

## AC 600A TRMS HVAC/R Clamp Meter

INSTRUCTION MANUAL

ENGLISH

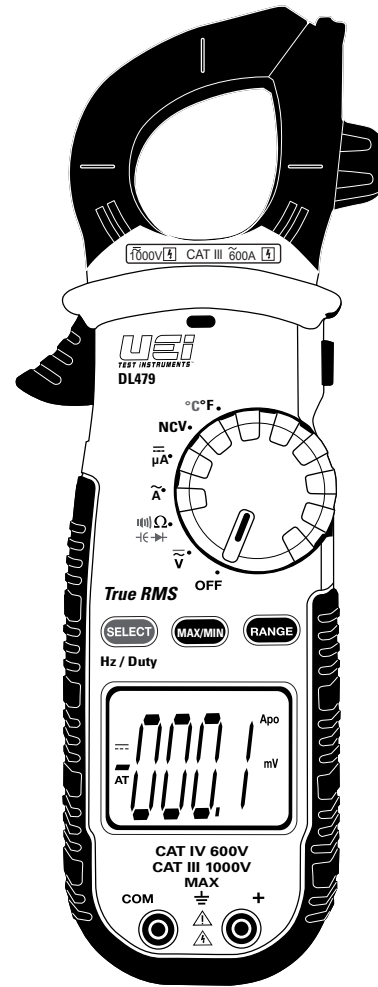


Intertek

600V  
CAT IV

1000V  
CAT III

RoHS  
Compliant



### CATEGORY DEFINITIONS

Measurement Category	Short-Circuit (typical) kA <sup>a</sup>	Location in the building installation
II	< 10	Circuits connected to mains socket outlets and similar points in the MAINS installation
III	< 50	Mains distributions parts of the building
IV	> 50	Source of the mains installation in the building

### WARRANTY

The DL479 is warranted to be free from defects in materials and workmanship for a period of two years from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEI's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEI 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.

A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge.

### DISPOSAL



**CAUTION:** This symbol indicates that equipment and its accessories shall be subject to separate collection and correct disposal.

### CLEANING

Periodically clean your meter's case using a damp cloth. DO NOT use abrasive, flammable liquids, cleaning solvents, or strong detergents as they may damage the finish, impair safety, or affect the reliability of the structural components.

### STORAGE

Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the General Specifications section, allow the instrument to return to normal operating conditions before using it.

## FEATURES

- True RMS
- 600A AC
- 750V AC/600V DC
- Resistance 60M $\Omega$
- Capacitance 2000 $\mu$ F
- Temperature -31° to 752°F (-35° to 400°C)
- DC Microamps 2000 $\mu$ A
- Frequency/Duty Cycle
- Data hold
- Min/Max (25 ms fast capture)
- Manual ranging option
- Backlight
- Worklight
- Audible voltage indicator
- Low battery indicator
- Auto power off
- Test lead storage
- Overmolded grip
- Magnetic mount
- Battery compartment latches

## GENERAL SPECIFICATIONS

- Operating Temperature: 32° to 104°F (0° to 40°C)
- Storage Temperature 14° to 122°F (-10° to 50°C)
- Operating Humidity: <75%
- Operating Altitude: 6,562 ft. (2000m)
- Pollution Degree: 2
- Display: 3 5/6" Digits 6,000 Count
- Backlight: Yes
- Refresh Rate: 3/sec
- Over-range: "OL" is displayed
- Dimensions: 8.75" X 3.5" X 1.75"
- Item Weight: 0.65 lb
- Calibration: Recommended Annually
- CAT Rating: CAT IV 600V / CAT III 1000V
- Certifications: cETLus 3rd Edition, CATIII 1000V, IEC 61010-1, 61010-2-032, 61010-2-033, CSA C22.2, NO. 61010-1, 61010-2-032, 61010-2-033, 6' Drop Protection, RoHS Compliant, CE Conformity
- Battery Type: (AAA) X 2
- Test Leads: Test lead w/Alligator Clips
- Accuracy:  $\pm$  (% of reading + # of least significant digits)

## IMPORTANT SAFETY WARNINGS

### WARNING

Read entire Safety Notes section regarding potential hazards and proper instructions before using this meter. In this manual the word "**WARNING**" is used to indicate conditions or actions that may pose physical hazards to the user. The word "**CAUTION**" is used to indicate conditions or actions that may damage this instrument.

