

RIVO MULTITRADE OPTICAL SYSTEMS

What size wire should be used for a secondary distribution box



Overview

Keep in mind that selecting the proper wire size is crucial when sizing a wire for electrical installations.

Key Takeaways

The wire size for a subpanel depends on the amperage rating, distance from the main panel, and conductor material, with common sizes ranging from 8 AWG for 40 amps up to 2/0 AWG for 200 amps. Determining Wire Size

The correct wire size is determined by the maximum expected load of the subpanel, not just the sum of branch circuit breakers. This involves performing a load calculation that accounts for continuous loads (operating for 3 hours or more) and non-continuous loads, applying a 125% factor to continuous loads as required by the NEC, and considering demand factors for realistic usage .

Ampacity and Material

- Copper conductors have higher ampacity than aluminum, so a smaller gauge can carry the same current.
- Aluminum conductors require a larger gauge to handle the same amperage safely . For example, a 100A subpanel located 80 feet from the main panel typically requires #4 AWG copper or #1/0 AWG aluminum to account for voltage drop and safe operation .

Distance and Voltage Drop



Longer runs increase resistance and voltage drop, which can reduce performance and damage equipment. NEC recommends keeping voltage drop under 3% for branch circuits and 5% for feeders. For long distances, it is often necessary to increase wire size beyond the minimum ampacity to maintain proper voltage .

Practical Wire Size GuideSubpanel AmperageCopper WireAluminum Wire40A8 AWG6
AWG60A6 AWG4 AWG100A4 AWG2 AWG125A3 AWG1/0 AWG150A2 AWG1/0
AWG200A2/0 AWG3/0 AWGAdditional Considerations

- Always size wires to handle 125% of continuous loads.
- Consider future expansion and high-demand equipment like welders or EV chargers.
- Ensure compliance with local electrical codes and NEC standards.
- Use a professional wire size calculator for precise sizing based on load, distance, and voltage drop . Selecting the correct wire size ensures safety, efficiency, and code compliance, preventing overheating, voltage drop, and potential fire hazards.

Article Content

How to Install a Cable Distribution Box Safely and Correctly?

Mounting the Box Marking and drilling: According to the predetermined installation position, mark the fixed point on

How to Find the Right Size of Wire and Cable in NEC & IEC?

Keep in mind that selecting the proper wire size is crucial when sizing a wire for electrical installations. An inappropriate size of wire

IEEE 525-2007_accepted

A conductor that is used to connect the CT secondary leads may have different requirements than a cable that is used for the VT

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