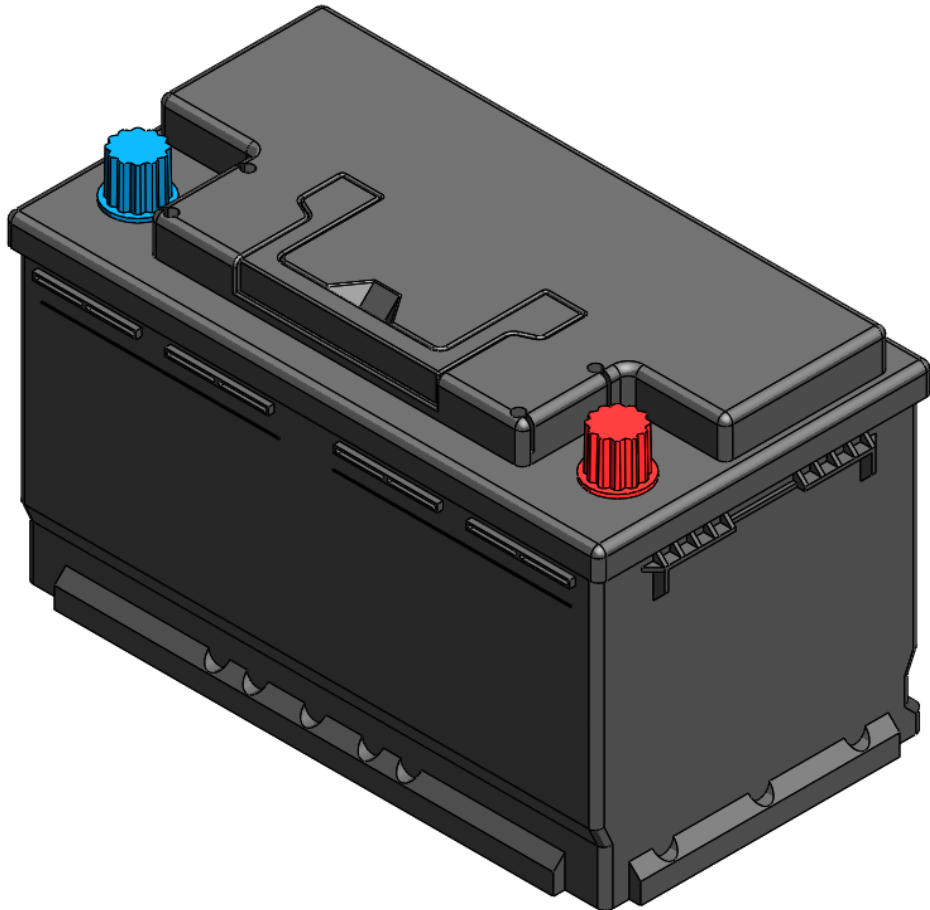




MJ SPACE CORP



Power Box

Model 1200 v.2

User Manual

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Product Purpose

Power Box is a LFP-type battery pack that can be used in many applications such as Energy Storage System (ESS), Uninterruptible Power Supply (UPS), Solar System, etc.

1. Safety Information



1.1 Safety Instructions

- Due to having electrical equipment inside the Power Box equipment, anyone who is not a company electrician or not authorized by the company should not open the Power Box, otherwise, an electric shock could occur, and the warranty would be lost.
- This equipment is an energy storage system, please make sure an energy storage battery is installed to ensure safe operation.
- Please consult with your dealer before utilizing it as part of a device that could endanger personal safety, such as a medical instrument, elevators, or other similar items, and careful consideration and design should be given to its application, setup, management, and maintenance.

