



Introduction

LiFePO₄wered/USB™ is a convenient power module that makes it easy for makers and engineers to integrate LiFePO₄ battery technology into their 3.3 V powered circuits.

What are LiFePO₄ batteries?

LiFePO₄ or “Lithium iron phosphate”, is a relatively new Lithium-ion chemistry that offers some distinct advantages:

- 3.2 V nominal voltage.
- 3.6 V maximum voltage during the charge cycle.
- Stable and safe chemistry, significantly reducing risk of fire and explosion compared to other Lithium-ion batteries.
- Long shelf-life.
- No memory effect.
- High charge/discharge cycle count (>1000).
- Wide temperature range (-20 °C - 60 °C).
- High power density.
- Low internal resistance.
- Environmentally friendly and RoHS compliant.

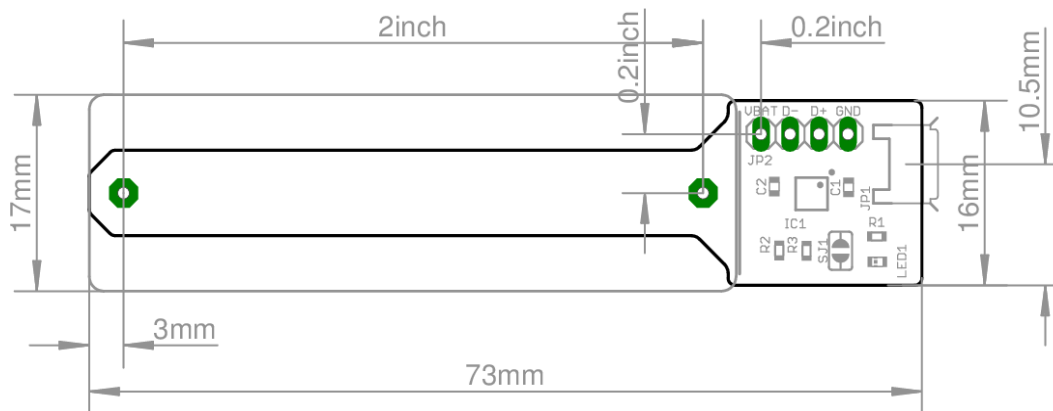
What is LiFePO₄wered/USB™?

Short answer: a convenient module to get you started with LiFePO₄ battery technology.

Long answer: a complete USB chargeable LiFePO₄ battery system with these great features:

- Convenient “battery holder with USB connector” form factor for easy PCB integration.
- Single sided design enables mounting flush with a carrier PCB.
- Connections are on a 0.1” grid for easy use with solderless breadboard or prototype PCBs.
- Uses micro-USB charge connector, for compatibility with ubiquitous cell phone chargers.
- Ultra low leakage of only 0.5 μA when the charger is disconnected.
- Smart charger IC keeps battery topped up as long as USB power is present while preventing overcharge, and provides features such as preconditioning and battery short protection.
- 3.3 V circuits can connect directly to the battery without the need for a voltage regulator.
- Extra 0.1” connector provides access to USB signals as well as alternative access to the battery power.
- Status LED indicates when the battery is charging.
- The battery can be charged while it is powering a circuit.
- Bridging solder jumper SJ1 turns on fast charge mode, requiring only half the normal charge time.

Mechanical characteristics



Electrical characteristics

Unless otherwise indicated, all characteristics apply for $V_{USB} = 4.5\text{ V to }6\text{ V}$ and $T_A = -20\text{ °C to }60\text{ °C}$. Typical values are at 25 °C , $V_{USB} = 5\text{ V}$.

| Parameter | Sym | Min | Typ | Max | Unit | Conditions |
|---------------------------------------|------------------------|------|------|------|---------------|--------------------------------------|
| USB charge voltage | V_{USB} | 4.2 | 5.0 | 6.5 | V | |
| Battery leakage current | $I_{DISCHARGE}$ | | 0.5 | 2 | μA | USB voltage absent |
| | | | 6 | 17 | μA | USB voltage present |
| Battery charge current | I_{CHARGE} | | 245 | | mA | SJ1 open |
| | | | 480 | | mA | SJ1 bridged |
| Maximum output voltage | V_{REG} | 3.58 | 3.6 | 3.62 | V | $T_A = -5\text{ °C to }55\text{ °C}$ |
| Battery short protection threshold | V_{SHORT} | | 1.45 | | V | |
| Battery short protection current | I_{SHORT} | | 25 | | mA | |
| Precondition voltage threshold | V_{PTH} | 1.9 | 2.0 | 2.1 | V | |
| Precondition current ratio | I_{PRE} / I_{CHARGE} | | 10 | | % | $T_A = -5\text{ °C to }55\text{ °C}$ |
| Auto recharge voltage ratio threshold | V_{ARECH} / V_{REG} | 93 | 95 | 97 | % | |
| Thermal shutdown | T_{SD} | | 150 | | °C | @ charge controller die |

Sales and support

To buy the LiFePO₄wered/USB™, please visit <http://lifepo4wered.com>.

To order in quantity and for volume discounts, please contact sales@lifepo4wered.com.

For support, please contact support@lifepo4wered.com.

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