### WARNING

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

### WARNING

- Before each use, verify meter operation by measuring a known voltage or current.
- Never use the meter on a circuit with voltages that exceed the category based rating of this meter.
- Do not use this meter during electrical storms or in wet weather.
- Do not use the meter or test leads if they appear damaged.
- Ensure meter leads are fully seated and keep fingers away from the metal probe contact when making measurements. Always grip the leads behind the finger guards molded into the probe.
- Do not open the meter to replace batteries while the probes are connected.
- Use caution when working with voltages above 60V DC or 25V AC RMS. Such voltages pose shock hazards.
- To avoid false readings that can lead to electrical shock, replace batteries if a low battery indicator appears.
- Unless measuring voltage or current, shut off and lockout power before measuring resistance or capacitance.
- Always adhere to national and local safety codes. Use proper personal protective equipment (PPE) to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Always turn off power to a circuit or assembly under test before cutting, unsoldering or breaking the current path. Even small amounts of current can be dangerous.
- Always disconnect the live test lead before disconnecting the common test lead from the circuit.
- In the event of electrical shock, ALWAYS bring the victim to the emergency room for evaluation, regardless of victim's apparent recovery. Electrical shock can cause unstable heart rhythms that may need medical attention.
- If any of the following occur during testing, turn off the power source to the circuit being tested: arching, flame, smoke, extreme heat, smell of burning materials or discoloration or melting of components.













### WARNING

Higher voltages and currents require greater awareness of physical safety hazards. Before connecting the test leads, turn off power to the circuit under test, set meter to the desired function and range, connect the test leads to the meter first, then connect to the circuit under test. Reapply power. If an erroneous reading is observed, disconnect power immediately and recheck all settings and connections.

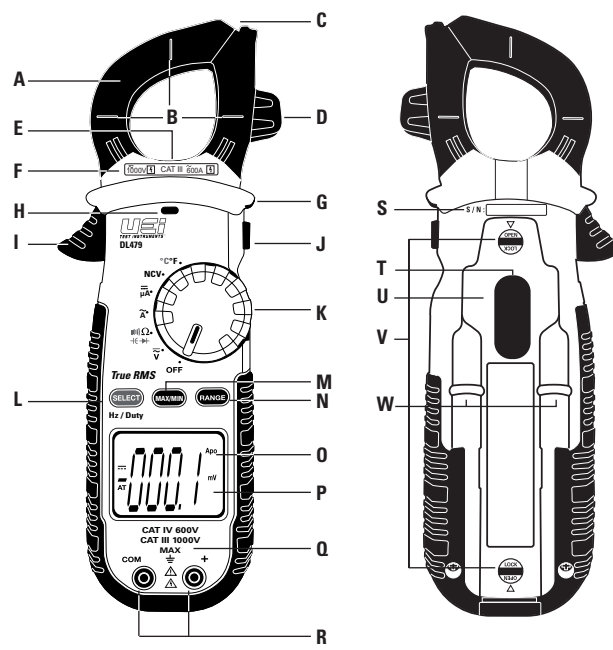
### WARNING

This meter is designed for trade professionals who are familiar with the hazards of their trade. Observe all recommended safety procedures that include proper lock-out utilization and use of personal protective equipment that includes safety glasses, gloves and flame resistant clothing.

