



**SEALED NICKEL METAL HYDRIDE  
RECHARGEABLE CELLS& BATTERIES  
DELIVERY SPECIFICATIONS**

**PRESENTED TO** : \_\_\_\_\_

**MODEL NO.** :           NM2700-AA          

**CUSTOMER PART No.** : \_\_\_\_\_

**DATE OF SUBMISSION** :           2024/11/20          

**Document Number** : \_\_\_\_\_

<b>Specification Approved</b>	<b>Prepared By</b>	
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	<b>Approved By</b>	
<b>Customer Approved</b>	<b>Checked By</b>	
	<b>Approved By</b>	
	<b>Please sign and return one copy to us.</b>	<b>Seal the</b>

## 1. Scope

This specification governs the performance of the following Nickel-Metal HYdride cylindrical battery.

## 2. Product model : NM2700-AA

## 3. External Appearance

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

## 4. Ratings

The data involving the nominal voltage and the approximate weight of the battery pack.

Description	Specification	Conditions
Nominal Voltage	1.2V	Unit: cell
Rated Capacity	2700mAh	Standard charging / discharging
Standard Charge	270mA (0.1C) 16hour	Ta=0~40°C (see note)
Fast Charge	810mA(0.3C)~1350mA (0.5C) With charge termination control	- $\Delta V=5\text{mv/cell}$ Timer cutoff=110% input capacity Temp. cutoff= 40~50°C, Ta= 0~40°C dT / dt=0.8°C / min
	4.0hour approx.(0.3C) 2.4hour approx.(0.5C)	
Closed circuit voltage: (C.C.V.)	The C.C.V. shall exceed <u>1.2V</u>	Following a standard charge period, the closed circuit voltage of the cell or battery shall be checked with a <u>0.86</u> $\Omega$ load within 1 hour
Open circuit voltage: (O.C.V.)	The O.C.V. shall exceed <u>1.25V</u>	Following a standard charge period, the open circuit voltage of the cell or battery shall be checked within 1 hour.
Maximum Discharge Current	2700mA (1C)	Ta= 10~40°C
Storage Temperature (Percent 40-80 charged state)	-20~55°C	Less than 7 days
	-20~45°C	Less than 30 days
	-20~40°C	Less than 90 days
	-20~30°C	Less than 360 days
	65% $\pm$ 20%	Relative humidity
Typical Weight	37.0g	Approx.

## 5. Performance

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

Relative humidity:  $65 \pm 20\%$  RH.

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

\*\*\*Notes: Standard charge / discharge condition

Charge : 270mA (0.1C) x 16 hrs

Discharge : 540 mA 0.2C to 1.0V/cell

\*\*\*The batteries must be standard discharged before charging

\*\*\*Battery test vide infra

Test	Specification	Conditions	Remarks
Typical Capacity	2700mAh	Standard charging / discharging	Up to 5 cycles Allowed
Minimum Capacity	2650mAh	Standard Charge / Discharge	Up to 5 cycles Allowed
Internal Impedance ( $R_i$ )	$\leq 35\text{m}\Omega$	Upon fully charge (1Khz)	Unit: cell
Rapid Discharge (0.5C)	$\geq 108\text{min}$	Standard charge, 10min rest before discharge at 0.5C to 1.0V/cell	Up to 5 cycles Allowed
Over-charge	It shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed.	Following a period of discharge at <u>0.2C</u> mA down to a terminal voltage of 1.0V, standard charge and then charge for 48hrs at <u>0.1C</u> mA. The capacity of the cell or battery shall not be less than the rated capacity when discharged at <u>0.2C</u> mA	
Over-discharge	The cell or battery shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed, and the subsequent capacity shall not be less than <u>70%</u> of rated capacity	Following a period of discharge at <u>0.2C</u> mA down to a terminal voltage of 1.0V, combine the cells with a <u>0.86<math>\Omega</math></u> load. After stored for a period of 24 hours, standard charged and then discharge at <u>0.2C</u> mA	
Self discharge retention	$\geq 1890\text{mAh}(70\%)$	Standard charge, it is placed at $20 \pm 2^\circ\text{C}$ ambient temperature for 28 days, and then discharged at 0.2C to 1.0V	
IEC Cycles Test	$\geq 400$	IEC 61951-2(2017)	

Short Circuit	Deformation & leakage may occur but no explosion	After standard charge, short circuit for 1 hr (lead wire =2.0mm <sup>2</sup> x 20mm)
Vibration Test	No leakage nor explosion	Charge at 0.1C for 14 hrs, then leave for 24 hrs. Check battery before/after vibration. Amplitude : 1.5mm, Vibration : 3000CPM any direction for 60 mins
Drop Test	No leakage nor explosion	Charge at 0.1C for 16 hrs, then leave for 24 hrs. Check battery before / after drop on the wooden board of thickness: 30 mm Height: 50 cm Direction is not specified test for 3 times.

## 6. Configurations, Dimensions And Markings

Please refer to the related drawing.

## 7. Warranty

One year limited warranty against workmanship and material defect.

