	Battery Specification		
	Item-Nr.: EL1-4500PN		Rev.: Seite 1
	Description: Motorcycle starter battery Li-FePO4		A0 von 9

Item-No. accundu	Item-No. Customer	Notice

Revision

Reason of Change	Index	Date	Issued	Checked	Approved
First issue	A0	05.05.17	JH	JH	

Li-FePO4 Motorcycle Starter Battery





	Battery Specification		
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	Battery Specification		
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	Description: Motorcycle starter battery Li-FePO4		A0 von 9

1. Scope

This specification shall be applied to motorcycle starting lithium battery (EL1-4500PN) manufactured by Intellect Pioneering Battery Technology.

2. System


Lithium-Iron-Phosphate Polymer Rechargeable Battery.

3. Battery Model

EL1-4500PN

4. Ratings

4.1	Nominal Capacity	4500mAh@0.2C (Typical) 4400mAh@0.2C (Min)
4.2	Nominal Voltage	12.8V
4.3	Nominal Impedance	10mohm (Typical) 20mohm (Max)
4.4	Charging Cutoff Voltage	14.6V
4.5	Charge Current	4400mAh (1.0C) Max.
4.6	Discharge Cutoff Voltage	9.2V
4.7	Max. Continuous Discharge Current	88000mA (20C)
4.8	Max. Pulse Discharge Current	176000mA (40C) Less than 3 seconds for each pulse
4.9	Weight	900 ± 100gr.
4.10	Operation Temperature	Charge: 0°C – 45°C Discharge: -20°C – 60°C
4.11	Storage	Storage Temp: -20°C – 45°C Storage Humidity: 65±20% RH

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5. Visual and Dimensions

5.1	Width	67.0mm Max	Refer to Appendix 1: Battery Drawing. Measured with weighing 300gf at 25±2°C on the battery surface.
5.2	Length	149.0mm Max	
5.3	Height	106.0mm Max	
5.4	Visual	There shall be no such defects as remarkable scratches, cracks, leakage or deformations.	

6. Battery Performance

6.1 Standard Test Condition

The batteries tested here shall be new batteries within one month after shipment from our factory and not be cycled over 5 times. The tests shall be conducted in an ambient temperature of 25±3°C under humidity of 45% to 75% and pressure of 86kPa to 106kPa, unless otherwise specified.


6.2 Measuring Instruments

Dimension Measurement	Precision should be not below 0.01 mm
Voltage and Current	Precision over class 0.5, having inner impedance more than 10kΩ/v.
Impedance Measurement	Sinusoidal alternating current method (1kHz LCR meter).
Battery test system	Current measurement shall be implemented by instrument with equal to more precision scale of ±0.1% and the constant voltage precision should be implemented with ±0.5%, and the timing precision should be not below ±0.1%.

6.3 Standard Charging

6.3.1 Battery Charging:

At 25±5°C, the battery shall be charged at a constant current of 2200mA (0.5C) to 14.6V and then at constant voltage of 14.6V with a charging time of 3.5 hours or 220mA (0.05C) cutoff.

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6.4 Electrical Performance

Test Items		Test Method	Criteria
6.4.1	Rated Capacity	At 25±5°C, the battery shall be charged at a constant current of 2200mA (0.5C) to 16.0V and then at constant voltage of 16.0V with a charging time of 3.5 hours or 220mA (0.05C) cut off. After 1 hour the capacity shall be measured at a discharge current of 880mA (0.2C) and a cut-off voltage of 9.2V.	≥4400mAh
6.4.2	Pulse Discharge (25°C)	At 25±5°C, the battery shall be repeated the following test circle to required times: charge the battery with the standard charge (Section 6.3.1), stand by for 1min. then pulse discharge at a current of 88000mA (20C) for 2seconds, stand by for 1min, charge the battery with the standard charge (Section 6.3.1) again. After the cycle, measuring the capacity of the battery.	The capacity retention after 10000 cycles shall be equal or more than 80% of initial capacity
6.4.3	Storage Characteristics (25°C)	The capacity retention shall be measured at a discharge current of 880mA (0.2C) and a cut-off voltage of 9.2V after standard charge (Section 6.3.1) and being stored for 28 days at 25±5°C.	The capacity retention shall be equal or more than 85% of initial capacity.


7. Delivery Condition

Battery capacity is about 30% (30% SOC). Battery voltage is 12.8~13.8V.

