Specification Approval Sheet

Model No. : **IFR32135-10S4P-600M**

1、Scope

This specification describes the requirements of the **Lithium ion Rechargeable Battery Pack** supplied by Akyga Battery

2、Description and Model

2.1 Battery Classification：**Lithium iron phosphate battery**

2.2 Battery Type: **IFR32135-10S4P-600M (with BMS)**

3、Basic Characteristics

No.	Item	Specification
1.	Cell Model	**IFR 32135-3.2V15.5Ah**
2.	Array mode	**10S4P**
3.	Nominal Capacity	**60Ah** (Standard**0.2C** charge and **0.2C** discharge)
4.	Minimum Capacity	**≥58Ah**
5.	Watt Hour	**1920Wh**
6.	Nominal Voltage	**32V**
7.	Initial AC Impedance	**≦200mΩ**
8.	Charging Voltage	36.50 V±0.10V
9.	Standard charging method	**Standard Constant Current: 12A** MAX constant current: 25A
10.	Standard discharging method	Standard Constant current:12**A**
11.	Maximum continuous discharge current	**≦30A**
12.	Cycle Life	**2000 cycles (0.2C charge , 0.2C discharge) Capacity retention≥90%**
13.	Weight (Kg)	**12kg**±0.2kg

14.	Operating Temperature	Charging：**0℃-45℃**
		Discharging：**-20℃～60℃**
15.	Storage Temperature	1 month： -20℃～45℃
		6months： -20℃～35℃
		1 year： -20℃～25℃
16.	Relative Humidity	65±20%
17.	Shipping capacity	40%~50%
18.	.	Standard charge the battery, and then put aside at room temperature for 28d or 55 ℃ for 7d, Charge retention rate ≥90%, Recovery rate of charge≥90

4、Environmental Characteristic

No.	Item	Testing Instruction	Requirement
1	Vibration Test	battery will be vibrated 30 minutes in three mutually perpendicular directions and changing frequency between 10 to 55Hz. The rate of scanning frequency is from 10 Hz to 55Hz with the rate of 1Hz per min. Vibration frequency：10-30Hz amplitude：0.38mm vibration frequency：30-55Hz: amplitude：0.19mm	battery shall not rupture, smoke, explode or leak. Battery electric voltage ≥**32V**

2	Constant Temperature/ Humidity Test	Keep the battery at 40±2℃ and 90%-95%RH for 48 hrs after complete charge. After the test, keep the battery at 20±5℃ for 2 hrs. Discharge at 10A constant current discharge to the termination voltage.	Appearance of the battery shall not rust, smoke or explode. Discharge Capacity ≥ 80%
3	High Temperature Performance Test	Keep the battery at a hot oven with 55±2℃ for 2 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at 20±5℃ for 2 hrs.	Appearance of the battery shall not rust, smoke or explode Discharge Capacity >90%
4	Low Temperature Performance Test	Keep the battery at -20±2℃ for 16-24 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at 20±5℃ for 2 hrs.	Appearance of the battery shall not rust, smoke or explode Discharge Capacity >55%

5、Safe Characteristic

Note: safety characteristics test no electronic protection circuit

No.	tem	Testing Instruction	Requirement
1	Over-charge test	Charge in accordance with the following two ways (Choosing one between the two). (1)Charge at 1C current for 90min or until voltage of some single battery reaches 5.0V (stop test when fulfills either condition). (2)Charge at 3C current until the voltage of some single battery reaches 10.0V, then stop the test.	battery shall not explode or catch fire

2	Over-discharge test	Charge the battery. Place at 20±5℃ for 1h, then discharge in 1/3C current at same temperature until some cell' s voltage is 0V	battery shall not explode or catch fire
3	Short-circuiting Test	After charge batteries, place at 20±5℃ for 1h. Short the battery for 10min, the external circuit resistance should be less than 5mΩ.	The battery shall not explode or catch fire

86Kpa-106Kpa

Above technical performance standard test environment temperature: 20±5℃ , Relative humidity: 65 ± 20% (unless otherwise requested), Atmospheric pressure: 86Kpa-106Kpa

6、BMS Specification

	VDET1	3.65±0.05V
	tVDET1	1.0±0.5S
	VREL1	3.45±0.05V
		≤3.0A
	VDET2	2.2±0.08V
	tVDET2	100±50mS
	VREL2	2.5±0.1V
	VDET3	0.1±0.025V
	IDP	13.0～16.0A
	tVDET3	10.0±5.0mS
		≤30A

	TSHORT	100～600uS
	RSS	RSS≤65mΩ
	IDD	30.0μA Max

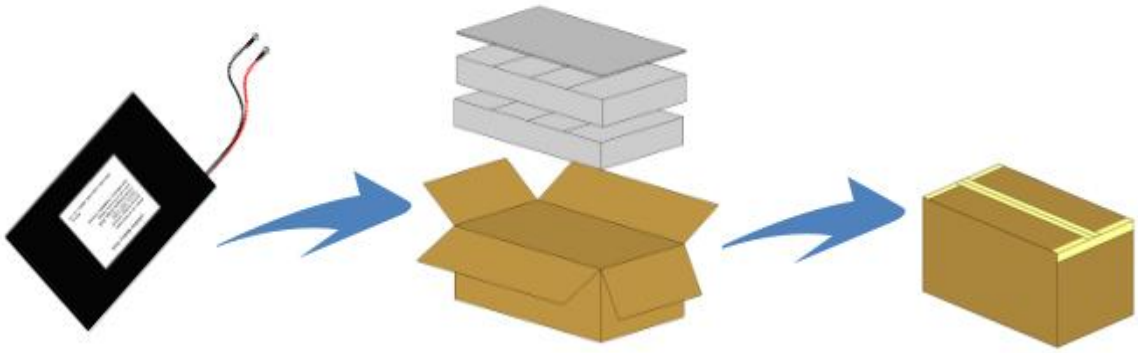
7、Product appearance and size

No.	Item	Specification	Remark
1.	Battery size	（175±2.0)mm*(285±2.0)mm*（150±2.0)mm	
2	Charging and discharging wire	Two pcs of wires ---- Red + & Black -: AWG UL1007-12# 85±10mm	

7、Product appearance and size

No.	Item	Specification	Remark
1.	Battery size	（175±2.0)mm*(285±2.0)mm*（150±2.0)mm	
2	Charging and discharging wire	Two pcs of wires ---- Red + & Black -: AWG UL1007-12# 85±10mm	

8. The labels contents and size



10、Storage conditions :

When the battery pack to be long-term stored, charge the battery pack to about 60% capacity,store in dry and ventilated place, charge **2.5h** for every 3 months. (Charge Current:5A)

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.

We assume no responsibility for the accident of not operating in accordance with the specification.

Specifications, raw materials, production process or production control system is changed , the change will vary depending on the quality and reliability of data written notice to the customer.

11、Warranty

12 months from the client receive the product.

12、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, pls 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!

- 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.