

Pocket Digital MultiMeter User Manual

1. Safety Instructions


This digital Multimeter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

- **NEVER** apply voltage or current to the meter that exceeds the specified maximum:

Input Limits	
Function	Maximum Input
V AC	500V DC/AC
V DC	500V DC/AC, 200Vrms on 200mV range
mA DC	200mA 250V fast acting fuse
Resistance, Continuity	250Vrms for 15sec max

- **USE EXTREME CAUTION** when working with high voltages.
- **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 500V above earth ground.
- **NEVER** connect the meter leads across a voltage source while the function switch is in the current, resistance, or diode mode. Doing so can damage the meter.
- **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
- **ALWAYS** turn off the power and disconnect the test leads before opening the doors to replace the fuse or batteries.
- **NEVER** operate the meter unless the back cover and the battery and fuse doors are in place and fastened securely.


2. Safety Symbols

 This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the operating Instructions to avoid personal injury or damage to the meter.

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

CAUTION This CAUTION symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.

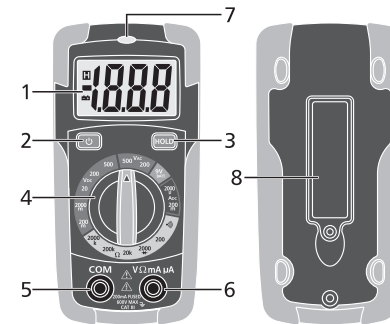
 This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds (in this case) 500 VAC or VDC.

 This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.



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

3. Controls And Jacks

- 1-LCD Display
- 2-Power button
- 3-Data Hold button
- 4-Function switch
- 5-COM jack
- 6-Positive jack
- 7-NCV indicate lamp
- 8-Battery Cover



4. Symbols And Annunciators

	Continuity
	Diode test
μ	micro (amps)
m	milli (volts, amps)
k	kilo (ohms)
Ω	ohms
VDC	volts direct current
VAC	volts alternating current
ADc	amps direct current
BATT.	Battery test

5. Specifications

Function	Range	Resolution	Accuracy
DC Voltage (V DC)	200mV	0.1mV	$\pm(0.5\% \text{ reading} + 2 \text{ digits})$
	2000mV	1mV	
	20V	0.01V	
	200V	0.1V	
	500V	1V	
AC Voltage (V AC)	200V	0.1V	$\pm(1.2\% \text{ reading} + 10 \text{ digits})$ (50/60Hz)
	500V	1V	
DC Current (A DC)	2000 μ A	1 μ A	$\pm(1.2\% \text{ reading} + 2 \text{ digits})$
	200mA	100 μ A	$\pm(1.5\% \text{ reading} + 2 \text{ digits})$
Resistance	200 Ω	0.1 Ω	$\pm(0.8\% \text{ reading} + 4 \text{ digits})$
	2000 Ω	1 Ω	
	20k Ω	0.01k Ω	
	200k Ω	0.1k Ω	
	2000k Ω	1k Ω	
Battery Test	9V	10mV	$\pm(1.2\% \text{ reading} + 2 \text{ digits})$

NOTE:Accuracy specifications consist of two elements:

- (% reading) – This is the accuracy of the measurement circuit.
- (+ digits) – This is the accuracy of the analog to digital converter.

NOTE:Accuracy is stated at 18°C to 28°C (65°F to 83°F) and less than 75%RH.

6. General Information

Diode Test:	Test current of 1mA maximum, open circuit voltage 2.8V DC typical
Continuity Check:	Audible signal will sound if the resistance is less than approximately 50Ω
Input Impedance:	1MΩ
ACV Bandwidth:	50Hz to 60Hz
Display:	3 ½ digit, 2000 count LCD,
Overrange indication:	"1" is displayed
Polarity:	Automatic (no indication for positive polarity); Minus (-) sign for negative polarity.
Measurement Rate:	2 times per second, nominal
Low Battery Indication:	"BAT" is displayed if battery voltage drops below operating voltage
Battery:	One 12volt battery
Fuses:	mA, μA ranges; 200mA/250V fast blow
Operating Temperature:	0°C to 50°C (32°F to 122°F)
Storage Temperature:	-10°C to 60°C (-4°F to 140°F)
Relative Humidity:	<70% operating, <80% storage
Operating Altitude:	2000M (7000ft) maximum.
Safety:	For indoor use and in accordance with overvoltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient overvoltages less than overvoltage Category III.

7. Operation

WARNING

- Before you use the instrument, inspect the test leads and probes for damage e.g. cracks or breaks, in the insulation. Replace if they are damaged.
- Never use damaged leads/probe.
- If the voltage to be measured is not know, set the selector switch to the highest range and reduce until a satisfactory reading is obtained.

7-1. DC Voltage Measurement

- Set the selector switch to the desired DCV range.
- Turn on the power to the circuit to be measured.
- Connect the test leads to the circuit to be measured. The voltage value should appear on the digital display along with the voltage polarity (if reversed only).

7-2. AC Voltage Measurement

- Set the selector switch to the desired ACV range.
- Turn on the power to the circuit to be measured.
- Connect the test leads to the circuit to be measured. The voltage value will appear on the digital display.

7-3. DC Current Measurement

- Set the selector switch to the DCA range.
- Open the circuit to be measured and connect the test leads in series with the load in which current is to be measured.
- Turn on the power to the circuit to be measured, the current value will appear on the digital display.

7-4. Resistance Measurement

- Set the selector switch to the desired OHM range.

WARNING: If the resistance to be measured is part of a circuit, turn off the power and discharge all capacitors before measurement.

- Connect the test leads to the circuit to be measured.
- The resistance value should now appear on the digital display.

7-5. Diode Test

- Set the selector switch to the diode position.
- Connect the red test lead to the anode of the diode to be measured and the black test lead to the cathode.
- The forward voltage drop in mV will be displayed. If the diode is reversed, the figure "1" should be shown on the display.

7-6. Continuity Test

- Set the selector switch to the "Buzzer" position.
- Connect the test leads to the circuit or conductor to be tested, the continuity will be judged by whether the buzzer sound or not.
- The buzzer sounds when the resistance in the circuit to be measured is less than about 50 ohm.

7-7. NON-Contact Voltage (NCV)

The NCV function works on any rotary switch position.

- Test the detector on a known live circuit before use.
- Hold the top of the meter very close to the voltage source as shown.
- If voltage is present, the rim of the LCD display will flash a bright red and a motor shaking will happen.

7-8. Battery Test

- Insert the black test lead banana plug into the negative "COM" jack and the red test lead banana plug into the positive "V" jack.
- Select the 9V BAT position using the function select switch.
- Connect the red test lead to the positive side of the 9V battery and the black test lead to the negative side of the 9V battery.
- Read the voltage in the display.

8. Replacing the Fuses

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the fuse door.

- Disconnect the test leads from the meter and any item under test.
- Open the fuse door by loosening the screw on the door using a Phillips head screwdriver.
- Remove the old fuse from its holder by gently pulling it out.
- Install the new fuse into the holder.
- Always use a fuse of the proper size and value (200mA/250V fast)
- Put the fuse door back in place. Insert the screw and tighten it securely.

WARNING: To avoid electric shock, do not operate your meter until the fuse door is in place and fastened securely.

9. Replacing the Batteries

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery door.

- When the batteries become exhausted or drop below the operating voltage, "BAT" will appear in the right-hand side of the LCD display. The batteries should be replaced.
- Dispose of the old batteries properly.



Rev.090419