

CPEV MH/Ni Battery Warranty Agreement

一、 SCOPE

This specification is applicable to Ni MH battery for hybrid produced by own company.

Model: Ni-MH CHR-60DEL6W3

Warranty: 2 years or 70 thousand miles.

二、 PRODUCT RATINGS

No.	Description	Unit	Specification	Condition
1	Nominal Voltage	V	7.2	
2	Operating Voltage	V	6.0~9.6	
3	Nominal capacity	mAh	6000	Standard charge / discharge
4	Minimum capacity	mAh	5800	Standard charge / discharge
5	Nominal Energy	Wh	43.2	1 hour rate
6	Weight	g	1020±50	Standard environment、 Accuracy±0.05g Electronic
7	Power Density	W/kg	>1050	
8	Energy Density	Wh/kg	>43	
9	Max. continuous discharge current	C	25	20℃~45℃
10	Max. continuous charge current	C	15	
11	Storage Temperature	℃	-20~35	
12	Operating Temperature	℃	-30~55	

三、 **PERFORMANCE**

Tests should be done within one month of receiving the goods under the following conditions.

Test condition

Temperature: 20±5℃

Relative Humidity: 65±20%

Atmospheric Pressure: 86～106kPa

Standard charge discharge specification

Discharge: 6000mA (1C) to 6.0V

Charge: 6000mA (1C)×1hrs, 1200mA (0.2C)×1hrs

Discharge: 6000mA (1C) to 6.0V

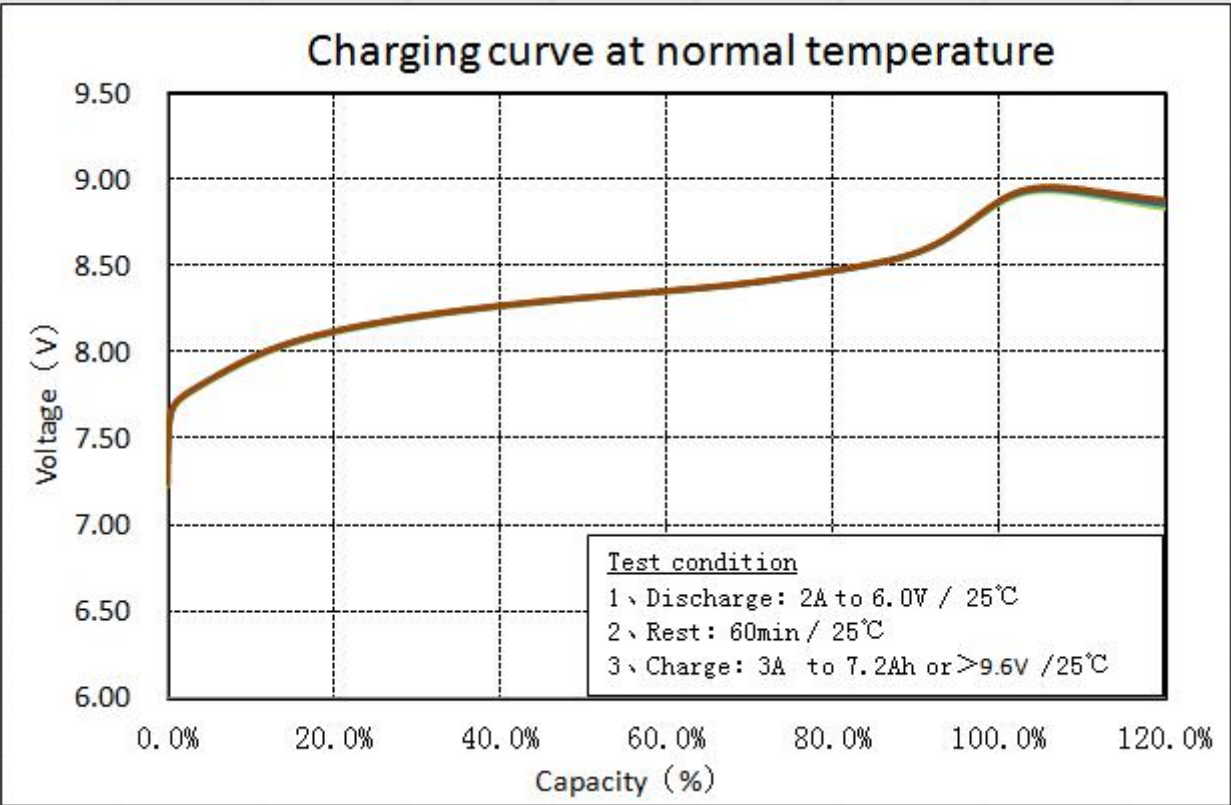
No.	Test	Unit	Description	Condition	Note
1	Open circuit voltage (OCV)	V	≥7.5	Within 1h after charging	
2	Internal resistance (DC-IR)	mΩ	≤16	50%SOC	
3	Internal Impedance (AC-IR)	mΩ	≤6.9	1kHz	
4	Self -discharge rate	%	<18		55±2℃ rest 3days, 20±2℃ rest 7days
5	Energy Efficiency	%	≥85	25℃	
6	Volumetric Efficiency	%	>95	25℃	
7	Cycle Life	Week	>3000	80%DOD	Charge to 90%, discharge to 10%

