

How to choose the size of a factory electrical distribution box



AI Overview

Select a distribution box by calculating total load, counting circuits, planning for future expansion, and ensuring proper material, module capacity, and safety compliance.

Step 1: Assess Your Electrical Load Start by listing all circuits in your factory, including lighting, machinery, HVAC, and minor loads like control panels. Identify the voltage requirements for each circuit (e.g., 120V single-pole or 240V double-pole) and calculate the total load current. This ensures the distribution box can handle the combined demand safely and efficiently, avoiding overloads or fire hazards.

Step 2: Determine Module or “Way” Requirements Distribution boxes are sized by the number of modules or “ways,” with each single-pole MCB typically occupying one module (18mm wide). Count the number of MCBs and the main incomer (e.g., a 4-pole MCCB) and add 20–30% spare capacity for future expansion. For example, if you need 12 single-pole MCBs and one 4-pole main, a 24-way box provides room for growth.

Step 3: Choose the Right Material and Protection Select the enclosure material based on the environment: cold-rolled steel or stainless steel for industrial indoor/outdoor use, or polycarbonate for corrosive or dry environments. Ensure the box meets the required Ingress Protection (IP) rating, with IP65 as a minimum for outdoor or dusty conditions.

Step 4: Consider Heat Dissipation Avoid filling the box to 100% capacity, as high internal temperatures can cause breakers to trip prematurely. A slightly larger box improves airflow and thermal management, enhancing reliability and safety.

Step 5: Compliance and Safety Standards Ensure the distribution box complies with IEC 61439 standards for low-voltage switchgear and controlgear assemblies. Verify that busbars, circuit breakers, and other components meet safety regulations and are installed by a licensed electrician.

Step 6: Plan for...

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For more information, pricing, or custom solutions, please contact us:

Website: <https://www.sphplantsales.co.za>

Email: info@sphplantsales.co.za

Phone: +27 64 827 3915

Address: Unit 9, Highveld Technopark, 43 Atlas Road, Johannesburg, 2196, South Africa

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