Upower

UE-192V25AH

Lithium battery system manual

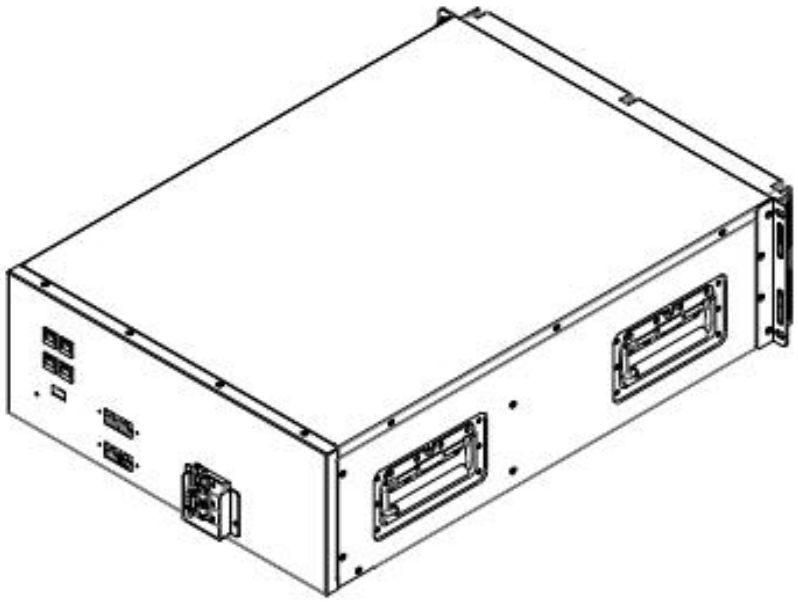
No.	Revision	Author	Revision of Content	Revision Time
1	V1.0		First release	05-29-2025

1.Introduction

The UE-192Li25 battery system is a battery module developed by Upower Technology Co., Ltd. for high-voltage lithium battery system; it can support highprecision multi-string (60S) battery voltage and temperature acquisition. The module support equalization charge (passive equalization), Max equalization current can reach 300mA. The external communication interface uses an isolated CAN Bus is used for internal communication, it can communicate up to 6 battery module . This manual will describe the system, performance, technical features, warning method and precaution.
This specification is only applicable to the UE-192Li25 battery pack provided by UPower Technology Co., Ltd.

2.Product description

2.1 Product：LiFePO4 rechargeable pack
2.2 Model：Square-3.2V-25Ah60S1P （192V25Ah）
2.3 Preview：(subject to the actual product)



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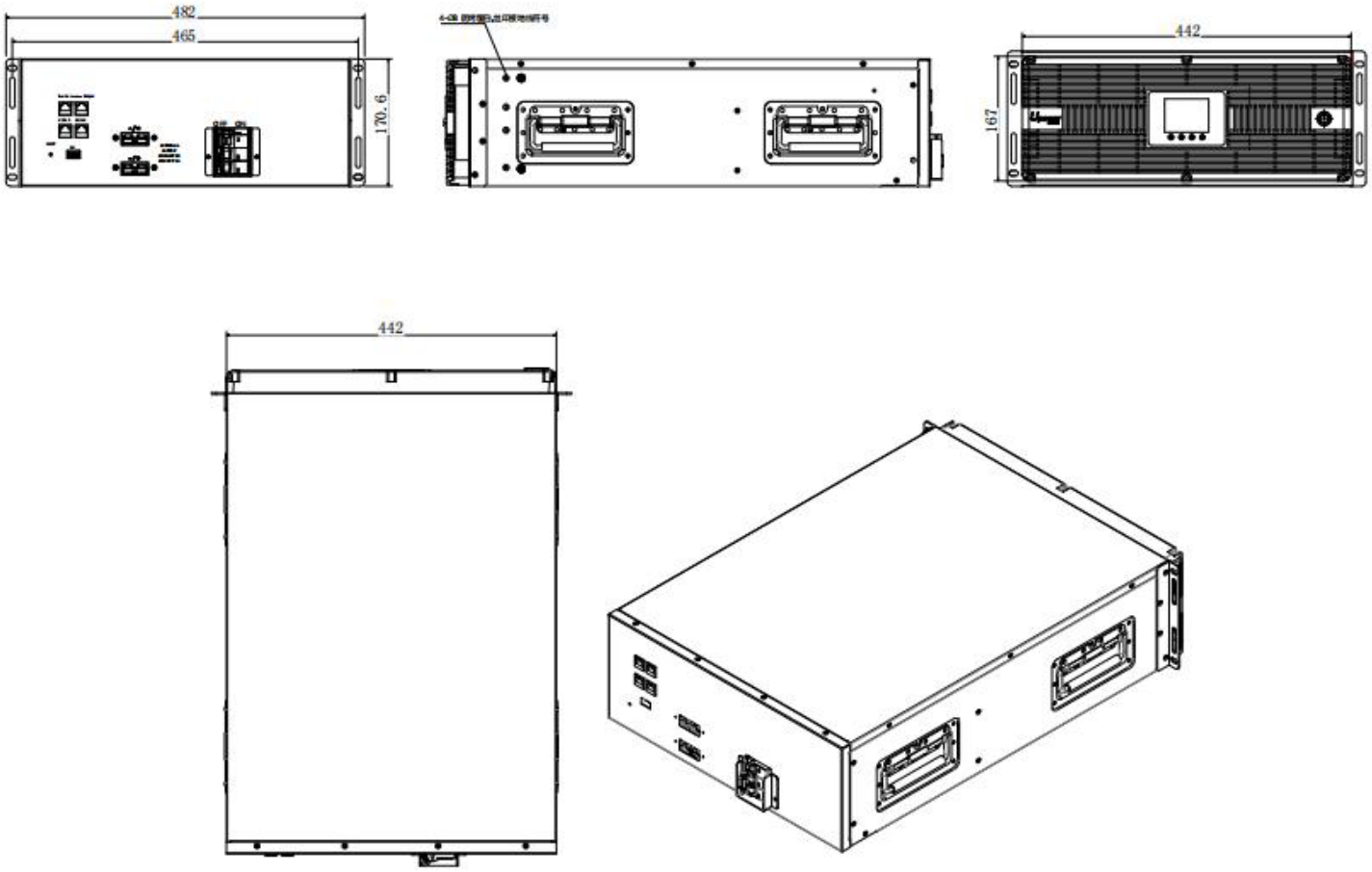
3.Product Features

