Lithium ion Battery Specification

Battery Type: 48V50Ah for Telecom

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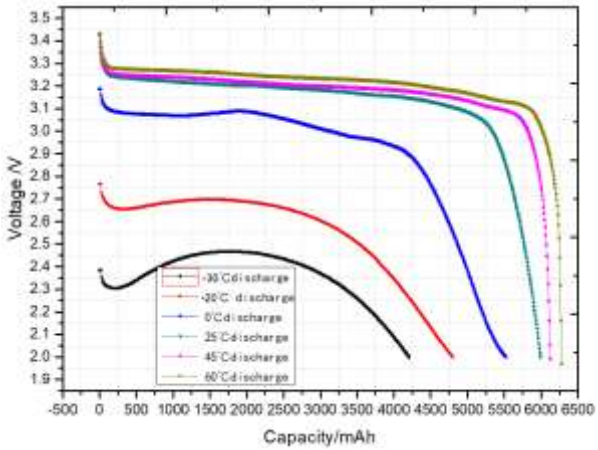
1. Description and Model

1.1 Battery Classification: LiFePO4
1.2 Battery Type: 48V50Ah(Telecom)

2. Basic Characteristics

Sr. NO.	Item	Criterion	Note
Cell Parameter			
1.	Battery Type	LiFePO4 Battery	
2.	Rated Voltage/Capacity	3.20V/6.0Ah	
3.	Voltage Range	2.00V-3.65V	
4.	Weight	0.143kg	
5.	Size	Φ(32.0±0.5)*H(70.2±0.4)mm	
6.	Cathode Material	LiFePO4	
7.	Anode Material	Graphite	
8.	Electrolyte Material	LiPF6	
9.	Working Temperature	Charge/Discharge: -20℃～60℃	
10.	Charge Retention	97% (25℃, 28 days)	
11.	Cycle Times	over 2000 cycles(0.2C cycle, 25℃,capacity retention 80%	
12.	Cell Discharge Curve at -20℃, 10℃, 0℃, 25℃, 45℃, 65℃		
Battery Pack Parameter			
1.	Nominal Voltage	48V	
2.	Voltage Range	37.5～54.75V	Cells voltage range: 2.5-3.65V

3.	Nominal Capacity	50Ah	
4.	Battery Combination	15S9P	135 cells
5.	Nominal Energy Capacity	2400Wh	
6.	Max. Charge Current	25A	0.5C
7.	Charge Time	2-5 hours	0.2C-0.5C Charge Current
8.	Max. Continuous Discharge Current	25A	0.5C
9.	Peak Discharge Current	26A	Duration time: 5S
10.	Chare and Discharge Efficiency	≥95%	
11.	Cycle Life of Battery Pack	Over 2000	at 80 % DoD, 25℃
12.	Total Weight	55.0kg	
13.	Humidity	(65±20)%	
14.	Cooling Method	Natural Cooling	
15.	Protection Level	IP54	
16.	Working Temperature	Charge: 0℃～60℃ Discharge: -20℃～60℃	

3. BMS Specification

3.1 Functions

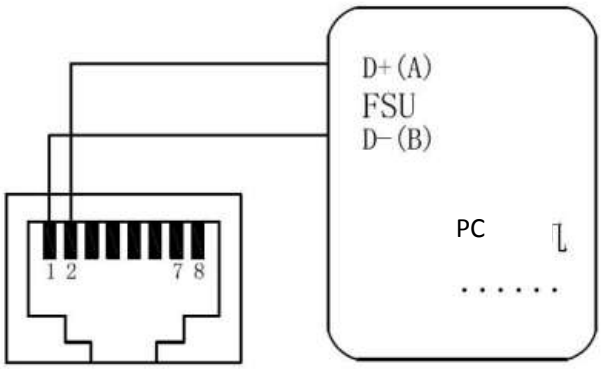
- Discharge over current and short circuit protection
- Over voltage, low voltage, temperature and over load protection
- Use the integration solution and the more stable performance
- Control by MOS, low internal resistance, large current and high precision
- With balancing

