



GR03X

TECHNICAL SPECIFICATION FOR ZINC MANGANESE DIOXIDE BATTERY

DATE: 9/15/2005

SPEC. NO.: ES-GR03X

REVISION: 2005C

GOLDEN POWER CORPORATION (HK) LTD.

Flat C, 20/F, Block 1, Tai Ping Industrial Centre, 57 Ting Kok Road, Tai Po, N.T., Hong Kong

Tel: (852) 3125 2288 Fax: (852) 3125 2000 / (852) 3125 2001

E-mail: battery@goldenpower.com Web Page: <http://www.goldenpower.com>

The Manufacturer reserves the right to modify product specification and data stated herein without prior notice

1. Scope

This Specification is applicable to Golden Power's Greenergy Long Life Battery
 Model No.:GR03X

1.1 Designations

Golden Power: GR03X IEC: R03 Others: AAA, 1212
 JIS: UM-4 ANSI: 24D

1.2 Reference Document

IEC 60086-1 (2000-11) --- Primary Batteries - Part 1: General
 IEC 60086-2 (2001-10) --- Primary Batteries - Part 2: Physical and electrical specification
 IEC 60086-5 (2000-07) --- Primary Batteries - Part 5: Safety of batteries with aqueous electrolyte

2. Chemical System

Zinc-Manganese Dioxide (Ammonium Chloride Electrolyte)

*** MERCURY AND CADMIUM ARE NOT ADDED IN THE BATTERY**

3. Nominal Voltage: 1.5 V

4. Average Weight : 7.6 g

5. Nominal Capacity

310mAh (condition: 75Ω load resistance, discharge 4 hours per day at 20+/-2°C, end-point voltage 0.9V)

6. Electrical Characteristics

Test conditions: 3.9Ω+/-0.5% load resistance, measuring time 0.3 seconds,
 temperature at 20+/-2 °C, tested within 30 days after delivery.

	Off-Load Voltage (V)	On-Load Voltage (V)	* Flush current (A)	Test Specification
New Battery	1.62	1.42	3.00	MIL-STD 105E, Class II, Double Sampling, AQL=0.4
After 3 mths. at 45°C	1.58	1.36	2.00	
After 12 mths. room temp	1.58	1.36	2.00	

7. Service Output

Condition: Test temperature 20 +/- 2°C, tested within 30 days after delivery

Standard	Discharge Condition			Average Minimum Discharge Time		
	Discharge Load	Discharge Time	E.P.V. (V)	New Battery	After 3 mths. at 45°C	After 12 mths. at room temperature
IEC	75Ω	4 h/d	0.9V	19 h	17 h	17 h
IEC	10Ω	1 h/d	0.9V	95 min	85 min	85 min
IEC	5.1Ω	4 m/h, 8 h/d	0.9V	42 min	38 min	38 min
IEC	3.6Ω	15 sec/min	0.9V	100 cycles	90 cycles	90 cycles

Satisfaction Standard:

- 1) 9 pieces of battery will be tested for each discharging standard.
- 2) The result of the average discharging time from each discharging standard shall be equal to or more than the average minimum time requirement; and no more than one battery has a service output less than 80% of the specified requirement.
- 3) One re-test is allowed to confirm the previous result

8. Electrolyte Leakage Proof Characteristics

Item	Condition	Period	Requirement	Acceptance Standard
Over-discharge Characteristics	75Ω continuous discharge at temperature 20+/-2°C; relative humidity: 65+/-20%RH	48 hours	There shall be no deformation exceeding the specified dimensions, nor leakage recognized by human eye	N=40; Ac=1; Re=2
Storage Characteristics	Storage at temperature 45 +/- 2°C; relative humidity below 70%RH	60 days		N=40, Ac=1, Re=2

9. Safety Characteristics

Item	Condition	Period	Requirement	Acceptance Standard
Short Circuit Characteristics	At temperature 20+/-2°C	24 hours	There shall be no explosion of battery	N=8; Ac=0; Re=1
Abusive Characteristics	Short circuit 4 pieces of battery in series, one of the 4 batteries has to be connected with its polarity reversed	24 hours		

10. Marking

The following markings will be printed, stamped or impressed on the body of the battery:

- (1) Designation : GR03X
- (2) Manufacturer's name or abbreviation **"Golden Power Logo"**
- (3) Polarity: "+" or "-"
- (3) Warning: Battery may explode or leak if recharged or disposed of in fire

