



KLEIN TOOLS CL1100 AC Clamp with Temperature Voltage Tester Instruction Manual

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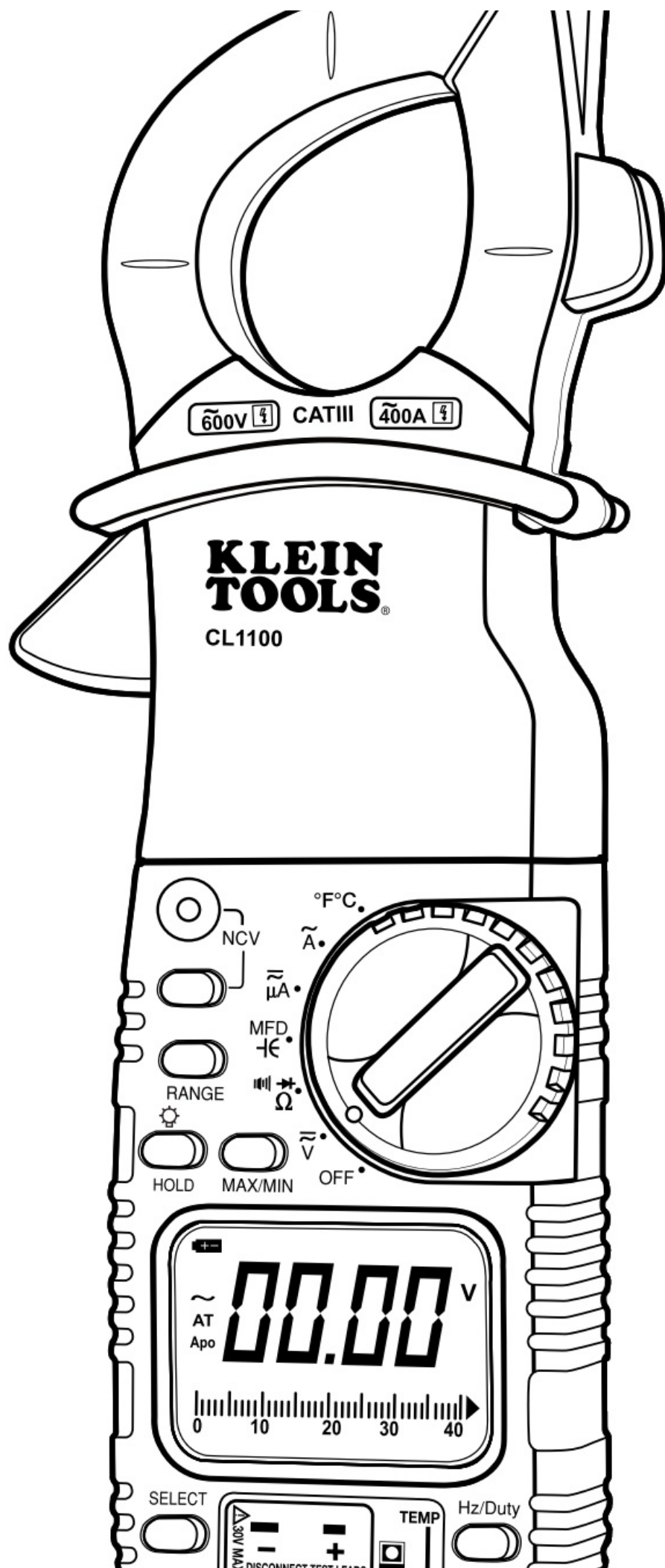
Instruction Manual
CL1100

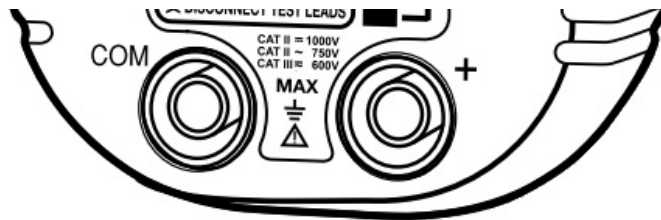
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CL1100 AC Clamp with Temperature Voltage Tester







