

12,8 & 25,6 Volt Lithium-Iron-Phosphate Batteries Smart With Bluetooth

www.victronenergy.com



12,8V 330 Ah LiFePO4 Battery



VictronConnect App

Victron Energy Lithium Battery Smart batteries are Lithium Iron Phosphate (LiFePO₄) batteries and are available in 12.8 V or 25.6 V in various capacities. They can be connected in series, parallel and series/parallel so that a battery bank can be built for system voltages of 12 V, 24 V or 48 V. The maximum number of batteries in one system is 20, which results in a maximum energy storage of 84 kWh in a 12 V system and up to 102 kWh in a 24 V¹⁾ and 48 V¹⁾ system.

A single LFP cell has a nominal voltage of 3.2V. A 12.8 V battery consists of 4 cells connected in series and a 25.6 V battery consists of 8 cells connected in series.

Why lithium-iron-phosphate?

Rugged

A lead-acid battery will fail prematurely due to sulfation:

- If it operates in deficit mode during long periods of time (i.e. if the battery is rarely, or never at all, fully charged).
- If it is left partially charged or worse, fully discharged (yacht or mobile home during wintertime).

A LFP battery:

- Does not need to be fully charged. Service life even slightly improves in case of partial charge instead of a full charge. This is a major advantage of LFP compared to lead-acid.
- Other advantages are the wide operating temperature range, excellent cycling performance, low internal resistance and high efficiency (see below).

LFP is therefore the chemistry of choice for demanding applications.

Efficient

- In several applications (especially off-grid solar and/or wind), energy efficiency can be of crucial importance.
- The round-trip energy efficiency (discharge from 100 % to 0 % and back to 100 % charged) of the average lead-acid battery is 80 %.
- The round-trip energy efficiency of a LFP battery is 92 %.
- The charge process of lead-acid batteries becomes particularly inefficient when the 80 % state of charge has been reached, resulting in efficiencies of 50 % or even less in solar systems where several days of reserve energy is required (battery operating in 70 % to 100 % charged state).
- In contrast, a LFP battery will still achieve 90 % efficiency under shallow discharge conditions.

Size and weight

- Saves up to 70 % in space
- Saves up to 70 % in weight

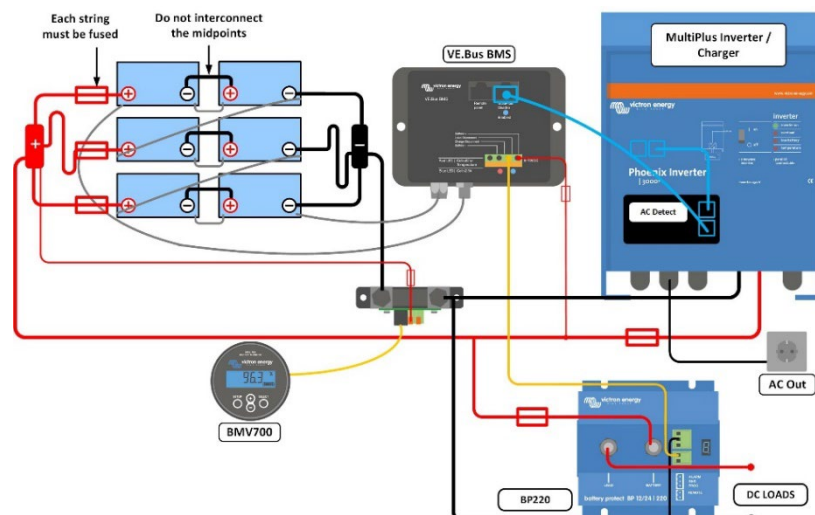
Expensive?

- LFP batteries are expensive when compared to lead-acid. But in demanding applications, the high initial cost will be more than compensated by longer service life, superior reliability and excellent efficiency.

Bluetooth

- With Bluetooth cell voltages, temperature and alarm status can be monitored.
- Instant readout: The [VictronConnect App](#) can display the most important data on the Device list page without the need to connect to the product.
- Very useful to localize a (potential) problem, such as cell imbalance.

¹⁾To reduce required balancing time, we recommend to use a little different batteries in series as possible for the application. 24 V systems are best built using 24 V batteries. And 48 V systems are best built using two 24 V batteries in series. While the alternative, four 12 V batteries in series, will work, it will require more periodic balancing time.



Our LFP batteries have integrated cell balancing and cell monitoring. The cell balancing/monitoring cables can be daisy-chained and must be connected to a Battery Management System (BMS).

