Other products from Martindale:

- 18th Edition Testers
- All-in-one's
- Calibration Equipment
- Continuity Testers
- Electrician's kits
- Full Calibration & Repair Service
- Fuse Finders
- Digital Clamp Meters
- Digital Multimeters
- Microwave Leakage Detectors
- Motor Maintenance Equipment
- Non-trip loop testers
- Pat testers & Accessories
- Phase rotation
- Proving units
- Socket Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators
- Specialist Metrohm testers (4 & 5kV)
- Specialist Drummond testers

MARTINDALE ELECTRIC

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INSTRUCTIONS

E-ZeTest EZ2500 LOOP TESTER

MARTINDALE ELECTRIC

Trusted by professionals

SAFETY INFORMATION: Always read before proceeding.

WARNING

These instructions contain both information and warnings that are necessary for the safe operation and maintenance of the E-ZeTest EZ2500. 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.

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding 30 V AC rms, 42 V AC peak or 60 V DC.

The E-ZeTest EZ2500 must only be used under the conditions and for the purposes for which it has been constructed. Particular attention should be paid to these Warnings, the Precautions, the Technical Specifications and the use of the E-ZeTest EZ2500 in dry surroundings.

Always check the E-ZeTest EZ2500 is in good working order before use and that there are no signs of damage to the unit. Do not use if damaged.

Always inspect your meter, test leads and accessories for any sign of damage before use. If any abnormal conditions exist (e.g: broken test leads, cracked case, display not reading, etc.), do not attempt to use it. Do not expose it to direct sunlight, excessive temperature or moisture.

Keep these instructions for future reference. Updated instructions and product information are available at: www.martindale-electric.co.uk

SYMBOLS:


Equipment complies with relevant EU Directives


AC (Alternating Current)


Ground


Direct Current


Equipment protected by Double Insulation (Class II)


Caution - refer to accompanying documents


Caution - risk of electric shock

4. MAINTENANCE

4.1 Cleaning

The E-ZeTest EZ2500 may be cleaned using a soft damp cloth. Do not use abrasives, solvents, or detergents, which can be conductive. Allow to dry completely before using.

4.2 Repair & Service

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

Before the unit is returned, please ensure that you have checked the unit and associated leads thoroughly for flat batteries (check & replace), blown fuses (check & replace) and other poor connections.

4.3 Storage Conditions

The E-ZeTest EZ2500 should be kept in warm dry conditions away from direct sources of heat or sunlight, and in such a manner as to preserve the working life of the unit. It is strongly advised that the unit is not kept in a tool box where other tools may damage it.

5. WARRANTY

The E-ZeTest EZ2500 is guaranteed against faults in manufacture and materials for 24 months from date of invoice and will be rectified by us free of charge, provided the unit has not been tampered with and is returned to us with its housing unopened. Damage due to dropping, abuse or misuse are not covered by this guarantee. Batteries and fuses are not covered by this guarantee.

Nothing in these instructions reduces your statutory rights.

CONTENTS

1. INTRODUCTION

1.1 Description

The E-ZeTest EZ2500 is a simple-to-use Earth Loop Impedance tester designed to make the accurate measurement of Earth Loop Impedance and Phase Neutral Impedance quick and easy. The E-ZeTest EZ2500 employs patented 'T Safe' non-trip technology to avoid tripping in-circuit Residual Current Devices (RCDs).

Mains powered and free of batteries, the E-ZeTest 2500 is fully automatic, requiring no actions on the part of the user to complete a comprehensive check of the wiring, and to obtain an Earth Loop Impedance and Phase Neutral Impedance result displayed to 2 decimal places, in accordance with the requirements of BS 7671 17th Edition. If the wiring is faulty or the mains supply voltage is below 198 Volts (<198V), or above 264 Volts (>264V), appropriate error messages are displayed and the Earth Loop Impedance test and Phase Neutral impedance measurments are not performed. The unit measures and displays the mains supply voltage and mains frequency.

1.2 Unpacking and Inspection

Before unpacking the E-ZeTest EZ2500, examine the shipping carton for any sign of damage. Unpack and inspect the E-ZeTest EZ2500 and any associated leads for damage. If there is any damage then consult your distributor immediately.

