



GLR20A

TECHNICAL SPECIFICATION FOR ALKALINE MANGANESE DIOXIDE BATTERY

DATE: 9/15/2005

SPEC. NO.: ES-GLR20A

REVISION: 2005C

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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 Alkaline Battery Model No.:GLR20A

1.1 Designations

Golden Power: GLR20A IEC: LR20 Others: D
 JIS: AM-1 ANSI: 13A

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

Alkaline-Manganese Dioxide

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

3. Nominal Voltage: 1.5 V

4. Average Weight : 145 g

5. Nominal Capacity

13000mAh (condition: 10Ω load resistance, discharge 4 hours per day at 20+/-2°C, end-point voltage 0.9V)

6. Electrical Characteristics

Test conditions: 2Ω+/-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	1.60	1.50	12.0	MIL-STD 105E, Class II, Double Sampling, AQL=0.4
After 3 mths. at 45°C	1.57	1.35	10.0	
After 12 mths. room temp	1.57	1.35	10.0	

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	10Ω	4 h/d	0.9V	100 h	90 h	90 h
IEC	3.9Ω	1 h/d	0.9V	36 h	32 h	32 h
IEC	2.2Ω	4 m/h, 8 h/d	0.9V	20 h	18 h	18 h
IEC	2.2Ω	1 h/d	0.8V	18 h	16.2 h	16.2 h
REF	2.2Ω	24 h/d	0.9V	17 h	15.3 h	15.3 h

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	2Ω 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=30; Ac=1; Re=2
Storage Characteristics	Storage at temperature 60 +/- 2°C; relative humidity below 90%RH	30 days		N=30, 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=9; Ac=0; Re=1
Abusive Characteristics	Charging current: 400mA, at temperature 20+/-2°C	24 hours		

10. Marking

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

- (1) Designation : GLR20A
- (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 3 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: 3.9Ω 1 h/d (Ref to the Figure 1)
- Discharge Method: 10Ω 4 h/d (Ref to the Figure 2)

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

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Figure 1: GLR20A DISCHARGE CURVE

Discharge Method: 3.9 ohm; Period: 1 h/d

Temperature: 20+/-2°C

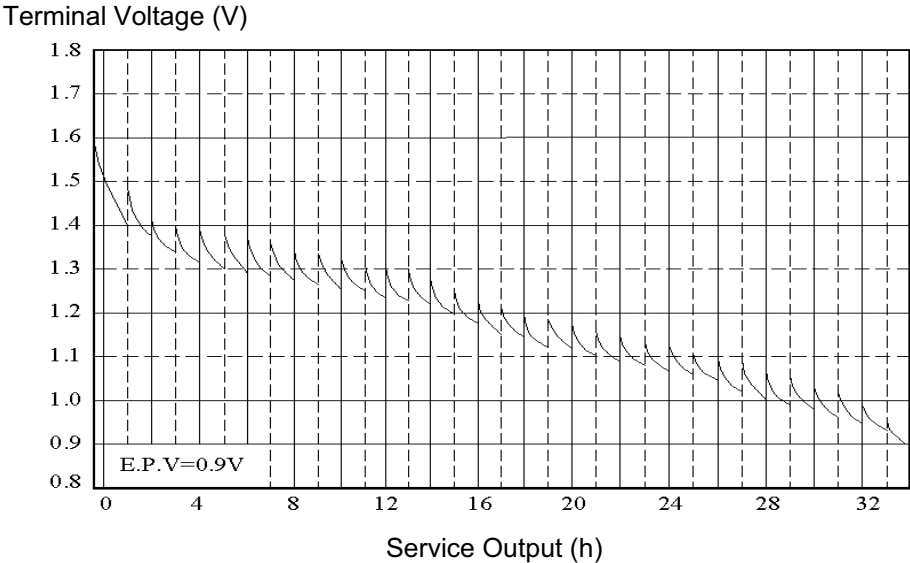
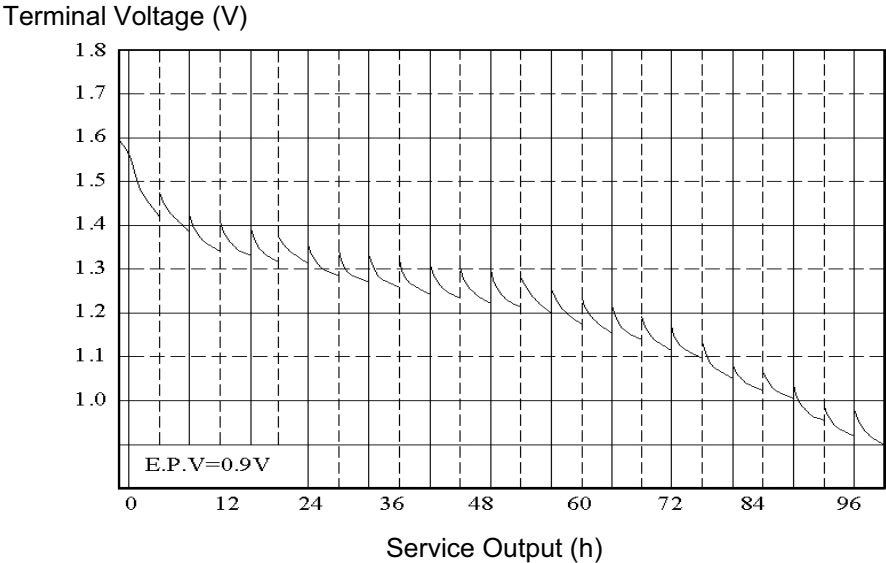