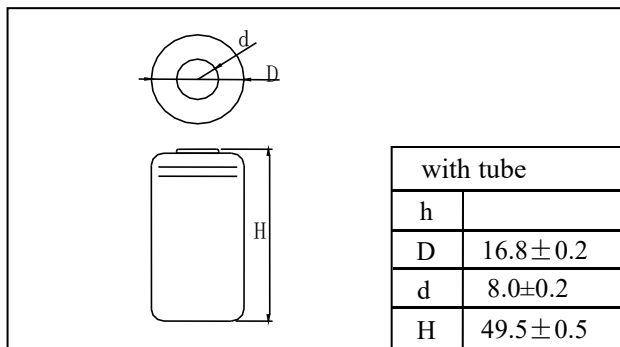
## 8. Cautions

1. Reverse charging is not acceptable.
2. Charge before use, use the correct charger for Ni-MH batteries.
3. Do not charge / discharge with more than the specified current.
4. Do not short circuit the cell / battery.
5. Do not incinerate or mutilate the cell/battery.
6. Do not solder directly to the cell / battery.
7. The life expectancy may be reduced if the cell / battery is subjected to adverse conditions, like extreme temperature, deep cycling, excessive overcharge /over-discharge.
8. Store the cell / battery in a cool dry place.

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9. For charging methods please reference to our technical handbook。
  10. When find battery power down during use, please switch off the device to avoid over-discharge。
  11. When not using a battery, disconnect it from the device
  12. well-ventilated place out of direct sunlight
  13. During long term storage, battery should be charged and discharged once every half a year。
  14. When the battery is hot, please do not touch it and handle it, until it has cooled down。
  15. Do not mix Akyga battery batteries with other battery brands  
or batteries of a different chemistry such as alkaline and zinc carbon batteries。
  16. Do not mix new batteries in use with semi-used batteries, battery may be over-discharged。
  17. Do not mix new batteries in use with semi-used batteries, battery may be over-discharged。
  18. Keep away from children. If swallowed, contact a physician at once。

## Specifications of single cell

Dimensions (mm)



Nominal Voltage	1.2V
Rated Capacity	2700 mAh
Minimal Capacity	2650 mAh
Standard Charge	270 mA, 16 hrs
Rapid Charge	1350 mA, 2.4 hrs (control required)
Continuous Discharge	less than 1350mA
Final Discharge Voltage	1.0V
Weight	37.0g (Approx)
Service Life	(>400cycles)

(according to IEC discharge characteristics standard)

Internal Resistance 35mΩ (Approx)

Ambient Temperature

Standard charge 0 ~40°C

Rapid charge 10 ~40°C

Discharge -10 ~ 55°C

Store : (65±20% RH)

Less than 7 days : -20 ~55°C

Less than 30 days : -20 ~45°C

Less than 90 days : -20 ~40°C

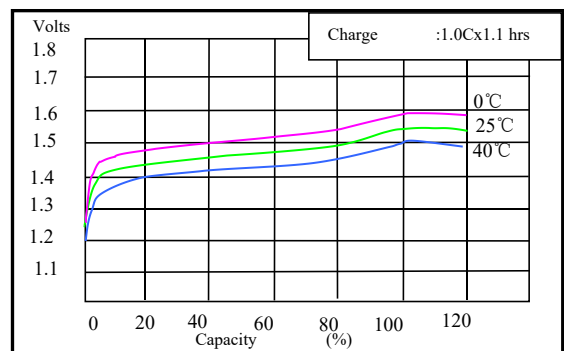
Less than 360 days : -20 ~30°C

Note

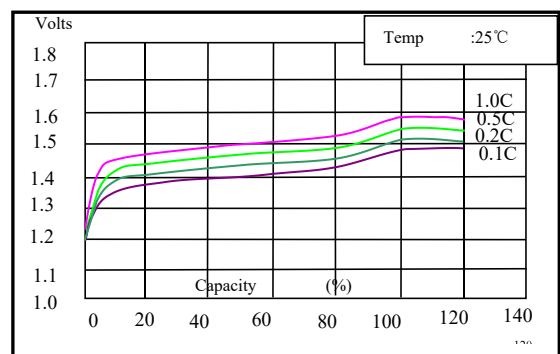
1. After charge at 0.1C for 16hrs and discharge at 0.2C to 1.0V at 25°C) .

2. Control required

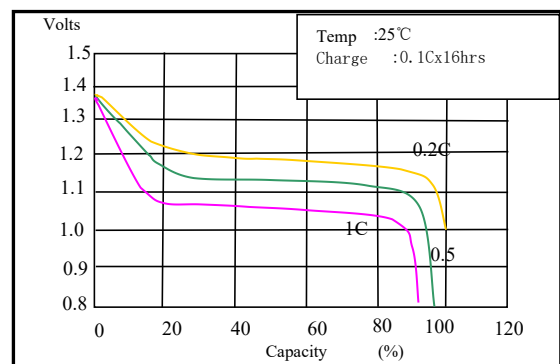
1) - Δ V: 0~ 5mV    2) dT/ dt: 0.8°C/ min    3) Tco: 45~ 50°C