1.2 Safety Precautions

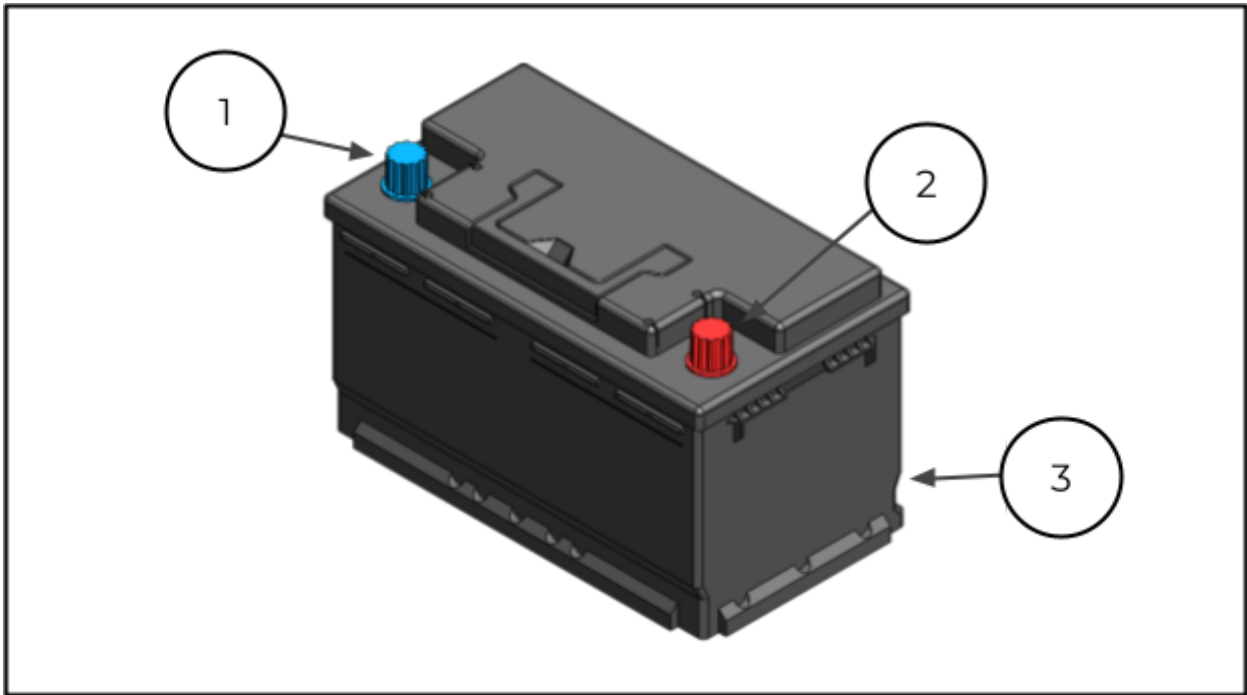
- When installing this product, please ensure that the monitor and TV are kept at a distance of 50 cm or more.
- The surface temperature of the cabinet will rise by 50°C around during the use of the product, this is a normal phenomenon.
- Please do not exceed the rated load capacity in use.

- Do not open the Power Box housing, otherwise the risk of electric shock or other hazards may be caused. For troubleshooting inside the device, please send it to the specified service center.
- Internal short circuits may lead to electric shock or fire. Therefore, to avoid such risks, containers with liquid shall not be placed on the product.
- If the device is working abnormally, please turn off the power immediately and contact your dealer.
 - Please do not store or use this product in the following environments:
 - Places without air convection;
 - Places where there are flammable gasses, corrosive substances, or a large amount of dust;
 - Places of abnormally high or low temperature (40°C above or below 0°C) and high humidity (90% or more);
 - Places in direct sunlight or near heating appliances;
 - Places with intense vibration;
 - Outdoor area.
- In case of a fire, please use a dry powder fire extinguisher. The use of liquid fire extinguishers may pose a risk of electric shock.
- Please attach a miniature circuit breaker to the input end of the product, so that the power plug can be disconnected from the outlet to turn off power in case of emergency.

Symbols	Descriptions
 Warning	<ul style="list-style-type: none"> ● The equipment must be grounded, and as the DC power supply is connected, be sure to ground the system reliably, and take care not to reverse the positive and negative wires. ● The Power Box has a high voltage inside. Therefore, to ensure personal safety, please consult the technical staff of this company for any questions. ● Keep away from fire, no heating. ● No short circuit or reversed connecting. ● No disassembling. ● No hitting or impacting.
 Caution	<ul style="list-style-type: none"> ● Improper operation may cause enormous loss. Please be sure to operate the device according to instructions. ● To ensure device safety and personal safety, it must be installed by professionals. ● No overcharging/over-discharging. ● Charging with recommended charger. ● No mixed usage of batteries of different manufacturers, types, or age. ● Do not use cells with heating, distortion, or leakage.