For Professionals...Since 1857®

www.kleintools.com

- DATA HOLD
- BACKLIGHT
- WORKLIGHT
- BAR GRAPH
- MAX / MIN
- 3-3/4 DIGIT 3999 COUNT LCD
- AUTO / MANUAL RANGE
- NON CONTACT VOLTAGE TESTER
- TEMPERATURE



GENERAL SPECIFICATIONS

The Klein Tools CL1100 is an auto-ranging clamp meter. It measures AC / DC voltage, AC / DC current, resistance, capacitance, frequency, duty cycle, and temperature. It can also test non-contact voltage, diodes, and continuity.

- Operating Altitude: 2000 meters
- Humidity: 80% max
- Operating Temperature: 0°C / 32°F to 45°C / 113°F










- Storage Temperature: 0°C / 32°F to 60°C / 140°F
- Accuracy Temperature: 18°C / 64°F to 28°C / 82°F
- Temperature Coefficient: 0.1*(specified accuracy) / °C
- Dimensions: 8.875" x 3.375" x 1.5"
- Weight: 10.7oz.
- Calibration: Accurate for one year
- CAT Rating: CAT III 600V
- Accuracy: \pm (% of reading + # of least significant digits)

WARNINGS

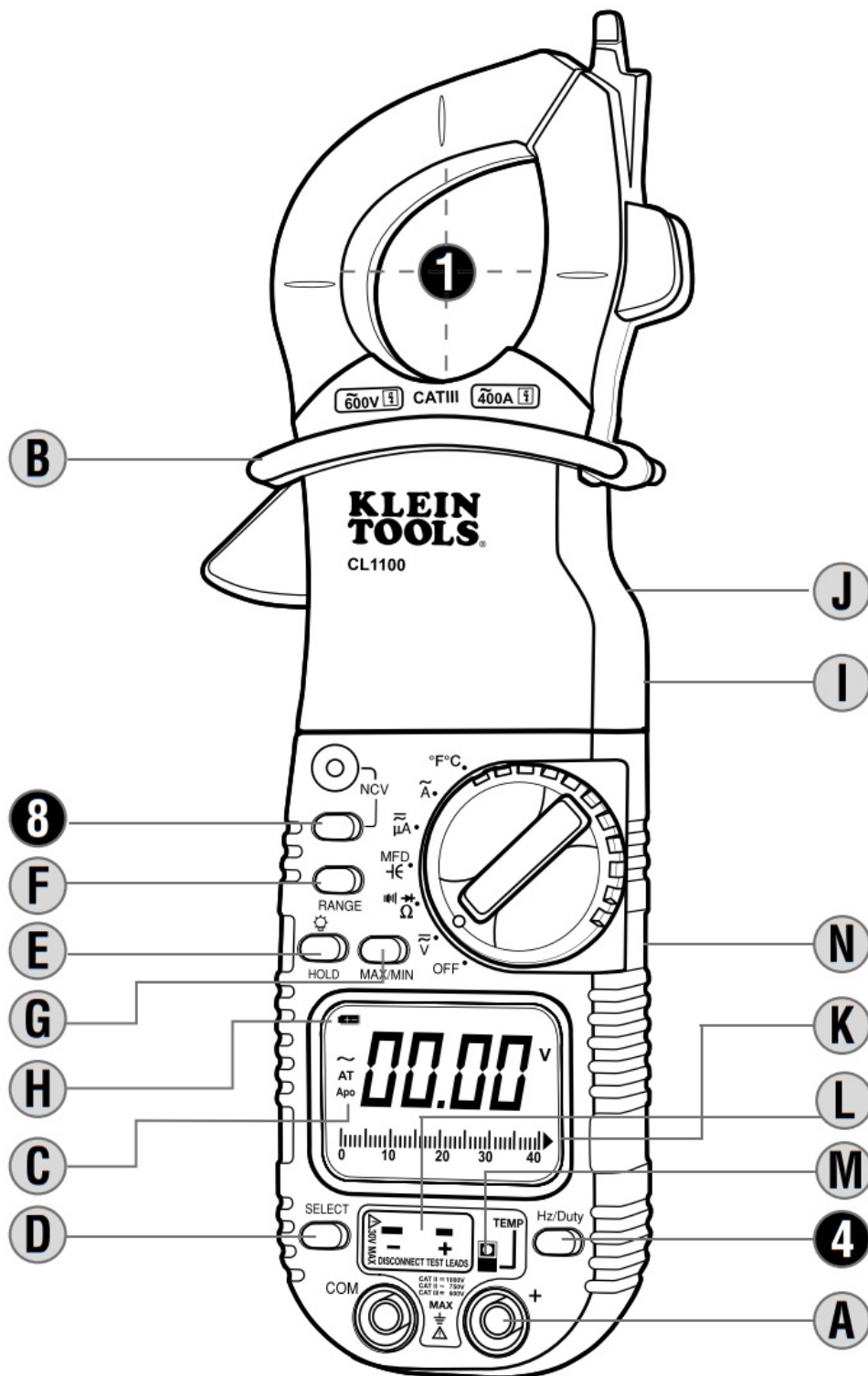
To ensure safe operation and service of the tester, follow these instructions.
Failure to observe these warnings can result in severe injury or death.

