



江苏海基新能源股份有限公司

JIANGSU Hi-gee ENERGY CO.,LTD.

磷酸铁锂电池规格书

LFP/AG BATTERY SPECIFICATIONS

产品型号 MODEL NO. HJLFP48173170E-120Ah 3.2V


制作日期 DATE: 2018.08.09

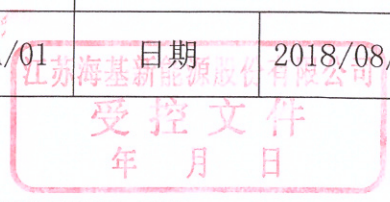
客户物料编码 Customer Part No. _____

江苏海基新能源股份有限公司
受控文件
年 月 日

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1.适用范围 Scope

本规格书适用于江苏海基新能源股份有限公司生产的磷酸铁锂电池。

This specification is just used for LFP cell produced by JIANGSU HIGEE ENERGY CO.,LTD.

2. 型号 Type:

HJLFP48173170E-120Ah


3.外观 Appearance

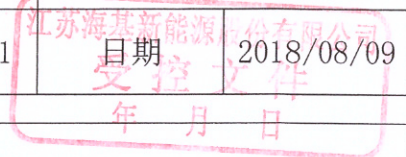
电池/电池组外观无破裂、划痕、变形、生锈、污迹、电解液泄漏等不良现象。

The cell / battery shall be free from cracks, scars, breakage, rust, discoloration, leakage and deformation.

4.电池的基本参数 Ratings

| 序号 No. | 项目 Items | 典型值 Typical data | 备注 Remark |
|--------|--|----------------------------|--|
| 1 | 型号 Type | LFP48173170E-120Ah | |
| 2 | 单体外壳材质 Casing material | 铝 Aluminium | |
| 3 | 标称容量 (0.5C@25±3℃) Nominal capacity | 120Ah | |
| 4 | 额定电压 Rated voltage | 3.2V | |
| 5 | 最大充电电压 Max.Charge voltage | 3.65V | |
| 6 | 放电截止电压 Cut-off voltage | 2.5V | |
| 7 | 标准充电电流 Standard charge current | 120A | |
| 8 | 标准放电电流 Standard discharge current | 120A | |
| 9 | 能量密度 (Wh/Kg) Energy density | ≥140 | |
| 10 | 最大脉冲放电电流 (长脉冲) Peak pulse discharge current(long pulse) | 240A | 最长放电时间为 3 分钟 3 minute(the longest discharge time) |
| 11 | 能量效率 (25±3℃) Energy Efficiency | ≥95% (0.5C) ≥92% (1.0C) | |
| 12 | 充电恒流比 (25±3℃) Constant current ratio of charge process | ≥97% (0.5C) ≥95% (1.0C) | |
| 13 | 最大脉冲放电电流 (短脉冲) Peak pulse discharge current(short pulse) | 360A | 电芯温度低于 50℃, 且 SOC>40%时最长放电时间为 30 秒, SOC<40%最长放电时间为 10 秒 The maximum discharge time : 30S (SOC>40%), or 10S (SOC<40%) but the temperature is not more than 50℃ |
| 14 | 月自放电率 self-discharge rate | ≤3%每月/per month | 25℃, 50%SOC 存储, 新电池存储 3 个月后 Storing for 3 month at 50%SOC @25 °C |

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|----|--|--------------------|--------------------------|
| 15 | 内阻 (50%SOC@1000Hz.) AC Impedance | $\leq 0.30m\Omega$ | |
| 16 | 出货电压(SOC40%) Voltage for shipment | $\geq 3.290V$ | 48A, 1h; charge 1h by48A |
| 17 | 电池重量 Weight | $\leq 2.86kg$ | |
| 18 | 工作温度 Operation temperature | 充电 charge | 0℃~45℃ |
| | | 放电 discharge | -20℃~50℃ |
| | | 贮存 Storage | -30℃~45℃ |
| 19 | 包膜绝缘耐压 (交流 1500±5V 压力 800±20Kg) Voltage tolerance test of dielectric film (AC 1500±5V; pressure 800±20Kg) | | 0~10mA |

5. 电池性能 Performance

除非其它规定，测试应在到货之日起 1 个月内进行，并且符合以下测试条件：

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

相对湿度 Relative humidity: 65±20% RH

环境温度 Ambient Temperature: 25±5℃

标准充/放电模式 Standard charge / discharge condition:

1C 恒流持续充电至最大电压 3.65V，然后在 3.65V 下恒压持续充电直至电流下限 $\leq 6.0\pm 0.5A$ 。

Firstly charging with 1CA to 3.65V, and then keeping the voltage of 3.65V for charging until the current is less than 6.0±0.5A.