## SYMBOLS

	AC (Alternating current)		DC (Direct current)
	Negative DC		AC/DC Voltage
<b>AT</b>	Auto-ranging	<b>OL</b>	Overload: Range Exceeded
<b>Apo</b>	Auto power off Active		Low Battery
<b>NCV</b>	Non-Contact Voltage	<b>MIN</b>	Minimum measured value displayed
<b>HOLD</b>	Hold/Capture Value	<b>%</b>	Duty Cycle
<b>MAX</b>	Maximum measured value displayed	<b>V</b>	Voltage
<b>Hz</b>	Hertz/Frequency	<b><math>\Omega</math></b>	Ohms/Resistance
<b>A</b>	Amperage	<b>MFD</b>	Capacitance made in nanofarads or microfarads
	Diode	<b>°C</b>	Degrees Celsius
<b>°F</b>	Degrees Fahrenheit		Continuity
	High Voltage Indication	<b>m</b>	Milli (x10 <sup>-3</sup> or 0.001)
<b>M</b>	Mega (x10 <sup>6</sup> or 1,000,000)	<b>n</b>	Nano (x10 <sup>-9</sup> or 0.00000001)
<b>k</b>	Kilo (x10 <sup>3</sup> or 1,000)		Warning or Caution
<b><math>\mu</math></b>	Micro (x10 <sup>-6</sup> or 0.000001)		Dangerous Levels
	Ground		Safe for disconnect from live conductors

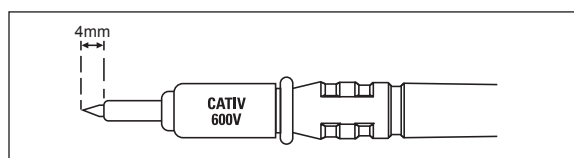
## OVERVIEW



- A. Clamp:** Measure inductive AC current. Opens to 1.25" (31.7mm).
- B. Conductor Alignment Marks:** Used to aid the visual alignment of a conductor when measuring inductive amperage. Greatest accuracy is achieved when the conductor inside the clamp is centered at the intersection of these marks.
- C. Wire Separation Tab/NCV sensor:** Used to isolate an individual wire from a bundle for testing. NCV sensor detects live voltage.
- D. Test Lead Holder:** Used for hand-free use of the test probes.
- E. Worklight:** Lights clamp area in dark work environments.
- F. Category Max Indicator:** Maximum CAT Rating for Clamp/jaw.
- G. Hand Guide:** Used as a point of reference for the operator's safety.
- H. NCV Alert Light:** Indicates voltage when in NCV mode.
- I. Clamp Lever:** Opens and closes current clamp jaw. The clamp uses a high-tension spring to close the jaw. Do not allow fingers or objects to become pinched in the base as the jaws close.
- J. Hold Button**
- Press to hold the reading on the display. Press again to return to live reading.
  - Press and hold to turn on Worklight and Backlight. Press and hold again to turn off.
- K. Function Dial:** Turns on meter and is used to select the function.
- L. Select Button**
- Used to choose measurement mode from a single dial selection; AC or DC volts, Resistance, Continuity, Diode or Capacitance, °F or °C in temperature mode.
  - Press and hold the button while turning the meter on to disable Apo (auto power off).
- M. Max/Min Button**
- Press to enter MAX/MIN mode.
  - Press repeatedly to alternate between Maximum and Minimum readings.
  - Press and hold to return to live readings.
- N. Range Button:**
- Press repeatedly to cycle through manual ranges.
  - Press and hold to return to auto ranging mode.
  - AT is displayed on LCD only during auto ranging mode.
- O. Apo:** Auto power off after 30 minutes of use. Press and hold the SELECT button while turning the meter on to disable Apo (auto power off).
- P. Display:**
- High contrast display.
- Q. Category Max Indicator:** Maximum CAT Rating for input jacks.
- R. Input Jacks:** Multifunction and Common jacks.
- Multifunction input port used for measuring: AC or DC volts, Resistance, Continuity, Diode, Capacitance, DC  $\mu$ A and temperature.
  - Use CAT III test leads or higher.
- S. Serial Number**
- T. Magnetic Mount:** For hands-free work.
- U. Battery Cover:** Easy access for replacing batteries.
- V. Battery Cover Latches:** Convenient, quick opening.
- W. Test lead holders:** For storing test leads when not in use.

