



# LCD BATTERY METER

## INSTRUCTION SHEET

This document describes how to operate and also outlines the specifications of the HULK 4x4 LCD BATTERY METER (HU6677B). This meter can test all kinds of battery types & monitor the following: voltage, discharge current, discharge power, discharge impedance, internal resistance, capacity, dump energy, energy consumption and running time, and display the measurement data through the bright and easy to read LCD screen.

Measuring Range is 300A (needs to be used with 300amp external shunt provided).

### 1. FUNCTION DESCRIPTION

#### 1.1 Voltage

1.1.1 **Measuring range: 0-200V. (Please note, when the voltage is going to be below 8V, please use the independent power supply mode) This can also be wired to your (Main battery) if using this meter on you Auxiliary battery.**

1.1.2 Display format: <10V display as: 9.99V  
<100V display as: 99.9V  
≥100V display as: 199V

1.1.3 Minimum resolution: 0.01V

1.1.4 The starting test voltage: 0.05V

1.1.5 Measurement accuracy: 1%

#### 1.2 Current

Measuring range: 0-300A using the supplied shunt. Default setting is 100A.

1.2.1 Display format: <1A display as: 999mA  
<10A display as: 9.99A  
<100A display as: 99.9A  
≥100A display as: 199A

1.2.2 Minimum resolution: 1mA

1.2.3 The starting test current: 20mA

1.2.4 Measurement accuracy: 1%

#### 1.3 Power

1.3.1 Measuring range: 0-60000W.

1.3.2 Display format: <10W display as: 9.99W  
<100W display as: 99.9W  
<1000W display as: 999W  
<10000W display as: 9.99kW  
≥10000W display as: 19.9kW

1.3.3 Minimum resolution: 0.01W

1.3.4 The starting test power: 0.2W

1.3.5 Measurement accuracy: 1%

#### 1.4 Impedance

**(Impedance=Voltage/ Current)**

1.4.1 Measuring range: 0-1000Ω

1.4.2 Display format: <100Ω display as: 99.9Ω  
≥100Ω display as: 999Ω

When current is zero or over the test range, it will display "---"

1.4.3 Minimum resolution: 0.1Ω

1.4.4 Measurement accuracy: 1%

#### 1.5 Internal Resistance

**Internal resistance= (Full voltage – Bring load voltage) / Bring load current, when the bring load voltage is larger than the maximum voltage, the internal resistance is zero.**

1.5.1 Measuring range: 0-999mΩ

1.5.2 Display format: 999mΩ, when the current is zero or over the test range, it will display "---".

1.5.3 Minimum resolution: 1mΩ

1.5.4 Measurement accuracy: 1%

Note: Before you test the internal resistance, you should preset the full voltage depending on the battery type.

After it is fully charged you can use it to test & if you don't fully charge it, you can set the battery without load voltage to the full voltage. Then test the internal resistance is not a fixed value, the more the battery discharged the bigger the resistance.

#### 1.6 Capacity

1.6.1 Measuring range: 0-1000AH

1.6.2 Display format: <1AH display as: 999mAH  
<10AH display as: 9.99AH  
<100AH display as: 99.9AH  
<1000AH display as: 999AH

1.6.3 Minimum resolution: 1mAH

1.6.4 Measurement accuracy: 1%

Note: Battery capacity testing is a cumulative process of discharge current versus time. It needs some time & the time is dependent on the discharge current. Before you test the capacity, you should preset the full voltage and the cut-off voltage depending on the battery type. After it is fully charged you can use it for the discharge test & when the dump energy display is blank, it means the discharge is over & the capacity display value is the batteries capacity.

#### 1.7 Dump energy

Dump energy is displayed via the battery symbol, 10 grids in total & every grid presents 10% energy.

Dump energy is calculated via the current battery voltage value & before test it you should preset the full voltage and the cut-off voltage depending on the battery type; every grid voltage = (the highest voltage – the lowest voltage) / 10.

#### 1.8 Accumulate energy consumption

1.8.1 Measuring range: 0~9999kWh

1.8.2 Display format: <1kWh display as: 999Wh  
<10kWh display as: 9.99kWh  
<100kWh display as: 99.99kWh  
<1000kWh display as: 999.99kWh  
≥1000kWh display as: 9999kWh

If you go over the test range it will become zero.

