



TRMS Dual Display Clamp Meter

INSTRUCTION MANUAL

ENGLISH



600V
CAT III

1000V
CAT II

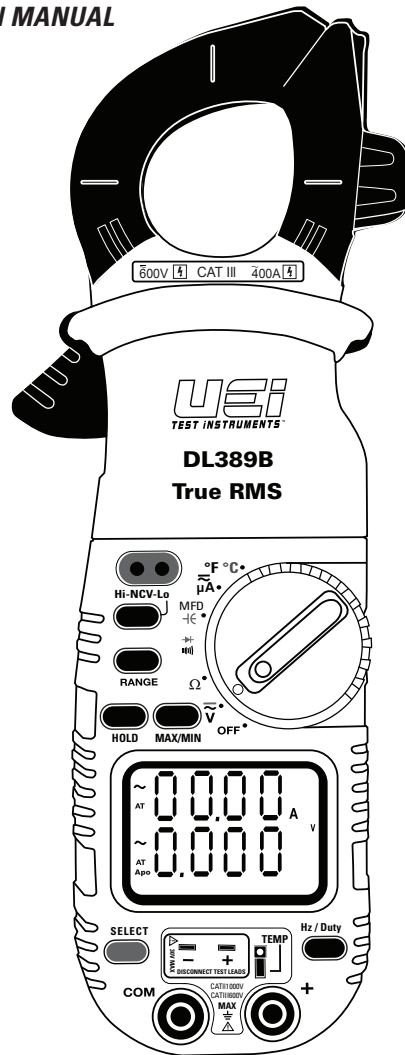


TABLE OF CONTENTS

FUNCTION	3
FEATURES	3
GENERAL SPECIFICATIONS	3
IMPORTANT SAFETY WARNINGS	4
SYMBOLS	5
CATEGORY DEFINITIONS	5
OVERVIEW	6 - 7
FCC IC INFORMATION	7
OPERATING INSTRUCTIONS	
AC/DC Voltage 750Vac/1000Vdc	8
Resistance	9
Continuity	9
Diode	10
AC Amp <400A	11
Capacitance (MFD)	11
AC/DC Low Amps	12
Non-Contact Voltage Hi-Lo	13
Temperature C°/F°	13
Frequency (Hz) / Duty Cycle Measurements	14
Test Lead Notes	15
Battery Replacement	15
WARRANTY	16
DISPOSAL	16
CLEANING	16
STORAGE	16

FUNCTION

- True RMS
- 750V AC
- 1000V DC
- 400A AC
- Temperature: -22°F to 752°F (-30°C to 400°C)
- Capacitance: 4000μF
- AC/DC low amps: 2000μA
- Frequency 199.9kHz
- Duty cycle: 99%
- Resistance: 40MΩ
- Hi-NCV-Lo
- Diode Test
- Continuity

FEATURES

- Dual Display
- Input Jack Locks
- Worklight
- Back Light
- Auto/Manual Ranging
- Min/Max
- Test Lead Storage
- Magnetic Mount
- User Temperature Calibration
- Auto Power Off
- Degree °F or °C
- Low Battery Indicator
- Test Lead Holder on Clamp

GENERAL SPECIFICATIONS

- **Operating Temperature:** 32° to 104°F
- **Storage Temperature:** -4° to 140°F
- **Operating Humidity:** <80% Max
- **Operating Altitude:** 6,562 ft (2000m)
- **Pollution Degree:** 2
- **Display:** 4,000 Count
- **Back Light:** YES
- **Refresh Rate:** 3 per Sec.
- **Over-range:** "OL" is displayed
- **Dimensions:** 8.70 in x 3.23 in x 1.50 in
- **Item Weight:** 11.1 oz
- **Calibration:** Recommended Annually
- **CAT Rating:** CATIII 600V/CATII 1000V
- **Certifications:** CATIII 600V/CATII 1000V, cETLus UL61010-1:2012
- **Battery Type:** (AAA) 2
- **Includes:** Test leads (ATL55), K-Type temperature probe, 2 (AAA) batteries, Manual, Pouch
- **Accuracy:** ± (% of reading + # of least significant digits)

IMPORTANT SAFETY WARNINGS

WARNING

Read entire safety notes section regarding potential hazard 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 injuries 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 occurs during testing, turn off the power source to the circuit being tested: arcing, flame, smoke, extreme heat, smell of burning materials or discoloration 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.