Figure 2: GLR20A DISCHARGE CURVE

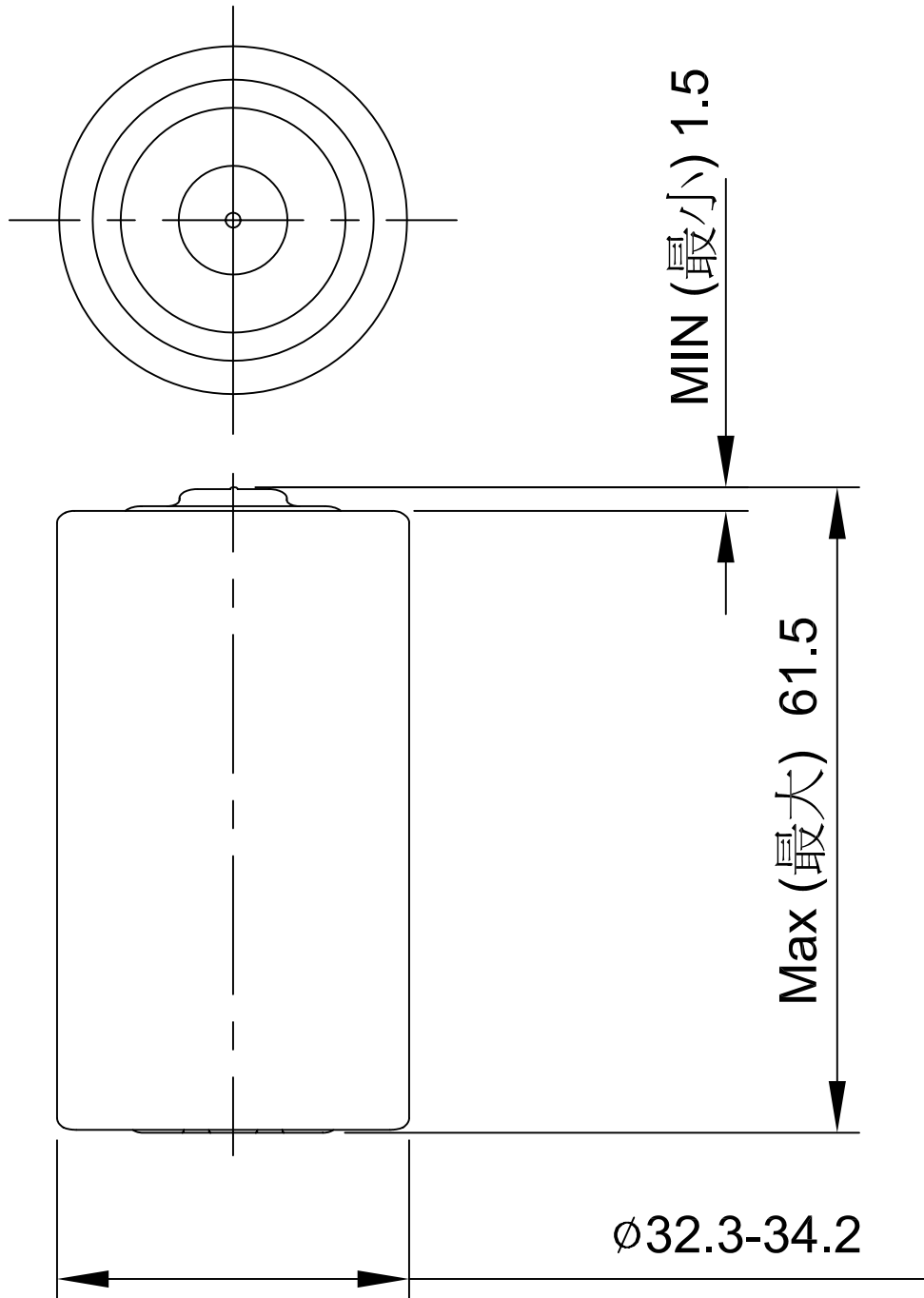
Discharge Method: 10 ohm; Period: 4 h/d

Temperature: 20+/-2°C



GLR20A BATTERY DIMENSION AND STRUCTURE

GLR20A 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): GLR20A

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)