- Current precision error < 1A;
- The acquisition error of cell voltage is ≤ 0.005v;
- Battery passive equalization
- With special PC test software, you can test and troubleshoot problems after the module is assembled.

4.Module Dimensions



5. Installation Instructions

5.1 Installation preparation

Read all safety information provided in this document before installation or operation.

Before operating the UE-192Li25 lithium battery system:
You must be qualified for electrical work;
Remove any possible wearable metal objects such as jewelry, watches, pens, etc.;

- In order to ensure the safety of construction for personnel and equipment, please turn off and disconnect battery pack when wiring .
- Please pay attention to the terminal voltage polarity of the battery module.
- Do the insulation work of the installation tools and use the tools correctly.
- Follow the port description and system connection diagram.
- When the system is running, it is forbidden to do the hot plugging.
- Power supply should be disconnected before doing any necessary operation.
- The time interval between on and off should be greater than 5-10s.
- Before launch the system, ensure the terminal are connected correctly and tightly.
- If any measuring is required, ensure that the tools are used carefully to avoid short circuit.

5.2 Installation tool

Torque wrench

Phillips screwdriver

Insulating gloves

Phillips screwdriver

6. BMS Description

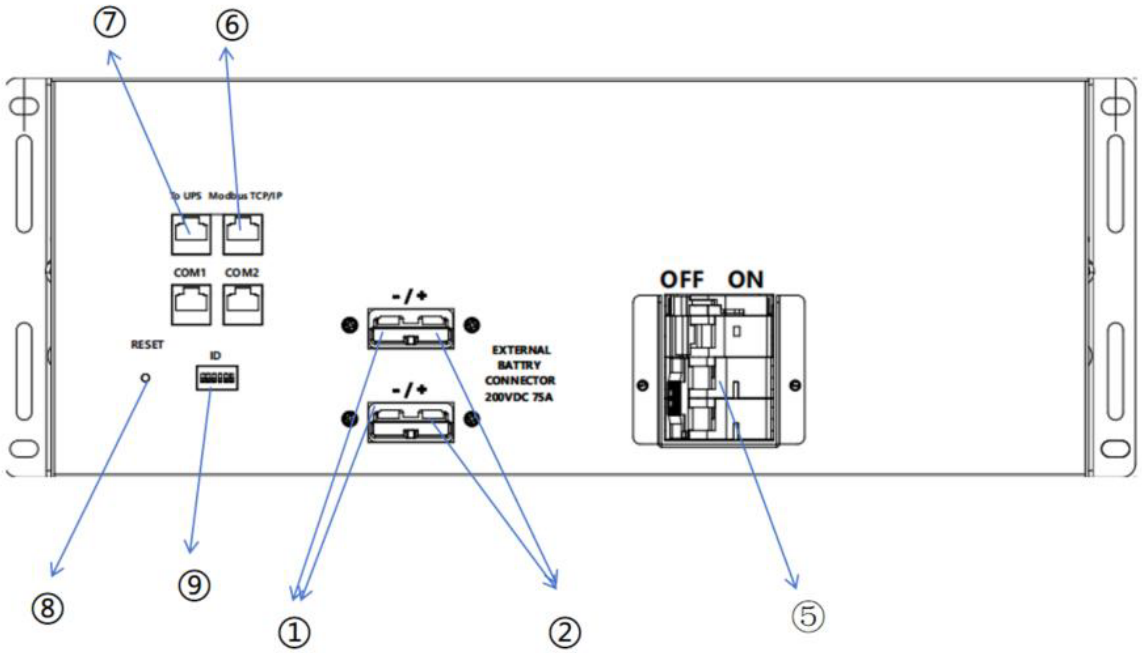
