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DIGITAL MULTIMETER

MODEL: DM-8034

82DM-8034IMD

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Section One

INTRODUCTION

This Multimeter is an accurate compact, and light weight type digital multimeter with 3 1/2 digits liquid crystal display. The multimeter has been carefully designed which can provide long reliable performance for your laboratory, or workbench application. In addition to the normal functions of a multimeter, it has following outstanding functions and features.

* **Built-in Capacitor meter to measure the capacitance up to 20 μF.**
* **Audible continuity check allows easy and fast checking of the short or open in the circuit.**
* **AC & DC current measurement up to 20A.**
* **Resistance measurement up to 20MΩ.**

** **IMPORTANT:** PLEASE READ THIS MANUAL CAREFULLY TO MAKE YOURSELF THOROUGHLY FAMILIAR WITH THE CAPABILITIES AND LIMITATIONS OF THIS INSTRUMENT BEFORE BEGINNING OPERATION.

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SPECIFICATIONS AND FEATURES

General Specifications:

Display : 0.5" digital height, 3 1/2 digit with "—" and decimal annunciators.

Measurement : DCV, ACV, Resistance, DCA, ACA, capacitance, Diode Check, Audible Continuity Check.

Sampling Time : 0.4 second.

Polarity : "—" will appear automatically in front of readout if input is negative.

Overrange : Indication on display shows "1" or "-1" when input is over the range.

Input Impedance : 10MΩ at all ranges of AC and DC voltage measurement.

Measurement Range and Accuracy

This instrument requires 30 minutes warm-up to achieve rated accuracy, and all the accuracies are guaranteed at 23°C ± 5°C, less than 75% RH.

1. DC Voltage

Range	Accuracy	Resolution	Input Impedance	Overload Protection
200mV	± 0.5% of reading + 1 digit	100 μV	10 MΩ	DC 500V AC 350V rms
2 V		1mV		DC 1000V AC 1000V rms
20 V		10mV		
200 V		100mV		
1000 V		1 V		

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2. AC Voltage (40Hz–500Hz)

Range	Accuracy	Resolution	Input Impedance	Overload Protection
200mV	± 1% of reading + 4 digit	100 μV	10 MΩ	DC 500V AC 350V rms
2 V		1mV		DC 1000V AC 1000V rms
20 V		10mV		
200 V		100mV		
1000 V		1 V		

3. Resistance

Range	Accuracy	Resolution	Full Scale Voltage	Open Circuit Voltage	Max Test Current	Overload Protection
200 Ω	± 0.75% of reading + 1 digit	0.1 Ω	< 0.30V	< 3.2V	2.5mA	DC 300V AC 250V rms
2K Ω		1 Ω	< 0.25V	< 0.6V	300 μA	
20K Ω		10 Ω	< 0.25V		60 μA	
200K Ω		100 Ω	< 0.25V		0.6 μA	
2M Ω		1K Ω	< 0.25V		0.6 μA	
20M Ω	± 1.5% of reading + 5 digit	10K Ω	< 0.40V		60 nA	

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4. DC Current

Range	Accuracy	Resolution	Volt Drop at Full Scale	Overload Protection
200 μA	± 0.5% of reading + 1 digit	0.1 μA	250mV	2A Fuse
2mA		1 μA		
20mA		10 μA		
200mA		0.1mA		
2 A	± 1.0% of reading + 3 digit	1mA	700mV	
20 A		10mA	700mV	—

5. AC Current (40Hz—500Hz)

Range	Accuracy	Resolution	Volt Drop at Full Scale	Overload Protection
200 μA	± 1% of reading + 4 digit	0.1 μA	250mV rms	2A Fuse
2mA		1 μA		
20mA		10 μA		
200mA		0.1mA		
2 A	± 1.5% of reading + 2 digit	1mA	700mV rms	
20 A		10mA	700mV rms	—

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6. Capacitance

Range	Test Condition	Accuracy (% of reading + digits)
2 nF	300Hz ± 5%	± (2% rdg + 4 digit)
20 nF		
200 nF		
2 μF		
20 μF		

7. Diode Check

Range	Function	Description	Open Voltage	Max Test Current	Protection
	Diode Check	Display read approx. forward voltage of diode.	Max 3.2V	2.5 mA	DC 300V AC 250V rms

8. Audible Continuity Check

Range	Function	Description	Open Voltage	Max Test Current	Protection
	Audible Continuity Check	Built-in buzzer sounds if conductance is less than 30 ohm	Max 3.2V	2.5 mA	DC 300V AC 250V rms

