METRAVI Metravi CT-9

Metravi CT-9 Handheld Dual Channel VI Curve Tracer User Manual

Model: CT-9

1. Introduction

The Metravi CT-9 Handheld Dual Channel VI Curve Tracer is a specialized device designed to integrate with any analog or digital oscilloscope. It enables the analysis of Voltage-Current (VI) characteristics of electrical components and circuits, effectively adding a component testing function to your oscilloscope. This device facilitates detailed diagnostics by plotting VI curves, which are crucial for identifying faults such as shorts, opens, or degraded components.

The CT-9 outputs signals directly viewable on an oscilloscope's XY mode, utilizing the oscilloscope's display for high-resolution VI curve analysis. Its dual-channel capability allows for simultaneous comparison of two components or circuit paths, making it ideal for identifying faulty components by comparing them against a known-good reference. It generates low-frequency AC or DC signals suitable for driving components to produce their characteristic VI curves.

Designed for portability and durability, the CT-9 features a lightweight, flame-retardant plastic shell with a frosted PET environmental-friendly material panel, making it suitable for both fieldwork and laboratory environments.

2. Package Contents

Upon unpacking, please verify that all items listed below are present and in good condition:

- Metravi CT-9 Unit
- Test Leads (one pair)
- 4mm BNC Cables (two)
- Power Adaptor (AC220V to DC 24V 1A)