6.1 System Overview

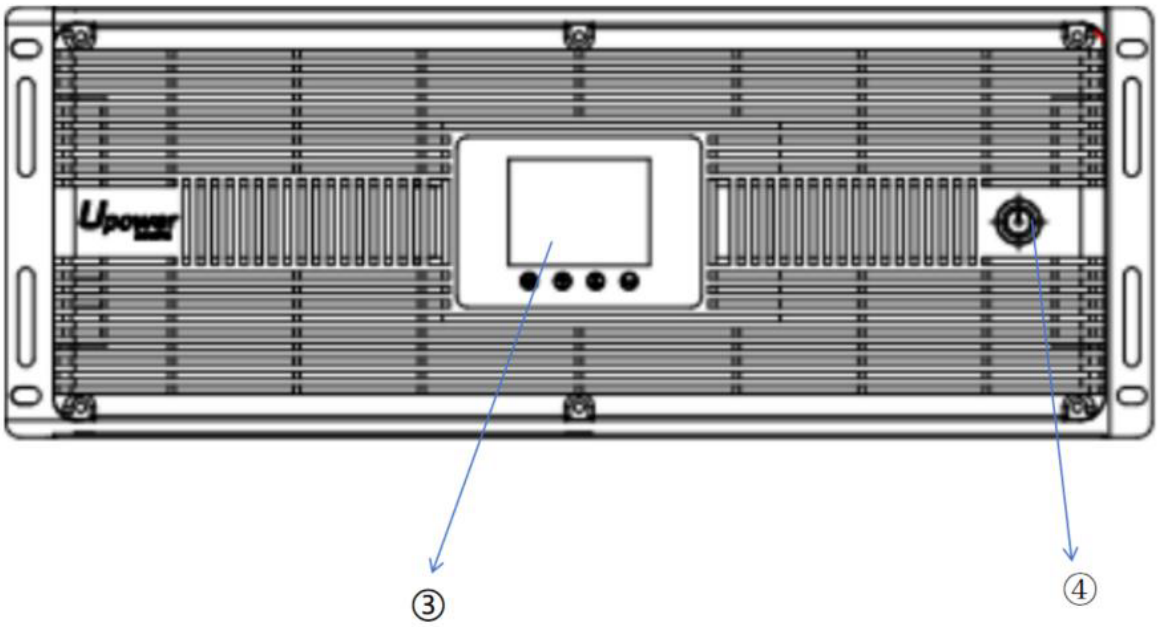
BMS system is a management system integrating control, acquisition and communication, which is responsible for battery current detection, data acquisition and analysis, alarm, protection control and communication. There are main circuit breakers, charge-discharge dual-control relay circuits and high-voltage isolation. Detection circuit, parallel processing circuit, high voltage power supply and DC starting circuit, liquid crystal display.

6.2 Functional characteristics

- Support 60 series of single 3.2V lithium iron phosphate battery in series.
- Charge and discharge same port design.
- Designed for battery management system integration.
- Intelligent passive cell balancing technology.
- SOC estimation error ≤ 5%.
- LCD display shows battery and BMS status in realtime.
- Support to view the battery data and BMS status of a single device through 485 and TCP/IP.

6.3 Interface Description

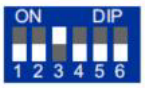
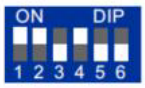
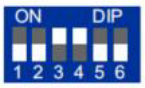
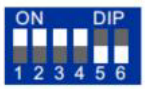
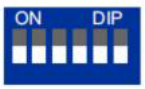




SN	Description	Remark
1	negative	
2	positive	
3	Display screen	
4	Button switch	
5	Breaker	
6	TCP/IP	
7	To UPS communication	
8	Reset	
9	ID	

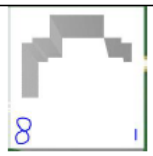
6.3.1 ID definition

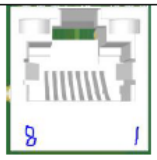
White is the dialing position.