1.8.3 Minimum resolution: 1Wh

1.8.4 Measurement accuracy: 1%

Note: 1Wh=0.001kWh=0.001 Kilowatt

#### 1.9 Running time

1.9.1 Measuring range: 0 ~ 999 hour (without load the time will not accumulate)

1.9.2 Display format: 0:00:00 ~ 999:59:59

If you go over the test range it will become zero.

## 2. OPERATING INSTRUCTIONS

### 2.1 Setting the full and cut-off voltage

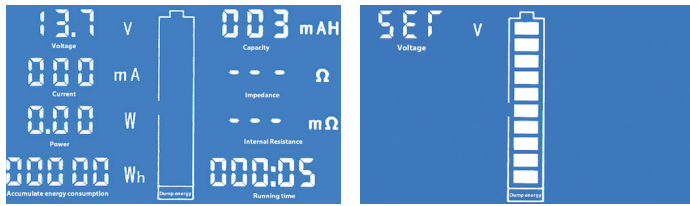


Figure 1: The normal display interface

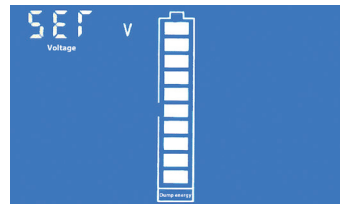


Figure 2: The voltage setting interface

#### 2.1.1 Set the full voltage:

**Step 1:** In the normal display interface (like fig. 1), long press the button until the LCD screen displays the interface like fig. 2, then release the button

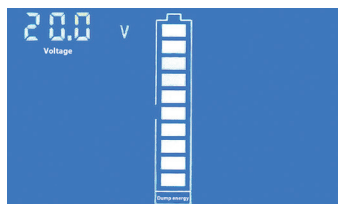


Figure 3: Full voltage setting interface (low bit)

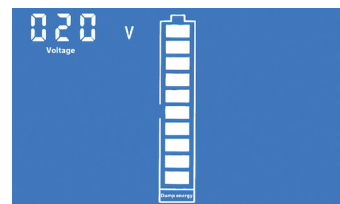


Figure 4: Full voltage setting interface (high bit)

**Step 2:** Set the status of full / cut-off voltage, long press the button until the LCD screen displays the interface like fig. 3, then release the button.

**Step 3:** At this time, the battery symbol displays full grids of energy and this means the full voltage setting status is complete, factory default the full voltage is 020.0V & the numerical code circulation flashing from the low bit to the high bit shows that the current setting digit, short press to set the digit; please pay attention to that, as the full voltage setting value has 4 digits but the numerical code has only 3 digits.

So the setting is divided into two parts: low bit (fig. 3) + high bit (fig. 4). For example, the default full voltage is 020.0V, then the display state is 20.0V to 020V low and high cyclic switching display. If you need to set the full voltage is 199.0V then please set the low bit to 99.0V & when the cycle reaches the high bit, it will display 099V and only the highest zero bit flickers to prompt you that it can be settled. Setting the high bit to 199V represents the full voltage is 199.0V.

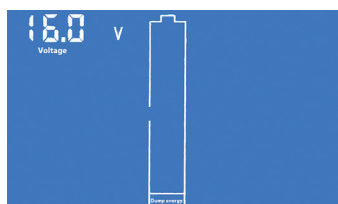


Figure 5: Cut-off voltage setting interface (low bit)

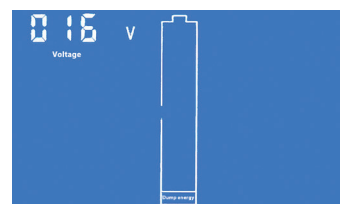


Figure 6: Cut-off voltage setting interface (high bit)

#### 2.1.2 Set the Cut-off voltage:

**Step 1:** After you set the full voltage, you will need to press the button longer until LCD shows the interface of Fig. 5, then release the button;

**Step 2:** At this time the battery symbol shows the zero-

grid to indicate the cut-off voltage setting state, the default cut-off voltage is 016.0V & the setting method is the same as above. The cut-off voltage is 0.8 times of the full voltage by default & after setting the full voltage then the cut-off voltage is automatically generated in the relationship of 0.8 times, otherwise you can reset it if required.

After all the above settings are completed, long press of the button until the settings are saved and exit the setting status, this will then restore the normal display interface.

