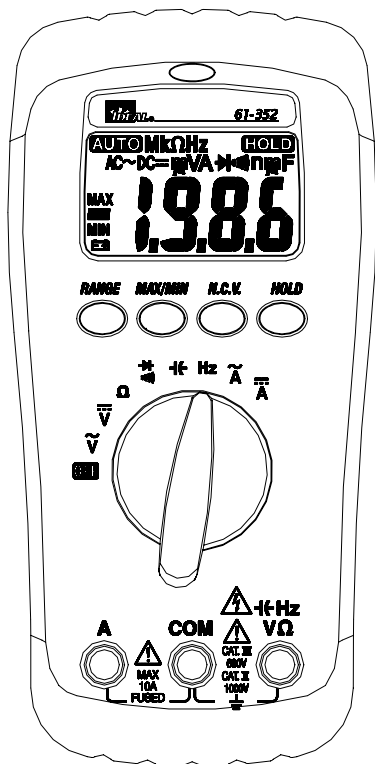




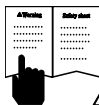
#61-350
#61-352
#61-354(TRMS)

350 Series Digital Multimeter



Features

Auto / Manual Ranging
Non-Contact Voltage (NCV) 80-600V AC
Measures AC/DC Current (352 and 354 only)
Measures AC/DC Voltage and Resistance
Measures Frequency and Capacitance (352 and 354 only)
Audible Continuity
Data Hold
Low Battery Indication
Auto Power Off
Large Numbers and Symbols
Electronic overload protection on all ranges



△ Read First

△ Safety Information

Understand and follow operating instructions carefully. Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

△ WARNING

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

- 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. Pay particular attention to the insulation surrounding the connectors.
- Do not use Meter if it operates abnormally as protection maybe 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 circuit prior to removing battery cap.
- Do not attempt to repair this unit as it has no userserviceable parts.
- Voltages exceeding 30VAC or 60VDC pose a shock hazard so use caution.

CAUTION

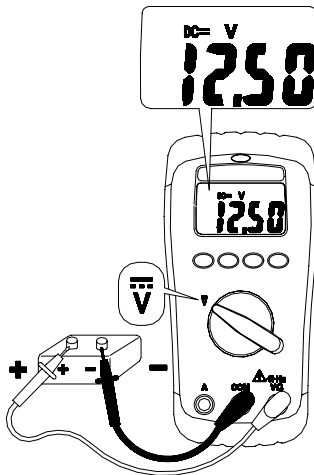
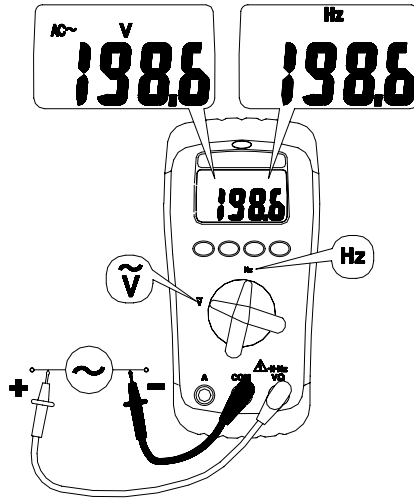
To protect yourself, think "Safety First":

- 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 or neutral before applying the red test lead to potential 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.
- Never connect a source of voltage with the function rotary switch in Ω / ∇ / $\Rightarrow$ / $\equiv$ $\sim$ A / Hz / Hz position. Never set the meter in $\equiv$ $\sim$ A function to measure the voltage of a power supply circuit in equipment that could result in damage to the meter and the equipment under test.

