

Product Specification

Product Model: Nickel-Metal Hydride Battery

Product Type: 2/3AA650

Draw up: Technical Department

Date: 2010-11-18

AA Portable Power Corp.

Document Title: Product Specification of Ni-MH 2/3AA650

Revision: 4.2

1、SCOPE

This specification governs the performance of the following Nickel-Metal Hydride cylindrical cell and its stack-up battery.

Model: 2/3AA650

Cell Size: 2/3AAcrew cut(13.9±0.1×28.1±0.5)mm

2、DATA OF STACK UP BATTERIES

All data involve voltage and weight of stack-up batteries are equal to the value of unit cell multiplied by the number of unit cell which consisted in the stack-up batteries

Example : Stack-up batteries consisting three unit cells

Nominal voltage of unit cell=1.2V

Nominal voltage of stack-up batteries =1.2V×3=3.6V

3、RATINGS

Description	Unit	Specification	Condition
Nominal Voltage	V/cell	1.2	Unit cell or stack-up batteries
Minimum Capacity	mAh	650	Standard Charge/Discharge
Nominal Capacity	mAh	650	Standard Charge/Discharge
Standard Charge	mA	65 (0.1C)	T ₁ =20±5°C(See Note 1)
	hour	16	
Fast Charge	mA	650 (1C)	- ΔV=0~5mV/cell , Timer Cutoff=120%nominal capacity , Temp.Cutoff=55°C, dT/dt=0.8°C/min, T ₁ =20±5°C
	hour	1.2 approx (See Note 2)	
Trickle Charge	mA	(0.03C)~(0.05C)	T ₁ =20±5°C
Standard discharge	mA	130 (0.2C)	T ₁ = 20±5°C Humidity: Max.85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	°C	-20~25	Within 1 year*
		-20~35	Within 6 months
		-20~45	Within 1 month
		-20~55	Within 1 week
Typical Weight	Gram	13.5	unit cell

*To keep the best performance for those not used for a long time,we recommend to charge the cells/batteries at least 30% after discharge entirely in every 6 months.

4、 PERFORMANCE

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

Ambient Temperature : $20\pm 5^{\circ}\text{C}$

Relative Humidity : $65\pm 20\%$

Notes: Standard Charge/Discharge conditions:

Charge: 65 mA(0.1C)× 16 hours

Discharge: 130 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
Capacity	mAh	≥ 650	Standard Charge/ Discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V	≥ 1.25	Within 1 hour after standard charge	
Internal Impedance	m Ω	≤ 38	Upon fully charged(1KHz)	
High Rate Discharge(1C)	min	≥ 51	Standard Charge, 1 hour rest before discharge by 1C to 1.0V/cell	up to 3 cycles are allowed
Charge Retention	mAh	≥ 390 (60%)	Standard Charge,Storage: 28 days Standard Discharge	$T_1=20\pm 5^{\circ}\text{C}$
IEC Cycle Life	Cycle	≥ 500	IEC61951-2(2003)7.4.1.1	see Note 3
Leakage		No leakage nor deformation	Fully charged at : 65 mA for 48 hrs	
Vibration Resistance		Change of voltage should be less than 0.02V/cell,Change of impedance should be less than 5 milli-ohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after vibration,amplitude 1.5mm,vibration 3000 CPM,any direction for 60mins.	
Impact Resistance		Change of voltage should be less than 0.02V/cell,change of impedance should be less than 5 milli-ohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after dropped,height 50 cm wooden board(thickness 30mm)direction not specified,3 times.	

5、 CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

6、 EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage or deformation.

7、 WARRANTY

One year limited warranty against workmanship and material defects.

8、 CAUTION

- [1]Reverse charging is not acceptable.
- [2]Charge before use. The cells/batteries are delivered in an uncharged state.
- [3]Do not charge/discharge with more than our specified current.
- [4]Do not short circuit the cell/battery Permanent damage to the cells/batteries may result.
- [5]Do not incinerate or mutilate the cells/batteries.
- [6]Do not solder directly to the cells/batteries.
- [7]The expected life may be reduced if the cells/batteries are subjected to adverse conditions as:
extreme temperature, deep cycling, excessive overcharge/ over-discharge.
- [8]Store the cells/batteries in a cool dry place. Always discharge batteries before packing.

Notes:

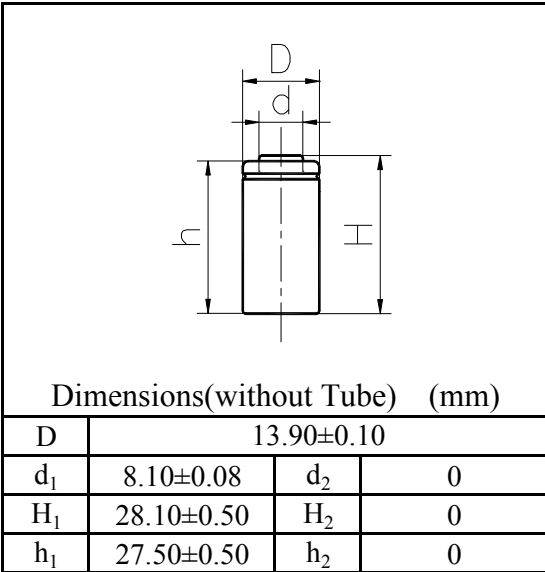
- [1] T_1 : Ambient Temperature.
- [2] Approximate charge time from discharged state, for reference only.
- [3] IEC61951-2(2003)7.4.1.1 Cycle Life:

Cycle No.	Charge	Rest	Discharge
1	$0.1C \times 16h$	None	$0.25C \times 2h20min$
2-48	$0.25C \times 3h10min$	None	$0.25C \times 2h20min$
49	$0.25C \times 3h10min$	None	$0.25C$ to 1.0V/cell
50	$0.1C \times 16h$	1-4h	$0.2C$ to 1.0V/cell

Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 h.

MODEL No: 2/3AA650

Description: 650 mAh SIZE NI-MH AA



Specification

Nominal Capacity		650 mAh	
Nominal Voltage		1.2 V	
Charge current	Standard	65 mA	
	Fast	650 mA	
Charge time	Standard	16 Hrs	
	Fast	1.2 Hrs	
Ambient Temperature	Charge	Standard	0°C~45°C
		Fast	10°C~45°C
	Discharge		-20°C~60°C
Storage		-20°C~55°C	
Internal Impedance(mΩ) (After Charge)		≤ 38	
Weight		13.5 g	

