

CL10A Battery Meter User Manual

Dongguan Leyi Intelligent Technology Co., Ltd.

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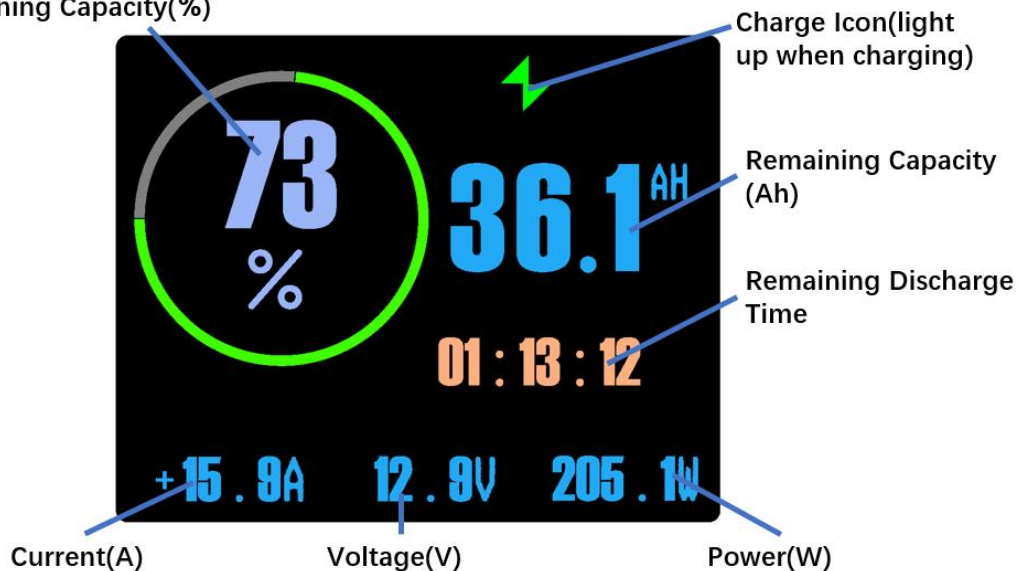
1.Warning



- The product must be properly installed and wired; otherwise, it will not function correctly.
- Initial setup of the product is required; otherwise, the battery meter capacity and SOC (State of Charge) cannot be displayed properly.
- The battery meter must be used together with a shunt. Shunts of different specifications must not be mixed and matched with this meter.
- The shunt for this product is 300A, which supports current up to 300A.

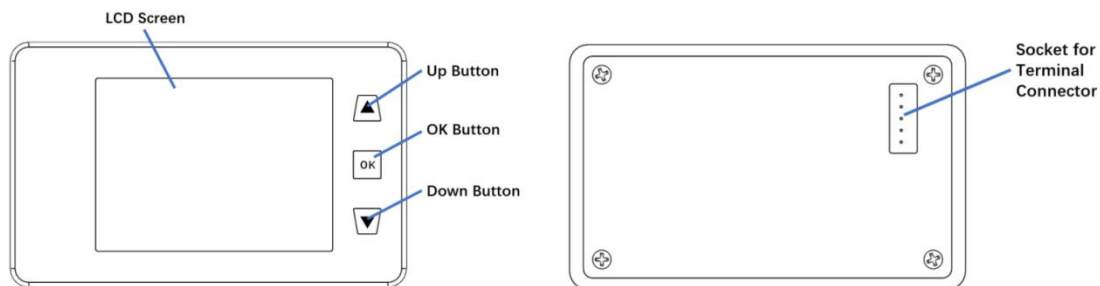
2.Product Main Page Diagram

Remaining Capacity(%)