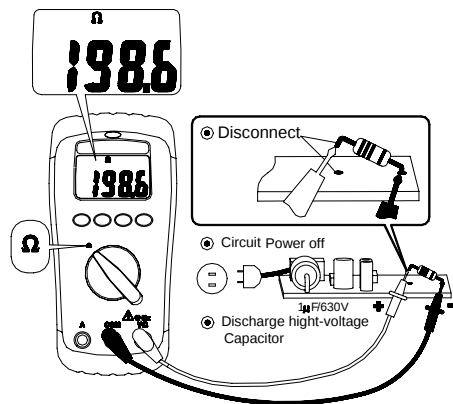
**Symbols as marked on the meter and
Instruction card**

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

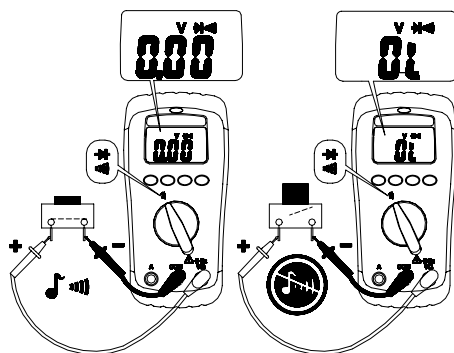
Measuring AC/DC Voltage And Frequency



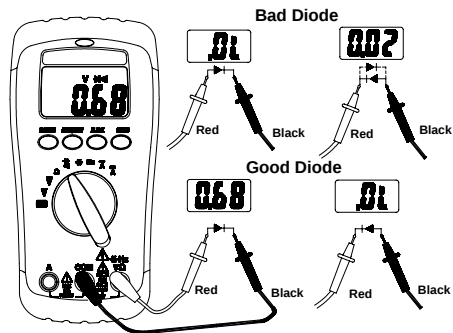
Resistance



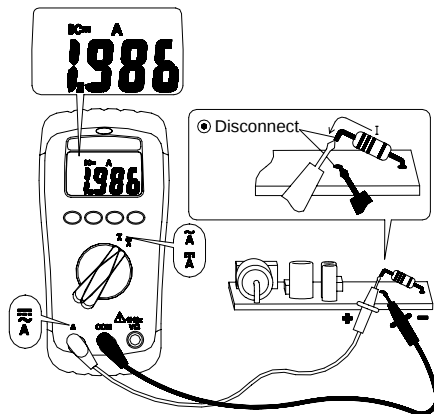
Testing for Continuity



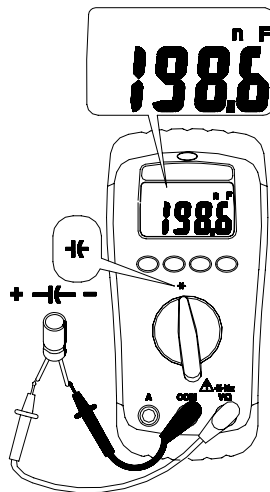
Testing for Diode



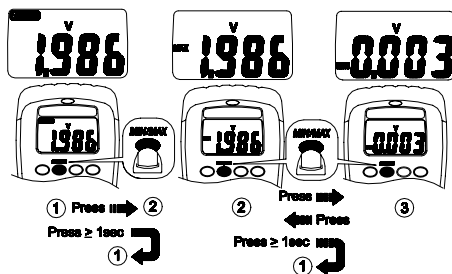
Measuring DC / AC Current (For 352,354 only)



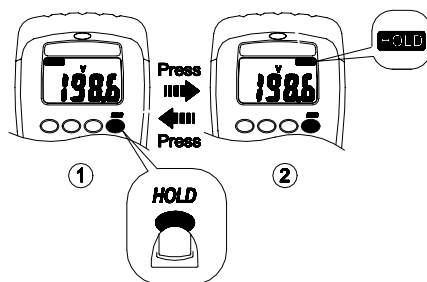
Measuring Capacitance (For 352,354 only)



