

Distribution Box Manufacturing Process Requirements



Overview

Distribution Box Manufacturing Process | Custom Electrical Enclosure. Learn the step-by-step distribution box manufacturing process—from design and mater.

Key Takeaways

Distribution boxes are manufactured through a precise process involving design, material preparation, cutting, forming, surface treatment, assembly, and inspection, while adhering to standards for materials, dimensions, protection, and installation. Manufacturing Process



1. Design & Engineering The process begins with digital design using CAD/3D modeling, considering customer requirements, application scenarios, and standards such as IEC, ANSI, UL, and NEMA. Engineers define material thickness, dimensions, IP/NEMA protection levels, and component layout to ensure reliability in applications like solar power, industrial automation, or commercial buildings . 2. Material Preparation High-quality steel (cold-rolled, galvanized, or stainless) or flame-retardant insulating materials are selected. Surface treatment materials, such as anti-rust coatings or powder paint, are prepared. Each batch undergoes tests for thickness, hardness, and corrosion resistance . 3. Cutting and Forming CNC laser or plasma cutting machines slice the metal sheets into precise shapes. Hydraulic or CNC press brakes bend the sheets to form the box structure. Punching machines create holes for cable entries, mounting, and ventilation . 4. Surface Treatment Powder coating, galvanization, or painting ensures corrosion resistance and aesthetics. Salt spray tests verify long-term durability, especially for outdoor applications . 5. Welding & Grinding Welded joints are reinforced and ground flush to maintain mechanical stability and prevent dust accumulation or arc flash hazards . 6. Assembly Internal components such as main and branch circuit breakers, busbars, neutral and ground bars, and terminals are mounted on metal or flame-retardant insulating plates. Components are securely fastened and electrically bonded to the enclosure . 7. Testing & Inspection Functional dry-run tests simulate on-site usage. Quality checks include verifying IP/NEMA ratings, component integrity, and compliance with safety standards . 8. Packaging & Shipping Finished boxes are packed with anti-vibration foam, waterproof film, and export-grade crates. Modular packaging may be used for larger orders to reduce shipping costs and facilitate installation .

Standard Requirements

Materials & Dimensions

- Cold-rolled steel or flame-retardant insulating material
- Switch box thickness: ≥ 1.2 mm; distribution box: ≥ 1.5 mm (range 1.2–2.0 mm)
- Anti-corrosion treatment and uniform painting (typically orange)
- Wooden enclosures are prohibited
- Installation
- Boxes must be installed upright and securely
- Mounting height: fixed type 1.4–1.6 m; portable type 0.8–1.6 m
- Cable entry/exit at the bottom with insulated bushings and clamps
- Rubber-sheathed insulated cables for portable boxes; no plug-and-socket connectors for power inlet
- Component Configuration
- Main Distribution Board (MDB) may follow either configuration:
- Main Isolator → Main RCD → Subcircuit Isolator → Subcircuit MCB/MCCB

- Main Isolator → Main Circuit Breaker → Subcircuit Isolator → Subcircuit RCD
 - MDB may include voltmeter, ammeter, kWh meter, and other instruments
 - Components must be mounted on non-wooden, flame-retardant plates and firmly secured Compliance & Documentation
 - Products must have a manufacturing license, certificate of compliance, product manual, and factory test records
 - Enclosures must meet IP/NEMA ratings suitable for the environment and application
- This structured approach ensures that distribution boxes are safe, durable, and compliant with international standards, suitable for residential, commercial, and industrial applications.

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Distribution Box Production and Processing Equipment: Complete

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The box production process for electrical enclosures is a systematic workflow ensuring the

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Technical Requirements for Distribution Box in Electrical Industry

Different industries, different products have different technical requirements, in the electrical industry, distribution boxes, distribution

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5. Process of Making Distribution Board ated enclosures open, semi-closed or totally enclosed type which provide and control,

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