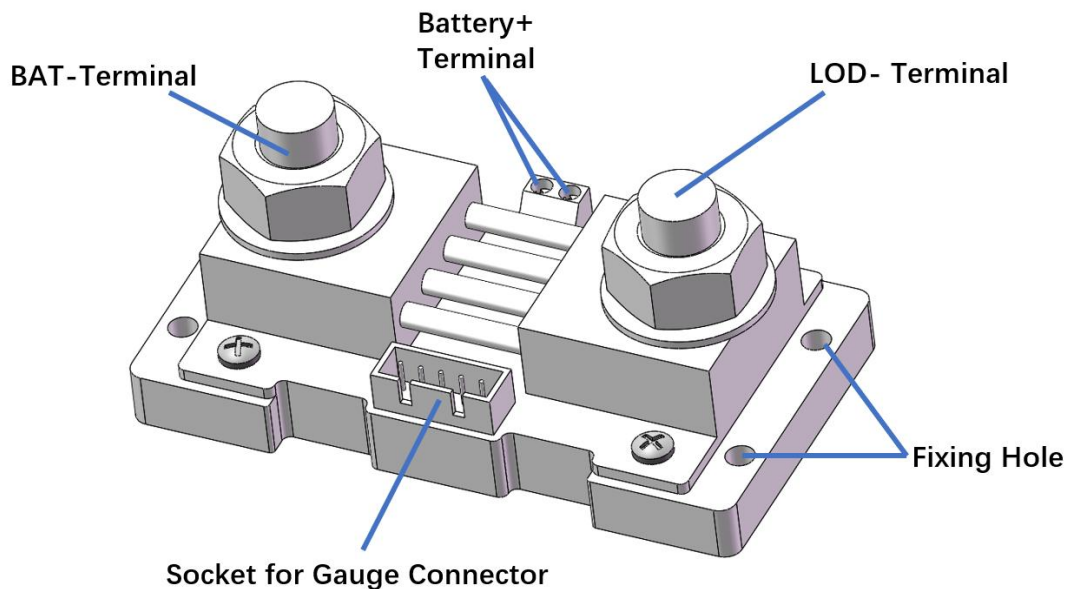


3. Product Description

3.1 Battery Meter Diagram



3.2 Shunt Diagram

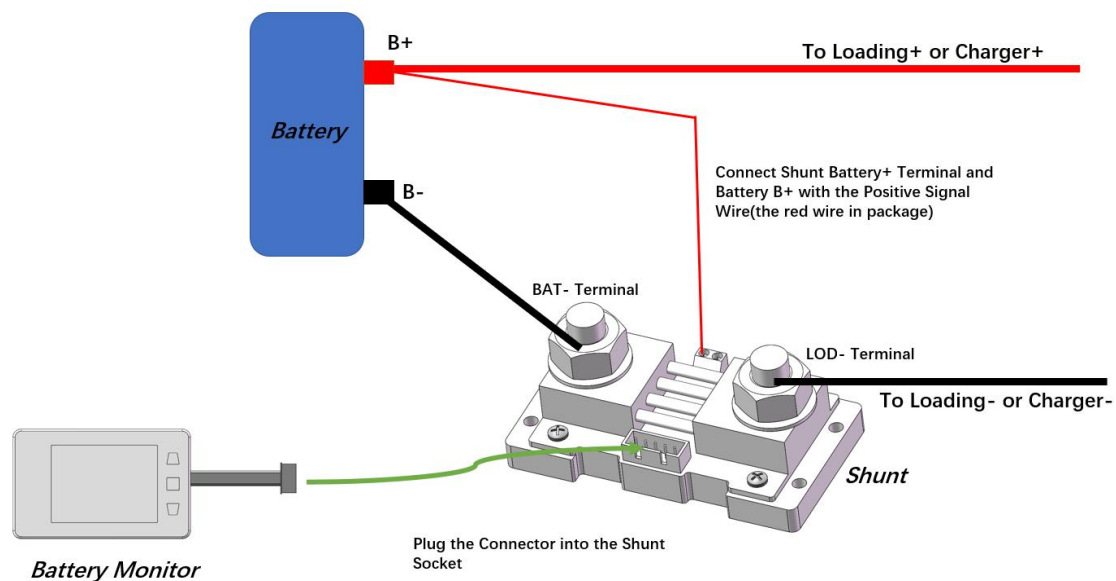


3.3 Button Function Description

1. On the main page, hold OK Button to enter the settings menu.
2. In the settings menu, tap UP Button or DOWN Button to switch between different setting menu. Tap OK Button to enter the chosen menu.
3. Tap DOWN Button to switch between different digit places; the selected digit will turn red.
4. Tap UP Button to change the value of the selected digit.
5. After setting, tap OK Button to confirm the parameter, then hold OK Button to save and return to the main page.

