



















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\

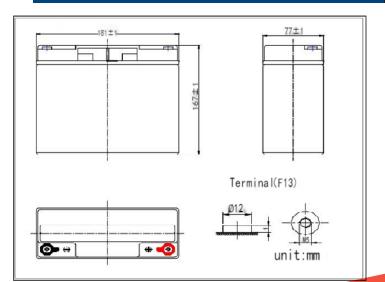
APPROVALS





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

DIMENSIONS:



INTELLIGENT BATTERY MANAGEMENT SYSTEM

18AH (12.8V 230WH)

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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

Terminal Type

- Mobility
- **Data Center**
- Transport
- Sports & Recreation
- Utility

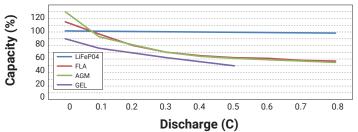
PERFORMANCE SPECIFICATIONS

Nominal Voltage 12.8 V Rated Capacity 18 AH at a Constant Current of 0.2C to 10V Stored Energy 230.4 Wh Cycle Life (@DOD100%) 2000 Cycles Approximate Weight 4.4 lbs (2 kg) Internal Resistance ≤30.0 mΩ Max Charge Current 18 A Max Discharge Current 18 A Charging Voltage 14.6 V Recommended Discharge Cut-Off Voltage 4 in series or 4 in parallel Series & Parallel Connection 4 in series or 4 in parallel Operating Temperature Range 32°F (0°C) to 113°F (45°C) Charge 32°F (15°C) to 95°F (35°C) Self-Discharge 43%/month Long Term Storage Charge every 6 months or as soon as OCV is 12.8V Power Unlwersal Chargers Contact us for information on a suitable charge tife 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 +/- 0.08 in. (+/- 2mm) for height dimensions	I LINI ON MANUE OF LOTT TOAT TONG	
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Charging Voltage Recommended Discharge Cut- Off Voltage Series & Parallel Connection Operating Temperature Range Charge Discharge Recommended Self-Discharge Rate Long Term Storage Charge Charg	Max Charge Current	18 A
Recommended Discharge Cut- Off Voltage Series & Parallel Connection Operating Temperature Range Charge Discharge Recommended Self-Discharge Rate Long Term Storage Life Expectancy (years) Short Circuit Protection A in series or 4 in parallel 4 in series or 4 in parallel 32°F (0°C) to 113°F (45°C) -4°F (-20°C) to 113°F (60°C) 59°F (15°C) to 95°F (35°C) Self-Discharge Rate ≤3%/month Charge every 6 months or as soon as OCV is 12.8V Contact us for information on a suitable charge the series of the series	Max Discharge Current	18 A
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Operating Temperature Range Charge 32°F (0°C) to 113°F (45°C) Discharge -4°F (-20°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 Unliwersal 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 Pimensional Tolerances +/- 0.04 in. (+/- 1mm) for length and width		10 V
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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 years at one cycle per day Short Circuit Protection Automatically recover after removal of short +/- 0.04 in. (+/- 1mm) for length and width	Charge Discharge	-4°F (-20°C) to 140°F (60°C)
Power Uniwersal Chargers Contact us for information on a suitable charge Life Expectancy (years) Short Circuit Protection Pimensional Tolerances OCV is 12.8V Contact us for information on a suitable charge y ears5 at one cycle per day Automatically recover after removal of short +/- 0.04 in. (+/- 1mm) for length and width	Self-Discharge Rate	≤3%/month
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Short Circuit Protection Automatically recover after removal of short +/- 0.04 in. (+/- 1mm) for length and width	Power Uniwersal Chargers	Contact us for information on a suitable charge
Short Circuit Protection short short +/- 0.04 in. (+/- 1mm) for length and width	Life Expectancy (years)	y ears5 at one cycle per day
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	Dimensional Tolerances	· · · · · · · · · · · · · · · · · · ·

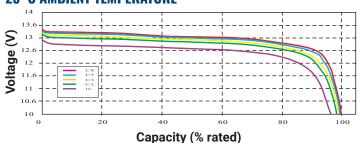
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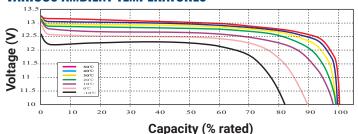
CAPACITY OF LiFeP04 vs. LEAD ACID AT VARIOUS CURRENTS OF DISCHARGE



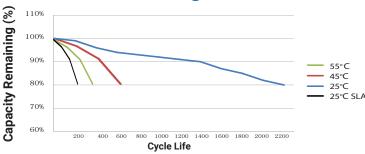
DISCHARGE VOLTAGE PROFILES AT VARIOUS RATES



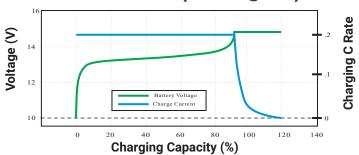
DISCHARGE VOLTAGE PROFILES AT 0.5C DISCHARGE RATE VARIOUS AMBIENT TEMPERATURES



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



CHARGING CHARACTERISTICS (0.2C AMP @ 25°C)



LFP-UP-1218

Rechargeable Lithium Iron Phosphate Battery UP - LiFePO4 Series Connection Range

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	48-54 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