

### MEASURING AC VOLTAGE > ACV

- 1 Connect Red test lead to 'VΩmA' terminal. Black test lead to 'COM' terminal.
- 2 Set RANGE switch to desired 'ACV' position.
- 3 Connect test leads in parallel with the load or circuit under test.
- 4 Read the measured voltage from the LCD display.
- 5 When the function switch set to "750", a "HV" sign will appear on the left bottom of display to remind of high voltage measuring, pay attention during testing.

### MEASURING DC CURRENT > DCA/10A

- 1 Connect Red test lead to 'VΩmA' terminal (measuring below 200mA) OR to '10A' terminal, Black test lead to 'COM'.
  - 2 Set RANGE switch to desired 'DCmA' OR '10A' position.
  - 3 Connect test leads in series with the load or circuit under test.
  - 4 Read the measured current from the LCD display.
- ⚠ **CAUTION** When during '10A' unfused range, testing period must be ≤ 10 seconds, and at interval ≥ 15 minutes.

### MEASURING RESISTANCE > Ω

- 1 Connect Red test lead to 'VΩmA' terminal, Black test lead to 'COM' terminal.
- 2 Set RANGE switch to desired 'Ω' position.
- 3 Connect test leads across the resistance under measurement.
- 4 If the resistance being measured is connected to a circuit, turn OFF power and discharge all capacitor before applying test leads.
- 5 Read the resistance value from the LCD display.
- 6 During '200Ω' range, an accuracy of 0.1-0.8Ω occurs (total resistance of both test leads). So, deduct this value when from actual reading.

### TRANSISTOR "hFE" MEASUREMENT > hFE

(Range switch same as on "hFE") position)

- 1 Set RANGE switch to desired 'hFE' position.
- 2 Determine 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 LCD will display the approximate hFE value at the condition of base current 10μA and VCE 3V.

### CONTINUITY CHECK > ●))

(Range switch same as on "hFE" position)

- 1 Connect Red test lead to 'VΩmA' terminal, Black test lead to 'COM' terminal.
- 2 Set RANGE switch to desired 'hFE/●))' position.
- 3 Connect test leads in parallel with the circuit under test.
- 4 If the resistance / impedance is under 30 ohm (approx.), Buzzer sounds.

Note : Please ignore the reading on LCD.

### MEASURING LIVE DIODE > →|

- 1 Connect Red test lead to 'VΩmA', Black test lead to 'COM'. Set RANGE switch to desired '→|' position.
- 2 Connect test leads across the diode under measurement (Red to the anode ; Black to the cathode).
- 3 The forward voltage drop is display in V. If the diode is reversed, only "1" will be display.

### BATTERY OR FUSE REPLACEMENT > 🔋 / ⚡

If 'BAT' appears on LCD display, it indicates that the battery should be replaced.  
To replace battery or fuse, unscrew the 2 screws at the back cover, remove the old one and replace with a new one. Secure the 2 screws after replaced.

Type of battery : 9V NEDA 1604/1604A ; IEC 6F22/6LR61

### ⚠ CAUTION

- 1 Before attempting to open the back cover, be sure to disconnect test leads from any energized circuits to avoid shock hazard.
- 2 For continued protection against fire, replace only with fuse of the specified voltage and current ratings.

### SINGLE PROBE TEST (ACV) FUNCTION

👉 Set the RANGE switch to "ACV" ⚠ **WARNING**

#### IMPORTANT SAFETY INSTRUCTIONS

1. Do not exceed 500 VAC (single phase) when testing.
2. During testing, test probes should be separately holding with both hands or remove the Black probe from the meter, as only one Red probe is used for detecting.



#### Distinguish 'Live/Hot' or 'Fault Finding'

Insert Red probe into the socket, LED lights up indicating the presence of AC voltage. Also, whenever 'Neutral' or 'Earthing/Ground' is disconnected, the LED will light up indicating a 'FAULT' line in the system.



