

CZ102 Voltmeter User Manual

Dongguan Leyi Intelligent Technology Co., Ltd.

CONTENTS

US

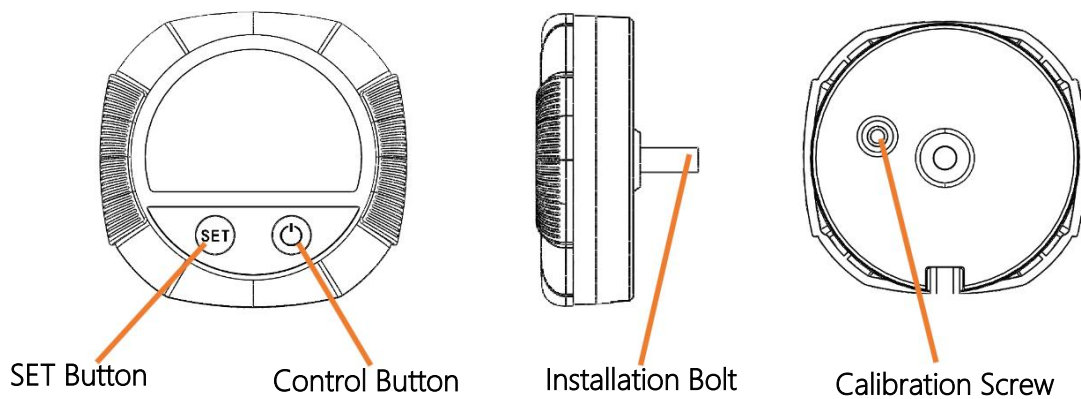
1. <u>Warning</u>	2
2. <u>Product Function Diagram</u>	2
3. <u>Main Interface Diagram</u>	2
4. <u>Wiring Instructions</u>	3
5. <u>Function Instructions</u>	3
5.1 Button Descriptions	3
5.2 Settings Instructions	4
5.2.1 Lithium Battery Settings Instruction	4
5.2.2 LiFePO4 Battery Settings Instructions	5
5.2.3 Lead-Acid Battery Settings Instructions	6
5.2.4 Custom Voltage Range Settings Instructions	7
6. <u>Product Features Description</u>	9
6.1 Backlight Always On / Timed Off Function	9
6.2 Undervoltage Alarm / Overcharge voltage Function	10
6.3 Factory Reset Function	13
6.4 Zero Offset Calibration Function	14
6.5 Power-off Memory Function	15
7. <u>Product Parameters Table</u>	15
8. <u>Package Contents</u>	15
9. <u>Installation Instructions</u>	16
10. <u>Customer Service and Technical Support</u>	18

1.Warning

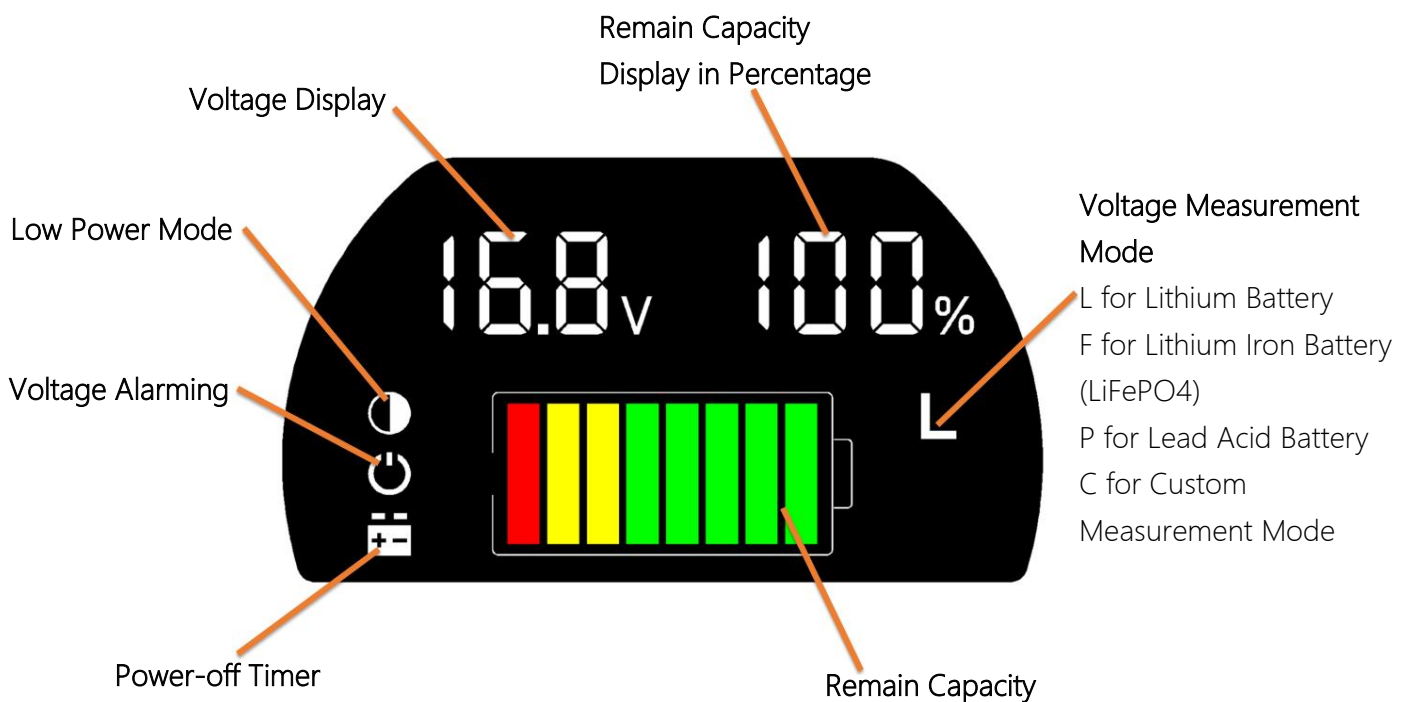


- The product must be connected to the battery properly.
- Read the manual and perform the initial setup before use.
- Without initial configuration, battery capacity will not be displayed properly.
- SoC (State of Charge) is accurate ONLY when the battery is not under load (Current = 0A). SOC may be inaccurate under load conditions.