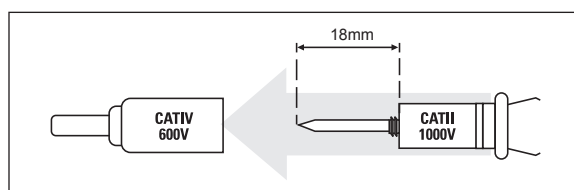
## Test Lead Notes

### Cat IV and CAT III Measurement Locations



- Ensure the test lead shield is pressed firmly in place. Failure to use the CAT IV shield increases arc-flash risk.

### CAT II Measurement Locations

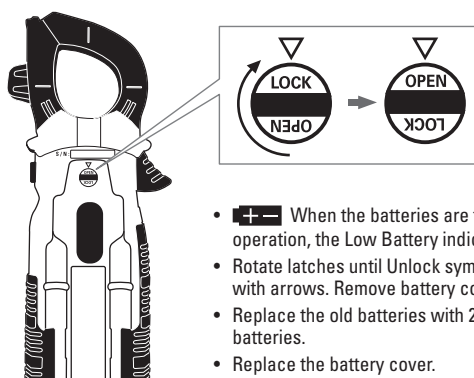


- CAT IV shields may be removed for CAT II locations. This will allow testing on recessed conductors such as standard wall outlets. Take care not to lose the shields.

**⚠ WARNING:** Test Lead category protections apply only to test leads and should not be confused with the meter's specific CAT rating. Observe the maximum category protection indicated on the meter the test leads are plugged into.

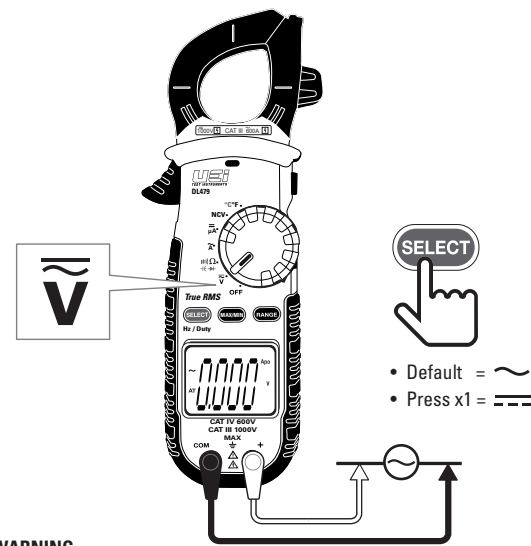
**⚠ CAUTION:** If the test leads need to be replaced, you must use a new one which should meet EN 61010-031 standard, rated CAT III 1000V or better.

## Battery Replacement



- **+** When the batteries are too low for safe operation, the Low Battery indicator will display.
- Rotate latches until Unlock symbols are aligned with arrows. Remove battery cover.
- Replace the old batteries with 2 new (AAA) batteries.
- Replace the battery cover.

AC/DC Voltage: <750V AC/600V DC



- Default =  $\sim$
- Press x1 =  $\sim$

**WARNING**

- Use CAT III rated Test leads or higher.
- Do not attempt to measure more than 750V AC/600V DC.
- Keep hands below line when measuring high current levels.
- Do not exceed 600 volts AC or DC – RMS at either the common or multifunction input ports as measured from earth ground.

Select AC or DC Voltage.

**WARNING**

- High Voltage indicator will display and audible alert will sound over 600V AC/DC and High Voltage indicator will display (without audible alert) over 30V AC/DC.