- 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 the meter during electrical storms, or in wet weather.
- Do not use the meter or test leads if they appear to be damaged.
- Ensure meter leads are fully seated, and keep fingers away from the metal probe contacts when making measurements.
- 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 a shock hazard.
- 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 lock out power before measuring resistance or capacitance.
- Always adhere to local and national safety codes. Use individual protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS

	AC Alternating Current
	DC Direct Current
	DC/AC Voltage or Current
	Ground
	AC Source
	Warning or Caution
	Dangerous levels
	Double Insulated Class II
	Safe for disconnect from live conductors

FEATURE DETAILS



A. Use CAT III rated leads or higher.



Do not attempt to measure more than 1000V DC or 750V AC or 2000 μ A.

B. Keep hands below line when measuring high current levels.

C. Auto Power-Off (Apo)

- Device will power off after 30 minutes non-use.
- Turn the dial or press a button to wake.
- Disabled during Max / Min function.
- Holding Select button while turning on disables Auto Power-Off.

D. Select Functionality Button

- Switch between AC and DC.
- Switch between  and .
- Switch between °F and °C.

E. Hold / Backlight / Worklight

- Press to hold the current input on the display.
- Press again to return to live reading.
- Press for 2 seconds to enable / disable lights.
- Using lights drains the battery significantly.


F. Auto / Manual Range

- Press repeatedly to cycle through manual ranges.
- Press for 2 seconds to return to auto ranging mode.
- AT is displayed on LCD only during auto ranging mode.

G. Max / Min Hold

- Press to enter Max / Min mode; the largest and smallest values will be saved while in this mode.
- Press repeatedly to alternate between the maximum and minimum readings.
- Press for 2 seconds to return to live reading and clear the stored maximum and minimum values.

H. I. Battery Replacement

- When  indicator is displayed on the LCD, batteries must be replaced.
- Remove the back screw and replace 2 x AAA batteries.

J. Magnetic Back

- Attach instrument to metal for hands-free use.

K. Bar Graph

- The bar graph shows an approximate analog representation of a measurement.
- The bar graph responds much faster than the digital display.
- The scale of the bar graph is zero to the maximum reading of the selected range.

