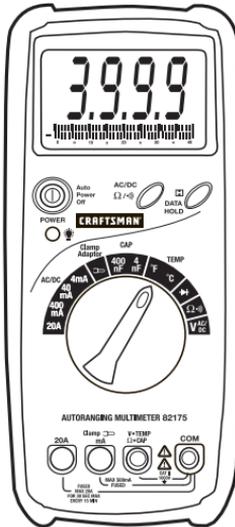


Owner's Manual



AutoRanging Digital MultiMeter

Model No.
82175



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

- Safety
- Operation
- Maintenance
- Español

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ONE YEAR FULL WARRANTY

ONE YEAR FULL WARRANTY ON CRAFTSMAN AUTORANGING MULTIMETER

If this CRAFTSMAN AutoRanging 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.

If this CRAFTSMAN AutoRanging MultiMeter is used for commercial or rental purposes, this warranty applies for 90 days from the date of purchase.

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 (EST)
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
mV DC/AC	250V DC or AC
V DC/AC	1000V DC or 750V AC
Clamp Adapter Input	250V DC or AC
mA DC/AC	400mA DC/AC
20A DC/AC	20A DC/AC (30 seconds max every 15 minutes)
Resistance, Capacitance, Diode test, Continuity, Temperature	250V DC/AC

2. **USE EXTREME CAUTION** when working with high voltages.
3. **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 1000V above earth ground.
4. **NEVER** connect the meter leads across a voltage source while the function switch is in the current, resistance, or diode mode. Doing so can damage the meter.
5. **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
6. **ALWAYS** turn off the power and disconnect the test leads before opening the doors to replace the fuse or battery.
7. **NEVER** operate the meter unless the back cover and the battery and fuse doors are in place and fastened securely.

SAFETY SYMBOLS



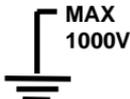
This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

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) 1000 VAC or VDC.



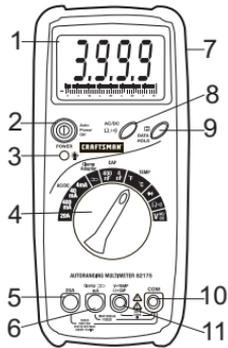
This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.



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

CONTROLS AND JACKS

1. 4000 count Liquid Crystal Display
2. Power switch
3. Display backlight switch
4. Rotary function switch
5. 20A current input jack
6. mA and Clamp Adapter input jack
7. Meter holster
8. AC/DC and Resistance/Continuity push button
9. Data Hold push-button
10. COM negative input jack
11. Positive input jack



SYMBOLS AND ANNUNCIATORS

- | | |
|--|-------------------------------------|
| | Audible Continuity |
| | Low Battery |
| | Diode |
| | Data Hold |
| | Resistance (ohms) |
| | Clamp Adaptor |
| | AC (Alternating voltage or current) |

SPECIFICATIONS

Function	Range	Resolution	Accuracy
DC Voltage (V DC) *Clamp adapter input	400mV*	0.1mV	±(2.0% reading + 3 digits)
	4V	1mV	±(0.7% reading + 3 digits)
	40V	10mV	
	400V	100mV	±(1.0% reading + 3 digits)
	1000V	1V	
AC Voltage (V AC) (40 - 400Hz) *Clamp adapter input	400mV*	0.1mV	±(2.0% reading + 8 digits)
	4V	1mV	±(1.2% reading + 5 digits)
	40V	10mV	
	400V	100mV	±(1.5% reading + 5 digits)
	750V	1V	
DC Current (A DC)	4mA	1μA	±(1.2% reading + 5 digits)
	40mA	10μA	
	400mA	100μA	
	20A	10mA	±(2.0% reading + 8 digits)
	AC Current (A AC) (40 - 400Hz)	4mA	1μA
40mA		10μA	
400mA		100μA	
20A		10mA	±(3.0% reading + 8 digits)
Resistance		400Ω	0.1Ω
	4kΩ	1Ω	
	40kΩ	10Ω	
	400kΩ	100Ω	
	4MΩ	1kΩ	
	40MΩ	10kΩ	±(3.0% reading + 5 digits)
	Capacitance	4nF	1pF
400nF		100pF	
Temperature	0 to 50°F	1°F or C	±(5.0% reading + 4 digits)
	50 to 750°F		±(3.0% reading + 3 digits)
	750 to 1800°F		±(3.0% reading + 5 digits)
	-20 to 0°C		±(5.0% reading + 4 digits)
	0 to 400°C		±(3.0% reading + 3 digits)
	400 to 1000°C		±(3.0% reading + 5 digits)

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 64°F to 82°F (18°C to 28°C) and less than 75% RH ambient MultiMeter conditions.