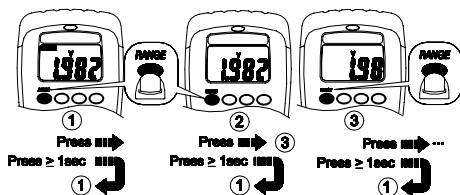
MIN MAX Record



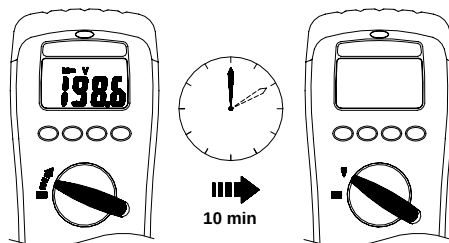
Display Hold



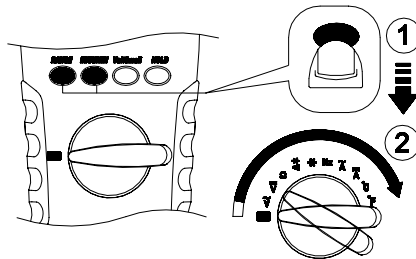
Manual Ranging and Auto Ranging



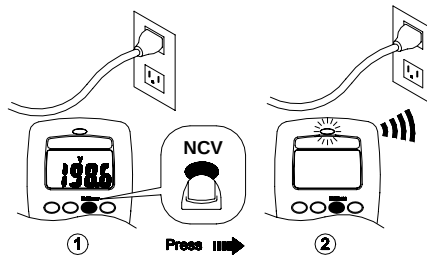
Auto Power Off (Battery Saver)



Disable Auto Power Off



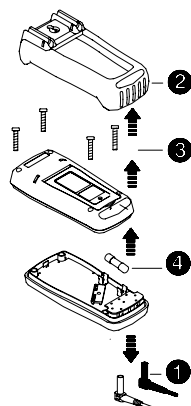
Non-Contact Voltage (NCV)



1. NCV switch will be activated on any function or at OFF status.
2. Test leads are not used for the NCV test.
3. Press the NCV button. The display goes black, a tone sounds and the red LED lights up to verify the instrument is operational. The NCV button must be held down to detect the presence of voltage without use of the leads.

Fuse Replacement (For 352 & 354 only)

Refer to the following figure to replace fuse :

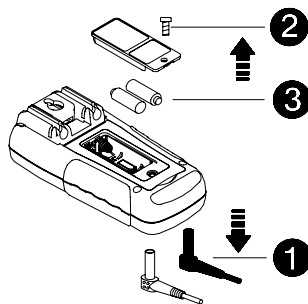


⚠ Caution

- Use only a fuse with the amperage, interrupt, voltage, and speed rating specified.
- Fuse rating : 10A, 500V

Battery Replacement

Refer to the following figure to replace the batteries :



⚠ Caution

- Replace the batteries as soon as the low batteries indicator "⚡" appears, to avoid false reading.
- Batteries 1.5V x 2

Maintenance

Do not attempt to repair this Meter. It contains no user-serviceable parts. Repair or servicing should only be performed by qualified personnel.

Cleaning

Periodically wipe the case with a dry cloth and detergent. Do not use abrasives or solvents.

Specifications

General Specifications

Display : 2000 counts updates 1.5/sec.

Polarity Indication : Automatic, positive implied, negative indicated.

Overrange Indication : "OL" or "-OL".

Batteries Life : Alkaline 250 hours

Low Batteries Indication : "⎓" is displayed when the batteries voltage drops below operating voltage.

Auto Power Off : Approx 10 minutes.

Operating Ambient : Non-condensing $\leq 50^{\circ}\text{F}$, $51.8^{\circ}\text{F} \sim 86^{\circ}\text{F}$ ($\leq 80\%$ R.H) $87.8^{\circ}\text{F} \sim 104^{\circ}\text{F}$ ($\leq 75\%$ R.H), $105.8^{\circ}\text{F} \sim 122^{\circ}\text{F}$ ($\leq 45\%$ R.H),

Storage Temperature : -4°F to 140°F , 0 to 80% R.H. when battery removed from Meter.

Temperature Coefficient :

$0.15 \times (\text{Spec.Accy}) / ^{\circ}\text{F}$, $< 64.4^{\circ}\text{F}$ or $> 82.4^{\circ}\text{F}$.

