

# Factory power distribution box wiring with socket

## Article Overview

A factory power distribution box with sockets should be wired with proper phase, neutral, and earth connections, protected by MCBs or RCCBs, and installed using suitable conduits and cable sizes for safety and reliability.

### Key Components and Safety Measures

- o **Distribution Box:** The distribution box (DB) serves as the central point where the main power supply is distributed to multiple loads. It houses protective devices such as MCBs (Miniature Circuit Breakers), RCCBs (Residual Current Circuit Breakers), and fuses to prevent overloads, short circuits, and leakage currents .
- o **Sockets:** Industrial sockets should match the load requirements (e.g., 16A, 32A, 63A) and be compatible with the plug types used in the factory. Each socket should ideally be protected by its own branch circuit breaker .
- o **Cable Selection:** Use copper cables with insulation suitable for the load:
  - o 2.5 mm<sup>2</sup> for 16A
  - o 6 mm<sup>2</sup> for 32A
  - o 16 mm<sup>2</sup> for 63AEnsure cables are double insulated for phase, neutral, and earth and that voltage drop does not exceed 10% of supply voltage .
- o **Wiring Connections:**
  - o **Phase (L):** Connect from the outgoing side of the MCB to the socket terminal marked L.
  - o **Neutral (N):** Connect from the neutral link in the DB to the socket terminal marked N.
  - o **Earth (E):** Connect from the earth link in the DB to the socket terminal marked E .
- o **Conduits and Protection:** Lay cables in PVC or GI conduits to protect against physical damage. Conduits can be embedded in walls or mounted externally. In wooden structures, cables may be installed inside panels without conduits, but proper insulation and protection are essential .
- o **Installation Procedure:**
  - o Isolate power before starting work.
  - o Mount the distribution box securely on the wall.
  - o Install sockets at required positions and connect wires according to the wiring diagram.
  - o Ensure all connections are tight and color-coded correctly for phases, neutral, and earth.
  - o Test the system for continuity, insulation, and proper operation of breakers before energizing .
- o **Additional Considerations:**
  - o Use waterproof or IP-rated boxes if the environment is exposed to moisture or dust.
  - o Ensure high-load areas have appropriately rated MCBs and cables.
  - o Follow local electrical codes and standards for industrial installations . By following these guidelines, a



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factory power distribution box with sockets can be safely and efficiently wired, providing reliable power distribution for machinery, equipment, and general factory operations.

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