

# TEK402 / TEK404 CONTINUITY TESTER

## INSTRUCTION MANUAL



GENERAL SAFETY INFORMATION: Always read before proceeding.

### Warning

These instructions contain both information and warnings that are necessary for the safe 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.


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


This product must only be used by a competent person capable of interpreting the results under the conditions and for the purposes for which it has been constructed. Particular attention should be paid to the Warnings, Precautions and Technical Specifications. Always check the unit is in good working order before use and that there are no signs of damage to it. Do not use if damaged. Where applicable other safety measures such as use of protective gloves, goggles etc. should be employed.


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)

REMEMBER: SAFETY IS NO ACCIDENT

MEANING OF SYMBOLS:

 Equipment complies with relevant EU Directives

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

 Caution - risk of danger & refer to instructions

 Caution - risk of electric shock

Thank you for buying one of our products. For safety and full understanding of its benefits please read this manual before use. Technical support is available from 01923 441717 and [support@martindale-electric.co.uk](mailto:support@martindale-electric.co.uk).

### CONTENTS

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Inspection	1
1.2	Description	1
1.3	Accessories	1
1.4	Battery Installation	1
<b>2</b>	<b>Product Specific Safety Information</b>	<b>2</b>
2.1	Precautions	2
<b>3</b>	<b>Operation</b>	<b>4</b>
3.1	General	4
3.2	Continuity Testing using the TEK402	4
3.3	Continuity Testing using the TEK404	5
3.4	Fused Overvoltage Protection (TEK402 only)	6
3.5	Overvoltage Alarm Function (TEK404 only)	6
<b>4</b>	<b>Maintenance</b>	<b>7</b>
4.1	Battery Replacement	7
4.2	Fuse Replacement (TEK402 only)	7
4.3	Test Lead Replacement	8
4.4	Cleaning	8
4.5	Repair & Service	8
4.6	Storage Conditions	8
<b>5</b>	<b>Warranty</b>	<b>9</b>
	<b>Specifications</b>	

## 1. INTRODUCTION

### 1.1 Inspection

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

### 1.2 Description

The TEK402 and TEK404 are battery powered continuity testers that gives an audible indication of the continuity resistance of a circuit under test.

The TEK404 also includes a LED to indicate the continuity of the circuit under test.

Both units must ONLY be applied to de-energised dead circuits.

The TEK402 has fused over-voltage protection for instances where the unit may accidentally be connected to a live circuit.

In the event that the TEK404 is connected to a live circuit the buzzer and LED will indicate an alarm condition.

### 1.3 Accessories (included)

- ◆ TL49B test leads with uninsulated crocodile clips (TEK402 only)
- ◆ TL47C test leads with insulated crocodile clips (TEK404 only)
- ◆ 9V battery
- ◆ Instructions

### 1.4 Battery Installation

On receipt the battery is inside the battery compartment but not connected. Refer to section 4.1 (battery replacement) for the battery installation instructions for the TEK402 / TEK404.

## 2. PRODUCT SPECIFIC SAFETY INFORMATION

**Measurement Category III (CAT III)** is applicable to test and measuring equipment connected to the distribution part of the building's low-voltage MAINS installation.

**Test Equipment Without A Rated Measurement Category** is applicable to testing and measurement of circuits not connected directly to the MAINS supply.

### 2.1 Precautions

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

#### **Warning**

Before use check the unit for cracks or any other damage. Make sure the unit is free from dust, grease and moisture. Also check any associated leads and accessories for damage. Do not use if damaged.

#### **Warning**

Circuits under test should be de-energised dead circuits.

#### **Warning** (Applicable to TEK402 only)

This unit must NOT be connected to CAT II, CAT III or CAT IV circuits.

#### **Warning**

Do not use if the battery cover is not fitted.

2

#### **Warning**

When this unit is used in combination with test leads, the measurement category of the combination is the lower measurement category of either this unit or the test leads used. Likewise, if test lead accessories such as crocodile clips are also used, the measurement category will be the lowest measurement category in that combination.

#### **Warning**

When using test leads / crocodile clips, always keep your fingers behind the finger guard on the test lead probe or crocodile clip.

#### **Caution**

Avoid severe mechanical shock or vibration and extreme temperature.

#### **Caution**

Remove the leads from the unit when not in use, to avoid flattening the battery.

#### **Caution**

Remove the batteries when not in use for an extended period, to avoid corrosion from leaking batteries.

3

## 3. OPERATION

### 3.1 General

To verify that the TEK402 / TEK404 is functioning correctly, connect the 4mm plugs of the test leads provided to the 4mm sockets of the TEK402 / TEK404.

Short together the probe tips. A loud audible tone will be emitted, and on the TEK404 only, the LED will be illuminated.

If the audible tone is not present, or low in amplitude, replace the TEK402 / TEK404 battery (see 4.1 Battery Replacement).

If the audible tone is not present after replacing the TEK402 battery, replace the TEK402 fuse (see 4.2 Fuse Replacement).

### 3.2 Continuity Testing using the TEK402

#### **Warning**

This unit must NOT be connected to CAT II, CAT III or CAT IV circuits.

#### **Warning**

Make all possible checks to verify that the circuit to be tested is NOT live.

Connect the 4mm plugs of the test leads provided to the 4mm sockets of the TEK402.

Taking all necessary safety precautions connect the test lead probes to the circuit to be tested. Uninsulated crocodile clips are provided for added convenience.

4

The sound level will be reduced by the presence of increased continuity resistance. The maximum sound level will be evident with the test leads shorted. The minimum sound level will be at approximately 10k $\Omega$ .

Note: The behaviour of the buzzer will be misleading if any voltage is present on the circuit under test.