四、 MANDATORY PERFORMANCE INDEX

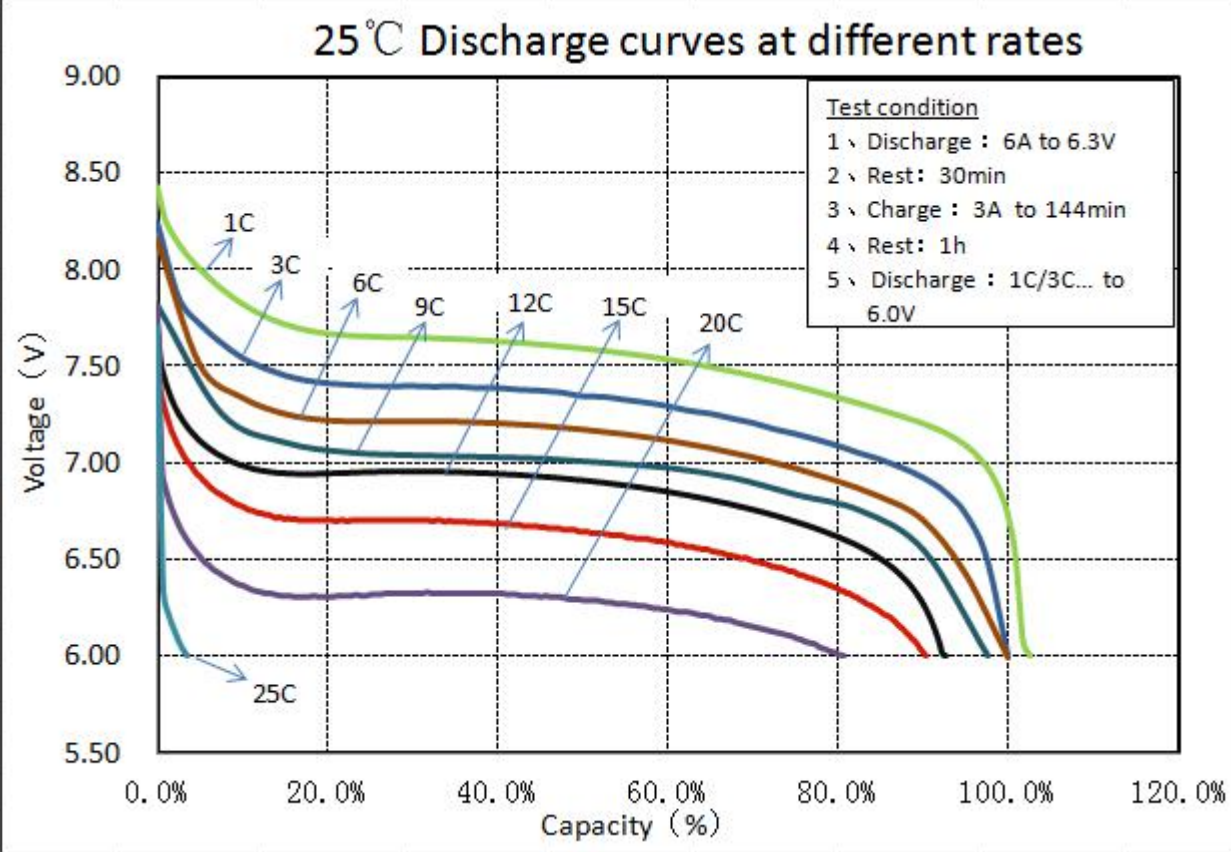
No.	Battery parameters	Test Method	Standard
1	Appearance	Visually check the appearance of the battery under good light conditions.	Neatly arranged, reliable and clearly marked. Free from cracks, scars.
2	Vibration Resistance	Fixed the battery module to the vibration test stand, Perform a linear scan vibration test according to the following conditions: ——Direction of vibration: single vibration ups and down; ——Vibration frequency: 10Hz~55 Hz; ——Max Acceleration: 30m/s ² ; ——Vibration Time: 3h.	No deformation and no leakage
3	Over discharge Test	1、 Charge according to standard charging method; 2、 Discharge with 6A current (If there is an electronic protective line, the discharge electronic protection line shall be removed temporarily) discharge 90min; 3、 Observe 1h.	No explosion, no catching fire, or no leakage.
4	Overcharge Test	1、 Charge by standard charging method; 2、 Charge 1H with 6A current; 3、 Observe 1h.	No explosion or no catching fire.
5	Short-circuit Test	1、 Charge by standard charging method; 2、 External Short-circuit the battery 10min, and the external line resistance should be less than 5mΩ; 3、 Observe 1h.	No explosion or no catching fire.
6	Heating Test	1、 Charge by standard charging method; 2、 The temperature chamber is heated from room temperature to 85 + 2 DEG C at a rate of 5/min, and the heating is stopped after 2h;	No explosion or no catching fire.
7	Extrusion Test	1、 Charge by standard charging method; 2、 Extrusion direction: perpendicularly pressure to the battery monomer arrangement direction 3、 Extrusion plate form: The radius of the 75mm half cylinder, the length of the semi cylinder (L) is greater than the size of the extruded battery; 4、 Extrusion speed: (5±1) mm/s; 5、 Extrusion degree: the voltage reaches 0V or the deformation amount reaches 30%, or the extrusion pressure reaches 200KN, then stop extruding; 6、 Observe 1h.	No explosion or no catching fire.
8	Acupuncture Test	1、 Charge by standard charging method; 2、 With high temperature resistant steel than 6mm ~ 10mm in diameter (tip cone angle of 45 degrees to 60 degrees, smooth surface, needle without rust, oxide layer and oil), with 25 + 5mm/s speed, from the vertical to the battery plate direction, turn through at least 3 monomer; 3、 Observe 1h.	No explosion or no catching fire.

