



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

TO : Hilltronic

BYD MODEL NO. H-AA1200B×2

CUSTOMER APPROVED P/N : _____

DATE OF SUBMISSION : 23-APR-05

ATTACHMENT : SPECIFICATION

TOTAL NO. OF PAGES : 5

SPECIFICATION NO. : S-HAA1200HA02

VERSION NO. : 2.0

Drawn	WANG-JIAN	
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(with company chop)

Please sign and return one copy to us

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1. APPLICATION

This specification applies to the Ni-MH batteries.

Model : H-AA1200B×2

2. DATA OF STACK UP BATTERIES

All data involves voltage and weight to stack up batteries are equal to the value of unit cell times the number of unit cell which consisted in the stack up batteries.

Example:

stack up battery consisting 2pcs unit cells.

Nominal voltage of unit cell=1.2V.

Nominal voltage of stackup batteries=1.2V×2=2.4V

3. CELL AND TYPE

3.1 Cell : Sealed Ni-MH Cylindrical Cell.

3.2 Type : H-AA1200B

3.3 Size type: AA

3.4 IEC type: HR15/49

4. RATINGS

4.1 Nominal voltage : 2.4 V

4.2 Nominal capacity : 1200 mAh/0.2CmA (Note 1)

4.3 Typical weight : 25 g (unit cell)

4.4 Standard charge : 120 mA×15hours

4.5 Rapid charge : 1200mA×1.1hours(Max.)

(with-ΔV, Time, Temperature control system)

Trickle current : 36~60 mA

4.6 Discharge cut-off voltage : 2 V

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

Standard charge 0~ +45°C

Rapid charge +10~ +40°C

Trickle charge 0~ +45°C

Discharge -20~+ 65°C

4.8 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 weeks -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.

5. ASSEMBLY & DIMENSIONS

Per attached drawing.

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6. PERFORMANCE**6.1 TEST CONDITIONS**

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

ambient conditions

Temperature : +20±5℃

Humidity : 65±20%

Standard charge :120mA(0.1C)×15hrs

Standard discharge :0.2C to 2V

6.2 TEST METHOD & PERFORMANCE

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	Typical	Standard charge/discharge	up to 3 cycles are allowed
	mAh	Minimum		
Open Circuit Voltage(OCV)	Voltage (V)	≥ 2.5	After 1 hour standard charge	
Internal impedance	mΩ/cell	≤ 25	Upon fully charge (1KHz)	
High rate discharge(1C)	minute	$\geq 48(960\text{mAh})$	Standard charge before discharge	End Voltage is 1.0V/Cell
Overcharge		no leakage nor explosion	120 mA(0.1C) charge 28 days	
Charge Retention	mAh	≥ 780	standard charge; storage: 28 days Standard discharge	
Cycle Life	cycle	≥ 500	IEC61951-2	see note 3
Leakage		NO leakage nor deformation	Fully charge at 1200 mA(1C), then storage 14 days	
Welding Strength	Kgf	≥ 2	90° direction	

Note 3 IEC61951-2 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

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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)

6.3 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 $80\pm 5\%$ (salting is allowed).

6.4 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

6.5 Shock

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.

6.6 Short

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

6.7 Incorrect polarity charging

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

7. PRECAUTION

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

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

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

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

8. WARNING

8.1 Avoid direct soldering onto cells.

8.2 Observe correct polarity when connecting.

8.3 Do not charge with more than our specified current.

8.4 Use only within the specified working temperature range.

9. DANGER!

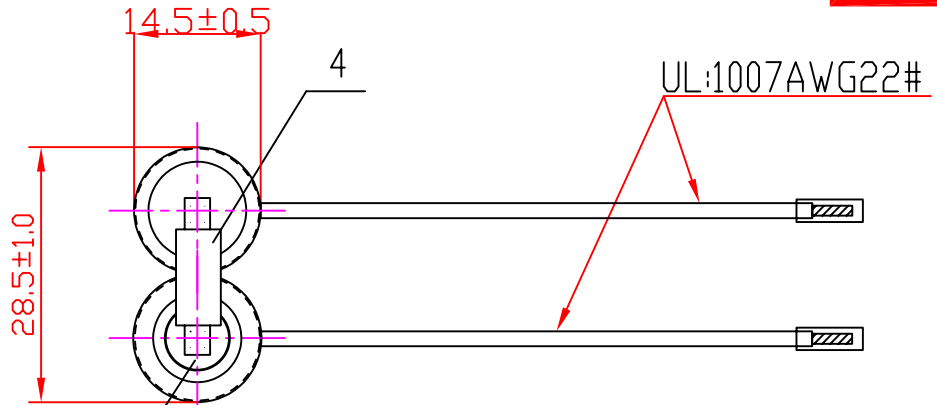
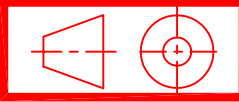
9.1 Avoid throwing cells into a fire or attempting to disassemble them. As the electrolyte inside is strong alkaline and can damage skin and clothes.