L. Temperature Input Jack

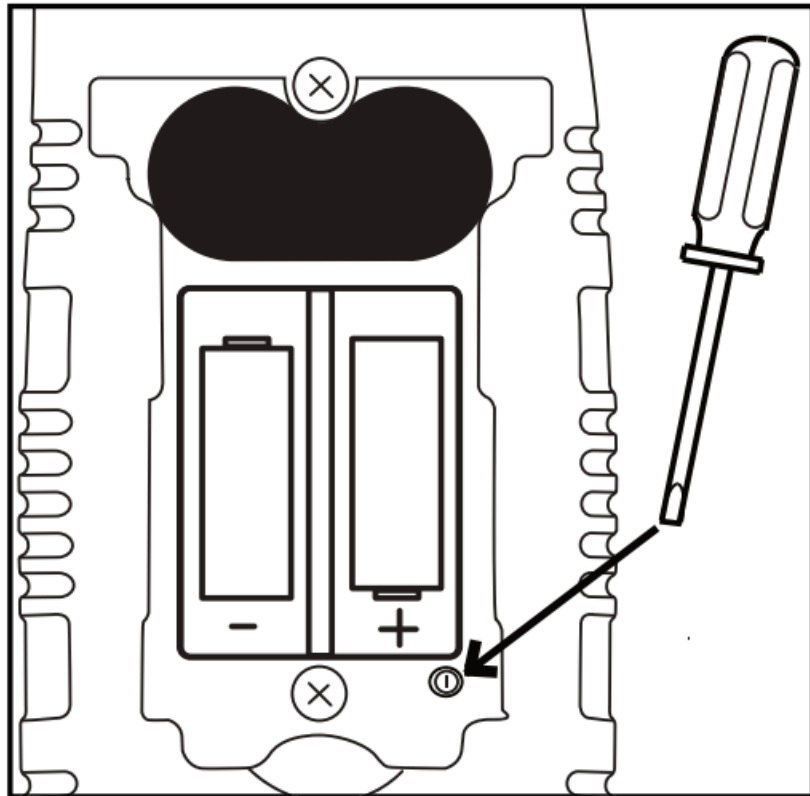
- Input jack for K-type thermocouple probe.

M. Temperature Switch

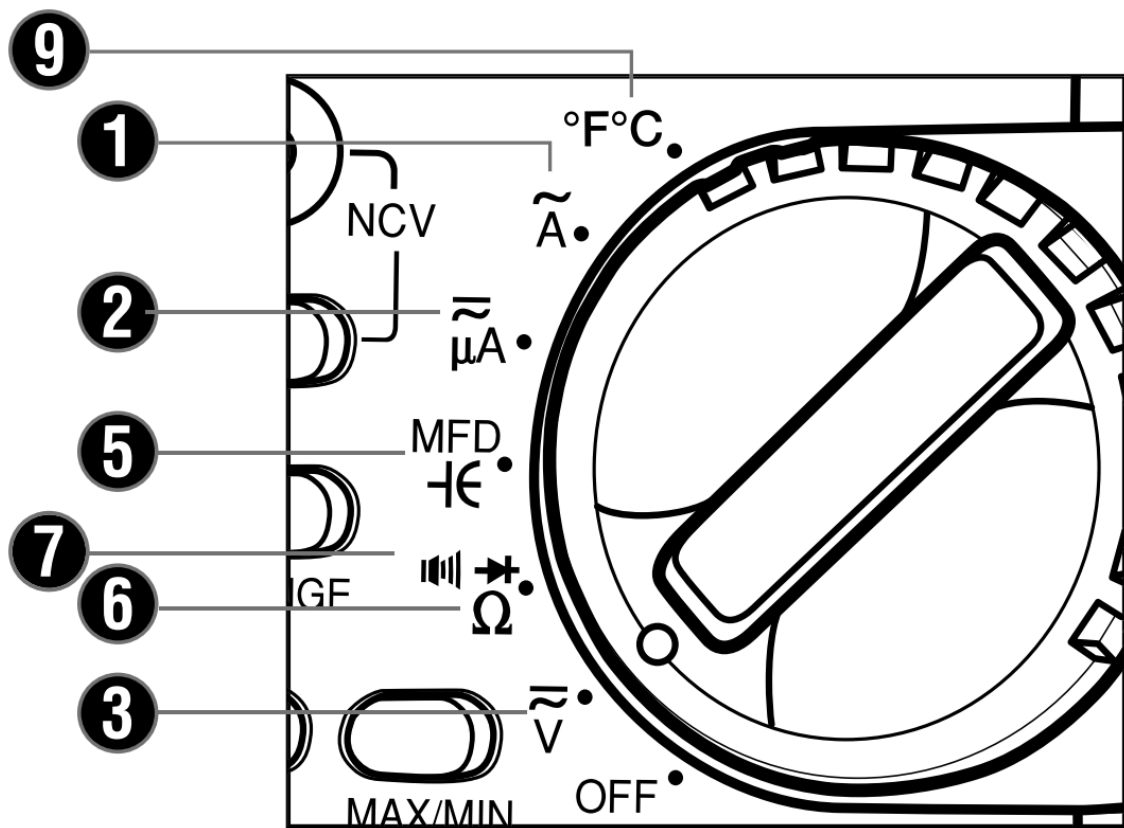
- Move the switch down to measure temperature, and up to measure all other functions that require standard test leads. Test leads must be removed before using the temperature function.

