# Product Specification

Product Name: LFP Li-ion battery cell

Model: 3.2V105Ah

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# Contents

# 1 Scope

This specification describes product type, basic performances, test method and precautions of the prismatic aluminum-clad $LiFePO_4$ lithium ion battery produced by MINRUA POWER CO.,LIMITED The product can be applied to vehicle power system and energy storage system.

# 2 Model

**2.1 Product Name：** Prismatic Aluminum-clad $LiFePO_4$ Lithium Ion Battery

**2.2 Product Model：** 3.2V105Ah

# 3 Nominal Technical Parameter

| No. | Item | | Parameter | Remark |
|---|---|---|---|---|
| 1 | Nominal capacity | | 105Ah | (25±2)℃, Standard charge/discharge. |
| 2 | Nominal voltage | | 3.2V | |
| 3 | AC Impedance resistance (1KHz) | | ≤0.5mΩ | |
| 4 | Standard charge/discharge | Current of charge/discharge | 0.5C/0.5C | (25±2)℃ |
| | | Cut-off voltage of charge/discharge | 3.65V/2.5V | |
| 5 | Maximum current of charge/discharge | Constant charge/discharge | 1C/1C | Refer to constant/pulse charge or discharge MAP |
| | | Pulse charge/discharge (30s) | 1C/3C | |
| 6 | Recommend SOC window | | 10%～90% | N.A. |
| 7 | Charge temperature | | 0℃～55℃ | Refer to constant/pulse charge or discharge MAP |
| 8 | Discharge temperature | | -20℃～55℃ | |
| 9 | Storage temperature | 1 month | -20℃～45℃ | N.A. |
| | | 1 year | 0℃～35℃ | |
| 10 | Storage humidity | | ＜95% | |

| No. | Item | | Parameter | Remark |
|---|---|---|---|---|
| 11 | Self-discharge rate per month | | ≤3%/per month | (25±2)℃，30%～50%SOC storage |
| 12 | Size | Width | 130.3±0.3mm | Refer to appendix 1 |
| 13 | | Thickness (30%-40%SOC) | 36.7±0.5mm | |
| 14 | | Height (total) | 200.5±0.5mm | |
| 15 | | Height (subject) | 195.5±0.5mm | |
| 16 | | Tabs distance | 67.0±1.0mm | |
| 17 | Weight | | 1980±100g | |

# 4 Test Conditions

## 4.1 Test Environment

Temperature：(25±2)℃

Relative humidity：15%～90%

Atmospheric pressure：86KPa～106KPa

## 4.2 Standard Charge

At (25±2)℃, the cell is charged by a constant current of 0.5C (A) to the cut-off voltage 3.65V, then kept at this voltage untill the current is less than 0.05C (A).

## 4.3 Standard Discharge

At (25±2)℃，the cell is discharged by a constant current of 0.5C (A) to the cut-off voltage 2.5V.

