



**XELLEX BATTERY (HK) LIMITED**

**XELLEX BATTERY & POWER SUPPLY TECH. CO., LTD.**

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**MH AAA 700 mAh \*1 (H)**

## **TECHNICAL SPECIFICATIONS**

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**The Technical Specifications hereinafter is only applicable to the Ni-Mh MH AAA700H \*1 type battery, which was provided by Xellex Battery Co., Ltd. All the practical technical data, which were used to describe Battery Performance involved in the Specifications are obtained from the relevant experiments to the products of Xellex. Rights reserved to take relevant rectifications or modifications to the structure and performance of the products without prior notice.**

## 1. Scope

This specification governs the performance of following Xellex Nickel Metal Hydride cylinder cell and its stack-up battery pack:

**Model: XELLEX-MH AAA700mAh\*1 (H)**

**Size: AAA**

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 cell in the battery pack. Examples, for a battery pack which consisting of three cells:

Nominal voltage of unit cell=1.2V

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

## 2. Dimensions

Diameter: 10.0±0.2mm

Height: 44.0±0.3mm

**3. Nominal Voltage:** 1.2V

**4. Typical Weight(unit cell):** 13.0g

**5. Nominal Capacity:** 700mAh (Standard Charge & Discharge)

## 6. Ratings

	Unit	Specifications	Conditions
Typical Capacity	mAh	<b>720</b>	Standard Charge & Discharge
Standard Charge	mA	<b>140(0.2C)</b>	T=0 ~ 50
	Hour	<b>7</b>	
Fast Charge	mA	<b>350(0.5C)</b>	-ΔV=5 ~ 15mV/cell Time Cutoff=120% Input capacity Temp Cutoff=55 T=10 ~ 50
	Hour	<b>2.4 Approx.</b>	
Trickle Charge	mA	<b>21 (0.03c) ~ 35 (0.05c)</b>	T=0 ~ 45
Discharge Cut-off Voltage	V/Cell	<b>1.0</b>	Unit Cell
Maximum Discharge Current	mA	<b>2100(3C)</b>	T=20 ~ 50
Storage Temperature		<b>-20 ~ 35</b>	Discharging State, Open Circuit

## 7. Performance and Test Methods

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

Ambient Temperature( ):20+5

Relative Humidity (%):65±20

Test Item	Test Conditions				Requirements																			
<p>( 1 ) Standard Charge &amp; Discharge</p> <p>(2) Open Circuit Voltage</p> <p>( 3 ) Capacity</p> <p>(4)Capacity ( High Rate Discharge )</p>	<p>Charge is conducted continuously for <b>7</b> hours at the constant current of <b>140mA</b> ,then discharge at the constant of <b>140mA</b> up to a cut-off voltage of <b>1.0V</b></p> <p>Voltage between terminals of the charged battery specified in item <b>(1)</b> is measured after rest for <b>1</b> hour.</p> <p>Discharge time of the charged battery specified in item <b>(1)</b> is measured at <b>140mA</b> up to a cut-off voltage of <b>1.0V</b> after rest for <b>30</b> 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.</p> <p>Discharge time of the charged battery specified in item <b>(1)</b> is measured at <b>700mA</b> up to a cut-off voltage of <b>1.0V</b> after rest for <b>30</b> 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</p>				<p>≥1.2V</p> <p>≥300minutes</p> <p>≥54 minutes</p>																			
<p>Cycle Life</p>	<table border="1"> <thead> <tr> <th>Cycle No.</th> <th>Charge</th> <th>Rest</th> <th>Discharge</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><b>70mA</b>×16h</td> <td>None</td> <td><b>175mA</b>×140min</td> </tr> <tr> <td>2-48</td> <td><b>175mA</b>×190min</td> <td>None</td> <td><b>175mA</b>×140min</td> </tr> <tr> <td>49</td> <td><b>175mA</b>×190min</td> <td>None</td> <td><b>175mA</b> to 1.0V/cell</td> </tr> <tr> <td>50</td> <td><b>70mA</b>×16h</td> <td>1-4h</td> <td><b>140mA</b> to 1.0V/cell</td> </tr> </tbody> </table>	Cycle No.	Charge	Rest	Discharge	1	<b>70mA</b> ×16h	None	<b>175mA</b> ×140min	2-48	<b>175mA</b> ×190min	None	<b>175mA</b> ×140min	49	<b>175mA</b> ×190min	None	<b>175mA</b> to 1.0V/cell	50	<b>70mA</b> ×16h	1-4h	<b>140mA</b> to 1.0V/cell			<p>≥500 cycles</p>
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<p>Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycles becomes less than 3h.</p> <p>Note: refer to IEC 61951-1 ( 2003 ) 7.4.1.1</p>																								