N. Temperature Adjustment

- Remove battery cover.
- Place temperature probe in distilled water with stirred crushed ice (a standard for 0°C and 32°F).
- Use a fine tip screwdriver to adjust the screw recessed in the bottom right corner of the battery cavity as shown until the display reads 32°F.

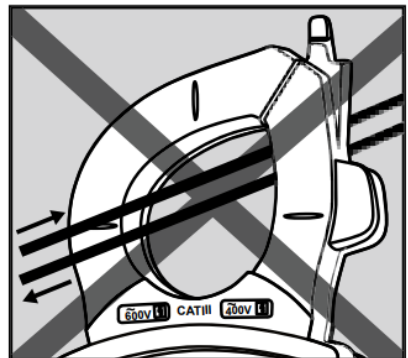
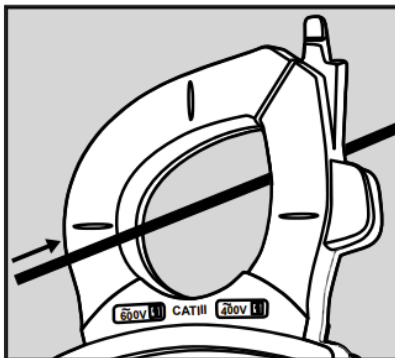
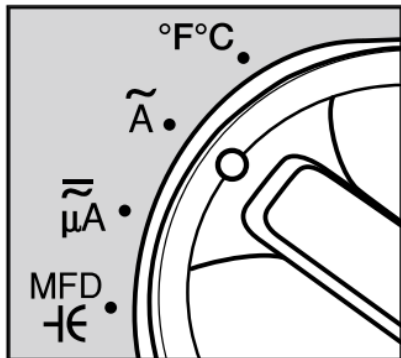


FUNCTION INSTRUCTIONS



1. AC Current (large): < 400A

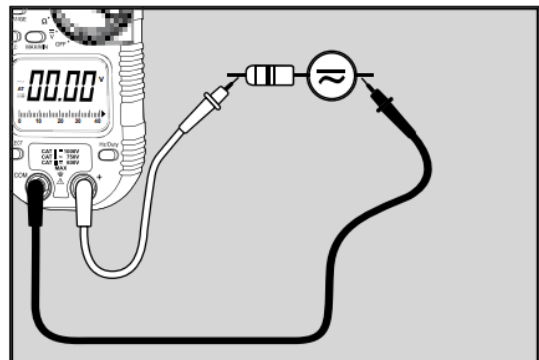
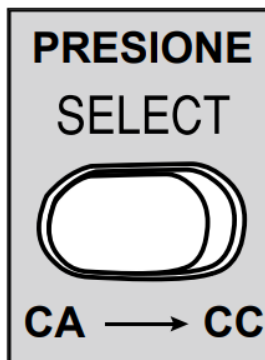
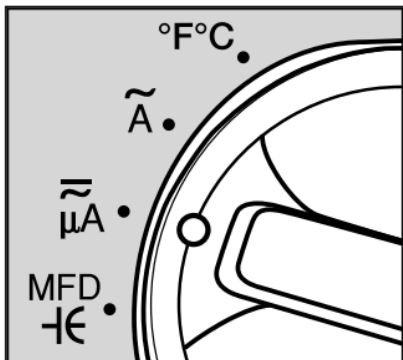
Features: **HOLD** **RANGE** **MAX/MIN**



- Center wire in guides for best accuracy.
- Opposing currents cancel (use line-splitter when necessary).

