



YAMPE

Rechargeable Lithium iron Phosphate Battery Specification



1. Product Specification

Table 1 (表 1)

No.	Item	General Parameter	Remark
1	Rated Capacity	20Ah	Standard discharge (0.2 C ₅) after standard charge(0.2 C ₅)
2	Minimal Rated Capacity	19Ah	
3	Nominal Voltage	12V	
4	Life Exception	Higher than 60% .of the Initial Capacity of the Cells	<ul style="list-style-type: none"> ◆ Charge: <u>CC@0.2C</u> to 14.6V, then CV till current to 0.05C ◆ Rest: 30min. ◆ Discharge: 0.2C to 8.0V ◆ Temperature: 20±5°C ◆ Carry out 1000cycles
5	Discharge cut-off voltage	8.0V	10.0V (recommended)
6	Charging cut-off voltage	14.6V	14.6V (recommended)
7	Cell and assembly method	IFR26650-3400mAh	4S6P
8	Housing material	ABS+PC housing	Blue



Continuous the table 1

No.	Item	General Parameter	Remark
9	Standard charge	0.2C constant current(CC) charge to 14.6V then constant voltage (CV)14.6V charge till charge current decline to $\leq 0.05C$	Charge time : Approx 5.5h
10	Standard discharge	Constant current 0.2C Cut-off voltage 8.0V	
11	Maximum Charge Current	$\leq 20A$	8A(recommended)
12	Maximum Continuous Discharge Current	$\leq 20A$	Over current 120±20A (5ms—60ms)
13	Operation Temperature Range	Charge: 0~55°C	60±25%R.H. 23 ±5 °C (recommended)
		Discharge: -10~60°C (cell surface temperature $\leq 80^{\circ}C$)	
14	Storage Temperature Range	Less than 1 year : 0~25°C	60±25%R.H. at the shipment state 23 ±5 °C (recommended)
		Less than 3 months:-5~35°C	
15	Weight	Approx/ 2.4Kg	
16	Dimension	L : 181±2 mm W : 76±2mm H : 166±2 mm	
17	Terminals	M6	



2. Performance And Test Conditions

2.1 Standard Test Conditions

Test should be conducted with new batteries within one week after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise specified, test and measurement shall be done under temperature of $20\pm 5^{\circ}\text{C}$ and relative humidity of 45~85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 15~30°C and humidity 25~85%RH.

2.2 Measuring Instrument or Apparatus

2.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

2.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance more than $10\text{k}\Omega/\text{V}$

2.2.3 Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01Ω .

2.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).

2.3 Standard Charge/Discharge

2.3.1 Standard Charge : 0.2C

Charging shall consist of charging at a 0.2C constant current rate until the battery reaches 14.6V. The battery shall then be charged at constant voltage of 14.6V volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to $0.05\text{C}_5\text{A}$. Charge time: Approx 7.0h, The battery shall demonstrate no permanent degradation when charged between 5°C and 45°C .



2.3.2 Standard Discharge : 0.2C

Battery shall be discharged at a constant current of 0.2C to 8.0V @ 20 °± 5C

2.3.3 If no otherwise specified, the rest time between charging and discharging is 30min.

2.4 Appearance

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

3. Handling of battery

3.1 Prohibition short circuit

Never short circuit battery. It generates very high current which causes heating of the battery and may cause electrolyte leakage, gassing or explosion that is very dangerous.

The poles may be easily short-circuited by putting them on conductive surface.

Such outer short circuit may lead to heat generation and damage of the battery.

An appropriate circuitry with PCM shall be employed to protect accidental short circuit of the battery pack.

3.2 Prohibition Parallel or string battery

Battery module can only be used alone, not in series or in parallel.

3.3. Mechanical shock

Falling, hitting, bending, etc. may cause degradation of battery characteristics.

4. Others

Prevention of short circuit within a battery pack

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection.

The battery pack shall be structured with no short circuit internally, which may cause generation of smoke or firing.



5. Storing the Batteries

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

6. Other Chemical Reaction

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.



Specification Of PCM

No.	Item		Parameter
1	Voltage	Charging voltage	DC:3.6V/cell
		Balancing voltage	3.6±0.05V/cell
2	Current	Balancing current	110±10mA
		Self-consume current	≤20μA
		Max. continuous charging current	20A
		Max. continuous discharging current	20A
3	Over-charging protection	Over-charging voltage	3.9±0.05V/cell
		Over-charging delay time	0.5S~2.0S
		Over-charging release voltage	3.8±0.1V/cell
4	Over-discharging protection	Over-discharging voltage	2.0±0.1V/cell
		Over-discharging delay time	10~200mS
		Over-discharging release voltage	2.3±0.1V/cell
5	Over-current protection	Over-current	120±20A
		Over-current delay time	5~60mS
		Release condition	Remove load
6	Short circuit protection	Function condition	External short circuit
		Delay time	200~800μs
		Release condition	Remove load
7	Impedance	Protection circuitry (MOSFET)	≤20mΩ
8	Temperature	Operating temperature	-40~+85℃
		Storage temperature	-40~+125℃