4. Product Wiring Instructions

4.1 Wiring Instructions



Step 1. Disconnect the circuit to ensure the following operations are carried out safely.

Step 2. Connect the Battery Negative Terminal (B-) to the shunt terminal marked BAT- (please prepare a suitable power cable; the included copper lugs in the package can be used to make the connection).

Step 3. Connect the shunt terminal marked LOD- to the negative terminal of the load or charger.

Step 4. Use the included red signal wire to connect the shunt terminal of Battery+ (shown in the shunt diagram) to the battery positive terminal (B+).

Step 5. Insert the male connector of the battery meter into the socket on the shunt.

Step 6. Wiring check. (Refer to Section 4.2 Wiring Check.)

Important Wiring Tips

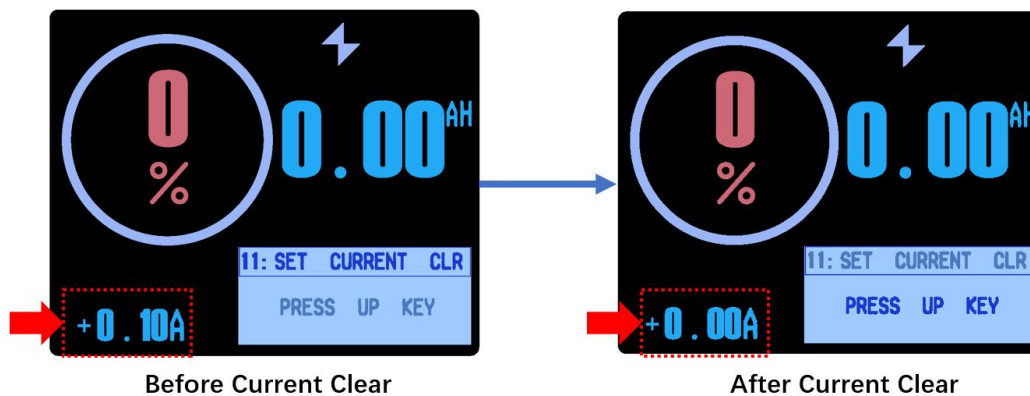


- The shunt is a heat-generating component and must be installed in a well-ventilated area. It must **NOT** be wrapped or covered. When used continuously at maximum current, ensure to keep it properly ventilated for heat dissipation.
- Keep the shunt dry; avoid moisture or immersion in water to prevent short circuits. It is **NOT waterproof**.
- Ensure that the shunt is connected in series with the main circuit negative side; it should never be connected to the positive side.
- The power wire must match current rating. Appendix lists the recommended power wire specifications corresponding to the maximum current.
- It is recommended to use terminal lugs for wiring, use correct lugs and wire based on the rated current of your application.

4.2 Wiring Check

After completing the wiring as described in Section 4.1, please start the wiring check before setting. ****If this step is skipped, incorrect measurement results may occur.**

- When there is no load, check whether current display is 0A. If the display is 0A, please **SKIP** the function **11 : SET CURRENT CLR**, otherwise please set the Current Clear Function as below:
 - ① In Main Page, hold OK Button and tap Up Button multiple times to navigate to **11 : SET CURRENT CLR** menu.
 - ② Tap OK Button to enter the menu and then tap Up Button to Clear the Drift Current.
 - ③ Tap OK to confirm and hold OK Button to return to Main Page.



Please note: Current clear is necessary ONLY when no discharge or charge current and the current display is not 0A. Otherwise skip this process.

- If there is no display at all, cut the power and check whether the wiring is correct (especially the positive voltage signal wire), and ensure that all connection points have good electrical contact.
- Charge or discharge the battery and check whether the current reading is correct. If it is not correct, verify that all charging and discharging currents pass through the shunt (the shunt must be connected in series with the main circuit negative side).
- When charging the battery, the battery symbol should show a (+); when discharging (load in use), it should show a (-). If the symbol is reversed, check whether the battery negative terminal (B-) is properly connected to the shunt terminal (BAT-). Make sure it is not connected by mistake with the shunt LOD- terminal.