2. Product Overview

2.1 Device Overview



1 Negative terminal (-)
2 Positive terminal (+)
3 Case

2.2 Technical Specifications

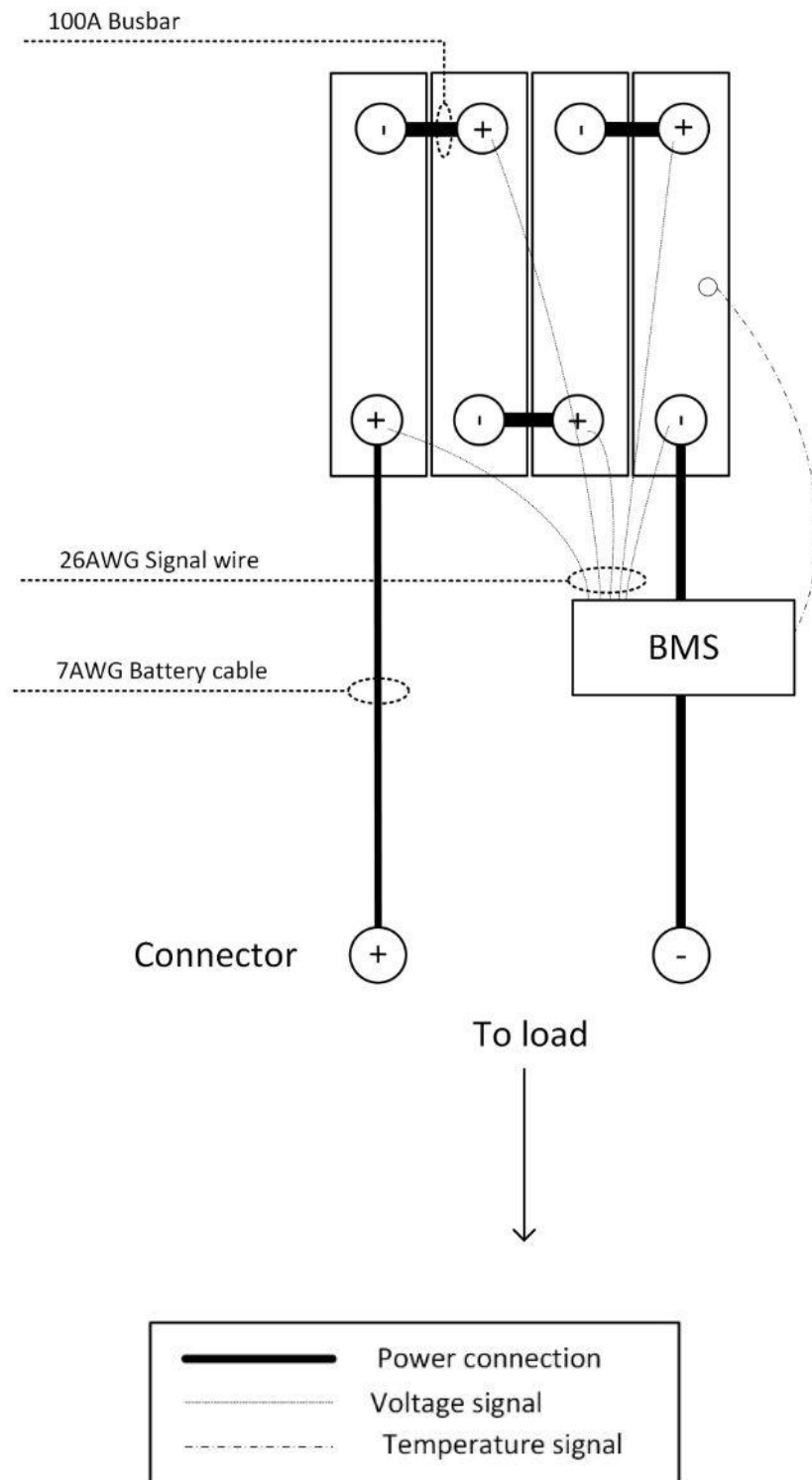
Technical Specification		Unit	Value
Electrical Characteristics	Nominal Voltage	Vdc	12
	Nominal Capacity	Ah	100
	Energy	kWh	1.2
	Internal Resistance	mOhm	< 10
	Cycle Life	Cycles	≥ 3000 (if fully charge and discharge 1C at 25 °C)
	Self-Discharge		< 2% at 25 °C
Charge	Charge Voltage	V	14.4
	Charge Current (standard)	A	20
	Charge Mode		CCCV
Discharge	Discharge Cut-off Voltage	V	10V @1C @25C
	Maximum Continuous Discharge Current	A	100
	Maximum Discharge Current (short pulsed)	A	100
Operating Temperature	Charge Temperature	°C	0 to 45
	Discharge Temperature	°C	-20 to 55
	Storage Temperature	°C	0 to 45
Other	Dimension (WxLxH)	mm	318 x 176 x 187
	Weight	kg	10± 1kg
	Cell Connection		1P4S
	Casing material		ABS plastic
	Cooling		Natural Cooling
BMS Function	Over Charge, Over Discharge, Over Current and Temperature Protection		

