



GROUNDING SIMPLIFIED

Grounding Definitions (per National Electrical Code NEC 2011)

- **Ground** — The earth.
- **Equipment Grounding Conductor (EGC)** — The conductive path(s) installed to connect normally non-current carrying metal parts of equipment together and to the system Grounded Conductor or the Grounding Electrode Conductor, or both.
- **Grounded Conductor** – A system or circuit conductor that is intentionally grounded.
- **Grounding Electrode Conductor (GEC)** – A conductor used to connect the system Grounded Conductor or the equipment to the Grounding Electrode or to a point on the Grounding Electrode system.
- **Grounding Electrode** – A conducting object through which a direct connection to earth is established.
- **Grounding Electrode** – The grounding electrode for a PV system is typically an 8 foot long, 5/8 inch diameter copper-clad steel rod inserted directly in the Earth. This is the standard method of grounding for PV modules and grounded racking systems.

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Grounding Requirements (per NEC 2011)

The Photovoltaic system shall meet the following grounding safety rules:

1. Ground all metal parts (chassis & frames) even if noncurrent carrying
2. Connect inverter ground conductor to PV array
3. Electrical ground of inverter must be Earth grounded
4. Follow proper sizing of all ground conductors

Grounding Requirements (microinverter per NEC 2011)

1. Size of Equipment Grounding Conductor — NEC allows using an inverter grounding electrode conductor smaller than the “largest utility conductor” if a 6 AWG copper wire(250.166(C)) is secured to each grounding bond point, and then earth grounded to an 8 foot grounding electrode.
2. Other guidelines — See Table 250.122 for Minimum Size Equipment Grounding Conductors for Equipment (based on the rating of upstream AC over current protection device(s)).

Note: The external ground bonding point on each Direct Grid inverter complies with grounding size requirement above provided the ground wire is secured with a stainless steel screw and two flat washers.

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Grounding (per NEC 2011)

Alternative Equipment Grounding method

(where permitted by AHJ):

Industrial rated Direct Grid micro inverters provide a 12 AWG wired and marked Equipment Grounding Conductor for grounding. It complies with NEC Table 250.122 and 690.45(A) rules for grounding conductor sizing (up to 20A over current protection rating). If not used, cut, crimp & terminate with a suitable listed device.

Note: NEC requirements related to combined AC/DC grounds are satisfied and automatically provided for by Direct Grid inverters with integrated GFDI.

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Other comments related to system grounding (per NEC 2011)

- Standard NEC compliant Grounding Electrode Conductor and Grounding Electrode rules shall be followed per Article 250.
- Care must be taken to use irreversible ground conductor splices (welded, soldered or listed crimp-on splicing devices) when tying several inverters to the ground.
- Care should be taken to ensure that all PV components are grounded together and properly per the NEC. This will afford the greatest personnel safety and lightning protection.