

TESTING ELECTRIC VEHICLE SUPPLY EQUIPMENT

Electric vehicle supply equipment (EVSE)

Electric vehicles are still in their infancy but may one day appear on every driveway in the country, along with their EVSE.



In domestic households, the charging point will most likely appear simply as a dedicated BS 1363 socket-outlet located on a driveway, providing all parts of the charging circuit are integrated into the vehicle itself. For vehicles which do not include the full charging circuit, a charging device, such as the one shown, may be wired into the supply.

For commercial/industrial applications, in addition to the method for domestic uses, there may be more advanced charging systems in place. These may include rapid charging systems and high current chargers for larger vehicles.

Supply Tests

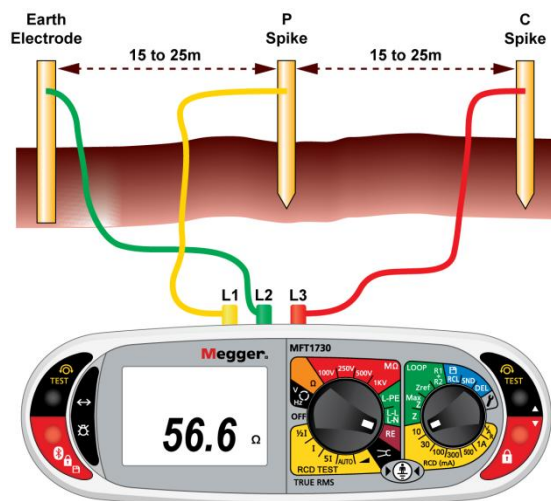
The supply to the charger must comply with BS 7671. This means that all standard installation tests, such as; continuity, insulation, RCD and earth loop impedance, must be taken as normal. Some EVSE may have an RCD incorporated into the outlet, this should also be checked to ensure it trips in a suitable amount of time.

For larger installations, the charger may be supplied by 400 V. Our applications note on testing three phase systems explains how to test 400 V supplies.

Earth Resistance Tests

Most installations require an additional connection to ground at the charging point, so that there is still a form of protection under fault conditions. This connection would be made by an earth spike/electrode driven into the ground.

Simply driving an earth spike into the ground and connecting it to the system will not guarantee a good quality earth connection. A good earth connection would require a low resistance loop reading, typically below 200 Ω . To ensure a good earth connection before making the circuit live a test of the earth resistivity should be performed. This test is taken between the earth electrode which has been installed and two test spikes driven into the ground for the duration of the test. As shown in the diagram below.



Portable Appliance Tests

Some of the charging systems include a detachable cable for connection between the charging point and the vehicle. This cable provides an earth path to the vehicle, the integrity of which should be tested periodically, along with the quality of the insulation. These tests can be performed as part of a portable appliance test.

Megger products suitable for testing EVSE

Continuity and Insulation Testing:

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

Loop Testing:

LTW325
LTW335
LTW425
MFT1700 Series

RCD Testing:

RCDT320
RCDT330
MFT1700 Series

Earth testing:

DET3
DET4
MFT1700 Series

PAT testing:

PAT300 Series
PAT400 Series