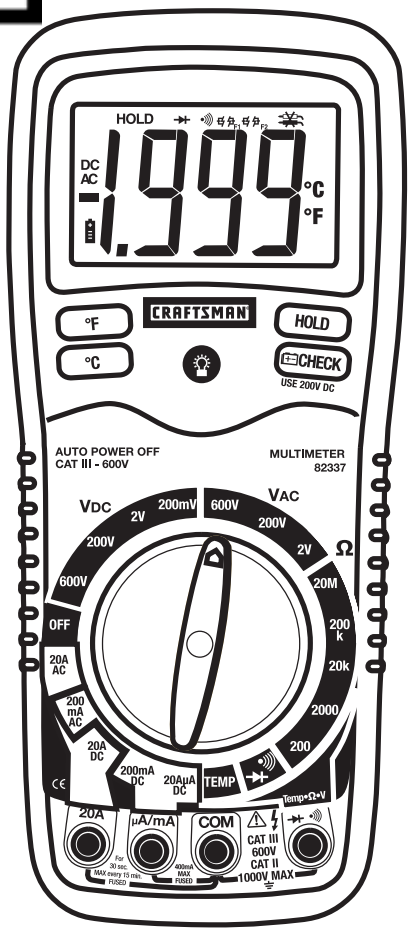
Owner's Manual

CRAFTSMAN

Manual Ranging Multimeter

Model No.
82337



CAUTION: Read, understand and follow Safety Rules and Operating Instructions in this manual before using this product.

- Safety
- Operation
- Maintenance
- Español

www.craftsman.com **061906**

TABLE OF CONTENTS

ONE YEAR FULL WARRANTY

ONE YEAR FULL WARRANTY ON CRAFTSMAN PROFESSIONAL MULTIMETER
If this CRAFTSMAN Professional Multimeter fails to give complete satisfaction within one year from the date of purchase, RETURN IT TO THE NEAREST SEARS STORE OR OTHER CRAFTSMAN OUTLET IN THE UNITED STATES, and Sears will replace it, free of charge.
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
Sears, Roebuck and Co., Dept. 817WA, Hoffman Estates, IL 60179

For Customer Assistance Call 9am - 5pm (ET)
Monday through Friday 1-888-326-1006

WARNING: USE EXTREME CAUTION IN THE USE OF THIS DEVICE. Improper use of this device can result in injury or death. Follow all safeguards suggested in this manual in addition to the normal safety precautions used in working with electrical circuits. DO NOT service this device if you are not qualified to do so.

SAFETY INSTRUCTIONS

This meter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

1. **NEVER** apply voltage or current to the meter that exceeds the specified maximum:

Input Limits	
Function	Maximum Input
V DC or V AC	600V DC/AC, 200Vrms on 200mV range
mA AC/DC	200mA 250V fast acting fuse
A AC/DC	20A 250V fast acting fuse(30 seconds max every 15 minutes)
Resistance, Diode Test, Continuity	250Vrms for 15sec max
Temperature	60V DC/24V AC

2. **USE EXTREME CAUTION** when working with high voltages
3. **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 600V above earth ground
4. **DO NOT** measure current of circuits whose voltage is greater than 600V above earth ground
5. **NEVER** connect the meter leads across a voltage source while the function switch is in the resistance or diode mode. Doing so can damage the meter
6. **ALWAYS** turn off the power and disconnect the test leads before opening the cover to replace the battery
7. **NEVER** operate the meter unless the back cover is in place and fastened securely

SAFETY SYMBOLS

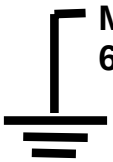
This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

WARNING

This **WARNING** symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

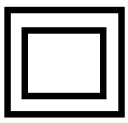
CAUTION

This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.