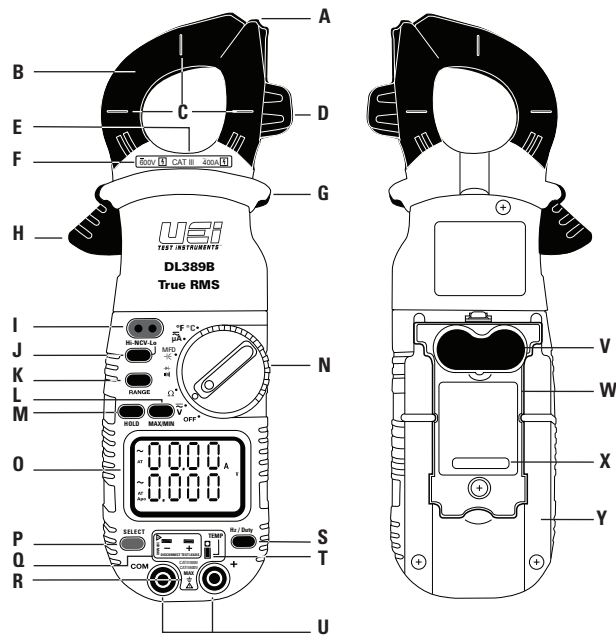
SYMBOLS

	AC (Alternating Current)		DC (Direct Current)
	Negative DC		AC/DC Voltage or Current
AT	Auto-Ranging	OL	Overload: Range Exceeded
Apo	Auto Power Off Active	NCV	Non-Contact Voltage
	Low Battery	HOLD	Hold/Capture Value
MIN	Minimum Measured Value Displayed	MAX	Maximum Measured Value Displayed
%	Duty Cycle	Hz	Hertz/Frequency
V	Voltage	A	Amperage
Ω	Ohms/Resistance		Diode
MFD	Capacitance Mode In Nanofarads or Microfarads	nF	Nanofarad
μF	Microfarad	μA	Microamps
°F	Degrees Fahrenheit	°C	Degrees Celsius
	Continuity	M	Mega (X10 ⁶ or 1,000,000)
m	Milli (X10 ⁻³ or 0.001)	k	Kilo (X10 ³ or 1,000)
n	Nano (X10 ⁻⁹ or 0.000000001)	μ	Micro (X10 ⁻⁶ or 0.000001)
	Warning or Caution		Ground
	Dangerous Levels		Double Insulation (Protection To Class II)
	Safe for Disconnect from Live Conductors		

CATEGORY RATING DEFINITIONS

Measurement Category	Short-Circuit (typical) kA*	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

OVERVIEW



A. Wire Separation Tab/NCV Sensor: Use to isolate an individual wire from a bundle for testing. NCV sensor detects live voltage.

B. Clamp: Measure inductive AC current. Opens to 1.25" (32mm)

C. Conductor Alignment Marks: Use 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.

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. Clamp Lever: Opens and closes current clamp jaw.

NOTE: 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.

I. Hi-NCV-Lo Alert Light: Indicates voltage when in NCV mode.

J. Hi-NCV-Lo Button: 24V to 600V range

- Press and hold for NCV detection

K. 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.
- **Note:** Select range prior to MAX/MIN for best results.

L. 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.

M. 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 Back Light. Press and hold again to turn off.

OVERVIEW (CONT.)

N. Function Dial: Turns on meter and is used to select the function.

O. Display:

- High contrast backlit dual display.
- AC Amps Upper display
- All other readings in Lower Display

P. Select Button:

- Used to choose measurement mode from a single dial selection; AC or DC volts, continuity, diode, AC or DC low amps, °F or °C in temperature mode.

Q. Thermocouple Temperature Input

R. Category Max Indicator: Maximum CAT Rating for input jacks.

- Multifunction input port used for measuring: AC or DC volts, resistance, continuity, diode, capacitance, AC or DC μ A and temperature.
- Use CATIII test leads or higher

S. Hertz/Duty Cycle Button (Hz/Duty):

- Press once in voltage mode to enter Hz mode
- Press again to enter duty cycle mode
- Press again to return to voltage mode

T. Input Jack Lock: Switch to use Temperature or Test lead inputs

U. Test Lead Inputs

V. Magnetic Mount: For hands-free work.

W. Battery Cover: Easy access for replacing batteries.

X. Serial Number

Y. Test Lead Holders: For storing test leads when not in use.

Apo: Auto power off after 30 minutes of use.

