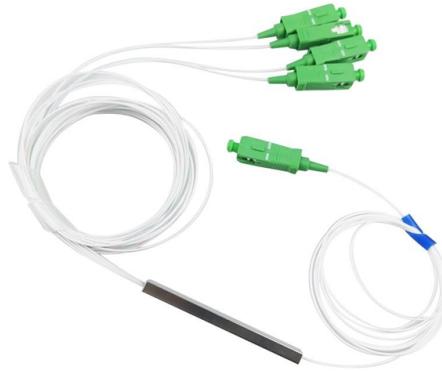


Electrical Distribution Box Auxiliary Material Formula



Overview

Complete List of Power Distribution Box Auxiliary Material Formulas
Electrical Distribution Box Diagrams | PDF | Power This document provides a list of comp.

Key Takeaways

Auxiliary materials for electrical distribution boxes are calculated based on load requirements, component ratings, safety margins, and compliance with standards, ensuring reliable operation and future expansion.

1. Determine Load Requirements

- Tabulate all connected loads for the distribution box, including motors, lighting, control circuits, and auxiliary devices.
- Apply demand factors and diversity factors where applicable to account for simultaneous operation and realistic usage .
- Include allowances for future load growth to ensure the system can accommodate expansion .

2. Select Main Components

- Circuit breakers and MCBs: Choose 2- or 3-pole breakers with appropriate short-time ratings, thermal time delay, and instantaneous trip settings .



- Contactors and motor starters: Ensure they comply with IEC or NEMA standards, suitable for direct-on-line starting, and capable of the required number of operations per hour .
 - Relays: Select auxiliary control relays with minimum thermal current ratings of 10A and contact convertibility for machine tool or control applications .
- ### 3. Calculate Auxiliary Wiring and Terminal Blocks
- Determine the number of terminals required for all incoming and outgoing cables, including spares (typically 20% extra), .
 - Maintain proper spacing: at least 100 mm between adjacent blocks and 200 mm from the bottom blocks to cable gland plates .
 - Size control wiring based on voltage, current, and insulation requirements, considering both AC and DC circuits .
- ### 4. Bus Bars and Enclosures
- Size bus bars according to rated current, short-circuit withstand, and derating factors for temperature and environmental conditions .
 - Ensure enclosures are ventilated for indoor use or weatherproof for outdoor installation, complete with locks, cable sealing boxes, and conduit entries .
- ### 5. Safety Margins and Standards Compliance
- Include a safety margin of approximately 10% on all main electrical ratings .
 - Verify short-circuit withstand, thermal and dynamic stresses, and ensure compliance with IEC, NEMA, or local electrical codes .
 - Provide adequate working clearances for operation and maintenance, following national or regional electrical standards .
- ### 6. Testing and Verification
- Factory test motors, starters, and auxiliary devices, and perform site tests to ensure correct operation under full load .
 - Verify calculations for load, short-circuit, and voltage drop to ensure reliability and safety .

Practical Considerations

- Include spare terminals, relays, and wiring to allow for future modifications or expansions.
- Consider environmental factors such as temperature, humidity, and vibration when selecting materials .
- For AC auxiliary systems in substations, size auxiliary transformers based on total demand kVA and consider redundancy for critical loads . By following these steps, you can systematically calculate and select all auxiliary materials for a complete electrical distribution box, ensuring reliability, safety, and compliance with standards.

Article Content

MODULE-09-ELECTRICAL-AUXILIARY-DRAWINGS.pptx

The document outlines the course structure for Building Technology II, focusing specifically on electrical and auxiliary drawings,

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

