



## PSL-SH-12110 12.8V 11.4 AH

Rechargeable Lithium Battery  
PSL SH – High-Rate Series

### BATTERY FEATURES

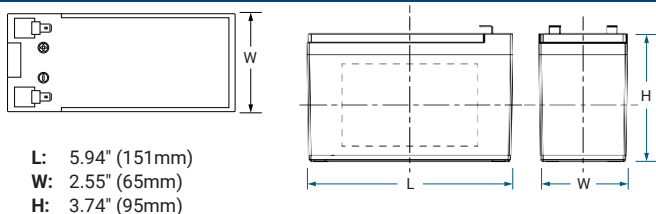
- Super safe lithium iron phosphate (LiFePO4) chemistry reducing the risk of explosion or combustion due to high impact, over-charging or short circuit situation
- Protection Circuit Module (PCM) controls the parameters of the battery to provide optimum safety by protecting against over-charging and over-discharging
- PCM contains a balance circuit, optimizing battery performance
- Higher voltage capability through serial connections
- Delivers twice the power of lead acid batteries, even at high discharge rates, while maintaining constant power
- Faster charging and lower self-discharge
- Up to 10 times more cycles than lead acid batteries
- Compact and only 40% of the weight of comparable lead acid batteries
- Rugged impact resistant ABS case

### APPROVALS

- UL 1642 cell certificate
- IEC 62133 cell certificate
- UN 38.3 certified
- ISO9001:2015 - Quality management systems



### DIMENSIONS: inch (mm)



### GLOBAL HEADQUARTERS (USA AND INTERNATIONAL EXCLUDING EMEA)

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### PROTECTION CIRCUIT MODULE

The PSL-SH Series comes with a protection circuit module which monitors current and voltages during charge and discharge. This protects the battery from over-charge and over-discharge.

The PCM includes a balancing circuit that controls all cell voltages in the battery, making sure they are constantly at the same voltage level, optimizing battery capacity.

### SERIES CONNECTION CAPABLE

The SH line allows for up to 2 batteries connected in series. The batteries must be matched at voltage levels, capacity, state of charge, date of manufacturing, and chemistry.

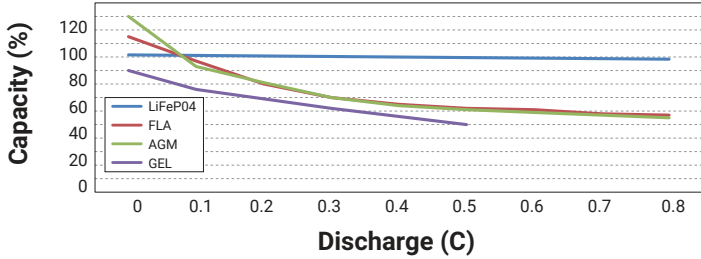
### APPLICATIONS

- Medical
- Solar
- Wind
- Mobility
- Data Center
- Transport
- Sports & Recreation
- Utility

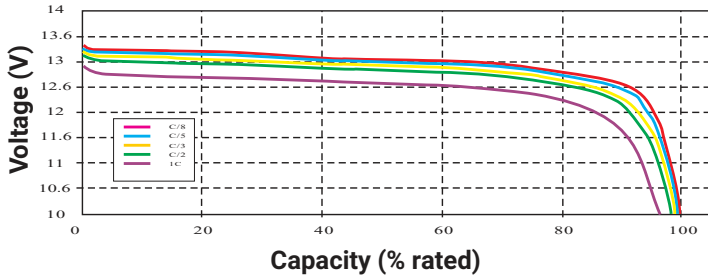
### PERFORMANCE SPECIFICATIONS

|                                       |                                                                                             |
|---------------------------------------|---------------------------------------------------------------------------------------------|
| Nominal Voltage                       | 12.8 V                                                                                      |
| Rated Capacity                        | 11.4 AH at a Constant Current of 0.2C to 10V                                                |
| Stored Energy                         | 145.9 Wh                                                                                    |
| Cycle Life (@DOD100%)                 | 2000 Cycles                                                                                 |
| Approximate Weight                    | 2.87 lbs. (1.3 kg)                                                                          |
| Internal Resistance                   | ≤50 mΩ                                                                                      |
| Max Charge Current                    | 11.4 A                                                                                      |
| Max Discharge Current                 | 20 A                                                                                        |
| Charge Cut-off Voltage                | 14.6 V                                                                                      |
| Recommended Discharge Cut-Off Voltage | 10 V                                                                                        |
| Series & Parallel Connection          | <b>2 batteries can be connected in series, parallel connection not recommended</b>          |
| Operating Temperature Range           |                                                                                             |
| Charge                                | 32°F (0°C) to 113°F (45°C)                                                                  |
| Discharge                             | 14°F (-10°C) to 140°F (60°C)                                                                |
| Recommended                           | 59°F (15°C) to 95°F (35°C)                                                                  |
| Self-Discharge Rate                   | 3%/month                                                                                    |
| Long Term Storage                     | Charge every 6 months or as soon as OCV is 12.8V                                            |
| Power Sonic Chargers                  | Contact us for information on a suitable charger                                            |
| Life Expectancy (years)               | 5 years at one cycle per day                                                                |
| Short Circuit Protection              | Automatically recover after removal of short                                                |
| Dimensional Tolerances                | +/- 0.04 in. (+/- 1mm) for length and width<br>+/- 0.08 in. (+/- 2mm) for height dimensions |
| Terminal Type                         | F2                                                                                          |

