

RIVO MULTITRADE OPTICAL SYSTEMS

First-level construction engineer s main distribution box and sub-distribution box



Overview

Understanding Power Distribution Hierarchy in BuildingsPower distribution hierarchy in building. detailed explanation of DB, SDB, MDB, RMU, and Switchgear.

Key Takeaways

The main distribution box (MDB) serves as the primary low-voltage distribution point, while the sub-distribution box (SDB) distributes power from the MDB to specific floors or sections of a construction site.

Main Distribution Box (MDB)
The MDB is the central low-voltage distribution point in a construction or building electrical system. It receives power from the transformer and distributes it to sub-distribution boxes or directly to large loads if necessary . Key features include:

- Voltage Level: Typically 415V for low-voltage distribution .
- Position: Located in the distribution room or a central area of the site .
- Components: Includes main busbars (usually copper), isolating switches, circuit breakers, and residual current devices (RCDs) for safety .
- Protection: Provides the first level of protection, often incorporating leakage protection to safeguard downstream circuits .
- Design: Bottom entry and exit cables, front-opening doors, and rainproof tops for outdoor suitability .

- Function: Acts as the main hub for distributing power to SDBs and other major equipment, ensuring safe and organized power flow .

Sub-Distribution Box (SDB)

The SDB is an intermediate distribution point that receives power from the MDB and supplies it to specific areas, floors, or sections of a construction site . Key aspects include:

- Voltage Level: Low voltage, typically 415V .
- Position: Installed per floor, building section, or designated zone .
- Components: Contains large three-phase circuit breakers and may include RCDs for additional protection .
- Protection: Provides the second level of protection in a three-tier system, complementing the MDB's safeguards .
- Design: Often features inner and outer doors, powder-coated exteriors, and rainproof tops for outdoor use .
- Function: Distributes power to final load points, such as distribution boards (DBs) or switch boxes, ensuring localized control and safety .

Hierarchy and Safety Principles

In construction electrical systems, the three-level distribution hierarchy is commonly used:

- MDB (Primary/First-Level): Central distribution and first protection layer.
- SDB (Secondary/Second-Level): Zone or floor distribution with secondary protection.
- DB or Switch Box (Tertiary/Third-Level): Final distribution to individual equipment or appliances, with residual current devices as the last protective measure . This system follows the principle of “one machine, one switch, one RCD, one box, one lock”, ensuring that each switch controls only one device and that safety is maintained throughout the distribution network .

Summary

For a first-level construction engineer, understanding the MDB and SDB is crucial for planning, installation, and safety compliance. The MDB serves as the main hub for low-voltage power distribution, while the SDB provides localized distribution and protection for specific areas, forming part of a structured, three-level electrical system that ensures safe and efficient power delivery on construction sites .

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Wiring diagram of electrical distribution box

You can see the wiring diagram of single phase distribution box from main meter to DB and other sub-circuit in the

Power Distribution Box Essentials: Functions, Types & How to choose

i) Main Distribution Box: This box is used in homes, industrial buildings, and commercial buildings. It receives electricity

Distribution Automation Handbook

3.14 Primary Distribution Substations A primary distribution substation is the connection point of a distribution system to a trans

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Wiring of the Distribution Board (Single Phase Supply From Utility Pole & Energy Meter to the Consumer Unit While we have already

What Is a Distribution Box?

A distribution box is a device that, as the name suggests, is designed to distribute electrical power. It takes the

Techware - Full-suite industrial engineering solutions

Our innovative distribution systems serve as the primary electrical hub for any industrial infrastructure, dividing power into subsidiary

Distribution Boards: Types, Components & Applications

An electrical distribution board receives an incoming electrical supply and organizes power distribution to outgoing

Distribution Box: Types and Functions | Axis-Electricals

A distribution box ensures that electrical supply is distributed in the building, also known as a distribution board, panel board, breaker

Distribution Box and Selection Guide: Internal Structure, Components ...

Learn how to choose a distribution box and understand its internal structure, including MCBs, busbars, neutral bars,

Distribution boards components

Distribution boards (generally only one in residential premises) usually include the meter (s) and in some cases

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