五、 PERFORMANCE CHART

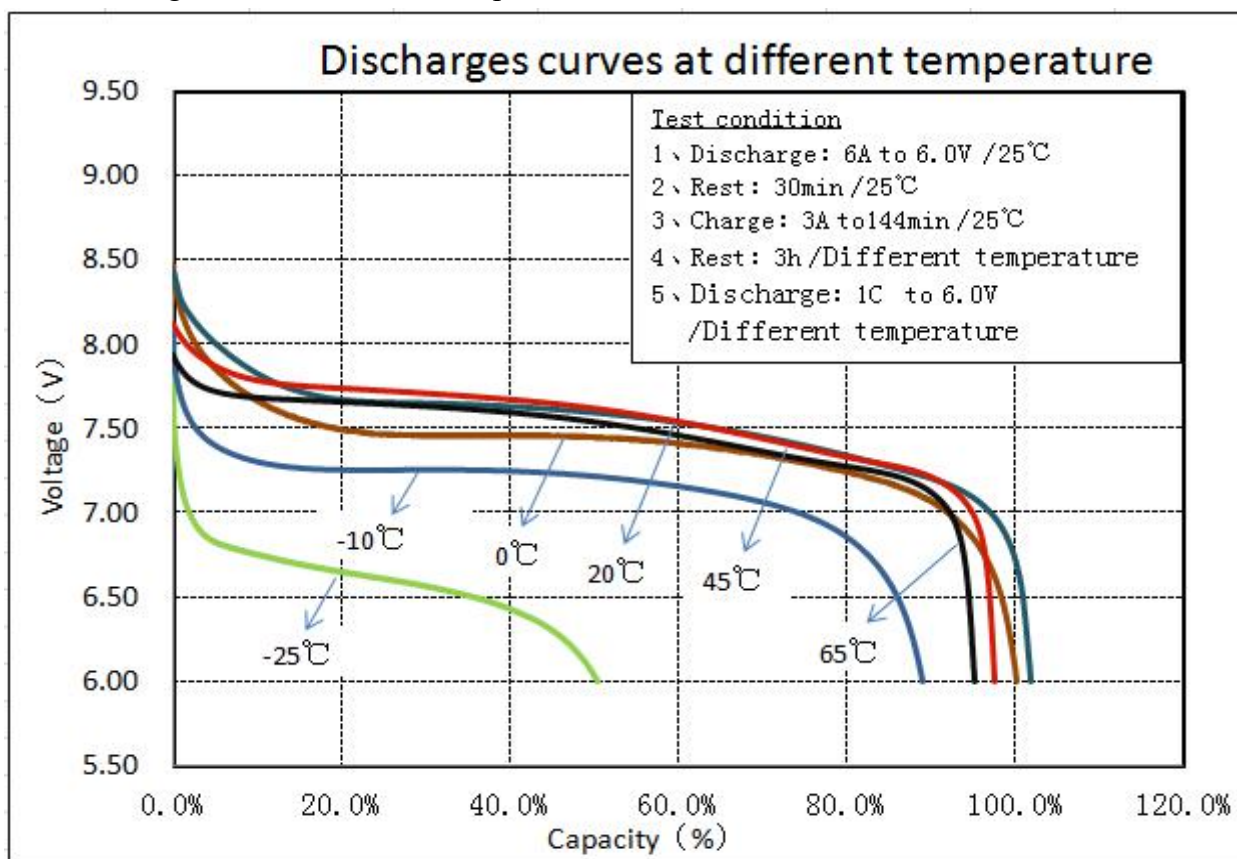
5.1、 Charging curve at normal temperature



5.2、 Discharge curves at different rates



5.3、 Discharge curves at different temperature



六、 CONFIGURATION AND DIMENSIONS (mm)

See attached sheet

七、 EXTERNAL APPEARANC

No scars, rust, discoloration, leakage and deformation.

八、 GUARANTEE

Product fabrication and material defects are guaranteed within 2 years.

Recommendations: the company's products have been filled 30-90% power in the factory, depending on the shipping distance and packing conditions. When capacity measurement, discharge with 1C to 6.3V/ pcs; Then charge/discharge with the specified current to test capacity. If the stock reach or exceed 2 months, discharge with 1C to 7.2V/ pcs; Then charge with 1C for 54min, 0.2C charge for 1hrs, rest 20min, discharge with 1C to 6.3V/ pcs, after 3 cycles; Then charge/discharge with the specified current to

test capacity.

