

Calculation formula for wiring in secondary distribution box



Summary of Content

To calculate wiring for a secondary distribution box, determine the total load, calculate the required current, select the appropriate breaker, and size the conductors based on ampacity and voltage drop.

Step 1: Determine Total Load

Start by listing all devices and circuits that will be connected to the secondary distribution box. Include continuous loads (running for 3 hours or more) and non-continuous loads. Continuous loads should be multiplied by 125% to comply with electrical code, while non-continuous loads are added at 100% of their rating. Sum the wattages or VA of all loads to get the total power demand for the subpanel.

Step 2: Calculate Required Current

Once the total load in VA or watts is known, calculate the current using the formula: $I = \text{Total Load (VA)} / \text{System Voltage (V)}$ For a typical residential subpanel, the system voltage is 240V for single-phase or 400V for three-phase systems. This gives the minimum current the feeder must carry.

Step 3: Select Feeder Breaker

The calculated current determines the size of the feeder breaker in the main panel. Ensure the breaker does not exceed the remaining capacity of the main panel. For safety, the breaker should match or slightly exceed the calculated load but remain within code limits.

Step 4: Size the Conductors

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MCB and ELCB Sizing for Distribution Box

The document calculates the size of branch circuit MCBs and a main ELCB for a distribution box based on the loads connected. It

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Enter the required parameters to precisely calculate the "Box Fill" requirements for an electrical wiring box. This box fill calculator

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