FCC/IC INFORMATION

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in any particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try and correct the interference by one or more of the following measures:

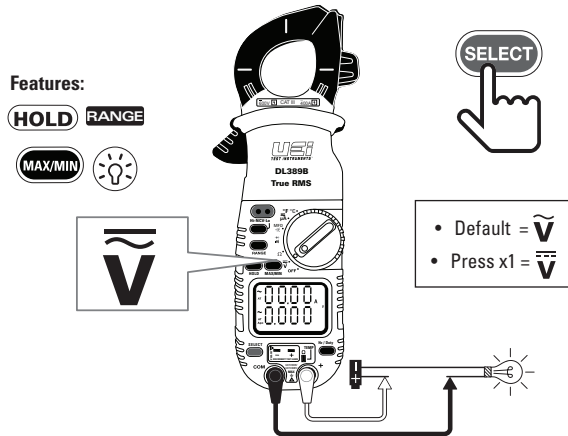
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION ⚠ Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

This device complies with Industry Canada license - exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

AC/DC Voltage 750VAC/1000VDC



⚠ WARNING

- Use CATIII rated Test leads or higher.
- Do not attempt to measure more than 750V AC/1000V DC.
- Do not exceed 25 volts AC or DC – RMS at either the common or Multifunction input ports as measured from earth ground.

AC Volts

Range	Resolution	Accuracy	Overload Protection
400mV	0.1mV	$\pm (2.0\% + 5 \text{ dgts})$	750V RMS
4V	1mV		
40V	10mV		
400V	100mV		
750V	1.0V		

45Hz to 1kHz True RMS (crest factor <3:1)

DC Volts

Range	Resolution	Accuracy	Overload Protection
400mV	0.1mV	$\pm (0.5\% + 4 \text{ dgts})$	1000V RMS
4V	1mV		
40V	10mV		
400V	0.1V		
1000V	1V	$\pm (0.8\% + 10 \text{ dgts})$	

Resistance: < 40MΩ

Features:

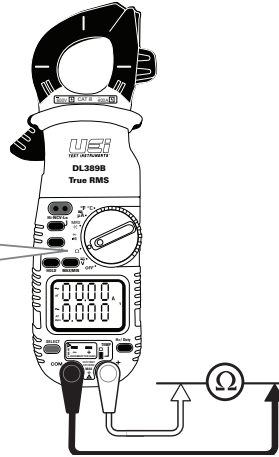
HOLD **RANGE**

MAX/MIN

Ω

⚠ WARNING

- Do not measure resistance on a live circuit.



Range	Resolution	Accuracy	Overload Protection
400Ω	100mΩ	± (1.0% +4 dgts)	600V RMS
4kΩ	1Ω		
40kΩ	10Ω		
400kΩ	100Ω		
4MΩ	1kΩ		
40MΩ	10kΩ	± (2.0% +4 dgts)	

Continuity

Features:

HOLD

MAX/MIN

SELECT

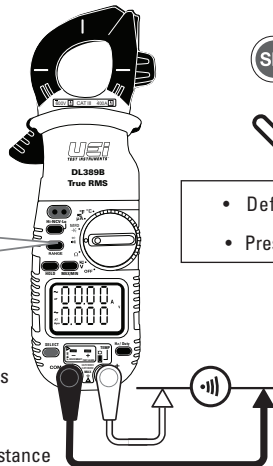


- Default =
- Press x1 =

- Buzzer sounds at less than 50Ω.

⚠ WARNING

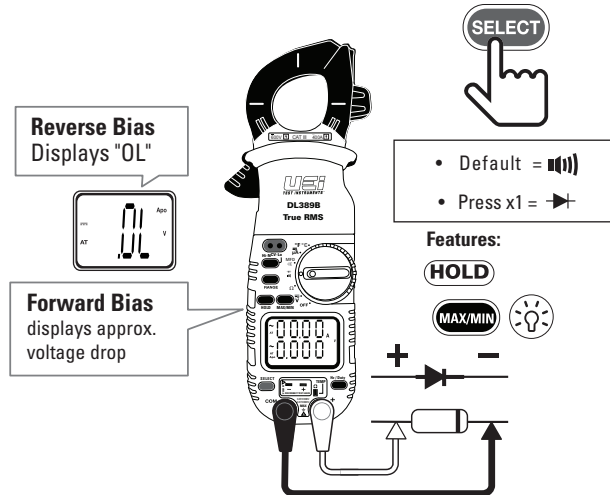
- Do not measure resistance on a live circuit.