2.3 User Guide



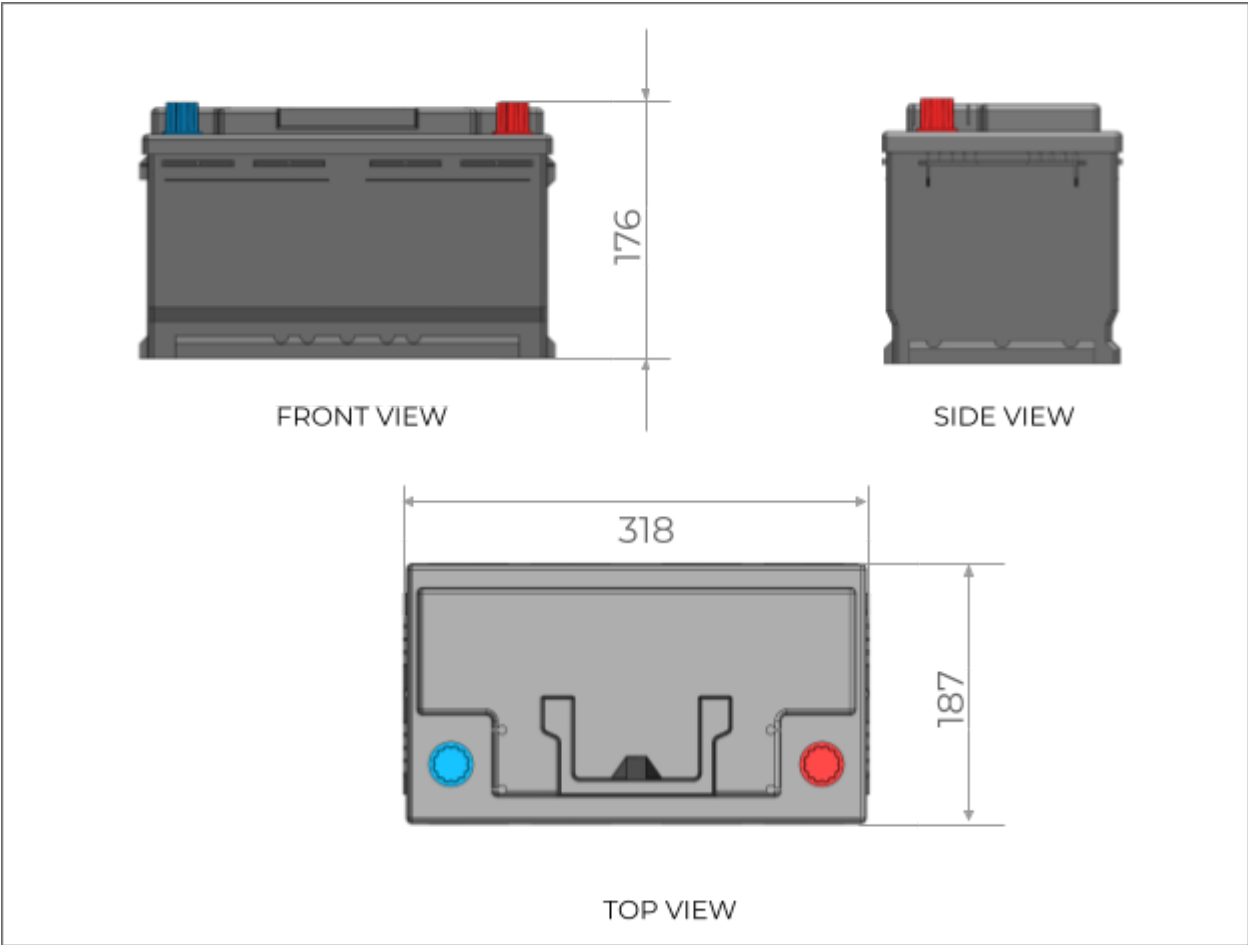
- Power box is connected to Load/Supply via electrical wire.
 - Positive terminal is red nuts.
 - Negative terminal is blue nuts.
 - No reversed connecting.

2.4 Wiring Diagram



Wiring diagram of Power Box

2.5 Mechanical Specifications



Power Box with side, front, and top views (All unit in mm)

3. Installation

3.1 Installation Precautions

- On-site installation must be performed under the guidance of an authorized professional engineer of mu Space.
- When carrying out electrical connection, please ensure to connect the ground wire of the Power Box first; and make sure that all the switches are turned off before the Power Box is installed.
- Installation of the Power Box shall be in accordance with the requirements of this manual in conjunction with local setting and use standards.

3.2 Installation Precautions

Following requirements shall be noted when selecting the installation space for the Power Box:

- Put the product in a ventilated place and ensure that the cooling holes and fan of the housing has a ventilation distance of more than 150 mm.
- The Power Box must be installed and used in a clean and dry indoor environment (ambient temperature: 0 ~ 40 'C, relative humidity: 5% to 90%; the best operating temperature is 25 'C). If the indoor temperature reaches 40 'C, it is recommended to outfit an air conditioning or enhance the ventilation facility.
- When the altitude is over 1000 ms, please use derating.
- The system could be installed indoors, outdoors, or in other suitable locations with adequate load-bearing capacity (the load-bearing capability base should support a minimum of 20 kg).

