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Non-Contact Voltage Detection Digital Multimeter

HOBBYIST



2 YEAR
WARRANTY

DATA
HOLD

CAT III
500V

AUTO
BACKLIGHT



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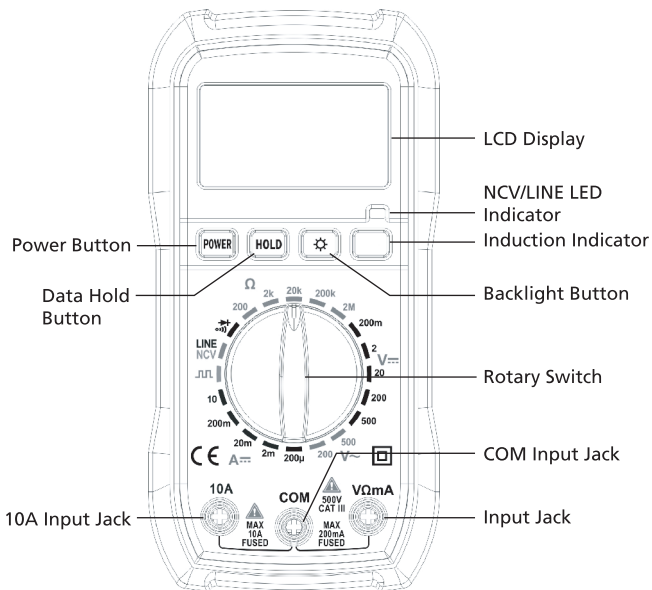
Non-Contact Voltage Detection Digital Multimeter

Thank you for purchasing this Non-Contact Voltage Detection Digital Multimeter. This multimeter includes an internal buzzer and LED warning light to indicate when power is earthed, voltage is detected, the circuit is leaking or resistance is lower than around 70Ω . Manual range selection allows you to work with preferred ranges. Equipped with a data hold option which allows you to lock your readings on-screen for data analysis, as well as an LCD backlight which activates automatically in low light conditions.

Please familiarise yourself with the functions of the multimeter before use. We recommend retaining this manual for ease of reference.

- Improper use of this meter can cause damage, shock, injury or death.
- Always remove the test leads before replacing the battery or fuses.
- Before using the meter, please inspect the condition of the test leads and the meter itself for any damage. If damage is present, please discontinue use.
- Do not measure voltage if the voltage on the terminals exceeds 1000V above earth ground.
- Use great care if voltages are greater than 30VAC RMS. Anything above this is considered a shock hazard.
- Always discharge capacitors and disconnect power before performing diode, resistance or continuity tests.
- Do not exceed the maximum limits of the input values shown in the specification tables on pages 9 & 10 of this manual.
- Remove the batteries from the meter if it will be unused for an extended period of time.

FUNCTIONS	
Max. Display	2000 Count
Basic Accuracy	0.5%
DC Voltage Range	200mV - 500V
AC Voltage Range	200V - 500V
DC Current Range	200 μ A - 10A
Resistance	200 Ω - 2M Ω
Square Wave Output	Yes
Diode Test	Yes
Continuity Check	Yes
NCV (Non-Contact Voltage) Detection	Yes
LINE (Live Wire Recognition) Test	Yes
LCD Backlight	Yes
Data Hold	Yes
Manual Range	Yes



The tilt stand & battery compartment are at the rear of the multimeter.

FUNCTIONS

NCV Detection	Move the rotary switch to NCV. When voltage is detected, the alarm will sound and the LED indicator will flash.
Hold Button	Press the button to lock readings as displayed on screen. Press again to unlock.
LED Indicator	Flashes when voltage is detected.
LCD Display	Readings and measurements taken by the multimeter appear in this area.
Backlight Button	Press to turn the backlight on. Light will remain on for approximately 10 seconds.
Auto Backlight	In low light conditions, the LCD Display backlight will automatically turn on.
Low Battery	The battery icon will appear on screen when battery power is low and the battery needs replacing.
Rotary Switch	Select a measurement range by turning the switch to the preferred option.
Input Jacks	<ul style="list-style-type: none">• V/ΩmA• COM• 10A: Input terminal for 10A current.

AC & DC VOLTAGE MEASUREMENT

To avoid electric shock and/or damage to the multimeter - do not attempt to take any voltage measurements that might exceed 600VDC and do not apply more than 600VDC between the common terminal and the earth ground. Unstable display may occur, especially at the low voltage range measurement. If an erroneous reading is suspected, short the V/ Ω mA jack and COM jack, and make sure zero is displayed on screen.