# 5 Battery Performance

## 5.1 Electrical Performance

| No. | Item | Requirements | Measuring Procedure |
|---|---|---|---|
| 1 | Rate dischargeability at 25℃ | Discharge capacity / Nominal capacity×100%<br>A) 0.5C(A)≥100%<br>B) 1.0C(A) ≥100% | After standard charged, the cell undergo a rest for 1h, then is diacharged by current 0.5C(A)、1.0C(A) respectively to cut-off voltage 2.5V. This test is allowed to be repeated for 3 times if the discharge capacity fails to meet the technical requirements. |
| 2 | Dischargeability at different temperature | Discharge capacity / Nominal capacity×100%<br>A) 55℃ ≥95%<br>B) -20℃ ≥70% | A) After standard charged, the cell undergo a rest for 5h at (55±2)℃, then is diacharged by current 1.0C(A) to cut-off voltage 2.5V;<br>B) After standard charged, the cell undergo a rest for 24h at (-20±2)℃, then is diacharged by current 1.0C(A) to cut-off voltage 2.0V. |
| 3 | Charge retention and recovery at 25℃ | residual capacity ≥ nominal capacity×95%<br>Recovered capacity ≥nominal capacity×97% | After standard charged，the cell undergo a rest for 28 days, then is diacharged by current 1.0C(A) to cut-off voltage 2.5V. The discharge capacity is called residual capacity. After standard charged again，the cell undergo 30min's rest ， then is diacharged by current 1.0C(A) to cut-off voltage 2.5V. The discharge capacity is called recovered capacity. |
| 4 | Cycle life at 25℃ | ≥3500 cycle @1C/1C | At (25±2)℃, 300kgf clamp force: the cell is charged by current 1.0C (A) to 3.65V, then kept at this voltage until the current is less than 0.05 C(A), followed by 30min rest, subsequently the cell is diacharged by current 1.0C (A) to 2.5V . Cycle continues until the capacity decays to 80% of the nominal capacity |
| 6 | End-of-life management | Discharge capacity / Nominal capacity <70% | The cell shall be stopped using when the life limit is exceeded. |

**5.2 Safety Performance**

| No. | Item | Requirements | Measuring Procedure |
|---|---|---|---|
| 1 | Overdischarge | No fire、explosion、electrolyte leakage | Reference: GB/T 31485-2015《 safety requirements and test methods for power batteries for electric vehicles》 |
| 2 | Overcharge | No fire、explosion | |
| 3 | Shortcircuit | No fire、explosion | |
| 4 | Dropping | No fire、explosion、electrolyte leakage | |
| 5 | Heating | No fire、explosion | |
| 6 | Crushing | No fire、explosion | |
| 7 | Prisking | No fire、explosion | |
| 8 | Seawater immersion | No fire、explosion | |
| 9 | Temperature cycle | No fire、explosion、electrolyte leakage | |
| 10 | Low pressure | No fire、explosion、electrolyte leakage | |

## 6 Transportation

The cells should be packed into boxes under the charge of 30% ~ 50%SOC. During the transportation, they should be protected from severe vibration, shock , extrusion, sun or rain.

## 7 Storage

Cells should be stored (more than 1 month) indoor with a dry and clean environment at 0 ℃~35 ℃, and charged and discharged every 6 months. Keep the last charge under 30%～50%SOC.

## 8 Attentions

1、It is necessary to ensure that the voltage, current and temperature of the cell are monitored and protected when the cell is charged and discharged.

2、Please keep the cell away from heat source, fire source , strong acid, strong alkali and other corrosive environment.

3、Do not short connect or install the battery with incorrect polarity at any time.

4、Do not mix up with cells from different models or manufacturers.

5、Do not use external force to make the cell fall, impact, puncture, do not disassemble the cell or change the external structure.

6、Please keep the cell's charge under 30% ~ 50%SOC, and avoid direct sunlight or high temperature and humidity environment when the battery is not used for a long time,

7、Please wear protective devices such as rubber gloves when operating the battery.

8、Please immediately stop using if there have leakage, smoking or damage with cell , and contact our company to deal with.

