

TECHNICAL DATA SHEET

40KWH LFP BATTERY SYSTEM

Application: Solar Energy Storage

Supplier: Li-ion Power Technology Co.,Ltd.

1. Technical Spec.

1.1 Battery Cell Parameters

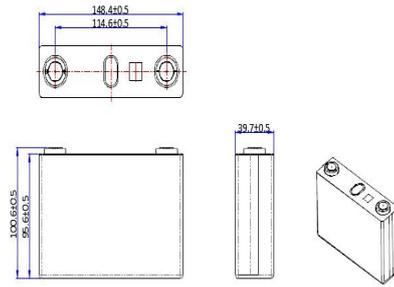
Nominal capacity: 50Ah

Dimension: 39 X 148 X 95mm

Weight: 1.17 kg±0.02kg

Nominal voltage: 3.2V

Energy density: 140 Wh/kg



◆ Battery cell: LFP50Ah-3914895

Charging rate: 0.5C (standard) 1C (max. continuous, needs cooling)

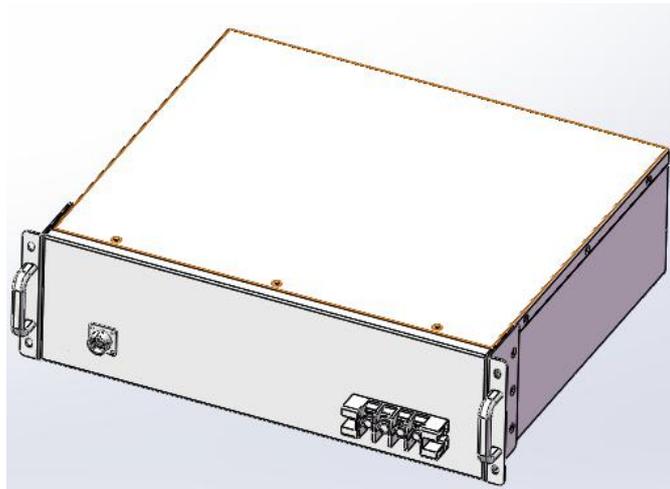
Discharging rate: 1C (standard) 2C (max. continuous)

Max. pulse current: 250A

Life cycles: capacity≥80%, nominal capacity@4000 cycles (155%DOD25°C±5°C 0.5C)

1.2 Battery Module

The specific structure is shown as below.



1.2-1 Battery module technical spec.

NO.	Item	Spec.
1	Series and parallels	8S2P
2	Rated capacity	100Ah
3	Rated voltage	DC25.6V
4	Voltage range	DC21V~29.2V



5	Rated energy	2.56kWh
6	Max. charge current	50A/75A
7	Max. discharge current	75A
8	Peak current	100A
9	Ip grade	IP20
10	Discharge temp.	-20°C~55°C
11	Charge temp.	0°C~45°C
12	Dimension	482.8*416*133mm

2. Battery System Parameters

2.1 key Parameters

2.1-1 Key parameters table

NO.	ITem	SPEC.	Remark
1	Series and parallel	128S2P	16 boxes
2	Rated capacity	100Ah	2 parallels
3	Rated voltage	DC 409.6V	
4	Voltage range	320V~467.2V	2.5~3.65V (single cell)
5	Rated energy	40.96Kwh	
6	Max. charge current	50A/75A	
7	Max. discharge current	75A	
8	Standard discharge current	50A	
9	Ip grade	IP20	
10	discharge temp.	-20°C~55°C	
11	Charge temp.	0°C~45°C	
12	Weight	512kg	

BAMS function description (first-level architecture)

Responsible for managing all BMUs under a PCS, communicating with the PCS and background monitoring system at the same time, and requesting PCS management in time according to the battery pack status.

The main functions are as follows:

- Data display function. Display key data such as total battery array voltage, SOC, current and temperature, as well as the number of all battery strings , cell voltage information, and temperature information in each battery cluster;
- Data saving function.
- Statistical estimation of battery array remaining power (SOC) and battery array health status (SOH);
- Receive BMU alarm signals, set parameters for BMU and LMU, communicate with PCS and background monitoring system, and report alarm signals;
- Receive operation commands issued by PCS and background monitoring system and send them to BMU;
- Communication with background monitoring system
- Provide human-machine interface, communication interface and authority management for local operation and remote operation, and complete the parameter setting function of the battery management system.