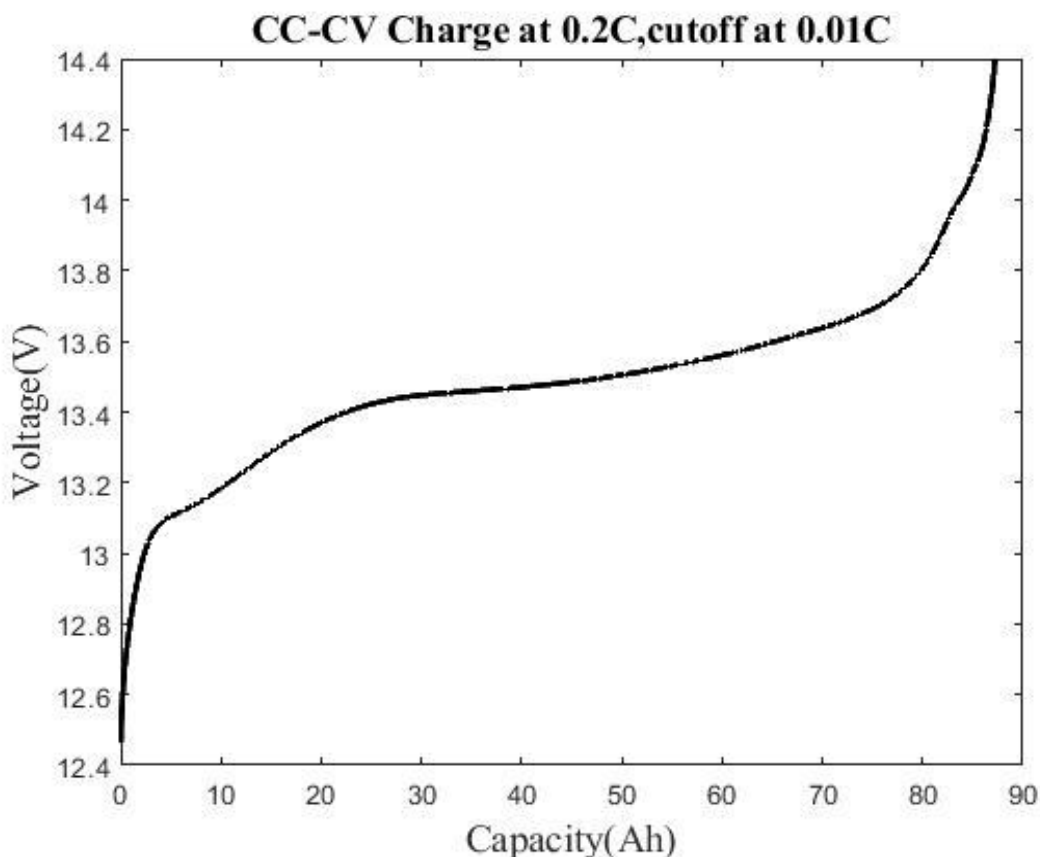
3.3 Wiring

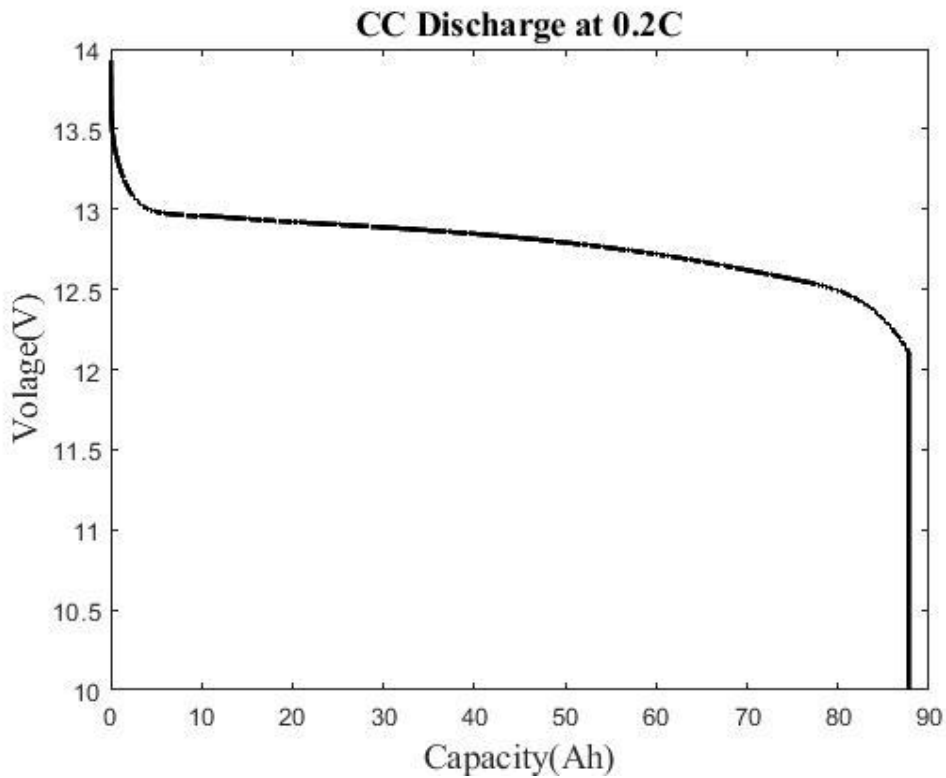
When designing external wiring cables, please consider power, current capacity, and the requirement for the system's overload capacity, as well as give a suggestion for the selection of a reasonable cross-section size of the cable. The installation engineer shall carry out the comprehensive selection in reference to relevant local standards. Generally, the length of a connecting cable is 2-10 m. Too long cable will cause voltage drop, resulting in corresponding increase of cable cross-section.