2. Product Function Diagram



3.Main Interface Diagram



4. Wiring Instructions

4.1 Connection in Series

If the battery pack consists of multiple cells connected in series, connect the voltmeter to the positive terminal of the first cell and the negative terminal of the last cell, as shown in the figure below.

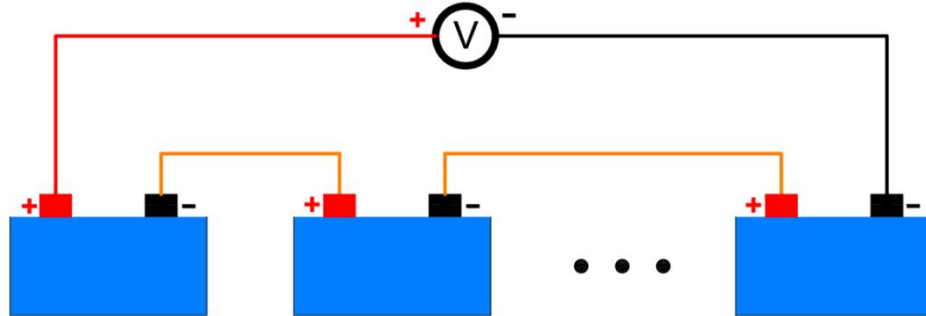


Diagram: Connection in Series

4.2 Connection in Parallel

If the battery pack consists of multiple cells connected in parallel, connect the voltmeter to the positive and negative terminals of any one of the cells, as shown in the figure below.

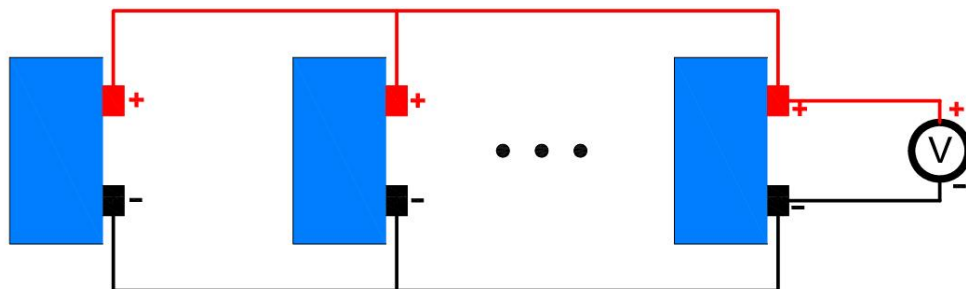
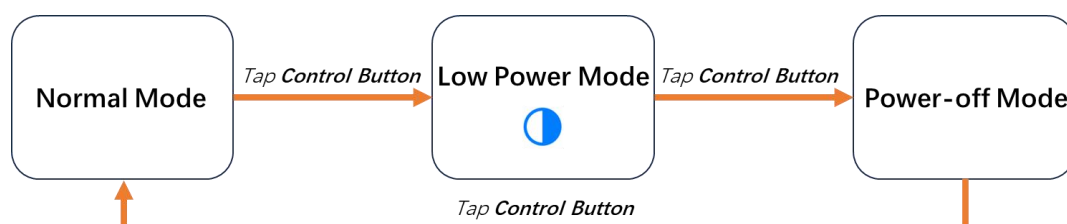


Diagram: Connection in Parallel

5. Function Instructions

5.1 Button Descriptions

1. On the main page, TAP the Control Button to switch between Normal Mode, Low Power Mode, and Power-off Mode. When entering Low Power Mode, the Low Power Mode icon will light up on the main page. Refer to the diagram below for the detailed switching logic.



2. On the main page, HOLD the SET Button to enter the settings menu, then TAP the SET Button to navigate through different function pages. If no settings need to be adjusted, HOLD the Control Button to return to the main page.

3. On the chosen function page, HOLD the SET Button to set the value. The parameter will start to flash. TAP the SET Button to adjust the value.

4. After setting the parameter, TAP the Control Button to confirm—the flashing will stop. Then HOLD the Control Button to save the settings and return to the main page.

5.2 Settings Instructions

- The product supports 4 types of measurement modes: Lithium battery (L), Lead-acid battery (P), LiFePO4 battery (F), and Custom voltage.
- The default setting is set to measure 3-series lithium battery voltage. Please setup to your battery type before use to function properly.

5.2.1 Lithium Battery Settings Instructions

The CZ102 voltmeter supports voltage measurement for 3-series to 22-series lithium battery packs.

Number of Battery Series
(3 series here)



Voltage Measurement Mode
(Lithium Battery here)

Setting Method:

1. On the main page, HOLD the SET Button to enter the settings page. The voltage measurement mode will display "L" (Lithium battery) when we are in the lithium battery page.
2. On the "L" page, HOLD the SET Button, and the numbers will start flashing.
3. TAP the SET Button to select the number from 03 to 22 cells.
4. After selecting the number, TAP the Control Button to confirm (the value will stop flashing once confirmed).
5. HOLD the Control Button for 2 seconds to save settings and return to the main page (setup complete).

5.2.2 LiFePO4 Battery Settings Instructions

The CZ102 voltmeter supports voltage measurement for 4-series to 26-series LiFePO4 battery packs.