9.2 Avoid short circuiting. It may be leakage.

9.3 Not to be used in sealed conditions for Ni-MH cells.

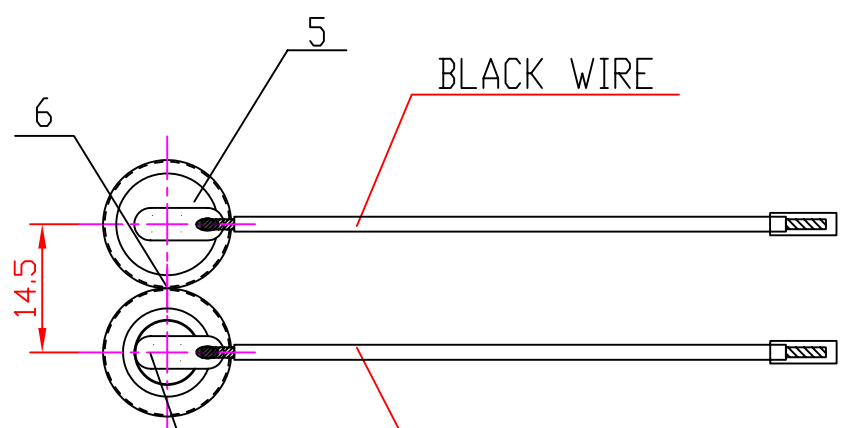
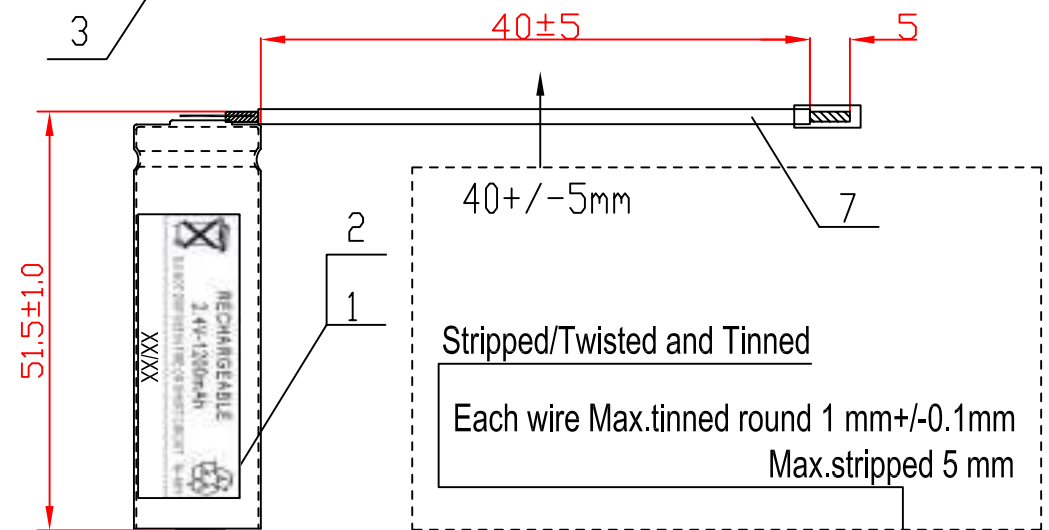
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SIZE: 35x7mm

LABEL



XX/XX
WEEK YEAR

4 welding spots contacted on the battery

7	WIRE		2	UL1007AWG22#
6	GLUE(201)		1	
5	TERMINAL	11X4X0.15	2	
4	PTC	LP120	1	
3	INSULATION PLATE		2	WHITE
2	SHINKAGE SLEEVE		2	GREEN
1	CELL		2	Ni-MH
NO.	NAME	SIZE	QTY	NOTE

BYD BYD COMPANY LIMITED			
DRAWN	WANG-JIAN	DATE	2005/04/23
CHECKD	ZHIJIAN-LI	DATE	2005/04/23
APPRVD	WEIHUA-LIU	DATE	2005/04/23
SCALE		UNIT	MM