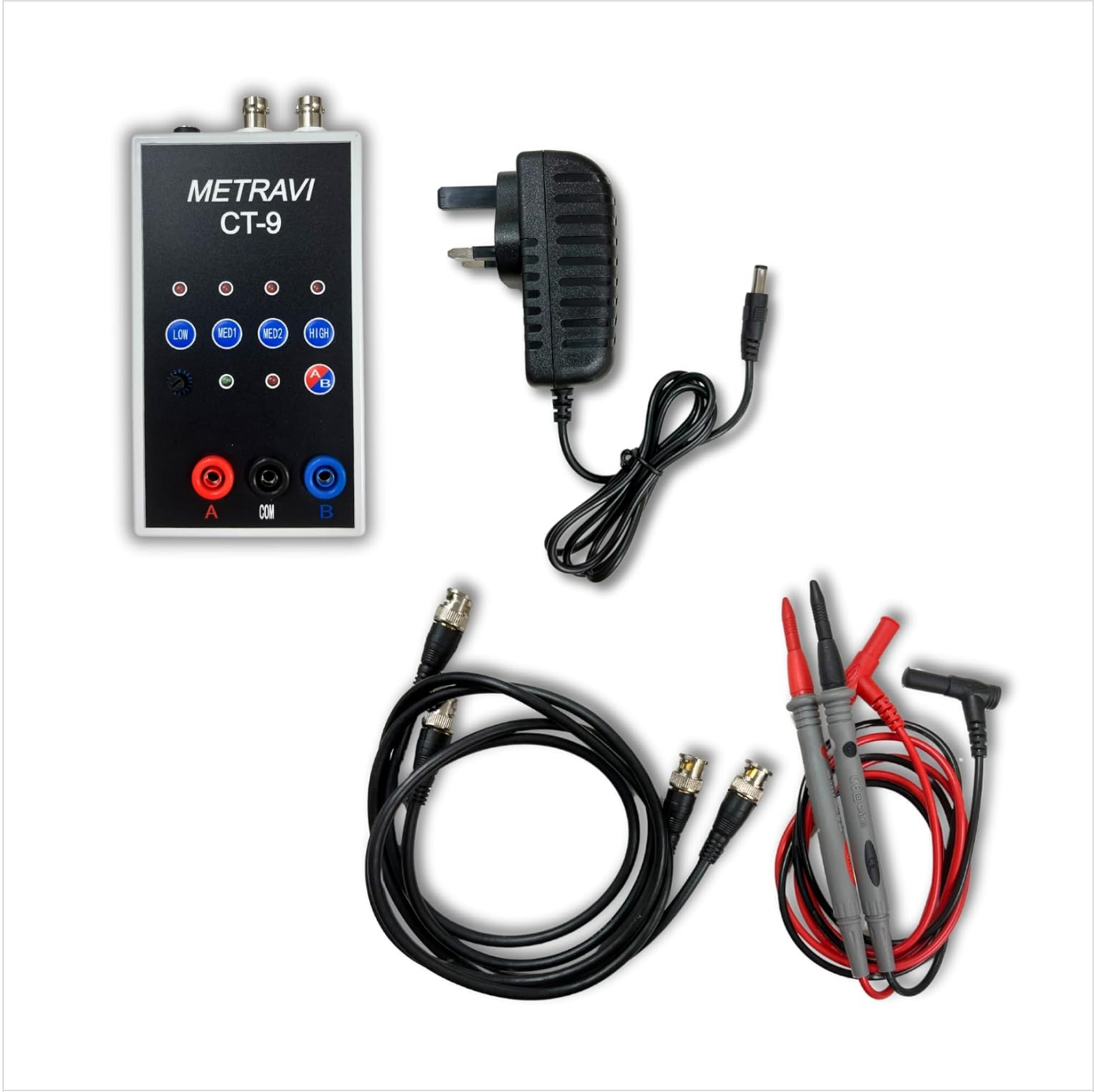


Figure 2.1: Metravi CT-9 unit with its accessories, including test leads, BNC cables, and power adapter.

3. Product Overview

The Metravi CT-9 features a user-friendly interface with clearly labeled controls and connectors.

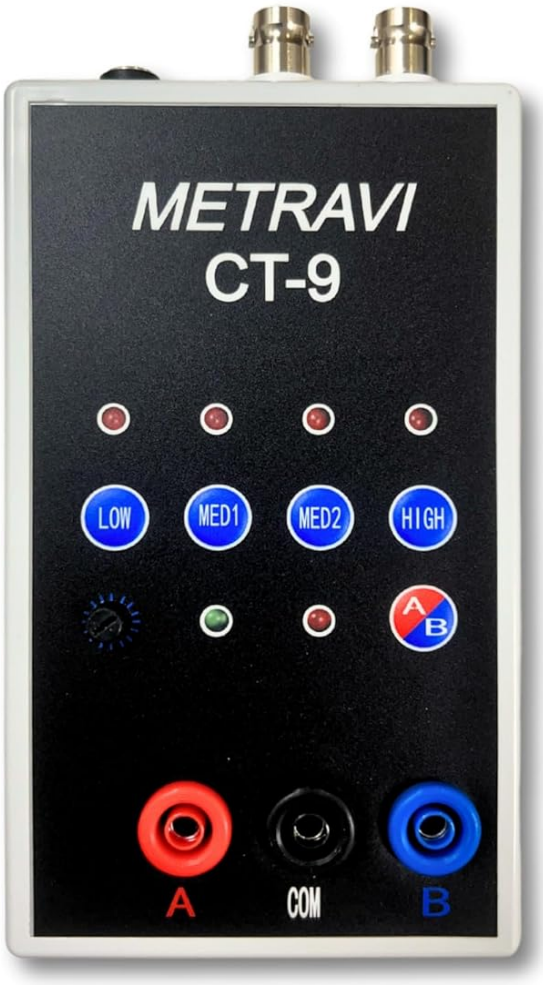


Figure 3.1: Front panel of the Metravi CT-9, showing input terminals (A, COM, B), test range buttons (LOW, MED1, MED2, HIGH), and indicator LEDs.

