



# Insulation Resistance Test Procedure

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## About insulation resistance testing

The recommended test voltage for performing insulation tests is 500 V DC. The instrument used should be capable of maintaining the test voltage when applied to the insulation of the equipment under test.

If the insulation test indicates a zero or a very low value, it is an indication that the equipment being resistance tested may have a fault. The fault should be rectified before any further testing. Some types of equipment may have a filter networks or transient suppression device, such as surge protection devices (SPDs) equipment of this type may give values of insulation resistance below normally accepted levels by design, performing the insulation resistance test at a reduced voltage, usually 250 V DC, is another option for testing this type of equipment.

Insulation resistance is normally measured by applying a test voltage of 500 V DC between the live conductor and the protective conductor and measuring the resistance. This test may not always be suitable, because it may damage equipment containing sensitive circuits and internal circuitry may lead to inaccurate readings; the manufacturer's instructions should be checked. A more appropriate alternative may be Conducting the test at a reduced voltage of 250 V DC.

Some equipment may not be suitable for insulation resistance testing at 500 V DC, particularly equipment with sensitive components, such as dimmers. In such cases, the manufacture of the equipment should be consulted before proceeding with the 500 V insulation test and before conducting alternative test options, such as a reduced insulation resistance test at 250 V DC (which will not stress the components any more than mains voltage does).

## When should insulation resistance testing be done?

Insulation resistance testing should be carried out after any work on the appliance has been carried out.



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continued

## Test procedure

To perform the tests needed, you will need an Insulation Resistance Tester or a multifunctional tester.

## Before everything, a safe isolation procedure must be carried out

- Step 1.** Select the appliance to be tested and disconnect its live conductors from the isolator or plug (the earth conductor can stay).
- Step 2.** Commence the test process by connecting one of the test leads on the Line conductor and the other one on the Earth conductor. Set the tester to the required voltage and press and hold the TEST button – the tester will display a value in Ohm`s or if it is out of its range then something like this: >299 MΩ.

*Note! For three phase appliances repeat steps 2 and three for each of the three Line conductors.*

- Step 3.** Repeat the test process with one of the test leads on the Neutral conductor and the other one on the Earth conductor.

- Step 4.** Record all readings on your worksheet.

Compare all test results to the minimum allowed value in BS7671 (1MΩ for a 230V a.c. circuit). If any of the values are lower, then further investigation is needed.

If the readings are in excess of the minimum allowed value, reconnect the live conductors to the plug or isolator and re-energise the appliance.