Sodium-ion Battery

50.4V 2520Wh Specifications

Model No.:SIB-4850

Version	Date	Revision Content	Note
A0	Feb.24,2025	New	

Edit	Proofread	Audit	Customer Approval

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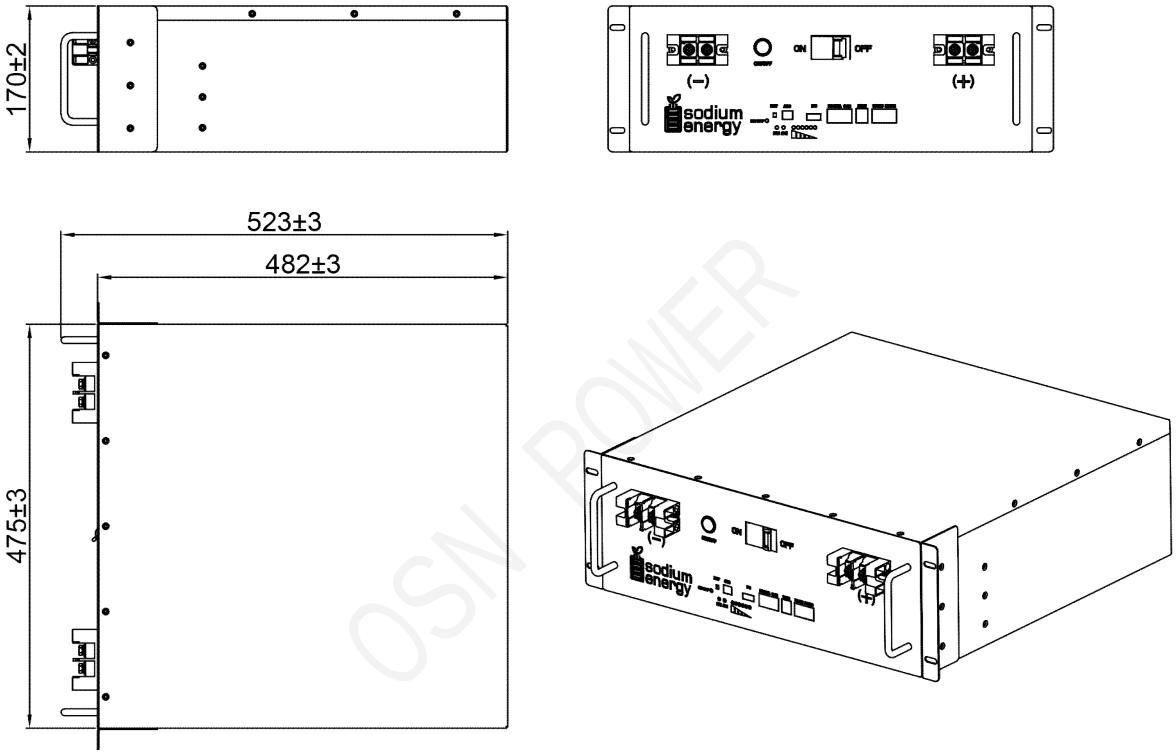
1. Scope

The purpose of this document is to specify the specifications of 50.4V 2520Wh Sodium-ion Battery supplied by Sodium Energy LTD and manufactured by OSN Power

2. Battery Package Drawing (Units:mm)

2.1 Size: Length 523±3 , Width 475±3 , Height 170±2 .



2.2 Product impression drawing(or photo):

3. Battery Weight ≤36Kg

4. Battery Specification

Parameter	Specification	Remarks
Nominal Capacity	50Ah	25℃±2℃
Discharge Energy	2520Wh	
Nominal Voltage	50.4 V	
Charge Cut-off Voltage	58.8V	
Discharge Cut-off Voltage	36.4V	
Internal Resistance	≤35mΩ	AC 1kHz, 25℃±2℃
Continuous Charge Current	25A(0.5C)	25℃±2℃
Standard Discharge Current	50A(1C)	25℃±2℃
Maximum Continuous Discharge Current	100A(2C)	
Charge Temperature	0℃~55℃	
Discharge Temperature	-40℃~55℃	
Storage Temperature	0℃~45℃	
Storage Humidity	≤75% RH	Relative Humidity

5. Battery Testing Equipment and Conditions

5.1 Appearance

There shall be no such defect as scratch, bur and other mechanical scratch, and the connector Should be no rust dirt. The structure and dimensions see attached drawing of the battery.