4. Test Report

4.1 Capacity test

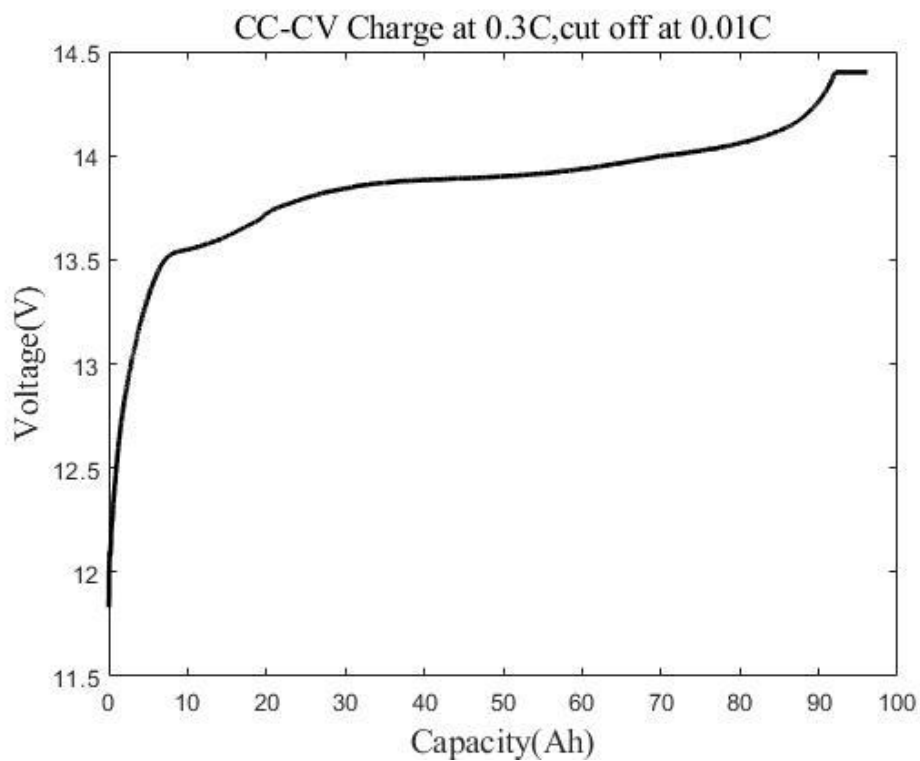
The capacity test is the test that evaluates the efficiency of the battery pack by charging and discharging at 0.2C rate (temperature is around 23-25 °C)

