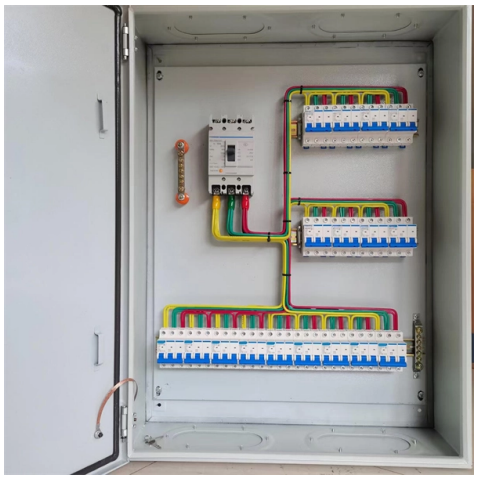
Complete Guide to Three-Level Distribution Box Configurations



Overview

This guide provides an exhaustive overview of the different types of distribution boxes, their features, applications, and considerations for selection and installation.

Key Takeaways

A three-level distribution box system is configured hierarchically with a primary distribution board, secondary distribution boards, and tertiary switch boxes, following strict branching, protection, and safety principles.

Hierarchical Structure

Primary Distribution Board (Level 1)Installed near the main power source or substation. Distributes electrical energy to secondary distribution boards located in different areas. Acts as the main control point and may include main switches and leakage protection devices for overall safety.

Secondary Distribution Board (Level 2)Receives power from the primary board and distributes it to tertiary switch boxes. Often includes motor control centers or circuit breakers to protect and monitor loads. Provides intermediate protection and ensures that branch circuits are properly managed.

Tertiary Switch Box (Level 3)The final distribution point for individual electrical equipment. Follows the “one machine, one switch” principle, meaning each switch controls only one device or socket. Includes the last level of leakage protection to safeguard connected equipment.

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Wiring and Branching Principles

Hierarchical Branching: Power flows from primary → secondary → tertiary without bypassing levels. Direct connections from the main board to equipment are prohibited. Separate Circuits: Power and lighting circuits should be separated at all levels, with distinct branch circuits and switch boxes.

Distance Guidelines: Maximum distance from a distribution board to a switch box: 30 meters. Maximum distance from a switch box to controlled equipment: 3 meters.

Safety and Environmental Considerations

Protective Environment: Install boards in dry, ventilated areas away from harmful gases, moisture, vibration, or heat sources. Maintenance Access: Ensure sufficient space for two people to work simultaneously and avoid obstructions around boards. Leakage Protection: Implement two-level protection with leakage protectors at both the primary/secondary boards and the tertiary switch boxes.

Summary

A three-level distribution box system ensures safe, efficient, and hierarchical power distribution. The primary board distributes to secondary boards, which in turn supply tertiary switch boxes. Each level incorporates protection devices, follows strict wiring principles, and maintains proper distances and environmental safety to prevent electrical hazards and ensure reliable operation.

Article Content

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Figure 1 provides a block diagram of an electrical distribution system showing the name and the typical location of the electrical distribution equipment in a data center and the power flow path.

three-level distribution system_switchgear_Switchboard_circuit

The three-level distribution system refers to a system that distributes electric power through three levels of distribution devices from the incoming power line at the construction site to

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Various sections of this guide cover the application and selection of such systems and components that may be incorporated into the power equipment being designed.

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The purpose, working principle, and usage instructions

The distribution box is an electrical equipment with the characteristics of small size, easy installation, special technical performance,

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