Number of Battery Series
(4 series here)



Voltage Measurement Mode
(LiFePO4 battery here)

Setting Method:

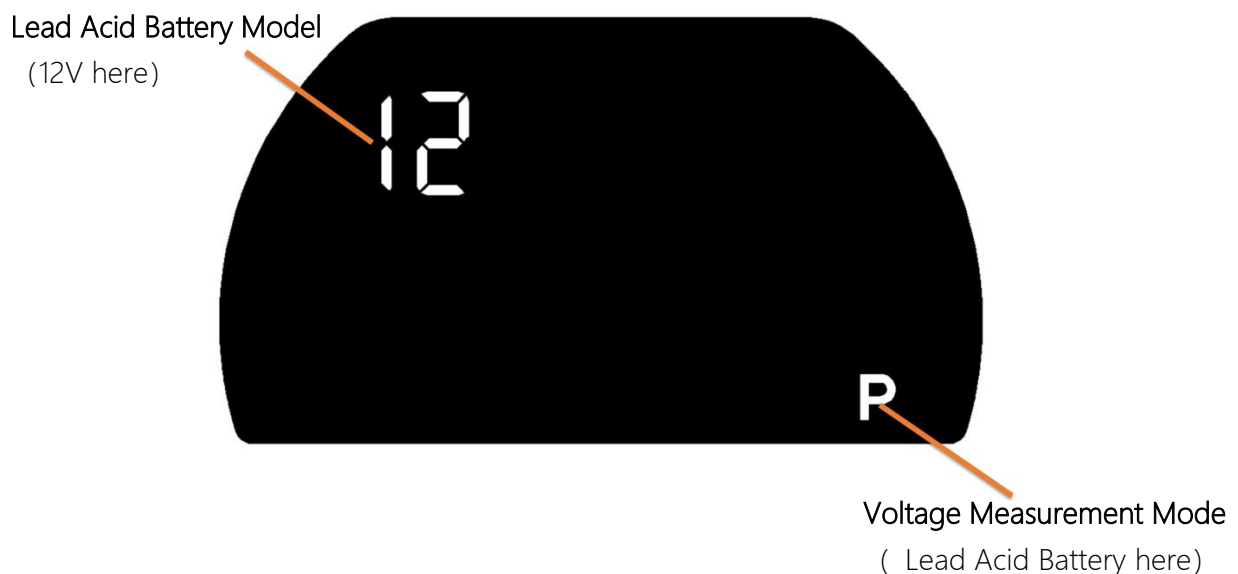
1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button once, and the voltage measurement mode will display "F" (LiFePO4) when we are in the LiFePO4 battery page.
3. On the "F" page, HOLD the SET Button, and the series number will start flashing.
4. TAP the SET Button to select the number of series from 03 to 26 cells.
5. After selecting the series number, TAP the "Control Button" to confirm (the value will stop flashing once confirmed).

6. HOLD the Control Button for 2 seconds to save settings and return to the main page (setup complete).

Note: A 3-series LiFePO4 battery pack does not provide enough voltage to light up the screen. The CZ102 voltmeter only supports 4-series or higher LiFePO4 battery packs.

5.2.3 Lead-Acid Battery Settings Instructions

The CZ102 voltmeter supports the following lead-acid battery specifications: 12V, 24V, 36V, 48V, 60V, 72V, and 84V.



Setting Method:

1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button twice, and the voltage measurement mode will display "P" (Lead-acid battery) when we are in the Lead-acid battery page.
3. On the "P" page, HOLD the SET Button, and the lead-acid battery specification value will start flashing.
4. TAP the SET Button to select a voltage range from 12V to 84V.
5. After selecting the voltage, TAP the Control Button to confirm (the value will stop flashing once confirmed).
6. HOLD the Control Button for 2 seconds to save settings and return to the main page (setup complete).

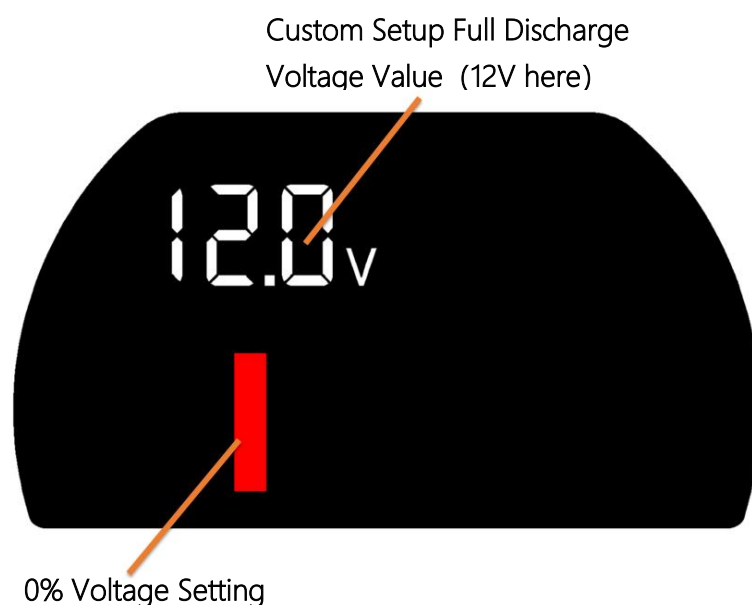
5.2.4 Custom Voltage Range Settings Instructions

Caution: If you encounter inaccurate data while using L, F, or P Modes, please contact us by scanning the QR Code at last page. We will guide you through using the custom mode. Alternatively, you may refer to the following method to set up the custom mode yourself.

If the battery does not belong to any of the above types, you can manually set the full charge and full discharge voltage to display the battery's percentage.