Power Requirements :

1.5V x 2 IEC LR03, AM4 or AAA size

Dimensions (W x H x D) :

2.91 in. x 6.14 in. x 1.34 in. without holster.

3.15 in. x 6.45 in. x 1.73 in. with holster.

Accessories : Battery (installed), Test leads and user manual.

Measure : Samples 2 times per second nominal.

Altitude : 6561.7 ft (2000m)

Safety : Complies with EN61010-1, UL61010-1, IEC 61010-1, CAT.III. 600V, CAT.II. 1000V.

Weight : 11.3 oz (320g) including battery.

Electrical Specifications

Accuracy is $\pm$ (% reading + number of digits) at
23°C $\pm$ 5°C < 80%RH.

DC / AC Volts

Range	AC Accuracy
200.0mV *	Unspecified
2.000V *	$\pm$ (1.5%+5dgt) 50Hz~300Hz
20.00V ~ 200.0V *	$\pm$ (1.5%+5dgt) 50Hz~500Hz *
750V AC / 1000V DC	

DC Accuracy : $\pm$ (0.5% + 2dgt)

Over voltage protection :
1000V DC or 750 V AC rms.

Input Impedance : 10M Ω // less than 100pF.

*** CMRR / NMRR :**

(Common Mode Rejection Ratio)

(Normal Mode Rejection Ratio)

V_{AC} : CMRR > 60dB at DC, 50Hz / 60Hz

V_{DC} : CMRR > 100dB at DC, 50Hz / 60Hz

NMRR > 50dB at DC, 50Hz / 60Hz

AC Conversion Type :

Average sensing rms indication.

AC conversions are ac-coupled, true rms
responding, calibrated to the sine wave input.

* The minimum LCD reading is 1400 count in Auto
Ranging Mode.

Crest Factor : C.F. = Peak / Rms

+ 1.5% addition error for C.F. from 1.4 to 3

+ 3% addition error for C.F. from 3 to 4

DC / AC Current (For 352 & 354 only)

Range	DC Accuracy	AC Accuracy	Voltage Burden
2.000A	$\pm$ (1.0% + 3 dgt)	$\pm$ (1.5% + 5 dgt)	2V max
10.00A **		50Hz ~ 500Hz *	

Overload Protection :

A input : 10A (500V) fast blow fuse

* **AC Conversion Type** : Conversion type and
additional specification are same as DC/AC Voltage.

** **Maximum input current restriction time :**

10 minutes.

Resistance

Range	Accuracy	Voltage Burden
200.0 ~ 200.0K Ω **	$\pm(0.7\% + 3 \text{ dgt})$	2V max
2.000M Ω **	$\pm(1.0\% + 3 \text{ dgt})$	
20.00M Ω *	$\pm(1.5\% + 3 \text{ dgt})$	

Open circuit Voltage : -1.3V approx.

* <100 dgt rolling.

** The minimum LCD reading is 1400 count in Auto Ranging Mode.

Diode Check and Continuity

Range	Resolution	Accuracy
	10 mV	$\pm(1.5\% + 5 \text{ dgt})^*$

* For 0.4V ~ 0.8V

Max. Test Current : 1.5mA

Max. Open Circuit Voltage : 2V

Overload Protection : 600V rms.

Frequency (For 352 & 354 only)

Range	Sensitivity	Accuracy
2000Hz ~ 200.0KHz	>1.5 Vac rms, <5 Vac rms	Frequency : 0.01% $\pm$ 1digit
2.000MHz ~ 20.00MHz	>2 Vac rms, <5 Vac rms	

Overload Protection : 600V rms.

Minimum pulse width : >25 ns

Duty cycle limits : >30% and <70%

Capacitance (For 352 & 354 only)

Range	Accuracy	Overload Protection
2.000nF ~ 200.0 μ F	$\pm(1.9\% + 8 \text{ dgt})$	600V rms
2.000mF *		

* < 100 dgt of reading rolling.

Lifetime Limited Warranty

This meter is warranted to the original purchaser against defects in material or workmanship for the lifetime of the meter. 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.