Intec Industries Co., Ltd.
Room 2703, Well Tech Centre,
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SPECIFICATION

Type:	Ni-MH Cylindrical Cell
Model No.:	IMH-13000F
Prepared:	HML
Approved:	LFX
Date:	May 12, 2011

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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: IMH-13000F
Size: F

3. CHARACTERISTICS

★ Nominal voltage: 1.2 V
★ Nominal capacity: 13000 mAh (0.2C)
★ Standard charge: 1300 mA×15h
★ Rapid charge: 3700 mA× 4 h (-ΔV= 10 mV)
★ Discharge cut-off voltage: 1.0 V/unit (20℃)
★ Max. current of constant discharge: 13 A (20℃,unit cell)
★ Operating temperature range: (Max. relative humidity: 85%)

Standard charge	0 ~ +45℃
Trickle charge	-10 ~ +35℃
Rapid charge	10 ~ +40℃
Discharge	-20 ~ +60℃

★ Storage temperature range: (Max. relative humidity: 85%)

Within two years	-20 ~ +25℃
Within two months	-20 ~ +35℃
Within one month	-20 ~ +40℃
Within one week	-20 ~ +60℃

4. EXTERNAL DIMENSION/WEIGHT

4.1 Max. Dimensions: Φ32.5 × 91.0 mm

4.2 Gross weight: 240 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℃. Relative humidity: 45% ~ 85%.

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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 16 hours then discharge with 0.2C to the end-voltage 1.0 V/unit, the capacity shall be more than 13000 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 IMPEDENCE
Within one hour after full charge, the internal impedance shall be less than 9 mΩ/cell.

5.2.5 SELF-DISCHARGE
The capacity shall be more than 9100 mAh after the storage of 28 days for the fully charged battery.

5.2.6 OVER-CHARGE I
The battery shall not cause salting, leakage or deformation when charged at 1300 mA for 48 hours and the capacity shall be more than 13000 mAh.

5.2.7 OVER DISCHARGE
The battery shall not cause deformation when it is discharged for 24 hours with the external resistance at 0.1Ω.

5.2.8 LIFE-SPAN (CUSTOM)
The capacity shall be more than 8450 mAh after 500 cycles with the test conditions as follow:

TEST CONDITION

Cycle	Charge	Rest	Discharge
1st	Charge at 0.1C_5 f or 16 hours	None	Discharge at 0.25C_5 for 2.33 h
2nd ~ 48th	Charge at 0.25C_5 for 3.17 hours	None	Discharge at 0.25C_5 for 2.33 h
49th	Charge at 0.25C_5 for 3.17 hours	None	Discharge to 1.0V/unit
50th	Charge at 0.1C_5 for 16 hours	1 ~ 4 hours	Discharge at 0.2C_5 to 1.0V/unit

5.2.9 STORAGE
Within 14 days, the battery shall not cause leakage at 30-60℃ 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

The battery shall not explode when charged at 1C for 2 hours with the polarity being reversed.

5.2.14 OVER CHARGE II

The battery shall not explode when charged at 1C for 1.2 hours.

6. CAUTIONS

A. The end-voltage is recommended at 1.0±0.1V/unit.

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.

E. Do not short circuit the cell.

F. Do not reverse charge the cell.

G. Do not transport the cell in fully charged state.

7. REFERENCE

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

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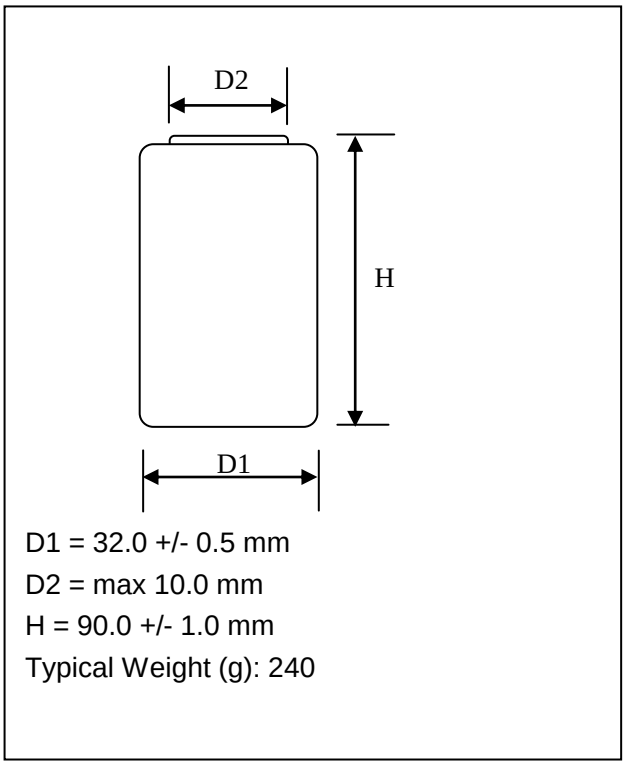
Specifications

Nominal voltage		**1.2V**	
Capacity (mAh)		**0.2C**	**C**
	Typical	**13000**	**11700**
Diameter		**32.0±0.5 mm**	
Height		**90.0±1.0 mm**	
Weight		**240g**	
Internal impedance at 1000Hz.		**9mΩ (After charge)**	
Charge	**Standard**	**1300mA×15hrs**	
	Rapid (-ΔV=10mV)	**3700mA×4hrs**	
Ambient temperature	**Charge** – **Standard**	**0℃～45℃**	
	Charge – **Rapid**	**10℃～40℃**	
	Discharge	**-20℃～60℃**	
	Storage	**-20℃～30℃**	

Note:

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



D1 = 32.0 +/- 0.5 mm
D2 = max 10.0 mm
H = 90.0 +/- 1.0 mm
Typical Weight (g): 240

Typical characteristics