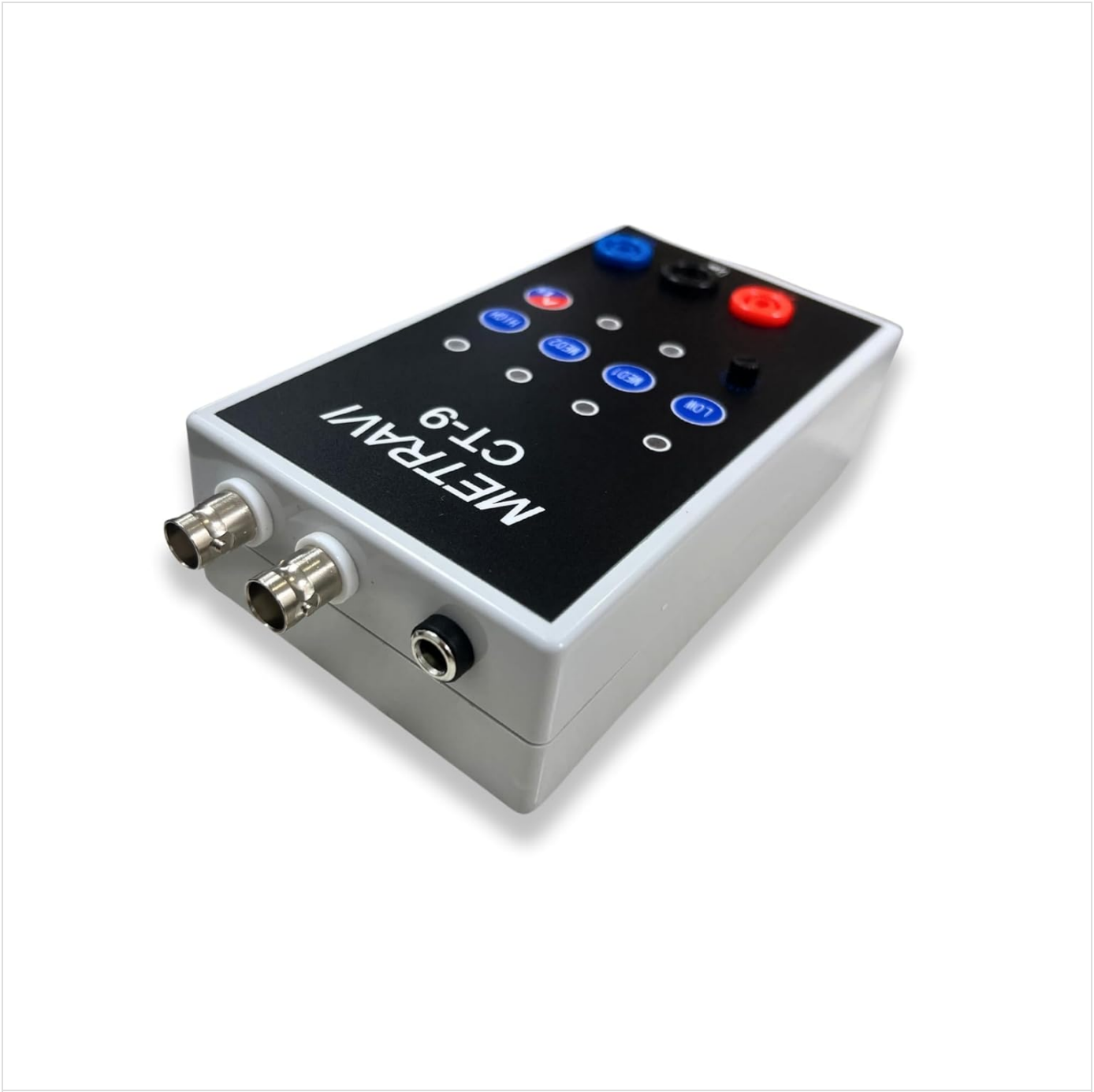


Figure 3.2: Top view of the Metravi CT-9, highlighting the BNC output connectors for oscilloscope connection and the power input jack.

4. Setup

Follow these steps to set up your Metravi CT-9 for operation:

1. **Power Connection:** Connect the provided AC220V to DC 24V 1A power adapter to the power input jack on the Metravi CT-9 unit. Plug the adapter into a suitable power outlet.
2. **Oscilloscope Connection:** Use the two 4mm BNC cables to connect the output BNC connectors on the Metravi CT-9 to the input channels (e.g., Channel 1 and Channel 2) of your oscilloscope.
3. **Oscilloscope Configuration:** Set your oscilloscope to XY mode. This mode is essential for displaying the Voltage-Current (VI) curves generated by the CT-9. Adjust the vertical and horizontal sensitivities (Volts/Div and Sec/Div) on your oscilloscope as needed to obtain a clear and appropriately scaled VI curve display.
4. **Test Lead Connection:** Connect the red test lead to the 'A' terminal, the black test lead to the 'COM' terminal, and the blue test lead to the 'B' terminal on the front panel of the CT-9.

