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1. Scope

This specification is suitable for the performance of following UNITECH nickel-metal hydride cylindrical cell and its stack-up battery packs:

Model: H-D8500mAh Flat Cap

Size: D

The data involving nominal voltage and approximate weight of a battery pack shall be equal to the value of the unit cell multiplied by the number of unit cells in the battery pack. An example, for a battery pack which consisting of 3 cells:

Nominal voltage of unit cell = 1.2V

So, nominal voltage of the battery pack = 1.2V×3 = 3.6V

2 Ratings

Type: NI-MH	**Model:** D8500mAh Flat Cap	
Nominal Specifications	Nominal Capacity: 8500mAh	Nominal Voltage: 1.2V
	Standard Charge: 850mA×16h	Fast Charge: 1800mA×340min
	Trickle Charge: 255~425mA	Cut-off Voltage: 1.0V
Temperature Range	Standard Charge: 0 ~ 45℃	Fast Charge: 10 ~ 40℃
	Trickle Charge: 0 ~ 45℃	Discharge: -20 ~ 65℃
	Storage (Within one year) : -20~ 45℃	
Humidity Range	65±20%	
Approx Weight	170g	
Dimension (with tube)	Diameter(mm)	$33.0^{0}_{-1.0}$
	Height (mm)	$60.5^{0}_{-1.0}$
Appearance	There shall be no such defects as deformation, flaw, stain, discoloration or electrolyte leakage, which may adversely affect the commercial value of the battery.	

3.Performance and Test Methods

Unless special stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature: 20±5℃.

Ambient Humidity: 65±20%.

<table>
<tr><th>Test Item</th><th colspan="4">Test Conditions</th><th>Request</th></tr>
<tr><td>1. Standard Charge</td><td colspan="4">Charge is conducted continuously for 16 hours at the constant current of 850mA after pre-discharge at the constant current of 1700mA up to an cut-off voltage of 1.0V.</td><td></td></tr>
<tr><td>2.Open-circuit Voltage</td><td colspan="4">Voltage between terminals of the charged battery specified in item(1) is measured after rest for 1 hour.</td><td>⩾1.25V</td></tr>
<tr><td>3.Capacity</td><td colspan="4">Discharge time of the charged battery specified in item(1) is measured at 1700mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.</td><td>⩾300 minutes</td></tr>
<tr><td>4.Capacity (high-rate -discharge)</td><td colspan="4">Discharge time of the charged battery specified in item(1) is measured at 4250mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.</td><td>⩾110 minutes</td></tr>
<tr><td rowspan="6">5.Cycle Life</td><td>Cycles</td><td>Charge</td><td>Rest</td><td>Discharge</td><td rowspan="6">⩾500 cycles</td></tr>
<tr><td>1</td><td>0.1CmA×16h</td><td>None</td><td>0.25CmA×140min</td></tr>
<tr><td>2-48</td><td>0.25CmA×190min</td><td>None</td><td>0.25CmA×140min</td></tr>
<tr><td>49</td><td>0.25CmA×190min</td><td>None</td><td>0.25CmA to 1.0V/Cell</td></tr>
<tr><td>50</td><td>0.1CmA×16h</td><td>1-4h</td><td>0.2CmA to 1.0V/Cell</td></tr>
<tr><td colspan="4">Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3h.
Note: IEC 61436
0.1CmA=8500mA×0.1=850mA ,the rest may be deduced by analogy.</td></tr>
</table>

Test Item	Test Conditions	Request
6.Potential	Discharge time of the charged battery specified in item(1) is measured at 1700mA up to an cut-off voltage of 1.2V .	≥240 minutes
7.Internal Resistance	The battery is measured at 1KHz with charge state.	≤10mΩ
8.Over-charge	Charge is conducted continuously for 48 hours at 850mA after the capacity test specified in item(3).	No deformation and leakage
9.Over-discharge	Discharge is conducted with a 0.071Ω/cell load for 24 hours.	No external deformation
10.Self-discharge	The charged battery specified in item(1) is stored for 28 days at 20℃, and the discharge time is measured at 1700mA.	≥180 minutes
11.Storage	The capacity test conducted as specified in item(3) after the battery discharged with 1700mA and stored for 12 months under standard condition.	≥300 minutes
12.Humidity	The charged battery is stored for 10 days at 33±3℃ and 80±5% of relative humidity.	No electrolyte leakage
13.Safety Valve Operation	Forced discharge is conducted for 30 minutes at a constant current of 8500mA after pre-discharge at a constant current of 1700mA up to 0V.	Not explode or disrupt. *
14.External Short-circuit	The charged battery specified in item(1) is short-circuited for 1 hour.	Not explode. *
15.Drop Test	The battery is subjected to a drop, which has a height of 1m(39.3inches) to an oak board of 10mm or more thick in a voluntary axis respectively 3 times.	Mechanically and electrically normal
Note: * Electrolyte leakage and deformation of battery are acceptable.		