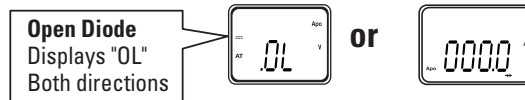
Open Circuit Voltage	Overload Protection
<0.44V	600V RMS
Threshold approx. <50Ω	

Diode

GOOD DIODE



BAD DIODE



- '0' Both directions (shorted)
- Forward voltage drop if forward biased.
- "O.L." if reverse biased.

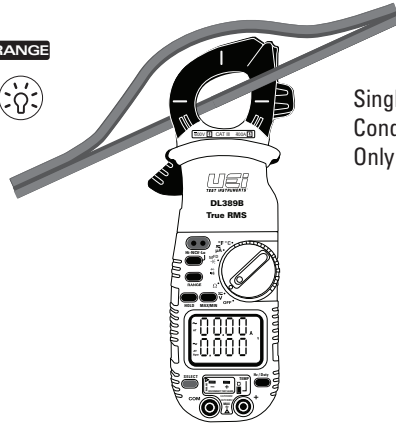
Range	Open Circuit V	Test Current	Overload Protection
2.0V	<1.6V DC	0.25mA	600V RMS

AC Amps: <400A

Features:

HOLD **RANGE**

MAX/MIN 



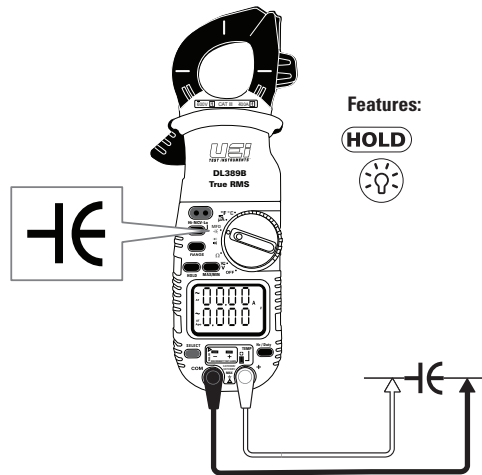
Single
Conductor
Only

- Center wire in guides for best accuracy.
- Opposing currents cancel (use line-splitter when necessary).
Keep hands below guard when measuring high current levels.
- Do not attempt to measure more than 400A AC.

Range	Resolution	Accuracy	Overload Protection
40A	0.01A	± (2.9% +15 dgts)	600V RMS
400A	0.1A	± (1.9% + 8 dgts)	

45Hz to 400Hz True RMS (crest factor <3:1)

Capacitance (MFD)



Features:

HOLD



Range	Resolution	Accuracy	Overload Protection
40nF	0.01nF	± (3.5% +6 dgts)	600V RMS
400nF	0.1nF		
4µF	0.001µF		
40µF	0.01µF		
400µF	0.1µF		
4000µF	1µF		

AC/DC Low Amps: <2000μA

Features:

HOLD **RANGE**

MAX/MIN

SELECT

- Default = $\overline{\mu A}$
- Press x1 = $\tilde{\mu A}$

DL389B
True RMS

⚠ WARNING

- Do not attempt to measure more than 2000μA.

DC Low Amps (Test Lead Input)

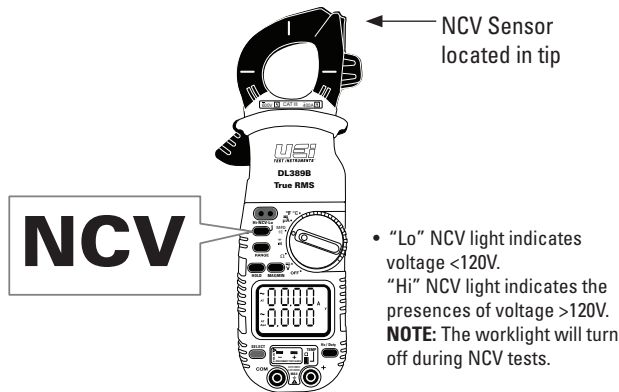
Range	Resolution	Accuracy	Overload Protection
400μA	0.01μA	± (1.2% +3 dgts)	2000μA/600V RMS
2000μA	0.1μA		

AC Low Amps (Test Lead Input)

Range	Resolution	Accuracy	Overload Protection
400μA	0.01μA	± (2.0% +5 dgts)	2000μA/600V RMS
2000μA	0.1μA	±(1.5% +5 dgts)	

