

Testing on 110 V Systems

110 V Systems

110 V electrical systems are used in applications which call for extra safety, such as construction sites. 110 V installations are centre-tapped to earth meaning that the potential to earth is halved and the shock hazard is just 55 V. Even though 110 V systems are safer, they still require the same tests prescribed by the 17th edition of the wiring regulations BS7671.

Insulation Testing

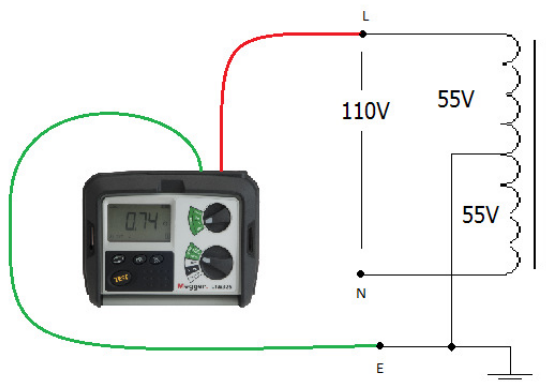
As directed by BS7671, when performing an insulation test on a 110 V circuit, you should select the 500 V range on your insulation tester.

Loop Testing

Since 110 V systems are actually 55 V centred tapped to earth, the operating voltage range of your loop tester has to reach as low as 55 V in order to perform a test. However, due to losses of potential in a circuit, the actual voltage could be lower than 55 V. Therefore, to ensure that your tester will still operate if any voltage drop occurs, its minimum operating voltage should ideally be 50 V or better still 48 V.

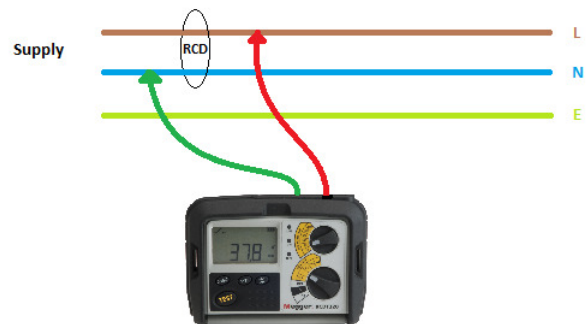
If you have a 110 V RCD protected circuit, only a two-wire low current/no-trip loop tester, such as an LTW325 or any of the MFT1700 series, can be used. A 3-wire tester requires the neutral and earth to be at the same potential therefore could not be used.

The following diagram shows how a loop tester should be connected to a 55 V centre-tapped system.



RCD Testing

RCD testers should also have an operating range down to 50 V so that they may be used on 55 V centred tapped systems. However, if your RCD tester does not have an operating range down to 50 V but to 100 V, it is still possible to test the RCD. This can be achieved by connecting your tester in the method shown below, it will then read 110 V and will be able to operate.



By connecting the RCD tester across the RCD on the phase and neutral conductors, the leakage current is then flowing through the test instrument so the RCD will still detect the imbalance of the current flowing. Although harder to make the connections, this is still a valid way of testing an RCD.

Instruments suitable for use on 110 V systems:

Insulation Testing:

MIT200 Series
MIT300 Series
MIT400 Series (500 V models only)
MFT1700 Series

Loop Testing:

LTW325
LTW335
LTW425
MFT1700 Series (2-wire tests only)

RCD Testing:

RCDT320
RCDT330
MFT1700 Series

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