



XELLEX BATTERY (HK) LIMITED

SHENZHEN XELLEX BATTERY & POWER SUPPLY TECH. CO., LTD

R20P-D-UM1

TECHNICAL SPECIFICATIONS

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The Technical Specifications hereinafter is only applicable to the Hg & Cd Free Zinc Manganese Dioxide R20P D type battery, which was provided by Xellex Battery Co., Ltd. All the practical technical data, which were used to describe Battery Performance involved in the Specifications are obtained from the relevant experiments to the products of Xellex. Rights reserved to take relevant rectifications or modifications to the structure and performance of the products without prior notice.

1.Scope

The Specifications is solely applicable to the "Xellex" Hg & Cd Free Zinc Manganese Dioxide Battery---R20P

1.1 Designations

Xellex : R20P IEC :R20P JIS :SUM-1

ANSI :13D Other : D, 3020, 1250

1.2 Reference Document

IEC 86-1 (1996-07) --- *Primary Batteries - General*

IEC 60086-2 (1997-07) --- *Primary Batteries – Specification Sheets*

2.Chemical System

Zinc-Manganese Dioxide Battery (Zinc Chloridize Electrolyte, 0%Hg and 0%Cd added)

3.Dimensions

Diameter: 32.3 ~ 34.2 mm Height: 60.0 ~ 61.5 mm

4.Nominal Voltage : 1.5 Volts

5.Average Weight : 82 g

6.Nominal Capacity

5400mAh (10Ω discharge 1 Hour per day , Temp. : 20 ± 2 , CDV<Cut-off Discharge Volt> : 0.9 Volts)

7.Electrical Performance

(Conditions : $3.9\Omega \pm 0.5\%$ load resistance, Measuring time 0.3 Seconds, Temperature at 20 ± 2 , Tested within 30 Days after delivery)

| | Off-load Voltage (V) | On-load Voltage (V) | *Flush Short Circuit Current(A) | Acceptance Standard |
|---------------------------------------|------------------------|-----------------------|-----------------------------------|---|
| New Battery | 1.60 | 1.5 0 | 8.5 | MIL-STD105E, Class II , Double Sampling , AQL=0.4 |
| After 12 Mths Shelf Time at room Temp | 1.55 | 1.40 | 7.0 | |

*The Hair Spring Ampere Meter with $\pm 0.5\%$ Accuracy (0.5 Level) shall be used.

8.Service Output

(Conditions : Test Temp. 20 ± 2 , Test within 30 Days after delivery)

| Test Standards | Discharge Condition | | | Average Minimum Discharge Time | |
|----------------|---------------------|----------------------|---------------------------------|--------------------------------|--|
| | Discharge Load | Daily Discharge Time | Cut-off Discharge Voltage (V) | New Battery | After 12 Mths Shelf Time at room Temp. |
| IEC Standard | 10Ω | 4 Hours | 0.9 | 45 | 41 |
| | 3.9Ω | 1 Hour | 0.9 | 13 | 12 |
| | 2.2Ω | 1 Hour | 0.8 | 7.5 | 6.5 |

Acceptance Criteria : 9 batteries shall be tested for each discharging standard, the Average Discharging Time should be equal to or above the Average Minimum Discharging Time required. Moreover, the total amount of the batteries whose Average Discharging Time is less than 80% of the time required shall not exceed 1, Thus, the ADT of the batteries can be recognized accorded with the requirements

9. Electrolyte Leakage Proof Characteristics

| Item | Condition | Period | Characteristics | Acceptance Standard |
|----------------------------------|---|---|---|---------------------|
| Over-discharge Characteristics | Temp. : 20 ± 2 Relative Humidity : $65 \pm 20\%RH$ | 3.9Ωcontinuous discharge to E.P.V: 0.6V | There shall be no deformation exceeding the specified dimensions, nor leakage recognized by human eye | N=40,Ac=1,Re=2 |
| Storage Characteristics | Temp. : 45 ± 2 Relative Humidity : $< 70\%RH$ | 90 Days | | N=40,Ac=1,Re=2 |
| High Temperature Characteristics | Temp.: 60 ± 2 Relative Humidity : $90 \pm 5\%RH$ | 20 Days | | |