## Appendix 1：Two-dimensional Diagram

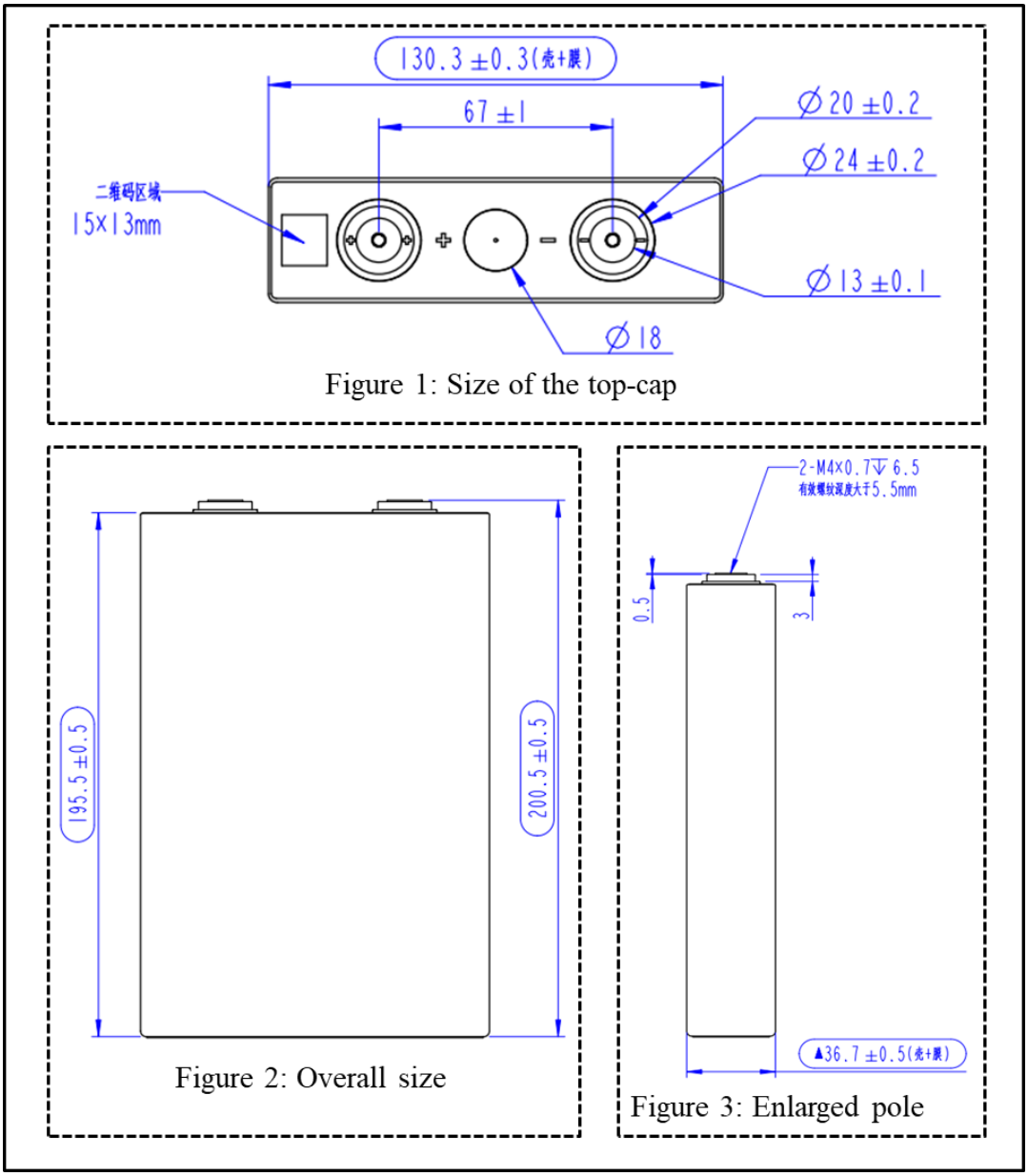
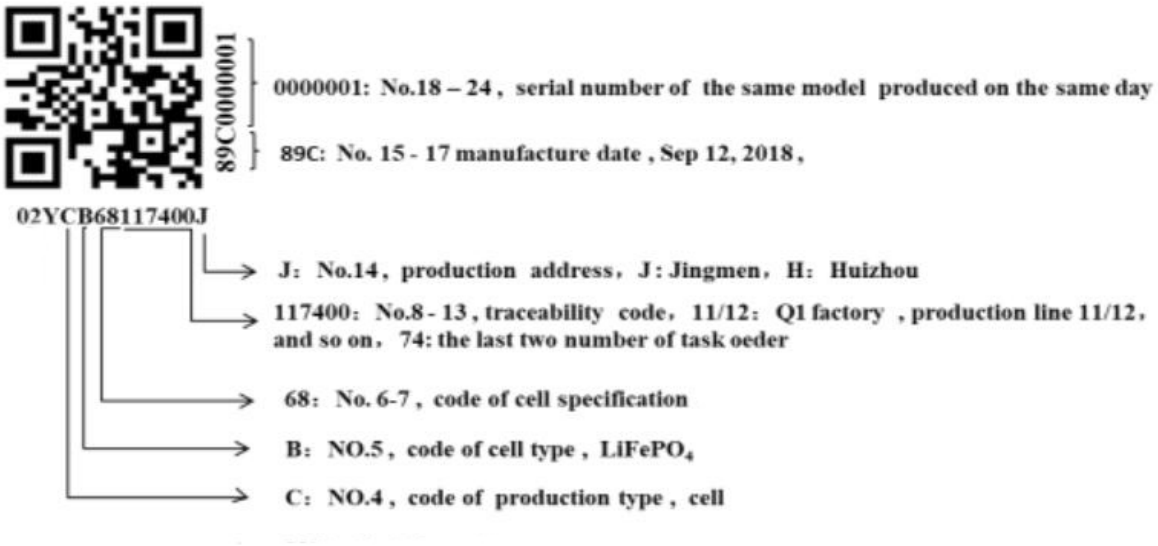