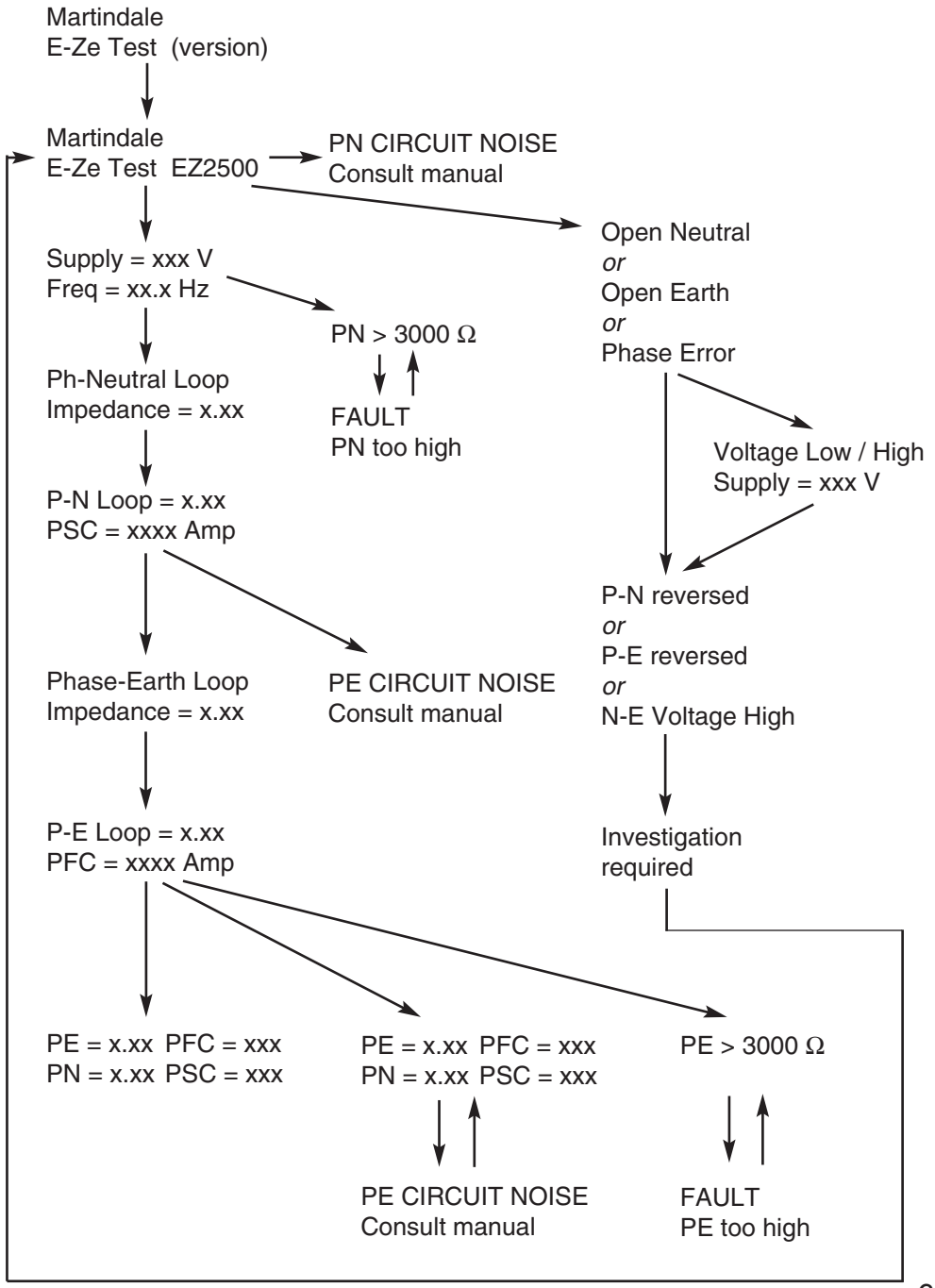
2. TECHNICAL SPECIFICATION

Nominal Voltage Rating: 220 - 240 V
Voltage Range for Wiring Error Detection: 30 - 275 V
Open Loop indication: If Open PE or PN Loop is detected, no Impedance Measurement takes place
Voltage Range for Impedance Measurement: 198 - 264 V
Frequency: 50 Hz
Loop Impedance Ranges: 0-8.99Ω, 9.0-89.9Ω, 90-899Ω, 900-1699Ω, 1700-3000Ω

