

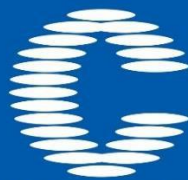
TECHNICAL SPECIFICATION SHEET

12.8V/15AH

Power Delivered: 192Wh

Cell Combination: 4S3P

Cell type: IFR 32650-3.2V/5000mAh



C-TECH

COSLIGHT INDIA TECHNOLOGY PRIVATE LIMITED



Specification Sheet Review:

Revision	Date	Description	Name
1.0	March 01, 2016	First Issue to Client	

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1. Scope

The specification shall be applied to the battery pack for Rechargeable LiFePO4 Battery

2. Model

IFR32650 12.8AH 15V

3. Battery Performance Test Criteria

a) Visual Inspection

There shall be no defect such as rust, leakage, which may adversely affect commercial value of battery.

b) Environmental Test Condition

Unless otherwise specified, all test stated in this product specification are conduct at below test condition

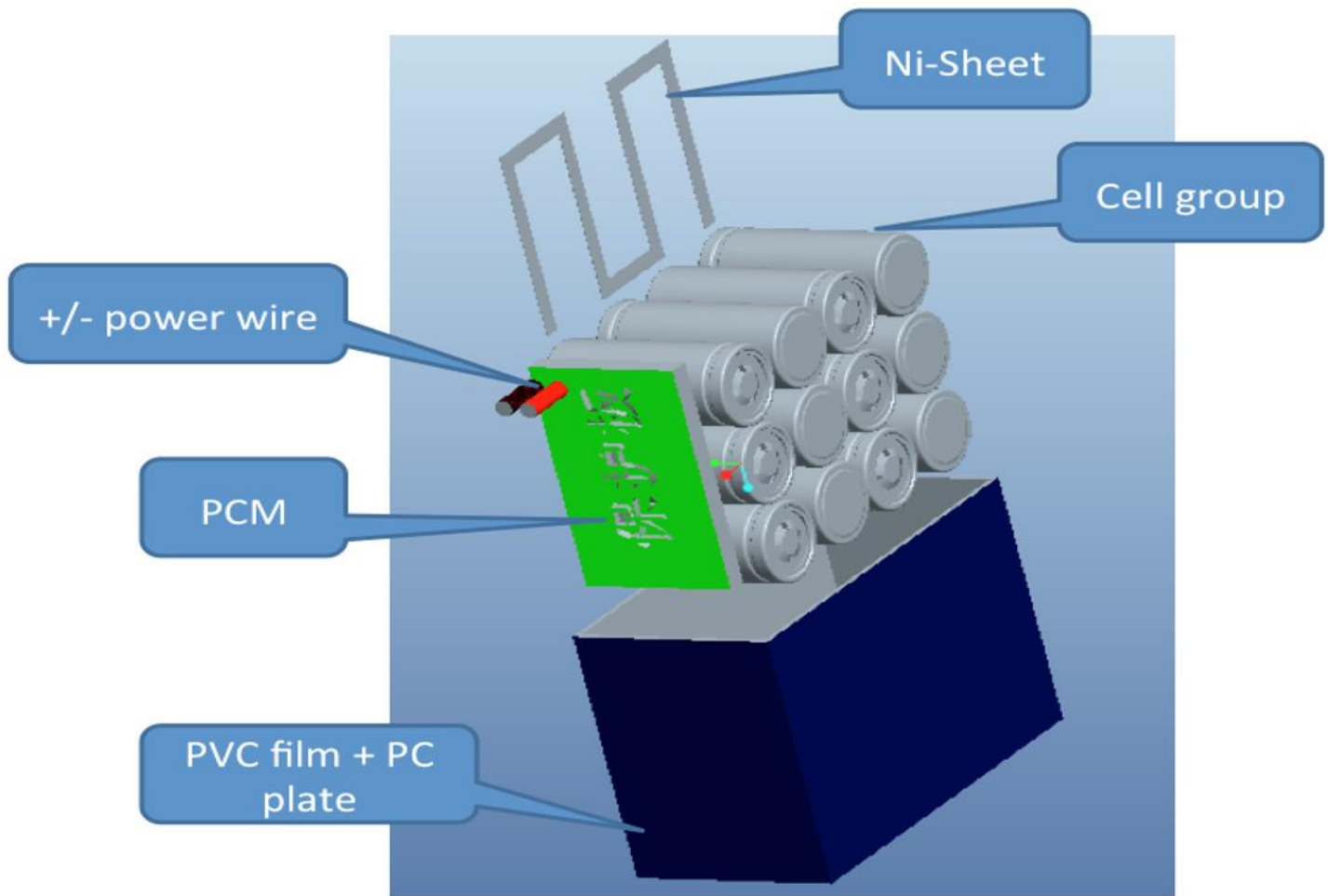
Temperature: 20°C~25°C

Relative Humidity: 60%±25% R.H.