Figure 1: Size of the top-cap

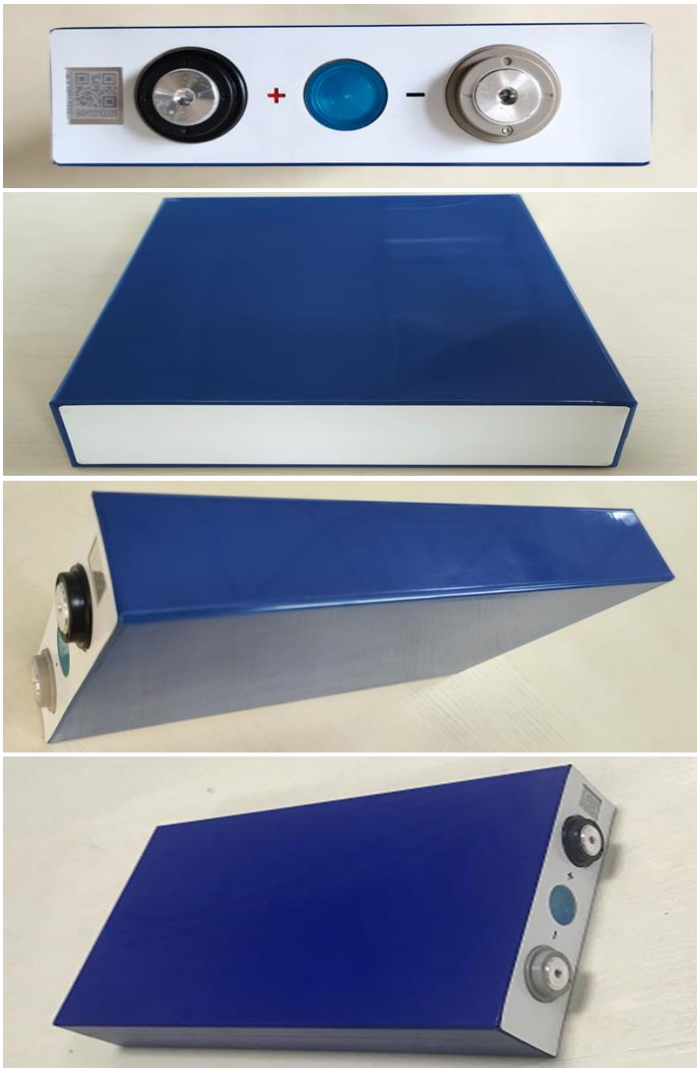
Figure 2: Overall size

Figure 3: Enlarged pole

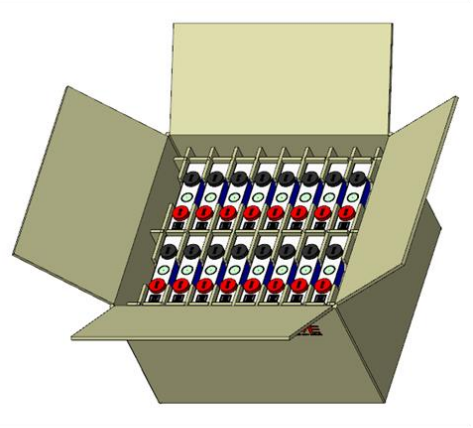
## Appendix 2： Code Rules



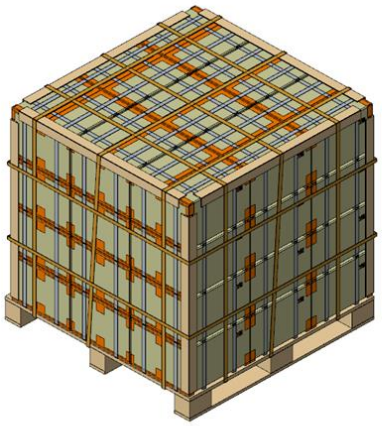

## Appendix 3：Appearance Photos



## Appendix 4：Packing Diagram



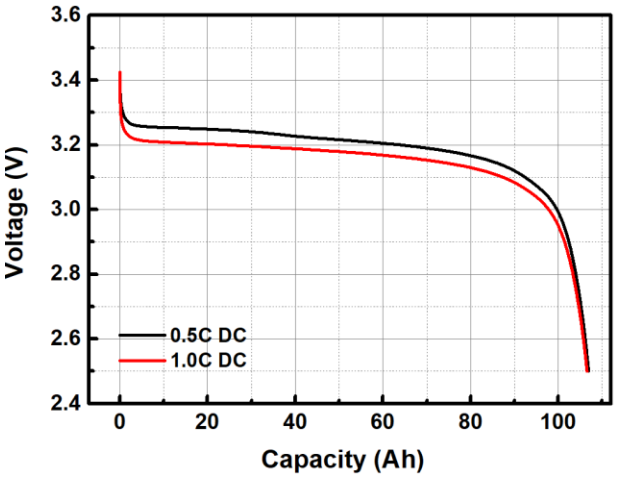
