

FRONT PANEL DESCRIPTION

- Display
- 3 1/2 digit, 7 segment, 15mm high LCD.
- Back light (option)
When this button is pushed, the Back light of display is on. After about 5 seconds, the Back light is self-off. The Back light is on again, just push this button once.
- Rotary switch
This switch is used to select functions and desired ranges as well as to turn on/off the meter.
- Hold button
When this button is pushed, the display will keep the last reading and "H" symbol will appear on the LCD until pushing it again.
- "10A" Jack
Plug in connector for red test lead for 10A measurement.
- "COM" Jack
Plug in connector for black (negative) test lead.
- "V/Ohm" Jack
Plug in connector for red (positive) test lead for voltage, resistance and current (except 10A) measurements.

SPECIFICATIONS

Accuracy is specified for a period of one year after calibration and at 18 to 28°C (64°F to 82°F) with relative humidity to 80%.

GENERAL

- Maximum voltage between terminals and earth ground : CAT II 600V
- Fuse protection : F 200mA/250V
- Power Display : 9V battery, NEDA 1604 or 6F22
- Measuring method : LCD, 1999 counts, updates 2-3/ sec.
- Measuring method : Dual-slope integration AD converter
- Overrange Indication : Only figure "1" on the display
- Polarity Indication : "-" displayed for negative polarity
- Operating Environment : 0 to 40°C

Storage temperature : -10°C to 50°C.

Low battery indication : "E" appears on the display

Size : 138mm X 69mm X 31mm

Weight : Approx. 170g.

DC VOLTAGE

Range	Resolution	Accuracy
200mV	100µV	±0.5% of rdg ± 2 digits
2V	1mV	±0.5% of rdg ± 2 digits
20V	10mV	±0.5% of rdg ± 2 digits
200V	100mV	±0.5% of rdg ± 2 digits
600V	1V	±0.8% of rdg ± 2 digits

Overload Protection: 250V ms. For 200mV range and 600V dc or rms. ac for other ranges.

DC CURRENT

Range	Resolution	Accuracy
200µA	0.1µA	±1% of rdg ± 2 digits
2mA	1µA	±1% of rdg ± 2 digits
20mA	10µA	±1% of rdg ± 2 digits
200mA	100µA	±1.5% of rdg ± 2 digits
10A	10mA	±3% of rdg ± 2 digits

Overload Protection: F 200mA/250V fuse. (10A range unfused)

AC VOLTAGE

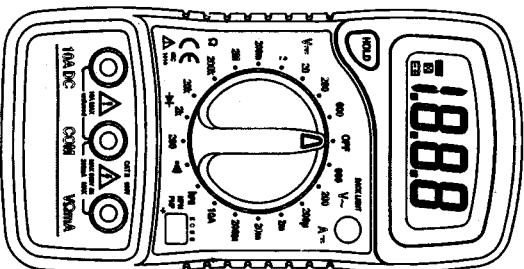
Range	Resolution	Accuracy
200V	100mV	±1.2 % of rdg ± 10 digits
600V	1V	±1.2 % of rdg ± 10 digits

Overload Protection: 600V dc or rms. ac for all ranges.
Frequency range: 40Hz to 400Hz. Response: Average responding, calibrated in ms. of a sine wave.

DIODE & CONTINUITY

Range	Description
⌘	If continuity exists (about less than 1.5kΩ), built-in buzzer will sound.
↔	Show the approx. forward voltage drop of the diode.

OPERATOR'S INSTRUCTION MANUAL



DIGITAL MULTIMETER

Overload Protection: 250V dc or rms. ac.

RESISTANCE

Range	Resolution	Accuracy
200Ω	0.1Ω	±0.8% of rdg ± 3 digits
2KΩ	1Ω	±0.8% of rdg ± 2 digits
20KΩ	10Ω	±0.8% of rdg ± 2 digits
200KΩ	100Ω	±0.8% of rdg ± 2 digits
2MΩ	1KΩ	±1.0% of rdg ± 2 digits

Maximum Open Circuit Voltage: 3.2V

Overload Protection: 250V dc or rms. ac for all ranges.

TRANSISTOR hFE TEST (0-1000)

Range	Test Range	Test Current	Test Voltage
NPN & PNP	0-1000	I _b =10μA	V _{ce} =3V

OPERATING INSTRUCTIONS

DC VOLTAGE MEASUREMENT

1. Connect the red test lead to the "V,Ω,mA" jack and the black lead to the "COM" jack.
2. Set rotary switch at desired DCV position. If the voltage to be measured is not known beforehand, set range switch at the highest range position and then reduce it until satisfactory resolution is obtained.
3. Connect test leads across the source or load being measured.
4. Read voltage value on the LCD display along with the polarity of the red lead connection.

DC CURRENT MEASUREMENT

1. Connect the red test lead to the "V,Ω,mA" jack and the black test lead to "COM" jack. (For measurements between 200mA and 10A, remove red lead to "10A" jack.)
2. Set the rotary switch at desired DCA position.
3. Open the circuit in which the current is to be measured, and connect test leads in series with the circuit.
4. Read current value on LCD display along with the polarity of red lead connection.

AC VOLTAGE MEASUREMENT

1. Connect the red test lead to "V,Ω,mA" jack and the black test lead to the "COM" jack.
2. Set the rotary switch at desired ACV position.
3. Connect test leads across the source or load being measured.
4. Read voltage value on the LCD display.

RESISTANCE MEASUREMENT

1. Connect the red test lead to "V,Ω,mA" jack and black test lead to the "COM" jack. (The polarity of red lead is positive "+".)
2. Set the rotary switch at desired "Ω" range position.
3. Connect test leads across the resistor to be measured and read LCD display.
4. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before applying test probes.

DIODE TEST

1. Connect the red test lead to "V,Ω,mA" jack and the black test lead to the "COM" jack (The polarity of red lead is positive "+").
2. Set the rotary switch at "→" position.
3. Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode of the diode. The approx. forward voltage drop of the diode will be displayed. If the connection is reversed, only figure "1" will be shown.

TRANSISTOR TEST

1. Set the rotary switch at "hFE" position.
2. Determine whether the transistor under testing is NPN or PNP and locate the emitter, base and collector leads. Insert the leads into proper holes of the hFE socket on the front panel.
3. Read the approximate hFE value at the test condition of base current 10μA and V_{ce} 3V.

NOTE:

To avoid electrical shock, remove test leads from measurement circuits before testing a transistor.

AUDIBLE CONTINUITY TEST

1. Connect red test lead to "V,Ω,mA", black test lead to "COM".
2. Set range switch to "→" position.
3. Connect test leads to two points of circuit to be tested. If continuity exists, built-in buzzer will sound.

BATTERY & FUSE REPLACEMENT

If "E" appears on display, it indicates that the battery should be replaced.
Fuse rarely need replacement and blow almost always as a result of operator's error.
To replace battery & fuse (200mA/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 battery polarity.

WARNING

Before attempting to open the case, always be sure that test leads have been disconnected from measurement circuits. Close case and tighten screws completely before using the meter to avoid electrical shock hazard.

ACCESSORIES

- Operator's instruction manual
- Set of test leads
- Gift box
- 9 volt battery, NEDA 1604 6F22 006P type
- Hoister (option)