

GENERAL

This instrument is one of the series of pocket-sized 3 1/2 digit multimeters for measuring DC and AC voltage, DC current, resistance and diode. Some of those also provide temperature transistor measurement and audible continuity test function or can be used as a signal generator or battery tester. Full range overload protection and low voltage battery indication are provided. They are ideal instruments for use in fields, such as laboratory, workshop, hobby and home applications.

FRONT PANEL DESCRIPTION

1. FUNCTION AND RANGE SWITCH

This switch is used to select the function and desired range as well as to turn on the instrument.

To extend the life of this battery, the switch should be in the "OFF" position when the instrument is not in use.

2. DISPLAY

3 1/2 digit, 7 segment, 0.5" high LCD.

3. "Common" JACK

Plug in connector for black (negative) test lead.

4. "VΩ mA" JACK

Plug in connector for red (Positive) test lead for all voltage and resistance and current (except 10A) measurements.

5. "10A" JACK

Plug in connector for red (positive) test lead for 10A measurement.

SPECIFICATIONS

Accuracies are guaranteed for 1 year, 23 °C ± 5 °C, less than 75% RH.

DC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200mV	100 μ V	$\pm 1.0\%$ of rdg $\pm 2D$
2000mV	1m μ V	$\pm 1.2\%$ of rdg $\pm 2D$
20V	10mV	$\pm 1.2\%$ of rdg $\pm 2D$
200V	100mV	$\pm 1.2\%$ of rdg $\pm 2D$
1000V	1V	$\pm 1.5\%$ of rdg $\pm 2D$

OVERLOAD PROTECTION: 200Vms AC for 200mV range and 1000V DC or 750Vrms AC for other ranges.

AC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200V	100mV	$\pm 2.0\%$ of rdg $\pm 10D$
750V	1V	$\pm 2.0\%$ of rdg $\pm 10D$

OVERLOAD PROTECTION: 1000V DC or 750Vrms for all ranges.

RESPONSE: Average responding, calibrated in rms of a sine wave.

FREQUENCY RANGE: 45Hz - 450Hz

DC CURRENT

RANGE	RESOLUTION	ACCURACY
200 μ A	100nA	$\pm 1.5\%$ of rdg $\pm 2D$
2000 μ A	1 μ A	$\pm 1.5\%$ of rdg $\pm 2D$
20mA	10 μ A	$\pm 1.5\%$ of rdg $\pm 2D$
200mA	100 μ A	$\pm 2.0\%$ of rdg $\pm 2D$
10A	10mA	$\pm 3.0\%$ of rdg $\pm 2D$

OVERLOAD PROTECTION: 200mA 250V fuse (10A range unfused).

MEASURING VOLTAGE DROP: 200mV.

RESISTANCE

RANGE	RESOLUTION	ACCURACY
200 ohm	100m ohm	$\pm 1.2\%$ of rdg $\pm 2D$
2000 ohm	1 ohm	$\pm 1.2\%$ of rdg $\pm 2D$
20k ohm	10 ohm	$\pm 1.2\%$ of rdg $\pm 2D$
200k ohm	100 ohm	$\pm 1.2\%$ of rdg $\pm 2D$
2000k ohm	1k ohm	$\pm 1.5\%$ of rdg $\pm 2D$

MAXIMUM OPEN CIRCUIT VOLTAGE: 2.8V.

OVERLOAD PROTECTION: 15 seconds maximum 200Vrms on all ranges.

AUDIBLE CONTINUITY

RANGE DESCRIPTION

Built-in buzzer sounds if resistance is less than 1 k ohm

OVERLOAD PROTECTION: 15 seconds maximum 220Vrms Sounds alarm.

TEMPERATURE (K TYPE PROBE)

RANGE	RESOLUTION	ACCURACY
-20 $^{\circ}$ C to 1370 $^{\circ}$ C	1 $^{\circ}$ C	$\pm 5\%$ $\pm 2D$ (up to 150 $^{\circ}$ C) $\pm 5\%$ of rdg (over 150 $^{\circ}$ C)

OVERLOAD PROTECTION: 220Vrms AC.