BCMU function description (secondary architecture)

- Responsible for managing single cluster battery array;
- Manage BLMU, Statistical estimation for battery voltage and temperature information, and report the battery information from BAMS response;
- Detect the battery cluster charging and discharging current;
- Set the short-circuit current over-current protection function to cut off the current loop when a short-circuit abnormality occurs;
- Set fault diagnosis and protection functions such as charge and discharge over-current, charge over-voltage, and discharge over-current. When an abnormality occurs, report to BAMS and wait to receive the operation command
- Control circuit breakers, contactors and other components;
- SOC estimation;

**BLMU functional description (three-level architecture)**

- Manage multiple battery cells in series;
- Battery voltage measurement and alarm;
- Battery temperature measurement and alarm;
- Battery unit passive equalization function;
- CAN isolated communication function;

2.3-1 BMS key parameters table for this system

No.	BMS Items	Spec.
1	Temp. Measurement range	-40°C~+105°C
2	Temp. Measurement accuracy	≤±1°C
3	Measurement range of single cell voltage	0V~5V
4	Measurement accuracy of single cell voltage	≤±3 mV
5	Measurement accuracy of system voltage	≤±1%
6	Measurement range of system current	-500A~+500A
7	Measurement accuracy of system current	≤0.5%FSR
8	SOC estimated accuracy	<5%
9	System insulation status monitoring	yes
10	System self check	yes
11	Pre-charge function	yes
12	System alarm and protection function	yes
13	Factors that cause system alarm and protection	Battery voltage, current, temperature, etc. are out of safe range; insulation fails; communication fails
14	Equalization function	Passive equalization
15	External communication method	Internal CAN / external RS485
16	Communication protocol	The communication protocol, the given point table includes the overall operation information, the battery cell operation information
17	Local display	Yes (optional)
18	Local display resolution	800×600

2.4-1 key materials table of this system

No.	Name	Spec.	Description	Note
1	Battery box		16pcs module boxes and 1 battery system cabinet	
2	Battery module	8S	16 pcs	
3	High-volt box		1pc	
4	BMS	BMS main and sub controllers	main controller 1 pc, sub-controllers 16pcs	
5	Display screen	7 inch		
6	Positive socket/plug		High-volt box	
7	Negative socket/plug		High-volt box	
8	Communication socket/plug			
9	Communication connector			

2.5 battery cluster structure parameters

- The high-voltage box is placed inside the battery cabinet with integrated design, exquisite and beautiful;
- The front and rear side doors of the battery cabinet are designed with perforated ventilation;
- The display uses a 7-inch large screen, which is embedded in the center of the left door at the front of the battery cabinet;
- Battery cluster size (mm): 1685 * 1035 * 500 (height * width * depth)
- The battery cluster system consists of 16 battery modules and a high voltage box.

The structure is shown as below.

(Overall black)



2.6 Battery system cabinet material and surface treatment

No bumps, scratches, burrs, rust, pits, bumps, etc.

The box material is cold-rolled plate (SPCC), and the whole surface is sprayed with plastic (black matt).

3. Factory inspection

3.1 Factory inspection items table of this system

No.	Items	Inspection Process and Index
1	Appearance	The nameplate and warning identification information are correct and not missing; the appearance of the cabinet is clean and the printing body is not damaged
2	polarity	Polarity is marked correctly
3	Nominal capacity test	0.2C charging, 0.5C discharging, cut-off voltage 2.5V (single string), each battery module discharge capacity $\geq 100\text{Ah}$

4. Marking, safety, packaging, storage, transportation

4.1 Appearance

Visual observation of the appearance of the battery system, the display marking should be clear and accurate, the nameplate should be fixed firmly and reliably, and the structural parts should be free from scratches, rust,

and deformation.

4.2 Marking

All markings on the battery system are clear and legible.

4.3 Safety marking

- Identify high and low voltage electrical connections.
- The upper surface of the battery system must have obvious safety warning signs and precautions.
- Obvious high-voltage danger signs should be visible on the surface of the battery system cabinet when people approach.

4.4 Nameplate

The nameplate is affixed on a prominent and visible position on the surface of the cabinet. The nameplate content should include: nominal voltage, nominal capacity, weight and other information.

4.5 Package

The packaging of the battery system meets the requirements of moisture and shock resistance.

Packing documents: packing list, product certificate, factory inspection report, and other documents provided with the product.

4.6 Storage

- The battery system is stored in a dry, clean and well-ventilated warehouse.
- The battery system should not be exposed to direct sunlight, and the distance from the heat source should not be less than 2m.
- The battery system must not be placed upside down or lying down, and avoid mechanical shock or heavy pressure.
- The battery system needs to be charged and discharged for maintenance every three months.

4.7 Transport

The storage capacity of the product should be in the 50% ~ 60% SOC state. During transportation, it should be protected from severe vibration, shock, compression, or sun and rain.

During the loading and unloading of the battery system, it should be handled gently to prevent falling, rolling, and heavy pressure.



5. Others

The customer shall not disassemble or change the structure of this product.

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