Phase Earth Loop Impedance Accuracy:
0 - 8.99Ω, ± 4% ± 0.05Ω *
9.0 - 89.9Ω, ± 5% ± 0.5Ω *
90 - 899Ω, ± 5% ± 5Ω *
900 - 1699Ω ± 5% ± 30Ω*
1700 - 3000Ω indicative

Phase Neutral Loop Impedance Accuracy:
0 - 8.99Ω, ± 4% ± 0.05Ω *
9.0 - 89.9Ω, ± 5% ± 0.5Ω *
90 - 899Ω, ± 5% ± 5Ω *
900 - 1699Ω ± 5% ± 30Ω *
1700 - 3000Ω indicative

3.4 TABLE OF DISPLAY MESSAGES



3.3.6 RCD in the Circuit Under Test

The E-ZeTest EZ2500 should not trip RCD's during the testing of wiring with in-circuit RCD's.

Note, however, that many modern products have a constant low level of earth leakage, to ensure that noise and stored charge is dissipated, for example, 3mA earth leakage is typical for a desk-top computer.

Note, also, that a 30mA RCD is guaranteed to trip at 30mA earth leakage, should not trip at 15mA, but is very likely to trip with earth leakage currents above 22mA.

Therefore, caution should be exercised where earth leakage currents inherent in the circuit under test are approaching the trip threshold of the in-circuit RCD, for example where several computers are all connected to one ring circuit fitted with a 30mA RCD.

Where tripping of the RCD may have a critical impact on the equipment connected to the supply, the RCD should be bridged temporarily during the test. Ensure any bridging links are removed immediately the tests are completed.

3.3.7 Possible Measurement Errors of Earth Loop Impedance

Where supply circuits under test have highly inductive or capacitive components distributed on that circuit (such as mains filters), or there is an excessive amount of mains disturbance present (e.g. motors running, rain shorting exposed wires, or a generator with high inductance supplying power, etc), it is possible the Phase Neutral and Earth Loop Impedance measurement could be adversely affected.

The message PN CIRCUIT NOISE is displayed to indicate noise on the Phase Neutral wires. The message PE CIRCUIT NOISE is displayed to indicate noise on the Phase Earth wires. If the noise levels on Phase Earth are not adversely too high, an estimated Phase Earth Impedance measurement is displayed together with a circuit noise warning.

When noise is a factor, always aim to physically unplug as many devices as possible from the circuit before taking measurements to minimise inductive, capacitive and noise related effects.

Voltage Accuracy:	± 4 %
Frequency Accuracy:	± 4 %
Temperature Range:	-10° to 40° C at max 80 % Relative Humidity (Non-Condensing)
Dimensions:	145 x 85 x 53mm + Cable
Weight:	240g plus cable plus case
Power supply:	From mains
Power consumption:	< 1.6 W
Overvoltage category:	Cat III/300V
Pollution degree:	2

Supplied with: zip carry case, mains lead & instructions

*** Note:**-Measurement accuracy can be affected by highly inductive or capacitive components distributed on the supply (see section 3.3.7).

3. OPERATION

3.1 Precautions

The E-ZeTest EZ2500 has been designed with your safety in mind, but please pay attention to the following warnings and cautions before using the unit.

⚠ Warning

Before use check the E-ZeTest EZ2500 for cracks or any other damage. Make sure the unit is free from dust, grease and moisture. Also check any associated leads for damage. Do not use if damaged. **DO NOT USE IN DAMP CONDITIONS.**

⚠ Warning

If the E-ZeTest EZ2500 does not power-up, or no messages appear on the LCD, this does not necessarily mean the circuit under test is dead. The phase supply may still be live, but the earth and neutral lines could both be open circuit. Always investigate such conditions with suitable care.

