

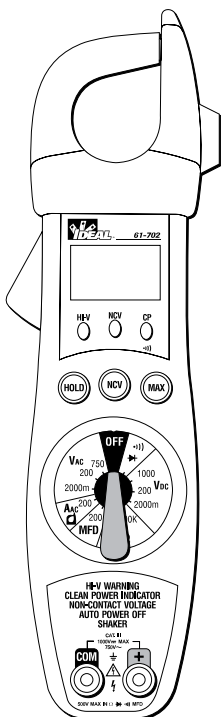


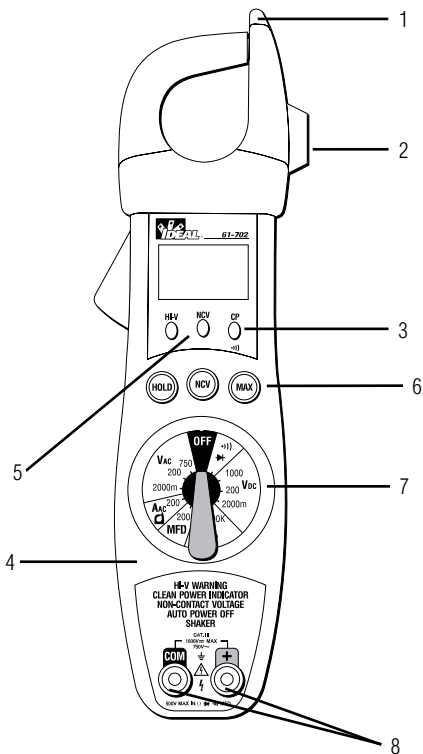
#61-702

#61-704

## **700 Series**

### **200 Amp Clamp Meters**





## 1. Non-contact voltage (NCV) (#61-702)

With the NCV tab on the tip of the clamp close to an AC voltage, press the NCV button. The NCV LED will light and the beeper will beep. The closer the NCV tab is to AC voltage, the louder the beep.

To differentiate between hot and neutral in an outlet, insert the NCV tab into each slot in the outlet. The beeper will be much louder on the hot side of the outlet than the neutral.

The test lead can also be used to differentiate between the hot and neutral. Insert the rod test lead into the + port and snap it into the test probe holder. Press the NCV button and insert the probe into each slot of the outlet. The beeper will only beep on the hot side of the outlet.

## **2. Test probe holder**

Use the single test probe holder to make voltage testing easy.

## **3. Indicator lights**

HI-V      High voltage indicator

In any VAC/VDC range when a voltage greater than 30V is touched, the beeper will beep, and the red Hi-V LED will blink.

In addition to the LED and beeper, the meter will shake when connected to high voltage. Even if the LED can't be seen, or the beeper can't be heard the shake can be felt.

NCV      Non-contact voltage indicator

• )))      Continuity indicator

CP      Clean power indicator

When the 60Hz AC power is clean, the green LED will be on. If the meter is connected to AC power, and the green LED is not on, the circuit has more than 5% ( $\pm 2\%$ ) total harmonic distortion (nominal). Investigation with specialized equipment may be necessary. Sensitivity: 20VAC on 200VAC range; 90V on 750VAC range.

## **4. Hold button (#61-702)**

Press hold button during measurement to capture the value. To clear the held value, press the hold button again, or press the reset button.

## **5. NCV button**

Press the NCV button to test for non-contact voltage.

## **6. Backlight (#61-704)**

Backlight auto-off approximately 60 sec.

## 7. Max button

Press Max prior to a measurement to capture the maximum reading displayed during the measurement. To clear the max value, press the max button again, or press the reset button.

## 8. Rotary switch

Turn the rotary switch to the appropriate function and range for the measurement.

## 9. COM port and + port

Plug the black lead into the com port and the red lead into the + port for VAC, VDC, Frequency, Resistance, and Capacitance measurements and Diode and Continuity checks.

## WARNING!

1. DO NOT UNDER ANY CIRCUMSTANCES EXCEED THESE RATINGS:
  - Voltage is not to exceed 750VAC or 1000VDC
  - Resistance, function is not to be performed on circuits capable of delivering greater than 600 Volts.
  - Frequency, Capacitance and Continuity functions are not to be performed on circuits capable of delivering greater than 500 Volts.
2. To avoid electrical shock hazards and/or damage to the meter:
  - Test NCV function on known live wire before using.
  - Do not exceed the voltage ratings for the meter. Use caution when measuring voltage.
  - Do not use during electrical storms. AC power sources with inductive loads or electrical storms may result in high voltage. High energy transients can damage meter and present a dangerous shock hazard.
  - Turn off power to the circuit or device being measured before taking resistance and capacitance measurements. Fully discharge all capacitors before measuring.
3. Ensure meter is in proper working order before using. Visually inspect meter for damage. Performing a continuity check can verify proper operation. If the meter reading goes from overload to zero, this typically means the meter is in proper working order.

