UE Series

FT-12Li200

FRONTAL TERMINAL - LIFEPO4 POWER

1. Scope

This specification only applies to the reference battery pack UE-FT-12Li200 manufactured by Master Battery, S.L.

2. Ratings

	Item	Rating	Note
Cell	Battery Type	Li-ion Battery	
	Cell Model	1244590 - 50 Ah	
	Nominal Capacity	50 Ah	Discharge: 0.2 C Cut-off Voltage: 2.5 V
	Minimum Capacity	47.5 Ah	Discharge: 0.2 C Cut-off Voltage: 2.5 V
	Nominal Voltage	3.2 V	
	Internal Impedance	≤ 1.8 mΩ	
	Dimensions (L x D x H)	Max. 445 x 12.5 x 92 mm	
	Weight	Approx. 1000 g	

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Item		Rating	Note
Battery Pack	Pack Method	4S4P	
	Nominal Capacity	200 Ah	Discharge: 0.1 C Cut-off Voltage: 10 V
	Minimum Capacity	190 Ah	Discharge: 0.1 C Cut-off Voltage: 10 V
	Nominal Voltage	12.8 V	
	Energy	2560 Wh	
	Charge Voltage	14.6 V	
	Discharge Cut-off Voltage	10 V	
	Charge Method	CC/CV	
	Standard Charge Current	40 A	
	Max. Charge Current	100 A	
	Standard Discharge Current	40 A	
	Max. Continues Discharge Current	200 A	
	Cycle Life	2500 times	100% DOD
	Internal Impedance	≤ 10 mΩ	
	Dimensions (L x W x H)	561 x 125 x 316 mm	
	Output Wire		
	Output Connector	M8	
	Weight	Approx. 19.5 kg	
	Working Temperature Range	Charge: -0°C~45°C Discharge: -20°C~60°C	
	Storage Temperature	-10°C~35°C	

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3. BMS Parameters

Nº	Description		Specification	Unit	Remarks
1	Discharge	Continuous Discharge Current	200	A	
2	Charge	Charge Voltage	14.6	V	
		Charge Current	100	A	
3	Overcharge Protection	Overcharge Detect Voltage	3.75±0.05	V	
		Overcharge Protection Delay	1	S	
		Overcharge Release Voltage	3.65±0.05	V	
4	Balance	Balance Detect Voltage	3.20	V	
		Balance Current	30±5	mA	
		Balanced Opening Condition	1. On a charge 2. Achieve set balanced opening differential pressure 3. Achieve 50 mv		
5	Overdischarge Protection	Overdischarge Detect	2.2±0.1	V	
		Overdischarge Detect Delay	1	S	
		Overdischarge Release Voltage	2.3±0.1	V	
6	Total Pressure Discharge Protection	Overall Overcast Protection Voltage	8.4	V	Deviation 1~2%
		Overall Over-release Protection Delay	1	S	
		Overall Over-release Protection and Release Voltage	9.6	V	
		Overall Over-release Protection Release Delay	1	S	
7	Discharge Overflow Protection	Discharge Current Level 2 Protection Current	3.70±50	A	
		Discharge Current Level 2 Protection Delay	1	S	
		Discharge Conditions	Removing the load is lifted		
		Charge the Over Current Protection Current	/	A	
		Charge Over Current Protection Delay	/	S	
		Discharge Conditions	Remove charger release		
8	Remove Charger Release	Short Circuit Protection Conditions	External load short circuit		
		Short Circuit Protection Delay	250	uS	
		Short Circuit Protection is Lifted	Removing the load is lifted		
9	Temperature Protection	Charging High Temperature Protection Temperature	/	°C	
		Charging is the Low-temperature Protection Temperature	/	°C	
		Discharge High Temperature Protection Temperature	/	°C	
		Discharge the Low-temperature Protection Temperature	/	°C	
		Temperature Protection Release Conditions	Reaching recovery temperature and dis load		
10	Internal Impedance	The Main Circuit Leads Through Internal Resistance	< 20	mΩ	
11	Consume Current	Self-current Current Consumption During Operation	500	uA	
		Hibernate Mode Self-consumption Current	0	uA	

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4. Performance

4.1 Standard Test Condition

The battery shall be evaluated within 1 month from the arrival date.
Unless otherwise stated in these specifications, the following test shall be carried out in an ambient temperature of 20±5°C, relative humidity of 65±20%.
Discharge capacity when the battery is discharged at 40 A to 10 V after being standard charged. Five cycles are permitted for this test. The test shall be terminated at the end of the first cycle which meets the requirement.