In the custom voltage range mode, the voltage measurement mode will display as "C".

Custom Full Discharge Voltage (0% Voltage) Settings Instructions



Setting Method:

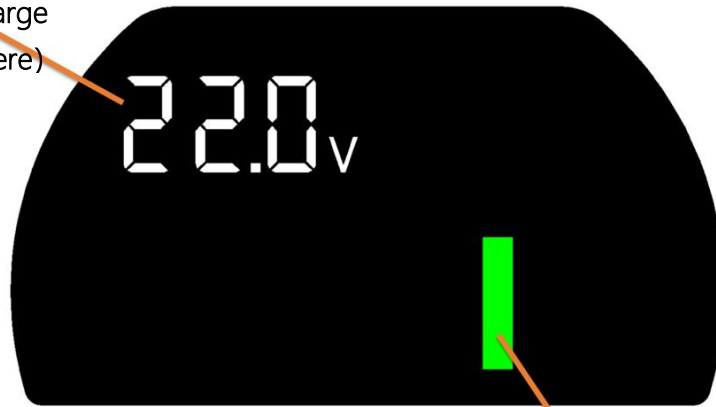
1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button three times to enter custom mode. In this mode, you will first set the full discharge voltage.
3. On the custom full discharge voltage settings page, HOLD the SET Button, and the tens digit will begin to flash. TAP the SET Button to adjust the tens digit.
4. TAP the Control Button to confirm the tens digit and move to the ones digit. The ones digit will flash, and TAP the SET Button to adjust the ones digit.

5. Repeat step 4 to adjust the decimal digits.

Once the decimal place value adjustment is complete, TAP the Control Button to move to the custom full charge voltage (100% voltage) settings page.

Custom Full Charge Voltage (100% Voltage) Settings Instructions

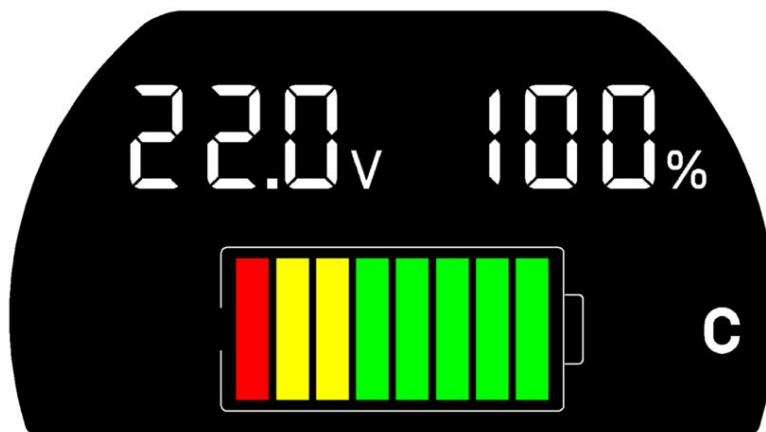
Custom Setup Full Charge
Voltage Value (12V here)



100% Voltage Setting

Setting Method:

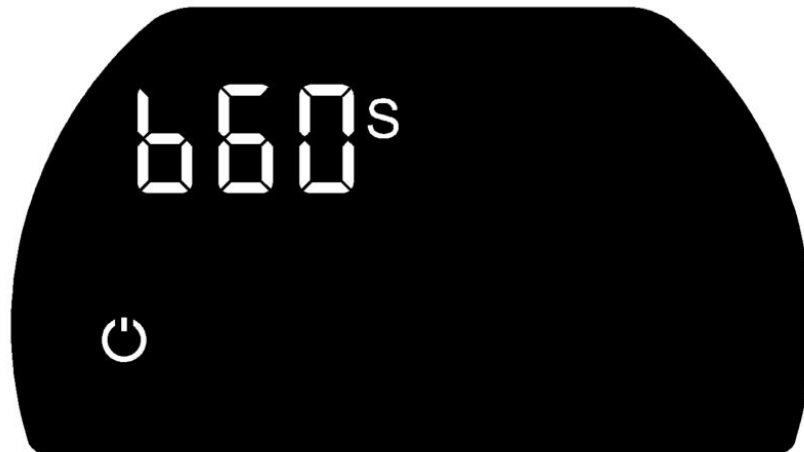
1. From the custom full discharge voltage settings page, proceed to the custom full charge voltage settings page.
2. Upon entering the custom full charge voltage settings page, the tens digit of the full charge voltage will begin to flash. TAP the SET Button to adjust the tens digit.
3. TAP the Control Button to confirm the tens digit and move to the ones digit setting. The ones digit will flash, and TAP the SET Button to adjust the ones digit.
4. Repeat step 3 to adjust the decimal places.
5. HOLD the Control Button to save the settings and return to the main page. The main page will display 'C' when the settings are complete.



6. Product Features Description

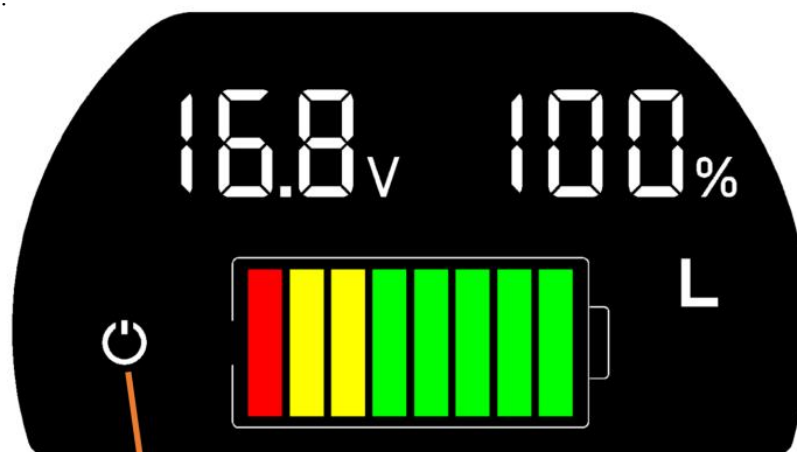
6.1 Backlight Always On / Timed Off Function

The screen of the voltmeter can be set to turn off after a specified time to enter power-off mode (the screen will not turn off during the function setting page).