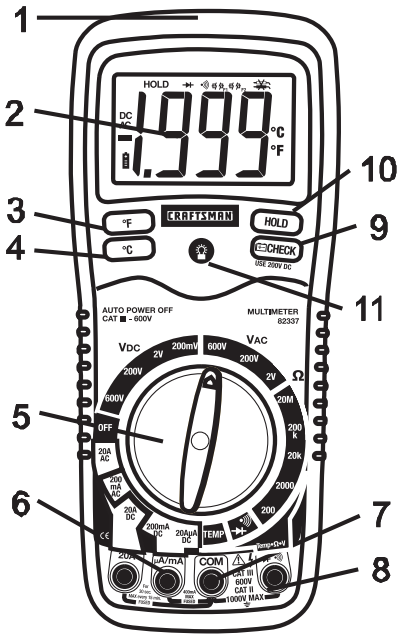
This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds (in this case) 600 VAC or VDC.

This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.



This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

CONTROLS AND JACKS

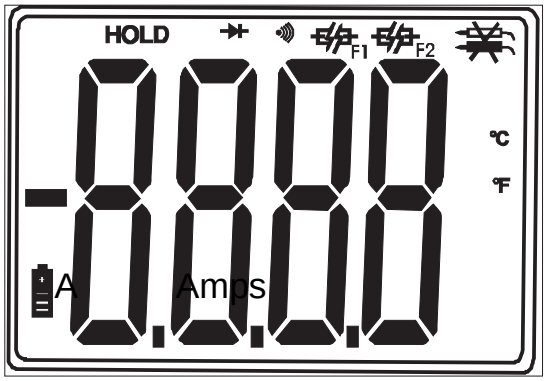


1. Rubber holster
2. 2000 count LCD display
3. Degrees F button
4. Degrees C button
5. Function switch
6. mA, uA and A input jacks
7. COM input jack
8. Positive input jack
9. Battery check button
10. Hold button
11. Backlight button

Note: Tilt stand and battery compartment are on rear of unit.

SYMBOLS AND ANNUNCIATORS

•)))	Continuity
	Diode test
	Battery status
	Test lead connection error
µ	micro (10^{-6}) (amps)
m	milli (10^{-3}) (volts, amps)
k	kilo (10^{3}) (ohms)
M	mega (10^{6}) (ohms)
V	Volts
AC	Alternating current
DC	Direct current
Ω	Ohms
HOLD	Data hold
ºF	Degrees Fahrenheit
ºC	Degrees Centigrade



SPECIFICATIONS

Function	Range	Resolution	Accuracy	
DC Voltage (V DC)	200mV	0.1mV	±(0.3% reading + 2 digits)	
	2V	0.001V	±(0.5% reading + 2 digits)	
	200V	0.1V		
	600V	1V	±(0.8% reading + 2 digits)	
AC Voltage (V AC)			50 to 400Hz	400Hz to 1kHz
	2V	0.001V	±(1.0% reading +6 digits	±(2.0% reading + 8 digits
	200V	0.1V	±(1.5% reading +6 digits	±(2.5% reading +8 digits
	600V	1V	±(2.0% reading +6 digits	±(3.0% reading +8 digits
DC Current (A DC)	200μA	0.1μA	±(1.5% reading + 3 digits)	
	200mA	0.1mA		
	20A	0.01A	±(2.5% reading + 3 digits)	
AC Current (A AC)			50 to 400Hz	400Hz to 1kHz
	200mA	0.1mA	±(1.8% reading +8 digits	±(2.5% reading +10 digits)
	20A	0.01A	±(3.0% reading +8 digits)	±(3.5% reading +10 digits)
Resistance	200Ω	0.1Ω	±(0.8% reading +4 digits)	
	2000Ω	1Ω	±(0.8% reading +2 digits)	
	20kΩ	0.01kΩ	±(1.0% reading +2 digits)	
	200kΩ	0.1kΩ		
	20MΩ	0.01MΩ	±(2.0% reading +5 digits)	
Temperature	-4 to 1382ºF	1ºF	±(3.0% reading +3 digits) (meter only, probe accuracy not included)	
	-20 to 750ºC	1ºC		

NOTE: Accuracy specifications consist of two elements:

- (% reading) – This is the accuracy of the measurement circuit.
- (+ digits) – This is the accuracy of the analog to digital converter.

