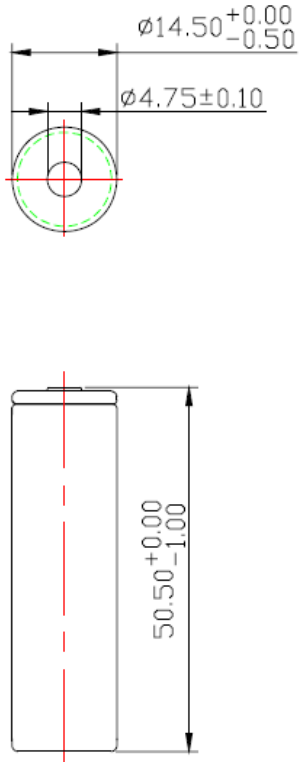


## TENERGY AA 1000mAh NiCd Battery

<b>Product Name:</b>	Tenergy NiCd AA	
<b>Product Number:</b>	20102	
<b>Battery Model:</b>	NiCd AA 1000mAh	
<b>Battery Chemistry:</b>	Nickel Cadmium	
<b>Dimension:</b>	Diameter (D): 14.5 mm	
	Button Height (H): 50.5 mm	
	Button Diameter (d): 4.75 mm	

### 1. SCOPE

The specification describes the technology parameters and testing standard for the NiCd AA size cells supplied by TENERGY CORPORATION.

### 2. CHARACTERISTICS

2-1.Nominal Voltage	1.2V
2-2.Typical Capacity* <sup>1</sup>	1000mAh
2-3.Minimum Capacity* <sup>1</sup>	800mAh
2-4.Charging Current* <sup>2</sup>	900mAh



---

2-5.Charging Time* <sup>2</sup>	Approx.72 min
2-6.End Voltage of Discharge	1.0V
2-7.Temperature(Recommended)	
Charge:	0~+40deg.C
Discharge:	0~+50deg.C
Storage: Less than 30 days	-20~+50deg.C
Less than 90 days	-20~+40deg.C
Less than 1 year	-20~+30deg.C
2-8.Humidity	45~85%
2-9.Impedance	<30mohm (after charge)
2-10.Weight	Approx. 20g

\*1: Discharge capacity when the battery pack is discharged at 160 mA after being charged at 80 mA for 16 hours.

\*2: Use recommended charging systems.

### 3. APPEARANCE

There shall be no practical damage such as conspicuous liquid electrolyte leakage, flow and dirt under conditions of storage or operation as specified herein.

### 4. ELECTRICAL CHARACTERISTICS

#### 4-1.Full-charge

Full-charge is defined as charged up to fully charged state using a specified fast charger.

The specified fast charger is as follows.

- Charging Current: 80mA
- Full charge detection: Peak Voltage

#### 4-2.Terminal voltage(O.C.V)



Open circuit voltage shall be a minimum voltage of 1.30V within 14 days after being fully charged.

#### 4-3.Capacity

##### 4-3-1.

The battery unit shall be capable of supplying 80mA continuous discharge current for a minimum of 280 minutes to 1.0V end voltage within 1 hour after being fully charged.

##### 4-3-2.

The battery unit shall be capable of supplying 400mA continuous discharge current for a minimum of 108 minutes to 1.0V end voltage within 1 hour after being fully charged.

##### 4-3-3.

The battery unit shall be capable of supplying 800mA continuous discharge current for a minimum of 54 minutes to 1.0V end voltage within 1 hour after following process.

·Charge with 80 mA for 16 hours after discharged with 160 mA to 1.0V.

Remarks: Item 4-3-3.is applied only for the capacity measurement. Please do not use item 4-3-3.for the design of the charger.

#### 4-4. Internal Impedance

After the battery unit is fully charged, within 1~4 hour(s), the internal impedance is not greater than 30mΩ, as tested by 1000Hz AC source.

#### 4-5.Cycle Life

The battery unit shall be capable of 200 minimum cycles under the conditions as follows (The ambient temperature is 18~22 deg.C).

Charge	:Paragraph 4-1
Rest	:1 hour
Discharge	:Paragraph 4-3-2
Rest	:1 hour



---

After 200 cycles, discharge time as specified in paragraph 4-3-2 shall be a minimum of 72 minutes.

#### 4-6.Over-discharge

Fully charged battery unit, when discharged with 10 ohm load for 8 hours, shall not cause damage, leakage, salting or degradation in performance characteristics as specified herein.

#### 4-7.Temperature Characteristics

##### 4-7-1.

Within 1 hour after fully charged at 40 deg.C, discharge time shall be a minimum of 84 minutes at 20 deg.C as specified in paragraph 4-3-2.

