INSTRUCTION MANUAL

MT312

RCD/ELCB, LOOP & POLARITY TESTER

Contents

Page no

1. INTRODUCTION

The MT312 is a compact, versatile tester designed for 3-wire AC circuits, supporting ELCB/RCD testing, loop impedance measurement, and polarity verification. It features a Non-Contact Voltage (NCV) function for safe AC voltage detection and displays wiring status clearly on a large, easy-to-read LCD screen. Voltage measurements between Live and Neutral, as well as Neutral and Earth, are shown directly on the display. The MT312 automatically performs loop impedance testing to verify correct wiring, with intuitive LED indicators: Green for Good, Orange for Check Circuit, and Red for Urgent Check—highlighting any potential faults. During ELCB/RCD testing, the device measures fault trip times up to 99.9ms, with a 10-second buzzer alert confirming a successful trip. A key feature of the MT312 is its interchangeable leads, enabling testing of standard power outlets with the included test leads or distribution boards using the optional MT350L test lead set.

2. SAFETY INFORMATION

2.1. International Safety Symbols

This symbol, when placed next to another symbol, terminal, or operating device, indicates that the operator should refer to the instruction manual for further information.

WARNING This **"WARNING**" symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION The **"CAUTION"** symbol indicates a potentially hazardous situation which, if not avoided, may result in damage to the tester.

This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

2.2. ⚠ Warning

WARNING: Read this instruction manual carefully and follow all safety guidelines and **"WARNING"** notices. To ensure safe operation and servicing of the meter, these instructions must be followed. Failure to do so may result in serious injury or death.

- Always verify the tester's functionality by testing it on a known energized and properly wired electrical outlet before use.
- Do not use if the tester appears damaged in any way.
- The tester is intended for indoor use only.
- Never use without the battery cover installed.
- The tester is designed for use with a 3-wire 230V ±10% earthed power outlet. Do not connect to a higher voltage supply.

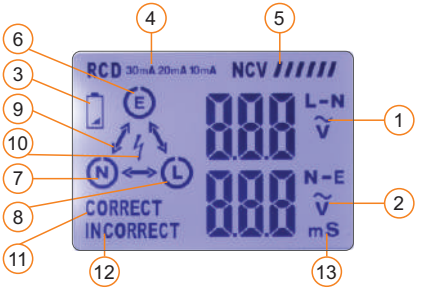
- This tester detects only common wiring issues. Always consult a qualified electrician to diagnose and correct wiring problems.
- This tester does not assess earth quality, detect dual live wires, identify combined faults across multiple lines, or indicate earth and neutral reversal.
- Never perform an ELCB/RCD earth fault test on a miswired outlet.
- Please turn off all equipment before testing earth leakage. Ensure all safety precautions are followed to prevent damage to the tester or injury to the person conducting the test.
- To minimize reading errors, follow these guidelines:
  - o Disconnect all appliances and equipment from the test circuit.
  - o Turn off or relocate any equipment that generates electromagnetic interference.

3. DESCRIPTION

3.1. Meter Description

1 - Plug Connector (Adaptor)
2 - NCV Indicator (Non-Contact Voltage Detector)
3 - LCD Display
4 - Loop Tester Indicator
5 - Power Button
6 - Buzzer Switch Button
7 - ELCB/RCD Current Selection Button
8 - ELCB/RCD Current Test Button
9 - Magnet
10 - Battery Cover

3.2. LCD Symbols Description



1.  Voltage between Live and Neutral Conductors
2.  Voltage between Earth and Neutral Conductors
3.  Low Battery Indicator
4. RCD 30mA 20mA 10mA ELCB/RCD Test and Current Setting
5. NCV Non-Contact Voltage Detection (Bargraph to indicate strength)
6. Earth Conductor Symbol
7. Neutral Conductor Symbol
8. Live Conductor Symbol
9.  Direction Symbol: The two adjacent conductors are reversed, and need to be exchanged
10.  High Voltage Symbol
11. CORRECT Wiring Correct Prompt
12. INCORRECT Wiring Incorrect Prompt
13.  Trip Time Reading (ms)

4. BUTTON AND FUNCTION DESCRIPTION

4.1. Power Button

- Press the Power button to turn the tester **On** or **Off**.
- When the tester is **ON** but not connected to a circuit, the LCD will display a **"Missing Live Wire"** status. Refer to section **5.3.1 on page 8** for more details.

4.2. Buzzer Switch Button

- Press the Buzzer button to toggle the buzzer function **On** or **Off**.

4.3. RCD Current Selection Button

- Press the ELCB/RCD current selection button (**IΔn**) to choose from three test current levels: **10mA**,**20mA**, or **30mA**.

4.4. RCD Current Test Button

- Once proper wiring is confirmed and the test current is selected, press the **Test** button to initiate the ELCB/RCD test. The trip time will be displayed on the LCD.

Note:
- If the **wiring is incorrect**, the ELCB/RCD test will not initiate.
- If the **wiring is correct**, the ELCB/RCD will trip, and the buzzer will sound for 10 seconds.

4.5 Auto Power Off

- To conserve battery life, the tester will automatically power off after approximately **5 minutes** of inactivity.
- To restart the tester, press the **Power** button.

5. OPERATING INSTRUCTIONS

WARNING: If the tester indicates that the outlet is incorrectly wired, do not proceed. Consult a qualified electrician immediately.

- **Always verify** the tester's functionality by first using it on a known live and properly wired electrical outlet.
- **Unplug all appliances or equipment** connected to the circuit being tested to reduce the risk of false readings.
- **Unspecified conditions** that may affect readings include, but are not limited to: poor earthing quality, multiple live (hot) conductors, and combinations of wiring defects—other than simple reversal of neutral and earth wires.
- The tester is designed not to trip an ELCB/RCD during normal wiring checks.
  - If the ELCB/RCD at the main distribution board trips during testing, this may indicate one of the following conditions:
    - A high earth leakage current is already present between the Live conductor and Earth.
    - Reversed Earth and Neutral connections are present in the circuit under test.