BATTERY TEST

RANGE	RESOLUTION	ACCURACY	TEST CURRENT
1.5V	1mV	$\pm 1.5\%$ of rdg $\pm 2D$	100mA
9V	10mV	$\pm 1.5\%$ of rdg $\pm 2D$	6mA

OVERLOAD PROTECTION 1/4 200mA 250V fuse

OPERATIONG INSTRUCTIONS

WARNING

1.TO avoid electrical shock hazard and/or damage of the instrument. do not measure voltages that might exceed 500V above earth ground.

2.Before the use of instrument, inspect test leads, connectors and probes for cracks, breadks,or crazes in the insulation.

DO VOLTAGE MEASUREMENT

1.Connect red test lead to "V Ω mA "jack. Black lead to "COM" jack.

2.Set RANGE switch to desired DCV position. If the voltage to be measured is not known beforehand, set switch to the highest range and reduce it untill satisfactory reading is obtained.

3.Connect test leads to device or circuit being measured.

4.Turn on power of the device or circuit being measured, voltage value will appear on Digital Display along with the voltage polarity.

AC VOLTAGE MEASUREMENT

1.Red lead to "V Ω mA".Black leak to "COM"

2.RANGE switch to desired ACV position.

3.Connect test leads to device or circuit being tested.

4.Read voltage vafue on Digital Display.

DC CURRENT MEASUREMENT

1.Red lead to "V Ω mA". Black leak to "COM". (For measurements between 200mA and 10A connect red leao to "10A" jack.)

2.RANGE switch to desired DCA position.

3.Open the circuit to be measured. and connect test leads IN SERIES with the load in which current is to be measured.

4.Read current value on Digital Display.

RESISTANCE MEASUREMENT

1.Red lead to "V Ω mA" .Black lead to "COM"

2.RANGE switch to desired Ω Position.


3.If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.

4.Connect test leads to circuit being measured.

5.Read resistance value on Digital Display.

DIODE MEASUREMENT

1.Red lead to "V Ω mA" .Black lead to "COM"

2.RANGE switch to  plsiton.

3.Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.

4.The forward voltage drop in mV will be displayed.If the diode is reversed, figure"1" will be shown.

TRANSISTOR hFE MEASUREMENT

1.RANGE switch to the hFE position.

2.Determine whether the transistor is NPN or PNP type and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes of the hFE Socket on the front panel.

3.The meter will display the approximate hFE value at the condition of base current 10 μ A and VCE 2.8V.

TEMPERATURE MEASUREMENT

1.RANGE switch to TEMP position and the current room temperature appears on the display with the charactor C.

2.Connect the k type thermoelectric couple to "V Ω mA" and"COM" jacks.

3.Contact the object under measurement with the thermoelectric couple carefully.

4.Read the temperature C on the display.

BATTERY TEST

1.Red lead to "V Ω mA" . Black lead to "COM"

2.RANGE switch to BATT position.

3.Connect test leads to the terminals of the battery under measurement and read the display value.

AUDIBLE CONTINUITY TEST

1.Red lead to "V Ω mA". Black lead to " COM"

- 2.RANGE switch to ∞) position.
- 3.Connect test leads to two points of circuit to be tested. if the resistance is lower then 1 k ohm, buzzer will sound.

TEST SIGNAL USE

- 1.RANGE switch to \square position.
- 2.A test signal(50Hz or 1000Hz depending on the model of multimeter)appears between "V Ω mA " and "COM" jacks. The output voltage is approx.5Vpp with a certain DC component,so additional insulating capacitor should be used

BATTERY AND FUSE REPLACEMENT

Fuse rarely need replacement and blow almost always as a result of operator error.

If "BAT" appears on display,it indicates that the battery should be replaced.

To replace battery & Fuse(500mA/250V)remove the 2 screws in the bottom of the case.Simply remove the old.and replace with a new one. Be careful to observe polarity.

CAUTION

Before attempting to open the case of the instrument,be sure to disconnect test leads from any energized circuits to avoid shock hazard.

ACCESSORIES

- Operator's instructon manual
- Set of test leads
- Gift box
- K type thermoelectric couple(Optional)
- 9 volt battery, NEDA 1694 6F22 TYPE(Optional)

OPERATOR' S INSTRUCTION MANUAL

MINI DIGITAL MULTIMETER



WARNING

**READ AND UNDERSTAND THIS MANUAL
BEFORE USING THE INSTRUMENT**
Failure to understand and comply with the
WARNINGS and operating instructions can
result in serious or fatal injuries and / or prop
erty damage.