LFP SERIES

solar Great

Medical Solar Wind Mobility Data Center Transport Sport & Recreation Utility




# LFP12100

12.8V
100 AH

**Rechargeable Lithium Iron Phosphate Battery**
**UP– LiFePO4 Series Connection Range**

## 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
- Battery Management System (BMS) controls the parameters of the battery to provide optimum safety by protecting against over-charging and over-discharging
- BMS enhanced design balances the battery cells, optimizing battery performance
- Higher capacity or voltage capability through parallel or 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

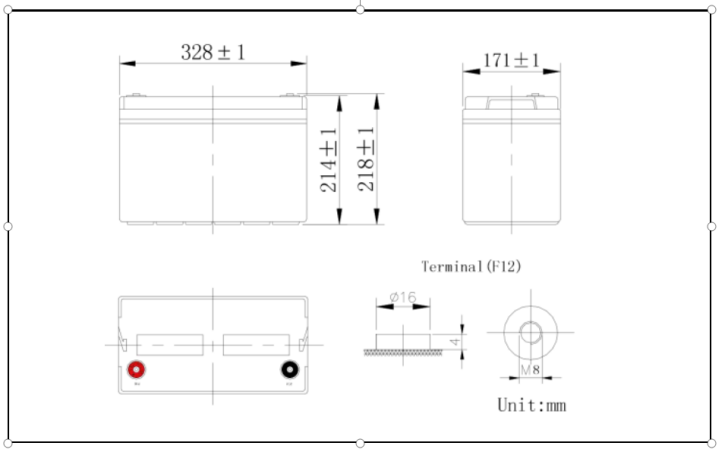
UN38.3 PASSED Transport Safety Certified

bsi. ISO 9001 Quality Management

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

## DIMENSIONS:

**Plane Chart:** Unit:mm




## INTELLIGENT BATTERY MANAGEMENT SYSTEM

The UP Series comes with an intelligent battery management system which monitors current and voltages during charge and discharge. This protects the battery from over-charge and over-discharge.

The BMS embeds smart balancing algorithms that control all cell voltages in the battery, making sure they are constantly at the same voltage level, optimizing battery capacity.

## SERIAL CONNECTION CAPABLE

The UP series allows for up to 4 batteries connected in series or 4 in parallel, but not concurrently. The batteries must all 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

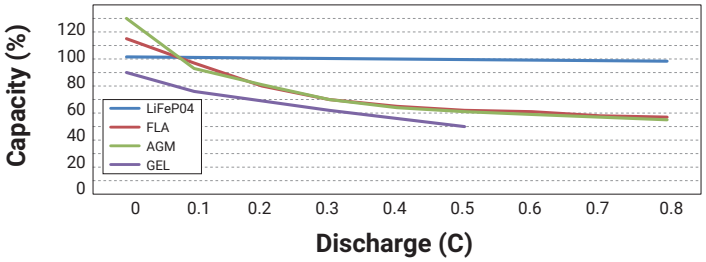
| | |
|---|---|
| **Nominal Voltage** | 12.8 V |
| **Rated Capacity** | 100 AH at a Constant Current of 0.2C to 10V |
| **Stored Energy** | 1280 Wh |
| **Cycle Life** (@DOD100%) | 2000 Cycles |
| **Approximate Weight** | 23.1 lbs (10.5kg) |
| **Internal Resistance** | ≤30.0 mΩ |
| **Max Charge Current** | 100 A |
| **Max Discharge Current** | 100 A |
| **Charging Voltage** | 14.6 V |
| **Recommended Discharge Cut-Off Voltage** | 10V |
| **Series & Parallel Connection** | **4 in series or 4 in parallel** |
| **Operating Temperature Range**<br>Charge<br>Discharge<br>Recommended | <br>32°F (0°C) to 113°F (45°C)<br>-4°F (-20°C) to 140°F (60°C)<br>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 Uniwersal Chargers** | Contact us for information on a suitable charge |
| **Life Expectancy** (years) | y ears5 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** | F12 |