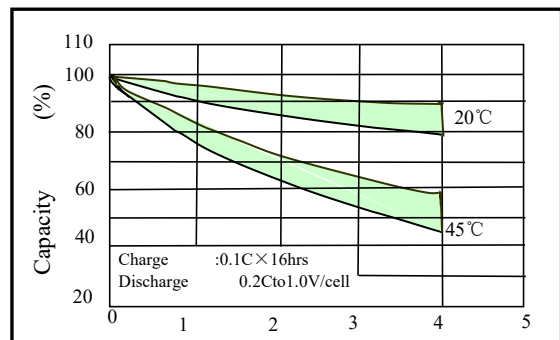
(1.0C Rate Charging Curves) 1.0C



0.1C/0.2C/0.5C/1.0C Rate Charging Curves



0.2C/0.5C/1C Rate Discharging Curves



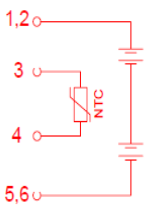
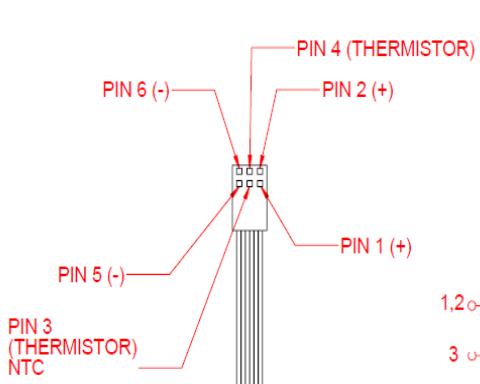
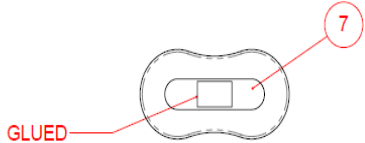
Storage & self discharge Curves Weeks

GENERAL TOLERANCES UNLESS SPECIFIED			
X +/-0.50	X.X +/-0.25	X.XX +/-0.1	X +/-1* X.X +/-0.5*
FLATNESS & SQUARE TOLERANCES:		M/C +/-0.2	FABRICATION: +/-1

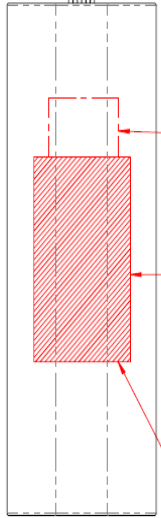
UNLESS SPECIFIED IN CONTRACT ALL WELDS MUST BE PRODUCED BY QUALIFIED WELDERS TO BS EN287-1: 2004 - WELDING SYMBOLS TO BS499-2: 1980

REV.	DATE	DESCRIPTION	ISSUED SIG
A	10/08/2010	PRODUCTION ISSUE	NJ

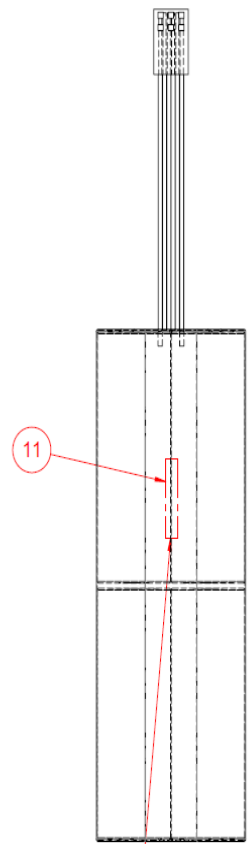
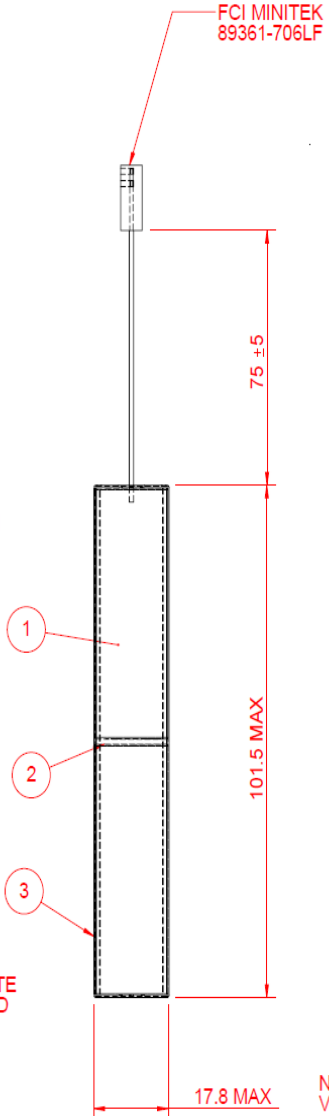
NOTE: BATTERY IS TOTALLY INSULATED  
APPROX WEIGHT: 162g



CIRCUIT DIAGRAM



LABEL INFORMATION SPECIFIED IN SEPERATE DOCUMENT ATTACHED



NTC 10K OHMS  
VISHAY #2381 640 63103