### 2.2 Current range setting:

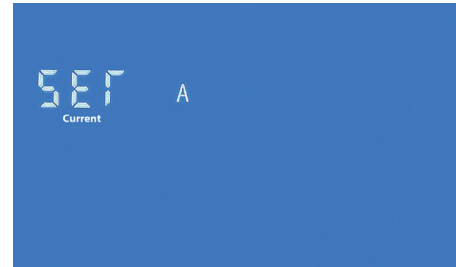


Figure 7: Current range setting interface

**Step 1:** In the normal display interface, long press of the button until the LCD shows the interface of Figure 2, then release the button & short press of the button again to switch to the interface like Figure 7. Then it indicates that this state is the current range setting state.



Figure 8: Current range choosing interface

**Step 2:** Longer press of the button until the LCD shows the interface of Figure 8, then release the button & short press the button again to switch the current range. This meter provides four current ranges & factory default is 100A. Then choose the corresponding range according to the shunt, 300A shunt supplied.

**Step 3:** After the current range setting is completed, long press of the button until the settings are saved and exit the setting status & this will restore the normal display interface.

## 2.3 Clear the Energy



Figure 9: Clear the energy interface

**Step 1:** In the normal display interface, long press of the button until the LCD shows the interface of Figure 2, then release the button & then short press of the button again will switch to the interface to Figure 9. This indicates that this state is the clearing energy setting state.

**Step 2:** Longer press of the button until the data has been cleared and exit the setting status & this will restore the normal display interface.

## 2.4 Clear the capacity

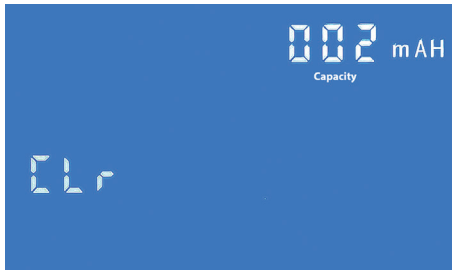


Figure 10: Clear the capacity interface

**Step 1:** In the normal display interface, long press of the button until the LCD shows the interface of Figure 2, then release the button, short press of the button again switch to the interface to Figure 10 & this indicates that this state is the clearing capacity setting state.

**Step 2:** Longer press the button until the data has been cleared and exit the setting status, restore the normal display interface.

## 2.5 Clear the running time

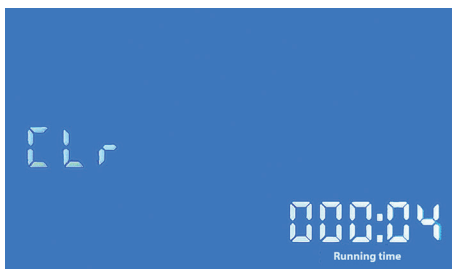


Figure 11: Clear the running time interface

**Step 1:** In the normal display interface, long press of the button until the LCD shows the interface of Figure 2. Then release the button, short press of the button again to switch to the interface to Figure 11. This indicates that this state is the clearing running time setting state.

**Step 2:** Longer press of the button until the data has been cleared and exit the setting status, this will restore the normal display interface.

## 2.6 Working mode

This meter has 2 modes, normal display mode & dormant mode. In normal display mode a short press the button will then enter it into dormant mode. In order to reduce the whole machine power consumption, the backlight and LCD display will be turned off in dormant mode. When in dormant mode a short press the button will switch it back to normal display mode.

Note: The meter will stop all measurement functions in dormant mode, so please do not switch to dormant mode if normal measurements are required.

## 3. PLEASE BE AWARE:

- 3.1 This module is suitable for indoor use only, it is not water proof, so please do not use outdoors.
- 3.2 Applied load should not exceed the rated voltage & current.
- 3.3 Please make sure it is wired correctly, if not followed correctly it can permanently damage the unit.

