Circuit Polarity

> This test prevents shock hazards by ensuring the earthing system, exposed conductive parts or connected equipment do not become live due to incorrect connections.

IF TESTING ON A *DISCONNECTED* SUPPLY, YOU'LL NEED:

- an ohm meter
- a volt meter
- a trailing lead.

IF TESTING ON A *CONNECTED* SUPPLY YOU'LL NEED:

- a volt meter
- a temporary earth electrode (you can use a screwdriver with an exposed metal shaft)
- a trailing lead.

BEFORE YOU START:

Ensure you are using all relevant personal protective equipment.

TIP

Use the **ME Hub app** to document your test results as you work.

HOW:

The test has two parts: mains, and subcircuits.

MAINS OR SUBMAINS TEST

If mains supply is not connected:

1. Turn off the main switch or incoming isolator in the switchboard.
2. Ensure no voltage is present using the prove-test-prove method. ⚠️
3. Connect one end of the trailing lead to the ohm meter.
4. Test phases:
   a. Connect the other end of the trailing lead to L1 (red phase) on the line side of the main switch or isolator.
   b. Connect ohm meter probe to L1 at point of supply or place of origin.
   c. Check ohm meter reading **– confirm continuity.**
   d. Repeat steps a–c for L2 (white phase) and L3 (blue phase) if applicable.
5. Test neutral:
   a. Connect one end of trailing lead to neutral busbar in the switchboard.
   b. Connect ohm meter probe to neutral at point of supply.
   c. Check ohm meter reading **– confirm continuity.**
6. Test earth (if PEC submains):
   a. Connect one end of trailing lead to the earth busbar in the switchboard.
   b. Connect ohm meter probe to the other end of the earth conductor.
   c. Check ohm meter reading **– confirm continuity.** *Note the resistance – this will need to be recorded for the earth continuity test.*

If mains supply is connected:

1. Drive an independent temporary earth electrode at least 5 metres from the installation's earth electrode.

2. Connect one end of the trailing lead to the independent earth; connect the other end of the trailing lead to one probe of the volt meter.
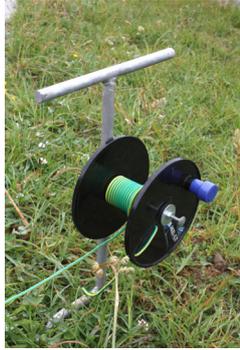
3. Connect the other probe of the volt meter to the switchboard enclosure to confirm the earth system is not live.

4. **Test phases:**

   a. Connect the volt meter to L1 (red phase) on the line side of the main switch in the switchboard.

   b. Check the volt meter reading — **reading should be 230v.**

   c. Repeat steps **a–b** for L2 (white phase) and L3 (blue phase) if applicable.

5. **Test neutral and earth:**

   a. Connect volt meter to the neutral busbar in the switchboard.

   b. Check the volt meter reading — **reading should be 0v.**

   c. Connect volt meter to the earth busbar in the switchboard.

   d. Check the volt meter reading — **reading should be 0v.**

SUBCIRCUIT TEST

1. Turn off the main switch in the switchboard. **Lock out and tag out.**

2. Ensure no voltage is present using the prove-test-prove method. ⚠️

3. Remove fuse or switch off the MCB for the subcircuit(s) being tested.

4. Connect one end of the trailing lead to one probe of the ohm meter.

5. **Test phases:**

   a. Connect the other end of the trailing lead to L1 (red phase) load side of the subcircuit in the switchboard.

   b. Connect the other probe of the ohm meter to L1 of the first subcircuit fitting termination.

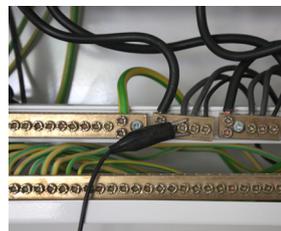   c. Check ohm meter reading — **confirm continuity.**

   d. Turn functional switches off — **confirm no continuity.**

   e. Repeat steps **b–d** for all L1 terminations on the subcircuit.

   f. Repeat steps **a–e** for L2 (white phase) and L3 (blue phase).

6. **Test neutral:**

   a. Connect one end of the trailing lead to the neutral busbar in the switchboard.

   b. Connect the ohm meter to the neutral of the first subcircuit fitting termination.

      i. Check the ohm meter reading — **confirm continuity.**

   c. Turn functional switches off:

      i. Single pole — **confirm continuity.**

      ii. Multi pole — **confirm no continuity. Neutral can only be switched if phase is also switched.**

   d. Repeat for all neutral terminations on the subcircuit.

Testing