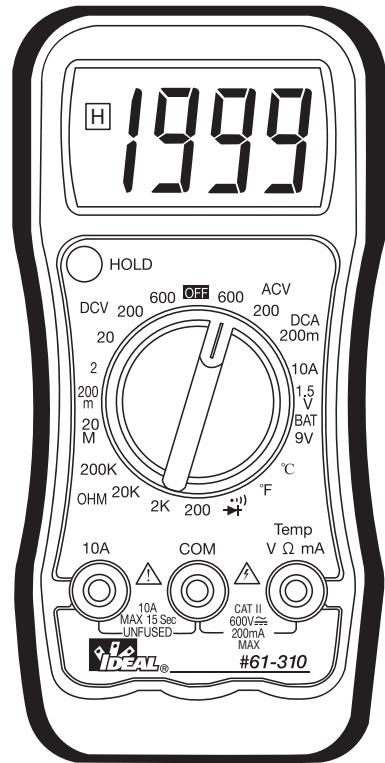




#61-310

Digital Multimeter
Instruction Manual



IMPORTANT SAFETY INFORMATION

Read and understand all of the instructions and safety information in these operating instructions before using this meter. Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

A **⚠ WARNING** statement identifies hazardous conditions and actions that could cause bodily harm or death.

⚠ WARNINGS

To avoid possible electric shock, personal injury or death follow these guidelines:

- Do not use if meter appears damaged. Visually inspect the meter to ensure case is not cracked and back case is securely in place.
- Inspect and replace leads if insulation is damaged, metal is exposed, or probes are cracked.
- Do not use meter if it operates abnormally as protection may be impaired.
- Do not use during electrical storms or in wet weather.
- Do not use around explosive gas, dust, or vapor.
- Do not apply more than the rated voltage to the meter.
- Do not use without the battery and the back case properly installed.
- Remove the test leads from the meter before removing battery cap.
- Do not attempt to repair this unit as it has no user-serviceable parts.
- Disconnect power and discharge capacitors before testing resistance, continuity, diodes, capacitance or temperature.
- Replace battery if erratic operation occurs.
- Use the proper terminals, function and range for your measurements.

To protect yourself, think "Safety First":

- Voltages exceeding 30VAC or 60VDC pose a shock hazard so use caution.
- Use appropriate personal protective equipment such as safety glasses, face shields, insulating gloves, insulating boots, and/or insulating mats.

- Before each use:
 - Perform a continuity test by touching the test leads together to verify the functionality of the battery and test leads.
 - Use the 3 Point Safety Method. (1) Verify meter operation by measuring a known voltage. (2) Apply meter to circuit under test. (3) Return to the known live voltage again to ensure proper operation.
- Never ground yourself when taking electrical measurements.
- Connect the black common lead to ground before applying the red test lead to voltage. Disconnect the red test lead from the voltage first.
- Always work with a partner.
- When using the probes, keep fingers as far behind the probe tips as possible.

Symbols

	Risk of electric shock
	See instruction card
	DC measurement
	Equipment protected by double or reinforced insulation
	Battery
	Earth
	AC measurement
	Conforms to EU directives

Ranges & Accuracies:

AC Converter: This model is averaging sensing, rms calibrated.

Accuracy: Accuracy is specified as +/- (a percentage of the reading + a fixed amount) at 23°C ± 5°C (73.4°F ± 9°F), less than 75% relative humidity.

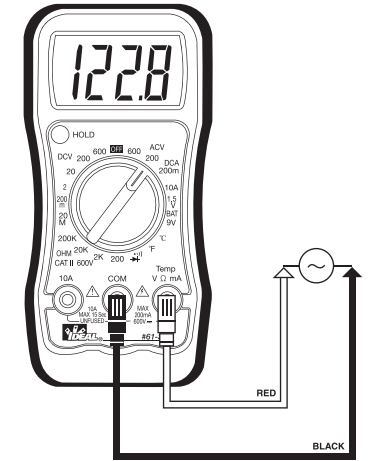
Temperature Coefficient: 0.1 times the applicable accuracy specification from 32°F to 64°F and 82°F to 122°F (0°C to 18°C ; 28°C to 50°C).