4.2 Testing Instrument or Apparatus

4.2.1 Dimension Measuring Instrument

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

4.2.2 Voltmeter and Ammeter

Voltmeters and ammeters shall be equal or more precision instruments of 10 KΩ/V and 0.01 Ω.

4.2.3 Impedance Meter

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

4.3 Standard Charge

Standard charge means charging for 6 hours using 14.6 V/40 A charger.

4.4 Standard Discharge

Standard discharge means discharging at 40 A down to 10 V.

4.5 Electrical Performance

Item	Condition	Specification
Open-Circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge.	≥ 12 V
Battery Capacity	The discharge time at 40 A shall be measured after standard charge at 20±5°C and rest 30 mins.	≥ 95%
Cycle Life	The discharge time on standard discharge shall be measured after 2500 cycles of standard charge and discharge at 20±5°C.	100% DOD
Charge (Capacity) Retention	The discharge time at 40 A shall be measured after standard charge and then storage at 20±5°C for 28 days.	≥ 80%
Temperature Characteristic 1	After standard charging at 20±5°C, laying the battery at 55°C for 5 hour, then discharge at 40 A to 10 V, record the discharge time.	≥ 90%
Temperature Characteristic 2	After standard charging at 20±5°C, laying the battery at -10°C for 24 hour, then discharge at 40 A to 10 V, record the discharge time.	≥ 60%

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5. Mechanical Performance

Item	Condition	Specification
Crush Test	A battery is to be crushed between two flat surfaces. The force for the crushing is to be applied by a hydraulic ram with a 32 mm diameter piston. The crushing is to be continued until a pressure reading of 17.2 mm Pa is reached on the hydraulic ram, applied force of 13 kN. Once the maximum pressure has been obtained it is to be released.	No fire, No explosion
Drop Test	The battery has only two axes of symmetry in which case only two directions shall be tested. The battery is to be dropped from a height of 1 meter twice onto concrete ground.	No explosion, No fire, No smoke
Vibration	A full-charged battery is to be subjected to simple harmonic motion with an amplitude of 1.6 mm total maximum excursion. The frequency is to be varied at the rate of 1 hertz per minute between 10 and 55 hertz. The cell shall be vibrated for 30 minutes per axis o XYZ axes.	No leakage, No Fire, No explosion

6. Delivery Condition

Approx. 40% charged; Shipment voltage: 13 V

7. Warnings

To prevent the possibility of the battery from leaking, heating, fire, Please READ this specification carefully before usage and observe the following precautions:

- When recharging, use the Li-ion battery charger specifically for that purpose.
- Do not strike battery with any sharp edge parts, such as Ni-tabs, pins and needles.
- Do not immerse the battery in water and seawater.
- Do not use and leave the battery near a heat source as fire or heater.
- Do not reverse the position and negative terminals.
- Do not connect the battery to an electrical outlet.
- Do not discard the battery in fire or heat it.
- The battery tabs are not so stubborn especially for aluminum tab. Do not bend tab.
- Do not short-circuit the battery by directly connecting the positive and negative terminal with metal object.
- Do not transport and store the battery together with metal objects such as necklaces, hairpins etc.
- Do not directly solder the battery and pierce the battery with a nail or other sharp object.

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8. Battery Operation Instruction

8.1 Charge

Charging current: Do not surpass the biggest charging current which in this specification.
Charging voltage: Do not surpass the highest voltage which in this specification.
Charge temperature: The charge temperature is in according to this specification.

8.2 Discharge Current

Discharge current: Do not surpass the biggest discharge current which in thisspecification.
Discharge voltage: Do not be less than the lowest voltage which is in this specification.
Discharge temperature: The discharge temperature is in according to this specification.

8.3 Over-discharge

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

8.4 Storing the Batteries

The battery should store in the product specification book stipulation temperature range. If has surpasses above for 3 months the long time storage, suggested you should carry on additional charge to the battery.

8.5 Please do not continuously charge the battery over 8 hours

9. Others

- The customer is requested to contact Master Battery in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.
- Master Battery will take no responsibility for any accident when the battery is used under other conditions than those described in this Document.
- Master Battery will inform, in a written form, the customer of improvement(s) regarding proper use and handing of the battery, if it is deemed necessary.

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