4S Active Balancer with Voltage Display Screen User Manual Version 1.0

(DS0855)

Heltec Energy

1. Product Overview

The 4S balancer has the function of full-disk equalization without distinction and automatic low-voltage sleep. **The minimum voltage difference can be balanced to about 0.01V, and the maximum equalization current can reach 5A.** When the voltage difference is 0.1V, the current is about 0.5A (actually it will be related to the capacity and internal resistance of the battery). When the battery is lower than 2.7V (ternary lithium/lithium iron phosphate), it stops working and enters sleep, and has over-discharge protection function. The battery voltage display supports real-time display of the voltage of the entire battery group and the voltage of a single string, and the numerical accuracy can reach about 5mV. This product is suitable for ternary lithium and lithium iron phosphate batteries.

The circuit board is sprayed with three-proof paint, which has excellent insulation, moisture-proof, leakage-proof, shock-proof, dust-proof, corrosion-proof, anti-aging, corona-resistant and other properties, which can effectively protect the circuit and improve the safety and reliability of the product. The actual object is shown in Figure 1.



Figure 1. Product Appearance

2. Technical Specifications

2.1 Main Parameters of the Display

Table 1. Main Technical Indicators for Display

Name	Parameters
Number of strings	4S
Battery type	NCM/LFP
Single string voltage range	2V-5V
Measurement accuracy	0.5% / ±5mV

2.2 Main Parameters of the Active Balancer

Table 2. Main Technical Indicators for Active Balancer

Technical indicators	Index
Product model	DS0855
Applicable string number	4S
Applicable battery type	NCM/LFP
Operating voltage range	NCM/LFP: 2.7-4.2V
Balance voltage accuracy	5mV (typical)
Balance mode	The entire battery group participates in active balancing of energy conversion at the same time
Balance current	When the voltage difference is about 1V, the maximum balancing current is 5A, and the balancing current decreases as the voltage difference decreases. The minimum balancing starting voltage difference of the instrument is 0.01V.
Undervoltage protection sleep voltage	NCM/LFP: 2.7V
Static operating current	13mA

Operating environment temperature	-10℃-60℃
External power	No external power supply is required, relying on the internal energy transfer of the battery to achieve the balance of the entire battery group.

3. Installation and Assembly

3.1 Description of the Connection Position

The display connection definition is shown in Figure 2, and its definition is shown in Table 3.



Figure 2. Connection Position

Table 3. Connection Definition Table

Number	Name	Definition
A	Black button	Screen sleep button (sleep/always on)
B-→B1+→B2+→B3+→B4+	B-	Negative pole of the first battery string
	B1+	Positive pole of the first battery string
	B2+	Positive pole of the second battery string
	B3+	Positive pole of the third battery string

	B4+	Positive pole of the fourth battery string
C	Screen display area	Left: Single battery voltage; Right: Total voltage

3.2 Connection Diagram

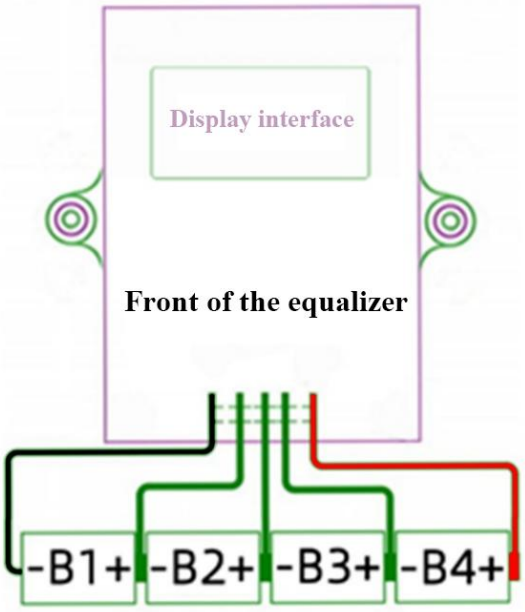


Figure 3. Circuit Connection Diagram

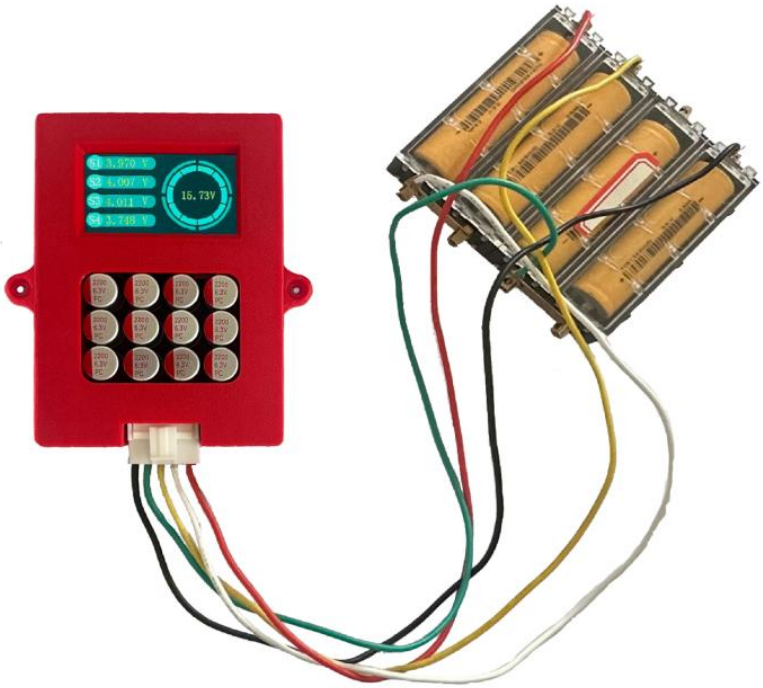


Figure 4. Physical Diagram

4. Precautions for Use

- During use, the design parameters and use conditions must be followed, and the parameters of this specification must not be violated. Otherwise, it is easy to damage the instrument and then damage the battery pack.
- During use, the cable must be connected to the battery in the order of the instruction manual, and then connected to the instrument after checking.
- The product will generate a certain amount of heat during use, so avoid using the product in a high temperature environment.
- If any abnormal situation occurs during use, please stop using it immediately, return it to the original factory or ask professional maintenance personnel for repair.
- This product has undergone a lot of reliability tests, and its reliability is far higher than that of general equalizing equipment on the market. At the same time, the process of the battery cell must be guaranteed to minimize the occurrence of combustion.

*Safety Precautions:

Our company is committed to improving quality and reliability, but generally speaking, electrical products have a probability of failure. Depending on the use environment and conditions, the durability will also vary. Use a lengthy design when using it to avoid abnormal heating, smoking, and even personal accidents, fire accidents, social damage, etc. caused by overload use.