NOTE: Accuracy is stated at 65°F to 83°F (18°C to 28°C) and less than 75% RH.

Diode Test	Test current of 1mA maximum, open circuit voltage 2.8V DC typical
Continuity Check	Audible signal will sound if the resistance is less than approximately 150Ω
Input Impedance	10MΩ
AC Response	Average responding
ACV Bandwidth	50Hz to 1kHz
DCA voltage drop	200mV
Display	3 ½ digit, 2000 count LCD, 0.9" digits
Auto-Power Off	15 minutes
Overrange indication	"1" is displayed
Polarity	Automatic (no indication for positive polarity); Minus (-) sign for negative polarity.
Measurement Rate	2 times per second, nominal
Low Battery Indication	**"**  **"** is displayed if battery voltage drops below operating voltage
Battery	One 9 volt (NEDA 1604) battery
Fuses	mA, µA ranges; 0.2A/250V fast blow A range; 20A/250V ceramic fast blow
Operating Temperature	41ºF to 104ºF (5ºC to 40ºC)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Operating Humidity	Max 80% up to 87ºF (31ºC) decreasing linearly to 50% at 104ºF (40ºC)
Storage Humidity	<80%
Operating Altitude	7000ft. (2000) meters maximum.
Weight	0.661lb (300g) (includes holster).
Size	7.36" x 3.2" x 2.0" (187 x 81 x 50mm) (includes holster)
Safety	For indoor use and in accordance with the requirements for double insulation to IEC1010-1 (1995): EN61010-1 (1995) Overvoltage Category III, Pollution Degree 2.

BATTERY INSTALLATION

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.

1. Disconnect the test leads from the meter.
2. Remove the rear battery cover by removing the two screws using a Phillips head screwdriver.
3. Insert the battery into battery clips, observing the correct polarity.
4. Put the battery cover back in place and secure with the two screws.

WARNING: To avoid electric shock, do not operate the meter until the battery cover is in place and fastened securely.

NOTE: If your meter does not work properly, check the fuses and battery to make sure that they are still good and that they are properly inserted.

OPERATING INSTRUCTIONS

WARNING: Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

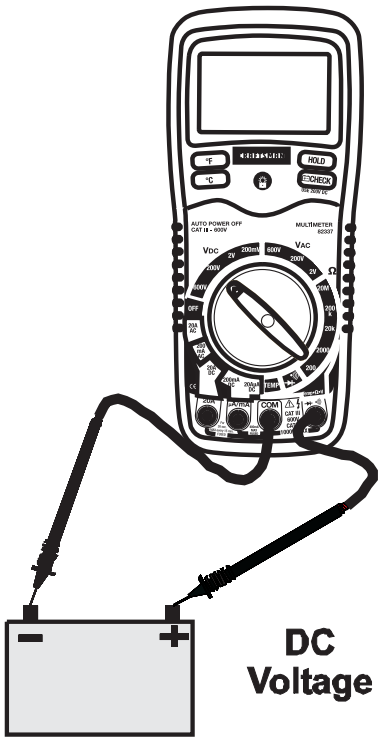
1. ALWAYS turn the function switch to the OFF position when the meter is not in use.
2. If "1 " appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

NOTE: On some low AC and DC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilize and give a proper measurement when connected to a circuit.

DC VOLTAGE MEASUREMENTS

CAUTION: Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the highest V DC position.
2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (V) jack.
3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
4. Read the voltage in the display. Reset the function switch to successively lower V DC positions to obtain a higher resolution reading. If the polarity is reversed, the display will show (-) minus before the value.

