

What size in mm² should the grounding wire for the distribution box be



Article Overview

For most residential distribution boxes (100–200 A), a copper grounding wire of 4 AWG ($\approx 21 \text{ mm}^2$) or aluminum 2 AWG ($\approx 33 \text{ mm}^2$) is typically used.

Equipment Grounding Conductor (EGC)

The EGC connects non-current-carrying metal parts of the distribution box to the system ground, providing a low-impedance path for fault currents. According to NEC Table 250.122, the minimum size depends on the rating of the overcurrent protection device (OCPD) protecting the circuit:

- 15–20 A: 14 AWG copper ($\approx 2.08 \text{ mm}^2$)
- 30 A: 10 AWG copper ($\approx 5.26 \text{ mm}^2$)
- 100–200 A: 4 AWG copper ($\approx 21 \text{ mm}^2$) or 2 AWG aluminum ($\approx 33 \text{ mm}^2$)
- 400–800 A: 2/0 to 3/0 AWG copper ($\approx 107\text{--}152 \text{ mm}^2$) Copper is preferred due to higher conductivity and corrosion resistance, allowing smaller sizes compared to aluminum for the same ampacity .

Grounding Electrode Conductor (GEC)

The GEC connects the distribution box to the grounding electrode (ground rod, Ufer ground, or metal water pipe). NEC Table 250.66 specifies sizing based on the largest ungrounded service-entrance conductor:...

Article Content

Oct 02, 2025

How to Size Grounding Electrode Conductor (GEC)?

For a proper grounding system, the following step-by-step guide can be used to determine the suitable size of grounding electrode

May 02, 2026

Earthing Cable Size Standard | IEC Vs NEC Vs BS 7671 Vs IEEE 80 ...

Compare earthing cable size standard requirements across IEC 60364, NEC 250.66, BS 7671, and IEEE 80 — which

Aug 02, 2025

Sizing Earth Conductor, Ground Electrode-Rod and Earth Plate

How to Determine the right size of Earth Continuity Conductor, Earthing Lead and Earth Electrodes based on BS-7671, IEC and NEC

May 27, 2026

DISTRIBUTION BOX

Each DISTRIBUTION BOX and controller must be grounded. On the US market, a 5.26 mm² (10 AWG) ground wire

Jun 22, 2026

Earthing Cable Size as Per IEC 60364-5-54: Formula & Guide

Earthing cable size as per IEC 60364-5-54 explained — calculation formula, minimum cross-sectional area rules,

Mar 01, 2026

Philippine Electrical Code – Equipment Grounding and Equipment ...

Sections in the Philippine Electrical Code Requiring Minimum Size Equipment Grounding Conductors according to

Nov 02, 2025

Ground Wire Size Calculator (NEC 250.122 Standard)

Ground wire size refers to the physical thickness of the minimum cable size for safety that connect electrical

Dec 08, 2025

Grounding Conductor: What is it (And How Do You Calculate The Right Size)?

A SIMPLE explanation of Grounding Conductors. Learn what a Grounding Conductor is, the color of the wire, and how

Nov 19, 2025

Ground Wire Size Chart

There are two distinct types of ground wire size charts as governed by the National Electric Code. The first one is the

Aug 07, 2025

Minimum Earthing Conductor Size: Best Guide

For copper conductors, the minimum size is typically 6 mm². For aluminum conductors, the minimum size is often set at

May 10, 2026

Ground Wire Size Chart (A Complete Guide)

If the wire run is longer than standard distances (usually over 100 feet), voltage drop becomes a concern, and you may need a larger

Jul 30, 2025

Ground Wire Sizing Guide | NEC Grounding Requirements

Size ground wires per NEC requirements. Learn equipment grounding conductor sizes, grounding electrode

Feb 27, 2026

Ground Wire Size Chart NEC 2026: Complete Grounding Guide

This comprehensive guide will walk you through everything you need to know about grounding conductor sizing, from

Aug 20, 2025

Grounding Conductor Size Calculator — NEC 250

The Grounding Conductor Size Calculator below gives you minimum equipment grounding conductor (EGC) and

Aug 14, 2025

Ground Wire Size Calculator

Note: Always comply with NEC when equipment grounding conductor should be sized larger than the values listed in this calculator.

Oct 05, 2025

What Size Ground Wire Do You Need

The NEC ground wire size chart defines the least instrument grounding conductor size for single and 3-phase systems

Jul 09, 2026

Ground Wire Sizing Guide | NEC Grounding Requirements

Learn how to properly size ground wires according to NEC requirements. This comprehensive guide covers

Apr 13, 2026

Earth Bonding Cable Size Selection

Notes: 1. Protective conductors (including earth and bonding conductors) of 10mm² cross-sectional area or less shall be of copper. 2.

Aug 30, 2025

Grounding Wire Size Calculator

Calculate equipment grounding conductors (EGC) based on circuit breaker size, grounding electrode conductors (GEC) for service

Mar 18, 2026

AWG Wire Gauge Chart & Table – American Wire Gauge (AWG)

The AWG (American Wire Gauge) wire size chart with detailed specifications on wire diameter, resistance, and ampacity. Find

Jun 14, 2026

Ground Wire Size Chart NEC 2026

When you buy the correct cable for your circuit, the ground wire is automatically the correct size. Ground wire sizing becomes a

Nov 15, 2025

Distribution Box and Selection Guide: Internal Structure, Components ...

Learn how to choose a distribution box and understand its internal structure, including MCBs, busbars, neutral bars,

Jan 26, 2026

Min Size Equipment Grounding Conductor

Table Minimum Size Equipment Grounding Conductors for Grounding Raceway and Equipment Rating or Setting of Automatic

Dec 28, 2025

Ground Wire Size Chart

This chart displays the size of a ground conductor for a circuit based on the ampere rating of the circuit

Oct 18, 2025

Nine Recommended Practices for Grounding

Bond all metal enclosures, raceways, boxes, and equipment grounding conductors into one electrically continuous

Oct 25, 2025

Ground Wire Size Calculator | Accurate Earth Conductor Sizing Tool

Easily calculate the proper ground wire size for electrical systems. Ensure safe earthing and compliance with NEC or

Contact Us

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