Setup Method:

1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button 4 times to enter the backlight settings page.
3. HOLD the SET Button; the backlight display mode value will start flashing.
4. TAP the SET Button to select from the options b10–b90 (refer to the table below for the meaning of each backlight display mode value).
5. TAP the Control Button to confirm; the option value will stop flashing.
6. HOLD the Control Button to return to the main page. The Power-off Timer Icon on the main page will light up, indicating the setting was successful.



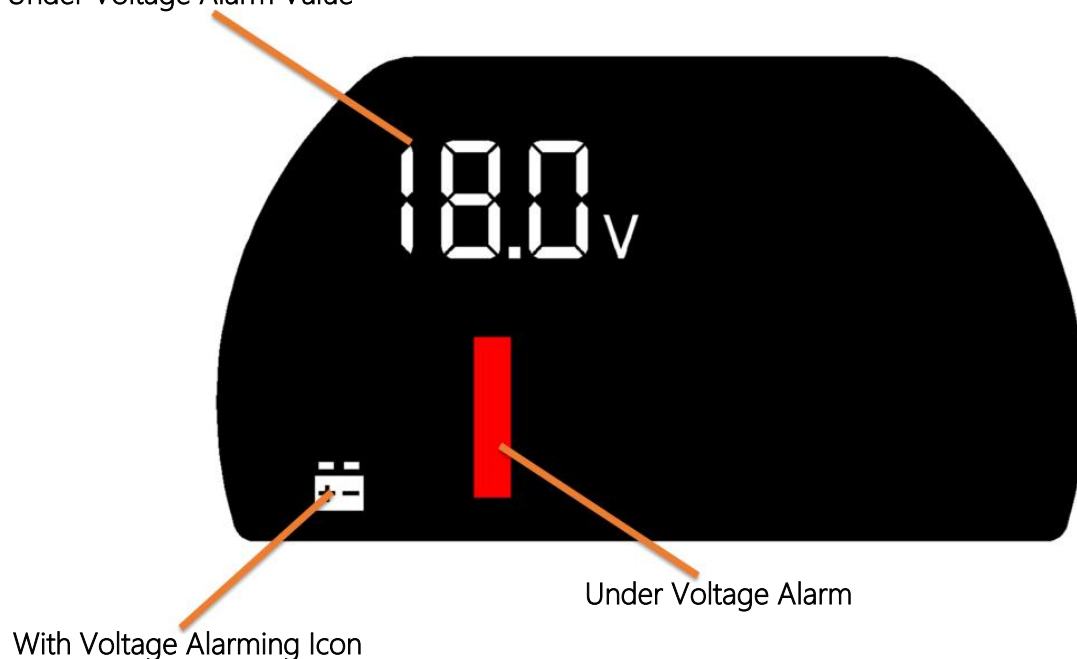
Power-off Timer Icon On

Backlight Display Options		
Backlight Display Mode Values	Meaning	Notes
b00	Backlight Always On	Settings Page – Backlight Always On
b10	Backlight stays on for 10 seconds, then turns off and enters power-off Mode	
b20	Backlight stays on for 20 seconds, then turns off and enters power-off Mode	
...	...	
b90	Backlight stays on for 90 seconds, then turns off and enters power-off Mode	

6.2 Undervoltage Alarm / Overcharge voltage Function

When the voltage falls below or rises above the setup values, the voltmeter triggers an alarm. This function with Voltage Alarm Icon is disabled by default. The icon will show when entering the alarm function setting page. If the battery voltage exceeds the overcharge voltage alarm voltage or falls below the undervoltage alarm voltage, the buzzer will be ON and the Voltage alarm Icon will flash.

Under Voltage Alarm Value

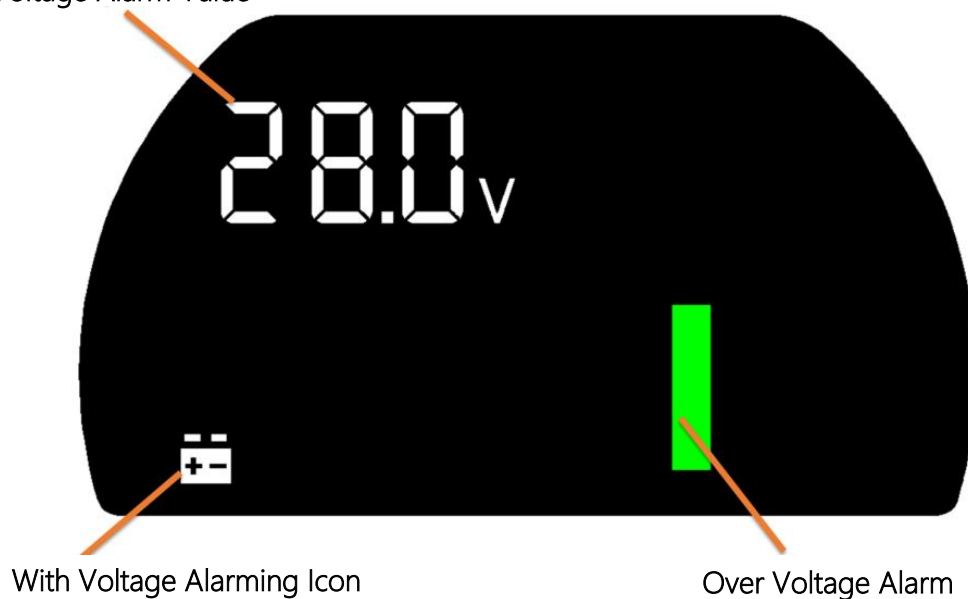


Undervoltage Alarm Setting Method:

1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button 5 times to enter the voltage alarm settings page; the undervoltage alarm setting will be displayed.
3. HOLD the SET Button; the tens digit of the undervoltage alarm value will start flashing.
4. TAP the SET Button to adjust the value.
5. TAP the Control Button to switch to the units and decimal digits, and TAP the SET Button to adjust those values. If you do not need to set the undervoltage alarm, set the value to 0.00V.
6. After decimal digit is set, TAP the Control Button again to switch to the overcharge voltage alarm setting page.

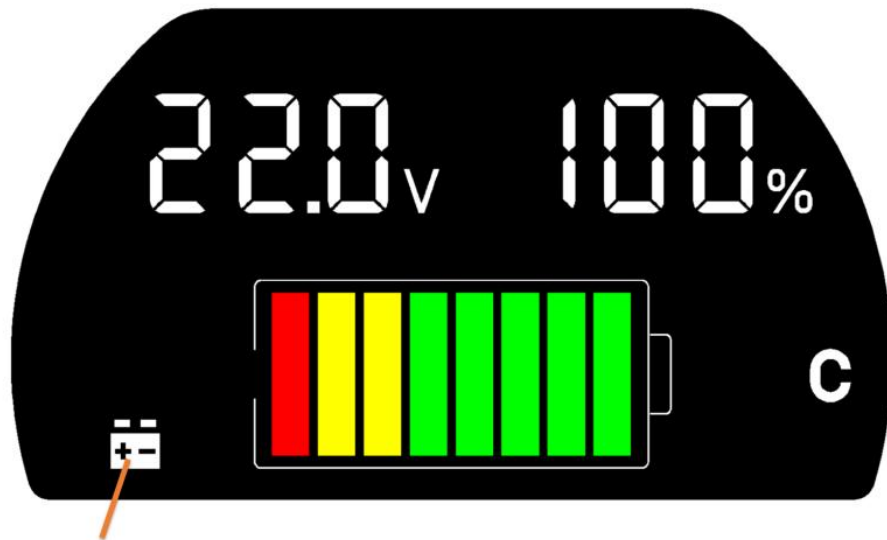
Overcharge voltage Alarm Setting Method:

Over Voltage Alarm Value



1. Enter the overcharge voltage protection setting page where the tens digit will start flashing.
2. TAP the SET Button to adjust the value.
3. TAP the Control Button to switch to the units and decimal digits, and TAP the SET Button to adjust the values. If you do not need to set the overcharge voltage alarm, set the value to 0.00V.

4. After completing the decimal place adjustment, TAP the Control Button to confirm the parameters, the digits will stop flashing.
5. HOLD the Control Button to save the parameters and return to the main page. Now the Voltage alarm Icon on the main page will ON, indicating the alarm setting is successful.



Voltage Alarming Icon On (Voltage Alarming Setup Finished)

Note:

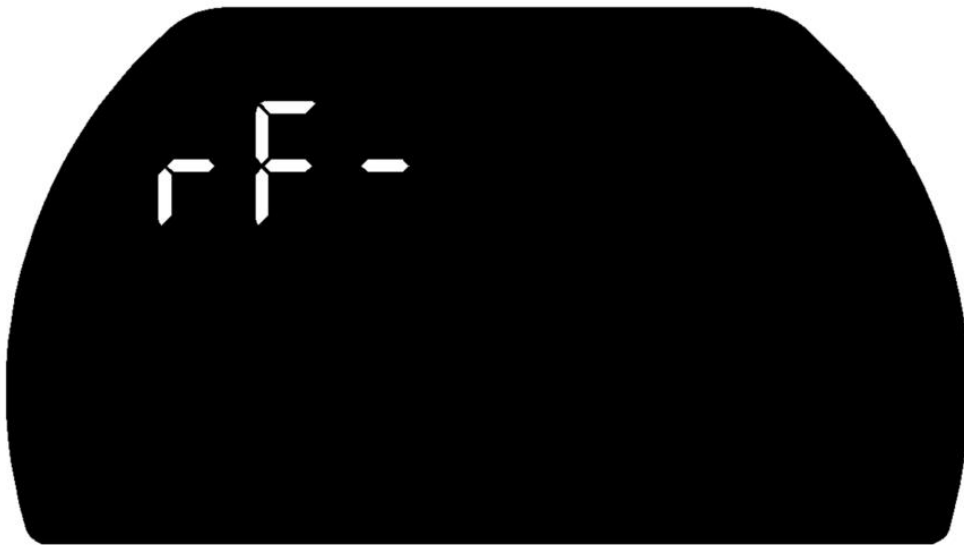
1. If both the overcharge voltage and undervoltage alarm values are set to 0V, the alarm function remains disabled.
2. You can set only one of the overcharge voltage or undervoltage alarms by setting the unwanted alarm value to 0V during configuration.
3. Either of the overcharge voltage or undervoltage parameters is set, Voltage alarm Icon will still be displayed.

6.3 Factory Reset Function

When the user needs to restore all parameters to the factory default settings, the factory reset can be performed within the settings menu.

Setting Method:

1. On the main page, HOLD the SET Button to enter the settings page.
2. TAP the SET Button 6 times to enter the factory reset page, where "rf-" will be displayed (as shown in the illustration).