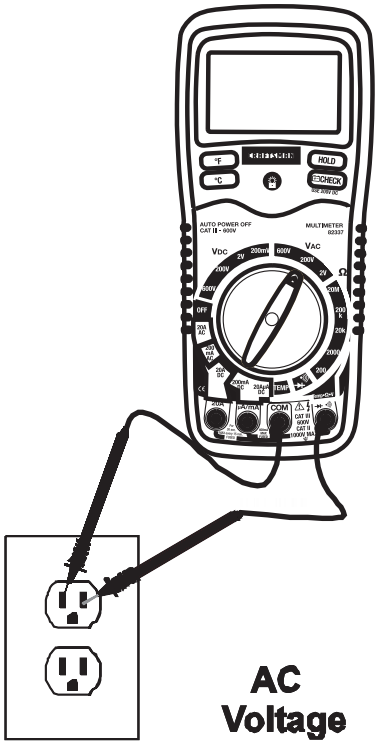


AC VOLTAGE MEASUREMENTS

WARNING: Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present.

CAUTION: Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

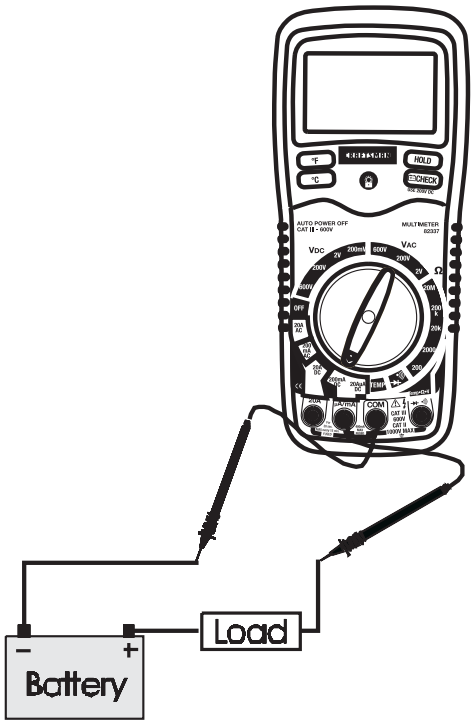
1. Set the function switch to the highest V AC position.
2. Insert the black test lead banana plug into the negative (COM) jack. Insert red test lead banana plug into the positive (V) jack.
3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
4. Read the voltage in the display. Reset the function switch to successively lower V AC positions to obtain a higher resolution reading.



DC CURRENT MEASUREMENTS

CAUTION: Do not make current measurements on the 20A scale for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

1. Insert the black test lead banana plug into the negative (COM) jack.
2. For current measurements up to 200µA DC, set the function switch to the 200µA DC position and insert the red test lead banana plug into the (uA/mA) jack.
3. For current measurements up to 200mA DC, set the function switch to the 200mA DC position and insert the red test lead banana plug into the uA/(mA) jack.
4. For current measurements up to 20A DC, set the function switch to the 20ADC range and insert the red test lead banana plug into the (20A) jack.

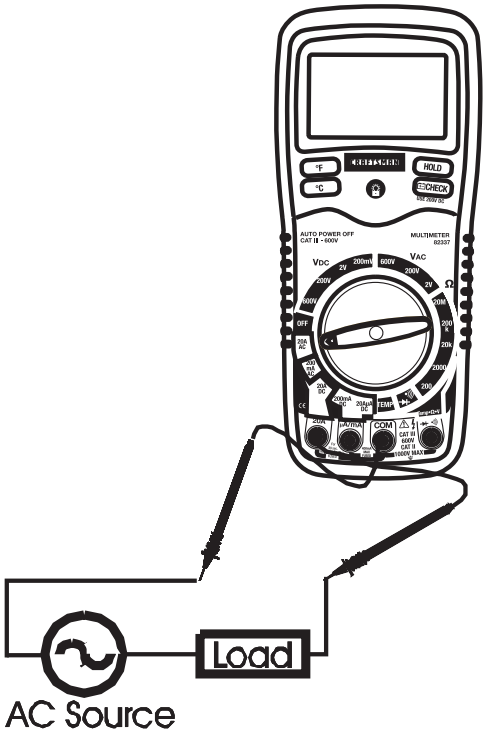


5. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
6. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
7. Apply power to the circuit.
8. Read the current in the display.