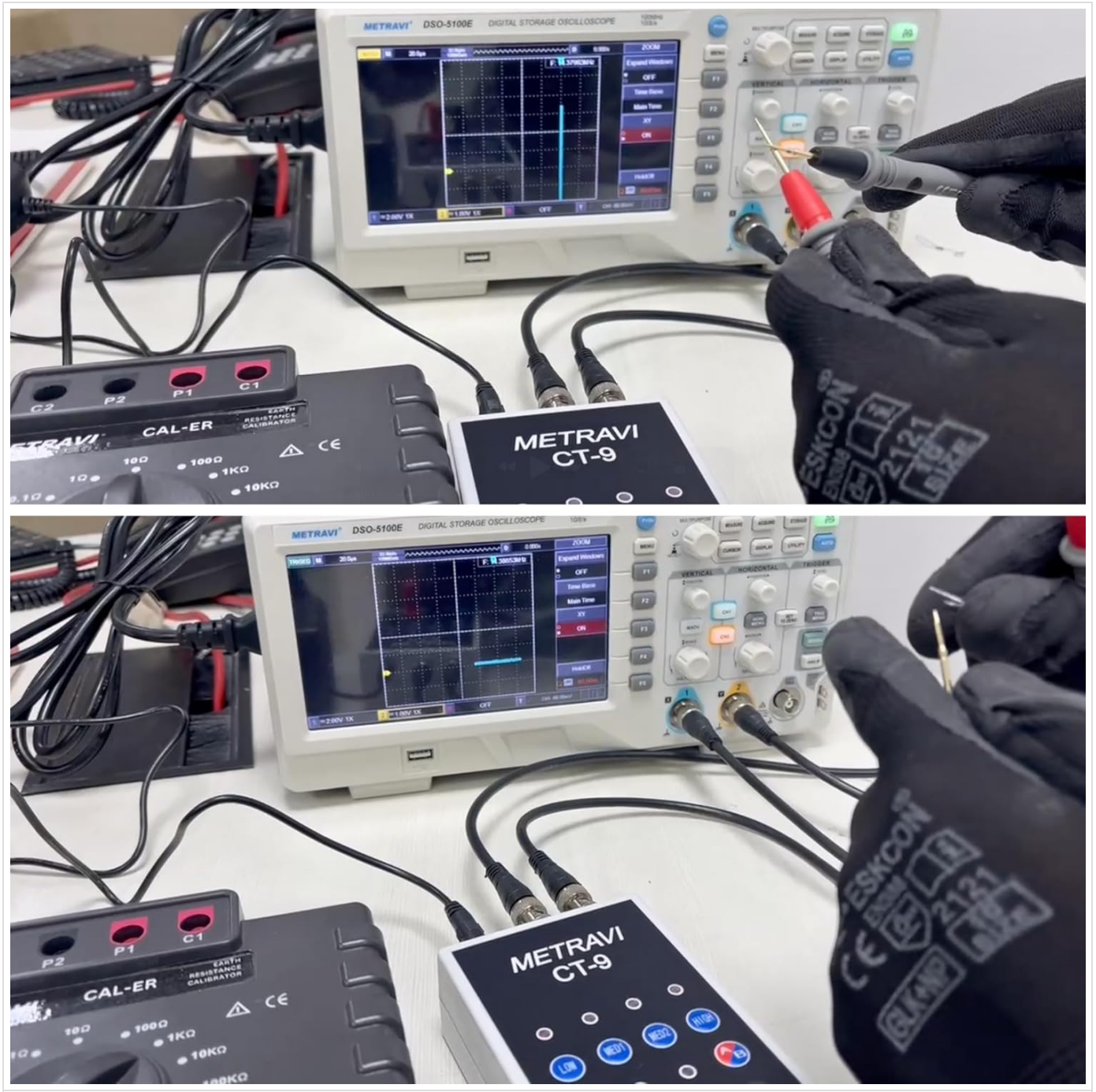


Figure 4.1: The Metravi CT-9 connected to a digital oscilloscope via BNC cables, ready for component testing.