2. AC / DC Current (small): <2000 μA

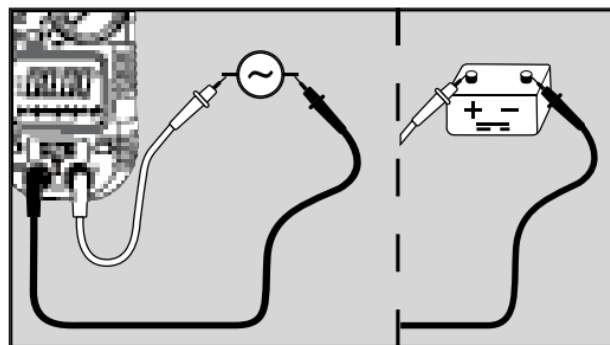
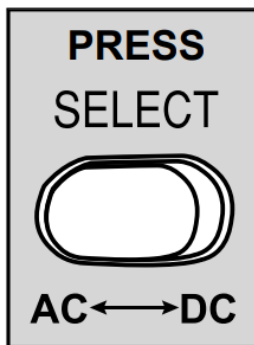
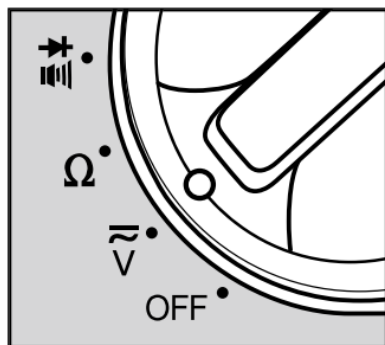
Features: **HOLD** **RANGE** **MAX/MIN**



- **!** Select AC or DC current source.
- Current above 2000 μA will damage instrument.

3. AC / DC Voltage: <750V AC or 1000V DC

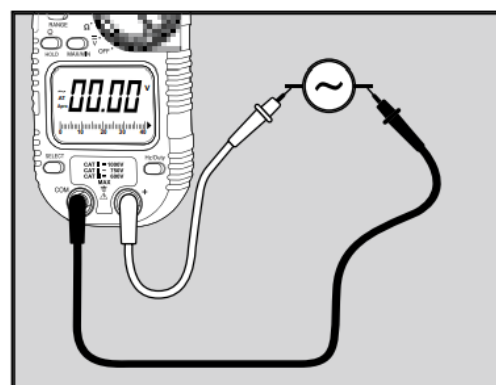
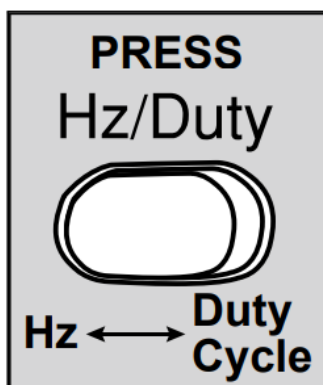
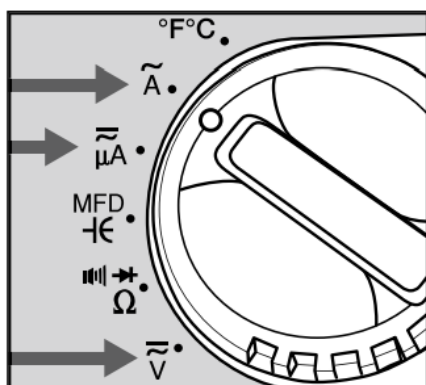
Features: **HOLD** **RANGE** **MAX/MIN**



- Select AC or DC voltage source.