AC CURRENT MEASUREMENTS

CAUTION: Do not make current measurements on the 20A scale for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

1. Insert the black test lead banana plug into the negative (COM) jack.
2. For current measurements up to 200mA AC, set the function switch to the highest 200mA AC position and insert the red test lead banana plug into the (mA) jack.
3. For current measurements up to 20A AC, set the function switch to the 20A AC range and insert the red test lead banana plug into the (20A) jack.
4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.

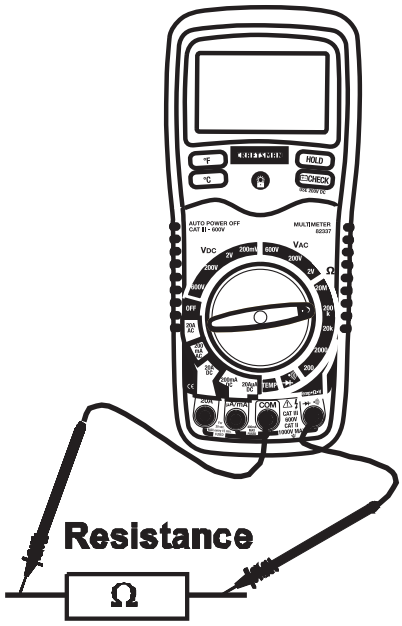


5. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
6. Apply power to the circuit.
7. Read the current in the display.

RESISTANCE MEASUREMENTS

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

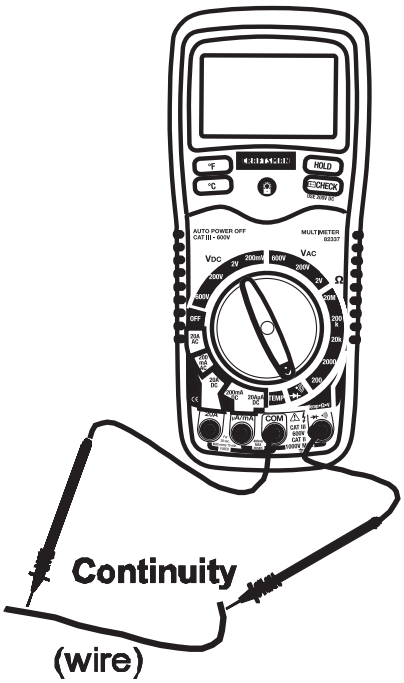
1. Set the function switch to the highest Ω position.
2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (Ω) jack.
3. Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4. Read the resistance in the display and then set the function switch to the lowest Ω position that is greater than the actual or any anticipated resistance.



CONTINUITY CHECK

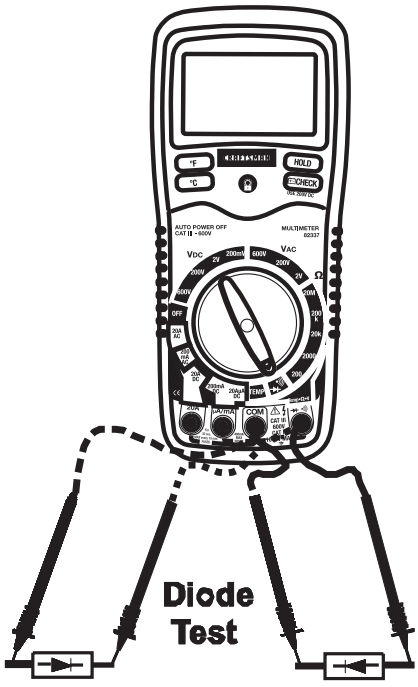
WARNING: To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to the position.
2. Insert the black lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (Ω) jack.
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than approximately 30Ω, the audible signal will sound. If the circuit is open, the display will indicate “1”.