SPECIFICATIONS

Diode Test	Test current of approximately 1mA, open circuit voltage 2.8V DC typical
Continuity Check	Audible signal will sound if the resistance is less than 40Ω approx; Open circuit: voltage 2.8V DC typical
Temperature sensor	Type K temperature probe (sold separately)
Autorange	For voltage and resistance
Input Impedance	10MΩ (VDC and VAC) 100kΩ for millivolt range
Display	4000 count LCD with bargraph indication
Overrange indication	“O.L.” is displayed
Auto Power Off	Meter automatically shuts down after 15 minutes of inactivity
Polarity	Automatic polarity; No indication for positive polarity; Minus (-) sign for negative polarity.
Measurement Rate	0.4 seconds, nominal
Low Battery Indication	“  ” is displayed if battery voltage drops below operating voltage
Battery	Requires one 9V NEDA 1604 or 6F22 battery (sold separately)
Fuses	mA range, 500mA/250V fast blow ceramic 20A range, 20A/250V fast blow
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	10°F to 122°F (-10°C to 50°C)
Relative Humidity	<70% operating
Operating Altitude	2000 meters (7000ft.) maximum.
Weight	12.34oz. (350g).
Size	7.52” x 3.23” x 1.42” (191mm x 82mm x 36mm)
Safety	For indoor use and in accordance with Overvoltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient overvoltages less than Overvoltage Category III.

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 press the POWER switch to the OFF position when the meter is not in use.
2. If "O.L." 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.

DATA HOLD

The Data Hold function allows the meter to "freeze" measurements.

1. Press the DATA HOLD (H) button to "freeze" the reading on the indicator. The indicator " " will be appear in the display.
2. Press the DATA HOLD button to return to normal operation.

BACKLIGHT

The backlight function illuminates the display to improve readability in dimly lighted areas.

1. Press the " " button (located directly beneath the power button) to turn the backlight on.
2. In order to conserve power, the backlight will automatically turn off after 5 seconds.

BARGRAPH DISPLAY

The LCD display indicates measurement data numerically and in a bargraph. The bargraph is shown on the bottom of the LCD window.

AUTO RANGE

The meter automatically finds the proper range for voltage and resistance measurements. All other functions are manually ranged.

INPUT SHUTTERS

The yellow input shutters either block or open the input jacks to ensure proper test lead connections for the measurement function selected.

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 rotary function switch to **V** position.
2. Press the AC/DC button to select DC.
3. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (V) jack.
4. 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.
5. Read the voltage in the display. The display will indicate the proper decimal point, range, and value. 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 rotary function switch to the **V** position.
2. Press the AC/DC button to select AC.
3. Insert the black test lead banana plug into the negative jack. Insert red test lead banana plug into the positive (V) jack.
4. 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.
5. Read the voltage in the display. The display will indicate the proper decimal point and value.

CLAMP ADAPTOR MEASUREMENTS

The Clamp Adaptor  input on the meter accepts the output from a clamp adaptor such as the Craftsman 82796. The meter displays the current value measured by the adaptor. The clamp adaptor must output 1mV (AC or DC) per amp.

1. Set the rotary function switch to the **Clamp Adaptor**  position.
2. Select AC or DC using the AC/DC button.
3. Insert the black banana plug from the adaptor into the meter's negative (COM) jack. Insert the red banana plug from the clamp adaptor into the meter's clamp input jack .
4. Clamp the adaptor jaw around the conductor under test.
5. Read the current in the display.



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 400mA, set the rotary function switch to the highest mA position and insert the red test lead banana plug into the (mA) jack.
3. For current measurements up to 20A, set the rotary function switch to the 20A range and insert the red test lead banana plug into the (20A) jack.
4. Use the AC/DC pushbutton to select DC.
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. For mA measurements, reset the function switch to successively lower mA positions to obtain a higher resolution reading. The display will indicate the proper decimal point and value.



AC CURRENT MEASUREMENTS

WARNING: To avoid electric shock, do not measure AC current on any circuit whose voltage exceeds 250V AC.