4. Battery specifications

No.	Items	Specifications	Remark
1	Capacity for assembled cell discharging by 0.2C	≥14700mAh	Standard discharging method
2	Battery Voltage	12.8-13.2V	Delivery Voltage, Within 10 days from Factory
3	Standard charge condition	Charge with 0.2C constant current and 14.6V constant voltage, charge to 14.6V, continue charging till current decline to ≤0.01C	Charge voltage: 14.6V±0.02V Charge current:0.2C
4	Standard discharging method	0.2C constant current discharge to 8.0V,	0.2C constant current discharge to 8.0V
5	Maximum Charge Discharge Current	0.2C	
6	Internal Impedance	Assemblage Impedance ≤120m Ω	Measure the Red and black wire of the connector after assembling.
7	Cell Configuration	4 Series 3 Parallel	Interconnected with Nickel Sheet
8	Dimension	L150 * W73 * H102mm	
9	Weight	1710 Grams	Approximate Weight of Battery Pack
10	Shell Material	PC plate + PVC film	
11	Terminal Wire Length	100mm	

5. Battery Pack Dimensions



6. Discharge Temperature v/s Capacity

Discharge Temperature	-20°C	-10°C	0°C	23°C	60°C
Discharge Capacity (0.2 C ₅ A)	30%	50%	80%	100%	95%

7. Mechanical characteristics

No	Items	Test Method and Condition	Criteria
1	Free fall test	The battery to be fully charged in accordance with standard charge condition, then drop the battery three times from a height of 1,0 m onto a concrete floor. The batteries are dropped so as to obtain impacts in random orientations.	No Fire
2	Vibration test	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	No explosion ,No leakage, No fire

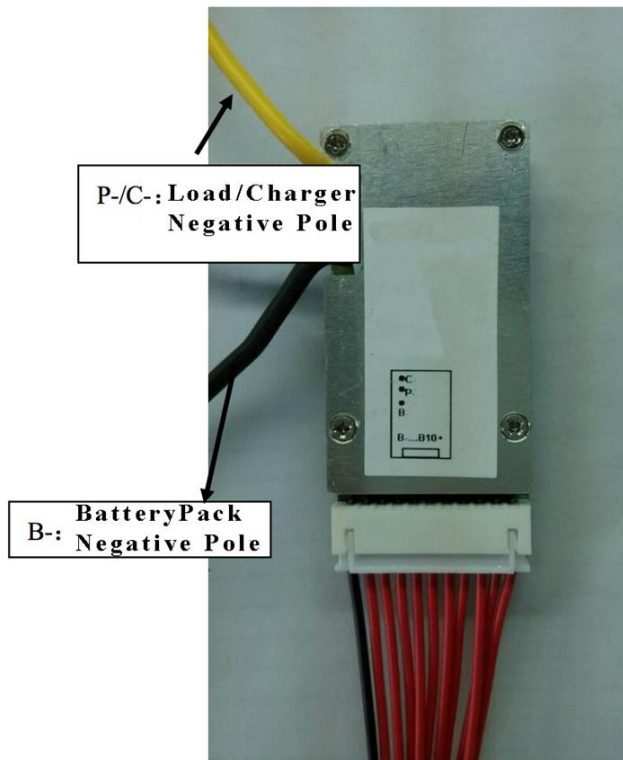
8. Safety performance

No	Items	Test Method and Condition	Criteria
1	Thermal exposure test	Each fully charged cell, stabilized at room temperature, is placed in a circulating air-convection oven. The oven temperature is raised at a rate of 5 ° C/min ± 2 ° C/min to a temperature of 130 ° C ± 2 ° C. The cell remains at this temperature for 10 min before the test is discontinued.	No explosion, No fire
2	Short test (20°C)	The fully charged battery is to be short-circuited by connecting the positive and negative terminals of the battery with resistance load not exceed 100m Ω .Tests are to be conducted at room temperature 20~25 °C.	No explosion, No fire The Temperature of the Battery surface not exceeded than 150°C
3	Short test(60°C)	The fully charged battery is to be short-circuited by connecting the positive and negative terminals of the battery with resistance load not exceed 100m Ω .Tests are to be conducted at room temperature about 60-65°C	No explosion, No fire The Temperature of the Battery surface not exceeded than 150°C

