

LiFePo4 Starting Battery

LiFePo4 is short for Lithium Iron Phosphate battery (Google it). They are made for different applications. One type can be used for low amperage, deep discharge applications, and another type for starting cars. I recently bought a dual purpose LiFePo battery that can be used for starting my Model A and for deep discharge at a lower current. I bought the battery online from an eBay vendor for \$235.33 plus shipping and taxes. The brand is Vevor and the model is Duple EV12-60. It is made in China. It has the standard posts but they are brass.



The first thing I noticed is that is a lot lighter than the smaller lead-acid battery I took out. The smaller lead-acid battery weighs 28 pounds and the 1/3 larger LiFePo batter weighs 12 pounds. It has 4 cells in series for a total nominal voltage of 12.8 volts. Here are the specs:

- Rated Capacity: 60 Amp-hours
- Rated Energy: 768 Watt-hours
- Recommended Charging Current: 30 Amps
- Maximum Charging Current 60 Amps
- Recommended Continuous Discharge Current: 30 Amps
- Maximum Discharge Current: 60 Amps
- Cold Start Current: 800 CCA
- Recommended Charging Voltage: 13.8 Volts
- Maximum Charging Voltage: 14.6 Volts
- Operating Temperature, Charging: 0 to 50 C (32 to 122 F)
- Operating Temperature, Discharging: -25 to 55 C. (-13 to 131 F)

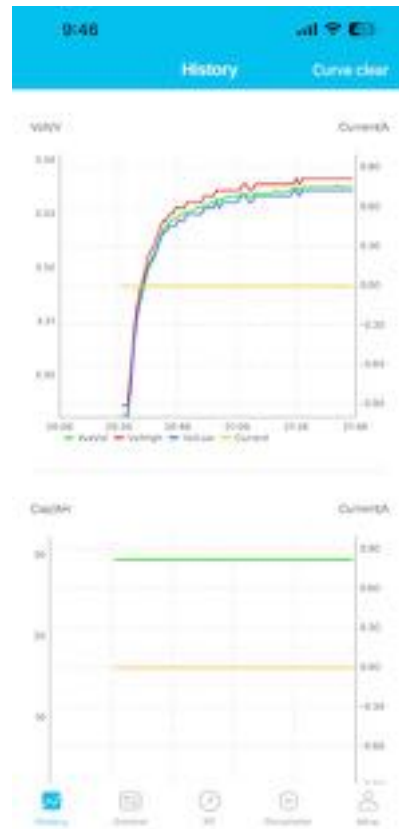
The 60 amp-hour capacity means that it would run my 5 amp ignition system or my LED emergency blinkers for 12 hours. The 800 CCA means that it could start my Diesel pickup. So if my alternator crapped out (it did once) I could get home on the battery. The battery is more powerful (higher voltage) than my old worn-out lead acid battery, so I may have to add a resistor to the 12-volt starter motor to reduce the torque. A Model T Bendix spring works as a resistor for a starter motor and it is low enough resistance to not effect the lights or charging.

The battery has an internal battery management system (BMS) that controls the charging of the 4 individual cells so that they are all equally charged. It also disconnects the battery if the charging voltage is too high (14.8 Volts) or the battery drops below a set point (10 Volts). There is an emergency start feature if the low voltage disconnects the battery.

There is an off-on button on top of the battery that could be used as a security feature in addition to my normal battery disconnect switch.



There is a battery monitoring application for Apple or Android phones that allows you to monitor the condition of the battery and individual cells. It connects to the battery through a Bluetooth link. The monitoring app will show the history of the battery, charging or discharging. It shows the condition of each of the 4 cells in the battery. I am now monitoring the battery in my living room which is next to the garage, about 20 feet away from my car, so it has a good range.



My battery came with a 49% state-of-charge. My battery maintainer's voltage and current are too low to charge the battery. A LiFePo battery needs about 14 volts to fully charge. It self discharges very little and it will not degrade from sitting, so I will not be using the battery maintainer.

This battery is a little too big for my battery tray, so I had to modify my tray. Don't make this mistake, as I did, and check the size of the battery before you buy it to make sure it will fit. The Duple EV12-30 is smaller and has plenty of power to start a Model A.

First start: The car started right up. Right after the start my voltmeter showed that the alternator was putting out 14 volts and my ammeter showed 15 amps charging. The monitor on my phone showed 15 amps at first and 12 amps after the battery voltage came up to 13.6 Volts. The monitor showed more than 2 hours before 100% state-of-charge. After 3 trips to town the state-of-charge is 62%.

The only real drawback I see is not being able to use my car in freezing weather. But I never drive my car then anyway. Some LiFePo batteries have a built-in heater to enable use at lower temperatures.

So far I am very happy with the new LiFePo battery. I expect it to last for 15 to 20 years or more, probably longer than me. Even though it was more expensive than a flooded lead-acid battery, the cost should be less in the long run. It is about the same price as a low-cost Optima battery. Anyone need a battery maintainer?