



**INSTRUCTION MANUAL**  
**MT472**  
**690V VOLTAGE TESTER**





# Contents

## Page no

|   |   |
|---|---|
| 1. Safety Warnings.....                   | 4 |
| 1.1. International Safety Warnings.....   | 4 |
| 1.2. Safety Notes.....                    | 4 |
| 1.3. Warnings.....                        | 4 |
| 2. Specifications.....                    | 6 |
| 3. Voltage Tester Description.....        | 7 |
| 4. Explanation of Symbols.....            | 7 |
| 5. Operation.....                         | 8 |
| 5.1. Function Test / Self Test.....       | 8 |
| 5.2. Voltage Test.....                    | 8 |
| 5.3. Low Impedance Test.....              | 8 |
| 5.4. Voltage Test with RCD Trip Test..... | 8 |
| 5.5. Maintenance.....                     | 9 |
| 5.6. Cleaning.....                        | 9 |
| 5.7. Calibration Interval.....            | 9 |

## 1. SAFETY WARNINGS

### 1.1. International Safety Symbols



Warning of a potential danger, comply with instruction manual.



Caution! Dangerous voltage. Danger of electrical shock.



Double insulation.

### 1.2. Safety Notes

- Reference. Please use utmost attention.
- Do not exceed the maximum allowable input range of any function
- Insulated personnel body protective equipment up to 690V.

### 1.3. Warnings

- ⚠ In order to avoid electrical shock, the valid safety and VDE regulations regarding excessive contact voltages must receive utmost attention, when working with voltages exceeding 120V (60V) DC or 50V (25V) RMS AC. The values in brackets are valid for limited ranges (as for example medicine and agriculture).
- ⚠ Prior to measurement ensure that the test leads and the test instrument are in perfect condition.
- ⚠ When using this instrument only the handles of the probes may be touched – do not touch the probe tips.
- ⚠ This instrument may only be used within the ranges specified and within low voltage systems up to 690V.
- ⚠ Prior to usage ensure perfect instrument function (e.g. on known voltage source).
- ⚠ The voltage testers may no longer be used if one or several functions fail or if no functionality is indicated.
- ⚠ Do not use this instrument under damp conditions.
- ⚠ Perfect display is only guaranteed within a temperature range of -10°C up to +55°C, at relative humidity question <85%.
- ⚠ If the operator's safety cannot be guaranteed, the instrument must be removed from service and protected against use.

#### **The safety can no longer be insured if the instrument:**

- Shows obvious damage
- Does not carry out the desired measurements
- Has been stored for too long under unfavorable conditions
- Has been subjected to mechanical stress during transport.

All relevant statutory regulations must be adhered to when using this instrument.

### **Appropriate Usage**

The instrument may only be used under those conditions and for those purposes for which it was designed. For this reason, in particular the safety references, the technical data including environmental conditions and the usage in dry environments must be followed.

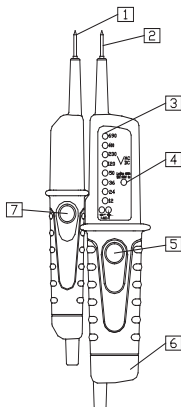
When modifying or changing the instrument, the operational safety is no longer ensured. The instrument may only be opened by an authorized service technician, e.g. for repair.

## 2. SPECIFICATIONS

| Function                  | Range                                      |
|---------------------------|--|
| LED voltage range         | 12, 24, 36, 50, 120, 230, 400, 690V AC/DC  |
| LED resolution            | ±12, 24, 36, 50, 120, 230, 400, 690V AC/DC |
| Tolerances                | -30% to 0% of reading                      |
| Voltage detection         | automatic                                  |
| Polarity detection        | full range                                 |
| Range detection           | automatic                                  |
| Response time             | < 0.1s LED                                 |
| ACV Frequency range       | 50/60Hz                                    |
| Automatic load (RCD)      | yes  |
| Internal basic load       | approx. 2.1W at 690V                       |
| Peak current              | 1s <0.2A / Is (5s) < 3.5mA                 |
| Operation time            | ED =30s                                    |
| Recovery time             | 10 min                                     |
| LED on                    | About 6V AC/DC                             |
| <b>Low Impedance Test</b> |  |
| Voltage range             | 12....690V AC/DC                           |
| Low impedance             | ≤6kΩ                                       |
| Operation time            | 5s@<230V AC/DC, 3s@< 400, 690V AC/DC       |
| Overvoltage protection    | 400, 690V AC/DC <5s                        |
| Temperature range         | -10°C up to +55°C                          |
| Humidity                  | max. 85% relative humidity                 |
| Overvoltage class         | CAT III - 690V                             |

