

# Product Specification

Product Model: Nickel-Cadmium Battery

Product Type: CD-2/3A700

Draw up: Technical Department

Date: 2014-10-10

## 1、SCOPE

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

Model: CD-2/3A700

Cell Size: 2/3A crew cut( $16.3\pm 0.1\times 27.4\pm 0.4$ )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 = $1.2\text{V}\times 3=3.6\text{V}$

## 3、RATINGS

Description	Unit	Specification	Condition
Nominal Voltage	V/cell	1.2	Unit cell or stack-up batteries
Nominal Capacity	mAh	700	Standard Charge/Discharge
Standard Charge	mA	70 (0.1C)	$T_1=20\pm 5^\circ\text{C}$ (See Note 1)
	hour	16	
Fast Charge	mA	700 (1C)	- $\Delta V=0\sim 15\text{mV/cell}$ , Timer Cutoff=120% nominal capacity , Temp.Cutoff= $55^\circ\text{C}$ , $dT/dt=0.8^\circ\text{C/min}$ , $T_1=20\pm 5^\circ\text{C}$
	hour	1.2 approx (See Note 2)	
Trickle Charge	mA	(0.03C)~(0.05C)	$T_1=20\pm 5^\circ\text{C}$
Standard discharge	mA	140 (0.2C)	$T_1=20\pm 5^\circ\text{C}$ Humidity: Max85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	$^\circ\text{C}$	-20~30(Within 1 year)*	Discharged state Humidity: Max85%
		-20~40(Within 6 months)	
		-20~50(Within 1 month)	
		-20~60(Within 1 week)	
Typical Weight	Gram	16	unit cell

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

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## 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: 70 mA(0.1C)× 16 hours

Discharge: 140 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
Capacity	mAh	$\geq 700$	Standard Charge / discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V	$\geq 1.25$	Within 1 hour after standard charge	
Internal Impedance	m $\Omega$	$\leq 31$	Upon fully charged(1KHz)	
High Rate Discharge(1C)	min	$\geq 51$	Standard Charge, 1 hour rest before discharge by 1C to 1.0V/cell	up to 3 cycles are allowed
Charge Retention	mAh	$\geq 455$ (65%)	Standard Charge,Storage: 28 days,Standard Discharge	$T_1=20\pm 5^{\circ}\text{C}$
IEC Cycle Life	Cycle	$\geq 500$	IEC61951-1(2003)7.4.1.1	see Note 3
Leakage		No leakage nor deformation	Fully charged at : 70 mA for 28 days	
Vibration Resistance		Change of voltage should be less than 0.02V/cell,change of impedance should be less than 5milliohm/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 5milliohm/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.	

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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.

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Notes:

(1)  $T_1$ : Ambient Temperature.

(2) Approximate charge time from discharged state, for reference only.

(3) IEC61951-1(2003)7.4.1.1 Cycle Life:

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

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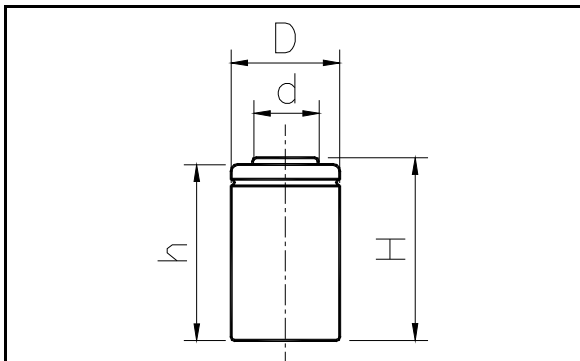
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**MODEL No:** CD-2/3A700