3. HOLD the Control Button; the '-' symbol will flash three times and then change to '0' (as shown in the illustration). The device will then restore factory settings and return to the main interface.

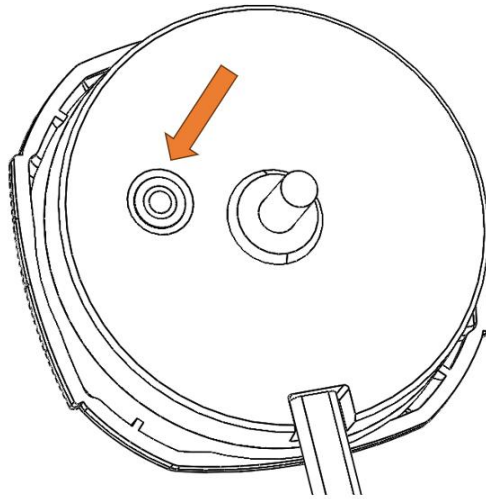


6.4 Zero Offset Calibration Function

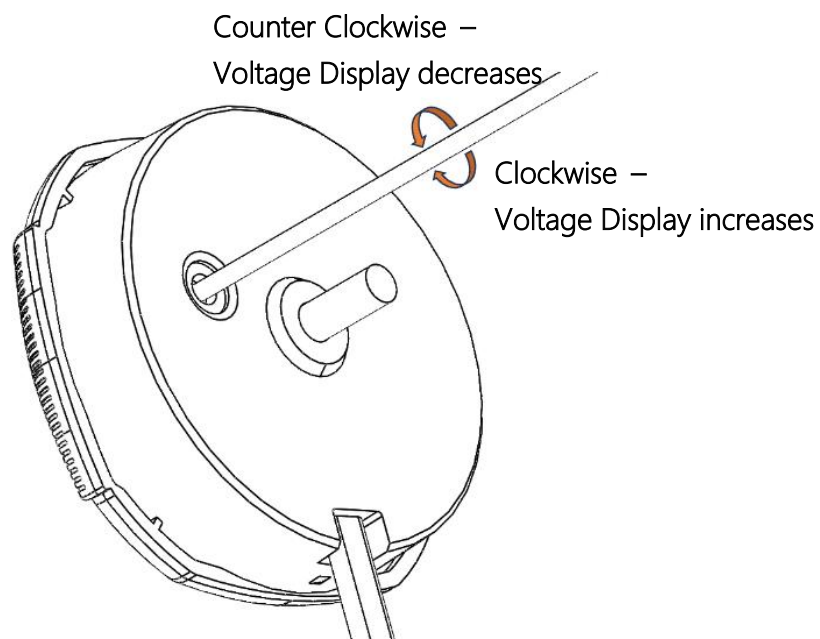
The calibration screw located on the back of the product allows the user to adjust the voltmeter zero offset by turning the screw.

Calibration Method:

1. Remove the waterproof silicone plug located on the back of the voltmeter.



2. Use a screwdriver to turn calibration screw inside the voltmeter to adjust the voltage measurement value. Rotate counterclockwise to decrease the voltage measurement value. Rotate clockwise to increase the voltage measurement value



3. Reinstall the waterproof silicone plug.



Warning

1. When calibrating, avoid using an excessively large screwdriver, as this may damage the voltmeter (a Phillips screwdriver with a diameter of about 3mm is recommended).
2. After calibration, ensure reinstall the waterproof silicone plug, otherwise, the voltmeter will not be waterproofed anymore.

6.5 Power-off Memory Function

Power-off memory function: After the voltmeter power supply is cut off, the function settings will be memorized and restored when powered again.

7. Product Parameters Table

Dimensions	89*60*19 (mm) /3.50*2.36*0.75 (in)
Specification	CZ102
Net Weight	30g
Voltage Range	9.5-100V
Operating Temperature Range	-20°C-60°C
Self-Consumption (Normal Mode)	≤15mA
Self-Consumption (Low Power Mode)	≤7.5mA
Self-Consumption (Shutdown Mode)	≤1mA
Voltage Measurement Accuracy	±1%

8. Package Contents

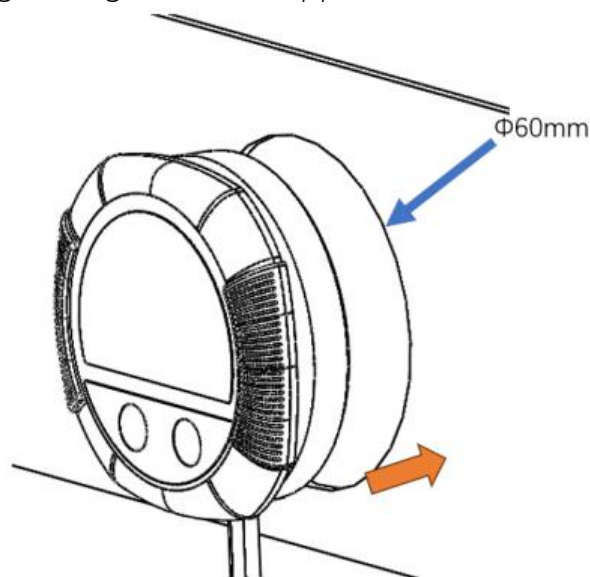
Contents	Specifications	Quantity
CZ102 Voltmeter	-	1
User Manual	-	1
Flush Mounting Bracket	-	1
Angled Mounting Bracket	-	1
Wing Nuts	M5	1
Lock Washers	M6	1

9. Installation Instructions

The CZ102 comes with two types of brackets, mounting washers, and nuts, supporting multiple installation methods to meet different installation requirements.

