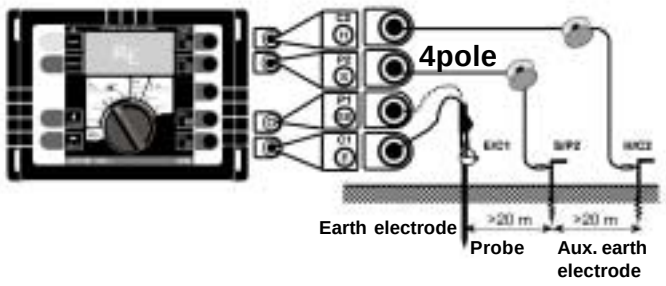
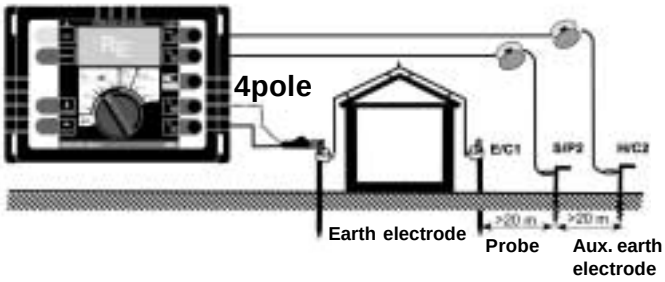
Practical test measuring setup

In a practical earth test temporary earth stakes are used, one stake usually noted as H or C2 is used as a path for test current which is injected in to the earth system under consideration.
The second stake which is usually noted as S or P2 measures the potential developed by the injection of the test current.
A nominal distance of 20m between the stakes is recommended. This will vary depending on the nature of system under tests.



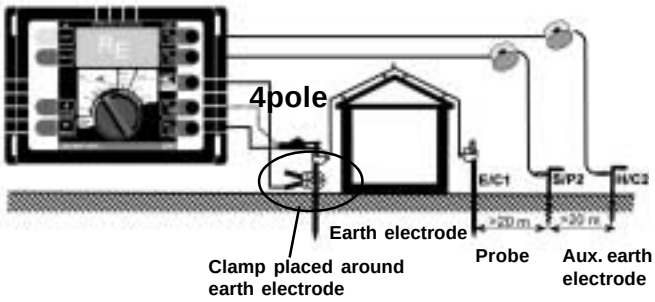
3pole- and 4pole-measurements



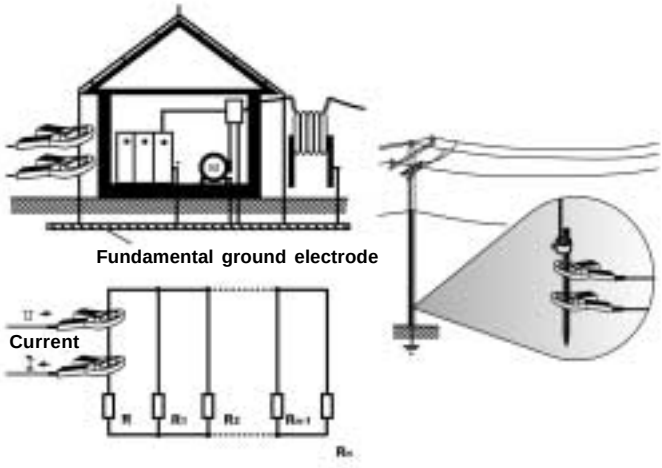
The standard earth test, usually called the 'Fall of Potential Method' uses either 3 or 4 poles or connections. The four pole method compensates for any voltage drop there may be in the wire used to connect to the earth E under test. The fourth wire is particularly important if the connection to the E is a long distance from the instrument.

Selective measurement method

Selective earth testing is based on the standard 'Fall of Potential Method' but has the advantage that the earth system does not need to be disconnected.
The E point is connected to the instrument; a current transformer is used to measure the test current through 'selective' parts of the earthing system.
If there are parallel paths in the earthing system the individual earth resistances of these parallel earths can be measured.



Stakeless measurement method



In this method the temporary stakes are replaced by two current clamps. The test current from the E and the H/C2 terminals of the instrument is fed through a current clamp. This clamp is placed aroung the conductor connecting the earth under test. A second measuring clamp is placed around the same conductor.
The resulting measurement is that of the earth under consideration with a series element which is the combined parallel resistance of all other connected elements. As the combined resistance of the parallel paths is small compared to the resistance of the earth being measured. Clamps should be at least 10 cm apart.