### 3. VOLTAGE TESTER DESCRIPTION

- |                                  |   |
|----------------------------------|---|
| 1 - Handle test probe – (L1)     | 5 - Low Impedance switch (L2)                     |
| 2 - Instrument test probe + (L2) | 6 - Battery case (Not Applicable for MT472 model) |
| 3 - LEDs for voltage display     | 7 - Low impedance switch (L1)                     |
| 4 - LED for low impedance test   |   |



### 4. EXPLANATION OF SYMBOLS

The voltage tester shows the following symbols:

|    |  |
|----|--|
| DC | DC voltage   |
| AC | AC voltage   |
| —  | DC voltage negative potential (DC)   |
| ⚡  | Phase display from 100 to 690V - 50/60Hz when used as a "single-pole" phase tester |
| 🔊  | Continuity test symbol   |
| ⚠  | Device for work to be performed with voltage present                               |

## 5. OPERATION

### 5.1. Function test / Self test

- Test the voltage tester on a known source.
- The voltage testers may no longer be used if one or several functions fails or if no functional reliability can be detected.
- The instruments are equipped with an internal load enabling the tripping of an RCD protection device of 10mA or 30mA.
- For voltage tests (L towards PE) in systems with RCD devices, the RCD may be triggered. To avoid RCD tripping first test between L and N (approx. 5s). Immediately afterwards testing L towards PE can be carried out without RCD tripping.

### 5.2. Voltage Test

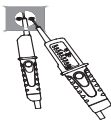
- Connect both test probes with power source.
- As from a voltage of >6V the voltage tester switches on automatically.
- The voltage is displayed via LEDs.
- For AC voltages "-" LEDs are illuminated.
- The instruments are equipped with an LED row comprising:  $\pm 12$ , 24, 36, 50, 120, 230, 400, 690V AC/DC. For DC voltage, the polarity of the voltage displayed refers to the instrument test probe (+).
- Due to technical reasons the instrument cannot effectuate an automatic switch-on for DC voltages within the range of approx. 0V to  $-/+4.5$ V.

### 5.3. Low impedance Test

Without pressing both low impedance buttons, the following voltage steps (AC or DC) can be indicated:  $\pm 24$ , 36, 50, 120, 230, 400, 690V AC/DC. By pressing both low impedance push buttons the voltage tester switches to a lower internal resistance (suppression of inductive and capacitive voltages). Thus, the indication of low impedance (5) is also activated. The duration of the test with a lower internal resistance of the device (load test) depends on the value of the voltage to be measured. To prevent excessive warming of the voltage tester, it is equipped with a thermal protection.

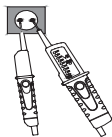
### 5.4. Voltage Test with RCD Trip Test

During voltage tests in systems equipped with RCD circuit breakers, a RCD switch can be tripped at a nominal residual current of 10mA or 30mA by measuring the voltage between L and PE.





To avoid RCD tripping a test has to be carried out between L and N during approx. 5s. Immediately afterwards, voltage testing between L and PE can be carried out without RCD tripping.



### **5.5. Maintenance**

When using voltage testers in compliance with the instruction manual, no particular maintenance is required. If functional errors occur during normal operating, our service department will check your instrument without delay.

### **5.6. Cleaning**

Prior to cleaning, remove voltage test from all measurement circuits. If the instruments are dirty after daily usage, it is advisable to clean them by using a damp cloth and a mild household detergent. Never use acid detergents or dissolvents for cleaning. After cleaning, do not use the voltage tester for a period of approx. 5 hours.

### **5.7. Calibration Interval**

The voltage testers must be calibrated periodically and checked by our service department at regular intervals to ensure the specified accuracy of measurement results. We recommend a calibration interval of one year.







---

## ***MAJOR TECH (PTY) LTD***

**South Africa**

 [www.major-tech.com](http://www.major-tech.com)

 [sales@major-tech.com](mailto:sales@major-tech.com)

**Australia**

 [www.majortech.com.au](http://www.majortech.com.au)

 [info@majortech.com.au](mailto:info@majortech.com.au)

