

Low Voltage Electrical Installation

MODULE 8

Chapter 5: Testing and Inspection

by

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Module Description

- **Expected Outcomes**
 - Perform inspection and testing in electrical installation.
 - Apply ethical principles and commit to professional ethics.
- **Module Outline**
 1. Continuity Test
 2. Insulation Resistance Test

Overview

- Last part of the project development.
- The main objective is to ensure all wiring circuits are correctly installed and totally safe.
- Make sure the main power supply is switched off before the test is run.
- Please ensure that all necessary equipment to do the test are available.

Overview

- **5 types of testing**
 - a. Continuity test
 - b. Insulation resistance test
 - c. Polarity test
 - d. Protection test
 - e. Earth electrode resistance test/Earthing test

1. Continuity Test

- There are 3 main types of continuity tests for the final circuits:-

a) Protection Conductor Continuity Test.

- To identify that all protection conductors are properly connected. (Earth wire)

b) Final Ring Circuit Conductor Continuity Test.

- To ensure that the continuity for all conductors around the ring circuit is positive.

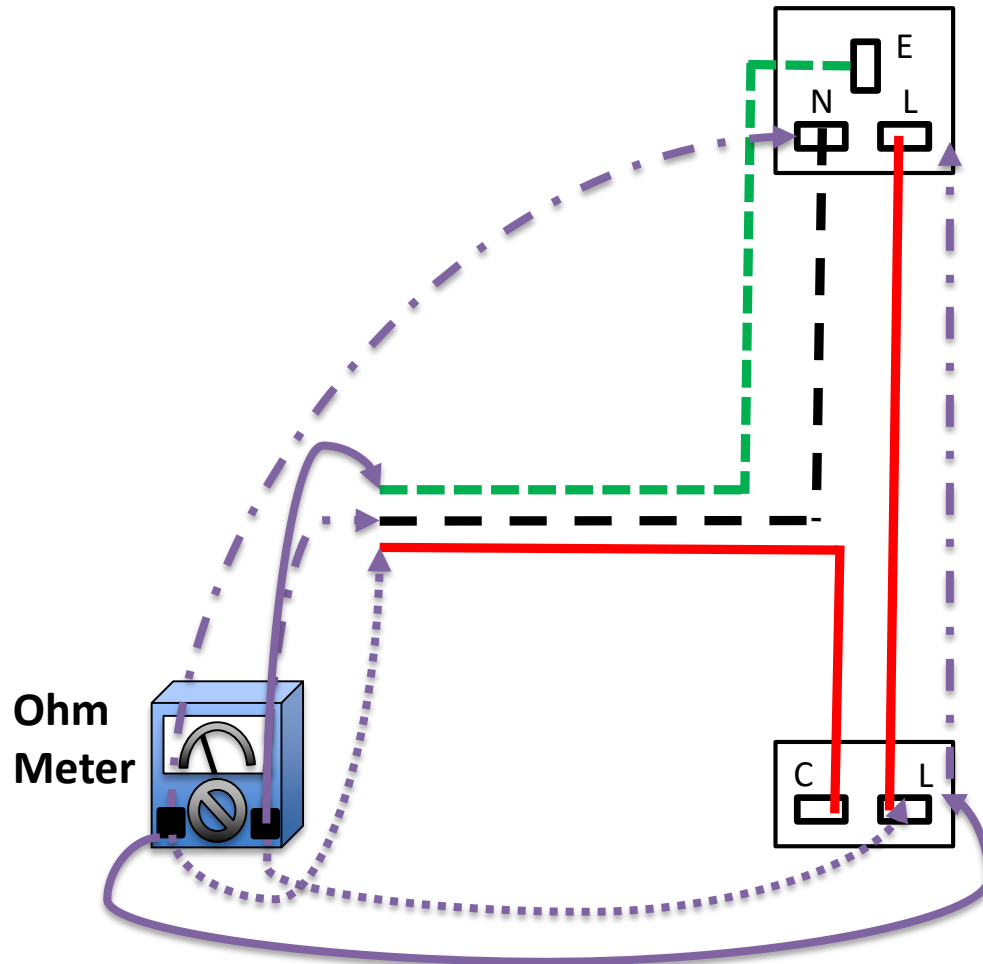
c) Live and Neutral Conductor Continuity Test.