10. Safety Characteristics

| Item | Condition | Period | Characteristics | Acceptance Standard |
|-------------------------------|---|----------|---|---------------------|
| Short Circuit Characteristics | Temp: 20 ± 2 Relative Humidity: $60 \pm 15\%$ Directly connect the Positive & Negative Terminals with a wire | 24 Hours | There shall be no explosion of battery | N=9,Ac=0,Re=1 |
| Abusive Characteristics | Temp. 20 ± 2 Connect 4pcs batteries in series in a battery case, in which, connect one of the batteries reversely, then short connect the wire of the battery pack, until the discharging ended up. | | No explosion, No leakage, and no obvious deformation shall happen | N=12,Ac=0,Re=1 |

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

- (1) Designation : R20P D UM1
- (2) Manufacturer's name, abbreviation or brand : XELLEX
- (3) Nominal Voltage : 1.5 V
- (4) Polarity : " + " , " - "
- (5) Warning: Battery may explode or leak if recharged or disposed of in fire.
- (6) Expiry Date(Guarantee Period) : The Date which shows on the labels of the finished product is used to indicate the Quality Assurance Period before it is used.



- (7) Icon :  An Icon which indicates the battery can not be disposed of in the Rubbish Can.

12. 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 " - " in the right position.
- (3) Short-connecting, heating, disposing of into fire and disassembling the battery are prohibited.

13. Shelf Life 2 years after delivery under room Temp. or other proper storage conditions

14. Discharging Curves

- 3.9 , Continuous Discharge Curve, E.P.V: 0.9V (Figure 1)
- 10 , Continuous Discharge Curve, E.P.V : 0.9V (Figure 2)
- 2.2 , Continuous Discharge Curve , E.P.V: 0.9V (Figure 3)

