



***Intec Industries Co., Ltd.***

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# SPECIFICATION

<b>Type:</b>	Ni-MH Cylindrical Cell
<b>Model No.:</b>	IMX-2000CsS
<b>Prepared:</b>	HML
<b>Approved:</b>	LFX
<b>Date:</b>	July 28, 2010



## 1. PREFACE

This specification applies to the Intec Nickel-Metal Hydride Cylindrical batteries or battery packs. Intec reserves the right to alter the product design or amend this specification without prior notice.

## 2. TYPE

This specification applies to the following sealed nickel-metal hydride battery.

Type: IMX-2000CsS

Size: 4/5 Cs

## 3. CHARACTERISTICS

- ★ Nominal voltage: 1.2 V.
- ★ Nominal capacity: 2000 mAh (0.2C)
- ★ Standard charge: 200 mA × 15h
- ★ Fast charge: 2000 mA × 1.2h (- Δ V = 5 mV).
- ★ Discharge cut-off voltage: 1.0 V/cell(20°C).
- ★ Max. current of constant discharge 13 A (20° C, unit cell)
- ★ Operating temperature range: (Max relative humidity: 85%)
  - Standard charge -10 ~ +50°C
  - Fast charge 0 ~ +45°C
  - Discharge -20 ~ +60°C
- ★ Storage temperature range: (Max relative humidity: 85%)
  - Within two years -20 ~ +30°C
  - Within six months -20 ~ +40°C
  - Within one month -20 ~ +50°C
  - Within one week -20 ~ +60°C

## 4. EXTERNAL DIMENSION/WEIGHT

4.1 Dimensions:  $\Phi 22.2^{+0.5}_{-0.5} \times 33.5^{+0.8}_{-0.5}$  (mm).

4.2 Gross weight: 46 (g).

## 5. CELL PERFORMANCE

### 5.1 TEST REQUIREMENTS

The following conditions are for new batteries (within one month after delivery under the test method of 5.2).

Environmental temperature: +15 ~ +25°C; Relative humidity: 45% ~ 85%.



## 5.2 TEST METHOD AND PERFORMANCES

### 5.2.1 APPEARANCE

The battery should be free from stretches, dirt, dents, and rusts.

### 5.2.2 CAPACITY

Charge with 0.1C for 15 hours then discharge with 0.2C to the end-voltage 1.0 V/unit, the capacity shall be more than 2000 mAh.

### 5.2.3 OPEN-CIRCUIT VOLTAGE

The open-circuit voltage within one hour after full charge shall be more than 1.25V/unit.

### 5.2.4 INTERNAL IMPEDANCE

Within one hour after full charge, the internal impedance shall be less than 12 m $\Omega$  /cell.

### 5.2.5 SELF-DISCHARGE

The capacity shall be more than 1400 mAh after the storage of 28 days for the fully charged battery.

### 5.2.6 OVER-CHARGE

The battery shall not cause salting, leakage or deformation when charged at 200 mA for 48 hours and the capacity shall be more than 2000 mAh.

### 5.2.7 OVER DISCHARGE

The battery shall not cause deformation when it is discharged for 24 hours with the external resistance at 0.2 $\Omega$ .

### 5.2.8 LIFE-SPAN

The capacity shall be more than 1400 mAh after 500 cycles with the test conditions as follow:

#### TEST CONDITION

Cycle-th	Charge	Rest	Discharge
1	Charge at 0.1C <sub>5</sub> for 15 hours	None	Discharge at 0.25C <sub>5</sub> for 2.33 h
2 ~ 48	Charge at 0.25C <sub>5</sub> for 3.17 hours	None	Discharge at 0.25C <sub>5</sub> for 2.33 h
49	Charge at 0.25C <sub>5</sub> for 3.17 hours	None	Discharge at 0.25C <sub>5</sub> to 1.0V/unit
50	Charge at 0.1C <sub>5</sub> for 15 hours	1 ~ 4 hours	Discharge at 0.2C <sub>5</sub> to 1.0V/unit

### 5.2.9 STORAGE

Within 14 days, the battery shall not cause leakage at 30-60°C with the relative humidity at 75%-85%.