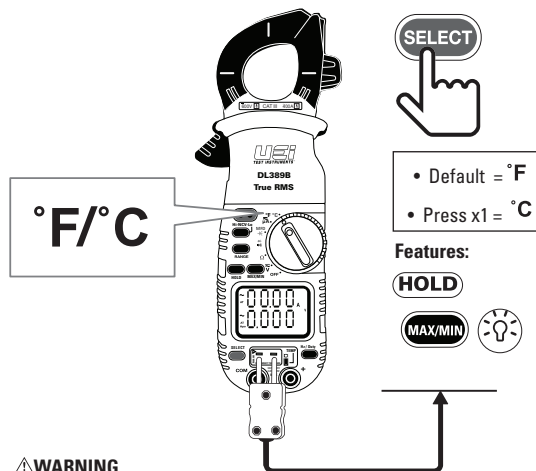
45Hz to 400Hz True RMS (crest factor <3:1)

Non-Contact Voltage Hi - Lo



- Press and hold NCV button, move clamp meter tip near voltage source.
- 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.

Temperature °F/°C



⚠ WARNING

Disconnect test lead probes from voltage source and meter.

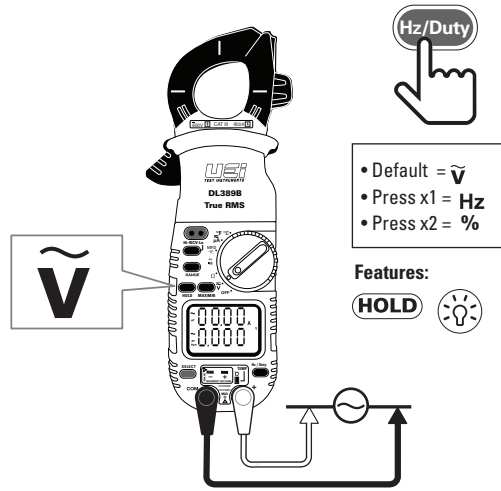
- Press **Select** button to change between Fahrenheit and Celsius.

Range	Resolution	Accuracy	Overload Protection
-22° to 14°F (-30° to -10°C)	0.1°F (0.1°C)	± (1.0% + 5.4°F) ± (1.0% + 3.0°C)	30V RMS
15° to 752°F (-9° to 400°C)		± (1.0% + 3.6°F) ± (1.0% + 2.0°C)	

Sensor must be thermocouple type.

Stated accuracy does not account for thermocouple accuracy

Frequency (Hz) / Duty Cycle Measurements



⚠ Use CAT III test leads or higher.

Select **AC Voltage** mode, press the button for Frequency and Duty Cycle modes.

Frequency

Range	Resolution	Accuracy	Overload Protection
99.99Hz	0.01Hz	$\pm (0.1\% + 4 \text{ dgts})$	600V RMS
999.9Hz	0.1Hz		
9.999kHz	1Hz		
99.99kHz	10Hz		
199.9kHz	100Hz		

Minimum Frequency: 0.5Hz, DC V offset should be zero

Sensitivity: > 10% of each AC volt range except 4V (>20%) range only

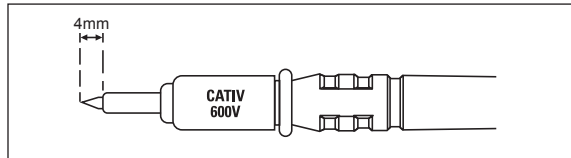
Duty Cycle

Range	Accuracy	Overload Protection
1.0 to 99.0%	$\pm (0.2\% \text{ per kHz} + 0.1\%)$ +5 dgts	600V RMS

0.5Hz to 100KHz (pulswidth > 2 μ sec)

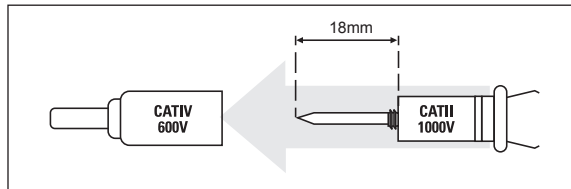
Test Lead Notes

CATIV 600V Measurement Locations



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

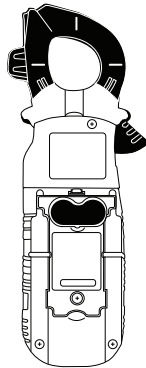
CATII 1000V Measurement Locations



- 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.

Battery Replacement



- **+** **-** When the batteries are too low for safe operation, the Low Battery indicator will display.
- Loosen screw. Remove battery cover.
- Replace the old batteries with 2 new (AAA) batteries.
- Replace the battery cover. Tighten the screw.

WARRANTY

The DL389B is warranted to be free from defects in materials and workmanship for a period of 2 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

For more information on warranty and service, contact:

This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.

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.