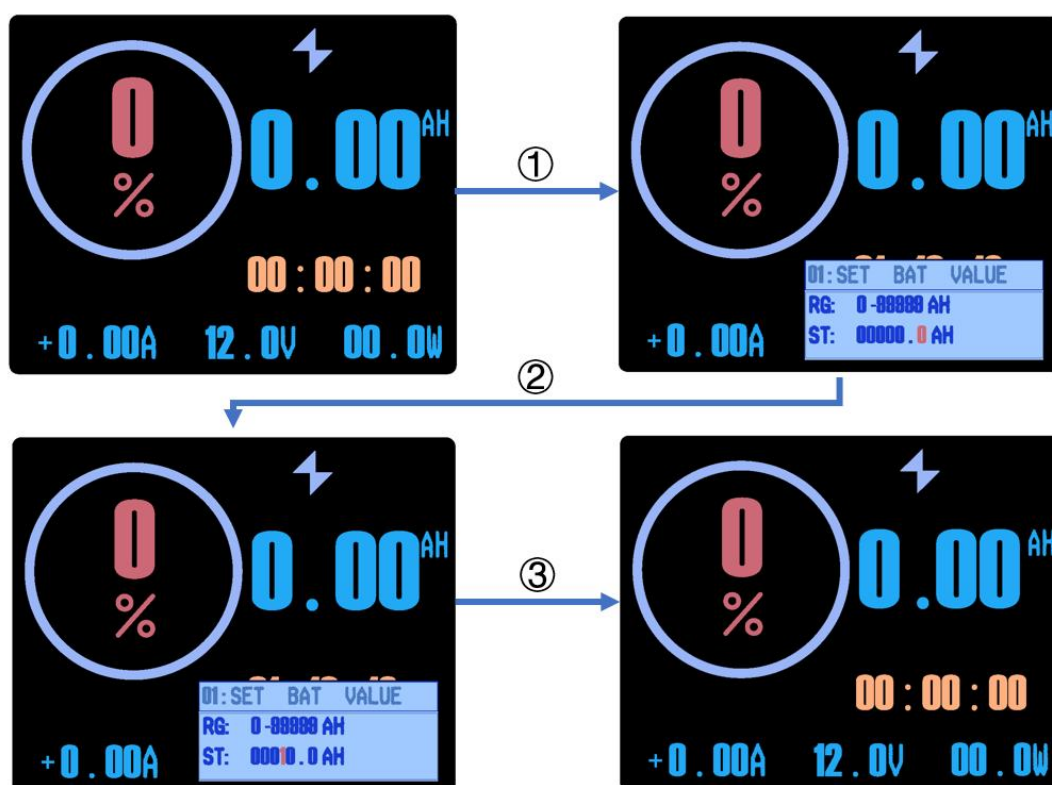
5. Initial Setup Instructions (Mandatory Configuration)

When using the battery meter for the first time, initial setup of two basic parameters is needed: 1. the Full Charge Capacity; 2. the Initial Capacity.

5.1 Full Charge Capacity Setting

Setup steps:

- ① On the main page, hold OK Button to navigate to the 01.SET BAT VALUE setting menu and tap OK Button to enter the full charge capacity setting.
- ② Tap UP Button to change the value of the selected digit; tap DOWN Button to switch between different digit.
- ③ Tap OK Button to confirm the value and hold OK Button to save and return to the main page.