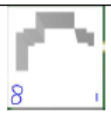
			
ID:1	ID:2	ID:3	ID:4
			
ID:5	ID:6	ID:7	ID:8
			
ID:9	ID:10	ID:11	ID:12
			
ID:13	ID:14	ID:15	ID:0
			
高压板-0X02	BMC主板0X01	AFE板-0X04	通讯板-0X03

Upgrade uses the last two ID.

6.3.2 R45 definition

To UPS	PIN NO	Description
	4	BOOT-485B
	5	BOOT-485A
	7	UPS-485A
	8	UPS-485B
	1/2/3/6	NC

MODBUS TCP/IP	PIN NO	Description
	1	TX+
	2	TX -
	3	RX+
	6	RX -
	4/5/7/8	CHS-GND(RJ45外壳

COM1/COM2	PIN NO	Description
	4	CAN-H
	5	CAN-L
	1/2/3/6/7/8	NC

7. Battery Status description

7.1 Conventional operation of battery

1.Start-up: turn on the Breaker, then press the button switch, and the battery will start normally after hearing the sound of relay.
2.Shut down: Shut down Breaker directly.
3.Monitoring: Please communicate with the corresponding equipment/computer according to the defined interface.
4.Turn on after the breath screen is displayed, and press and hold for 5S.

7.2 Control Parameter

Item		Parameters		Condition
Charge	Cell voltage protection 1	3.75V		OVR: Cell < 3.45V or discharge current >=2A
	Cell voltage protection 2	3.85V		
	Module voltage protection 1	222.0V		Rack < 207.0V or discharge current >=2A
	Module voltage protection 2	225.0V		
	Over charging current 1	>40A	Delay10s	
	Over charging current 2	≥50A	Delay 3s	
	Low temperature protection 1	< -5ºC		Recovery 5ºC
	High temperature protection 1	> 70ºC		Recovery 60ºC
	High temperature protection 2	> 75ºC		
Discharge	Cell voltage protection 1	2.7V		UVR: Cell > 3.1V or (manual recovery and in period 60S and charge current >=2A)
	Cell voltage protection 2	2.5V		
	Module voltage protection 1	162.0V		Rack >180.0V or (manual recovery and in period 60S and charge current >=2A)
	Module voltage protection 2	150.0V		
	Over charging current 1	>95A	Delay10s	
	Over charging current 2	≥100A	Delay 3s	
	Low temperature protection 1	< -20ºC		Recovery -10ºC
	High temperature protection 1	> 75ºC		Recovery 65ºC
	High temperature protection 2	> 80ºC		
BMS	Cell balance	50mA		Cell voltage difference > 40mV
	Power consumption	1W		Operation condition
	Communication ports	RJ45&CAN&TCP/IP		Connect UPS

7.3 Working Mechanism

7.3.1 Voltage overcharge protection and recovery

During the charging process, when any single or total voltage of the battery is higher than the protection value, the BMS will first close the auxiliary discharge contactor and then disconnect the main contactor.It is not able to charge the battery but discharge still can be done.When the protection release condition is met, the BMS will release the protection, first close the main contactor, and then disconnect the auxiliary discharge contactor.

7.3.2 Voltage over-discharge protection and recovery

During discharge, when any cell voltage or total voltage of the battery pack is lower than the protection value, the main contactor is disconnected and discharge is prohibited.
If the protection release condition is met, the BMS will release the protection and close the main contactor.

7.3.3 Charge and discharge overcurrent protection and recovery

When the charge and discharge current is greater than the protection value, the BMS enters the protection state, disconnects the main contactor, and prohibits charging or discharging. When the release condition is met, the BMS will reclose the main contactor to allow charge and discharge.

7.3.4 Short circuit protection

Circuit breaker is used to achieve short circuit protection. CB is rated at 250A. When the current is greater than 13 times of rated current, the trip response time is <10ms.