Rev4: 10/19

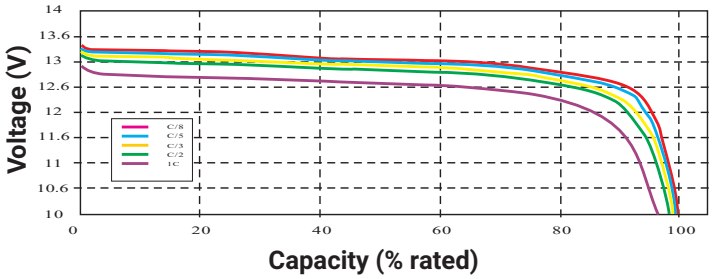
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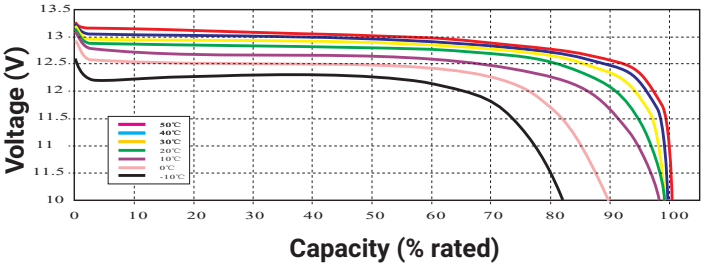
## CAPACITY OF LiFePO4 vs. LEAD ACID AT VARIOUS CURRENTS OF DISCHARGE



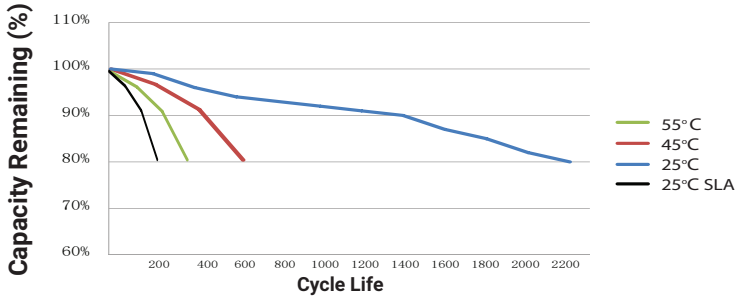

## DISCHARGE VOLTAGE PROFILES AT VARIOUS RATES 25°C AMBIENT TEMPERATURE



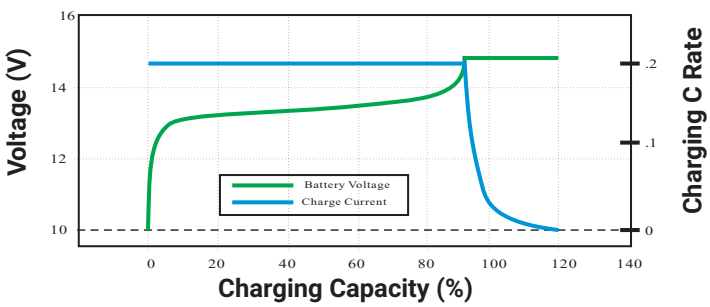

## DISCHARGE VOLTAGE PROFILES AT 0.5C DISCHARGE RATE VARIOUS AMBIENT TEMPERATURES




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




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




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**Rechargeable Lithium Iron Phosphate Battery**
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## BENEFITS OF LITHIUM

Lithium offers several performance benefits versus it's sealed lead acid (SLA) equivalent. A lithium battery's capacity is independent from the discharge rate and provides constant power throughout it's 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.

## BMS TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **Over charge** | |
| **Over-charge protection for each cell** | 3.90 V |
| **Over-charge release for each cell** | 3.60 V |
| **Over-charge release method** | Protection releases when all cell voltages drop below the over-charge release voltage |
| **Over discharge** | |
| **Over-discharge protection for each cell** | 2.00 V |
| **Over-discharge release for each cell** | 2.50 V |
| **Over-discharge release method** | Protection releases when all cell voltages rise above the over-discharge release voltage |
| **Over current** | |
| **Discharge over-current protection** | 290-310 A |
| **Protection delay time** | 31 ms |
| **Over-current release method** | Remove load for the over-current protection to release |
| **Battery temperature** | |
| **Over-temperature protection** | 65° C |
| **Release temperature** | 55° C |
| **Short circuit protection** | |
| **Function condition** | External short circuit |
| **Short circuit delay time** | 250-500 ms |
| **Release condition** | Remove load for the short circuit protection to release |

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