Important Tips for Capacity Setting



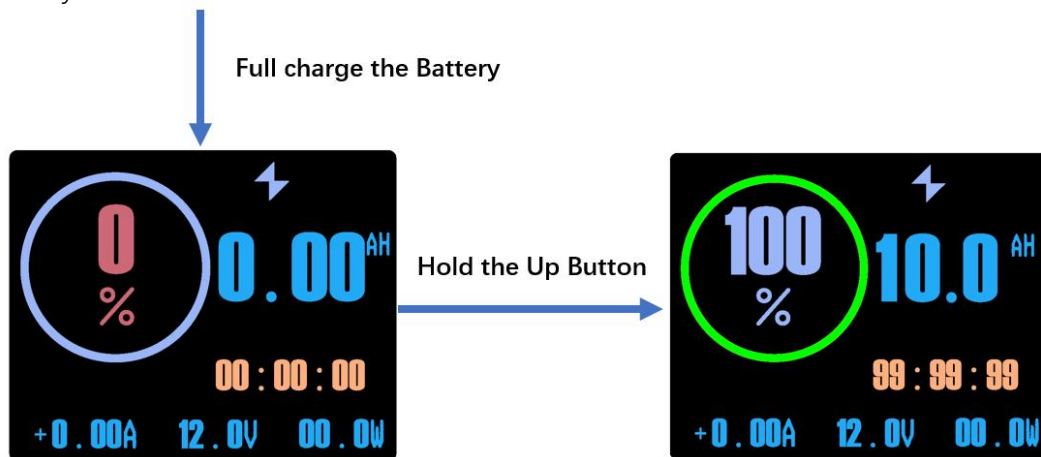
- Battery pack full charge capacity must be set correctly; otherwise, the SoC (State of Charge) value will not be displayed accurately.
- If the battery pack is made up of multiple identical cells connected in series, the total full charge capacity of the battery pack is equal to the full charge capacity of a single cell.
- If the battery pack is made up of multiple identical cells connected in parallel, the total full charge capacity of the battery pack is the sum of the capacities of all the cells.

5.2 Initial Capacity Setting

After setting the battery full charge capacity, it is necessary to align the displayed capacity on the meter with the actual battery capacity. Two methods are provided below; please choose either one for the initial capacity setup.

Method 1. Set the initial capacity to 100% when the battery is fully charged

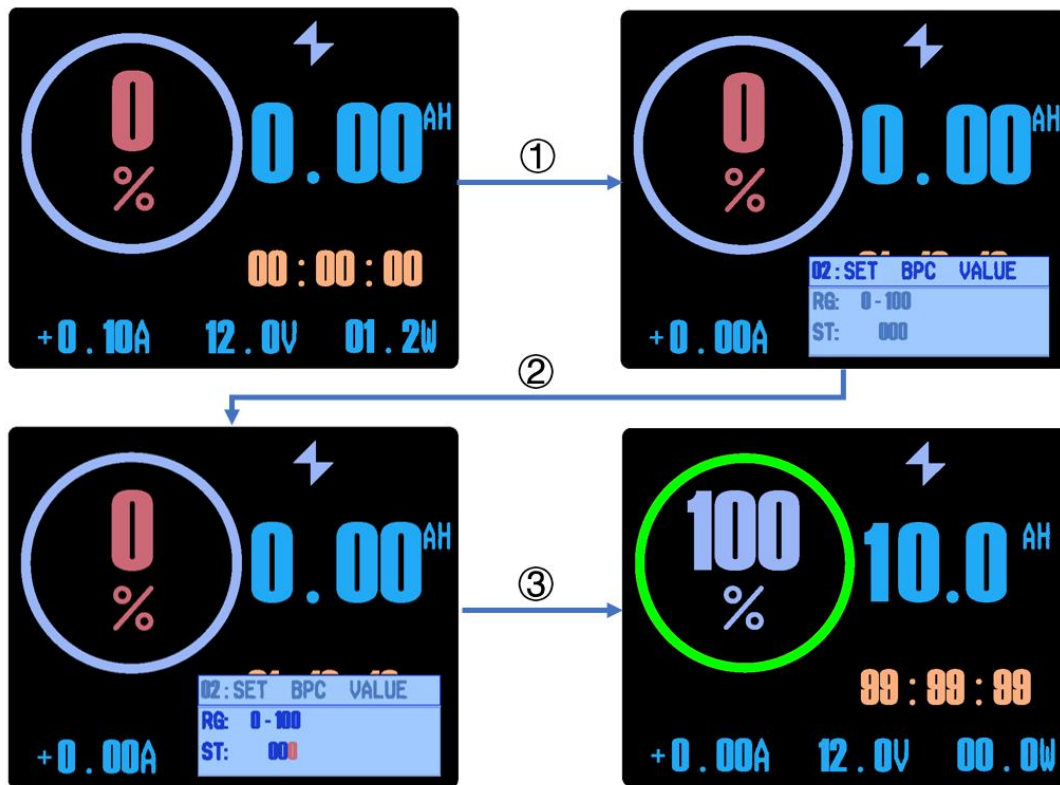
1. Fully charge the battery, and in this fully charged state, set the capacity status to full.
2. To set the battery capacity status to full: on the main page, hold UP Button; this will set the displayed capacity on the battery meter to full capacity, and the SoC will show as 100%.