4	Forced discharge test	A discharged cell is subjected to a reverse charge at 0.5C for 150 min.	No explosion, No fire
5	Over charge test	After standard charge, continue to charge with a constant voltage 3C/4.6V per a cell, holding 8h.	No explosion, No fire

9. PCM Description

PCM profile Display



PCM cable connection details,

- B-, connecting to the battery pack negative pole (cable3135/Black/16WG/L:150±5MM)
- P-/C-, connecting to the load negative pole & charger negative pole (cable3135/Blue/16WG/ L:150±5MM)
- Protection board 5pin cable, started from Black cable, the order is: B- /B1+/B2+/B3+/B4+(B+)

UL1007 22AWG L = 300±5MM B-: BLACK, B1-B4: RED

Attention: Please be caution with the connection to prevent any improper wiring.

10. Protection Board Parameters

Specification

1.1 Scope: This specification applies to the design and production of the LIB6030B-4SA lithium protection board

1.2 Battery capacity: 15Ah

1.3 Environmental standard: ROHS

1.4 Function description: Overcharge protection, over-discharge protection, overcurrent protection, short circuit protection

1.5 Ambient Temperature: 25 °C

1.6 Reliability Test: Constant temperature and Humidity test: + 40 ± 2 °C 90% RH @48Hours; High temperature test: + 55 ± 2 °C@ 2Hours; Low temperature test: -20 ± 2 °C 16Hours; ESD anti-static test ESD test: Normal operation in all parts at ± 4KV (contact) ± 8KV (AIR) condition

Protection Parameters	Parameter value			
	min	type	max	unit
Charging Voltage	14.4	14.6	14.8	V
Charging MOS withstand voltage			30(DC)	V
Discharging MOS withstand voltage			30(DC)	V
Charging current		10	12	A
Continues discharging current		10	12	A
Over charging current protection value	35	40	45	A
Overcurrent protection Delay	80	120	160	mS
Cell self-discharging current(3.30V)	15	35	32	uA
Cell balance current (3.65V)	38	42	48	mA
Cell balance voltage	3.55	3.61	3.65	V
Cell overcharging voltage protection	3.80	3.85	3.90	V
Over charging voltage recovery	3.55	3.65	3.75	V
Over charging test Delay	0.5	1.0	2.0	S
Cell over charging voltage testing value	2.20	2.30	2.40	V
Overcharging voltage recovery	2.42	2.50	2.58	V
Over charging testing delay	0.5	1.0	2.0	S
Short circuit /OV/OC protection recovery	After remove the LOAD, protection will be recovered.			
Protection circuit internal resistance		8	15	mΩ
Max temperature		45	60	°C
Battery pack protection at discharging time	60	65	70	°C
Storage temperature	20	25	30	°C
Operation temperature	-20	25	45	°C

11. Cautions for Battery Operation

To ensure proper use of the battery please read the manual carefully before using it.

- Handling
 - Do not expose to and dispose of the battery in fire.
 - Do not put the battery in a charger or equipment with wrong terminals connected.
 - Avoid shorting the battery.
 - Avoid excessive physical shock or vibration.
 - Do not disassemble or deform the battery.
 - Do not immerse in water.
 - Do not use the battery mixed with other different make, type, or model batteries.
 - Keep out of the reach of children.

- Charge and Discharge
 - Battery must be charged with appropriate charger only.
 - Never use a modified or damaged charger.
 - Do not leave battery in charging condition for more than 24 hours.

- Storage
 - Store the battery in a cool, dry and well-ventilated area.

- Disposal
 - Regulations vary for different countries. Dispose of in accordance with local regulations.

12. Precautions for Storage

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity. We recommend that batteries should be charged about once per half a year to prevent over discharge.

13. Ageing

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

Note: Any other items which are not covered in this specification shall be agreed by both parties.