DIODE TEST

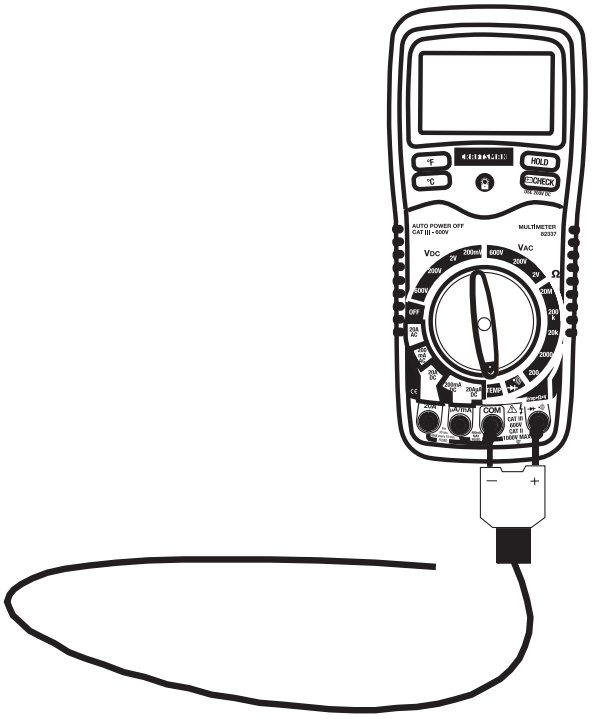
1. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive (diode) jack.
2. Turn the rotary switch to the position.
3. Touch the test probes to the diode under test. Forward bias will typically indicate 400 to 1000. Reverse bias will indicate “**1** ”. Shorted devices will indicate near 0 and the continuity beeper will sound. An open device will indicate “**1** ” in both polarities.



TEMPERATURE MEASUREMENTS

1. Set the function switch to the TEMP position.
2. Insert the Temperature Probe into the Temperature Socket, making sure to observe the correct polarity.
3. Press the ºF or ºC button for the desired units.
4. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes.
5. Read the temperature in the display.

Note: The temperature probe is fitted with a type K mini connector. A mini connector to banana connector adaptor is supplied for connection to the input banana jacks.



DISPLAY BACKLIGHT

Press the  button to turn on the display backlight function. The backlight will automatically turn off after 15 seconds.

BATTERY CHECK

The  CHECK function tests the condition of the 9V battery. Set the function switch to the 200VDC range and press the CHECK button. If the reading is less than 8.5, battery replacement is recommended.

DATA HOLD

The hold function freezes the reading in the display. Press the HOLD key momentarily to activate or to exit the hold function.

AUTO POWER OFF

The auto off feature will turn the meter off after 15 minutes.

LOW BATTERY INDICATION

If the  icon appears in the display when the battery voltage is low. Replace the battery when this icon appears.

WRONG CONNECTION INDICATION

The  icon will appear in the upper right corner of the display and the buzzer will sound whenever the positive test lead is inserted into the 20A or uA/mA input jack and a non-current (yellow) function is selected. If this occurs, turn the meter off and reinsert the test lead into the proper input jack for the function selected.

MAINTENANCE

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery cover.

WARNING: To avoid electric shock, do not operate your meter until the battery cover is in place and fastened securely.

This multimeter is designed to provide years of dependable service, if the following care instructions are performed:

1. **KEEP THE METER DRY**. If it gets wet, wipe it off.
2. **USE AND STORE THE METER IN NORMAL TEMPERATURES.** Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
3. **HANDLE THE METER GENTLY AND CAREFULLY.** Dropping it can damage the electronic parts or the case.
4. **KEEP THE METER CLEAN.** Wipe the case occasionally with a damp cloth. DO NOT use chemicals, cleaning solvents, or detergents.
5. **USE ONLY A FRESH BATTERY OF THE RECOMMENDED SIZE AND TYPE.** Remove the old or weak battery so it does not leak and damage the unit.
6. **IF THE METER IS TO BE STORED FOR A LONG PERIOD OF TIME**, the battery should be removed to prevent damage to the unit.