Method 2. Directly enter the current SoC value

If the current SoC value is known, you can directly input the SoC value in the settings (any value from 0% to 100%).

- ① On the main page, hold OK Button to enter the settings menu.
- ② Tap UP Button to navigate to the 02.SET BPC VALUE setting menu and tap OK Button to enter setting; set value by tapping UP Button to change the value of the selected digit, and tap the DOWN Button to switch between digit places.
- ③ Tap OK Button to confirm, and then hold OK Button to save and return to the main page.



After finishing the above settings, the battery meter is ready for fundamental use.

6. Advanced Functions Overview

The following functions are not mandatory to set up. Please be aware that incorrect settings may cause incorrect display of the SoC or other parameters.

6.1 Set Overcharge Voltage Notice

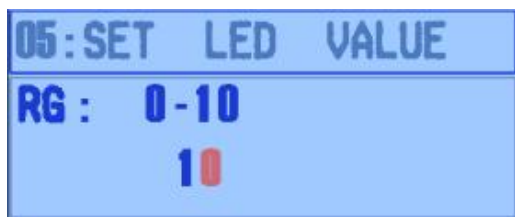
Function Description	Figure
When the voltage exceeds Overcharge Voltage value, the battery meter will trigger the SoC display to show 100%.	
Setup Steps: ① On the main page, hold OK Button to enter the settings menu. tap UP Button to find <u>03: SET OVP VALUE</u> , then tap OK Button to select this setting page. ② Tap UP Button and DOWN Button to adjust the parameter value.	

③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.

6.2 Set Undervoltage Notice

Function Description	Figure
When the voltage drops below Undervoltage, the battery meter will trigger the SoC display to show 0%.	
Setup Steps ① On the main page, hold OK Button to enter the settings menu. Tap UP Button to navigate to <u>04: SET LVP VALUE</u> , then tap OK Button to enter this setting menu. ② Tap UP Button and DOWN Button to adjust the parameter value. ③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.	

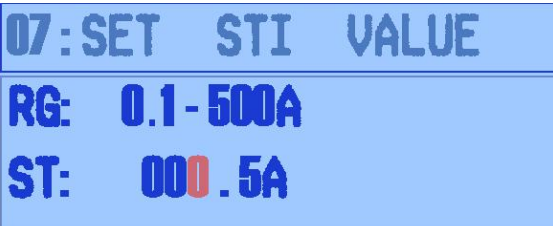
6.3 Set Screen Brightness

Function Description	Figure
Screen brightness can be adjusted through the settings menu.	
Setup Steps: ① Hold OK Button to enter the settings menu. tap UP Button to find <u>05: SET LED VALUE</u> , then tap OK Button to enter this menu. The brightness level can be set between 0 and 10. ② Tap UP Button and DOWN Button to adjust the brightness value. ③ After setting, tap OK Button to confirm, then hold OK Button to save and return to the main page.	

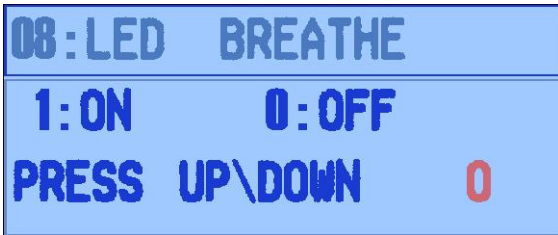
6.4 Set Screen Timeout

Function Description	Figure
If the current is lower than a threshold current (Please refer to 6.5), and there is no user operation for longer than the set timeout period, the battery meter will turn off the screen and enter low power mode.	 06 : SET REST SCREEN RG: 0 - 900S ST: 010S
Setup Steps: ① Hold OK Button to enter the settings menu. tap UP Button to find <u>06: SET REST SCREEN</u> , then tap OK Button to enter this menu. ② Tap UP Button and DOWN Button to adjust the parameter value. ③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.	