Test Item	Test Conditions	Requirements
Potential	Discharge time of the charged battery specified in item (1) is measured at <b>140mA</b> up to a cut-off voltage of <b>1.2V</b> .	≥240 minutes
Internal Resistance	The battery is measured at <b>1000Hz</b> with Fully Charged state.	≤40mΩ/cell
Overcharge	Charge is conducted continuously for <b>48</b> Hours at <b>70mA</b> after the capacity test Specified in item(4).	No deformation and leakage
Overdischarge	Discharge is conducted with a <b>0.8Ω/cell</b> Load for <b>24</b> hours.	No external deformation
Self-discharge	The charged battery specified in item(1) Is stored for <b>28</b> days at <b>20</b> ,then discharge at 130Ma up to a cut-off voltage of <b>1.0V</b> .	≥220 minutes
Storage	The capacity test conducted as specified In item(3) after the battery discharged With <b>140mA</b> and stored for <b>18</b> months under Standard condition.	≥300 minutes
Humidity	The charged battery is stored for <b>15</b> days At <b>33±3</b> and <b>80±5%</b> of relative humidity.	No electrolyte leakage
Safety Characteristics	Forced discharge is conducted for <b>30</b> Minutes at a constant current of <b>700mA</b> followed by a discharge at a constant Current of <b>140mA</b> up to <b>0V</b>	No explosion *
External Short-circuit	The charged battery specified in item(1) Is short-circuited for <b>1</b> hour.	No explosion *
Drop Test	The battery is subjected to a drop, which has a height of <b>150cm (59inches)</b> to an oak board of <b>10mm</b> or more thick in a voluntary axis respectively <b>3</b> times.	No leakage , No short-circuit, Mechanically and electrically normal
NOTE:* Electrolyte leakage and deformation of battery are acceptable.		

**8. General Characteristics and Charge Curve** ( Page 6)**9. Discharge Curve and Cycle Life** (Page 7)**10. Battery Dimensions** ( Page 7 )**11. Marking** : The following markings will be printed, stamped or impressed on the body  
of the battery :