Features:



DC Volts

Range	Resolution	Accuracy	Overload Protection
600mV	0.1mV	±(0.5% +4 dgts)	1000V RMS
6V	1mV		
60V	10mV		
600V	100mV		

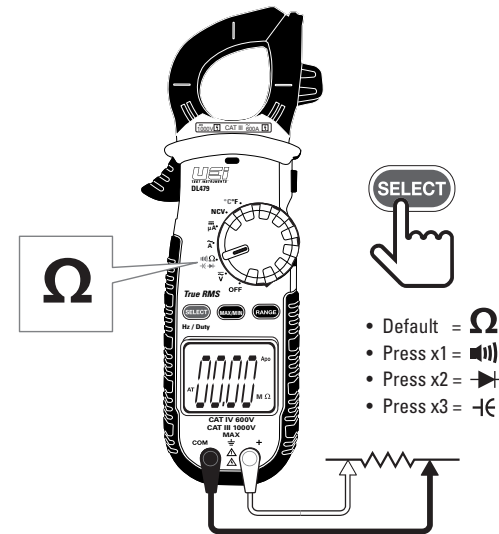
AC Volts (45Hz to 400Hz)

Range	Resolution	Accuracy	Overload Protection
600mV	0.1mV	±(1.0% + 3 dgts)	1000V RMS
6V	1mV		
60V	10mV		
600V	100mV		
750V	1.0V		

True RMS Frequency Range: Square 50Hz to 100Hz  
Sine 50Hz to 400Hz

Bandwidth: Sine = 0.5% error at 1.5kHz (max)  
Square = 0.5% error at 0.1kHz (max)  
Triangle = 0.5% error at 1.2kHz (max)

Resistance: <60MΩ



- Default =  $\Omega$
- Press x1 =  $\Omega$
- Press x2 =  $\rightarrow$
- Press x3 =  $\leftarrow$

Features:

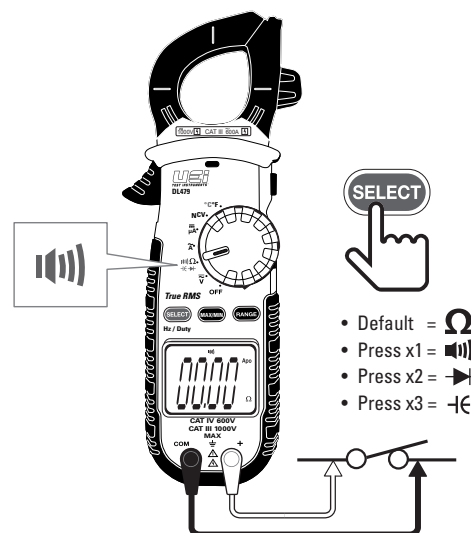


**WARNING**

- Do not measure resistance on a live circuit.

Range	Resolution	Accuracy	Overload Protection
600Ω	0.1Ω	±(0.8% +3 dgts)	600V RMS
6kΩ	1Ω		
60kΩ	10Ω		
600kΩ	100Ω		
6MΩ	0.001MΩ		
60MΩ	0.01MΩ	±(1.2% +3 dgts)	

Continuity



- Default =  $\Omega$
- Press x1 =  $\Omega$
- Press x2 =  $\rightarrow$
- Press x3 =  $\leftarrow$

- Buzzer sounds at less than 40Ω.

**WARNING**

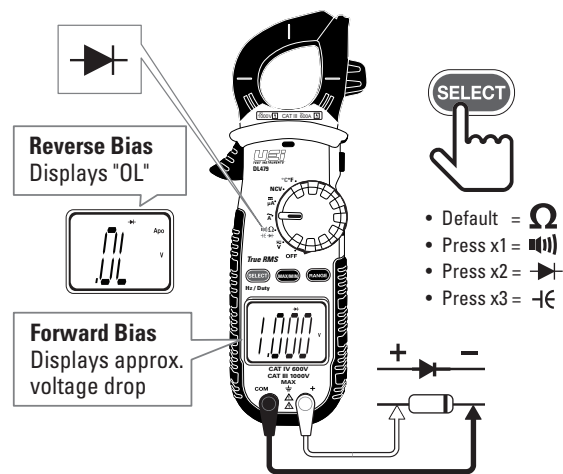
- Do not measure resistance on a live circuit.