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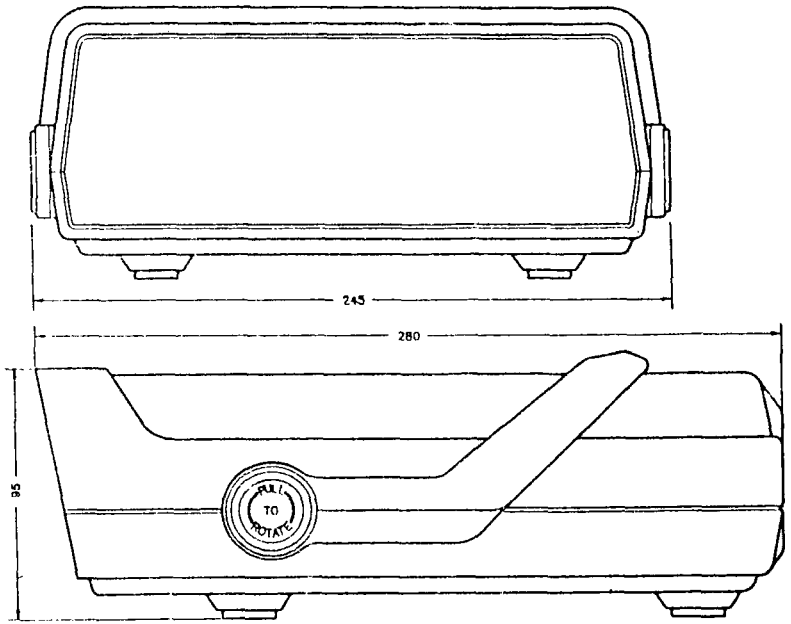
Operating Temperature	:	0°C to 50°C	0°C to 35°C, 0–80%RH 35°C to 50°C, 0–70%RH
Storage Temperature	:	-20°C to 70°C	
Power Requirement	:	AC 110V, 220V, ± 15%, 50/60Hz	
Dimensions Weight	:	245(W) x 95(H) x 280(D) mm	
Accessories	:	Test Leads (red & black)	1 pair
		Operation Manual	1 piece

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Section Three
OPERATING INSTRUCTIONS

This section of the manual will provide you with information on measurement techniques that will help you to fully utilize the measurement capabilities of this instrument.

3.1 Outline Drawing and Operating Features



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3.2 Safety Rules

1. Before making measurement, check if the function and range is set at proper position.
2. Always start with this instrument from the highest range of the function to be measured. Pay careful attention to the maximum rated voltage of each range and input terminal.
3. Never ground yourself when taking electrical measurements. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats or any suitable and approved insulating material.
4. The 20A range is unprotected and has a very low internal resistance. It might cause hazard if a voltage signal is input into this terminal.
5. Disconnect line power or input signal before accessing fuse.

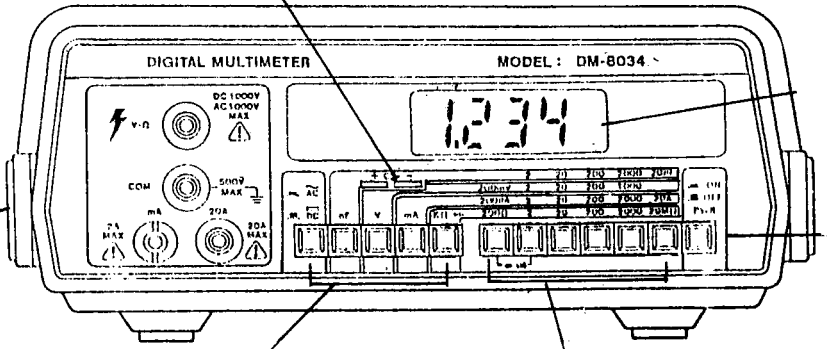
3.3 Method of Measurement

3.3.1 DCV, ACV Measurements

1. Select the "V" function.
2. Set the range switch to the desired range. (if you have no idea about the value of input, we suggest you always start at the highest range).
3. If measuring "DCV", select the AC/DC switch to "DC" position.
   If measuring "ACV", select the AC/DC switch to "AC" position.
4. Connect black test lead to "COM" input terminal and red test lead to "V-Ω" input terminal.
5. Connect the test leads to the mesuring points and read the displayed value.

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Capacitance Measuring Sockent



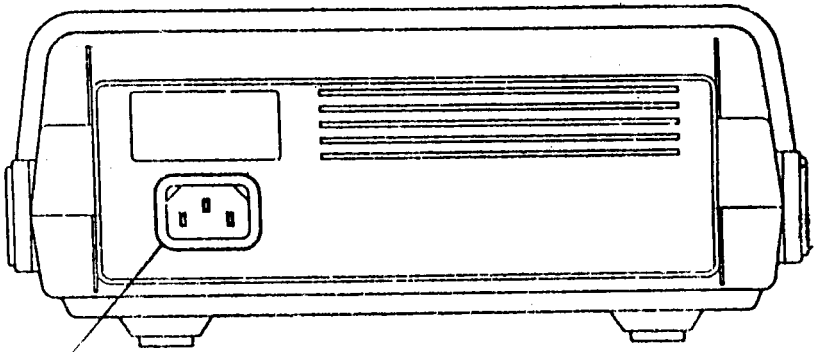
Readout: LCD indicator display measured input

INPUT Terminals: input connection for voltage or resistance (V–Ω) and current (2A,20A) measure–ments with repect to the COM terminal

POWER Switch: Push button switch to energize the instrument.