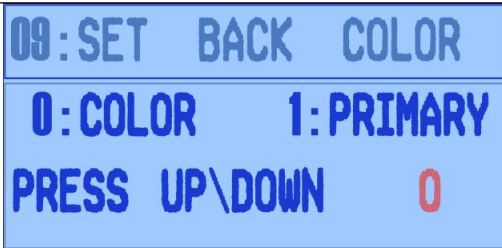
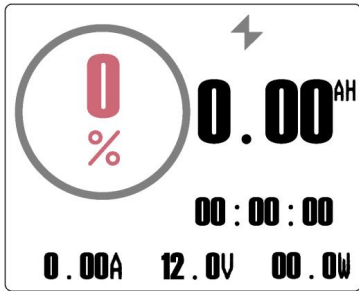
6.5 Set Screen Off Current

Function Description	Figure
When the current drops below Screen Off Current and there is no user operation for longer than the screen timeout period (configured as described in 6.4), the battery meter will turn off the screen and enter low power mode.	 07 : SET STI VALUE RG: 0.1 - 500A ST: 000.5A
Setup Steps: ① On the main page, hold OK Button to enter the settings menu. tap UP Button to find <u>07: SET STI VALUE</u> , then tap OK Button to enter this menu. ② Tap UP Button and DOWN Button to adjust the parameter value. ③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.	

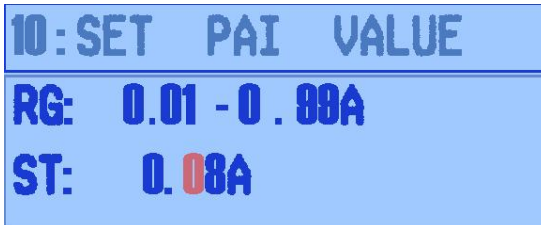
6.6 Set Low Battery Backlight Breathing Alarm

Function Description	Figure
If Backlight breathing alarm is set, the backlight will provide a visual breathing warning when the battery pack's SoC drops to 20%.	
Setup Steps: ① On the main page, hold OK Butto to enter the settings menu. tap UP Button to find <u>08: LED BREATHE</u> , then tap OK Button to select this page. ② Tap UP Button and DOWN Button to set the value(1: enable; 0: disable). ③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.	

6.7 Set Display Mode

Function Description	Figure
The display can switch between color / black & white mode. Note: Please power off and restart the battery meter for the new setting to take effect. The default mode is color display.	 
Setup Steps: ① On the main page, hold OK Button to enter the settings menu. tap UP Button to find <u>09: SET BACK COLOR</u> , then tap OK Button to select this page. ② Tap UP Button and DOWN Button to set the parameter value (1: black & white; 0: color). ③ After setting, tap OK Button to confirm the value, then hold OK Button to save and return to the main page.	

6.8 View Zero Offset Current

Function Description	Figure
If the measured current is below Zero Offset Current (Default 0.06A), the battery meter will display 0A as an open circuit. Power consumption will remain 0AH until current >Zero Offset Current.	
Setup Steps: ① On the main page, hold OK Button to enter the settings menu. tap UP Button to find <u>10: SET PAI VALUE</u>, then tap OK Button to select this page. ② The default zero offset current value is 0.06A. ③ After viewing, tap OK Button to confirm, then hold OK Button to the main page.	

6.9 Restore Factory Settings

Function Description	Figure
All parameters will be reset to their default values. Note: If previously in Black & White mode, please power off and on again to restore default color.	
Setup Steps: ① On the main page, hold OK Button to enter the settings menu. Tap UP Button to find <u>12: RET FACTORY SET</u>, then tap OK Button to select this page. ② Tap UP Button to reset all parameters to factory default settings. ③ After resetting, tap OK Button to confirm, then hold OK Button to save and return to the main page.	

