What does intelligent distribution box mean

Overview

WO2024255014A1 The intelligent distribution box comprises multiple electrical devices, the electrical devices at least comprising a common power Intelligen.

Key Takeaways

An intelligent distribution box is a smart electrical panel that integrates monitoring, control, and protection functions for power distribution, often using IoT, cloud computing, and AI technologies.Definition and Components

An intelligent distribution box is an advanced electrical distribution device designed to manage and protect electrical circuits while providing real-time monitoring and control. It typically includes:

• Intelligent circuit breakers for overcurrent, short circuit, and leakage protection

• Sensors and meters to monitor voltage, current, power, temperature, and environmental conditions

• Central processing unit (CPU) or embedded processors to process data and control operations

• Communication modules for IoT connectivity, enabling remote monitoring and management via apps or web platforms

• Standard guide rails and PCB boards for modular installation and data transmission between devices
Key Functions

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Intelligent distribution boxes offer multiple functions beyond traditional panels:

• Electrical safety protection: anti-leakage, overvoltage, surge, overcurrent, overload, short circuit, and line overheat protection

• Real-time monitoring and diagnostics: tracks the status of circuits, detects hidden faults, and sends alarms remotely

• Load management: monitors and controls power consumption, allowing flexible limits and scheduling for energy efficiency

• Remote control and automation: enables opening/closing of circuits, connecting/disconnecting wires, and adjusting settings via mobile devices or cloud platforms

• Data collection and reporting: generates daily, monthly, or customized reports for energy usage and system performance

Applications

Intelligent distribution boxes are widely used in:

• Residential buildings: home lighting, appliances, and weak current systems

• Commercial buildings: offices, shops, hotels, and advertising lights

• Industrial facilities: factories, data centers, and smart parks

• Renewable energy systems: photovoltaic and wind power installations

Benefits

• Enhanced safety: reduces risk of electrical accidents and fires

• Energy efficiency: optimizes power usage and prevents overloads

• Convenience: allows remote monitoring, control, and automated management

• Integration with smart grids: supports digitalization and intelligent operation of power distribution networks In summary, an intelligent distribution box transforms traditional electrical panels into smart, connected devices that improve safety, efficiency, and operational control in modern electrical systems.

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