

A low impedance equipment-ground path is essential to insure the instantaneous operation of the fuse or circuit breaker. This impedance value must be much less than one (1) ohm. It is critical to note that this reading (in ohms) is impedance and not resistance. Measuring it requires the use of an (AC) impedance tester that measures the impedance of a conductor from the point of test back to the main electrical service. Do not use an ohmmeter or digital multi-meter (DMM). While DMMs are capable of quantifying DC resistance values, they cannot measure impedance in AC electrical systems.

GUIDELINES TO FOLLOW

1. Write clear, concise specifications to cover both earth- and equipment-grounding requirements and document all test results to establish a benchmark for any future testing.
2. Use proper test equipment and always verify that the earth ground, equipment ground and neutral conductors conform to NEC standards.
3. Conduct a wiring verification test. Measure all voltages, current, phase rotation, load balance, equipment-grounding conductor impedance, neutral impedance, and the presence of the required neutral-ground bond at the service equipment.
4. Test for wiring errors at the panel or outlet of interest. Check for missing connections, including open equipment-grounding conductors, open neutrals, and open-phase conductors.
5. Test for poor quality or improper connections including reversed phase/neutral or reversed neutral/equipment grounding.
6. As circuit breaker ratings increase, the impedance values become lower.

7. Purchase power-conditioning and power-protection products only after determining that the facility wiring and grounding are trouble free and of high quality.
8. Follow the guidelines found in the book: EC&M Understanding NEC Rules on Grounding and Bonding.

During visual inspection, ask the following:

1. Are the earth-grounding and equipment-grounding systems properly installed?
2. Are proper wire sizes used for the feeder and branch-circuit conductors?
3. Is an insulated equipment-grounding conductor installed with the feeder conductors?
4. Are individual branch circuits installed to supply only electronic loads?

Remember to perform verification and routine testing of electrical wiring and grounding with specialised earth-ground resistance and impedance testers. It is the final, critical step to ensure optimum system/equipment performance and the safety of your personnel.

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EPG People...

Maybe they thought they were losing a skilled worker and were reluctant to let a good man go. Fortunately for us, Canada finally processed his paper work and after 90 days of waiting, Howard Lester became a permanent US resident, husband, step father and newest addition to EPG's Customer Service/Tech. Support department. Now after six months of service, we think it was well worth the wait.

Howard's background in electrical systems and pump repair has provided the testing, repair, field service and troubleshooting expertise needed to support customers from Michigan to Saipan.

If you have a technical support issue, call Howard. He's got the right answers and most likely, a few stories to tell.

Howard enjoys his new US residency, mountain and trail biking, fishing and hiking along with his new wife and two children.



Howard Lester