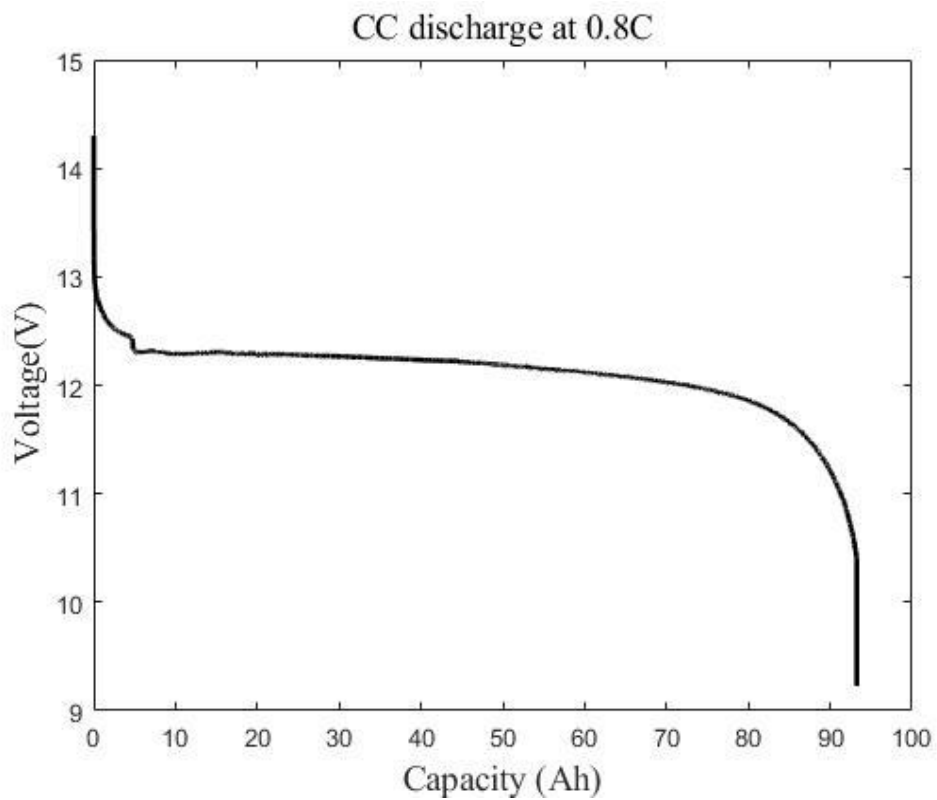
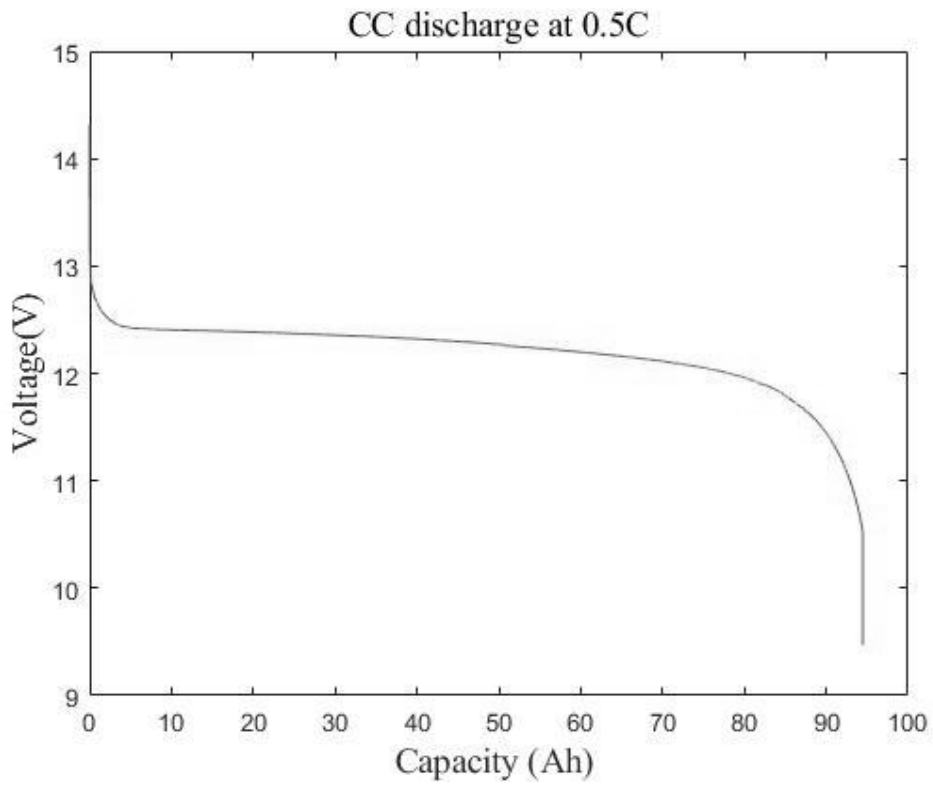