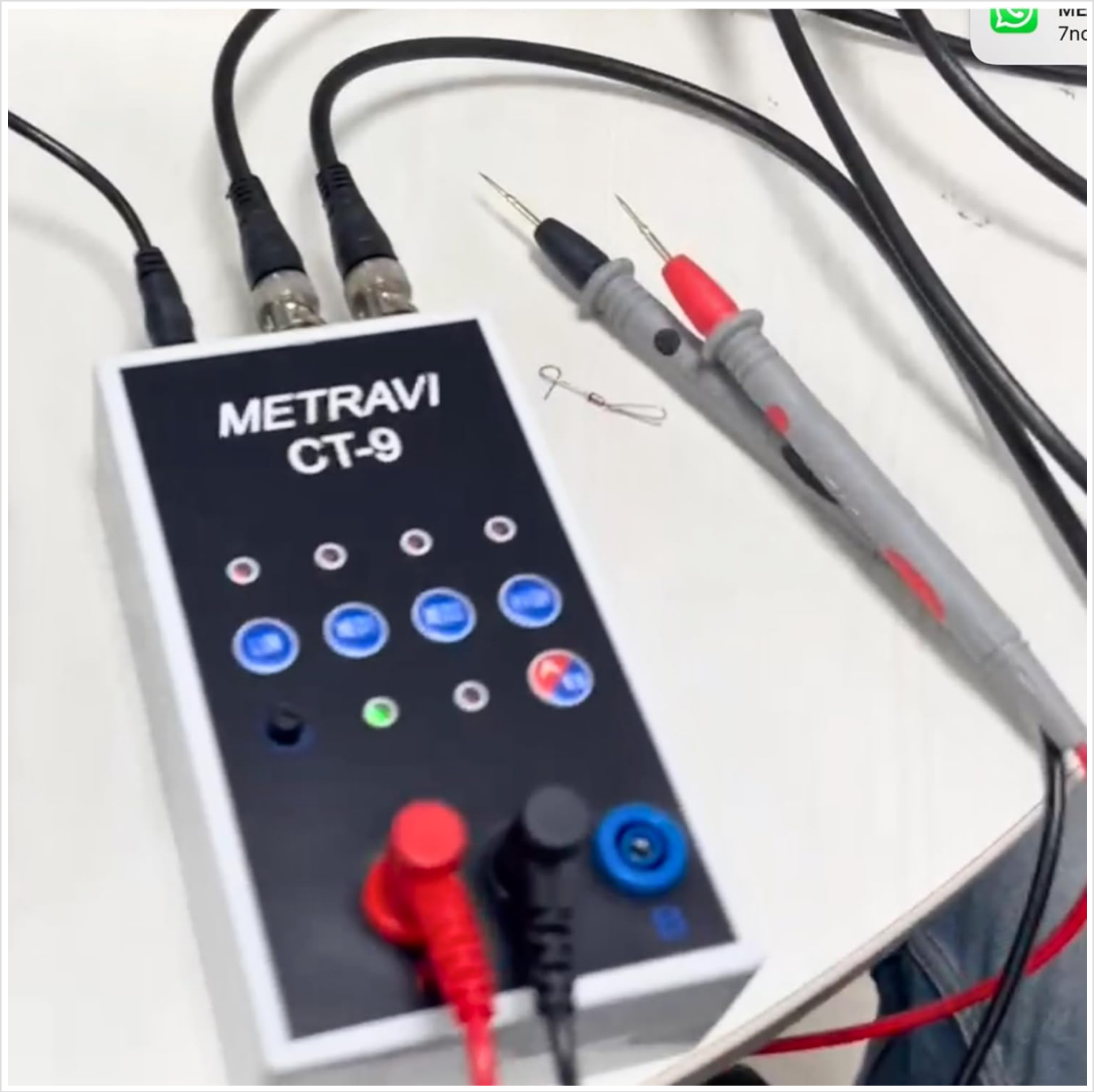


Figure 4.2: Close-up view of the Metravi CT-9 with test leads connected and BNC cables running to an oscilloscope, demonstrating a typical setup.

5. Operating Instructions

The Metravi CT-9 is designed for non-destructive testing, ensuring no harm to sensitive components during analysis.

1. **Power On:** Once connected, the CT-9 will power on.
2. **Select Test Range:** Use the 'LOW', 'MED1', 'MED2', and 'HIGH' buttons to select the desired test range. The selected range determines the characteristics of the generated AC or DC signals, influencing the shape and scale of the VI curve on the oscilloscope. Experiment with different ranges to find the most suitable display for the component under test.
3. **Connect Component(s):**
    - **Single Component Test:** Connect the component to be tested between the 'A' and 'COM' terminals using the test leads.
    - **Dual Component Comparison:** For simultaneous comparison, connect the first component between 'A' and

'COM', and the second component (e.g., a known-good reference) between 'B' and 'COM'. The oscilloscope will display both VI curves, allowing for direct visual comparison to identify discrepancies.