15. Battery Dimensions & Structure (Figure 4)

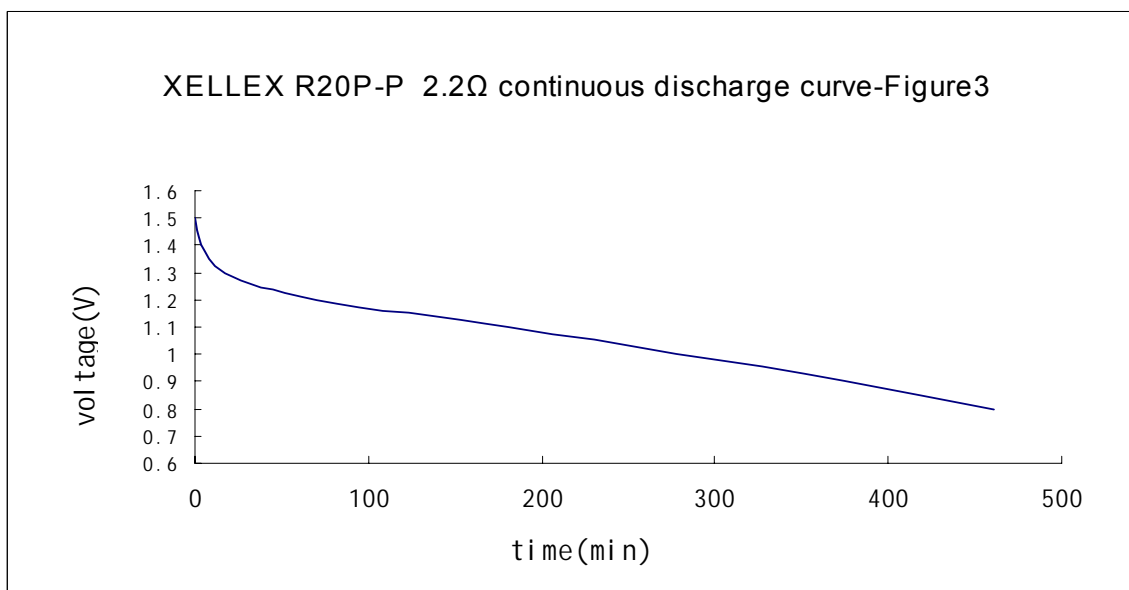
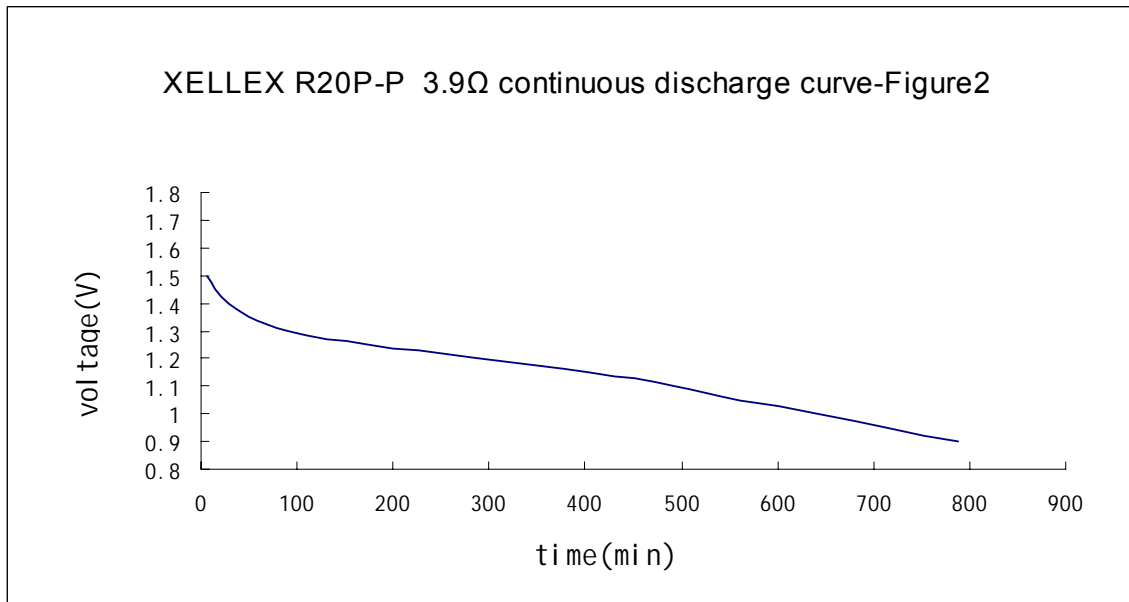
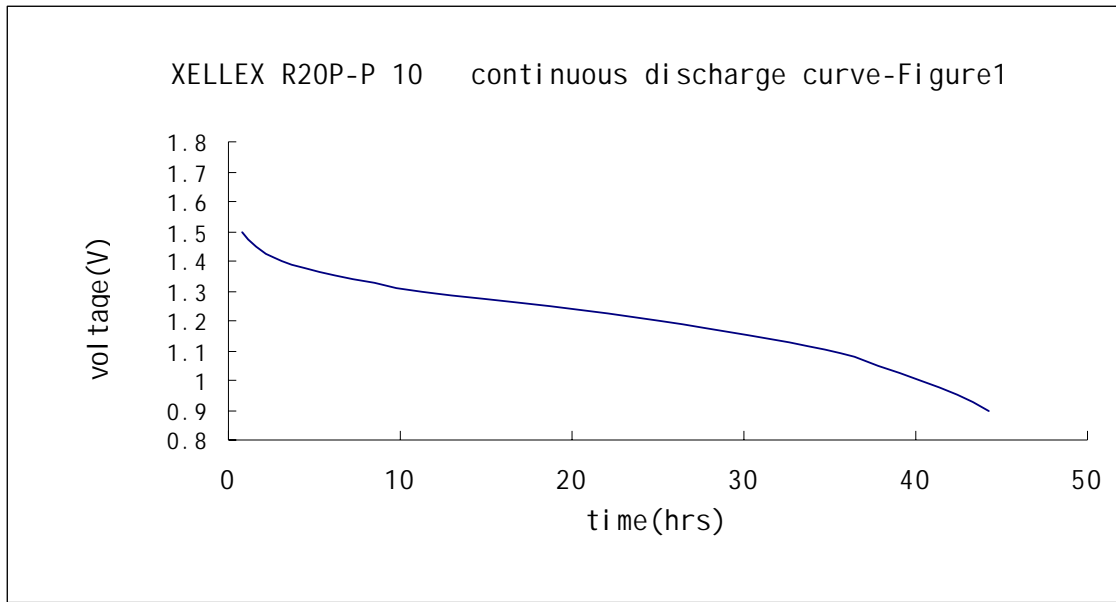


Figure 4