##### 4-7-2.

Within 1 hour after fully charged at 20 deg.C, discharge time shall be a minimum of 84 minutes at 0 deg.C as specified in paragraph 4-3-2.

#### 4-8.Self-discharge

##### 4-8-1.

After fully charged unit is stored for 30 days at 20 deg.C, discharge time shall be a minimum of 72 minutes as specified in paragraph 4-3-2.

##### 4-8-2.

After fully charged unit is stored for 7 days at 40 deg.C, discharge time shall be a minimum of 72 minutes as specified in paragraph 4-3-2.

#### 4-9.Safety

##### 4-9-1.

The battery unit shall not explode when it is charged at 80 mA for 5 hours.

However, it is acceptable for the battery unit to sustain leakage of battery fluid and show a change in appearance.



4-10.Vibration

The battery unit shall not sustain damage to its battery performance, when it is tested under the following conditions.

Conditions:	Amplitude	---4mm
	Cycle	---16.7Hz
	Direction	---Three directions(X,Y,Z)
	Time	---60 minutes

4-11.Supply

The battery unit shall be shipped at charged state.

**5. ENVIRONMENTAL PROTECTION REQUIREMENT**

5-1. The requirement on Hazardous Substances in the Products should comply with 2006/66/EC and TENERGY's criterion on HS.

**6. TRANSPORT**

6-1. To ensure battery safety during delivery, SOC (State Of Charge) must be below 35%, inside temperature of container could not be over 35°C.Product holder should be responsible for any possible loss during delivery if above conditions cannot be met completely.

6-2. Inside temperature of container must be below 20°Cif any client requires SOC (State Of Charge) above 35%, the distance between battery master cartons should be not less than 10cm in container, and coercive air cross ventilation system is required in container to ensure even temperature for each master carton. Product holder should be responsible for any possibly accidental loss if above conditions cannot be met completely.

**7. PRECAUTION:**

Please keep in mind the following points when designing and manufacturing equipment. Please insert in your instruction manual. To prevent equipment malfunctions from affecting the batteries, be sure to use protection devices for electrical circuits and



batteries.

**⚠ Danger!**

- Failure to carefully observe the following procedures and precautions can result in leakage of battery fluid (electrolyte), heat generation, explosion, fire and serious personal injury!
- Never dispose of TENERGY batteries in a fire or heat them.
- Do not connect the (+) positive and (-) negative terminals of TENERGY batteries together with electrically conductive materials, including lead wires. Do not transport or store TENERGY batteries with their uncovered terminals or connected with a metal necklace or other electrically conductive material. When carrying or storing batteries, use a special case.
- Only charge TENERGY batteries using those specific chargers that satisfy TENERGY's specifications. Only charge batteries under the conditions specified by TENERGY.
- Never disassemble TENERGY batteries. Doing so may cause an internal or external short circuit or result in exposed material of battery reacting chemically with the air. It may also cause heat generation, explosion and fire. Also, this is dangerous as it may cause splashing of alkaline fluid.
- Never solder lead wires directly on to TENERGY batteries.
- The (+) positive and (-) negative terminals of TENERGY batteries are predetermined. Do not force the terminals to connect to a charger or equipment. If the terminals cannot be easily connected to the charger or the equipment, check if the (+) and (-) terminals are incorrectly positioned.
- The gas release vent which release internal gas is located in the (+) positive terminal of the TENERGY battery. For this reason, never deform this section or cover or obstruct its gas release structure.
- Do not directly connect TENERGY batteries to a direct power source or the cigarette lighter socket in a car.
- TENERGY batteries contain a strong colorless alkaline solution (electrolyte). The alkaline solution is extremely corrosive and will cause skin damage. If any fluid from a TENERGY battery comes in contact with user's eyes, they should immediately flush their eyes and wash them thoroughly with clean water from the tap or another source and consult a doctor



**Tenergy Corporation**

436 Kato Terrace  
Fremont, CA 94539 U.S.A  
Tel: 510-687-0388 Fax: 510-687-0328  
[www.tenergybattery.com](http://www.tenergybattery.com) email: sales@tenergybattery.com

urgently. The strong alkaline solution can damage eyes and lead to permanent loss of eyesight.

- When TENERGY batteries are to be incorporated in equipment or housed within a case, avoid air-tight structures, as this may lead to the equipment or the case being damaged or may be harmful to users.

**8. WARRANTY**

TENERGY will be responsible for replacing the battery against any defects or poor workmanship for six months from the date of shipping.

Any other problems caused by malfunction of the equipment or misuse of the battery are not under this warranty.

