



**Intec Industries Co., Ltd.**  
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# SPECIFICATION

<b>Type:</b>	Ni-MH Cylindrical Cell
<b>Model No.:</b>	IMX-3000Cs
<b>Prepared:</b>	CYL
<b>Approved:</b>	LFX
<b>Date:</b>	09 Jun, 2008



**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-3000Cs

Size:           Cs          

**3. CHARACTERISTICS**

- ★ Nominal voltage: 1.2 V.
- ★ Nominal capacity: 3000 mAh
- ★ Standard charge: 300 mA × 15h
- ★ Quick charge: 1400 mA × 2.4h (- Δ V= 5mV)
- ★ Trickle charge: 90 ~ 150 mA
- ★ Discharge cut-off voltage: 1.0 V/cell (20°C)
- ★ Max. current of constant discharge: 21 A (20°C, unit cell)
- ★ Operating temperature range: (Max. relative humidity: 85%)
  - Standard charge                    0 ~ +40°C
  - Trickle charge                    10 ~ +30°C
  - Quick charge                    10 ~ +30°C
  - Discharge                    -20 ~ +60°C
- ★ Storage temperature range: (Max. relative humidity: 85%)
  - Within two years                    -20 ~ +30°C
  - Within two months                    -20 ~ +40°C
  - Within one month                    -20 ~ +50°C
  - Within one week                    -20 ~ +60°C

**4. EXTERNAL DIMENSION/WEIGHT**

4.1 Dimensions: Φ22.5±0.5 × 42.2±0.8 mm

4.2 Gross weight: 51 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 cell should be free from stretches, dents, dirt 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 3000 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 25 mΩ /cell.

**5.2.5 SELF-DISCHARGE**

The capacity shall be more than 1800 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 300 mA for 48 hours and the capacity shall be more than 3000 mAh.

**5.2.7 OVER DISCHARGE**

The battery shall not cause deformation when it is discharged for 24 hours with the external resistance at 0.5Ω.

**5.2.8 LIFE-SPAN (CUSTOM)**

The capacity shall be more than 2100 mAh after 500 cycles with the test conditions as follow:

TEST CONDITION:

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

**5.2.9 LIFE-SPAN (EXPRESS)**

The battery shall supply 1800 mAh at the 400<sup>th</sup> cycle under the conditions as follows.

Charge	0.5C <sub>5</sub> for 144 minutes (- Δ V= <u>5</u> mV)
Discharge	1C <sub>5</sub> to 1.0V/cell



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**5.2.10 STORAGE**

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

**5.2.11 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.

**5.2.12 DROP TEST**

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

**5.2.13 SHORT CIRCUIT**

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

**5.2.14 INCORRECT POLARITY CHARGE**

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

**5.2.15 OVER CHARGE II**

The battery shall not explode when charged at 1C for 2 hours.

**6. CAUTIONS**

- A. The end-voltage is recommended at  $1.0 \pm 0.1V$ /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.



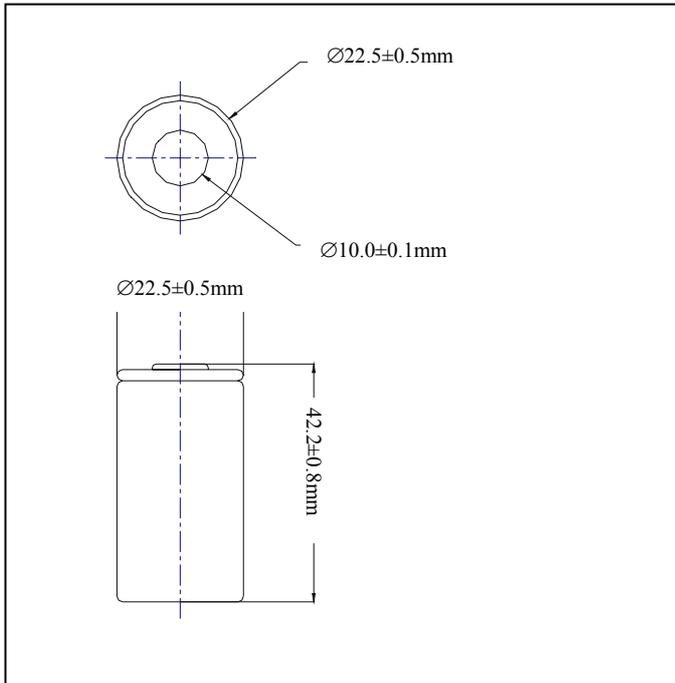
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**Specifications**

<b>Nominal voltage</b>		<b>1.2V</b>		
<b>Capacity (mAh)</b>		<b>C/5</b>	<b>C/2</b>	
	<b>Nominal</b>	<b>3000</b>	<b>2670</b>	
	<b>Typical</b>	<b>3150</b>	<b>2750</b>	
<b>Diameter</b>		<b>22.5 ± 0.5 mm</b>		
<b>Height</b>		<b>42.2 ± 0.8 mm</b>		
<b>Weight</b>		<b>51g</b>		
<b>Internal impedance at 1000Hz.</b>		<b>≤ 25mΩ (After charge)</b>		
<b>Charge</b>	<b>Standard</b>	<b>300mA × 15hrs</b>		
	<b>Quick</b>	<b>1400mA × 2.4hrs</b>		
	<b>Trickle</b>	<b>Max.</b>	<b>90mA</b>	
		<b>Min.</b>	<b>150mA</b>	
<b>Ambient temperature</b>	<b>Charge</b>	<b>Standard</b>	<b>0°C ~ 40°C</b>	
		<b>Quick</b>	<b>10°C ~ 30°C</b>	
	<b>Discharge</b>		<b>-20°C ~ 60°C</b>	
	<b>Storage</b>		<b>-20°C ~ 30°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**

