

All socket testers check that the earth, live and neutral are the right way around. Some offer added features – they may include a buzzer in addition to LEDs to indicate a good socket or they may show a combination of indicators to identify which particular fault type is present.

Only advanced and professional socket testers will indicate the quality of the earth connection. For detection of cross polarity at the incoming supply specialist socket testers are required.



When selecting a socket tester it's important to understand the different types available and their capabilities and limitations.

There is one fault that a socket tester and indeed no other piece of equipment can easily find – the swapping of the Earth and Neutral wires. This is because the earth and neutral are common at the substation, (if not closer), so electrically they are indistinguishable.

Socket Tester Categories

There are 3 main categories of socket testers, simple, advanced and professional, summarised in the following table. The key differentiator is in the ability to measure and display either ranges or numerical values for earth loop impedance.

All socket testers will show the absence of an Earth; the Martindale EZ165 and EZ365 will show you how good your earth is and the EZ2500 will give you numerical values for certification and reporting.

This differentiation is important as some simple socket testers on the market have been seen to show an earth as “good” even when the impedance is as high as 500kΩ. As 0.5MΩ (500kΩ) is normally considered a good insulation level, it's clear that in this case the “protective” earth will not protect.

Earth Loop Impedance

A reliable earth loop impedance measurement is important to ensure that over current protection devices achieve a fast enough disconnection time to avoid electrocution. In the case of an earth fault, loop impedance values must be less than those specified in the BS7671 Wiring Regulations.

	Simple			Advanced		Professional
	CP501	BZ101	BZ701	EZ165	EZ365	EZ2500
Indicate functional socket	✓	✓	✓	✓	✓	✓
Detect line/neutral reversal	✓	✓	✓	✓	✓	✓
Detect presence of earth	✓	✓	✓	✓	✓	✓
Display range of earth loop impedance values				✓	✓	
Display the numerical value of earth loop impedance						✓
Detect supply cross polarity			✓		✓	
30mA RCD trip check					✓	

Earth loop values higher than a few ohms can cause problems with disconnection times and therefore socket testers capable of indicating earth loop impedance values in this range reveal a lot more about the electrical safety of the installation than just an LED wiring fault indicator. The Martindale EZ165 and EZ365 have this capability built-in.

Supply Cross Polarity

Although all socket testers are capable of identifying wiring faults at the socket, they will not detect when the incoming supply polarity has been reversed. This serious fault condition where L-NE connections have been reversed at the supply requires a special additional test. This capability is included in the new Martindale EZ365 and BZ701 socket testers and activated through a simple touch pad.

18th Edition Testing and Verification

It's important to appreciate that socket testers are not an alternative to the full verification of wiring installations. However as a first line indicator to identify potentially unsafe installations and wiring faults, socket testers offer a fast and effective solution when properly specified.

They can also be particularly useful as a service tool in identifying potentially unsafe conditions prior to carrying out work on existing electrical systems and equipment or before installing new appliances.

For information on professional loop testers and multifunction testers suitable for carrying out all the tests needed to verify the safety of domestic, commercial and industrial wiring installations according the 18th Edition Wiring Regulations, see our ET4000/4500 multifunction installation testers.



Simple Socket Testers

CP501, BZ101 & BZ701 with sounder



Advanced Socket Testers

EZ165 & EZ365 with earth loop impedance, polarity test and RCD check



Professional Socket Tester

EZ2500 socket tester with automatic non-trip earth loop testing plus voltage and frequency measurement

Other useful information

Electrical Safety First Best Practice Guide 8

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