- 1) Set the rotary switch to the voltage position (V= $\sqrt{\text{V}}$ -).
- 2) Insert the black test lead banana plug into the negative COM jack.
- 3) Insert the red test lead banana plug into the positive V/ Ω mA jack.
- 4) Touch the black test probe tip to the negative side of the circuit.
- 5) Touch the red test probe tip to the positive side of circuit.
- 6) Read the voltage on screen. The polarity of the red test lead will display when taking the DC Voltage measurement.

CURRENT MEASUREMENT

Use the proper terminals, function and range for any current measurement. Never attempt measurement if potential for an open circuit to earth is greater than 250V. Do not place the test leads in parallel with a circuit or component when the test leads are plugged into the current terminals.


- 1) Disconnect power from the circuit to be tested and discharge the capacitors.
- 2) Set the rotary switch to current measuring range.
- 3) For current measurements:
 - less than 200mA, insert the black test lead banana plug into the negative COM jack.
 - between 200mA to 10A, insert the red test lead banana plug into the mA jack.
- 4) To break the circuit under test, connect the black test lead to the more negative side of the break, and connect the red test lead to the more positive side of the break.
- 5) Connect power to the circuit being tested and read the value on screen. If OL displays, the input is over range - so you will need to select the higher range.
- 6) Disconnect power from the circuit to be tested, then discharge all capacitors. Remove the test leads and recover the measured circuit.

DIODE TEST & CONTINUITY CHECK

To avoid electric shock - disconnect power to the unit under test and discharge all capacitors before taking the diode test, and never measure continuity on circuits of wires that have voltage on them. In a circuit, a good diode should produce a forward bias reading of voltage. However, the reverse-bias reading can be variable based on the resistance of other pathways between the probe tips.

DIODE TEST



- 1) Set the rotary switch to the  position.
- 2) Insert the black test lead banana plug into the negative COM jack.
- 3) Insert the red test lead banana plug into the positive V Ω mA jack.
- 4) Place the red test lead on the anode of diode and black test lead on the cathode of the diode. The meter will show the approx. forward voltage of the diode. Reverse voltage will indicate OL.

CONTINUITY CHECK

Touch the test probe tips to the circuit or wire you wish to check. The maximum value of resistance under check will appear on the screen. If the resistance is less than 30 Ω , the audible signal will sound.


RESISTANCE MEASUREMENT

To avoid electric shock - disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords. The measured value of a resistor in a circuit is usually different from the rated value of a resistor. This is because the test current of the meter flows through all possible paths between the probe tips. In order to ensure the best accuracy when measuring low resistance, short the test leads before the measurement and subtract this resistance value from the total. For high resistance measurements, the meter may take a few seconds to stabilise the readings. In an open circuit, the meter will display OL to indicate over range.

- 1) Set the rotary switch to the Ω position.
- 2) Insert the black test lead banana plug into the negative COM jack.
- 3) Insert the red test lead banana plug into the positive V Ω mA jack.

- 4) Touch the test probe tips across the circuit or the part under test. It's best to disconnect one end of the circuit, so the rest of the circuit will not interfere with the resistance reading.
- 5) Read the resistance displayed on-screen.

SQUARE WAVE OUTPUT

- 1) Set the rotary switch to  range position.
- 2) Insert the black test lead banana plug into the negative COM jack.
- 3) Insert the red test lead banana plug into the V Ω mA jack.
- 4) The meter output square wave: frequency = 50Hz \pm 10Hz, V_{p-p} = 5V \pm 2V, output impedance = 560k Ω .

NCV (NON-CONTACT VOLTAGE) DETECTION

Due to external interference sources, this test may detect the wrong voltage. Please use as an estimate only. Socket design, insulation thickness and other variable conditions may interfere with detection. External sources such as flashlights, motors, etc may interfere with reading and cause the wrong detection.

- 1) Set the switch to the NCV position
- 2) Hold the meter near the voltage source.
- 3) The LED light will flash and an audible beep will be heard to indicate the presence of voltage.

Please note: the screen might display O.L or numbers, which provide no context to the NCV function.

LINE (LIVE WIRE RECOGNITION) TEST

When serious circuit leakage is detected (approx. over 15V) and the red test lead is in contact with the earth line, the meter will buzz and the LED light will flash.

