

# Product Specification

Product Model: Nickel-Metal Hydride Battery

Product Type: J-4/5A2000

Draw up: Technical Department

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1、SCOPE

This specification governs the performance of the following **JJJ** Nickel-Metal Hydride cylindrical cell and its stack-up battery.

JJJ Model: 4/5A2000

Cell Size: 4/5Acrew cut(16.6±0.1×42.1±0.5)mm

2、DATA OF STACK UP BATTERIES

All data involve voltage and weight of stack-up batteries are equal to the value of unit cell multiplied by the number of unit cell which consisted in the stack-up batteries

Example : Stack-up batteries consisting three unit cells

Nominal voltage of unit cell=1.2V

Nominal voltage of stack-up batteries =1.2V×3=3.6V

3、RATINGS

Description	Unit	Specification	Condition
Nominal Voltage	V/cell	1.2	Unit cell or stack-up batteries
Minimum Capacity	mAh	1950	Standard Charge/Discharge
Nominal Capacity	mAh	2000	Standard Charge/Discharge
Standard Charge	mA	200 (0.1C)	T <sub>1</sub> =20±5℃(See Note 1)
	hour	16	
Fast Charge	mA	1000 (0.5C)	- Δ V=0~5mV/cell , Timer Cutoff=120%nominal capacity , Temp.Cutoff=55℃, dT/dt=0.8℃/min, T <sub>1</sub> =20±5℃
	hour	2.4 approx (See Note 2)	
Trickle Charge	mA	(0.03C)~(0.05C)	T <sub>1</sub> =20±5℃
Standard discharge	mA	400 (0.2C)	T <sub>1</sub> = 20±5℃ Humidity: Max.85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	℃	-20~25	Within 1 year*
		-20~35	Within 6 months
		-20~45	Within 1 month
		-20~55	Within 1 week
Typical Weight	Gram	34.0	unit cell

\*To keep the best performance for those not used for a long time,we recommend to charge the cells/batteries at least 30% after discharge entirely in every 6 months.

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## 4、 PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature :  $20\pm 5^{\circ}\text{C}$

Relative Humidity :  $65\pm 20\%$

Notes: Standard Charge/Discharge conditions:

Charge: 200 mA(0.1C)× 16 hours

Discharge: 400 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
Capacity	mAh	$\geq 1950$	Standard Charge/ Discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V	$\geq 1.25$	Within 1 hour after standard charge	
Internal Impedance	m $\Omega$	$\leq 30$	Upon fully charged(1KHz)	
High Rate Discharge(1C)	min	$\geq 51$	Standard Charge, 1 hour rest before discharge by 1C to 1.0V/cell	up to 3 cycles are allowed
Charge Retention	mAh	$\geq 1200$ (60%)	Standard Charge,Storage: 28 days Standard Discharge	$T_1=20\pm 5^{\circ}\text{C}$
IEC Cycle Life	Cycle	$\geq 500$	IEC61951-2(2003)7.4.1.1	see Note 3
Leakage		No leakage nor deformation	Fully charged at : 200 mA for 48 hrs	
Vibration Resistance		Change of voltage should be less than 0.02V/cell,Change of impedance should be less than 5 milli-ohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after vibration,amplitude 1.5mm,vibration 3000 CPM,any direction for 60mins.	
Impact Resistance		Change of voltage should be less than 0.02V/cell,change of impedance should be less than 5 milli-ohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after dropped,height 50 cm wooden board(thickness 30mm)direction not specified,3 times.	

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5、CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

6、EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage or deformation.

7、WARRANTY

One year limited warranty against workmanship and material defects.

8、CAUTION

[1]Reverse charging is not acceptable.

[2]Charge before use. The cells/batteries are delivered in an uncharged state.

[3]Do not charge/discharge with more than our specified current.

[4]Do not short circuit the cell/battery Permanent damage to the cells/batteries may result.

[5]Do not incinerate or mutilate the cells/batteries.

[6]Do not solder directly to the cells/batteries.

[7]The expected life may be reduced if the cells/batteries are subjected to adverse conditions as:  
extreme temperature, deep cycling, excessive overcharge/ over-discharge.

[8]Store the cells/batteries in a cool dry place. Always discharge batteries before packing.

Notes:

[1] T<sub>1</sub>: Ambient Temperature.

[2] Approximate charge time from discharged state, for reference only.

[3] IEC61951-2(2003)7.4.1.1 Cycle Life:

Cycle No.	Charge	Rest	Discharge
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25C×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V/cell
50	0.1C×16h	1-4h	0.2C to 1.0V/cell
Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 h.			