**Description:** 700 mAh SIZE NI-Cd A

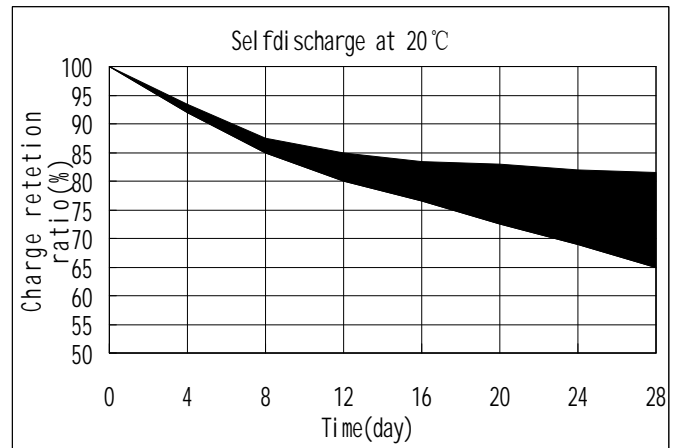
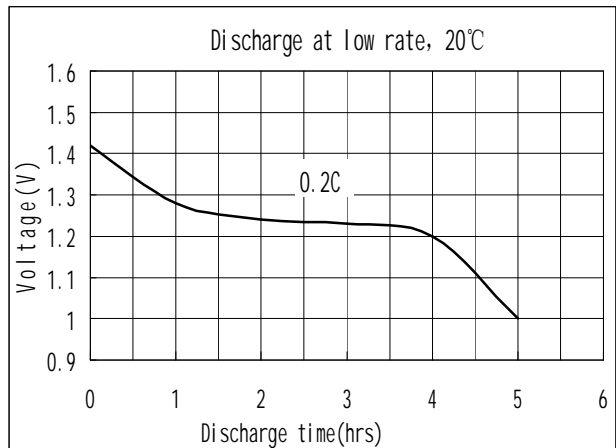
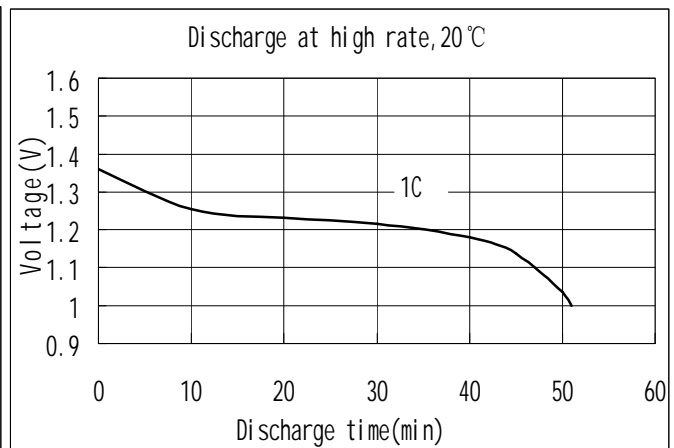
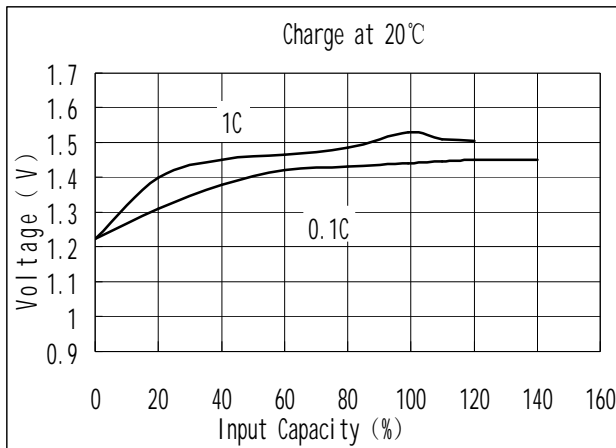


Dimensions(without Tube) (mm)

D	16.30±0.10
d	8.50±0.08
H	27.40±0.40
h	27.00±0.50

## Specification

Nominal Capacity		700 mAh	
Nominal Voltage		1.2 V	
Charge current	Standard	70 mA	
	Fast	700 mA	
Charge time	Standard	16 Hrs	
	Fast	1.2 Hrs	
Ambient Temperature	Charge	Standard	0°C~45°C
		Fast	10°C~45°C
	Discharge		-30°C~60°C
Storage		-20°C~60°C	
Internal Impedance(mΩ) (After Charge)		≤ 31	
Weight		16 g	



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