POWER-SONIC
TRUSTED BATTERY SOLUTIONS

PSL-FP SERIES

Medical | Solar | Wind | Mobility | Data Center | Transport | Sport & Recreation | Utility

PSL-FP-IFP30135185EC 3.2V 50AH ENERGY CELL

Rechargeable Lithium Cell
PSL FP – Lithium Iron Phosphate Series

CELL FEATURES

- Super safe lithium iron phosphate (LiFePO4) chemistry reducing the risk of explosion or combustion due to high impact, over-charging or short circuits
- Construct custom battery design by placing two or more cells in parallel and/or series
- Fast charging and low self-discharge rate
- Durable steel case material

APPROVALS

UN38.3 PASSED Transport Safety Certified

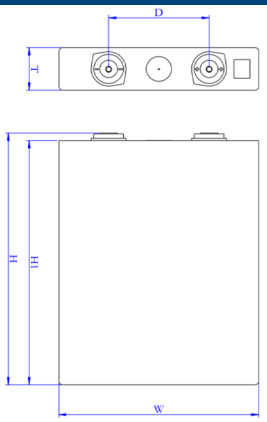
bsi. ISO 9001 Quality Management

- UL 1642 certified
- UN 38.3 certified
- ISO9001:2015 - Quality management systems

DIMENSIONS: inch (mm)

Laser Weld Terminal:
H: 7.40in (188mm)
H1: 7.08in (180mm)
D: 2.66in (67.5mm)
W: 5.31in (135mm)
T: 1.15in (29.3mm)

Screw Bolt Terminal:
H: 7.80in (198mm)
H1: 7.08in (180mm)
D: 2.66in (67.5mm)
W: 5.31in (135mm)
T: 1.15in (29.3mm)



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To ensure safe and efficient operation always refer to the latest edition of our Technical Manual, as published on our website.
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LITHIUM ENERGY CELL

The PSL-FP-IFP30135185EC is an energy cell. Energy cells are designed to deliver sustained current over a long period of time, making them ideal for use in cyclic applications.

PERFORMANCE SPECIFICATIONS

Nominal Voltage	3.2 V
Rated Capacity	50 AH
Stored Energy	160 Wh
Cycle Life (@DOD100%)	2000 Cycles
Approximate Weight	3.08 lbs (1.4 kg)
Internal Resistance	≤0.7 mΩ
Max Charge Current	50 A/1C
Max Discharge Current	150 A/3C
Charge Cut-off Voltage	3.65 V
Recommended Discharge Cut-Off Voltage	2.5 V
Operating Temperature Range Charge Discharge Recommended	 32°F (0°C) to 131°F (55°C) -4°F (-20°C) to 131°F (55°C) 59°F (15°C) to 95°F (35°C)
Temperature Limit	Cell skin temperature cannot exceed 65°C
Standard Charging Method	0.5C constant current charge to 3.65V, then constant voltage charge until the charge current declines to 0.05C
Life Expectancy (years)	5 years at one cycle per day
Dimensional Tolerances	+/- .04 in. (+/- 1 mm) for all dimensions
Terminal Type	M6 Screw Bolt or Laser Weld Plate

STORAGE SPECIFICATIONS

	1 Month	3 Months	6 Months
Retention*	90%	85%	80%
Recovery*	95%	90%	85%

*Cell stored at 77°F (25°C) with 50% SOC.
Storage temperature should be 14°F (-10°C) to 86°F (30°C) with 45-85%RH. It is recommended to store cells at 25°C and between 3.2 and 3.4V for long term storage.