BATTERY REPLACEMENT

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.

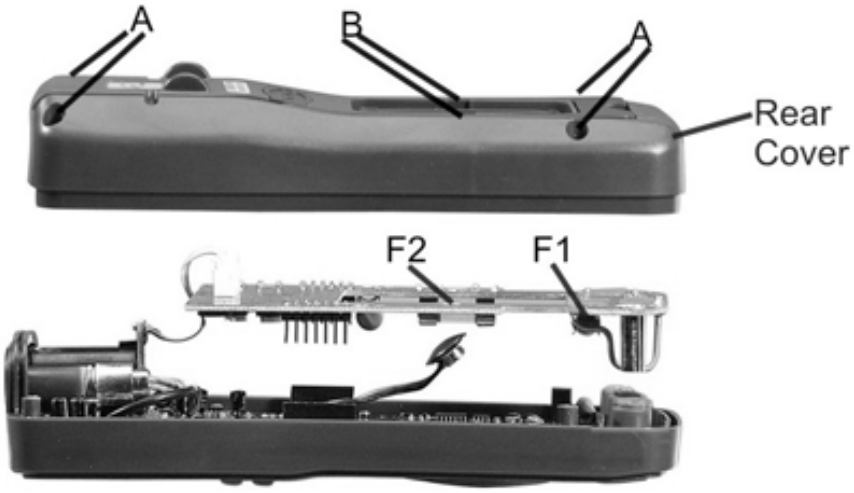
1. When the battery becomes exhausted or drops below the operating voltage, " " will appear in the left-hand side of the LCD display. The battery should be replaced.
2. See the Battery Installation section of this manual.
3. Dispose of the old battery properly.

WARNING: To avoid electric shock, do not operate your meter until the battery cover is in place and fastened securely.

NOTE: If your meter does not work properly, check the fuses and battery to make sure that they are still good and that they are properly inserted.

FUSE REPLACEMENT

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before replacing the fuses.



1. Disconnect the test leads from the meter.
2. Remove the protective rubber holster.
3. Remove the battery cover (two "B" screws)
4. Disconnect and remove the battery.
5. Remove the four "A" screws securing the rear cover.

6. Remove the rear cover.
7. Lift the center circuit board straight up from the connectors to gain access to the fuse holders.
8. Gently remove the old fuse and install the new fuse into the holder.
9. Always use a fuse of the proper size and value (0.2A/250V fast blow for the 200mA range, 20A/250V fast blow for the 20A range).
10. Align the center board with the connectors and gently press into place.
11. Replace and secure the rear cover, battery and battery cover and screws.

WARNING: To avoid electric shock, do not operate your meter until the rear cover and battery cover are in place and fastened securely.

UL LISTED

The UL mark does not indicate that this product has been evaluated for the accuracy of its readings.

TROUBLESHOOTING

There may be times when your meter does not operate properly. Here are some common problems that you may have and some easy solutions to them.

Meter Does Not Operate:

1. Always read all the instructions in this manual before use.
2. Check to be sure the battery is properly installed.
3. Check to be sure the battery is good.
4. If the battery is good and the meter still doesn't operate, check to be sure that both ends of the fuse are properly installed.

If You Do Not Understand How the Meter Works:

1. Purchase "Multitesters and Their Use for Electrical Testing", (Item No. 82303).
2. Call our Customer Service Line **1-888-326-1006**.

SERVICE AND PARTS

Item Number	Description
82376	Fuse kit
93894	9V battery
82398	Set of black and red Test Leads
82337-D	Replacement battery cover
82337-C	Front cover
82337-CS	Rear cover screws
82377	Thermocouple probe

For replacement parts shipped directly to your home
Call 9 am – 5 pm eastern, M - F
1-888-326-1006