

# BZ701 SOCKET TESTER

## INSTRUCTION MANUAL

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**MARTINDALE**  
● ● ● ELECTRIC

*Keeping You Safe*



**ALWAYS READ THESE INSTRUCTIONS BEFORE  
PROCEEDING**

Thank you for buying one of our products. For safety and a full understanding of its benefits please read this manual before use. Technical support is available from +44 (0)1923 441717 and [support@martindale-electric.co.uk](mailto:support@martindale-electric.co.uk).

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## 1. SAFETY INFORMATION



### **REMEMBER: SAFETY IS NO ACCIDENT**

These instructions contain both information and cautions that are necessary for the correct operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

Particular attention should be paid to the Precautions and Technical Specification.

If the equipment is used in a manner not specified by Martindale Electric, the protection provided by the equipment may be impaired.

Please keep these instructions for future reference. Updated instructions and product information are available at:  
[www.martindale-electric.co.uk](http://www.martindale-electric.co.uk)

## 1.1 Meaning of Symbols and Markings



**Caution - risk of danger and refer to instructions**



**Caution - risk of electric shock**



**Equipment protected by double or reinforced insulation (Class II)**

**CAT II (Measurement Category II)** is applicable to test and measuring equipment connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation. For further information on measurement categories visit:  
[www.martindale-electric.co.uk](http://www.martindale-electric.co.uk)



**Equipment complies with relevant EU Directives**



**Equipment complies with relevant UK Conformity Assessed marking**



**End of life disposal of this equipment should be in accordance with relevant Directives.**

## 1.2 Precautions

This product has been designed with your safety in mind, but please pay attention to the following warnings and cautions before use.

## Warnings

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding the extra low voltage (ELV) limit of 50V AC RMS or 120V DC.

Where applicable other safety measures such as use of protective gloves, goggles etc. should be employed.

This socket tester must only be used by a skilled and competent person who is familiar with the relevant regulations, the safety risks involved and the consequent normal safe working practices, and under the conditions and for the purposes for which it has been constructed and specified.

Before each use the socket tester should be examined for damage, cracks, cuts or scratches. **Do not use** if damaged in any way.

Make sure the socket tester is dry, clean and free from dust, grease and moisture while in use to avoid the danger from electric shock due to surface leakage.

The BZ701 must only be used on CAT II installations up to 300V to earth.

Always verify the unit is functioning correctly on a known correctly-wired live socket before and after use.

If none of the indicators illuminate, this does not necessarily mean the circuit under test is dead. For example the earth and neutral lines could both be open circuit, or the supply voltage may be <125V.

Does not detect E-N reversal.

## **Cautions**

Avoid severe mechanical shock or vibration and extreme temperature.

## **2. INTRODUCTION**

### **2.1 Inspection**

Examine the shipping carton for any sign of damage. Inspect the unit and any accessories for damage. If there is any damage, consult your distributor immediately.

### **2.2 Description**

The BZ701 is a socket tester that also indicates if the mains voltage is below 195V or above 270V or if the neutral to earth voltage is greater than 30V using LEDs and a buzzer.

The BZ701 safely detects Line-Neutral reversal (cross polarity) at the incoming supply. The polarity swap test detects a serious fault condition that cannot be identified by normal socket testers on PME/TN-C-S systems, the most common type of supply. It is easily activated by using the touch pad.

Correct polarity is indicated by three flashing green LEDs. A fault condition is clearly indicated by 3 red LEDs and a warning buzzer.

## **3. OPERATION**

### **3.1. Description of Indicators**

The BZ701 uses a row of LED's to indicate wiring condition and mains voltage level.

Note: The level of the mains supply is only indicated if the wiring is correct.

Verify the BZ701 in a known correctly wired live socket before and after use. If any indicators do not illuminate or the buzzer does not emit a continuous tone, then do not use the BZ701 and return it for repair.

### 3.2 Buzzer

Table 1 shows the buzzer response for the various wiring and RCD test conditions.

*Table 1.*

Continuous tone	Wiring correct
Pulsed tone	Faulty wiring Supply voltage out of tolerance

### 3.3 Using the BZ701

Plug the BZ701 into the socket to be tested.

Compare the status of the indicators with the front decal or with figures 1, 2 & 3 in sections 3.3.1 and 3.3.2.

If the BZ701 does not power up and none of the LED's illuminate this could mean that the wiring is incorrect, or the mains voltage is less than 125V and investigation of the wiring is required. In such circumstances verify the BZ701 in a known correctly wired socket to confirm the need for investigation.

The BZ701 is designed to be plugged into a socket and removed after the test has been performed. If the BZ701 is left plugged into a socket it will go into standby mode after approximately 10 minutes. The illuminated LED indicators will go blank and the centre LED will flash amber and the buzzer will beep every 5 seconds.

#### 3.3.1 Wiring and Voltage Check











The condition of the wiring at the socket under test or any out of



tolerance supply voltage will be indicated by the LED sequences of figure 1 on the row of LED's.

