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Medical equipment lithium battery BMS

Overview

Often referred to as the “brain” of the lithium-ion battery pack, the BMS is a set of integrated hardware and software designed to oversee and manage the battery pack’s performance and safety.Why is a BMS necessary for Li-ion batteries?

Increasing the charging voltage above 4.30 V for Li-ion which is designed for 4.20 V/cell will lead to fire and safety hazards . Therefore, a BMS is necessary for Li-ion batteries for safety and to extract maximum energy from the battery pack by keeping the battery pack in an optimum balanced state.

What is a battery management system (BMS)?

A Battery Management System (BMS) is very significant for ensuring and monitoring that the batteries would function according to the manufacturer's specified limitations. To identify the battery state for its life degradation, remaining available energy, and management, the BMS should provide functions such as battery parameters estimation.

Why do medical devices use lithium-ion batteries?

Medical devices demand highly reliable, safe, and long-lasting power sources to ensure continuous operation in critical environments. Whether in hospitals, emergency response units, or home healthcare settings, medical equipment relies on lithium-ion batteries for their high energy density, long cycle life, and lightweight design.

Are medical lithium-ion batteries safe?

Unlike consumer electronics, medical lithium-ion batteries must adhere to stringent safety and performance standards. A battery failure in a ventilator or an infusion pump can pose life-threatening risks. Therefore, selecting the right medical-grade lithium-ion battery is crucial for device manufacturers and healthcare providers.

Does a lithium-ion battery management system cut it?

Lithium-ion applications come with pretty unique electrical demands. That’s why a one-size-fits-all battery management system simply won’t cut it. Voltaplex offers tailored BMS design services that align with your product’s power requirements, space constraints, and industry-specific compliance needs.

What is a battery balancing system (BMS)?

A BMS ensures the safe operation of the battery pack during charging/discharging and balancing of the battery cell. The key operation of BMS is also to measure accurate SOC to enforce OEM-recommended safe operating area of Li-ion batteries. Cell balancing based on false SOC can cause safety hazards for battery packs during operation.

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