5.2 Measurement Apparatus

5.2.1 Dimension Measuring Instrument

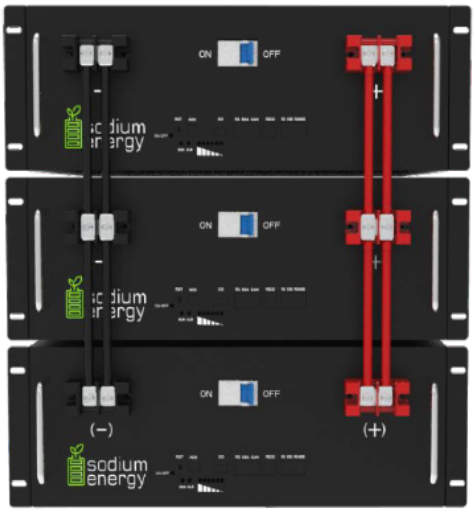
The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

5.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner

4.2 Parallel Connection

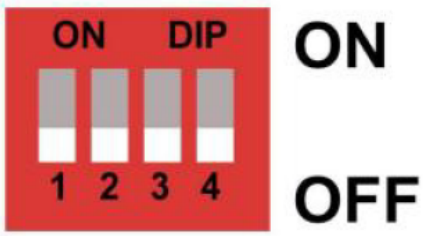
When Connect the batteries in parallel, connect the positive terminal and positive terminal (red colour) in parallel, and the negative terminal and negative terminal (black colour) in parallel, the max module quantity in parallel is 15pcs, as shown in the figure below:



15pcs max in parallel			
Model	Capacity	Max Parallel	Max Capacity
49.6V 50Ah	2.48KWh	15pcs	49.6V 750Ah 37.2KWh
49.6V 75Ah	3.72KWh	15pcs	49.6V 1125Ah 55.8KWh
49.6V 100Ah	4.96KWh	15pcs	49.6V 1500Ah 74.4KWh
49.6V 200Ah	9.92KWh	15pcs	49.6V 3000Ah 148.8KWh

4.3 Dial Code Switch Settings (parallel connection needed)

When the battery modules are connected in parallel, the dial code switch of each battery module
can be used to distinguish different battery addresses. The hardware address can be set through the dial code switch on the board. The definition of the dial code switch refer to the following table.



ADD	Dial switch position				Explain
	#1	#2	#3	#4	
0	OFF	OFF	OFF	OFF	No parallel connection, only 1pcs
1	ON	OFF	OFF	OFF	Pack1(master)
2	OFF	ON	OFF	OFF	Pack2
3	ON	ON	OFF	OFF	Pack3
4	OFF	OFF	ON	OFF	Pack4
5	ON	ON	ON	OFF	Pack5
6	OFF	ON	ON	OFF	Pack6
7	ON	ON	ON	OFF	Pack7
8	OFF	OFF	OFF	ON	Pack8
9	ON	OFF	OFF	ON	Pack9
10	OFF	ON	OFF	ON	Pack10
11	ON	ON	OFF	ON	Pack11
12	OFF	OFF	ON	ON	Pack12
13	ON	OFF	ON	ON	Pack13
14	OFF	ON	ON	ON	Pack14
15	ON	ON	ON	ON	Pack15

impedance not less than 10 KΩ/V.

5.2.3 Ammeter

Standard class specified in the national standard or more sensitive class.

Total external resistance including ammeter and wire is less than 0.01Ω

5.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method.(AC 1kHz LCR meter).

5.3 Standard Test Condition

Test should be conducted with new batteries within one month after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise defined, test and measurement shall be done under temperature of 25±2℃ and relative humidity of less 75% ,air 86Kpa~106Kpa.

5.4 Rest Period

Unless otherwise defined, 30min,rest period after charge,30min,rest period after discharge.

6. Storage and Others

6.1 Long Times Storage

If stored for a long time(don't used,exceed three months), the cell should be stored in drying and cooling place. The cell's storage voltage should be 50.4V~58.8V and the cell is to be stored in a condition that the temperature of 25±2℃ and the relative humidity of 45%~75%. Long-term use of unused batteries to recharge every 3 months. Ensure that the battery voltage is within the above range.