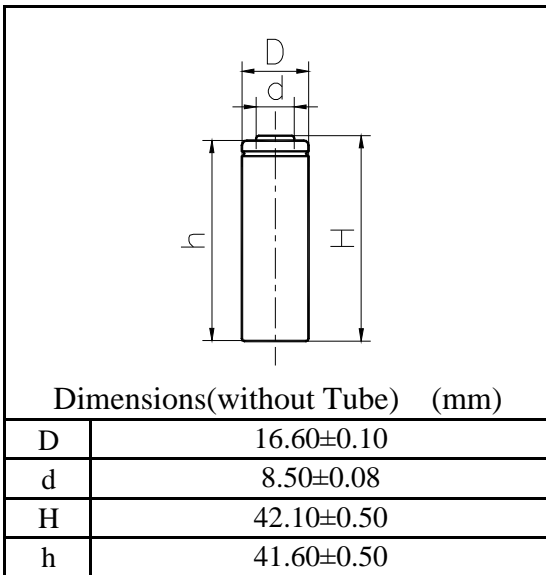
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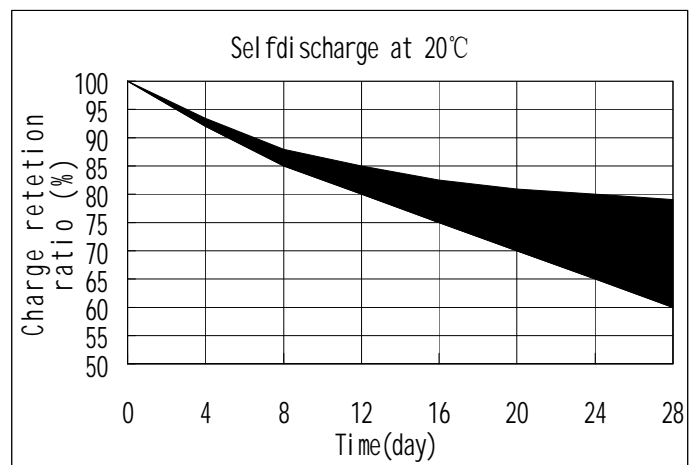
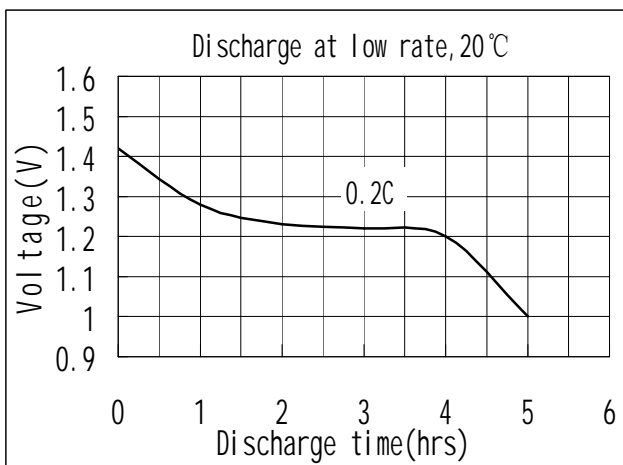
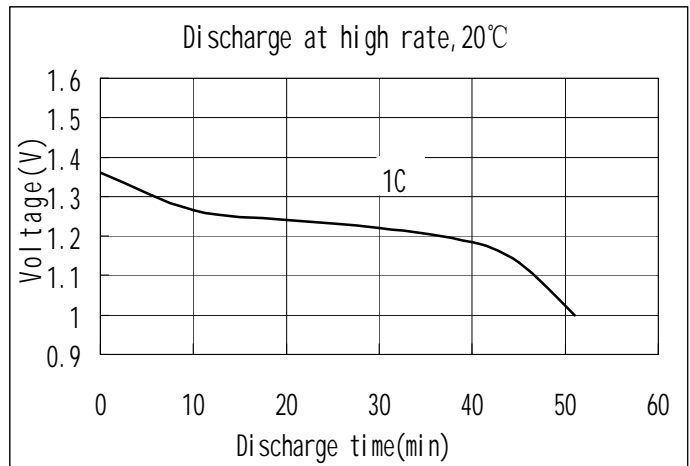
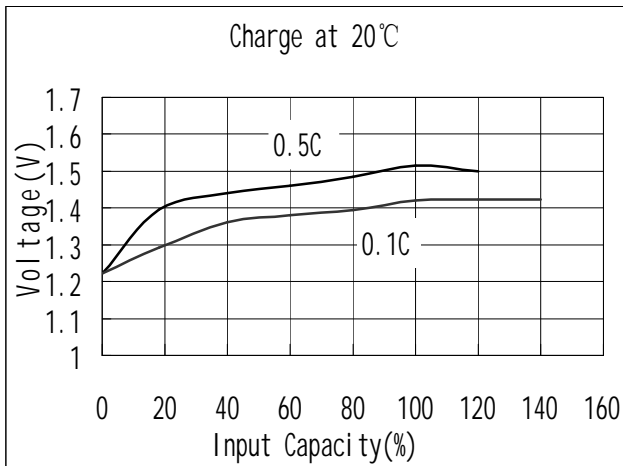
**MODEL No:** J-4/5A2000

**Description:** 2000 mAh SIZE NI-MH A



## Specification

Nominal Capacity		2000 mAh
Nominal Voltage		1.2 V
Charge current	Standard	200 mA
	Fast	1000 mA
Charge time	Standard	16 Hrs
	Fast	2.4 Hrs
Ambient Temperature	Charge	Standard Fast
	Discharge	0°C~45°C 10°C~45°C
	Storage	-20°C~60°C -20°C~55°C
Internal Impedance(m Ω ) (After Charge)		≤ 30
Weight		34.0 g



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