4. Configuration, Dimensions and Markings

Please refer to the attached drawings.

5. General Characteristics

Please refer to the attached drawings.

6. Suggestions & Cautions:

6.1 The cut-off voltage is recommended at 1.0±0.1V/cell.

6.2 Charge the batteries prior to use.

6.3 Don’t solder directly to the battery.

6.4 Don’t short circuit and reverse charge.

6.5 Do not dispose of in fire and keep away from damage.

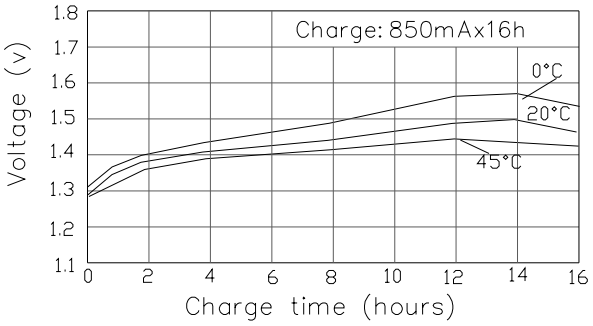
6.6 Store the batteries uncharged in a cool and dry place.

6.7 The batteries’ life may be reduced if they are subjected to adverse conditions such as: extreme temperature, deep cycling, excessive overcharge/discharge.

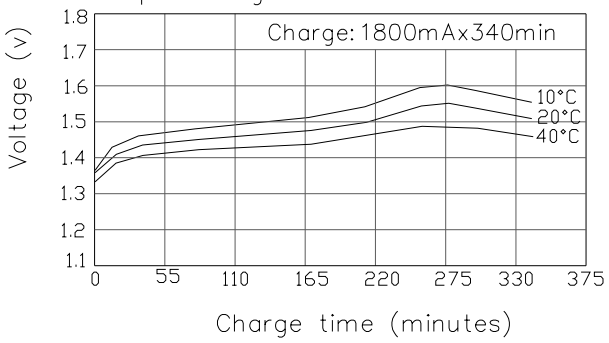
Product Name		Sealed Nickel Metal Hydride Cylindrical Rechargeable Battery
Model		H-D8500mAh
Nominal Voltage		1.2V
Nominal Capacity		8500mAh
Dimension (with tube)	Diameter	$33.0^{+0}_{-1.0}$
	Height	$60.5^{+0}_{-1.0}$
Approx Weight		170g
Internal Resistance at 1000Hz		⩽10mΩ (After charge)
Charge	Standard	850mA×16h
	Rapid	1800mAx340min
	Trickle	255~425mA
Discharge Cut-off Voltage		1.0V
Cycle Life		⩾ 500 Cycles
Ambient Temperature	Standard Charge	0°C to 45°C
	Rapid Charge	10°C to 40°C
	Trickle Charge	0°C to 45°C
	Discharge	-20°C to 65°C
	Storage	-20°C to 45°C
Ambient Humidity		65±20%

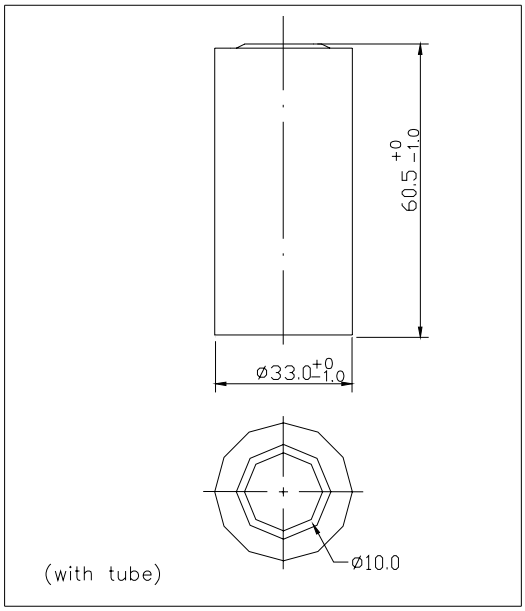
General Characteristics

Standard charge



Rapid charge





Discharge