11. Caution for use

- (1) Since the battery is not manufactured for recharging, there are risks of electrolyte leakage or causing damage to the device if the battery is charged.
- (2) The battery shall be installed with its "+" and "-" polarity in correct position, otherwise may cause short-circuit.
- (3) Short-circuiting, heating, disposing of into fire and disassembling the battery are prohibited.
- (4) Battery cannot be forced discharged, which lead to excess gassing and, may result in bulging, leakage and de-crimping of cap.
- (5) New and used batteries cannot be used at the same time, when replaced batteries recommend to replace all and with the same brand type.
- (6) Exhausted batteries should be removed from compartment to prevent over-discharge, which cause leakage damage to the device.
- (7) Direct soldering is not allowed, which will damage the battery.
- (8) Battery should be kept out of the reach of children to prevent swallow, in case of accident should contact physician at once.

12. Shelf Life 1 years after delivery under proper storage conditions.
(Temperature: 20+/-2°C; Relative humidity: 65+/-20%RH)

13. Discharge Curves (Condition: Test temperature 20+/-2°C)

- Discharge Method: 75Ω 4 h/d (Ref to the Figure 1)
- Discharge Method: 10Ω 1 h/d (Ref to the Figure 2)

14. Battery Structure and Dimension: Ref to Drawing DWG-S001

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Figure 1: GR03X DISCHARGE CURVE

Discharge Method: 75 ohm; Period: 4 h/d

Temperature: 20+/-2°C

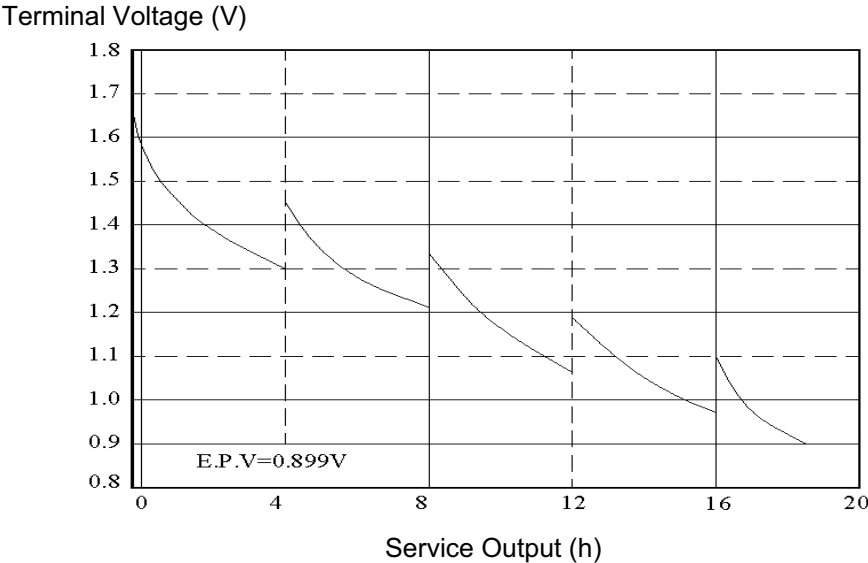
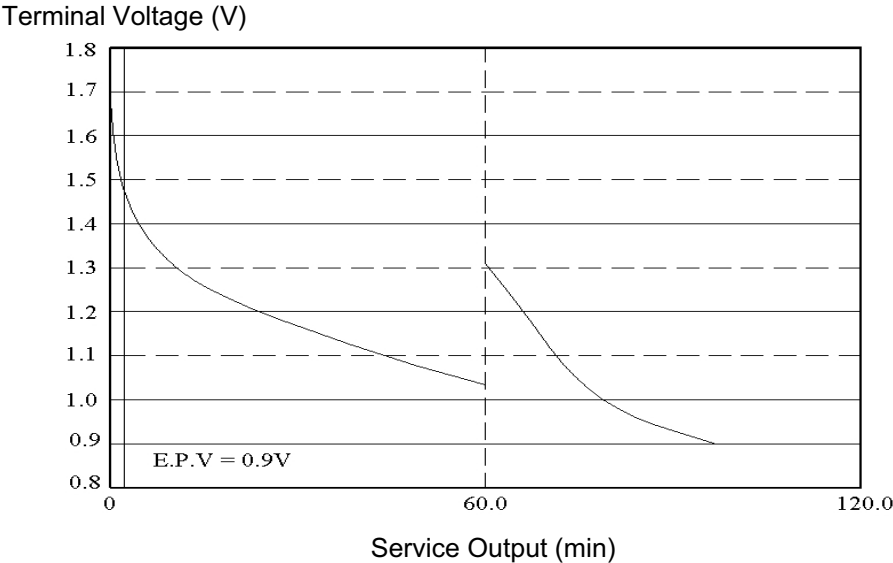