#### 'Ground/Earthing' Disconnected Check

Use Red probe to make contact with accessible surface of electrical appliances such as Kettle, AC motor etc. LED lights up when 'Ground/Earthing' is not connected to the system.



#### Wrong Connection Check

The probe should be in contact with the heating element of hair dryer with power OFF. LED lights up when the plug is inserted improperly, OR 'Live/Hot' wire is connected 'WRONGLY' to the socket.



**GENERAL**

**DMM830HS**

USER'S MANUAL

## ECONOMY DIGITAL MULTIMETER with LED and CONTINUITY BEEPER

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 property damage.

**GENERAL**

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DMM830HS User's Manual

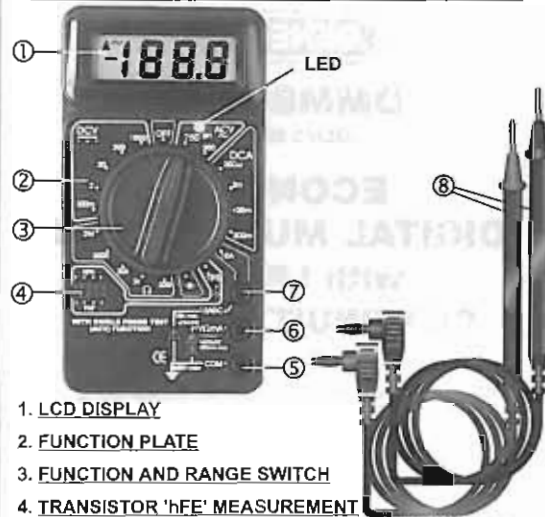
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MAN#DMM830HS 08/09

## FUNCTION AND NAME OF EACH PART



### 1. LCD DISPLAY

### 2. FUNCTION PLATE

### 3. FUNCTION AND RANGE SWITCH

### 4. TRANSISTOR 'hFE' MEASUREMENT

Measuring (hFE) socket for NPN and PNP type transistor.

### 5. 'COM' COMMON TERMINAL

Return terminal for all measurements. Do not apply more than 500V between the COM terminal and Earth Ground. Plug in connector for Black (Negative) test lead.

### 6. '20mA' VOLTS, OHMS, CURRENT (mA), DIODE TEST CONTINUITY CHECK INPUT TERMINAL

Plug in connector for Red (positive) test lead.

### 7. '10A' AMPERES INPUT TERMINAL

For current measurements (DCA) upto 10A. Plug in connector for Red (positive) test lead.

### 8. TEST LEADS

Red lead is '+' (positive) for measuring 'V/A/Ω/→/←/→/←' input and Black lead '-' (negative) for "COM" input.

## INTRODUCTION

**CONGRATULATIONS !** You have purchased equipped with fully featured, precision digital multi meter. We hope you will use it correctly after reading this operation manual carefully.

### IMPORTANT SAFETY INSTRUCTIONS

BEFORE USING YOUR INSTRUMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND INJURY TO PERSONS, INCLUDING THE FOLLOWING.

1. Never use your instrument on the electric circuit that exceed 500V.
2. Always inspect the test leads for damaged insulation or exposed.
3. Be sure to disconnect the test leads from the circuit when changing the function or range.
4. Before starting measurement, make sure that the function and range are properly set in accordance with the measurement. Do not turn the range switch during measurement.
5. Never use the instrument with wet hands or in a damp environment.
6. Disconnect the input power and discharge all high voltage capacitors through a protective impedance before testing in the 'Ω' and '→/←' functions.
7. Never measure the line connected with equipment (i.e. motor, current transformer) that generates induced or surge voltage which may exceed the maximum allowable voltage.
8. Use a damp cloth only, do not use abrasives or solvents on the meter.
9. The meter is not designed for the verification of fixed installations.
10. Do not operate the meter unless the bottom case has been closed.
11. The instrument must not be used in the presence of moisture. (eg. dew or rain)
12. Do not modify internal circuit.