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Rev1: 06/20

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CAPACITY SPECIFICATIONS

Item	Test Method and Condition	Result
Rated Capacity 0.5C	Capacity measured with discharge current of 0.5C with 2.5V cut-off voltage after the standard charge.	53Ah
Rated Capacity 1C	Capacity measured with discharge current of 1C with 2.5V cut-off voltage after the standard charge.	50Ah
Rated Capacity 2C	Capacity measured with discharge current of 2C with 2.5V cut-off voltage after the standard charge.	48Ah
Rated Capacity 3C	Capacity measured with discharge current of 3C with 2.5V cut-off voltage after the standard charge.	45Ah
Cycle Life	Temperature: 23+/-5°C Charge: 1C Constant Current to 3.65V, then Constant Voltage to 0.05C cut off Discharge: 1C discharge to 2.5V 80% or more of first cycle capacity at 1C discharge	2000 times
Initial Impedance	Internal resistance measured at AC 1KHz at 50% charge	≤0.7 mΩ

Standard environmental test condition:
Unless otherwise specified, all tests stated in this Product Specification are conducted at:
Temperature: 23+/-5°C
Humidity: 65+/-20% RH

CHARGING SPECIFICATIONS

Charging Current:
Charging current should be less than the maximum charge current specified within this product specification. Charging with higher current than recommended may cause damage to the cell's electrical, mechanical, and safety performance, and could lead to heat generation or leakage of electrolyte.

Charging Voltage:
Charging voltage should be less than the maximum charge voltage specified within this product specification. Charging beyond 3.7V, which is the absolute maximum voltage, is strictly prohibited. The charger shall be designed to comply with this condition. Charging with higher voltage than maximum may cause damage to the cell's electrical, mechanical, and safety performance, and could lead to heat generation or leakage of electrolyte.

Charging Temperature:
The cell should be charged within 32°F (0°C) to 113°F (45°C).

Reverse Charging:
Reverse charging is prohibited. The cell is required to be connected correctly. The polarity has to be confirmed prior to wiring. If the cell is not connected properly, the cell cannot be charged. Reverse polarity charging may cause degradation of the cell's performance, overall damage to the cell, which could lead to heat generation or leakage of electrolyte.

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DISCHARGING SPECIFICATIONS

Discharging Current:
Discharging current should be less than the maximum discharge current specified within this product specification. Discharging with higher current than recommended may reduce the capacity of the cell and could cause the cell to over-heat.

Discharging Temperature:
The cell should be charged within -4°F (-20°C) to 140°F (60°C).

Over Discharging:
In order to prevent over-discharging, the cell should be charged periodically, as over-discharging may cause decreased cell performance. In the event that a cell has been over-discharged below 2V, care must be taken to bring the cell out of the over-discharged state. Charging should start with a low current (0.01C) for 15 - 30 minutes, i.e. pre-charging, before rapid charging starts. The rapid charging shall begin after the individual cell voltage has been reached above 3V per cell within 15 - 30 minutes that can be determined with the use of an appropriate timer for pre-charging. In case the individual cell voltage does not rise to 3V within the pre-charging time, then the charger shall have functions to stop further charging and display the cell is at abnormal state.

BATTERY PROTECTION/MONITORING REQUIREMENTS

The cell(s) need to be connected to a Protective Circuit Module (PCM) or Battery Management System (BMS). The PCM/BMS must have function(s) to prevent over-charging, over-discharging, and over-current to maintain the safety and overall performance of the cells. Please note that over current can happen by an external short circuit.

Overcharging:
The PCM/BMS must be programmed to stop charging if the cell reaches 3.7V. Over-current protection must be set at specified maximum continuous rating outlined in this specification.

Over-discharging:
The PCM/BMS must be programmed to stop discharging when the cell reaches 2V. Over-current protection must be set at specified maximum continuous rating outlined in this specification.

WARNINGS

Short Circuit:
Please use enough insulation layers between wiring and the cell to prevent short circuits within the battery pack.

Disassembly:
Never disassemble the cell. Disassembling may cause an internal short circuit, which may cause gas emission, fire, or other problems.
Do not puncture the cell. The electrolyte inside the cell is harmful if it comes into contact with the skin or eyes. In the event the electrolyte comes into contact with skin or eyes, it is recommended to immediately flush the electrolyte with fresh water and seek medical attention.

Warning:
Do not place cell in fire. This may cause the cell to overheat and explode.
Do no immerse the cell into liquids (water, etc.).
Do not use a damaged cell.

Replacement:
If a cell needs to be replaced, please contact Power Sonic. End users should not replace cells.

FURTHER INFORMATION

Please refer to our website **www.power-sonic.com** or email us at **technical-support@power-sonic.com** for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.

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