7. Package Contents List

Package Contents		
Name	Quantity	Specification
Battery Meter	1	-
User Manual	1	-
Shunt	1	300A
Shielded Cable	1	Length 3m (9.84 feet)
Positive Signal Wire	1	Length 1m (3.28 feet)
Terminal Lugs	2	300A
Wrench	1	17mm&14mm
Mounting Screws & Nuts	4	M3

8. Customer Service and Technical Support

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



SETUP GUIDE



SUPPORT



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Appendix: AWG Wire Harness Details Table

AWG Gauge	Diameter (Inches)	Diameter (mm)	Ohms per 1000' (@ T=20°C)	Ohms per km (@ T=20°C)	Max amps for chassis wiring	Max amps for power X-mission
0000	0.4600	11.6840	0.0490	0.160720	380	302
000	0.4096	10.40384	0.0618	0.202704	328	239
00	0.3648	9.26592	0.0779	0.255512	283	190
0	0.3249	8.25246	0.0983	0.322424	245	150
1	0.2893	7.34822	0.1239	0.406392	211	119
2	0.2576	6.54304	0.1563	0.512664	181	94
3	0.2294	5.82676	0.1970	0.646160	158	75
4	0.2043	5.18922	0.2485	0.815080	135	60
5	0.1819	4.62026	0.3133	1.027624	118	47
6	0.1620	4.11480	0.3951	1.295928	101	37
7	0.1443	3.66522	0.4982	1.634096	89	30
8	0.1285	3.26390	0.6282	2.060496	73	24
9	0.1144	2.90576	0.7921	2.598088	64	19
10	0.1019	2.58826	0.9989	3.276392	55	15
11	0.0907	2.30378	1.2600	4.132800	47	12
12	0.0808	2.05232	1.5880	5.208640	41	9.3
13	0.0720	1.82880	2.0030	6.569840	35	7.4
14	0.0641	1.62814	2.5250	8.282000	32	5.9
15	0.0571	1.45034	3.1840	10.44352	28	4.7
16	0.0508	1.29032	4.0160	13.17248	22	3.7
17	0.0453	1.15062	5.0640	16.60992	19	2.9
18	0.0403	1.02362	6.3850	20.94280	16	2.3
19	0.0359	0.91186	8.0510	26.40728	14	1.8
20	0.0320	0.81280	10.150	33.29200	11	1.5
21	0.0285	0.72390	12.800	41.98400	9	1.2
22	0.0254	0.64516	16.140	52.93920	7	0.92
23	0.0226	0.57404	20.36	66.78080	4.7	0.729
24	0.0201	0.51054	25.67	84.19760	3.5	0.577
25	0.0179	0.45466	32.37	106.1736	2.7	0.457
26	0.0159	0.40386	40.81	133.8568	2.2	0.361
27	0.0142	0.36068	51.47	168.8216	1.7	0.288
28	0.0126	0.32004	64.9	212.8720	1.4	0.226
29	0.0113	0.28702	81.83	268.4024	1.2	0.182
30	0.0100	0.254	103.2	338.4960	0.86	0.142
31	0.0089	0.22606	130.1	426.7280	0.700	0.1130
32	0.0080	0.2032	164.1	538.2480	0.530	0.0910
Metric 2.0	0.00787	0.200	169.4	555.6100	0.510	0.0880
33	0.00710	0.18034	206.9	678.6320	0.430	0.0720
Metric 1.8	0.00709	0.18000	207.5	680.5500	0.430	0.0720
34	0.00630	0.16002	260.9	855.7520	0.330	0.0560
Metric 1.6	0.00630	0.16002	260.9	855.7520	0.330	0.0560
35	0.00560	0.14224	329.0	1079.120	0.270	0.0440
Metric 1.4	0.00551	0.14000	339.0	1114	0.260	0.0430
36	0.00500	0.12700	414.8	1360	0.210	0.0350
Metric 1.25	0.00492	0.12500	428.2	1404	0.200	0.0340
37	0.00450	0.11430	523.1	1715	0.170	0.0289
Metric 1.12	0.00441	0.11200	533.8	1750	0.163	0.0277
38	0.00400	0.10160	659.6	2163	0.130	0.0228
Metric 1	0.00394	0.10000	670.2	2198	0.126	0.0225
39	0.00350	0.08890	831.8	2728	0.110	0.0175
40	0.00310	0.07874	1049	3442	0.090	0.0137
41	0.00280	0.07112	1323	4341		
42	0.00250	0.06350	1659	5443		
43	0.00220	0.05588	2143	7031		
44	0.00200	0.05080	2593	8507		
45	0.00176	0.04470	3348	10984		
46	0.00157	0.03988	4207	13802		
47	0.00140	0.03556	5291	17359		