Figure 2: GR03X DISCHARGE CURVE

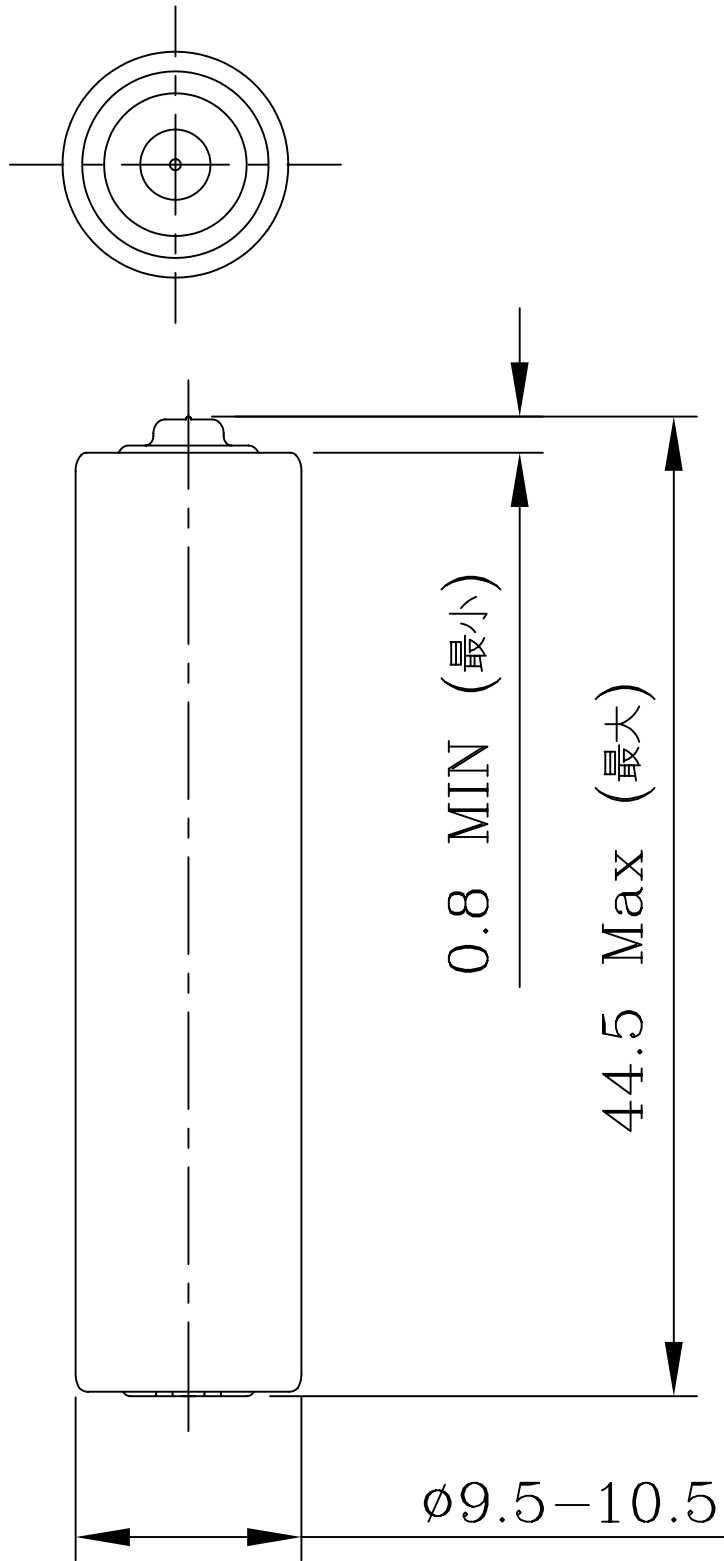
Discharge Method: 10 ohm; Period: 1 h/d

Temperature: 20+/-2°C



GR03X BATTERY DIMENSION AND STRUCTURE

GR03X 電池外形及尺寸



GOLDEN POWER CORPORATION (HK) LTD.

金力企業(香港)有限公司

MODEL(型號): GR03X

DWG No.(圖號): DWG-S-001

SCALE(比例): NTS DIM(單位): mm

Approved by (審核):

DATE(日期): 15/9/05 DRAWN BY(繪制): Kelvin

Cecilia Chu

TOLERANCES (公差) LINEAR ± 1 3rd ANGLE PROJECTION
ANGULAR $\pm 1/4^\circ$ (第三角度視圖)