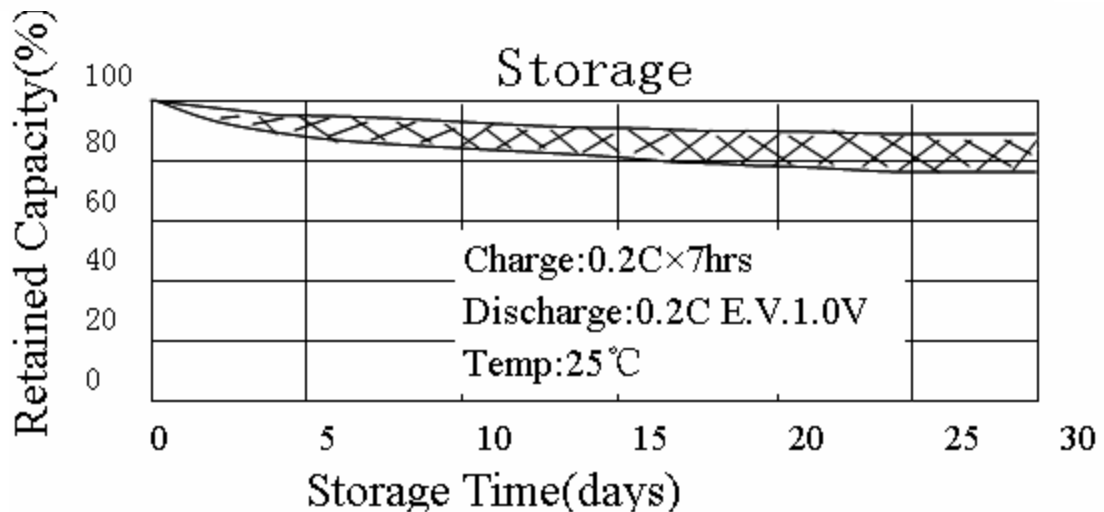
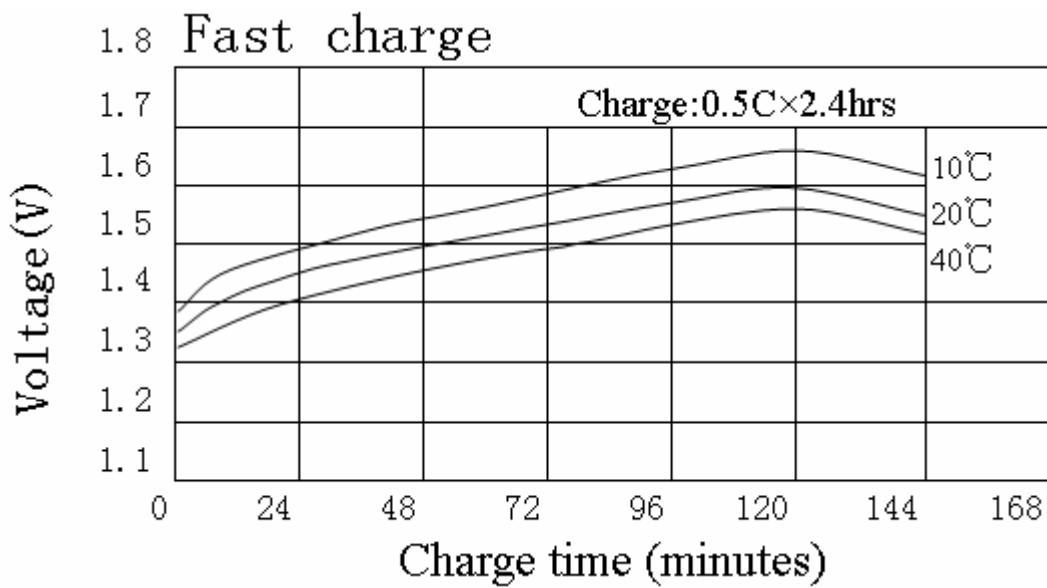
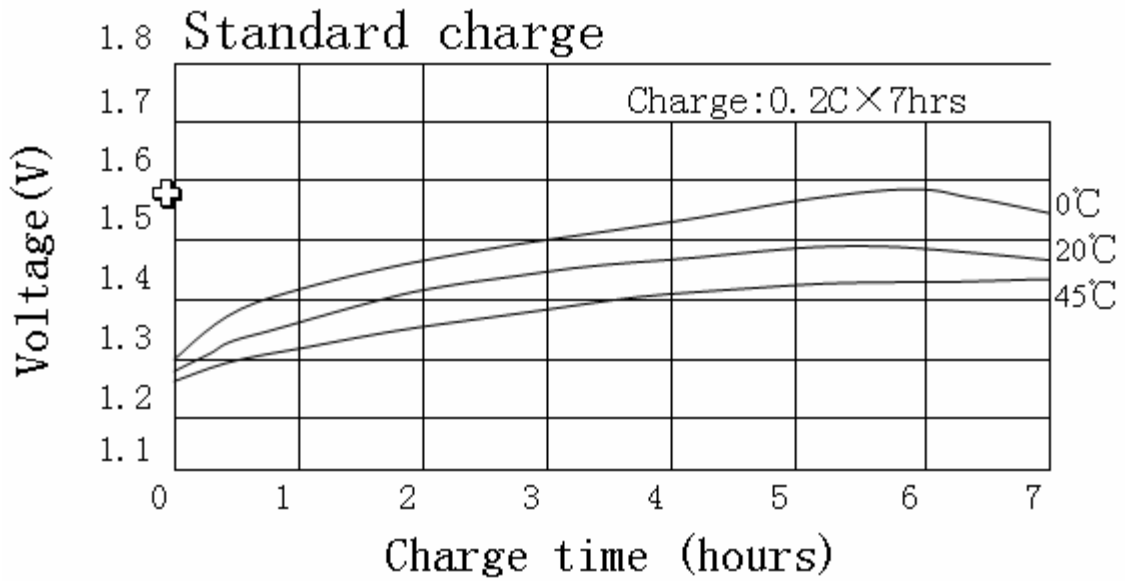
- ( 1 ) Designation : AAA700mAh
- ( 2 ) Manufacturer's name, abbreviation or brand : XELLEXX
- ( 3 ) Nominal Voltage : 1.2V
- ( 4 ) Polarity : " + " , " - "
- ( 5 ) Warning: Battery may explode or leak if recharged or disposed of in fire.

- ( 6 ) Icon  An Icon which indicates the battery can not be disposed of in the Rubbish Can.

**12. Cautions For Use**

- ( 1 ) The cut-off voltage is recommended at 1.0V/cell.
- ( 2 ) Charge "Xellex" batteries prior to use.
- ( 3 ) Don't solder directly to "Xellex" batteries.
- ( 4 ) The battery shall be installed with its "+" and "-" in the right position.
- ( 5 ) Do not dispose of in fire and keep away from damage.
- ( 6 ) Store "Xellex" batteries uncharged in a cool and dry place.
- ( 7 ) The batteries life may be reduced if they are subjected to adverse conditions such as: extreme temperature, deep cycling, excessive overcharge/discharge.

**Figures:**



**Figures:**

**Discharge Characteristics at 20°C**