\*\*Warranty not given if this is the case.\*\*

## 4. OTHER SPECIFICATION

### 4.1 LCD full display figure

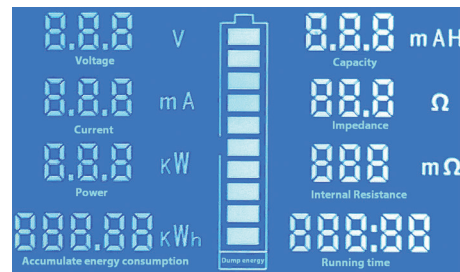


Figure 18: LCD full display figure

### 4.2 Power consumption

Normal working state: 0.03-1.2W

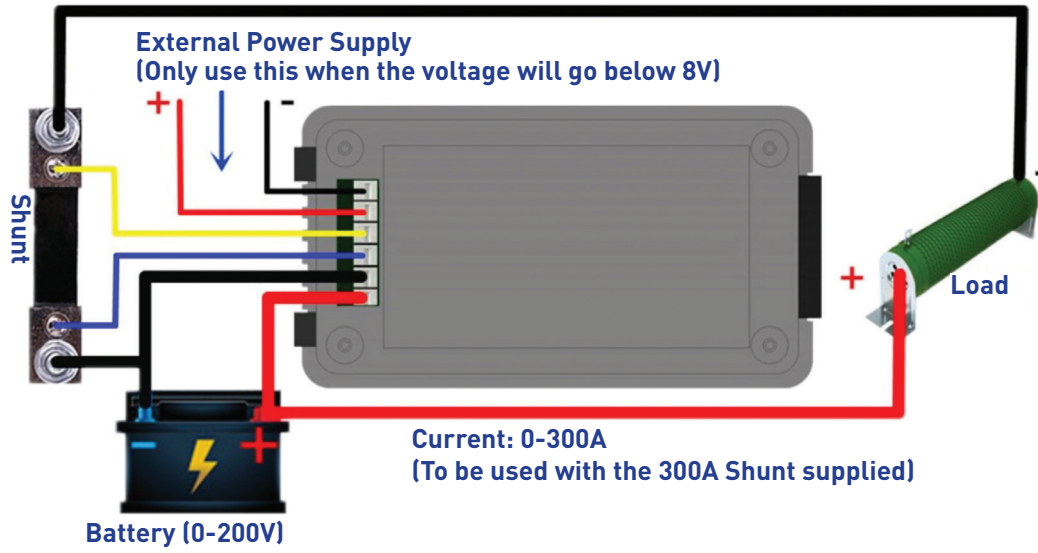
Sleeping state: 0.5mW-0.5W

The power consumption is related to the test voltage value, the higher the voltage the greater the power consumption.

### 4.3 Working temperature

-20°C ~ +60°C

## 5. WIRING DIAGRAM



## 6. DIMENSIONS FIGURE (MM)

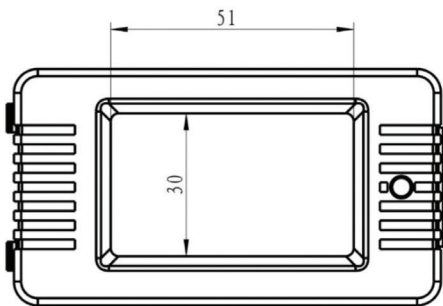


Figure 14 LCD Screen size

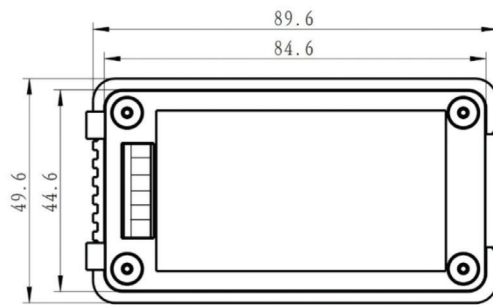


Figure 15 Out frame size

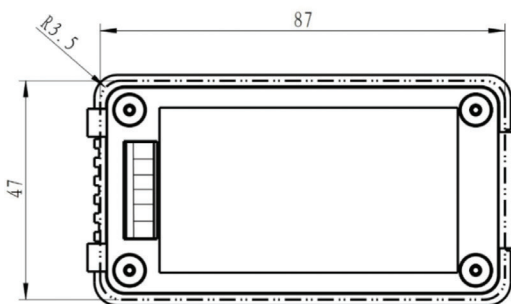


Figure 16 Hole size

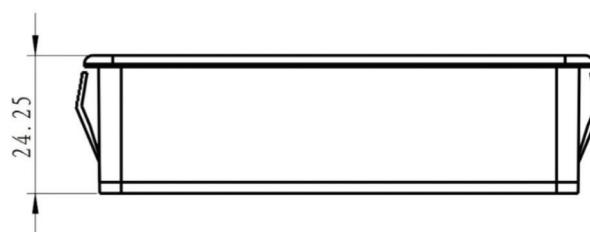


Figure 17 Height size