

Earth Continuity

This test checks that the connection between any part of the earth system is of low enough resistance to operate safety devices, and that the difference in potential between exposed conductive parts isn't hazardous.



YOU'LL NEED:

- a volt meter
- an ohm meter
- an ammeter (clamp meter)
- a trailing lead.



BEFORE YOU START:

1. Make sure you are using all relevant personal protective equipment.
2. Prove your ammeter is working using the prove-test-prove method.
3. Isolate the supply.
4. Test the resistance of the trailing lead and note resistance **OR** connect the trailing lead to your ohm meter and set it to zero.

TIP

Use the **ME Hub app** to document your test results as you work. You'll also find a calculator feature to help you identify the correct readings when testing the subcircuit.



HOW:

This test has four parts: main earth conductor, equipotential bonding, mains / submains, and subcircuit.

MAIN EARTH CONDUCTOR

This tests any part of the installation supplied by a Protective Earth Neutral (PEN – i.e. 2- or 4-wire) submain.

1. Confirm the supply is not live using the prove-test-prove method.
2. Use the ammeter to ensure there is no current flowing in the main earth conductor. 
3. Disconnect the main earth from the busbar. *This ensures that the test result is not affected by any parallel paths.*



4. Connect one end of the trailing lead to the main earth conductor at the switchboard; connect the other end to an ohm meter probe. 
5. Connect the other probe of the ohm meter to the earth electrode. *Do not connect to the clamp or cable.* 
6. Check the ohm meter reading; subtract the trailing lead resistance if required – **result must be <math><0.5\Omega</math>.**
7. Reconnect the main earth conductor.





EQUIPOTENTIAL BONDING

1. Connect one end of the trailing lead to the earth busbar; connect the other end to an ohm meter probe.
2. Connect the other ohm meter probe to an equipotentially bonded part of the installation.
3. Check the ohm meter reading; subtract the trailing lead resistance if required – **result must be <math><0.5\Omega</math>.**
4. Repeat steps 3–4 for all other equipotentially bonded parts.

MAINS / SUBMAINS

A) Combined protective earth and neutral (PEN) conductors (for 2- or 4-wire supplies)

1. Confirm the supply is not live using the prove-test-prove method. ⚠️
2. Use the ammeter to ensure there is no current flowing in the submain PEN conductor. ⚠️
3. Disconnect the PEN conductor from the neutral busbar in the switchboard. *This ensures that the test result is not affected by any parallel paths.*
4. Connect one end of the trailing lead to the disconnected PEN conductor; connect the other end to an ohm meter probe.
5. Connect the other probe of the ohm meter to the other end of the PEN conductor.
6. Check the ohm meter reading; subtract the trailing lead resistance if required – **result must not exceed the Re value given in Table 8.2. Use the ME Hub app’s calculator to find the maximum value for this test.**
7. Reconnect the PEN conductor to the neutral busbar in the switchboard.

B) Protective earth conductor (PEC) (for 3 or 5-wire supplies)

1. Confirm the supply is not live using the prove-test-prove method. ⚠️

2. Use the ammeter to ensure there is no current flowing in the submain PEC. ⚠️
3. Disconnect the submain PEC from the busbar in the switchboard. *This ensures that the test result is not affected by any parallel paths.*
4. Connect one end of the trailing lead to the disconnected submain PEC; connect the other end to an ohm meter probe.
5. Connect the other probe of the ohm meter to the other end of the submain PEC.
6. Check the ohm meter reading; subtract the trailing lead resistance if required – **result must not exceed the Re value given in Table 8.2. Use the ME Hub app’s calculator to find the maximum value for this test.**
7. Reconnect the submain PEC to the main switchboard.

SUBCIRCUITS AND ITEMS THAT MUST BE EARTHED

1. Confirm the supply is not live using the prove-test-prove method. ⚠️
2. Connect one end of the trailing lead to the earth busbar; connect the other end to an ohm meter probe.
3. Connect the other ohm meter probe to the earth terminal of the socket outlet or lamp holder, or exposed parts of the item needing to be earthed.
4. Check the ohm meter reading; subtract the trailing lead resistance if required – **result must not exceed the Re value given in Table 8.2. Use the ME Hub app’s calculator to find the maximum value for this test.**
5. Repeat steps 2–3 for all other items needing to be earthed.