The LEDs are labelled N E L to aid fast identification of the source of common faults. A look up chart on the tester provides further fault diagnosis. More comprehensive diagnostics are included in Fig 1 and Fig 2.

*Figure 1. Wiring and Voltage Test Indicators*

	<b>Wiring Correct, Voltage OK</b>
	<b>Wiring Correct, Voltage high &gt;270V</b>
	<b>Wiring Correct, Voltage low &lt;195V</b>
	<b>Earth-Neutral voltage &gt;30V</b>
	<b>Open Neutral</b>
	<b>Open Earth</b>
	<b>Phase (Line) Fault</b>
	<b>Phase-Neutral Reversal</b>
	<b>Phase-Earth Reversal</b>
	<b>Serious wiring fault or voltage &lt;125V</b>

In the event of a fault being indicated, investigation should only be carried out by a suitably qualified electrician.

Figure 2. Possible socket wiring and BZ701 indications when line (phase) is connected to the socket.

BZ701 Pins			
N	E	L	
<b>Socket Under Test Wiring</b>			
N	E	L	
E	N	L	● ● ●
E	E	L	
N	N	L	
OPEN	E	L	● ○ ○
OPEN	N	L	
OPEN	L	E	
OPEN	L	N	
N	OPEN	L	○ ● ○
E	OPEN	L	
L	OPEN	E	
L	OPEN	N	
L	E	OPEN	○ ○ ●
L	N	OPEN	
E	L	OPEN	
N	L	OPEN	
L	E	N	● ○ ●
L	E	E	
L	N	E	
L	N	N	
E	L	L	
N	L	L	
N	L	E	○ ● ●
E	L	E	
E	L	N	
N	L	N	
L	E	L	
L	N	L	
OPEN	OPEN	OPEN	○ ○ ○
L	L	L	
L	L	OPEN	
L	OPEN	L	
OPEN	L	L	
L	OPEN	OPEN	
OPEN	L	OPEN	
OPEN	OPEN	L	

Does not detect E-N reversal.

### 3.3.2 Incoming Supply Cross Polarity Check

Where the polarity of the incoming mains supply has been reversed (i.e., Supply Line is connected to Neutral & Earth, Supply neutral & earth are connected to Line) then, as with all standard socket testers, BZ701 will not detect this fault, unless the additional Supply Cross Polarity Check is carried out.

To check for supply cross polarity an additional test is required which is easily activated by touching the blue **POLARITY CHECK** touch pad with a finger.

If the incoming supply wiring polarity is correct, the three LED's will flash **GREEN** and the buzzer indicating correct socket wiring will continue.

If the wiring polarity is reversed, the wiring LED's will flash **RED** and the buzzer will emit a pulsed tone. The BZ701 will continue to indicate this fault condition once the finger has been removed from the touch pad.

In the event of a fault being indicated, investigation should only be carried out by a suitably qualified electrician.

## **4. MAINTENANCE**

### **4.1 Cleaning**



Prior to cleaning, ensure the BZ701 is disconnected from any live circuits.

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent or alcohol. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the unit. If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain in a dry environment for 2 hours before use.

### **4.2 Repair & Service**

There are no user serviceable parts. Return to Martindale Electric if faulty. Our service department will quote promptly to repair any fault that occurs outside the guarantee period.

### **4.3 Storage Conditions**

The BZ701 should be kept in warm dry conditions away from direct sources of heat or sunlight, and in such a manner as to preserve their working life. It is strongly advised that they are not kept in a tool box where other tools may damage them.

## **5. WARRANTY AND LIMITATION OF LIABILITY**

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by

a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.

**Electrical**

Nominal operating voltage: 230V~ ±10%.

Operating frequency: 50Hz

Power consumption: <2.5W

Power: from mains socket under test

Standby: after approx. 10 minutes

Voltage low indication: <195V >125V ± 5%

Voltage high indication: >270V ± 5%

Earth neutral voltage high indication: > 30V nominal

Open earth indication: >35kΩ ± 15%

Supply Polarity: detection of incoming supply cross polarity

**General**

Dimensions: 65 x 80 x 59mm

Weight: approx. 93g

**Environmental**

Location: Indoor use only

Altitude: up to 2000m

Operating environment: -10°C to 40°C, at max. 60%RH

Mains supply voltage fluctuations: ± 10%

Overtoltage category: CAT II 300V

Pollution degree: 2

**Safety**

Conforms to BS EN 61010-1

Class II, Reinforced insulation

**EMC:** Conforms to BS EN 61326-1

## Check out what else you can get from Martindale:

- 18th Edition Testers
- Accessories
- Calibration Equipment
- Continuity Testers
- Electricians' Kits
- Environmental Products
- Full Calibration & Repair Service
- Fuse Finders
- Digital Clamp Meters
- Digital Multimeters
- Labels
- Microwave Leakage Detectors
- Safe Isolation Kits
- Multifunction Testers
- Non-trip Loop Testers
- Pat Testers & Accessories
- Phase Rotation Testers
- Proving Units

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### Ver. C1.6

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