

## NI-CD BATTERIES SPECIFICATIONS

(MODEL NO.) : STIUMX-3D

(FILE NO.) : \_\_\_\_\_

(CUSTOMER NO.) : \_\_\_\_\_

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## 1. Preface

This specification describes the physical, functional and electrical characteristics of the D Ni-Cd High Temperature rechargeable battery.

## 2. Model

STIUMX-3D

Desc. Ni- Cd 3.6 V D 4000mAh High Temp

## 3. Appearance

There shall be no defects such as remarkable scratches, discoloration, electrolyte leakage or deformation.

## 4. Product Identification

Technical Specification of 3.6V/4000mAh Nickel Cadmium High Temperature Battery.

(1)	Model	:	STIUMX-3D
(2)	Dimension (mm)	:	L max.124.0 W max.32.7 (mm)
(3)	Nominal Capacity at 20±5°C	:	4000mAh
	Typical Capacity at 0.2C	:	4100mAh
(4)	Nominal Voltage	:	3.6V
(5)	Standard Charging at 20±5°C	:	400mA for 14h
(6)	Fast Charging at 20±5°C	:	8000mA for 6h
(7)	Continuous Charging at 55±2°C	:	200mA
(8)	Trickle Charging (after fast charge)	:	100mA
(9)	Standard Discharging	:	800mA – 3.0V
(10)	Max. Continuous Discharge Current	:	2000mA
(11)	Operation Temperature		
		Charge	: 0 ~ +50°C
		Fast Charge	: +10 ~ +60°C
		Continuous Charge	: 0 ~ +60°C
		Trickle Charge (after fast charge)	: 0 ~ +60°C
		Discharge	: 0 ~ +60°C
		Storage	: 5 ~ +40°C
(12)	Optimum Storage Temperature	:	+ 5 ~ +25°C
(13)	Weight	:	Approx. 370g
(14)	Internal Impedance	:	≤ 80m

## 5. Characteristics

Unless otherwise specified, the standard range of atmospheric conditions for marking and is as follows:

Ambient Temperature	:	20± 5°C
Relative Humidity	:	65± 20%
Atmospheric Pressure	:	960± 100mbar

Technical testing condition and specification - refer to ICEL 1001 and UL924 and National Standard GB/T11013-94.

### 5.1 Available Capacity

This table gives minimum capacities of the battery under various charge and discharge conditions. The temperature is 20°C± 5°C. Deviations depending on test conditions may be observed.

\* Cut off voltage 1.0V per cell.

CHARGE	NORMAL	NORMAL
Rate	0.1C	0.2C
Current (mA)	400	800
Duration (hours)	14	6
DISCHARGE Rate	CAPACITY(mAh)	CAPACITY(mAh)
0.2C 800mA	>4000	>4000
0.5C 2000mA	>3800	>3800

### 5.2 Continuous Charging

The cell is designed to be continuous charged between +15 to + 60 with the above mentioned constant current (0.05C). Occasional temperatures of 0 to 70 degrees C are acceptable for short durations only (<2 weeks). A " TRICKLE" Charge is designed to follow a " quick" charge. With low temperatures, below 0 ,charge voltage must be limited to 1.55 volts per cell. In case of charge current bi-regime, or pulse charge, cell must be charged at a minimum trickle charge rate of 0.033C between the pulses.

Charge	Rate	Current	Duration	Temperature
Standard	0.1C	400mA	14 h	+5°C ~ + 60°C
Fast	0.2C	800mA	6 h	+10°C ~ + 60°C
Trickle	0.025C	100mA	Continuous	0°C ~ + 60°C

## 5.3 Temperature Characteristics

The following table gives the minimum available capacity of the cell under the charge conditions: Deviations depending on test conditions may be observed.

CHARGE	Temperature	PERMANENT	PERMANENT	PERMANENT
Rate			0.05C	0.05C
Current (mA)	+55°C	250	250	438
Duration (hours)		24	36	30
DISCHARGE Rate	Temperature	CAPACITY(mAh)	CAPACITY(mAh)	CAPACITY(mAh)
0.25C 1000mA	+55°C	≥3800	≥3800	≥3800

**Remarks :** The battery are able to meet UL924 standard in a sense that when it is used with a nominal constant current charger of 250mA for 30 hours and a 6 W Tungsten Halogen lamp load for discharge.

## 5.4 Charge Retention

After a 28 day storage at 20°C± 5°C the cell shall retain typically 70% of its initial capacity, it being initially fully charged.

After a 7 day storage at 40°C± 5°C cell shall retain typically 70% of its initial capacity, it being initially fully charged.

## 5.5 Storage

MAH recommends storing the open circuit battery in a discharged state with the temperature range of +5°C to +25°C, and the relative humidity range of 60% to 70%.

An extended storage temperature range of -10°C to +70°C with 65%± 20% relative humidity is permitted for short periods or on an intermittent basis.

## 5.6 Overcharge

Cell shall be charged at a constant current of 0.1C for 28 days at an ambient temperature of 20± 5°C, the capacity at 0.2C discharge rate is typically 5000mAh.

## 5.7 Life Duration in Continuous charging

Life duration of cell depends mainly on its temperature and overcharge capacity. The end life is considered when its capacity reaches 60% of the initial capacity. Typical life is 4 years with the average use conditions defined as follows:

- 1) Working temperature is 55°C.
- 2) Continuous charging rate of 0.05C.
- 3) Discharge once per month at 0.25C.

# ULTRA MAX®



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