5.1. NCV (Non-Contact Voltage) Test

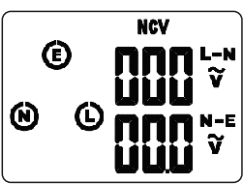
- Before performing the NCV test, **verify the tester's functionality** by testing it on a known energized electrical circuit.
- The **NCV function is always active** when the tester is powered on.
- Hold the tester and move it slowly from side to side. When the internal sensor detects nearby AC voltage, the **built-in buzzer will beep**.
- The **faster the beeping**, the **stronger the detected voltage**.
- A **bar graph** on the display indicates the strength of the detected voltage.

5.2. Receptacle Wiring Test

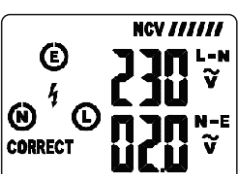
- Press the Power button to turn the tester On or Off.
- With the tester turned on, connect it to the circuit. If voltage is present, the tester will display the wiring condition and measured voltage on the LCD screen.
- If a wiring error is detected, consult a qualified electrician for inspection and repair.
- When correct wiring is detected, the tester will automatically perform a loop impedance test and indicate results using the status LEDs:
  - **Green LED (Good):** Resistance < 1.8Ω
  - **Orange LED (Check):** Resistance between 1.8Ω and 92Ω
  - **Red LED (Urgent Check):** Resistance > 92Ω

5.3. Wiring Indication Chart

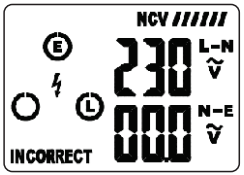
1. Missing live wire



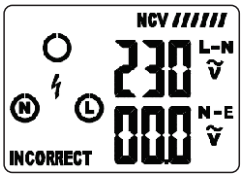
2. Correct Wiring



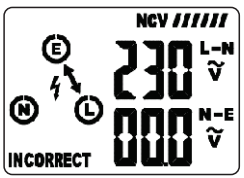
3. Missing Neutral Wire



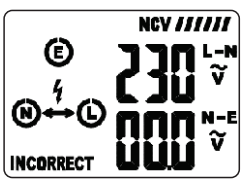
4. Missing Earth Wire



5. Live Wire and Earth Wire Reversed



6. Live wire and Neutral Wire Reversed



6. MAINTENANCE

6.1. Cleaning and Storage

- Periodically **clean the tester's casing** using a damp cloth and mild detergent.
- **Do not use** abrasives, solvents, or harsh chemicals.
- If the tester will not be used for an extended period, **remove the batteries** and store them separately to prevent leakage or corrosion.

6.2. Battery Replacement

- Open the battery compartment by **loosening the fastening screws** on the back.
- **Replace batteries** with 2x 1.5V AAA batteries, ensuring correct polarity.
- Close the back cover and securely **tighten the screws**.

7. TECHNICAL SPECIFICATIONS

Function	Range	Accuracy
Voltage Indication	25V to 264V AC (50/60Hz)	±(2%+3)
RCD Test Voltage	230V AC (50/60Hz)	±10%
Trip Current Setting	10mA, 20mA, 30mA	±3mA
Fault Trip Time	99.9ms Max.	
Loop Impedance Wiring Indication	Green - Good (Resistance <1.8Ω) Orange - Check (Resistance between 1.8Ω and 92Ω) Red - Urgent Check (resistance >92Ω)	
NCV	Yes - Bargraph displays detected voltage strength	
Low Battery Indication	is displayed if battery voltage drops below the required operating voltage	
Operating Temperature	0°C to 40°C	
Operating Humidity	20% to 75% RH	
Storage Temperature	-10°C to 50°C	
Storage Humidity	20% to 80% RH	
Operating Altitude	2000 meters (7000ft) Max.	
Automatic Power Off	5 minutes (approx.)	
Display	LED Indicators and LCD Display	
IP Rating	IP40	
Safety	CAT III 300V IEC 61010/EN61010, IEC 61557-7/EN 61557-7 Pollution degree 2	
Power Source	2 x AAA Alkaline Batteries 1.5V	
Dimensions	136 x 75 x 31mm	
Weight	185g	
Test Lead Type	IEC Socket adaptor with plug top MT350L Optional Distribution board leads	

8. PRODUCT REGISTRATION
Scan the QR code to activate your warranty.

9. WARRANTY
Warranty Coverage
Major Tech warrants its test instruments to be free from defects in materials or workmanship under normal use and service for a period of two (2) years from the date of shipment. This warranty is extended exclusively to the original purchaser, provided the online Product Registration has been completed on either www.major-tech.com or www.majortech.com.au depending on which country the product was purchased. This warranty is non-transferable.

Exclusions
This warranty does not cover:
- Disposable batteries and fuses.
- Damage caused by leaking batteries (damaging the meter and components).
- Normal wear and tear of mechanical components.
- Failures caused by use outside the product's specifications.
- Any product which, in the opinion of Major Tech, has been misused, contaminated, or damaged due to neglect.

Check Procedure
Prior to contacting Major Tech or a distributor regarding a warranty claim, please check the following:
- Batteries are installed correctly.
- Battery condition – either replace disposable batteries or ensure rechargeable batteries are charged where applicable.
- Test leads are inserted in the correct terminals and are fully inserted, no damage to test leads.

Contact Information
For any warranty claims or inquiries, please contact either Major Tech or the distributor from whom the product was purchased.

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