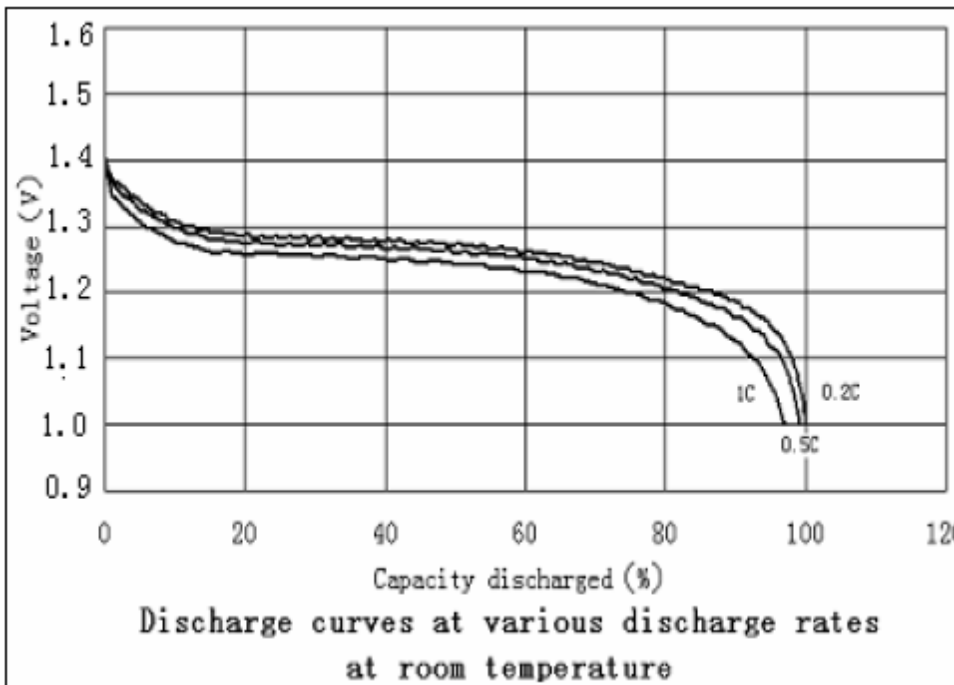
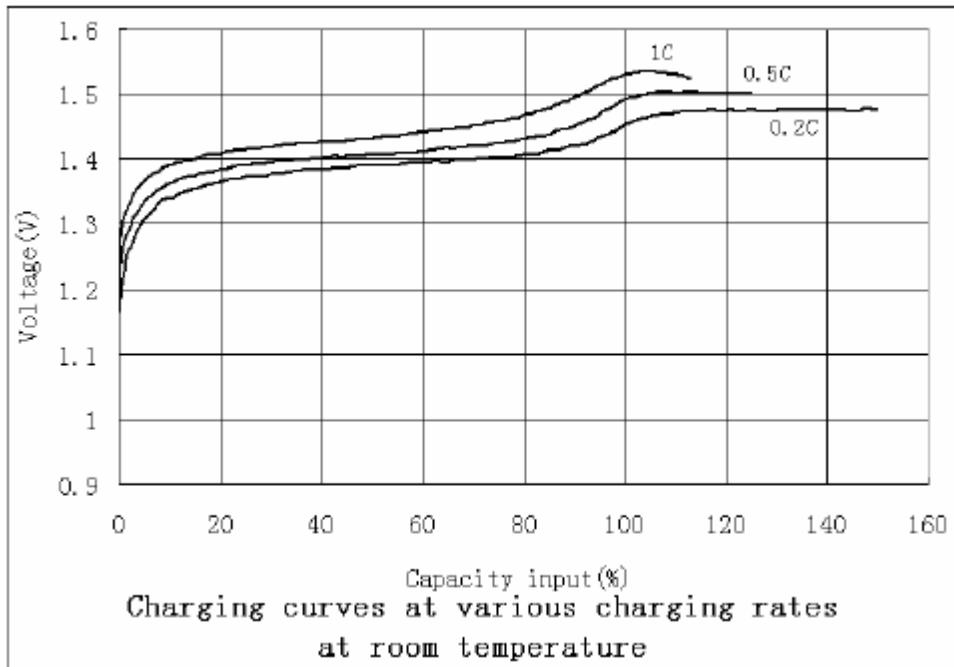
**Notice:**

To assure safety, please consult to the TENERGY technical staff for your applications including electrical specifications, mechanical designs, protective devices and any special specification.

TENERGY reserve the right to alter or amend the design, model and specification without prior notice.



**Appendix: Performance Curve**







**Tenergy Corporation**

436 Kato Terrace

Fremont, CA 94539 U.S.A

Tel: 510-687-0388 Fax: 510-687-0328

[www.tenergybattery.com](http://www.tenergybattery.com) email: sales@tenergybattery.com

