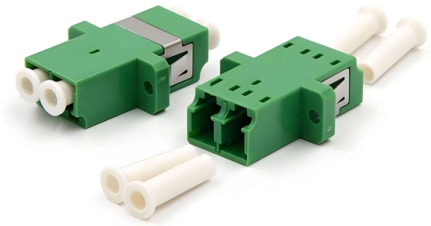
Composition of New Energy High-Voltage Distribution Box



Overview

High-voltage Distribution Box Technology for New Energy VehiclesThis article, in combination with the latest industry patents and technical standards in 20.

Key Takeaways

A high-voltage distribution box in new energy vehicles integrates relays, fuses, busbars, DC/DC converters, OBCs, and high-voltage wiring to safely manage and distribute power from the battery to vehicle subsystems. Core Components1. Copper Busbars Copper busbars serve as the main conductive pathways, connecting relays, resistors, and shunts to route high-voltage electricity efficiently during charging and discharging processes.

2.

High-

Voltage Relays and Fuses Relays control the connection and disconnection of high-voltage circuits, while fuses provide overcurrent protection to prevent damage to the battery and vehicle electronics. 3. DC/DC Converter The DC/DC converter steps down high-voltage DC from the battery to low-voltage DC required by vehicle electronics, ensuring stable operation of lights, infotainment, and control systems.

4. Onboard Charger (OBC) The OBC converts AC from the public grid into high-voltage DC to charge the battery. In many modern vehicles, OBC and DC/DC functions are combined into a two-in-one controller for compactness and efficiency.

5.

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High-

Voltage Wiring Harness Specialized high-voltage wiring connects all components within the distribution box and to external high-voltage devices like motors, compressors, and PTC heaters. Safety and insulation are critical due to the high voltage involved. 6.

Additional Components Some distribution boxes integrate cement resistors, shunts, and electric compressors. Shunts measure current flow, resistors manage transient loads, and compressors or PTC heaters support thermal management of the battery.

Functional Overview

The high-voltage distribution box acts as a central hub for power management, coordinating current flows, monitoring circuit integrity, and interfacing with battery management and thermal control systems. It ensures safe, efficient energy distribution to components such as motors, air conditioning compressors, and battery preheating systems. Modern designs also emphasize compactness, weight reduction, and diagnostic capabilities to meet evolving EV performance and safety standards.

Integration with Vehicle SystemsBattery: Supplies high-voltage DC to the distribution box. Motor Controller: Receives power routed through the distribution box to drive the motor. Charging System: Interfaces with the OBC for AC-to-DC conversion.

Thermal Management: PTC heaters and compressors connected via the distribution box maintain battery temperature. In summary, the high-voltage distribution box is a multi-functional, intelligent module that combines power routing, protection, conversion, and communication to ensure the safe and efficient operation of new energy vehicles.

Article Content

High-voltage Distribution Box Technology for New Energy Vehicles

This article, in combination with the latest industry patents and technical standards in 2025, systematically analyzes the technological breakthroughs of high-voltage distribution boxes in

CN220662268U

The utility model aims to overcome the defects of the prior art and provide the modularized high-voltage distribution box for the new energy automobile, which has the advantages of...

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Generally, the high-power vehicle operates under high-power electric power, the voltage is higher than 700VDC, the current is up to 400A, and great challenges are brought to the design of a...

Composition of New Energy High-Voltage Distribution Box

The main parts of the high-voltage distribution box are shown in Figure 1. ① is the copper busbar, which is responsible for conducting electricity and connects ② relays, ③ cement resistors, and 4 shunts.

Internal structure, function and fault diagnosis of high-voltage power ...

The functions of the high voltage distribution box are shown in the following table:

Global High Voltage Distribution Box for New Energy Vehicles Market ...

The high-voltage distribution box of new energy electric vehicles is the high voltage and high current distribution unit PDU for all pure electric vehicles and plug-in hybrid vehicles.

High voltage power box: distribution unit, OBC & DCDC | Valeo

The High Voltage Power Box combines the functionality of an Onboard Charger (OBC), a DC/DC converter and a PDU (Power Distribution Unit). The OBC is the interface between the car

Global High Voltage Distribution Box for New Energy Vehicles Market ...

Chapter 2, to profile the top manufacturers of High Voltage Distribution Box for New Energy Vehicles, with price, sales quantity, revenue, and global market share of High Voltage Distribution Box for New

High Voltage Distribution Box – Rawsuns

High voltage distribution box is the control part of EV power supply, which has the functions of power distribution, current measurement, short circuit protection,

High-Voltage Power Supply in New Energy Vehicle (BMS, BDU, Relay ...

The high-voltage power supply system of new energy vehicles studied in this report mainly includes modules such as Battery Management System (BMS), Battery Distribution Unit (BDU), high-voltage

Battery Junction Box | HV Battery Management System

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Exploring Growth Patterns in High Voltage Distribution Box for New ...

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The High Voltage Distribution Box (HVDB) market for New Energy Vehicles (NEVs) is booming, projected to reach $25 billion by 2033 at a 25% CAGR. Explore market trends, key players

High Voltage Distribution Box: The Ultimate Guide to Selection ...

Discover the essential guide to high voltage distribution boxes: their function, selection, applications, and safety. Learn how these critical components enable efficient, secure power distribution in industrial,

The 8 Main High-voltage Components in Electric Cars

Both hybrid cars and pure electric cars have high voltage components. In pure electric vehicles, the components directly connected to the power battery are high voltage components,

Strategic Vision for High Voltage Distribution Box for New Energy ...

The High Voltage Distribution Box for New Energy Vehicles sector currently commands a valuation of USD 45.7 billion in 2024, projected to expand at a Compound Annual Growth Rate

The main functions of the high-voltage distribution box assembly for ...

It also contains other auxiliary detection functions, such as current detection, leakage detection, etc. Taking BYD''s new energy vehicle as an example, the high-voltage distribution box

High voltage power distribution units

Power distribution in electric vehicles presents significant challenges in design, particularly concerning safety and reliability, due to the high electrical currents.

Composition and structure analysis of low voltage distribution box

A low voltage distribution box features robust enclosures, busbars, and protection devices to ensure safe, efficient power distribution in electrical systems.

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