Ranges & Accuracies

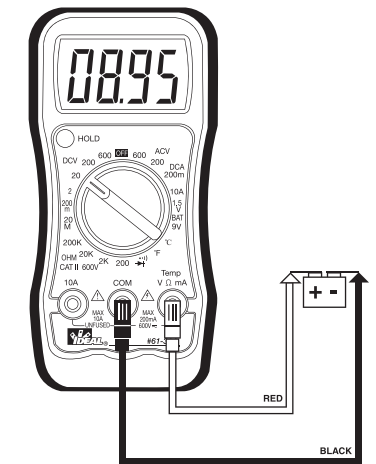
Function	Range & Resolution	Accuracy	Overload Protection
DC Voltage	200.0m/2.000/20.00/200.0 V 600.0V	±(0.5%+2) ±(0.8%+2)	600V DC/AC rms.
AC Voltage (40-400Hz)	200.0/600 V	±(1.2%+10)	250mA/250V Fast Fuse Unfused (15 sec. max.)
DC Current	200.0mA 10.00A	±(1.5%+2) ±(3.0%+5)	250V DC/AC rms.
Resistance	200.0 Ω 2.000/20.00/200.0 kΩ 20.00MΩ	±(0.8%+4) ±(0.8%+2) ±(3.0%+3)	250V DC/AC rms.
Diode Check	Test current : 1mA and then open circuit voltage is 2.8VDC typical.		
Continuity	The buzzer sounds with less than 30Ω.		
Temperature*	-4-1382 °F -20-750 °C	±(2.5%+19) @ -4-59°F ; ±(1.0%+9) @ 60-750°F ±(2.5%+19) @ 751-1382°F	
Battery Test	Test current: 1.5V/120mA ; 9V/9mA approx.	±(2.5%+10) @ -20-16°C ; ±(1.0%+5) @ 17-400°C ±(2.5%+10) @ 401-750°C	

*Accuracy is stated for meter only. Thermocouple accuracy adds another ±2% to reading.
Input Impedance : 4.5MΩ for ACV ; 10MΩ for DCV

AC Voltage (V~)



DC Voltage (V=)



99 Washington Street
Melrose, MA 02176
Phone 781-665-1400
Toll Free 1-800-517-8431

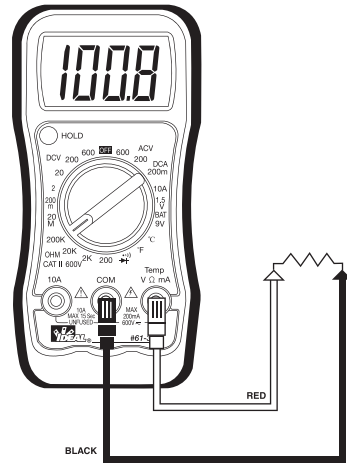
Visit us at www.TestEquipmentDepot.com

Back to the Ideal 61-310 Product Info Page

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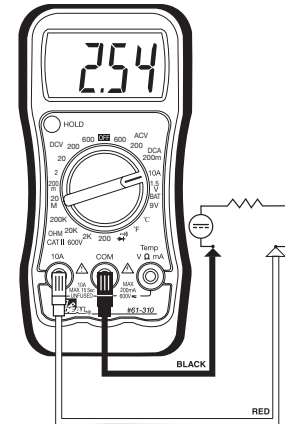
FAX 781.665.0780 - TestEquipmentDepot.com

Resistance (Ω)



WARNING: De-energize circuit before taking resistance measurement.

DC Current (A \rightarrow)

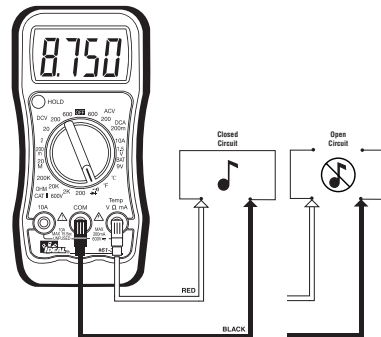


Turn power off, break circuit, insert meter in series, then turn power back on.