⚠ Warning

Always verify the E-ZeTest EZ2500 is in good working order before use, by testing it on a known correctly wired socket.

⚠ **Caution:** Avoid severe mechanical shock or vibration and extreme temperature.

3.2 Description of Display

The E-ZeTest EZ2500 uses a two-row dot-matrix LCD to indicate mains voltage level, correctness of socket wiring and earth loop impedance, and to indicate a series of fault conditions that may exist.
See Table 3.4 for full list of messages and their inter-relationship.

3.3 Using the EZ2500

3.3.1 Connection

It is recommended that testing is carried out, as far as it possible, on a circuit where all appliances are disconnected. Ensure you have read the Precautions (Section 3.1) before proceeding.

- Plug the E-ZeTest EZ 2500 into the socket to be tested using the IEC lead supplied.
- Ensure the socket is switched on.
- View the messages on the display.

If you are using the E-ZeTest EZ2500 with TL88 leads to test wiring, connect the green clip to earth, black to neutral and red to live in that order and then plug the TL88 lead into the IEC inlet socket of the E-ZeTest EZ2500.

3.3.2 Start Up

Every time the E-ZeTest EZ2500 is plugged in it will, display a brief series of messages, before it calculates and displays the Phase Neutral Loop Impedance, Phase Earth Impedance and related fault currents.

Note: If the E-ZeTest EZ2500 display does not illuminate, this could mean that the supply voltage is less than 30V, or could mean a simultaneous fault on both earth and neutral (see Precautions section 3.1).

Verify the E-ZeTest EZ2500 in a known correctly-wired socket. If the E-ZeTest EZ2500 is shown to be functioning correctly, investigate the socket where a fault response occurred.

3.3.3 Phase Neutral & Earth Loop Impedance Test

If the wiring is correct and the supply voltage of the circuit under test is between 198V and 264V the E-ZeTest EZ 2500 will perform a Phase Neutral and Earth Loop Impedance check automatically. No interaction is required by the user; simply note down the Phase Neutral and Earth Loop Impedance value displayed at the end of the message sequence.

3.3.4 Wiring and Voltage Check

If the E-ZeTest EZ2500 detects a fault condition in the wiring under test, or the supply voltage is less than 198V (<198V) or greater than 264V (>264V), or the Earth Loop Impedance is greater than 3000Ω (>3000Ω**)** or Phase Neutral Impedance is greater than 3000Ω, the LCD will display an appropriate message or set of messages, according to table 3.4. The Phase Neutral and Earth Loop Impedance measurements will not be displayed depending on error and noise conditions

encountered whilst measuring.

In such circumstances, always have suspect wiring investigated and unplug as many unnecessary appliances from the mains as possible.

Note: It is always better to unplug an appliance completely rather than merely switch it off.

Note: The E-ZeTest EZ2500 is designed to operate and detect faults if phase is available on any one of the three input pins and a neutral or earth return is available on one or both of the remaining two input pins. This ensures that the unit will alert the user to the need for investigation under a wide variety of wiring fault conditions.

The fault messages that are displayed relate to the most common wiring faults. However, these common wiring faults share symptoms with other unusual faults that may exist.

In such circumstances, the wiring fault could be different to that reported on the display.

For example, the symptoms detected and displayed as a "phase neutral reversed" fault would also be present for a fault where the neutral was open between the distribution board and the socket under test and the neutral was shorted to the phase within the socket under test.

Therefore, always investigate wiring faults with care, testing for live voltages on all pins. Ensure that all wiring faults are rectified without delay.

Note: An indicated low voltage value, or a " Voltage Low" message, may be the result of a low supply voltage, or be the result of a high impedance value on the incoming phase conductor.

Note: As with all other testers, the E-ZeTest EZ2500 does not detect earth-neutral reversal.

3.3.5 Repeat measurements

If the E-ZeTest EZ2500 is left plugged into a socket, the display will not be updated but will continue to show the last measured value of Phase Neutral and Earth Loop Impedance.To take a fresh measurement, disconnect the E-ZeTest EZ2500 from the supply then re-connect, to re-start the measurement process.