

# Product Specification

Product Model: Nickel-Metal Hydride Battery

Product Type: J-4/5SC2000P

Draw up: Technical Department

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**1 、 SCOPE**

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

JJJ Model: 4/5SC2000P

Cell Size: 4/5SC(22.0±0.1×32.5±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    | 1900                       | Standard Charge/Discharge   |
| Nominal Capacity          | mAh    | 2000                       | Standard Charge/Discharge   |
| Standard Charge           | mA     | 200 (0.1C)                 | T <sub>1</sub> =20±5°C(See Note 1)  |
|                           | hour   | 16                         |   |
| Fast Charge               | mA     | 1000 (0.5C)                | - ΔV=0~5mV/cell , Timer<br>Cutoff=120%nominal capacity ,<br>Temp.Cutoff=55°C , dT/dt=0.8°C/min,<br>T <sub>1</sub> =20±5°C |
|                           | hour   | 2.2 approx<br>(See Note 2) |   |
| Trickle Charge            | mA     | (0.03C)~(0.05C)            | T <sub>1</sub> =20±5°C  |
| Standard discharge        | mA     | 400 (0.2C)                 | T <sub>1</sub> = 20±5°C Humidity: Max85%  |
| Discharge Cut-off Voltage | V/cell | 1.0                        |   |
| Storage Temperature       | °C     | -20~25                     | Within 1 year*  |
|                           |        | -20~35                     | Within 6 months   |
|                           |        | -20~45                     | Within 1 month  |
|                           |        | -20~55                     | Within 1 week   |
| Typical Weight            | Gram   | 42                         | 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        | $\geq 1900$   | 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 $\Omega$ | $\leq 13$   | Upon fully charge(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 28days<br>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 5milliohm/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 5milliohm/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. |                               |
| Maximum continuous discharge current | A          | 10(5C)  |  |                               |
| Maximum momentary discharge current  | A          | 20(10C)   |  |                               |

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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. |               |      |                    |

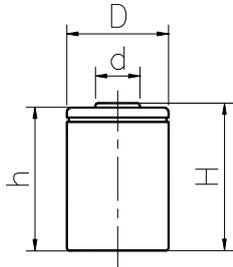
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**MODEL No:** J-4/5SC2000P

**Description:** 2000 mAh SIZE Ni-MH SC

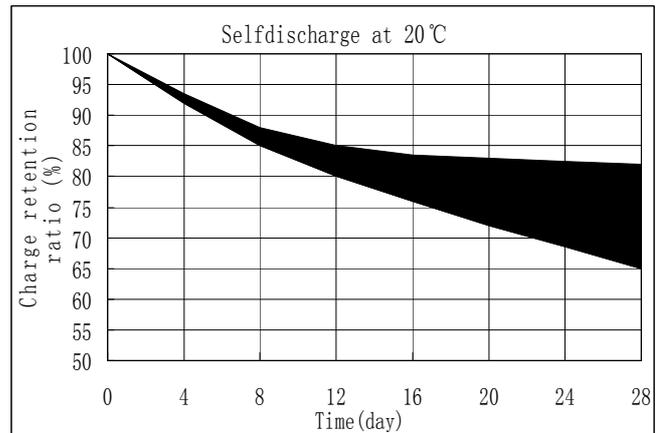
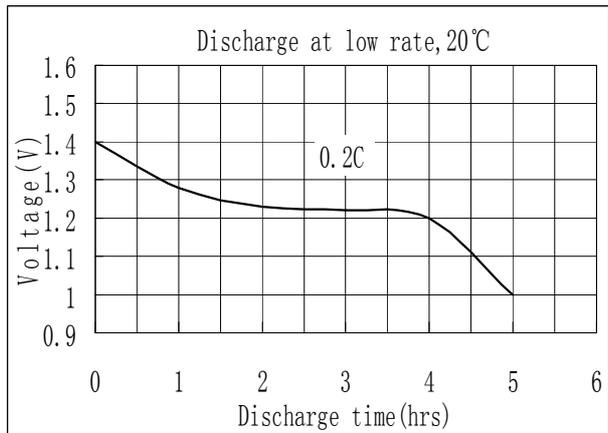
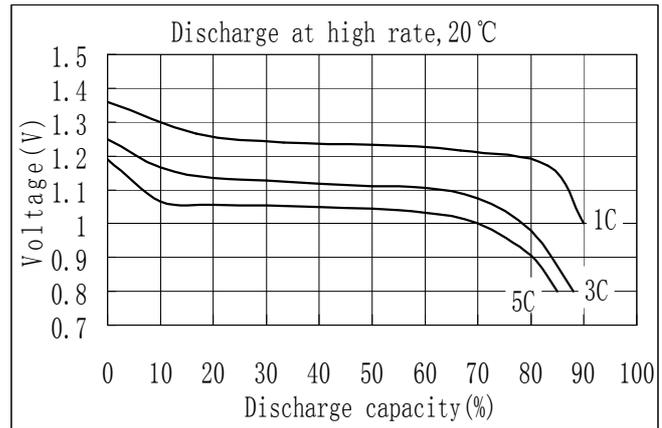
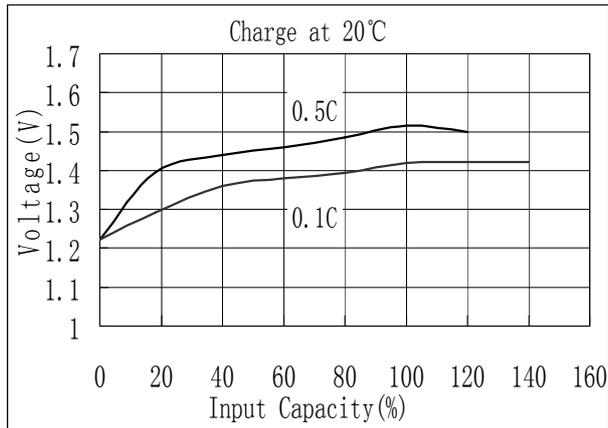


Dimensions(without Tube) (mm)

|   |            |
|---|------------|
| D | 22.00±0.10 |
| d | 10.00±0.08 |
| H | 32.50±0.50 |
| h | 32.00±0.50 |

## Specification

|  |           |          |            |
|--|-----------|----------|------------|
| Nominal Capacity                         |           | 2000 mAh |            |
| Nominal Voltage                          |           | 1.2 V    |            |
| Charge current                           | Standard  | 200 mA   |            |
|  | Fast      | 1000 mA  |            |
| Charge time                              | Standard  | 16 Hrs   |            |
|  | Fast      | 2.2 Hrs  |            |
| Ambient Temperature                      | Charge    | Standard | 0°C~45°C   |
|  |           | Fast     | 10°C~45°C  |
|  | Discharge |          | -30°C~60°C |
|  | Storage   |          | -20°C~55°C |
| Internal Impedance(mΩ)<br>(After Charge) |           | ≤ 13     |            |
| Weight                                   |           | 42 g     |            |



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