4. **Observe VI Curve:** The VI curve of the connected component(s) will be displayed on your oscilloscope in XY mode. Analyze the shape of the curve to diagnose the component's condition. Deviations from expected curves can indicate faults such as opens, shorts, or degradation.
5. **Adjust Oscilloscope Settings:** Fine-tune the oscilloscope's vertical and horizontal settings (Volts/Div, Sec/Div) to optimize the display of the VI curve for detailed analysis.

6. Maintenance

The Metravi CT-9 is built for durability and designed to withstand regular use in industrial or field settings. To ensure its longevity and optimal performance, follow these general maintenance guidelines:

- **Cleaning:** Keep the unit clean by wiping it with a soft, dry cloth. Avoid using abrasive cleaners or solvents that could damage the plastic shell or panel.
- **Storage:** Store the device in a cool, dry place away from direct sunlight and extreme temperatures when not in use.
- **Cable Inspection:** Regularly inspect the power adapter, BNC cables, and test leads for any signs of wear, damage, or fraying. Replace damaged cables immediately to ensure safe and accurate operation.
- **Avoid Physical Shock:** While robust, avoid dropping the unit or subjecting it to severe physical shocks, which could damage internal components.

7. Troubleshooting

If you encounter issues with your Metravi CT-9, consider the following common troubleshooting steps:

- **No Power:** Ensure the power adapter is securely connected to both the CT-9 and a working power outlet. Verify the power outlet is active.
- **No VI Curve on Oscilloscope:**
  - Confirm the oscilloscope is set to XY mode.
  - Check that the BNC cables are securely connected to both the CT-9 outputs and the oscilloscope inputs.
  - Verify the oscilloscope's vertical and horizontal sensitivities are appropriately set. Start with higher Volts/Div and Sec/Div settings and adjust downwards.
  - Ensure the component under test is properly connected to the CT-9's terminals.
- **Distorted or Unstable Curve:**
  - Check for loose connections in the test leads or BNC cables.
  - Ensure the component under test is not faulty or shorted.
  - Adjust the oscilloscope's input coupling (AC/DC) and bandwidth settings.
- **Incorrect Readings:** Ensure the correct test range (LOW, MED1, MED2, HIGH) is selected for the component being tested.

If the issue persists after attempting these steps, please contact customer support for further assistance.

8. Specifications

Feature	Specification
Model Number	Metravi CT-9

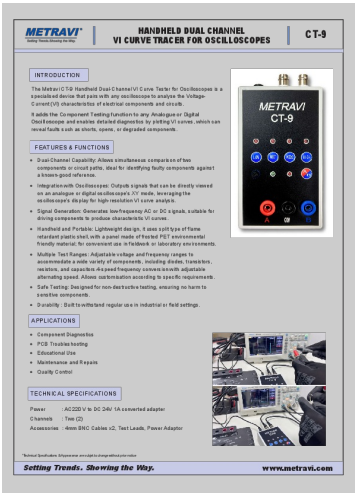
Channels Capability	Dual Channel (A, B, COM)
Test Ranges	4-speed frequency conversion (LOW, MED1, MED2, HIGH)
Signal Generation	Low-frequency AC or DC signals
Power Source	Corded Electric (AC220V to DC 24V 1A adapter)
Item Weight	394 Grams
Product Dimensions (L x W x H)	17 x 11 x 9 Centimeters
Material	Flame retardant plastic shell, frosted PET panel
Included Components	Meter, Test Leads, BNC Cables, Power Adaptor

9. Warranty and Support

For warranty information, please refer to the documentation provided at the time of purchase or contact your retailer. An optional 1-year extended warranty may be available for purchase.

For technical support, inquiries, or assistance with your Metravi CT-9, please contact Metravi Instruments Pvt. Ltd. or your authorized distributor.

- **Manufacturer:** Metravi Instruments Pvt. Ltd.
- **Support Email:** servicing@metravi.com



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HANDHELD DUAL CHANNEL VI CURVE TRACER FOR OSCILLOSCOPES CT-9 INTRODUCTION The Metravi CT-9 Handheld Dual-Channel VI Curve Tester for Oscilloscopes is a specialised device that pairs with any oscilloscope to analyse the VoltageCurrent VI characteristics of electrical components and circuits. It a...

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