- 1) Set the rotary switch to LINE position.
- 2) Connect the black test lead to the COM jack and red test lead to the V Ω mA jack. Make sure to hold the insulation part of the black test lead and not plug it into the circuit under measurement.
- 3) Contact the red test lead to the wire. If it's live, the meter's buzzer will sound and the red LED will flash.
- 4) If an earth connection is detected, the buzzer will not sound and the LED light will not flash.

MEASUREMENT SPECIFICATIONS

The following guide is based on an environmental temperature of 18-28°C and humidity <80%.

DC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200mV	100 μ V	$\pm(0.5\%$ reading + 2 digits)
2V	1mV	$\pm(0.5\%$ reading + 3 digits)
20V	10mV	$\pm(0.8\%$ reading + 3 digits)
200V	100mV	
500V	1V	$\pm(0.8\%$ reading + 5 digits)

Overload Protection: 200mV range at 250VDC or 250VAC RMS
Other ranges at 600VDC or 600VAC RMS

AC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200V	0.1V	$\pm(1.8\%$ reading + 10 digits)
500V	1V	

Overload Protection: 500VDC or 500VAC RMS
Frequency Range: 40~400Hz

DC CURRENT

RANGE	RESOLUTION	ACCURACY
200 μ A	0.1 μ A	$\pm(1.0\%$ reading + 5 digits)
2mA	1 μ A	
20mA	10 μ A	
200mA	100 μ A	$\pm(2.0\%$ reading + 5 digits)
10A	10mA	$\pm(3.0\%$ reading + 5 digits)

Overload Protection: Fuse F200mA/250V

No fuse for 10A range

SQUARE WAVE OUTPUT

OUTPUT FREQUENCY	VP-P	IMPEDENCE
50Hz \pm 10Hz	5V \pm 2V	560k Ω



RESISTANCE

RANGE	RESOLUTION	ACCURACY
200 Ω	0.1 Ω	$\pm(1.0\%$ reading + 2 digits)
2k Ω	0.001k Ω	
20k Ω	0.01k Ω	
200k Ω	0.1k Ω	
2M Ω	0.001M Ω	

Overload Protection: 250VDC or 250VAC RMS

Maximum Open Circuit Voltage: <3.2V

DIODE & CONTINUITY

RANGE	FUNCTION
	Display approximate forward voltage of diode
	Built-in buzzer will sound if resistance is less than $70\Omega \pm 30\Omega$

MAINTENANCE

BATTERY INSTALLATION

To avoid false readings, replace the battery as soon as the low battery power indicator appears.

- 1) Turn power off and disconnect the test leads from the meter.
- 2) Open the rear battery cover with a screwdriver.
- 3) Remove the old battery and insert the new battery into the battery holder, observing the correct polarity.
- 4) Put the battery cover back in place and secure with the screws.

REPLACING THE FUSES

- 1) Turn power off and disconnect the test leads from the meter.
- 2) Remove the battery cover and battery.
- 3) Remove the screws securing the rear cover.
- 4) Gently remove the old fuse and install the new fuse into fuse holder.
- 5) Replace and secure the rear cover, battery and battery cover.

SPECIFICATIONS

Protection:	Overload, Full Range
Max. Input Voltage:	600VDC
Operating Temperature:	0°C~40°C
Operating Humidity:	< 80%RH
Storage Temperature:	-10°C~60°C
Storage Humidity:	< 70%RH
Power Supply:	1 x 9V Battery
Dimensions:	145(H) x 70(W) x 32(D)mm
Weight:	200g (including battery)

BOX CONTENTS

- 1 x Non-Contact Voltage Detection Multimeter
- 1 x Test Leads
- 1 x Holster
- 1 x 9V Battery
- 1 x User Manual

WARRANTY

This product is protected by a 2 year warranty (from the date of purchase) covering all product manufacturing defects/faults that may occur within this timeframe. This warranty does not cover damage caused by neglect, misuse, contamination, alteration, accident or abnormal conditions of operation or handling, including failures caused by use outside of the product's specifications, or the normal wear and tear of mechanical components.

In the event that you suspect your product is defective/faulty, cease using the product when the suspected defect/fault arises and return the product along with proof of purchase to the place of purchase or distributor for assessment. Distributor contact details are available on the last page of this manual.

If the assessment concludes that the product is indeed defective/faulty, the product will either be repaired or replaced at no cost to you.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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