LIFEPO4 SMART

Lithium battery 12,8V & 25,6V Smart, with integrated cell balancing and Bluetooth integrated to monitor cell voltage and temperature

Bateria Litio Smart

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Lithium-iron-phosphate (LiFePO4 or LFP) is the safest of the mainstream li-ion battery types. The nominal voltage of a LFP cell is 3,2V (lead-acid: 2V/cell). A 12,8V LFP battery therefore consists of 4 cells connected in series; and a 25,6V battery consists of 8 cells connected in series.

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. Very useful to localize a (potential) problem, such as cell imbalance.

Our LFP batteries have integrated cell balancing and cell monitoring. Up to 5 batteries can be paralleled and up to four 12V batteries or two 24V batteries can be series connected, so that a 48V battery bank of up to 1500Ah can be assembled. 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 3,1V (adjustable 2,85-3,15V).
2. Disconnect or shut down the load whenever the voltage of a battery cell decreases to less than 2,8V (adjustable 2,6V-2,8V). 3. Stop the charging process whenever the voltage of a battery cell increases to more than 4,2V.
4. Shut down the system whenever the temperature of a cell exceeds 50°C.

SPECIFICATIONS

LiFePO4 Smart	Smart 12,8/60	Smart 12,8/100	Smart 12,8/150	Smart 12,8/160a	Smart 12,8/200a	Smart 12,8/300	Smart 25,6/200
Nominal Voltage	12,8 V	12,8 V	12,8 V	12,8 V	12,8 V	12,8 V	25,6 V
Nominal capacity @ 25°C*	60 Ah	100 Ah	150 Ah	160 Ah	200 Ah	300 Ah	200 Ah
Nominal capacity @ 0°C*	48 Ah	80 Ah	125 Ah	130 Ah	160 Ah	240 Ah	160 Ah
Nominal capacity @-20°C*	30 Ah	50 Ah	75 Ah	80 Ah	100 Ah	150 Ah	100 Ah
Nominal energy @ 25°C*	768 Wh	1280 Wh	1920 Wh	2048 Wh	2560 Wh	3840 Wh	5120 Wh
Cyce Life (Capacity ≥ 80% of nominal)							
80% DoD	2500 cycles						
70% DoD	3000 cycles						
50% DoD	5000 cycles						
Discharge							
Max. continuous discharge current	120 A	200 A	300 A	320 A	400 A	600 A	400 A
Recommended continuous discarge current	≤60 A	≤100 A	≤150 A	≤160 A	≤200 A	≤300 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	22,4 V
Operating Conditions							
Operating temperatura	Discharge: - 20 to 50 °C Charge: 5 to 50 °C						
Storage temperature	-45 to 70 °C						
Humidity	Max. 95 % (non condensing)						
Protection class	IP 22						
Charge							
Charge voltage	14 - 14,4 V Recommended 14,2 V						28 - 28,8 V Recommended 28,4V
Float voltage	13,5 V						27 V
Maximum charge current	120 A	200 A	300 A	320 A	400 A	600 A	400 A
Recommended charge current	≤30 A	≤50 A	≤75 A	≤80 A	≤100 A	≤150 A	≤100 A
Other							
Max. storage time @ 25°C **	1 year						
BMS Connection	Male + female cable with M8 circular connector, length: 50 cm						
Power connection	M8	M8	M8	M8	M8	M10	M8
Dimensions (h x w x d) mm	240 x 285 x 132	197 x 321 x 152	237 x 321 x 152	237 x 321 x 152	237 x 321 x 152	247 x 425 x 274	317 x 631 x 208
Weight	12 Kg	15 Kg	20 Kg	20 Kg	22 Kg	51 Kg	56 Kg

* Discharge current ≤1C

** When fully charged

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