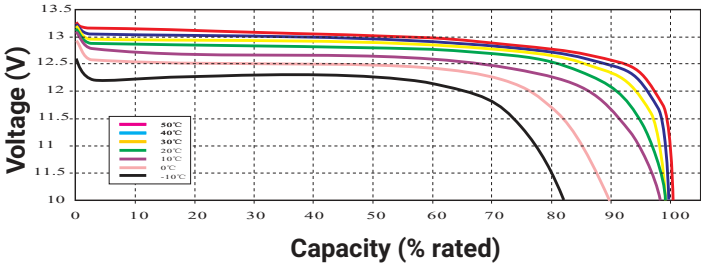
**CAPACITY OF LiFePO4 vs. LEAD ACID AT VARIOUS CURRENTS OF DISCHARGE**



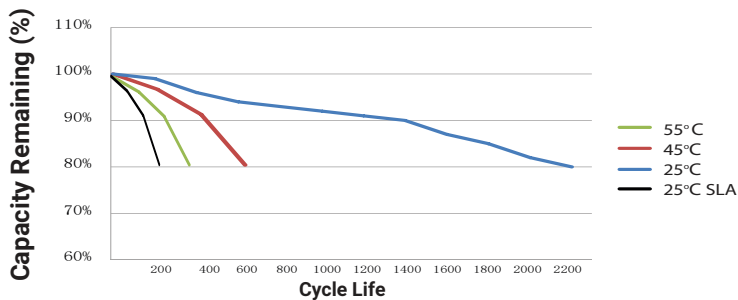
**DISCHARGE VOLTAGE PROFILES AT VARIOUS RATES 25°C AMBIENT TEMPERATURE**



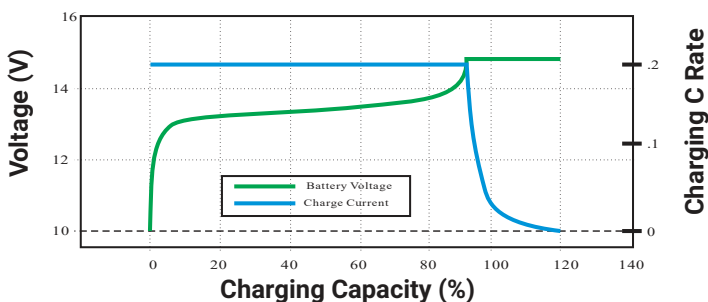
**DISCHARGE VOLTAGE PROFILES AT 0.5C DISCHARGE RATE VARIOUS AMBIENT TEMPERATURES**



**CYCLE LIFE vs. VARIOUS TEMPERATURE 0.2C CHARGE/0.5C DISCHARGE @ 100% DOD**



**CHARGING CHARACTERISTICS (0.2C AMP @ 25°C)**



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**BENEFITS OF LITHIUM**

Lithium offers several performance benefits versus its sealed lead acid (SLA) equivalent. A lithium battery's capacity is independent from the discharge rate and provides constant power throughout its discharge. The degradation of a lithium battery at a high temperature is significantly reduced in comparison to SLA.

Lithium has ten times the cycle life as SLA at room temperature. Even at an elevated temperature, lithium still has increased cycle life over SLA at room temperature.

Lastly, Lithium charging follows a similar charging profile as SLA, Constant Current Constant Voltage (CC/CV). However, lithium can be charged faster, without the need for a maintenance float charge.

**PCM TECHNICAL SPECIFICATIONS**

|                                              |                                                                                       |
|----------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Over-charge</b>                           |                                                                                       |
| Over-charge voltage for each cell            | 3.80 V                                                                                |
| Over-charge release voltage for each cell    | 3.60 V                                                                                |
| Over-charge release method                   | Protection releases when all cell voltages drop below the over-charge release voltage |
| <b>Over-discharge</b>                        |                                                                                       |
| Over-discharge voltage for each cell         | 2.00 V                                                                                |
| Over-discharge release voltage for each cell | 2.50 V                                                                                |
| Over-discharge release method                | Protection releases upon charging                                                     |
| <b>Over current</b>                          |                                                                                       |
| Discharge over current protection            | 80-100 A                                                                              |
| Over-current delay time                      | 50-150 ms                                                                             |
| Over current release method                  | Remove load for the over-current protection to release                                |
| <b>Battery temperature</b>                   |                                                                                       |
| Over-temperature protection                  | 65° C                                                                                 |
| Release temperature                          | 48° C                                                                                 |
| <b>Short circuit protection</b>              |                                                                                       |
| Function condition                           | External short circuit                                                                |
| Short circuit delay time                     | 200-800 ms                                                                            |
| Release condition                            | Remove load for the short circuit protection to release                               |

**FURTHER INFORMATION**

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