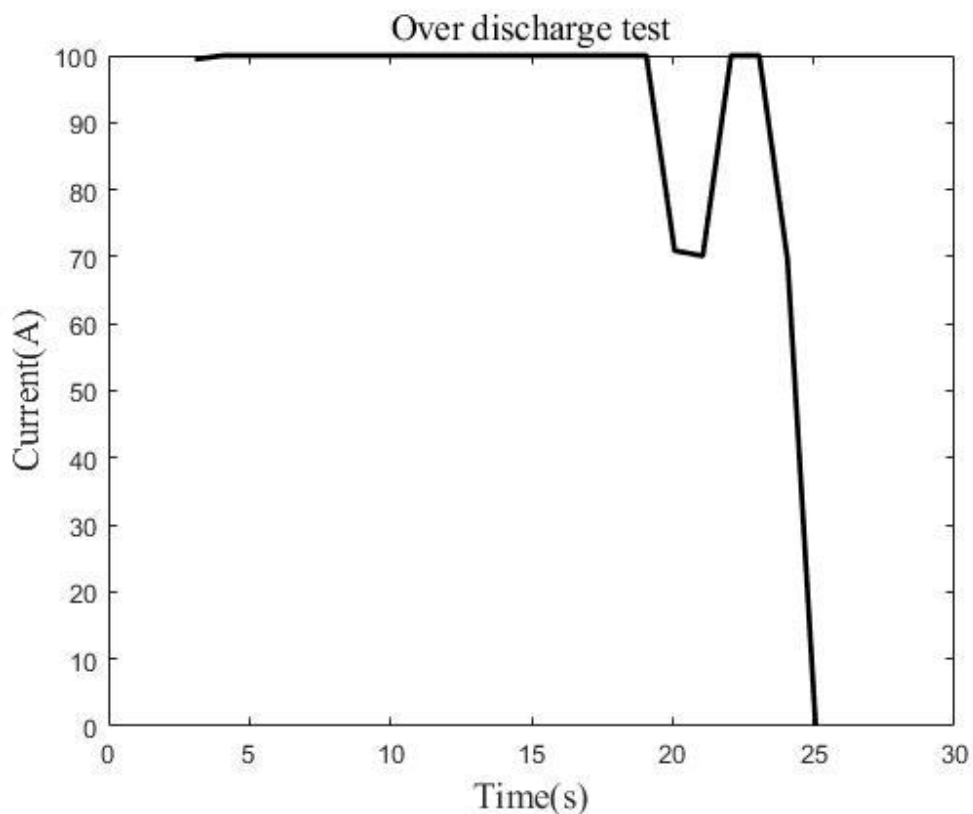


4.2 Performance test

The performance is the test charge and discharge at each C rate & over discharge test.







5. Equipment list

No.	Description	Quantity
1	Case	1
2	Battery cell	4
3	Battery management system (BMS) module	1
4	Busbar	3
5	Terminal	2
6	Electric wire	1
7	User manual	1

6. Usage Restrictions

- Do not remove, open, or shred secondary cells or batteries.
- Do not bring the cell or battery near heat or fire, avoid storing in direct sunlight.
- Do not short-circuit the shell or battery. Do not carelessly store neglected cells or batteries where they may short-circuit each other or short-circuit with other metals.
- Do not remove the cell or battery from the package prior to utilization.
- Do not expose the cell or battery to mechanical shock.
- In the event that the cells are leaking, do not allow the liquid to come in contact with your skin or eyes. If exposed, wash exposed parts with plenty of water and consult a doctor.
- Do not use any chargers other than those supplied for use with the equipment specified.
- Note that the plus (+) and minus (-) signs on the battery cell and on the equipment must ensure that it works properly.
- Do not use any cell or battery that are not designed for use with equipment.
- Do not combine cells with different manufacturers, capacities, sizes, or designs in the apparatus.
- Keep the cell or battery out of the reach of children.
- Seek medical attention as soon as the cell or battery is swallowed.
- Only purchase cells or batteries suitable for the equipment.
- Store cells and batteries in a clean, dry place.
- Clean the cells, connector, or battery connector with a clean, dry cloth when the connector is dirty.
- It is necessary to charge the cell or secondary battery before use. Use the correct charger and refer to the manufacturer's manual or equipment manual for proper charging methods.
- Do not keep the battery charged when not in use.

- After being stored for a long period of time, it may be necessary to bring a cell or battery to charge and discharge multiple times for maximum performance.
- Secondary cells or batteries provide optimum performance when operating at normal room temperature.
- Keep the original product documentation for future reference.
- Operate only the cells or batteries for which they are intended to be used.
- Always remove the battery from the equipment as much as possible when it is not in use.
- Dispose of properly.

7. Disclaimer

- This document has been carefully prepared by mu Space.
- However, we assume no liability nor responsibility for the accuracy or completeness of the information provided within. This document's information is updated and modified on a regular basis to reflect the current hardware and software status. Additionally, even if the given standards are followed, we cannot guarantee that this product will perform without errors.
- Under no circumstances can we guarantee that purchasing this product will make you accomplish a specific objective.
- We take no obligation for direct, indirect, or consequential damages experienced by third parties as a result of the purchase of this product, to the extent permissible by law.
- In no event will any responsibility exceed the product's purchase price.
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8. Support and Contact Information

If you have technical problems concerning mu Space products, please contact us:

- Local line (Thailand): +662 028 9425 ext 21
- Email: support@muspacecorp.com