4. Visually inspect leads for damage before using. Replace if insulation is damaged or leads appear suspect.
5. Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures etc. Keep your body isolated from ground by using dry clothing, rubber shoes, mats, or any other approved insulating material. Keep your fingers behind the finger guards on the probes. Work with others.
6. Before beginning all unknown measurements, set meter to highest possible range.
7. Disconnect the meter from the circuit before turning off any inductor, including motors, transformers, and solenoids.
8. Clean the exterior with clean dry cloth. Do not use liquid.

## **General Operation**

### **Auto power off**

To extend the life of your battery, the meter automatically turns off after approximately 60 minutes.

### **Selecting Ranges**

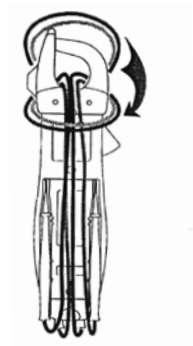
For all ranges and functions choose a range just above the expected value. If display reads "OL" (overrange), select a higher range. If display shows less than three numbers, select a lower range for better resolution.

### **Accuracy Specifications**

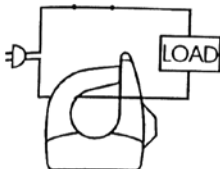
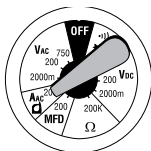
Accuracy specifications are based on nominal operating temperature of  $74^{\circ}\text{F} \pm 8^{\circ}$ , and a relative humidity less than 75%. Accuracy is specified as  $\pm$  (% of reading + number of least significant digits).

## Lead Storage

Silicone test leads are provided with the meter. These test leads stay flexible in very cold weather and can withstand high temperatures without melting. For convenient lead storage, wrap the leads as shown.



## AC Current



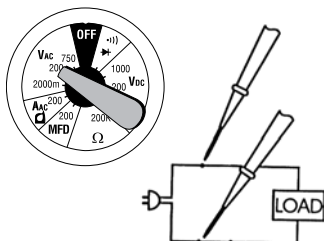
Range	Resolution	Max Display	Accuracy
200A	0.1A	199.9	$\pm(3\%+5)$

Frequency response: 50Hz - 60Hz;  $\pm(5\%+5)$  60Hz - 400Hz.  
True RMS Sensing: (61-704 only)

## To Measure AC Current:

1. Set the rotary switch to the appropriate AAC range.
2. With the jaws closed, separate one wire from a bundle using the long fixed jaw.
3. Slide the wire to the corner where the two jaws meet, then open the jaws to let it in.
4. Measure the current in only one wire at a time.

## AC & DC Volts



## AC Voltage

Range	Resolution	Max Display	Accuracy
2000mV	1mV	1999	$\pm(1.2\%+3)$
200V	0.1V	199.9	$\pm(1.2\%+3)$
750V	1V	750	$\pm(2\%+5)$

Frequency response: 50Hz - 500Hz;  $\pm(2\%+5)$  500Hz - 1KHz;

50Hz - 500Hz on 600V and 750V ranges.

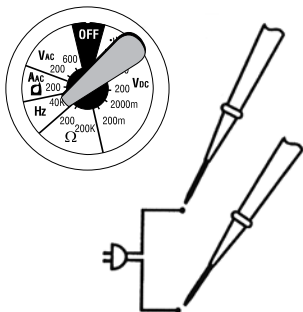
True RMS Sensing: (61-704 only)

## DC Voltage

Range	Resolution	Max Display	Accuracy	
2000mV	1mV	1999	$\pm(0.5\%+1)$	
200V	0.1V	199.9	$\pm(0.5\%+1)$	
1000V	1V	1000	$\pm(0.5\%+1)$	

### To Measure Voltage:

5. Plug the black test lead into the COM port and the red test lead into the + port.
6. Set the rotary switch to appropriate VAC or VDC range.
7. Connect the meter in parallel with the load or circuit.
8. Measure the voltage



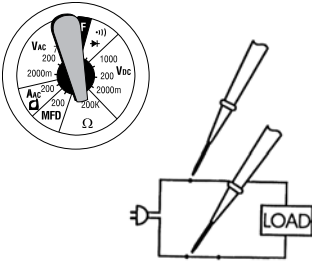
## Frequency

### To Measure Frequency:

1. Plug the black test lead into the COM port and the red test lead into the + port.
2. Set the rotary switch to the HZ position.
3. Connect the meter in parallel with the load or circuit.
4. Meter is auto-ranging, and will select 2k 20k or 40k range.
5. Measure the frequency.