SAVE THESE INSTRUCTIONS

## SAFETY SYMBOLS AND INFORMATION

	<b>WARNING</b>	Is used for conditions and actions that pose hazards to the user.
	<b>CAUTION</b>	Is used for conditions and actions that may damage your instrument.
	<b>500V MAX</b>	To avoid electrical shock or damage to the instrument, do not apply more than 500 VAC/DC between 'COM' terminal and 'Earth Ground'.
	<b>DANGEROUS VOLTAGE</b>	To avoid electrical shock, use caution when working above 60VDC or 30 V r.m.s. AC (42.4 peak), such voltages pose a shock hazard.
	<b>Double insulation (CAT. II)</b>	
	<b>CE</b>	The instrument conform to EU Council Directives.

## SPECIFICATIONS

FUNCTION	RANGE	RESOLUTION	ACCURACY	REMARKS
DC VOLTAGE	200mV	100μV	+/- (0.5%, 2dgt)	Max. Input 1000VOC
	2V 20V 200V	1mV 10mV 0.1V	+/- (0.8%, 2dgt)	
	1000V	1V	+/- (1.2%, 2dgt)	
AC VOLTAGE	200V 750V	0.1V 1V	+/- (1.2%, 10dgt)	Max. Input 750VAC Response : Average responding**
DC CURRENT	200μA 2mA 20mA	0.1μA 1μA 10μA	+/- (1%, 2dgt)	Fused Protection (250mA/250V)
	200mA	0.1mA	+/- (1.5%, 2dgt)	Unfused
	10A	10mA	+/- (2%, 2dgt)	
RESISTANCE	200Ω 2kΩ 20kΩ 200kΩ 2MΩ	0.1Ω 1Ω 10Ω 100Ω 1kΩ	+/- (1%, 2dgt)	Maximum open circuit voltage 2.8V Overload protection : 15 seconds max 220V r.m.s. on all ranges.
TRANSISTOR hfe	NPN PNP	0 - 1000	V <sub>ce</sub> approx. 3V	I <sub>b</sub> approx. 10μA
CONTINUITY CHECK (BEEPS)	hFE			≤30 ohm Buzzer sounds

\*\*Calibrated in r.m.s. of a sine wave. Frequency Range : 40~400Hz.

### Notes :

1. Accuracy is given as +/- (% of reading +/- number of least significant digits) at 18° to 28°C with relative humidity up to 60% for a period of one year after calibration.
2. Sources like radio station, television, vehicle radio cellular phones transmitter generate electromagnetic radiation that may induce voltages in the test leads of the multi-meter. In such cases the accuracy of the multi-meter cannot be guaranteed due to physical reasons.

## FEATURES :

\* **Display :** 3-1/2 digits LCD; 0.5" high with polarity ' - ' ; AC ' Δ ' ; high voltage ' HV ' ; low battery ' BAT ' indication. LED for single pole ACV test.

\* **OVER RANGE INDICATION :** 3 least significant digits blanked i.e. Display '1'

\* **MAXIMUM COMMON MODE VOLTAGE :** 500V peak

### \* TEMPERATURES :

Operating : 0°~50°C (below 80% RH)  
Storage : -10°~50°C (below 70% RH)  
Guaranteed accuracy : 23°C +/-5°C (below 75% RH) for 1 year

\* **LIFE OF BATTERY :** 100 hours when alkaline cell

\* **ALTITUDE :** operating: 2000m; storage: 10000m

\* **DIMENSIONS AND WEIGHT :** 132(H) x 70 (W) x 25 (D) mm  
Net weight: 140 grams

MEASURING DC VOLTAGE

- ① Connect Red test lead to "VΩmA" terminal. Black test lead to "COM" terminal.
- ② Set RANGE switch to desired 'DCV' position. If the voltage to be measured is unknown before, set switch to the highest range and reduce it until satisfactory reading is obtained.
- ③ Connect test leads in parallel with the load or circuit under test.
- ④ Read the measured voltage from the LCD display with the voltage polarity.
- ⑤ When the function switch set to "1000", a "HV" sign will appear on the left bottom of display to remind of high voltage measuring, pay attention during testing.