8. Date of Minimum Durability

Date of Minimum Durability: one year after shipment in the standard storage condition. The ambient temperature is 20±5°C, the humidity is 45% to 85%, and the pressure is 86kPa to 106kPa.

Charge the battery within two months after received, and charge the battery to about 50% SOC each six months during a long-term storage.

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9. Handling Guideline

9.1 Battery Charging

Use only approved chargers and procedures. Improperly charging may cause the battery to flame or damage.

Charge the battery using constant current /constant voltage method.

Do not charge the battery with a current or voltage higher than the specified maximum value in this specification. The absolute maximum charging voltage is 3.65V per cell.

Prohibit reverse charging of the battery. The battery must be connected correctly.

Parallel charger is preferred, which can charge each cell independently.

Battery shall be charged at 0°C ~45°C environment temperature specified in the Product Specification. In case of environment temperature is lower than 10°C, charge shall be with a little current (recommend 0.1C). If the environment temperature is lower than 0°C, charge shall be prohibited.

9.2 Battery Discharging

Do not discharge the battery with current higher than the specified maximum value in this specification.

Time of each starting operation should be less than 3 seconds.

Time gap between two starting operation should be over one minute.


Do not supply power by the battery only for a long time.

9.3 Operation Temperature

The battery shall be operated (stored, charged and discharged) in the temperature specified in this specifications.

9.4 Battery Short Circuit

Do not short-circuit a battery. A short circuit can result in over-heating of the terminals and provide an ignition source. More than a momentary short circuit will generally reduce the battery service life and can lead to ignition of surrounding materials or materials within the battery if the seal integrity is damaged. Extended short-circuiting creates high temperature in the battery and at the terminals. Physical contact to high temperatures can cause skin burns. In addition, extended short-circuit may cause the battery to flame.

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9.5 Body Contact

In case of contacting the materials from a damaged or ruptured battery:

Eye contact: Washing immediately with plenty of water for at least 15 minutes. Get medical attention in time.

Skin Contact: Washing immediately with water and soap.

Inhalation of Vented Gas: Remove to fresh air. Get medical attention in time.

Ingestion: Get medical attention immediately.

9.6 Battery Storage

Keep away battery from children.

Do not store battery in a manner that allows terminals to short circuit.

Do not place battery near heating sources, nor exposed to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.

Do not store battery in any place where will damage battery or cause safety matter.

9.7 Dangerous Operation

Prohibit reversing battery polarity within a battery assembly.

Do not bend, fold or fall the battery or part of the battery. It may cause the battery be damaged and result in the battery swelling, leaking, explosion or ignition

Do not heat or dispose the battery into fire, water or other liquids.


Do not put the battery into microwave, washing machine or drying machine.

Do not put the battery onto oven.

Do not put or operate battery under other high temperature conditions.

Do not use a damaged battery.

Do not mix Batteries and Types. Avoid using old and new cells or cells of different sizes, different chemistry or types in the same battery assembly.

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9.8 Battery Disassembly

Never disassemble a battery.

Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted.

9.9 Others

We shall make no liability for problems that occur when the above specifications are not followed.

10. Revision and Statement

We have the right to revise this specification. We'll inform our customers after revision.

If any matters with this specification arise, it shall be revised by mutual agreements.

Appendix 1 Battery Drawing

技术要求:

- 1 外壳材质: 聚苯硫醚 polyphenylene sulphide (PPS)
- 2 热增温度: 285℃
- 3 公差: ±0.5
- 4 容量: 4500mAh

Technical drawing of the battery showing top, side, and front views. Dimensions are 149mm max height, 106mm max width, and 67mm max depth. Callouts 01, 02, 03, and 04 indicate specific features on the battery casing.

04	+-号原框	长9.5*宽9.5 (长宽厘米)	1
03	+-号原框	长9.5*宽9.5 (长宽厘米)	1
02	原框壳 (下盖) / Plastic frame	COF-EL1B	1
01	原框盖 (上盖) / Plastic cover	COF-EL1A	1

※※※以上物料均需符合ROHS要求※※※

EL1系列电池成品图 PN (左:+ 右:-)	变更内容	请做铁值电池 (LiFe Battery)
设计	样品确认	
绘图	复核	
审核	版本	A0
批准	日期	2017-02-09

RD-W1-T-W1503-1P002-A 	数量 1	重量 1 比例 1:2.5 张 1
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