



Lithium-ion(NCM) Battery

Pack Specification



Model No : HD48-13(48V13Ah)

Designed	Checked	Approved
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1. Preface

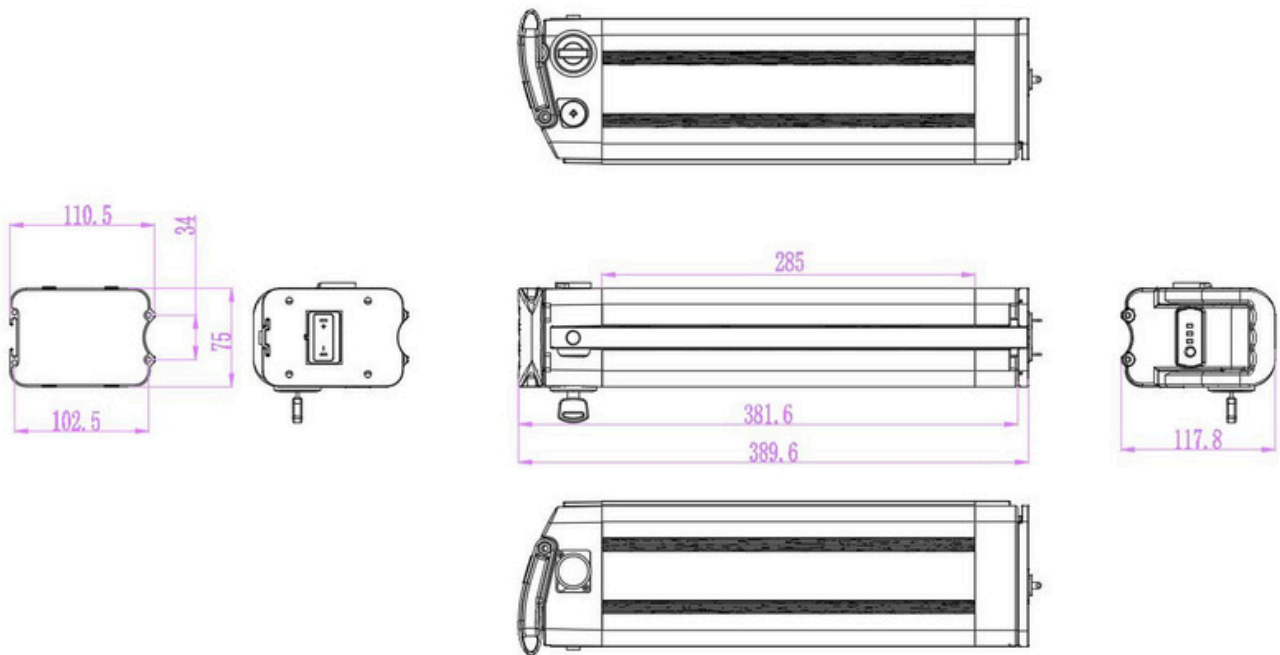
This manual describes the type and size, performance, technical characteristics, warning and caution of the HD48-13(48V13Ah) Lithium-ion rechargeable pack. The specification only applies to HD48-13(48V13Ah) Lithium-ion rechargeable battery supplied by Haidi Energy Technology Co.,Ltd.

2. Product and Model

2.1 Product: HD48-13(48V13Ah) Lithium-ion(NCM) Battery Pack

2.2 System Configuration:

Standard pack: HDCNR18650-2600mAh-3.7V/13S5P



Charge	Positive	XLR-3P
	Negative	
Discharge	Positive	4PIN connector
	Negative	



3. Battery Pack Specifications

Items	Standard	Comments
Nominal voltage	48V	13S
Typical capacity	13Ah	At 0.2C discharge rate
Max continuous discharge current	25A	
Discharge cut-off voltage	About 39V	
Charge input voltage	54.6V	Charge mode: CC/CV Use a constant current, constant voltage(CC/CV)
Charge current	≤5A	
Operation temperature range	Charge/ Discharge	0°C~+45°C/-20°C ±60°C
	Discharge	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
Shell material	ABS+PC	
Humidity	5%≤RH≤85%	
Total Weight	Approx: 4.3Kg±0.3Kg	
Size (D*H)	389.6*117.8*75mm±2mm	
Protection function	Over charge protection、Over discharge protection、Over current protection、Short circuit protection, Temperature protection.	

