A-Core Container

BMS for 3C batteries

Overview

In this article, we explore how advanced BMS design enables 3C continuous discharge, effective heat management, and dual communication support using CAN Bus and SMBus protocols —and how Himax has implemented these technologies in real-world custom battery solutions.What is a 3s battery management system (BMS)?

The 3S Battery Management System (BMS) is an electronic system designed to manage and protect a 3-cell series (3S) lithium-ion or lithium-polymer battery pack. It ensures the safe operation of rechargeable batteries by monitoring their state, controlling the charging and discharging process, and providing necessary protections.

What is battery management system (BMS)?

Battery Management System (BMS) is the brain of lithium-ion batteries. At CM Batteries, our CTO Wang has over 20 years of experience in battery management system design, specializing in BMS hardware and software with minimal energy loss and stable quality.

How to choose a BMS for a lithium-ion battery?

The primary job of a BMS is to prevent overloading the battery cells. So, for this to be effective, the maximum rating on the BMS should be greater than the maximum amperage rating of the battery. When choosing a BMS for a lithium-ion battery, the most important aspect to consider is the maximum current rating of the BMS.

How does BMS calculate battery capacity?

The BMS calculates key battery metrics: State of Charge (SoC): The available battery capacity compared to its full capacity. State of Health (SoH): The overall health and aging status of the battery. Depth of Discharge (DoD): The percentage of battery capacity used during a discharge cycle. 05. Thermal Management.

How do you connect a BMS to a battery pack?

The system includes step-up and step-down voltage regulators to provide adjustable output voltages, controlled by a rocker switch, and multiple DC jacks for power input and output. Battery Connection: Connect the BMS to the battery pack by soldering the B+, B1, B2, and B- to the corresponding terminals of the battery cells in series.

How will BMS technology change the future of battery management?

As the demand for electric vehicles (EVs), energy storage systems (ESS), and renewable energy solutions grows, BMS technology will continue evolving. The integration of AI, IoT, and smart-grid connectivity will shape the next generation of battery management systems, making them more efficient, reliable, and intelligent.

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