7 FUNCTION DIGITAL MULTIMETER OPERATING INSTRUCTIONS

SKU 90899 Read all instructions before using this tester

Specifications

ITEM	DESCRIPTION
Frequency	45-450 Hz
DC Amps	Ranges: 200µA/2000µA/20mA/200mA, 10A Accuracy (@200µA-200mA) 1.2%±2D; (@10A) 3%±2D
DC Voltage	Ranges: 200mV/2000mV/20/200/1000V Accuracy (@200mV) 0.5%±1D; (@2000mV-200V) 1.0%±1D; (@1000V) 1.0%±2D
AC Voltage	Ranges: 200/750V Accuracy (45-450 Hz) 1.2%±10D
Resistance	Ranges: 200/2000/20K/200K/2000K Ohm Accuracy (@200-200K Ohm) 0.8%±2D; (@2000K Ohm) 1.0%±2D;
Sampling Rate	2.5 times/Second
Overload Protection	Fast-Acting 500mA/250V Fuse
Operating Temperature	Range: 32° - 104° F
Display	1/2" high 3-1/2-digit LCD
Battery	One 9 V (included)
Weight	.45 lb.
Features	32" Test Leads, Transistor (NPN and PNP) Testing Function, Battery Testing Function, and Automatic Polarity and Zero Adjust

Save This Manual

You will need the manual for the safety warnings and precautions, and operating and maintenance procedures.

Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

Safety Warnings and Precautions

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Warnings continued on page 3.

Safety Warnings and Precautions

1 Avoid working alone If an accident happens an assistant can bring help
2 Keep work area clean Cluttered areas invite injuries
3 Avoid electrical shock Use extreme caution when using this tool near uninsulated conductors or bus bars Prevent body contact with grounded surfaces such as pipes radiators ranges and cabinet enclosures when testing voltages
4 Avoid damaging meter Use only as specified in this manual
5 Observe work area conditions Do not test voltages in damp or wet locations Dont expose to rain Keep work area well lit
6 Keep children away Children must never be allowed in the work area Do not let them handle machines tools or extension cords
7 Store idle equipment When not in use tools must be stored in a dry location to inhibit rust Always lock up tools and keep out of reach of children
8 Dress properly Do not wear loose clothing or jewelry as they can be caught in moving parts Protective electrically nonconductive clothes and nonskid footwear are recommended when working Wear restrictive hair covering to contain long hair
9 Use eye protection Always wear ANSI approved impact safety goggles
10 Do not overreach Keep proper footing and balance at all times Do not reach over or across electrical cables or frames
11 Maintain tools with care Ensure multimeter has a fresh battery Inspect test leads periodically and if damaged have them repaired by an authorized technician
12 Stay alert Watch what you are doing use common sense Do not operate any tool when you are tired
13 Check for damaged parts Before using any tool any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function Check for any broken parts and any other condition that may affect proper operation Any part that is damaged should be properly repaired or replaced by a qualified technician Do not use the tool if any switch does not operate properly

15 Replacement parts and accessories When servicing use only identical replacement parts Use of any other parts will void the warranty Only use accessories intended for use with this tool Approved accessories are available from Harbor Freight Tools
16 Do not operate tool if under the influence of alcohol or drugs Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs If there is any doubt do not operate the tool

17 We recommend that only a licensed electrician work on high voltage or other potentially dangerous circuits

Note Performance of this tool may vary depending on condition of internal battery

Warning The warnings cautions and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur It must be understood by the operator that common sense and caution are factors which cannot be built into this product but must be supplied by the operator

Warning This product contains or produces chemicals including lead known to the State of California to cause cancer and birth defects or other reproductive harm California Health & Safety Code 25249.5 et seq.