6.2 Others

Any matters not mentioned in this specification shall be determined by both parties through negotiation.

7. Safety Characteristics

No.	Items	Test Methods & Steps	Standard
7.1	Over-discharge	After the cell is fully charged according to the standard charging mode, it is discharged with 1C current for 90min.	No fire. No explosion.
7.2	Over-charge	After the cell is fully charged in the standard charging mode, it is then charged with 1C current to 58.8V stop charging.	No fire. No explosion.
7.3	Heating Additive Test	After the cell is fully charged in the standard charging mode, place the cell in a heating test chamber, rise from room temperature to 130℃±2℃ at 5℃/min and hold for 30 min.	No fire. No explosion.
7.4	High and Low Temperature shock	After the cell is fully charged according to the standard charging mode, it is put in a low temperature environment of -20℃ for 2h, and then for 2h at 75℃. End the test for 5 cycles, and the sample is taken out after the test.	No fire. No explosion.
7.5	Crushing Test	After the cell is fully charged according to the standard charging mode, the half cylinder plate with a radius of 75mm is used to press the cell in the direction vertical to the cell plate at the speed of (2±1) mm/s. When the voltage reaches 0V or the deformation reaches 15% or the extrusion pressure reaches 13 KN.	No fire. No explosion.
7.6	Vibration Test	After the battery cell is fully charged according to the standard charging mode, install the battery fixture on the surface of the vibration table, and adjust the test equipment according to the vibration frequency and the corresponding amplitude below. In each direction of X, Y and Z, the frequency is swept for 90-100min, and the sweep rate is 1Hz / min, displacement amplitude (single amplitude): 0.16mm	No leakage. No fire. No explosion.
7.7	Low Air Pressure	After the cell is fully charged according to the standard charging mode, the cell is 11.6kPa for 6 hours at room temperature.	No leakage. No fire. No explosion.
Notes: Refer to lithium-ion battery standards for electric vehicles for battery safety test.			

8. Safety Precautions

To prevent the possibility of the cell from leakage, heating, explosion, please observe the following precautions.

8.1 Don't immerse the cell in water. Cell should be placed in a cool and dry environment.

8.2 Don't use and leave the cell near a heat source, such as fire or heater.

8.3 When charging, please choose a special charger for sodium-ion cells.

8.4 Don't connect the cell to an electrical outlet directly.

8.5 Don't discard the cell in fire or heater.

8.6 Don't connect the positive and negative terminals directly with metal objects.

8.7 Don't transport and store the cell together with metal objects such as necklaces, hairpins.

8.8 Don't strike, throw or trample the cell.

8.9 Don't directly solder the cell.

8.10 Don't pierce the cell with a nail or other sharp object.

8.11 Don't use or leave the cell at very high temperature conditions (for example, strong direct sunlight or a vehicle in extremely hot conditions).

8.12 If the cell leaks and the electrolyte get into your eyes, don't wipe eyes, instead thoroughly rinse the eyes with clean running water, and immediately seek medical attention if necessary. Otherwise, eyes injury can result.

8.13 If the cell gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during usage, recharging or storage, immediately remove it from the device or cell charger and stop using it.

8.14 In case the cell terminals get dirty, clean the terminals with a dry cloth before use.

10. Hazard Warning

WARNING

CELLS ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.
RUNNING TESTS ON THE CELLS IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.
WORK ON CELLS MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.
CELL MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF CELLS AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED.
FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

10.2 Types of Hazards

Customer acknowledges the following potential hazards in connection with the usage and handling of the Products:

10.2.1 Working with battery can expose the handler to chemical, shock and/or arcing hazards. Although a person's body might react to contact with direct current voltage differently than from contact with alternate current voltage, Customer shall take a conservative position and consider the risk of shock or electrocution to be the same for both alternate current and direct current exposures greater than 50V.

10.2.2 Batteries expose its handler to chemical hazards associated with the electrolyte used in the cell.

10.2.3 When selecting work practices and personal protective equipment, customer and its employees should consider potential exposure to these hazards and therefore prevent accidental short-circuit that can result in electrical arcing, explosion, and/or "thermal runaway" of the batteries.