### 3.3 Continuity Testing using the TEK404

#### **Warning**

Make all possible checks to verify that the circuit to be tested is NOT live.

Connect the 4mm plugs of the test leads provided to the 4mm sockets of the TEK404.

Taking all necessary safety precautions connect the test lead probes to the circuit to be tested. Insulated crocodile clips are provided for added convenience.

The sound level and LED brightness will be reduced by the presence of increased continuity resistance. The maximum sound level and LED brightness will be evident with the test leads shorted.

The minimum sound level and LED brightness will be at approximately 1.7k $\Omega$ .

The buzzer and LED will cease to operate at approximately 2.2k $\Omega$ .

Note: The behaviour of the buzzer will be misleading if any voltage is present on the circuit under test.

5

### 3.4 Fused Overvoltage Protection (TEK402 only)

If the TEK402 is inadvertently connected to a live circuit, the internal circuitry will intentionally draw a current to blow the internal fuse, and protect other components of the TEK402.

### 3.5 Overvoltage Alarm Function (TEK404 only)


The TEK404 incorporates an alarm function which operates if it is inadvertently connected to a live circuit >30V DC or AC rms.

The alarm is indicated by an interrupted pulsed buzzer tone and pulsed LED illumination.

Note: The TEK404 should not be used as a voltage detector.

## 4. MAINTENANCE

### 4.1 Battery Replacement

 To avoid shock or injury, disconnect the TEK402 / TEK404 from any external circuits or components and remove the test leads before proceeding.


Unscrew the battery cover retaining screw and lift off the battery cover.

Fit a new 9V, MN1604/PP3 alkaline battery, observing correct polarity.

Replace the battery cover and secure it with the battery cover retaining screw.

Check the unit functions by replacing the test leads and shorting them together.

### 4.2 Fuse Replacement (TEK402 only)

 To avoid shock, injury or damage, disconnect the TEK402 from any external circuits or components and remove the test leads and battery before proceeding.

 Replace only with the fuse specified.

Unscrew the battery cover retaining screw and lift off the battery cover.


Remove the blown fuse from the metal clips, and replace it with a 50mA 250V Ceramic Fast Acting, 20mm x 5mm fuse. Martindale Ref: FUSE50250X3 (Pack of 3).

Replace the battery cover and secure it with the battery cover retaining screw.

Check the unit functions by replacing the test leads and shorting them together.

### 4.3 Test Lead Replacement

If the test leads become damaged they should be replaced.

 The replacement test leads must have the same, or a better, overvoltage category rating as the TL49B (TEK402) / TL47C (TEK404) leads supplied.

### 4.4 Cleaning

The unit may be cleaned using a soft dry cloth. Do not use moisture, abrasives, solvents, or detergents, which can be conductive.

### 4.5 Repair & Service

There are no user serviceable parts in this unit other than those that may be described in section 4. Return to Martindale Electric 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, batteries, fuse, leads and poor connections.

### 4.6 Storage Conditions

The instrument 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 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.

10



## Specification TEK402 / TEK404 Continuity Tester



### ELECTRICAL

#### TEK402 Mk3

**Test voltage:** 9V DC (approx)

**Test current:** 11mA (approx, into short circuit)

**Continuity range (audible):** Up to 10k $\Omega$  nominal

**Audible output level:** 85dB minimum at 30cm with leads shorted

**Overvoltage protection fuse rating:** 50mA, 250V, Fast Acting Ceramic Fuse, 20mm x 5mm

#### TEK404 Mk2

**Test voltage:** 9V DC (approx)

**Test current:** < 50 $\mu$ A (into short circuit)

**Continuity range:** 0 $\Omega$  to 2.2k $\Omega$  approx (buzzer loudness and LED brightness reduce with increasing continuity resistance)

**Audible output level:** 85dB minimum at 30cm with leads shorted

**LED indication:** Bright orange LED

**Alarm function threshold:** 30V  $\pm$  20V DC or AC rms



## Specification TEK402 / TEK404 Continuity Tester

### GENERAL

#### Temperature & Humidity

**Operating:** -10 to 40°C at max 70% R.H

**Storage:** -10°C to 50°C  $\leq$  80% R.H

**Altitude:** up to 2000m

**Power:** 9V, MN1604/PP3 alkaline battery

**Dimensions:** 150 (H) x 64 (W) x 31 (D) mm

#### Weight:

TEK402 Mk3 264g approx (including leads, croc clips & battery)

TEK404 Mk2 296g approx (including leads, croc clips & battery)

**Includes:** TL49B test leads with uninsulated crocodile clips (TEK402 only), TL47C test leads with insulated crocodile clips (TEK404 only), 9V battery, instructions.

#### Safety:

TEK402 Mk3 conforms to BS EN61010-1 max 50V to earth

TEK404 Mk2 conforms to BS EN61010-1 CAT III 600V

Class II Double Insulation

Pollution Degree: 2

Test leads supplied conform to BS EN61010-031 CAT III 1000V, 10A

**EMC:** Conforms to BS EN61326

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

- 17th 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
- Motor Maintenance Equipment
- Multifunction Testers
- Non-trip Loop Testers
- Pat Testers & Accessories
- Phase Rotation Testers
- Proving Units
- Socket Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators
- Specialist Metrohm Testers (4 & 5kV)
- Specialist Drummond Testers



Martindale Electric Company Limited  
Metrohm House, Penfold Trading Estate, Imperial Way, Watford WD24 4YY, UK  
Tel: +44(0)1923 441717 Fax: +44 (0)1923 446900  
E-mail: sales@martindale-electric.co.uk  
Website: www.martindale-electric.co.uk



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