length*width*height：420*343*255mm



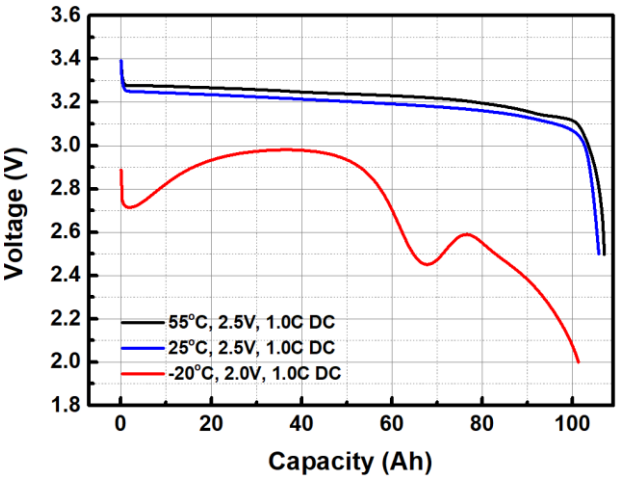
length*width*height：1300*1100*1140mm

## Appendix 5：Electrical Performance Diagram

1、Rate discharge curve at 25℃




2、Discharge curves at different temperature




3、Cycle curve（1.0C 充放 3.65V-2.5V）