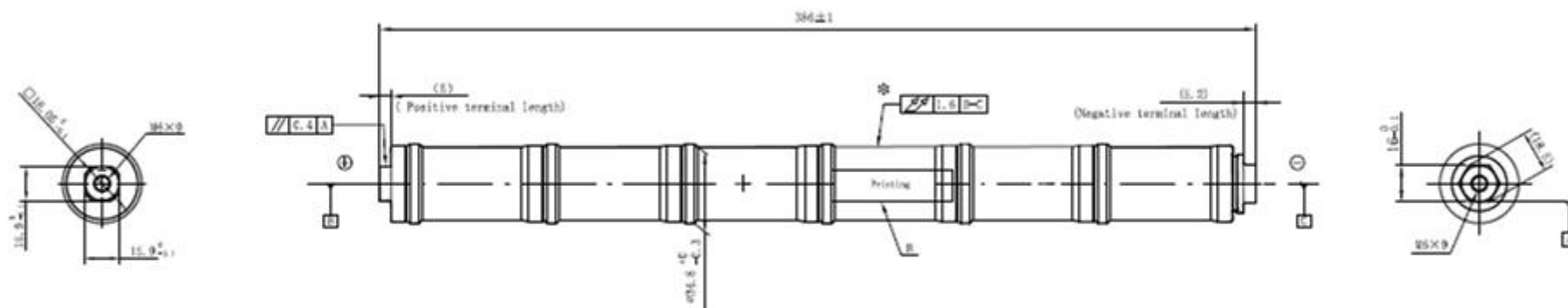
For the first use, the standard charge method is recommended to avoid damage to the battery.

九、 CAUTION

1. When charging the battery, please charge in accordance with the charging method in the technical manual. use the specified charger in the specified temperature range. Do not reverse charge, do not exceed the required charging current, and do not exceed the required charging time.
2. Do not charge only with limited voltage and limited current.
3. Do not put the battery into the fire or heating it.
4. Do not connect the positive and negative pole with conductive substances such as metals.
5. Do not dissect the battery.
6. Do not refit or damage batteries.
7. Do not solder battery.
8. Do not contacting the battery with water, sea water, or other oxidants.
9. Do not hit, puncture or shock battery.
10. Do not use batteries inconsistent with the equipment.
11. The inside strong alkali with high corrosiveness may burn people. If alkali is hitting eyes, skin or clothing, please drastically clean it with tap water or other clean water and get medical treatment straight away.
12. If the battery does not work properly in the equipment, please refer to the equipment warning and use manual.

13. When the battery is out of use, please make sure the switch is off, otherwise, it may cause leakage. When the battery is not used for a long time, make sure the battery is open circuit that the positive and negative poles are completely disconnected from other devices. When the battery with the charging device is in storage, ensure that the static current of the charging device is very small (recommended less than $5\mu\text{A}$), prevent the loop of the battery and the charging device. The battery be over discharged for a long time shall result in liquid leakage, disable to charge, and it is difficult to restore the performance.
14. Battery mixing is strictly prohibited neither with different charged states for the similar batteries nor for a dry cell, other battery of different sizes, or brands.
15. When two or more similar batteries are used together, the state must be the same.
16. Stop using the new battery immediately if it is found to be alkaline, fever or other abnormalities occur. Please wipe it with a soft dry cloth if there is dirt in the battery. Prevent battery from contact with equipment, leakage or useless.
17. Batteries must be stored or used in a specified, dry, heat dissipating environment.(According to the specification, the long-term storage temperature of the battery is $-20^{\circ}\text{C}\sim 35^{\circ}\text{C}$). Storage or use of batteries should be placed in an special area. No other articles around, especially flammable or explosive articles.
18. No baby or child is allowed to remove the battery from the charger or equipment. during charging or use.
19. Batteries do not use for a long time, need to activate 1 times every 3 months; activation methods need to communicate with manufacturers.

*** Note: If the above regulations are violated, battery leakage, fever, explosion, fire, battery performance degradation or shortened life may occur.**



Printing

NI-MH D 7.2V 6000mAh

Det:B (3:1)

(Note)

1. Please fasten the terminal when screwing the screw;
2. Tighten the bolt with the 6 ± 0.1 N / M torque wrench;
3. Note the positive and negative sign when using \oplus \ominus ;
4. The specific size in use needs further discussion.



Concept diagram of module eccentricity measurement

Method for the determination of degree of eccentricity (part):

1. On both sides of the terminal, the screw is secured with a clip to take the center line;
2. the rotating module, contact position measuring gauge icon at;
3. The measured values are calculated according to the following formula:

$$\frac{\text{Max} - \text{min}}{2}$$