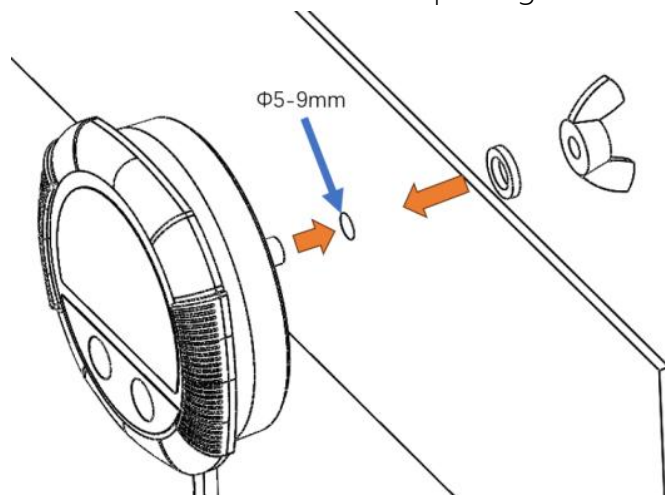
9.1 Hole Drilling Installation

Use a standard 60 mm (2.36 inch) drill bit to make a hole on the flat surface where the voltmeter needs to be installed. Then, insert the voltmeter directly into the mounting hole. glue can be applied for fixed mounting.



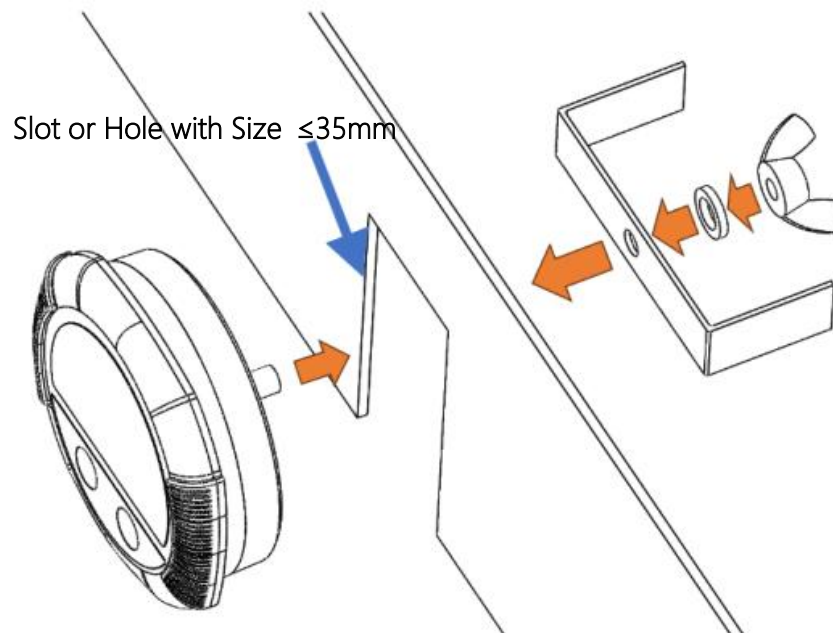
9.2 Hole Drilling with Washer and Nut Installation

Drill a 5 mm–9 mm (0.197–0.354 inch) mounting hole on the chosen surface. Use the included nuts and washers from the package for installation.



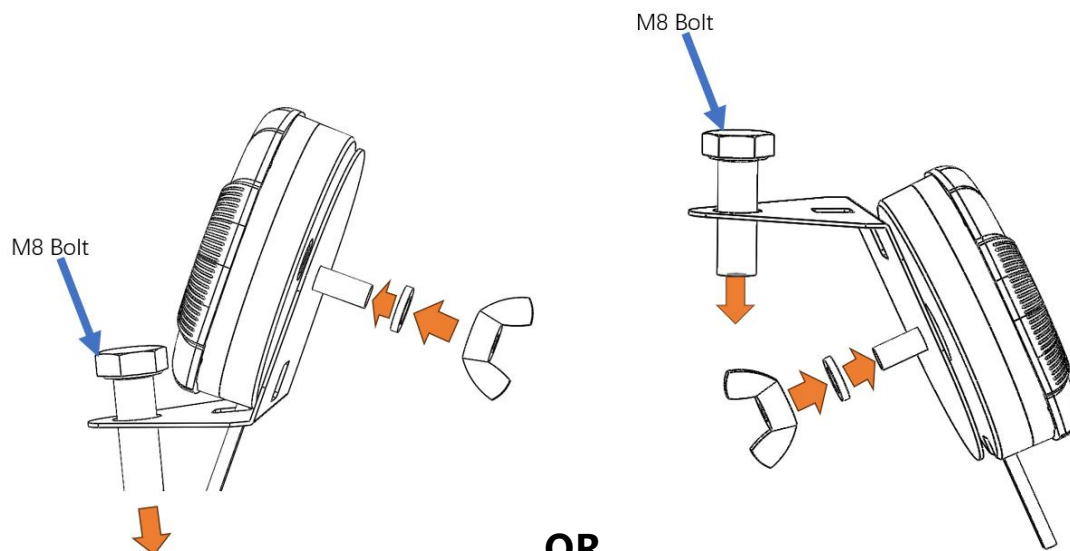
9.3 Flat Bracket with Washer and Nut Installation

If the mounting location is a relatively wide slot or hole, the voltmeter can be installed using the flat bracket along with washers and nuts.



9.4 Angled Mounting Bracket with Bolt, Washer, and Nut Installation

If the voltmeter needs to be installed on an M8 threaded hole and positioned at a specific angle, use an angled mounting bracket along with a bolt, washer, and nut, as shown in the diagram below.



10. Customer Service and Technical Support

If you encounter any issues with the product, please scan the QR codes below for further assistance.



SETUP GUIDE



SUPPORT



Download Multilingual Manuals