FUNCTION Switches: Select the (AC or DC) Voltage (V), Current (mA) Resistance (KΩ) and Capacitance (nF) modes.

RANGE Switches: Select the Voltage (0.2, 2. 20, 200 or 1000V) current (0.2, 2, 20, 200, 2000mA or 20A), resistance (0.2, 2, 20, 200, 2000KΩ or 20MΩ) and and Capacitance (2, 20, 200, 2000nF or 20μ) ranges



AC SOCKENT: for connection AC cord to ac power line

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3.3.2 DCA, ACA Measurements

1. Select the "mA" function.
2. Set the range switch to the desired range. (If you have no idea about the value of input, we suggest you always start at the "2000" range).
3. If measuring "DC", select the AC/DC switch to "DC" position.
   If measuring "AC", select the AC/DC switch to "AC" position.
4. Connect black test lead to "COM" input terminal and red test lead to "A" or "20A" input terminal. (For measuring current large than 2A, red lead must be placed at "20A" input terminal).

   NOTE: A. "20A" terminal is not fused 15 seconds max. It might cause hazard if a voltage signal is input into this terminal.

   B. If red test lead is placed at "mA" input terminal and input is higher than 2A. The fuse will blow to protect the circuit.
5. Connect the leads to the measuring points and read the dispayed value.

3.3.3 Resistance Measurement

1. Select the "KΩ" function.
2. Set the range switch to the desired range.
3. Connect test leads to the "COM" and "V-Ω" input terminal respectively.
4. Connect the leads to the measuring points and read the displayed value.

   NOTE: The circuit to be tested must be in power-off status during the resistance measurement. Any voltage drop across the circuit to be tested will cause mistaken reading of resistance measurement.

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3.3.4 Capacitance Measurement

1. Select the "nF" function and set the range switch to the desired range.
2. Insert the leads of the capacitor into the "Capacitance Measurement Socket (CX)", and read the display.

   NOTE: A. Discharge the tested capacitor before measurement by shorting the two leads of the capacitor with a 100Ω resistor.

   B. Never apply voltage to the "Capacitance Measurement Socket", serious damage may result.

   C. The AC/DC knob must be set on "DC" position while the Capacitance Measurement function is provided.

3.3.5 Diode Check

1. Select the "KΩ" function.
2. Press the "200Ω" and "2" button (→+ •)) symbols) in simultaneously.
3. Connect black test lead to "COM" input terminal and red lead to "V-Ω" input terminal.
4. Connect the leads to the semiconductor junction (diode or transistor) as shown in Figure 3-3 and 3-4, and read displayed value.
   In the case of Figure 3-3, the reading value shall be the approx. Forward voltage of the semiconductor junction. If the reading value is ".000" that means the junction is short. If the reading value is "1." that means the junction is open.

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In the case of Figure 3-4, the readout shall be "1." If readout is ".000" or other number that means the semiconductor junction is defective.

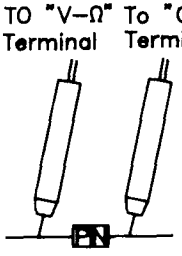


Figure 3-3.

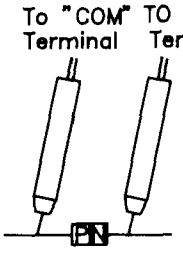


Figure 3-4.

3.3.6 Audible Continuity Check

1. Select the "KΩ" function
2. Press the "200Ω" and "2" button (symbols) in simultaneously.
3. Connect black test lead to "COM" input terminal and red test lead to "V-Ω" input terminal.
4. Connect leads to measuring points. Buzzer sounds if the resistance between two measuring points is smaller than 30Ω.

   NOTE: The circuit to be tested must be in power-off status during the contiuity check. Any negative singal input will turn the buzzer on and cause mistaken reading of continuity.

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Section Four
MAINTENANCE

4.1 Replacement of Fuse

4.1.1 Line Fuse Replacement

The line fuse is located internally in the instrument. To replace the fuse, proceed as follows:

1. Disconnect the line cord from the AC socket.
2. Remove the top cover of the instrument.
3. Carefully remove the defective fuse and put the proper fuse (0.2A/110V, 0.1A/220V) in the replacement.
4. Reinstall the top cover.

4.1.2 Current Fuse Replacement

The current fuse protects the 200μA through 2000mA ranges from an input current greater 2 A. To replace the current fuse, perform the following steps:

1. Turn off the power, disconnect the power line and remove the test leads.
2. Place the end of a flat blade screwdriver into the slot of the fuse holder on the front panel. Carefully rotate the fuse carrier turn counterclockwise till remove the fuse and the fuse carrier off the front panel.
3. Remove the defective fuse and replace the proper fuse (2A).

   NOTE: Use only the recommended fuse type. If a fuse with a higher current rating is installed, damage may occur upon overload.

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