1C 恒流放电至 2.5V Discharging with 1CA to 2.5V

5.1 电化学性能 electrochemistry performance

| 序号 No. | 项目 Item | 标准 Standard | 测试方法 Testing method |
|--------|---|--|--|
| 1 | 常温放电性能 Discharge performance at room temperature | 放电容量/标称容量 Discharge /nominal capacity×100% 1C $\geq 100\%$ | 1atm, 环境温度 25℃±3℃, 相对湿度为 45%~85%的条件下, 电池 1C 标准充电后, 搁置 10min, 分别以 1C 进行放电至 2.5V, 循环三次。 At standard atmospheric pressure, charging with 1CA standard charge in the condition of temperature 25℃±5℃, relative humidity 45%~85%, resting for 10min, and discharging with 1CA to 2.5V, permitting to test for three times. |
| 2 | 常温荷电保持能力 (25±3℃) charge retention | 剩余容量 \geq 初始容量*97% 恢复容量 \geq 初始容量*98% Remain capacity \geq initial capacity *97% Recovery capacity \geq initial capacity *98% | 电池标准充电后, 在 25℃±5℃贮存 28 天, 储存期满后, 以 1C 放电至 2.5V, 测量电池容量。 After standard charged, rest in 25℃±5℃ for 28 days. Then discharge with 1CA to 2.5V, testing the battery capacity. |

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| 3 | 循环寿命 Cycle life | 残余容量 \geq 标称容量 *80% (96Ah) Remnant Capacity \geq nominal capacity *80% (96Ah) | 新电池状态 fresh cell \geq 7500 次 times (0.5C@25°C, 100%DOD) \geq 6000 次 times (1.0C@25°C, 100%DOD) |
| 4 | 贮存性能 Storage performance | 容量保持 \geq 80% (25 \pm 3°C 12 个月) Capacity retention \geq 80% (25 \pm 3°C storage for 12 months) | 电池标准充电后, 开路放置 12 个月, 以 1C 放电至 2.5V, 测试放电剩余容量 After standard charging, storing for 12 months at 25 \pm 3°C, then discharging with 1C to 2.5V, testing the battery capacity. |

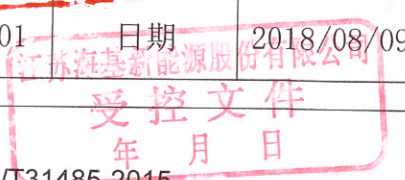
5.2 环境适应性能 Environment adaptive performance

| 序号 No. | 项目 Items | 标准 Standards | 测试方法 Testing method |
|--------|---|--|---|
| 1 | 低气压测试 Low pressure test | 电池应不爆炸、不起火、不漏液 No exploding, no fire, no leaking liquid | 1. 电池按标准充电模式充电; charge with standard model; 2. 电池放入低气压箱中, 调节试验箱中气压为 11.6Kpa, 温度为室温, 静置 6 小时; Put cells in low pressure box, and then change the pressure to 11.6Kpa at normal temperature, rest for 6h. 3. 观察 1 小时; Observe for one hour; |
| 2 | 恒定湿热性能 Invariableness moist heat performance | 搁置后放电容量/标称容量 \times 100% $>$ 80% Discharge capacity / nominal capacity \times 100% $>$ 80% 电池外观无明显变形、不冒烟、不爆炸 No exploding, No fire | 电池标准充电后, 置于温度为 40 \pm 5°C, 相对湿度为 90% 的恒温恒湿箱中, 搁置 48h 后, 取出电池搁置 2h, 以 1C 放电至 2.5V, 测试电池容量。 After standard charging, stand in a box for 48hs, then resting for 2h, discharging with 1CA to 2.5V, recording discharge capacity. The testing temperature and relative humidity are under 40 \pm 5°C and 90% separately. |
| 3 | 低温容量 Capacity at low temperature | 搁置后放电容量/初始容量 \times 100% (A) 0 °C \geq 80%; (B)-20 °C \geq 70%; Discharged capacity/nominal capacity \times 100% (A) 0 °C \geq 80%; (B)-20 °C \geq 70%; | 新电池状态, 25°C 温度标准充电, 0°C 温度标准放电 新电池状态, 25°C 温度标准充电, -20°C 温度 1C 恒流放电至 2.0V Fresh cell, standard charge at 25°C, standard discharge at 0°C ; Fresh cell, standard charge at 25°C, discharging with 1CA to 2.0V at -20°C |

5.3 安全与可靠性 Safety performance

| 序号 No. | 项目 Item | 标准 Standard | 测试方法 Testing method |
|--------|------------------------------------|----------------------------------|-----------------------------|
| 1 | 过充测试 Over-charge performance | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 2 | 过放测试 Over-discharge performance | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |

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| 3 | 短路测试 Short-circuit performance | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 4 | 跌落测试 Drop test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 5 | 加热测试 Heating Test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 6 | 挤压测试 Crush Test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 7 | 海水浸泡测试 Seawater immersion test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 8 | 针刺测试 Nail test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 9 | 温度循环测试 Temperature cycle test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |
| 10 | 低气压测试 Low pressure test | 不爆炸、不起火 No exploding, No fire | Reference to GB/T31485-2015 |

6. 使用注意事项 NOTES

6.1 当使用中的电池的内阻超过这个电池最初内阻的 150%或电池的容量小于等于 84Ah, 应停止使用电池;
When the internal resistance of the cell exceeds 150% of the original internal resistance or the capacity is less than 84Ah, the cell should be stop to use.


6.2 若预计将电池存放 30 天以上的, 应将 SOC 调整为 40%左右;
If the cell is expected to be stored for more than 30 days, the SOC should be adjusted to about 40%.

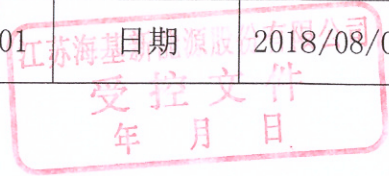
6.3 电箱设计应充分考虑到电池的散热、防水、防尘问题, 满足国家有关标准规定的防水、防尘等级。由于电箱问题导致电池过热损坏电池, 或由于防水、防尘问题导致电池损坏 (如腐蚀、生锈等), 海基新能源不承担质量保证责任;

The design of the pack case should take into the heat dissipation, waterproof, dustproof and so on, and meet the relevant national standards. If not, Higeer is not responsible for the damage things.

6.4 在任何正常的使用情况下, 电池的温度不能超过 55°C,
In any case, the temperature of cell is not permitted to exceed 55°C.

6.5 电池避免在本规格书禁止的低温条件下充电, 否则可能出现容量降低现象。

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Forbidding to charge when temperature is less than 0°C.

6.6 不要用超过规格要求的电流对电池进行充放电;

Please according to this specification, when charge and discharge cells.

6.7 严格按照指示和说明连接电池正负极，禁止反向充电;

No reverse charging.

6.8 避免电池受机械振动碰撞及压力冲击，否则电池内部可能短路，产生高温或火灾;

Avoiding mechanical vibration collision and pressure shock, otherwise the battery may be short circuit, causing high temperature or fire.

6.9 电池应储存在阴凉干燥处。

Store the cell / battery in a cool dry place.

6.10 禁止将电池投入火中或试图拆开。

Do not incinerate or mutilate the cell/battery.

6.11 禁止电池正负极短路和过充，否则强电流和高温可能导致人身伤害或者火灾。

Cells must not be short-circuited or overcharged, which can lead to injury or fire.

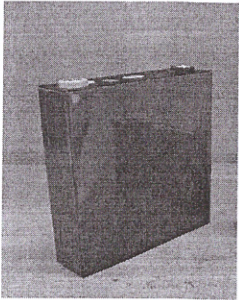
6.12 避免电池到过放状态。电池电压低于 1.5V 时，电池内部可能会遭到永久性的破坏;


Avoiding overcharge, when the battery voltage is less than 1.5v, the battery may suffer permanent damage.

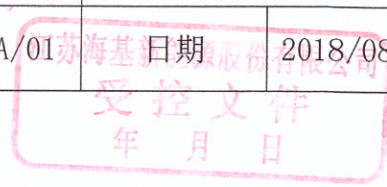
6.13 当电解液泄漏时，应避免皮肤和眼睛接触到电解液。如有接触，应使用大量的清水冲洗接触到区域，并向医生寻求帮助。禁止任何人和动物吞食电池任何部件或电池所含物质。

When the electrolyte leaks, the skin and eyes should not touch the electrolyte directly. If happen, please clear with water repeatedly and see a doctor; Forbidding to eat any part of the cell or any material contained in the cell.

7. 电池尺寸规格及外观 Dimension and appearance

| 参数 Item | 尺寸 Dimension (mm) | 备注 Remark | 外观 appearance |
|----------------------------|-------------------|---|---|
| 厚度 Thick | 48±0.5 | 电池包膜后的尺寸（测试压力为 5000±200N）Including the thick of dielectric film (test pressure 5000±200N) |  |
| 宽度 Wick | 173.9±0.5 | | |
| 高度 Height | 170±0.6 | | |
| 极柱中心距 (Distance for polar) | 129.3±0.2 | | |

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8. 典型曲线 Typical curve

