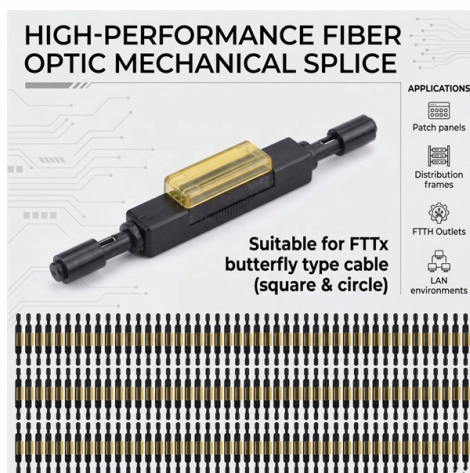


Parallel Connection Principle of Cold Storage Electrical Distribution Boxes



Overview

During the installation of a cold storage, the operation of the cold storage distribution box is of great significance.

Key Takeaways

In cold storage electrical distribution boxes, parallel connection ensures that multiple devices or circuits share the same voltage while maintaining independent current paths for stable and safe operation. Principle of Parallel Connection

In a parallel connection, each electrical load or device is connected across the same voltage source, allowing each component to operate independently. This means that if one device fails, the others continue to function without interruption. In cold storage systems, this principle is applied to connect refrigeration units, heaters, and control circuits to the distribution box, ensuring reliable operation and redundancy .

Wiring and Terminal Considerations

- **Terminal Blocks:** Use relay terminal blocks with two wires per connection for standard loads. If more than three wires need to be connected, additional terminal blocks should be installed to avoid overloading and ensure proper current distribution .
- **Wire Protection:** All external wiring should be protected using steel pipe hoses or cable trays. Wires should be placed in the middle of the tray and never in direct contact with the ground to prevent mechanical damage and moisture ingress .

- **Connection Materials:** For heating elements or sensitive equipment, use glass or ceramic tube wires. Flammable wires should be avoided to maintain safety .

- **IP Rating:** The wire inlets and connection boxes should meet IP55 or higher to prevent dust and moisture from affecting the electrical components .

Installation and Safety Practices

- **Crimping and Torque:** When connecting wires to terminals, strip the insulation appropriately (e.g., 10mm for AC lines, 4mm for communication lines) and crimp securely. Tighten screws to the recommended torque (e.g., 0.2–0.4 N·m for communication wires) to ensure stable electrical contact .

- **Communication Lines:** For parallel operation of inverters or controllers, connect CAN or RS485 communication lines according to the labeling, ensuring the master inverter is properly linked to the battery and DIP switches are set correctly .

- **Uniformity:** Maintain uniform wiring and piping layouts to reduce the risk of malfunctions and simplify maintenance .

Benefits of Parallel Connection in Cold Storage

- **Redundancy:** Individual devices can fail without affecting the entire system.

- **Stable Voltage:** All devices receive the same voltage, ensuring consistent performance.

- **Ease of Maintenance:** Faults can be isolated without shutting down the entire cold storage system.

- **Scalability:** Additional devices can be added without major rewiring. By following these principles, cold storage electrical distribution boxes can operate efficiently, safely, and reliably, supporting both refrigeration and heating equipment while minimizing downtime and maintenance costs .

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2.3.2: The Parallel Connection

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4.2: The Parallel Connection

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