Lithium Manganese Battery
Technology Specification

Customer	
Part name	Lithium Manganese Battery
Model No	CR2032 210mAh 3.0V
Part No	CR2032 HP2D
Date	2021-08-04

1 Scope

The specification applies to CR2032 HP2D (Li/MnO_2) battery supplied by AKYGA Battery

2 Characteristics and Performance

2.1 Battery type： CR2032

2.2 Nominal voltage：3.0 V

2.3 Normal capacity：210 mAh (15KΩ to cut-off voltage 2.0V at 23℃±3℃

2.4 Operating temperature range：-20-60℃

2.5 Storage temperature range：25±15℃

2.6 Normal weight：3.0g

2.7 Structure and Outside dimensions ：Fig1.

2.8 Performance：

Table 1 . CR2032 Performance

Item	Condition	Test temperature	Characteristic	
Open circuit voltage	No load	23℃±3℃	3.05-3.45V	
			3.05-3.45V	
Load voltage	15kΩ, after 5s	23℃±3℃	3.00-3.45V	
			3.00-3.45V	
Discharge Capacity	Continually discharge at 15kΩ resistance to cut-off voltage 2.0V	23℃±3℃	Normal	1100h
			The lowest	1000h

Table 2.

Item	Condition	Characteristic
Fast Discharge Capacity	Continually discharge at 3kΩ resistance to cut-off voltage 2.0V	210h
Self-discharge rate	The normal temperature and humidity under normal storage for 12 months	Less than 5%

3 Test

3.1 Conditions:

Temperature：25±15℃, Relative Humidity：65±10% Pressure: 1.0atm, (unless otherwise specified)

3.2 Measure Instrument：

3.2.1 Dimensional measurement：Caliper with accuracy of ±0.02mm.

3.2.2 Voltmeter：this has an accuracy of±0.2% and impedance of above 10MΩ.

3.2.3 Exactitude resistance：tolerance should be ±0.5%.

3.2.4 Resistance box：tolerance should be ±0.5%

3.2.5 Constant temperature oven：tolerance should be±2℃

3.3 Initial test：

Cells should be tested in the first 3 months after production

3.4 Outside dimensions：

The measuring instrument as specified 3.2.1 is used. The result should meet the requirement of 2.7

3.5 Open circuit voltage：

Cells should be stored for not less than 24 hours at the normal conditions as specified 3.1, at the same circumstance use voltmeter specified in 3.2.2 to measure voltage between "+" and"-". Results should meet the requirement of table 1

3.6 Load voltage：

Cells should be stored for not less than 24 hours at the normal conditions as specified 3.1, at the same circumstance, Parallel connect meter and 15kΩresistance specified in 3.2.2 to measure voltage between "+" and"-". Result should meet the requirement of table 1

3.7 Discharge capacity：

Cells should be stored for not less than 24 hours at the normal conditions as specified 3.1, Continually discharge at 15kΩ resistance to cut-off voltage 2.0v. Results should meet the requirement of table 1

3.8 Appearance：

No scathe, no crackle, no rust, no dirty spots, and mark clearly

3.9 Terminal arrangement：

Have good conduction performance, no deformation and leakages

3.10 Leakage proof characteristic

Store sample cells 30 days at 45±3℃, relative humidity below 70%, then check appearance at normal temperature and normal humidity with naked eyes. Cells should be no leakage.

3.11 Self-discharge rate

Self-discharge rate can calculated as below equation, result should meet the requirement of table 2

$$\text{Self-discharge rate}(\%) = \frac{A1-A2}{A1} \times 100\%$$

A1 —— Cell average discharge capacity in initial period

A2 —— average discharge capacity after storage

3.12 Vibration Test：

The battery is to be subjected to simple harmonic motion with amplitude of 0.8mm. The frequency is to be varied at the rate of 1 Hz per minute between 10 and 55 Hz, and return back between 90 and 100 minutes. The battery is to be tested in three mutually perpendicular directions

3.13 Drop Test:

Cell should be dropped 10 times from the height of 1.9m onto cement ground. Result should be no leakage, no fire and no explosion

3.14 Short- circuit test：

The cell is to be short-circuited by connecting the positive and negative terminals of the cell with copper wire having a resistance about 0.1Ω. Cell is to be completely discharged or its surface temperature has returned to ambient temperature. During the process, cell should be no fire and no explosion

4 Mark

4.1 Cell type：CR2032

4.2 Nominal voltage ：3V 4.4

Polarity：+

5 Inspection rules

5.1 Deliver inspection: Depending on GB2828

Table 3

Number	Test	Item	IL	AQL
1	Dimensions	3.4	S-2	0.4
2	Appearance	3.8	II	1.0
3	Open circuit voltage	3.6	II	0.4
4	Discharge capacity	3.7	--	--

5.2 Routine inspection: Depending on GB2829 and QB/T2389

6. Inspection for service output

6.1 9 samples shall be tested for service output

6.2 If the average value is equal to or more than the value of table 1, and if the number of batteries showing a value less than 80% of the value of table 1 is 1 or less. The batteries are considered to conform to the requirement.

6.3 If the average value is less than the value of table 1,or if the number of batteries showing a value less than 80% is 2 or more, the test shall be repeated with other 9 pieces. At the second test, if the average value is equal to or more than the value of table 1,and if the number of batteries showing a value less than 80% of the value of table 1 is 1 or less, these batteries are considered to conform to the requirement.

6.4 At above second test, if the average value is less than the value of table 1, or if the number of batteries showing a value less than 80% of the value of table 1 is 2 or more, the batteries are considered not to conform to the requirement. third test shall not be performed.

7 Disply and storage

7.1 Batteries shall be stored in well-ventilateddry and cool conditions
7.2 Battery cartons should not be piledup in severa layers,or should not exceed a specified height
7.3 Batteries should not be exposed to direct sun ray for a long time or placed in areas where they get wet by rain.
7.4 Do not mix unpacked batteries so as to avoid mechanical damage and/or short circuit among each other

8 Storage life

Storage life of batteries are two years long at 20℃±2℃ and RH 60±15%

9 Warnings and Cautions

9.1 Do not short circuited, recharge, heat, disassemble nor dispose in fire.

9.2 Do not force-discharge.

9.3 Do not make the anode and the cathode reversed

9.4 Do not solder directly

9.5 Keep battery out of children's reach 9.6 Do not store or use in the environment of over 85℃.

10 Note

According to the need, this technical specification may be modified at any time. For more information, please consult with us.

According to the need, this technical specification may be modified at any time.

Fig1. Structure of CR2032 HP2D