Charging, chargers and inverters

Charge your LiFePO4 battery safely and set chargers, solar controllers and inverters for it.

Batterieslab's batteries are **LiFePO4** (lithium iron phosphate). They charge faster and last longer than lead-acid batteries, but they need equipment set for lithium. What follows is general guidance for LiFePO4 batteries; your battery's data sheet has its own figures.

> **Set every charging source for LiFePO4**
> A charger, solar controller or inverter-charger that isn't set for LiFePO4, or that exceeds the battery's voltage or current, can damage the battery and isn't covered by the warranty.

Charger settings

Use the LiFePO4 (lithium) profile of your charger if it has one. Otherwise, typical settings for LiFePO4 are:

Setting	12.8 V battery	Per cell
Absorption (bulk) voltage	14.2–14.6 V	3.55–3.65 V
Float voltage	13.4–13.6 V, or float off	3.35–3.40 V
Equalisation	**Off**	—
Temperature compensation	**Off**	—

For 25.6, 38.4 and 51.2 V batteries, multiply the 12.8 V values by 2, 3 and 4. Keep the charge current within the battery's maximum: see your battery's data sheet.

Charging in the cold

LiFePO4 cells must not be charged below freezing. The BMS protects the battery by stopping the charge: Battery Monitor then shows **Charge Temp Too Low** and the **Charge FET** turns **OFF**. Charging resumes by itself when the battery warms up.

Solar, inverters and vehicles

- **Solar charge controllers:** choose the LiFePO4 profile, or the voltages above.
- **Inverters and inverter-chargers:** set the battery type to LiFePO4. The battery isn't made for starting engines.
- **Vehicles:** don't charge the battery from a vehicle's alternator.

Everyday charging

- Partial charges are fine: LiFePO4 doesn't need to be fully charged each time.
- Charge to 100 % now and then: the BMS recalibrates the state of charge at full charge and balances the cells.
- Avoid keeping it fully charged when it's not in use, and don't leave it empty: a battery left fully discharged can be damaged beyond repair.

> **Tip**
> A full charge from 20 % or less to 100 %, with Battery Monitor connected or on an IoT or Ermis battery, lets us measure the battery's real capacity for its state of health on the battery passport.