# Resistance (Ohms)

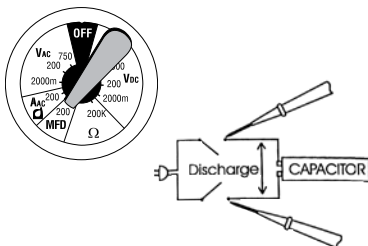


Range	Resolution	Max Display	Accuracy
200Ω	0.1Ω	200.0	±(1% +3)
200kΩ	0.1kΩ	200.0	±(1% +3)

## To Measure Resistance:

1. Turn the power off to the circuit or device that is to be measured and discharge all capacitors before attempting a measurement.
2. Plug the black test lead into the COM port and the red test lead into the + port.
3. Set the rotary switch to the appropriate Ohms range.
4. For correct reading, ensure that the device being tested contains no voltage.
5. Measure the resistance.

## Capacitance Testing




Range	Resolution	Max Display	Accuracy
200MFD	0.1MFD	199.9	±(3% +5)

### To Measure Capacitance:

1. Disconnect the capacitor from power.
2. Short the terminals to discharge the capacitor.
3. Disconnect any resistors that might be between the terminals of the capacitor.
4. Plug the black test lead into the COM port and the red test lead into the + port.
5. Set the rotary switch to the MFD position.
6. Connect the test leads to the capacitor and measure the capacitance.

### Diode Check:


To ensure a proper functioning diode, the meter will develop a voltage across the component from a test current. The diode test function allows measurements of forward voltage drops across diode and transistor junctions.

1. Turn off power to the device or circuit that is being tested and discharge all capacitors.
2. Plug the Black test lead into the port and the Red test lead into the + port.
3. Set the rotary switch to the  position.
4. Connect the test leads to the diode. Normally the forward voltage drop of a good silicone diode is shown between 0.4V and 0.8V. If the diode under test is defective, "000" (short circuit) or "OL" (non-conductive) is displayed.

## Continuity Check

### To Verify Continuity:

A continuity test ensures that all circuit connections are intact.

1. Plug the Black test lead into the COM port and the Red test lead into the + port.
2. Set the rotary switch to the  position.
3. Connect the test leads to the circuit to be measured. The beeper will sound within 100mS if the resistance of the circuit measured is lower than 300 Ohms.
4. In addition to the beeper, both 61-702 and 61-704 have an LED to verify continuity.

### General Specifications

**Display:**

3-1/2 digit LDC display


**Polarity Indication:**

Automatic, negative indicated, positive implied

**Overrange Indication:**

"OL"

**Low Battery Indication:**

 when the battery voltage drops below operating voltage

**Auto Power Off:**

Approx. 60 min.

**Temperature Coefficient:**

0.1 x (specified accuracy) / °F, <64°F or >82°F

**Power Requirements:**

9V NEDA 1604

**Battery Life:**

150 hours typical with alkaline  
75 hours typical with carbon zinc

**Installation Category:**

IEC 1010-1, IEC1010-2-032,  
Cat III 1000V




## Maintenance

### Warning

To avoid electrical shock, remove test lead before opening the cover. Repairs or servicing not covered in this manual should only be performed by qualified personnel.

## **Battery Replacement:**

When the multimeter displays  the battery must be replaced. Disconnect and unplug leads, turn meter off, and remove the battery cover. Replace the battery with a NEDA type 1064 9V battery.

## **Warranty Statement**

This tester is warranted to the original purchaser against defects in material and workmanship for two years from the date of 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.

### **IDEAL INDUSTRIES, INC.**

Sycamore, IL 60178, U.S.A.

800-304-3578 Customer Assistance

[www.testersandmeters.com](http://www.testersandmeters.com)

**ND 2356-3**

Made in Taiwan