WARNINGS:

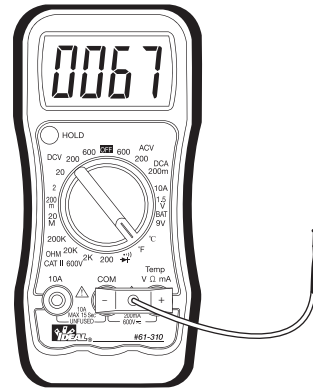
- Check fuse before testing.
- Use the proper switch position and lead inputs.
- Never attempt to measure current on circuits or equipment with more than 250 volts potential.
- Limit high current measurements to 15 seconds maximum followed by a 15 minute cooldown period.

Audible Continuity (\rightarrow)



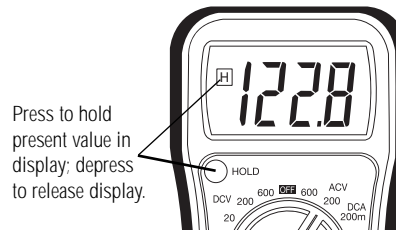
WARNING: De-energize circuit first.

Temperature



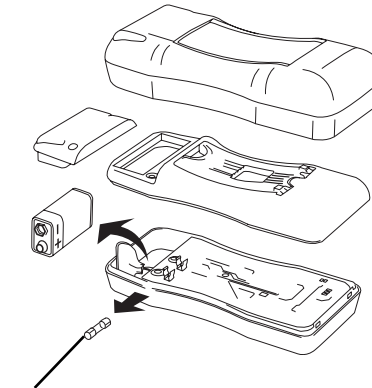
WARNING: To avoid electric shock, do not place test leads or thermocouple on a voltage source.

Data Hold



Press to hold present value in display; depress to release display.

Battery & Fuse Replacement



F-310: 250mA/250V
5mm x 20mm

WARNING: To avoid electric shock, disconnect test leads before removing battery cover.

WARNING: For continued protection against fire, replace only with fuse of the specified voltage, current and rupture speed ratings.

Specifications

General Features

Display: 1999 Count LCD
Over range: "1" or "-1" is displayed
Polarity: Automatic (no indication for positive polarity); Minus(-) sign for negative polarity

Altitude: 6561.7 ft. (2000m)
Accuracy: Stated accuracy at 73° ±41°F (23° ±5°C), < 75% R.H.

Batteries: Requires 9VDC (NEDA 1604)
Fuse: 250mA/250V (#F-310)

Operating environment: 32°F to 104° (0° to 40°C) at < 75% R.H.
Storage environment: -4° to 140°F (-20° to 60°C) at < 80% R.H.

Weight: 7.1 oz (200g)
Size: 5.9"H x3.0"W x1.5"D (150mmHx76mmWx38mmD)

Accessories Included: Test Leads (TL-310), 9V Battery, Operating Instructions
Safety Certification: Complies with UL61010-1, UL61010-031, IEC EN61010-1, EN61010-031, Cat II-600V



Equipment protected by double insulation.

Instrument complies with overvoltage category II. Cat II equipment protected from transients in outlets and long branch equipment. Pollution degree 2 in accordance with IEC-664. Indoor use.

Maintenance

Clean the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

Service and Replacement Parts

No user-serviceable parts.

For replacement parts or to inquire about service information contact IDEAL INDUSTRIES, INC. at 1-877-201-9005 or visit our website @ www.testersandmeters.com.

Warranty Statement

This meter is warranted to the original purchaser against defects in material or workmanship for a two-year period after purchase. During this warranty period, IDEAL INDUSTRIES, INC. will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the instrument.

Any implied warranties arising out of the sale of an IDEAL product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. The manufacturer shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses, or economic loss.

State laws vary, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty does not cover batteries.

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