Features:

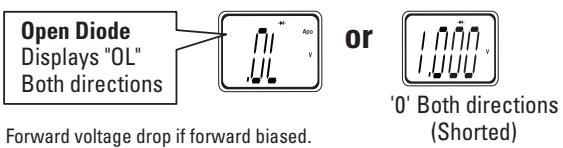


## Diode

### GOOD DIODE



### BAD DIODE

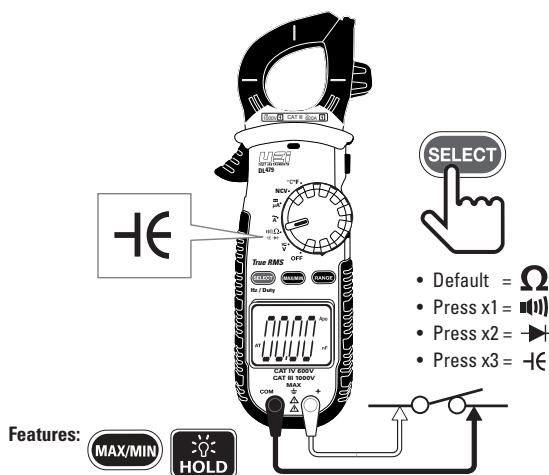


- Forward voltage drop if forward biased.
- "O.L." if reverse biased.

Features: HOLD

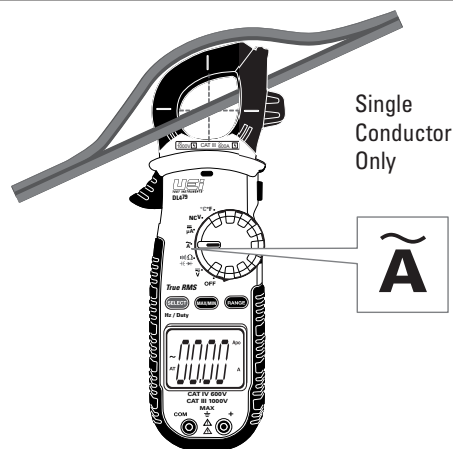
Range	Open Circuit V	Test Current	Overload Protection
4.0V	<3.0V DC	1.30mA	600V RMS

## Capacitance (MFD)



Range	Resolution	Accuracy	Overload Protection
60nF	0.01nF	±(3.0% +5 dgts)	600V RMS
600nF	0.1nF		
6.000μF	0.001μF		
60.00μF	0.01μF		
600.0μF	0.1μF		
2000μF	1μF		

## AC Amps: < 600A



- Center wire in conductor alignment marks for best accuracy.
- Opposing currents cancel (*use line-splitter when necessary*).

### WARNING

- Keep hands below guard when measuring high current levels.
- Do not attempt to measure more than 600A AC.

Features: MAX/MIN RANGE HOLD

AC Amps Measurement – Jaw input

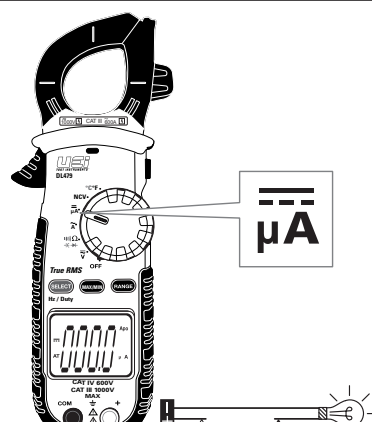
Range	Resolution	Accuracy	Overload Protection
60A	0.01A	±(2.0% +8 dgts)	600V RMS
600A	0.1A		

True RMS Frequency Range: Sine 50Hz to 400Hz

Frequency width: 60Hz to 400Hz: 5% to 95%

Frequency width: 400Hz to 4kHz: 15% to 85%

## DC Low Amps: < 2000μA



**⚠ WARNING**

- Do not attempt to measure more than 2000µA DC

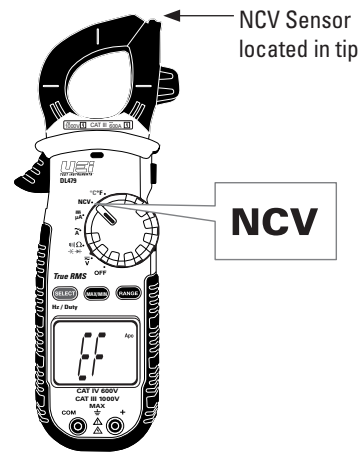
Features:



DC Low Amps – Test Lead input

Range	Resolution	Accuracy	Overload Protection
600µA	0.1µA	±(1.2% +3 dgts)	2000µA/600V RMS
2000µA	1µA		

**Non-Contact Voltage**

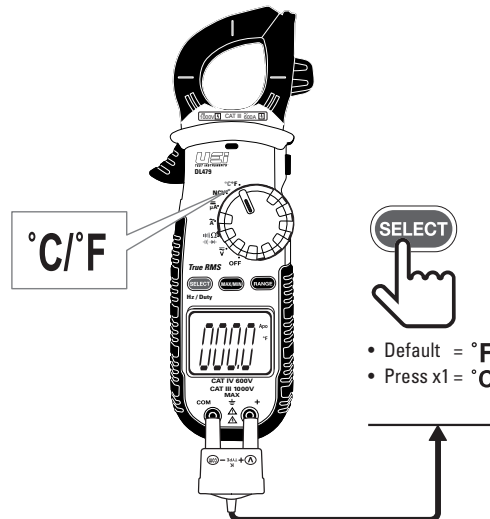


- Select NCV mode and move the tip of the clamp meter near voltage source. Both an Audible and Visual alert will indicate voltage.
- Non-Contact Voltage Detection is used to detect power with sensor located in the tip of the clamp head indicates positive response with both an Audible and Visual alert.
- Do not use non-contact voltage detector to determine if there is current on the wire. Detection operation could be affected by socket design, insulation thickness, type or other factors.
- Voltage indicator light may also light when voltage is present on the meter's input jack or from an external interference such as motors, flashlights, etc.

**On Voltage**

Approx. 25V AC

**Temperature C°/F°**



- Disconnect test lead probes from voltage source and meter.

- Press Select button to change between Fahrenheit and Celsius

Features:

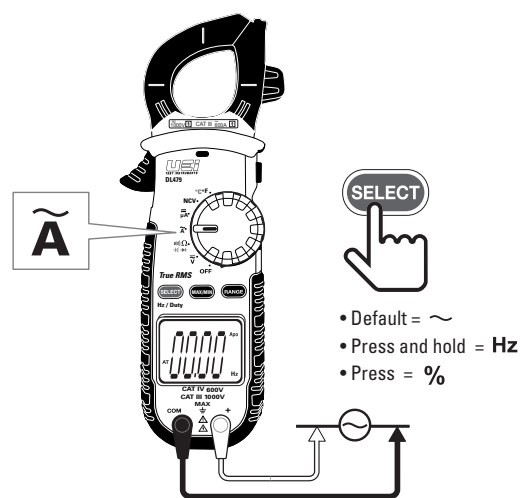


Range	Resolution	Accuracy	Overload Protection
-31° to 752°F	0.1°F	±(1.5% +3.6°F)	600V RMS
-35° to 400°C	0.1°C	±(1.5% +2 °C)	

Sensor must be thermocouple type.

Stated accuracy does not account for thermocouple accuracy.

**Frequency (Hz) / Duty Cycle**



- Use CAT III test leads or higher.

- Set Function dial to AC/DC Amps, select AC Amps, press and hold the Select button for Frequency and Duty Cycle modes.

**⚠ WARNING**

- Do not attempt to measure more than 750V AC/600V DC.

Features:



Frequency

Range	Resolution	Accuracy	Overload Protection
99.99Hz	0.01Hz	±(0.1% +3 dgts)	600V RMS
999.9Hz	0.1Hz		
9.999kHz	0.001kHz		

Duty Cycle

Range	Resolution	Accuracy	Overload Protection
0.5% to 95%	0.1%	± (0.2% per kHz +2.0% +2 dgts)	600V RMS
60Hz to 400Hz			
15% to 85%			
400Hz to 2kHz			