



**比亚迪股份有限公司**  
**BYD COMPANY LIMITED**

**SEALED METAL HYDRIDE**  
**RECHARGEABLE CELLS & BATTERIES**  
**APPROVAL SHEET**

**TO :** Steki-Impex Kft

**BYD MODEL NO :** H-AA2400A

**CUSTOMER APPROVED P/N :** \_\_\_\_\_

**DATE OF SUBMISSION :** 20-Mar-13

**ATTACHMENT :** SPECIFICATION

**TOTAL NO. OF PAGES :** 5

**SPECIFICATION NO :** S-HAA2400A01

**VERSION NO :** 1.0

Drawn	<b>ZONGQIANG-LU</b>	
Approved	Product Development Dept.1	JIANGUO-TANG
	Process Technology Dept	ZHENGYI-HUANG
	Quality Department	XIANCHANG-JIN

*(with company chop)*

*Please sign and return one copy to us*

**BYD COMPANY LIMITED**

ADD:BYD Scien-Tech Industrial Center Yan'an Road  
Kuichong, Longgang, Shenzhen China P.C.: 518119  
TEL: 86-755-89888888 FAX: 86-755-84202222  
E-Mail:byd@byd.com  
<http://www.byd.com.cn>

-Confidential. Please keep integrated.-

The content of this document is the property of BYD Company Limited. It is to be treated strictly confidential and is not to be disclosed, reproduced, or used in whole or in part without written consent.

**1. APPLICATION**

This specification applies to the Ni-MH batteries.

Model :           H-AA2400A          

**2. CELL AND TYPE**

2.1 Cell : Sealed Ni-MH Cylindrical Cell.

2.2 Type :           H-AA2400A          

2.3 Size type:           AA          

2.4 IEC type:           /          

**3. RATINGS**

3.1 Nominal voltage :           1.2           V

3.2 Nominal capacity :           2400           mAh/0.2CmA (Note 1)

3.3 Typical weight :           29           g (unit cell)\*

“\*”:Battery weight is only for reference.

3.4 Standard charge :           240           mA×15hours

3.5 Rapid charge :           2400mA×1.2hours(Max.)            
(with-ΔV, Time, Temperature control system)

Trickle current :           72~120           mA

3.6 Discharge cut-off voltage           1           V(0.2CmA)

3.7 Temperature range for operation (Humidity: Max. 85%)

Standard charge	0 ~ +45°C
Rapid charge	+10 ~ +40°C
Trickle charge	0 ~ +45°C
Discharge	-5 ~ +65°C

3.8 Temperature range for storage (Humidity: Max. 85%)

Within 1 years (Note 2)	-20 ~ +25°C
Within 6 months	-20 ~ +35°C
Within a months	-20 ~ +45°C
Within a week	-20 ~ +55°C

Note 1: Rated capacity figures are based on single cell performance.

Note 2: We recommend cells or batteries are charged after one cycle every 6 months.

**4. ASSEMBLY & DIMENSIONS**

Per attached drawing.

**5. PERFORMANCE****5.1 TEST CONDITIONS**

The test is carried out with new batteries.  
( within a month after delivery )

ambient conditions

Temperature : +20±5°C                      Humidity : 65±20%

Standard charge : 240mA(0.1C)×15hrs

Standard discharge : 0.2C to 1.0V

-Confidential. Please keep integrated.-

The content of this document is the property of BYD Company Limited. It is to be treated strictly confidential and is not to be disclosed, reproduced, or used in whole or in part without written consent.

## 5.2 TEST METHOD &amp; PERFORMANCE

Test	Unit	Specification	Conditions	Remarks	
Capacity	mAh	Typical	2400	Standard charge/discharge	up to 3 cycles are allowed
		Minimum	2200		
Open Circuit Voltage(OCV)	Voltage (V)	≥1.25	After 1 hour standard charge		
Internal impedance	mΩ/cell	≤25	Upon fully charge (1KHz)		
High rate discharge(1C)	minute	≥48(1920mAh)	Standard charge before discharge	End Voltage is 1.0V/Cell	
Overcharge		no leakage nor explosion	240 mA(0.1C) charge for 28 days		
Charge Retention	mAh	≥1560	standard charge; storage: 28 days Standard discharge		
Cycle Life	cycle	≥500	IEC61951-2	see note 3	
Leakage		no leakage nor deformation	Fully charge at 2400 mA(1C), then storage 14 days		