7.3.5 Battery high / low temperature protection and recovery

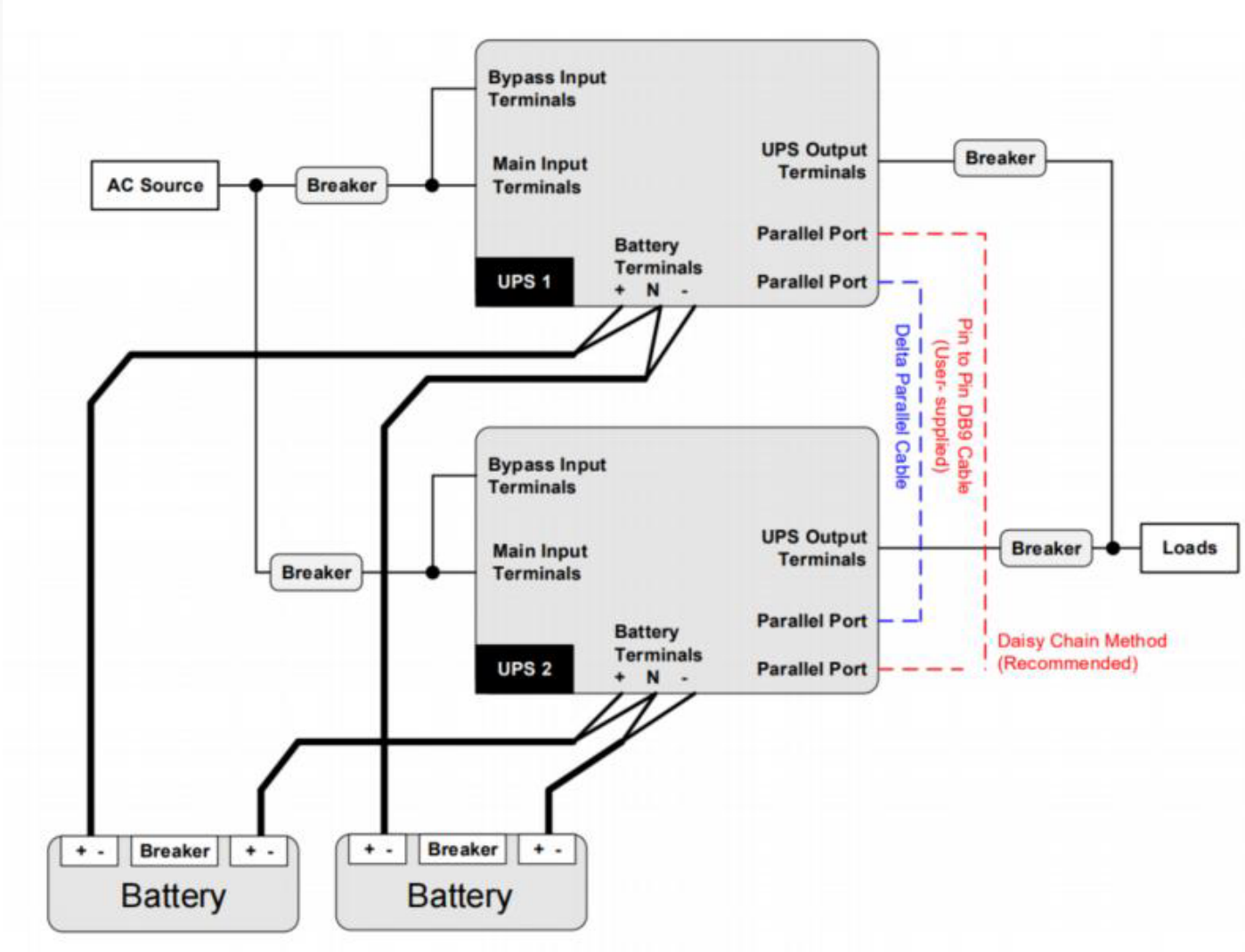
When the temperature reaches the set protection, the BMS will trigger the battery high temperature/low temperature protection and disconnect the main contactor until the main contactor recloses after the release condition is met.

7.3.6 Balanced function

BMS has bypass resistor to equalize the cell. (passive balancing).

Equalization function will work when:
Cell voltage is higher than 3.45V, and voltage difference with lowest voltage cell is greater than 50mV.

8. System Diagram



9. Precautions

1. The charging current should be less than specified max charging current. It will damage the battery if the charging current is greater than the recommended current.
2. Discharge current should be less than the specified max discharge current. It may damage the battery if discharge current is greater than the recommended.
3. Avoid short circuit battery modules.
4. Battery module must be disassembled by professionals only.
5. Do not use or place the battery module at high temperature, otherwise it will cause the battery module to overheat, or the function is invalid and the life is shortened.
6. It is strictly forbidden to immerse the battery in water. When it is not suitable to use, it should be store in a cool and dry environment.
7. Avoid any wire or connection short circuit.
8. It is strictly forbidden to disassemble the BMS with the circuit breaker closed.
9. Be sure to disconnect the circuit breaker on the panel during installation, disassembly and maintenance, otherwise there is danger of electric shock.

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