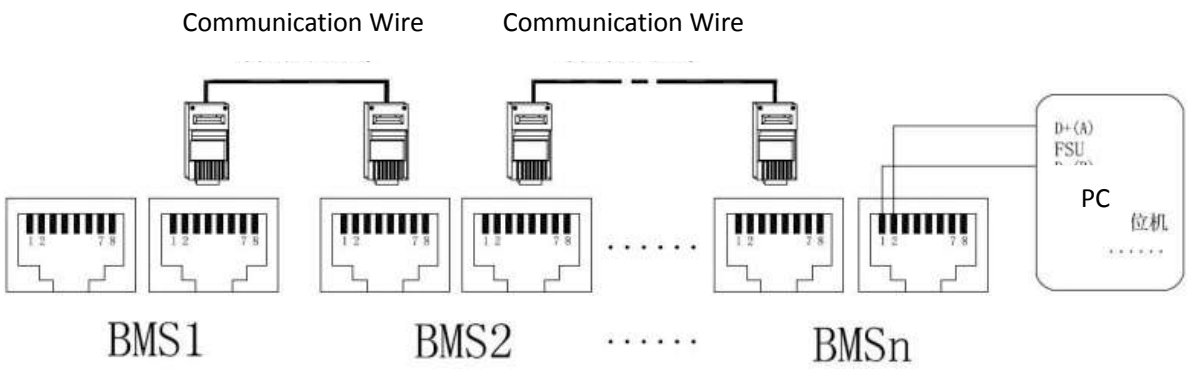
3.2 Parameters

Item		Parameter
Output Voltage	Working range	36V-60V
Working Current	Working range	≤50A
Operation Temperature	Working range	-20℃ ~ +70℃
Self-consuming	Under operation	≤100μA
Internal Resistance		≤10mΩ

Over Charge Protection	Protection Voltage	3.75±0.05V
	Recovery Voltage	3.34±0.1V
	Over voltage protection delay	0.50 ~ 1.50S
Over Discharge Protection	Protection Voltage	2.50±0.1V
	Recovery Voltage	2.90±0.1V
	Lowe voltage protection delay	50.00~150.00ms
Over Current Protection	Charge Over Current Protection #1	
	Charge Over Current Protection #2	
	Discharge Over Current Protection #1	
	Discharge Over Current Protection #2	90A, delay 500ms
Short Circuit Protection	Protection Delay	70us
	Recovery Condition	Cutoff load
Temperature Protection	Overheat Protection Temperature	65±2℃
	Recovery Temperature/Time	50±2℃
Charge Balancing	Charge Balancing Open Voltage	3.5±0.050V
Communication Interface	RS485	