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 400mA set the rotary function switch to the highest mA position and insert the red test lead banana plug into the (mA) jack.
3. For current measurements up to 20A, set the function switch to the 20A range and insert the red test lead banana plug into the (20A) jack.
4. Use the AC/DC pushbutton to select AC.
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 voltage in the display. For mA measurements, reset the function switch to successively lower mA positions to obtain a higher resolution reading. The display will indicate the proper decimal point and value.

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 rotary function switch to the Ω position.
2. Use the Ω pushbutton to select resistance (Ω).
3. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive Ω jack.
4. 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.
5. Read the resistance in the display. The display will indicate the proper decimal point and value.



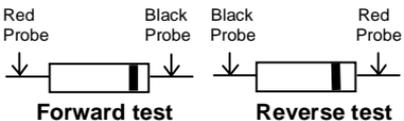
CONTINUITY CHECK

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

1. Set the rotary function switch to the Ω position.
2. Use the Ω pushbutton to select continuity.
3. Insert the black lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (Ω) jack.
4. Touch the test probe tips to the circuit or wire you wish to check.
5. If the resistance is less than approximately 40Ω , the audible signal will sound. If the circuit is open, the display will indicate "1".

DIODE TEST

WARNING: To avoid electric shock, do not test any diode that has voltage on it.

1. Set the rotary function switch to the \rightarrow position.
2. Insert 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 test probe tips to the diode or semiconductor junction you wish to test. Note the meter reading.
4. Swap the probe polarity as shown by switching probe position. Note this reading.

5. The diode or junction can be evaluated as follows:
 - A. If the Forward test displays a value and the Reverse test displays "O.L.", the diode is good.
 - B. If both tests display "O.L.", the device is open.
 - C. If both tests are very small or 0, the device is shorted.

NOTE: The value indicated in the display during the diode check is the forward voltage.

CAPACITANCE MEASUREMENTS

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

1. Set the rotary function switch to the **4nf** or **400nF** position.
2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (CAP) jack.
3. Touch the test leads to the capacitor to be tested.
4. Read the capacitance in the display. The display will indicate the proper decimal point and value.



TEMPERATURE MEASUREMENTS

WARNING: To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to a **TEMP °F** or **TEMP °C** position.
2. Insert the Temperature Probe into the negative (COM) and the positive (TEMP) jacks, making sure to observe the correct polarity.
3. 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 (about 30 seconds).
4. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.



WARNING: To avoid electric shock, be sure the thermocouple has been removed before changing to another measurement function.

AUTO POWER OFF

The meter will automatically beep and shut off after 15 minutes of inactivity. This feature prevents unnecessary battery drain if the meter is accidentally left on. Press the POWER switch to OFF and then press to ON turn power on.

MAINTENANCE

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

WARNING: To avoid electric shock, do not operate your meter until the battery and fuse doors are 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. **ALWAYS USE A FRESH BATTERY OF THE RECOMMENDED SIZE AND TYPE.** Remove 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 meter damage.

REPLACING THE BATTERY

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

1. When the battery drops below the operating voltage, “” will appear in the LCD display. The battery should be replaced.
2. Disconnect the test leads from the meter.
3. Open the battery door by lifting the rear stand and removing the two screws using a Phillips head screwdriver.
4. Insert the battery into battery holder, observing the correct polarity.
5. Put the battery door back in place. Secure with the two screws.
6. Dispose of the old battery properly.

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

WARNING: To avoid electric shock, do not operate the meter until the battery door 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.

REPLACING THE FUSES

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

1. Disconnect the test leads from the meter and any item under test.
2. Remove the protective holster and then remove the three screws and lift off the back cover.
3. Remove the old fuse from its holder by gently pulling it out.
4. Install the new fuse into the holder.
5. Always use a fuse of the proper size and value.
6. Replace the rear cover and secure it with the three screws.

WARNING: To avoid electric shock, do not operate your meter until the fuse door is 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 does not 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 the instructional book *Multitesters and Their Use for Electrical Testing* (Item No. 82303) at your local Sears store.
2. Call our Customer Service Line **1-888-326-1006**.

SERVICE AND PARTS

Item Number	Description
82375	Fuse kit
93894	9V Battery
82398	Set of black and red Test Leads
82175-DB	Replacement battery door
82175-CS	Rear cover screws
TP872	Type k temperature probe

For replacement parts shipped directly to your home
Call Monday through Friday, 9 AM – 5 PM Eastern Time
1-888-326-1006