



SET MIL12-0,23 (12.8V18Ah)

BATERÍA + BOLSA + CARGADOR
ESPECIAL GOLF

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1. Preface

This specification describes the type and size, performance, technical characteristics, warning and caution of the **SET MIL12-0,23 (12.8V18Ah) LiFePO₄ rechargeable pack**.

2. Product and Model

- 2.1. **Product:** LiFePO4 Battery Pack
- 2.2. **Model:** SET MIL12-0,23 (12.8V18Ah)
- 2.3. **Picture And Output Wire:**



Positive output wire	Red Anderson Connector	Length: 30mm
Negative output wire	Black Anderson Connector	Length: 30mm



3. Battery Pack Specifications

Items	Standard	Comments
Nominal voltage	12.8V	4S6P
Typical capacity	18Ah	At 1C discharge rate
Max continuous discharge current	30A	
Over current protection	140±30A	5ms-20ms
Discharge cut-off voltage	10V	
Charge voltage	14.4±0.1V	Charge mode: CC/CV, Use a constant current, constant voltage(CC/CV) please use special lithium charger.
Charge current	3A	
Inner resistance	≤48mΩ	Between positive and negative polar
Operation temperature range	Charge	0°C ~ +45°C
	Discharge	-20°C ~ +65°C
		When the environment temperature is higher than 45°C, please pay attention to ventilation and heat rejection.
Storage temperature range	0°C ~ 40°C (Capacity 80%)	Recommended long-term storage temperature is 15~25°C
humidity	5%≤RH≤85%	
Shell material	Plastic shell	With Nylon Bag
Weight	2.7±0.2Kg	
Output Port	USB	5V
Size (L*W*H)	168*125*75mm	
Protection function	Over charge protection、Over discharge protection、Over current protection、Temperature protection、Balanced function	

4. Standard Test Conditions

All test in this specification should be in standard atmospheric conditions:

temperature: $25 \pm 5^\circ\text{C}$, relative humidity: $65 \pm 20\%$.

5. Characteristics

5.1. Standard charge

Charge the battery with Lithium ion battery special test cabinet, supply 14.4V voltage, constant-current 0.2C(A) current until current down to 0.02C (A).

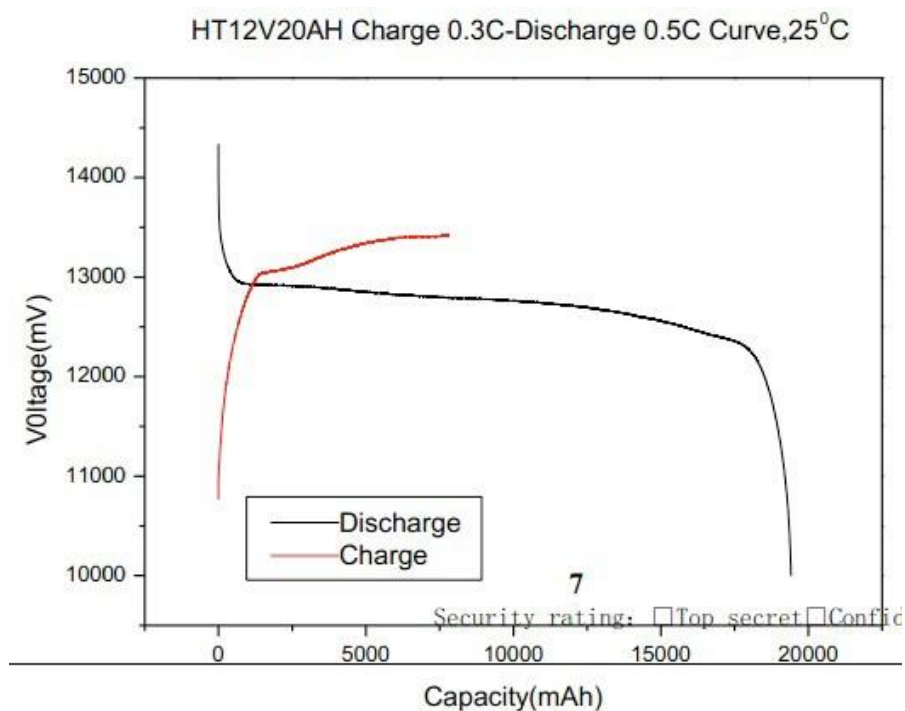
5.2. Standard discharge

Discharge the battery at 0.2C (A) to 10.0V or battery cut off voltage

5.3. Electrical Performance

Test Items	Test Methods	Test Standards
Capacity retention rate	After standard charge under 5.1 specified conditions, store the cells for 28 days, then discharge at 0.2C (A) to cut-off voltage.	Capacity retention rate $\geq 80\%$
Cycle Life	standard charge at 0.2C (A) , rest 0.5~1 h discharge at 0.2C to cut off voltage rest 0.5~1h repeat the above steps until 2000 cycles.	Capacity retention rate $\geq 80\%$

6. Cell characteristic curve



7. PCM Electrical Characteristics (Ta=25°C)

NO.	Item	Standard	
1	Voltage	Charge mode	CC/CV
		Single cell Charge balance Voltage	3.6±0.025V
2	Current	Single cell balance current	36±5mA
		Self-discharge current	≤20uA
		continuous charge current/discharge current	4A/30A
3	Over charge protection	Over charge protection voltage	3.90±0.025V
		Over charge release voltage	3.80±0.05V
4	Over discharge protection	Over discharge protection voltage	2.00±0.062V
		Over discharge release voltage	2.00±0.062V
5	Over current protection	Over current protection current	140±30A
		Over current protection delay	5ms-20ms
		Over current release	Cut off load
6	Short circuit protection	Condition	Outside short circuit
		Short circuit protection Release time	<600us
		Release condition	Cut off Loading, release automatically
7	Temperature	Working temperature range	-20°C~+60°C
		Storage temperature range	-40°C~+85°C
		Temperature protection	65±5°C

8. Cautions

- Charging current should be less than maximum charge current specified in the Product Specification ; Charging current bigger than recommended current may damage the battery;
- Discharging current should be less than maximum discharge current specified in the Product Specification ; Discharging current bigger than recommended current may damage the battery;
- It should be noted that the cell would be possible to be at a over-discharged state by its self-discharge characteristics in case the cell is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to maintain between 13.2V and 13.6V (Recommended 3 month one cycle.
- Over-discharging may causes loss of cell performance, characteristics, or battery functions;
- Please charge the battery within 12 hours after use;
- Battery storage environment follow the above conditions and in standard atmosphere, should be without strong magnet, no power, no static;
- Do not reverse the polarity of the battery pack for any reason;
- Do not short circuit the battery pack;
- Do not reverse polarity charging;
- Battery packs can be combined in series or in parallell, but no more than two sets;
- Do not immerse the battery pack in water or sea water, or get it wet;
- Do not disassemble battery;
- Do not expose the battery to extreme heat or flame; 8 .13 Please use special charger for charging.

9. Product Liability

Blackbull is not responsible for the incident caused by not obeying the specifications. Before using the battery, you should read the specifications, usage instruction and some attentions carefully to learn its application method and areas. If the phenomenon such as error using method or wrong circuit connection, or input power data, working index are inconsistent with the specifications, cause damage to product, load and its accessories, we are not responsible for it.