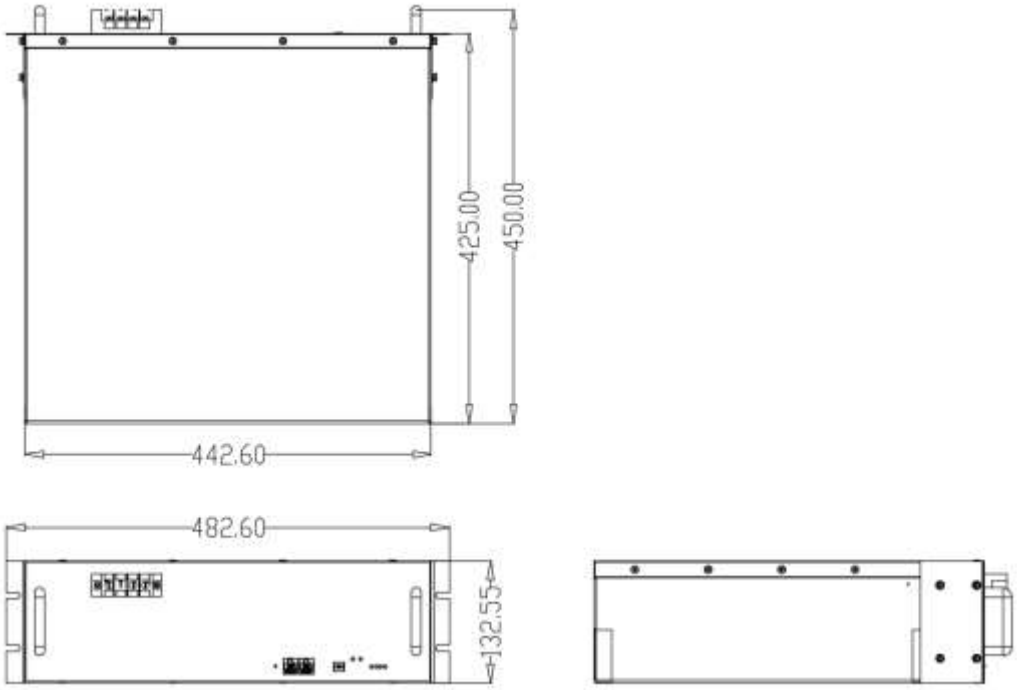
3.3 RS485 Interface





Parallel Connection

4. Product Dimension



Dimensions(L*W*H): 482.6*425.0*132.55mm

5. Battery Pack Performance

5.1 Cycle Performance

Item	Standard	Test Condition
Cycle Life	Retention capacity after 2000 cycles ≥80%*rated capacity	0.33C cycle, 100% DOD at 25℃

5.2 High and Low Temperature Performance

Item		Standard	Test Condition
1	-10℃ low temperature discharge	Discharge capacity ≥70%*rated capacity	After standard charging, stay in -10℃±2℃ for 20 hours, then discharge with 0.33C to 37.5V;
2	55℃ high temperature discharge	Discharge capacity ≥99%*rated capacity	After standard charging, stay in 55℃±2℃ for 5 hours, then discharge with 0.33C to 37.5V;

5.3 Storage Performance

Item			Initial SOC	Standard	Test Condition
1	Capacity Retention Rate	25℃, one month	100%	96%	The percentage of discharge capacity after storage and capacity before storage test conditions: standard charge and discharge
		60℃, 7 days	100%	96%	
2	Capacity Recovery Rate	25℃, one month	100%	98%	After testing the remaining capacity after storage, charge and discharge for 3 times,t he highest capacity is the recovery capacity, and the percentage of the recovery capacity and the capacity before storage is the recovery rate
		60℃, 7 days	100%	98%	

6. Packing/Storage/Shipment

- Packaging Method: **Plywood case, one battery pack per case.**
- The battery should be checked the voltage, resistance and the function of protective circuit before shipment.
- The battery should be transported to the factory assembly, to pay special attention to the packing, in order to avoid transport stress. We suggest using the same packaging when the battery is transported. Even the package is opened, please pack with the components and materials as same as the original packing.
- The battery should be in a half state of charge(50%) packaging boxes for transport, in the transport process, prevent severe vibration, shock, extrusion, prevent the sun and rain, should be in automobile, train, ship, airplane and other forms.
- When the battery pack to be long-term stored, charge the battery pack to about 80% capacity, store in dry and ventilated place, charge and discharge once every 3 months. (Charge Current: 0.2C)
- The battery pack and charger should be stored in clean, dry and ventilated place, avoid contacting with corrosive materials and be away from fire and heat.

7. Guarantee Period of Quality

- ✧ We assume no responsibility for the accident of not operating in accordance with the specification.
- ✧ The guarantee period of quality is 2 years basic on delivery date. Our company would replace battery which due to the manufacturing problems and it is not abnormal use, if the battery appears during the abnormal situation.

8. Battery Handling Precautions

- Forbid to immerse battery in water or allow it to get wet!
- Don't charge, use and store battery near a heat source such as fire and heater! If the battery leaks or releases strange odor, please remove it from place near fire place immediately. Fully charge the battery before first-time using.
- Forbid to reverse the positive and negative pole!
- Forbid to throw the battery pack into fire or heat it!
- Forbid to short-circuit battery with wire or other metal objects!
- Forbid to nail, knock or trample battery!

- Forbid to disassemble the battery and battery pack in any way!
- Forbid to put the battery into microwave oven or pressure vessel!
- If the battery pack gives off odor, gets heat, deformation, discoloration or appears any abnormal phenomenon, stop using it; please remove the battery from electrical appliances and stop using it, when the battery is being used or charged!
- Forbid to use battery pack in a very hot environment, such as under direct sunlight or in car on hot day. Otherwise, the battery pack will overheat, which will affect battery performance and shorten battery life!
- If the battery leaks and electrolyte leakage enters into the eyes, do not rub, rinse with water immediately and seek immediate medical assistance. If not in time, eyes will be hurt!
- Ambient temperature will affect the discharge capacity, if the ambient temperature is beyond the standard environment (25±5),℃ the discharge capacity will drop!

Special Considerations:

- During charging, if there is odor and unusual noise, immediately stop charging.
- During discharging, if there is odor, unusual noise, immediately stop charging.
- If there are above phenomenon, please contact the manufacturer, do not disassemble by yourself.