4. Standard Test Conditions

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

25± 5°C, relative humidity: 65±20%.



5. Characteristics

5.1 Standard charge

Charge the battery with the Battery special test cabinet, supply 54.6V voltage, constant-current 0.2C(A) current until current down to 0.02C (A) .

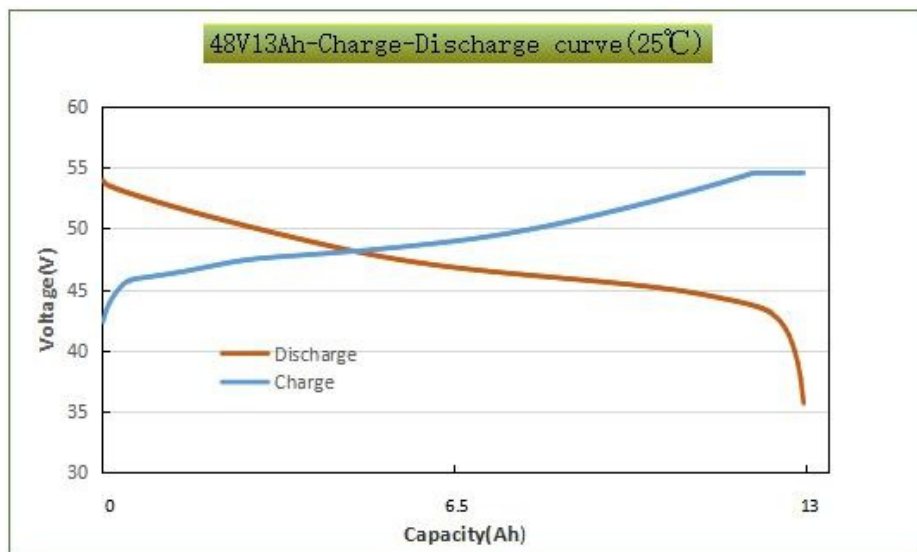
5.2 Standard discharge

Discharge the battery at 0.2C (A) to 39V or battery cut off voltage.

5.3 Electrical Performance

TestItems	TestMethods	TestStandards
Capacity retention rate	After standard charge under 5.1 specified conditions, store the cells for 28days,thendischargeat0.2C (A) to cut-off voltage.	Capacityretentionrate \geq 80%
Cycle Life	1) Standard charge at 0.2C (A ,) 2) Rest 0.5~1 h 3) Discharge at 0.2C to cut off voltage 4) Capacity retention rate \geq 80%	>500cycles @ 100% DOD; >800cycles @ 90% DOD; >1000cycles @ 80% DOD;

6.Characteristics Curve





7. Cautions

- 7.1 Charging current should not be more than maximum charge current specified in the Product Specification, Charging current bigger than recommended current may damage the battery;
- 7.2 Discharging current should be no more than maximum discharge current specified in the Product Specification; Discharging current bigger than recommended discharge current may damage the battery;
- 7.3 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 48.1V and 49.4V (Recommended 3 months one cycle) .Over-discharging may causes loss of cell performance, characteristics, or battery functions;
- 7.4 Please charge the battery within 12 hours after use;
- 7.5 Battery storage environment follow the above conditions and in standard atmosphere, should be without strong magnet, no power, no static;
- 7.6 Do not reverse the polarity of the battery pack for any reason;
- 7.7 Do not short circuit the battery pack;
- 7.8 Do not reverse polarity charging;
- 7.9 Battery packs can be combined in series or in parallel according to the specification;
- 7.10 Do not immerse the battery pack in water or sea water, or get it wet;
- 7.11 Do not disassemble battery;
- 7.12 Do not expose the battery to extreme heat or flame;
- 7.13 Please use a compatible charger for charging;