



golden power

KR4000D-HD

**TECHNICAL SPECIFICATION
FOR
SEALED Ni-CD CYLINDRICAL BATTERY**

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SPEC. NO. : S-KR4000D-HD-A

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The Manufacturer reserves the right to modify product specification and data stated herein without prior notice.

1. Scope

This specification applies to sealed nickel cadmium cylindrical rechargeable single cell, KR4000D-HD and stack up battery packs. All the data involving voltage and weight of stack up battery packs equal to the value of single cell times the number of single cell in the battery packs.

2. Cell Type

Golden Power Designation: KR4000D-HD
 Size: D
 IEC Designation: KRH 20

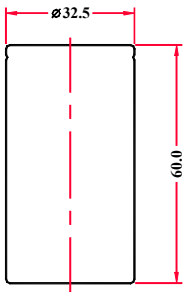
3. Rating

Nominal Voltage: 1.2V
 Nominal Capacity: 4000mAh
 Internal Impedance: Max. $\leq 4.5 \text{ m}\Omega$ (after fully charged)
Normal Charge Current: 400 mA (0.1C) at 0°C ~ 45°C
Normal Charge Duration: 14~16 hrs
Quick Charge Current: 2000 mA (0.5C) at 0°C ~ 45°C
Quick Charge Duration: 2.8 hrs
Trickle Charge Current: ~ NA ~
 Discharge Temperature: -20°C ~ 60°C

4. Physical Specification

The dimensions of a single sealed nickel cadmium cylindrical rechargeable cell, KR4000D-HD, are shown in Table I. The PVC jacket comes within these tolerances.

Table I. Dimensions of KR4000D-HD

Cell Drawing	Cell Dimensions (mm)	
 <p>The drawing shows a cylindrical cell with a diameter dimensioned as $\varnothing 32.5$ and a height dimensioned as 60.0. A dashed vertical line indicates the central axis of the cylinder.</p>	Diameter	$\varnothing 32.5$
	Height	60 mm
	Jacket	PVC
	Weight	142 g

5. Electrical Specifications

5.1 Charging procedure for test purpose

The cell shall be charged at an ambient temperature of $20\pm 5^{\circ}\text{C}$ at a constant current of **400mA (0.1C) for 15 hours.**

5.2 Discharging test

The cell shall be charged according to 5.1 prior the test, and shall be stored for not less than 1 hour and not more than 4 hours at an ambient temperature of $20\pm 5^{\circ}\text{C}$ and relative humidity of $65\pm 20\%$. At the same ambient temperature, the cell shall be discharged at various rate, and the available rated capacity shall meet the standard specified in *Table II.* within five cycles.

Table II. Discharge Test at 20°C

Constant Discharge Current	Constant Discharge Current Rate (C)	End Point Voltage (V)	Discharge Duration ¹⁾	Available Capacity (%) ¹⁾
800mA	0.2	1.0	5 hr	100
4000mA	1.0	1.0	54 min	90

¹⁾ Minimum Values

5.3 Charge retention

In the charge retention test, the cell shall be charged according to 5.1, and shall be stored in open circuit for 28 days at an average ambient temperature of $20\pm 5^{\circ}\text{C}$ and relative humidity of $65\pm 20\%$. After the storage, the cell shall be discharged at the same ambient temperature according to the *standard discharge* stated in 5.2. The capacity of the cell shall not be less than **3000mAh (75%).**

6. Storage Recommendation

The battery can be stored at a temperature range of $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ for normal storage and $-30^{\circ}\text{C} \sim 35^{\circ}\text{C}$ for prolonged storage, and at a maximum relative humidity of 85%.

7. Cycle Life

Cycle life test is a series of charge-discharge test cycles, and the cycle life is defined as the number of cycle tested until the available capacity drops down to 60% of nominal capacity. The cycle life of the cell shall not be less than 500.

8. Precautions

- Do not throw the cells / batteries into fire or attempt to disassemble them.
- Do not have direct spot welding to the cells / batteries.
- Do not short circuit the cells / batteries.
- Do not use same size primary batteries together with Ni-CD battery.
- Do not use discharged and charged Ni-CD batteries together.
- Keep Charging temperature and rate within our recommended limits.

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