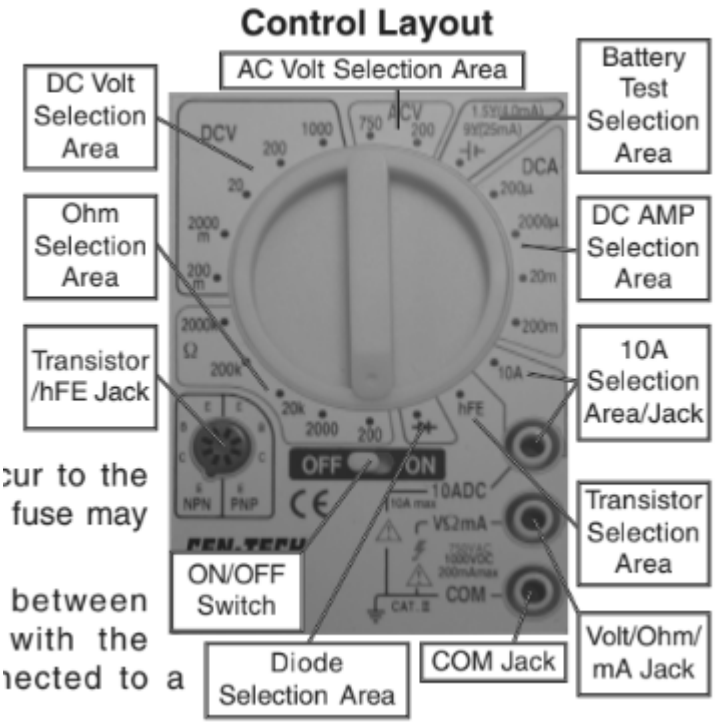
Operation

WARNING ELECTRICAL SHOCK CAN CAUSE DEATH OR INJURY AVOID TOUCHING EXPOSED CONDUCTORS OF ELECTRICITY

Additional Multimeter Precautions

1 Do not test voltage on AC circuits higher than 750 volts
2 Do not test voltage on DC circuits higher than 1000 volts
3 Do not test current on circuits higher than 10 amps
4 Be careful not to apply voltage to the Test Leads when they are connected to the COM Bottom and VΩmA Center Jacks and the Multimeter is in an Ohms testing setting Damage can occur to the multimeter or the fuse may blow
5 Do not switch between testing modes with the multimeter connected to a circuit

Control Layout



AC Voltage Measurements

Measure AC conductors carrying up to 750 VAC 45-450 Hz

1. Turn the Range Selector Switch to 750 ACV setting Always start with the highest range if the voltage is unknown
2. Plug the red lead into the VΩmA Center Jack Plug the black lead into the COM Bottom Jack Switch the Multimeter ON
3. Carefully touch the exposed conductors with the tips of the probes to measure the voltage not amperes
4. Read measurement If the voltage is less than 200 volts set the Range Selector Switch to the lower range
5. When testing is complete remove Test Leads and store with multimeter

DC Voltage Measurements

Measure DC conductors carrying up to 1000 VDC

1. Turn the Range Selector Switch to 1000 DCV setting
2. Follow the directions above under AC Voltage Measurements only use the DC settings instead

DC Current Measurements

Measure DC conductors carrying up to 10 amperes

1. Turn the Range Selector Switch to the 10A position Always start with the highest range if the amperage is unknown
2. Plug the red lead into the 10A Top Jack Plug the black lead into the COM Bottom Jack Switch the Multimeter ON
3. Carefully touch the exposed conductors with the tips of the probes to measure the amperage Note Amperage is always tested in series with the circuit under test
4. Read measurement If the reading is less than 2 AMPs switch the red lead to the VΩmA Center Jack and set the Range Selector Switch to the 200 mA setting
5. When testing is complete remove Test Leads and store with multimeter

Resistance Measurements

Measure circuit resistance up to 2000K Ohms
WARNING NEVER measure resistance on a circuit with voltage running through it

1. Turn the Range Selector Switch to the 200 Ω position
2. Plug the red Test Lead into the VΩmA Center Jack Plug the black Test Lead into the Com Bottom Jack Switch the Multimeter ON Short the Test Leads together The meter should read 0 Ohms
3. Touch the exposed conductors with the tips of the Test Leads
4. Read measurement If the reading is 1 set the Range Selector Switch to the next higher Ohm Ω position

Transistor hFE Measurements

Test transistors to ensure proper function

1. Turn the Range Selector Switch to the hFE position Switch the Multimeter ON
2. Insert the transistor pins into the appropriate hFE jack NPN or PNP according to the EBC Emitter Base Collector sequence
3. The meter will show the approximate hFE value

Diode Measurement

Test the voltage drop in diodes

1. Turn the Range Selector Switch to the Diode  position

2. Plug the red Test Lead into the VΩmA Center Jack Plug the black Test Lead into the Com Bottom Jack Switch the Multimeter ON
3. Connect the red probe to the anode of the diode and the black to the cathode
4. The approximate forward voltage drop of the diode will be displayed in mV If the connection is reversed only 1 will be shown

Battery Charge Measurement

Test the amount of charge left in batteries

NOTE This setting is for testing the charge of small 9V or 1.5V batteries only Never use this setting to test automotive or lead acid batteries The high current could cause damage to the meter and or cause severe personal injury Use the appropriate DC Voltage setting to test the open current voltage of such batteries instead

1. Turn the Range Selector Switch to the Battery ⊣⊢ position
2. Plug the red Test Lead into the VΩmA Center Jack Plug the black Test Lead into the Com Bottom Jack Switch the Multimeter ON
3. Connect the red probe to the positive terminal of the battery and the black to the negative terminal
4. The battery amperage under a load of 370 mΩ will be displayed to a resolution of 1mA

Normal amperage
For a standard 9V 6LR61 battery = 25 mA ,
For a 1.5 V AA LR6 battery = 4 mA

Maintenance

1 Wipe unit with a slightly damp cloth using a light detergent Do not use solvents or abrasives
2 Remove battery if not in use for long periods
3 Store unit in a dry location
4 Other than the battery and fuse there are no replaceable parts on this unit Repairs should be done by a qualified technician

Battery/Fuse Replacement

To replace the battery or fuse
1 Remove the Test Leads from the multimeter
2 Turn the unit over
3 Remove both screws using a Philips screwdriver
4 Remove back cover
5 Pull battery/fuse out of unit and replace with the same 9V battery or 500mA/250V fastacting fuse

6 Replace cover and retighten screws

NOTE No replacement parts are available for this tool

Warning

This content is compiled from multiple sources and is provided for reference purposes only. It may not be complete or fully applicable to all situations. If you are unable to resolve your issue, please contact the product manufacturer or an authorized service provider for official support.