### 5.2.10 VIBRATION

The battery shall not cause damage to its performances when tested with the amplitude at 4 mm (0.158 inch) and the frequency at 1000Hz.



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**5.2.11 DROP TEST**

The battery shall keep normal when dropped from a height of 450 mm (17.716 inch) to the wooden board.

**5.2.12 SHORT CIRCUIT**

The fully charged battery shall not explode when shorted directly by wires.

**5.2.13 INCORRECT POLARITY CHARGE**

Discharge at  $0.2C_5$  to the end voltage 0V, then discharge by force at  $1C_5$  rate for 60 minutes, and the battery should not explode or break.

**6. SUGGESTION & ADVICE**

- A. The end-voltage is recommended at  $1.0 \pm 0.1V/\text{cell}$ .
- B. The battery may go fail when shorted, over-charged or charged with incorrect polarity.
- C. Avoiding soldering directly to the battery.
- D. Do not dispose of in fire and keep away from damage.

**7. REFERENCE**

Please refer to Intec's Customer Service if there is any question on using batteries.



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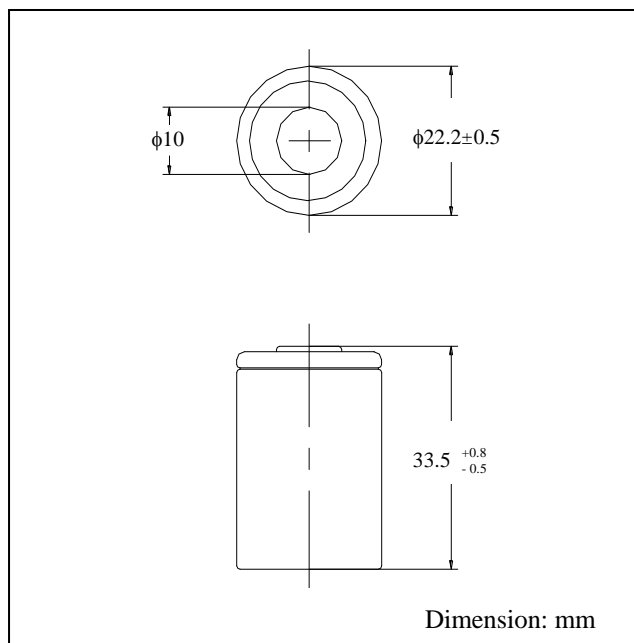
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## Specifications

<b>Nominal voltage</b>		<b>1.2V</b>	
<b>Capacity (mAh)</b>		<b>C/5</b>	<b>C</b>
	<b>Nominal</b>	<b>2000</b>	<b>1800</b>
	<b>Typical</b>	<b>2050</b>	<b>1840</b>
<b>Diameter</b>		<b>0.87±0.02 in</b> <b>22.2±0.5 mm</b>	
<b>Height</b>		<b>1.32<sup>+0.3</sup><sub>-0.2</sub> in</b> <b>33.5<sup>+0.8</sup><sub>-0.5</sub> mm</b>	
<b>Weight</b>		<b>46g</b>	
<b>Internal impedance at 1000Hz.</b>		<b>≤12mΩ</b> <b>(After charge)</b>	
<b>Charge</b>	<b>Standard</b>	<b>200mA × 15hrs.</b>	
	<b>Fast</b>	<b>2000mA × 1.2hrs.</b>	
<b>Ambient temperature</b>	<b>Charge</b>	<b>Standard</b>	<b>-10°C ~ 50°C</b>
		<b>Fast</b>	<b>0°C ~ 45°C</b>
	<b>Discharge</b>		<b>-20°C ~ 60°C</b>
	<b>Storage</b>		<b>-20°C ~ 45°C</b>

Note:

1. Nominal capacity, rated at C/5, 20°C.
2. Other capacities are for reference.
3. Weight and internal impedance are for reference.



## Typical characteristics