- To ensure that each conductor in the circuit has continuity

1. Continuity Test (cont.)

- Test Equipment – Multimeter (Ohm range) or Ohm Meter
- Test Method:
 - Turn off the MCCB, RCD/ELCB and MCB.
 - Disconnect all loads.
 - Turn on all switches in the circuit.
 - Disconnect the fuses/final circuit breakers and close the circuit.
 - Carry out the test as shown in Figure 1;
- The meter shall read value less than **1 ohm**.

1. Continuity Test (cont.)



Live and Neutral Conductors Continuity Test [1]

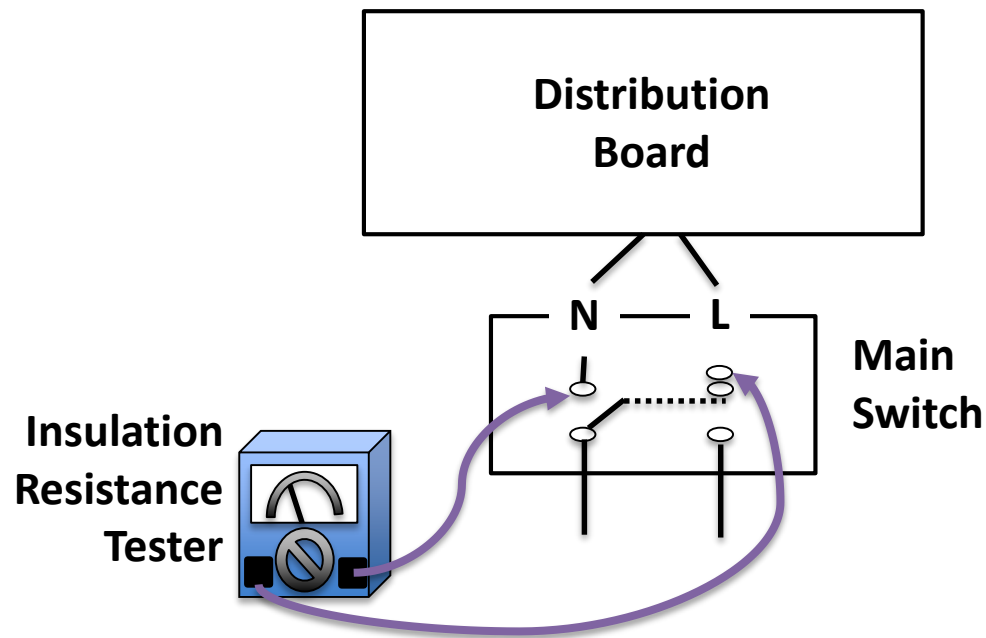
2. Insulation Resistance Test

- Function of Insulation Resistance Test:
 - to ensure that there is no leakage current between;
 - a) phase conductors
 - b) phase and neutral conductors
 - c) phase conductor and earth.
 - to test the strength of the cable insulation.

2. Insulation Resistance Test (cont.)

- Test Equipment – Insulation Resistance Tester /Megohmmeter/Megger meter. Operating voltage is 500VDC.
- Test Method:
 - Turn off main switch.
 - Disconnect all loads.
 - Turn on all circuit control switches.
 - Carry out test as in the Table 1 & Figure 2.
- Meter shall read a resistance value not less than **0.5 Megaohm**.

2. Insulation Resistance Test (cont.)



Insulation Resistance Test [1]

References

- [1] Suruhanjaya Tenaga, *Guideline For Electrical Wiring in Residential Buildings*, 2008.

Thank you