Battery Management System (BMS)

The BMS will:

1. Generate a pre-alarm whenever the voltage of a battery cell decreases to less than 3.1 V (adjustable 2.85 V – 3.15 V).
2. Disconnect or shut down the load whenever the voltage of a battery cell decreases to less than 2.8 V (adjustable 2.6 V – 2.8 V).
3. Stop the charging process whenever the voltage of a battery cell increases to more than 3.75 V or when the temperature becomes too high or too low.

See the BMS datasheets for more features.

| Battery specification | | | | | | | | | |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|
| VOLTAGE AND CAPACITY | LFP-Smart 12,8/50 | LFP-Smart 12,8/100 | LFP-Smart 12,8/160 | LFP-Smart 12,8/180 | LFP-Smart 12,8/200 | LFP-Smart 12,8/300 | LFP-Smart 12,8/330 | LFP-Smart 25,6/100 | LFP-Smart 25,6/200-a |
| Nominal voltage | 12,8 V | 12,8 V | 12,8 V | 12,8 V | 12,8 V | 12,8 V | 12,8 V | 25,6 V | 25,6 V |
| Nominal capacity @ 25°C* | 50 Ah | 100 Ah | 160 Ah | 180 Ah | 200 Ah | 300 Ah | 330 Ah | 100 Ah | 200 Ah |
| Nominal capacity @ 0°C* | 40 Ah | 80 Ah | 130 Ah | 150 Ah | 160 Ah | 240 Ah | 260 Ah | 80 Ah | 160 Ah |
| Nominal capacity @ -20°C* | 25 Ah | 50 Ah | 80 Ah | 90 Ah | 100 Ah | 150 Ah | 160 Ah | 50 Ah | 100 Ah |
| Nominal energy @ 25°C* | 640 Wh | 1280 Wh | 2048 Wh | 2304 Wh | 2560 Wh | 3840 Wh | 4220 Wh | 2560 Wh | 5120 Wh |
| *Discharge current ≤1C | | | | | | | | | |
| CYCLE LIFE (capacity ≥ 80 % of nominal) | | | | | | | | | |
| 80 % DoD | 2500 cycles | | | | | | | | |
| 70 % DoD | 3000 cycles | | | | | | | | |
| 50 % DoD | 5000 cycles | | | | | | | | |
| DISCHARGE | | | | | | | | | |
| Maximum continuous discharge current | 100 A | 200 A | 320 A | 360 A | 400 A | 600 A | 400 A | 200 A | 400 A |
| Recommended continuous discharge current | ≤50 A | ≤100 A | ≤160 A | ≤180 A | ≤200 A | ≤300 A | ≤300 A | ≤100 A | ≤200 A |
| End of discharge voltage | 11,2 V | 11,2 V | 11,2 V | 11,2 V | 11,2 V | 11,2 V | 11,2 V | 22,4 V | 22,4 V |
| Internal resistance | 2mΩ | 0,8mΩ | 0,9mΩ | 0,9mΩ | 0,8mΩ | 0,8mΩ | 0,8mΩ | 1,6mΩ | 1,5mΩ |
| OPERATING CONDITIONS | | | | | | | | | |
| Operating temperature | Discharge: -20°C to +50°C Charge: +5°C to +50°C | | | | | | | | |
| Storage temperature | -45°C to +70°C | | | | | | | | |
| Humidity (non-condensing) | Max. 95 % | | | | | | | | |
| Protection class | IP 22 | | | | | | | | |
| CHARGE | | | | | | | | | |
| Charge voltage | Between 14 V/28 V and 14,4 V/28,8 V (14,2 V/28,4 V recommended) | | | | | | | | |
| Float voltage | 13,5 V/27 V | | | | | | | | |
| Maximum charge current | 100 A | 200 A | 320 A | 360 A | 400 A | 600 A | 400 A | 200 A | 400 A |
| Recommended charge current | ≤30 A | ≤50 A | ≤80 A | ≤90 A | ≤100 A | ≤150 A | ≤150 A | ≤50 A | ≤100 A |
| OTHER | | | | | | | | | |
| Max storage time @ 25°C* | 1 year | | | | | | | | |
| BMS connection | Male + female cable with M8 circular connector, length 50cm | | | | | | | | |
| Power connection (threaded inserts) | M8 | M8 | M8 | M8 | M8 | M10 | M10 | M8 | M8 |
| Dimensions (hxxwxd) mm | 199 x 188 x 147 | 197 x 321 x 152 | 237 x 321 x 152 | 237 x 321 x 152 | 237 x 321 x 152 | 347 x 425 x 274 | 265 x 359 x 206 | 197 x 650 x 163 | 237 x 650 x 163 |
| Weight | 7 kg | 14 kg | 18 kg | 18 kg | 20 kg | 30 kg | 30 kg | 28 kg | 39 kg |
| * When fully charged | | | | | | | | | |