Note 3 cycle life

Cycle number	Charge	Rest	Discharge
1	0.1CmA for 16h	none	0.25CmA for 2.33h
2~48	0.25CmA for 3.17h	none	0.25CmA for 2.33h
49	0.25CmA for 3.17h	none	0.25CmA to 1.0V/cell
50	0.1CmA for 16h	1~4h	0.20CmA to 1.0V/cell

50-cycle test as per above table is repeated . The discharge time of the 100th, 200th, 300th, 400th, 500th should be more than 3 hours respectively. (Ambient temperature is 20±5)°C

Cells shall be mechanically and electrically normal after being subjected to a drop from a height of 450mm (17.716inches) onto an oak board in a voluntary axis respectively 3 times.

## 5.3 Humidity

The cells shall not leak during the 14 days when it is submitted to the condition of a temperature of 33±3°C and a relative humidity of 80±5% (salting is allowed).

-Confidential. Please keep integrated.-

The content of this document is the property of BYD Company Limited. It is to be treated strictly confidential and is not to be disclosed, reproduced, or used in whole or in part without written consent.

#### 5.4 Vibration

Cells shall be mechanically and electrically normal after vibration which has an amplitude of 4mm(0.1575 inches) a frequency of 1000 cycles per minute, which should be continued in any directions during 60 minutes

#### 5.6 Short

Cells shall not explode after 1 hour short-circuit test.

#### 5.7 Incorrect polarity charging

Cells shall not explode after 5 hour of incorrect polarity charging at 1 CmA.

### 6. PRECAUTION

6.1 We recommend you to set the cut-off voltage at 1.0V/cell.

6.2 If it is below 1.0V/cell, cells may have over-discharged or reverse charged.

6.3 Do not detect  $-\Delta V$  for first 5 minutes of charging.

6.4 The cells shall be delivered in charged condition, Before testing or using, the cells shall be correctly charged in accordance with this specifications.

### 7. WARNING

7.1 Avoid direct soldering onto cells.

7.2 Observe correct polarity when connecting.

7.3 Do not charge with more than our specified current.

7.4 Use only within the specified working temperature range.

7.5 Do not subject cells or batteries to mechanical shock.

7.6 Do not mix cells of different manufacture, capacity, size or type within a battery.

7.7 Seek medical advice immediately if a cell or battery has been swallowed.

7.8 When disposing of secondary cells or batteries, keep cells or batteries of different electro-chemical systems separate from each other.

7.9 Do not maintain secondary cells and batteries on charge when not in use.

8.0 After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance

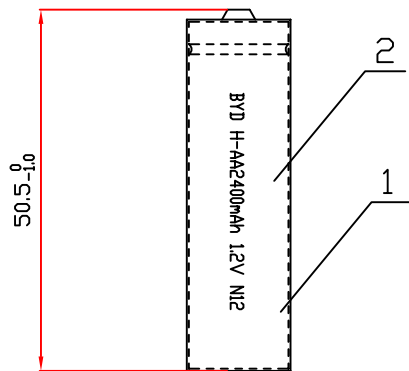
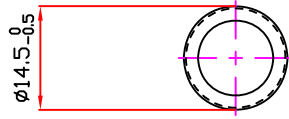
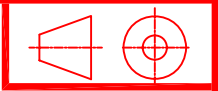
8.1 In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes.

If contact has been made, wash the affected area with copious amounts of water and seek medical advice

8. The product can meet the HSF requirement.

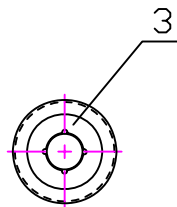
-Confidential. Please keep integrated.-

The content of this document is the property of BYD Company Limited. It is to be treated strictly confidential and is not to be disclosed, reproduced, or used in whole or in part without written consent.



DATE CODE:

N 12  
Year(2013) Week(12)



NO.	NAME	SIZE	QTY	NOTE	SAP NO
3	WASHER	AA	1	WHITE	429950
2	PVC	23.5X54	1	GREEN U	433885
1	CELL	AA	1	NI-MH	



比亚迪股份有限公司  
BYD COMPANY LIMITED

DRAWN	ZONGQIANG-LU	DATE	2013/03/20
CHECKD	GUOQING-LI	DATE	2013/03/20
APPROVED	ZHENGYI-HUANG	DATE	2013/03/20
SCALE	/	UNIT	MM