4. Frequency (Hz) / Duty Cycle (See Feature Details)

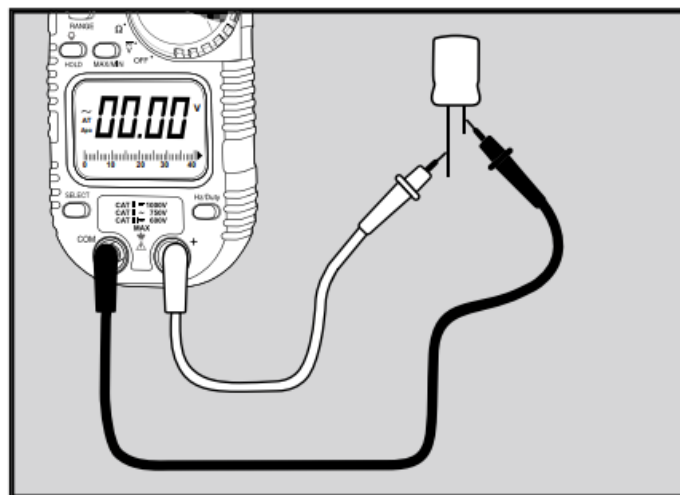
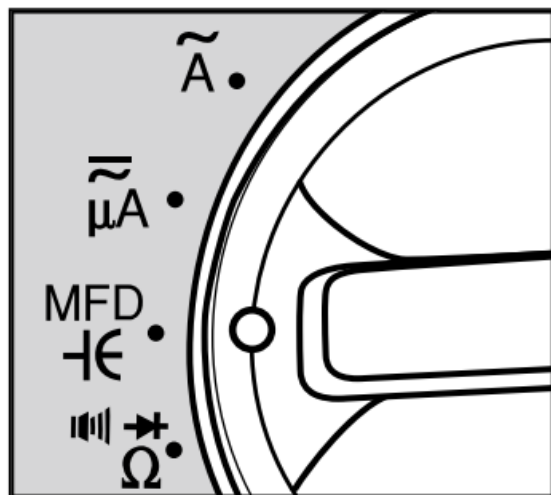
Features: **HOLD**



- Select \tilde{V} , μA , or \tilde{A} setting.
- Frequencies greater than 500 kHz will display "0.000Hz".

5. Capacitance: < 4000 μ F

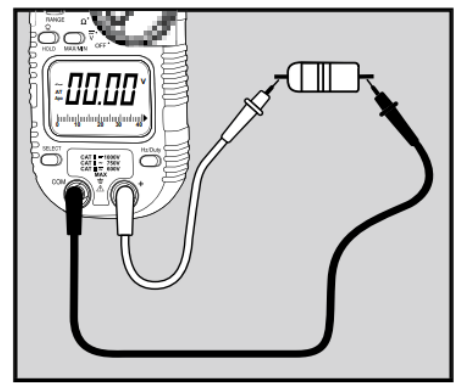
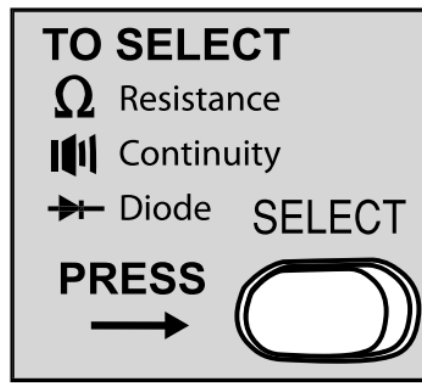
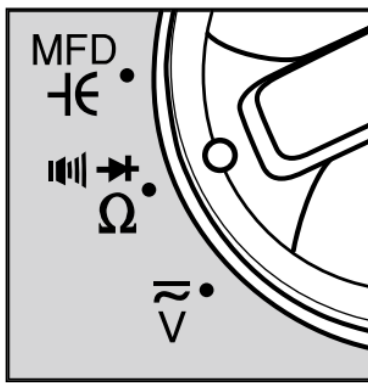
Features: **HOLD**



- Safely discharge capacitor before measurement.
- Reading may take up to 60 seconds for large capacitors.

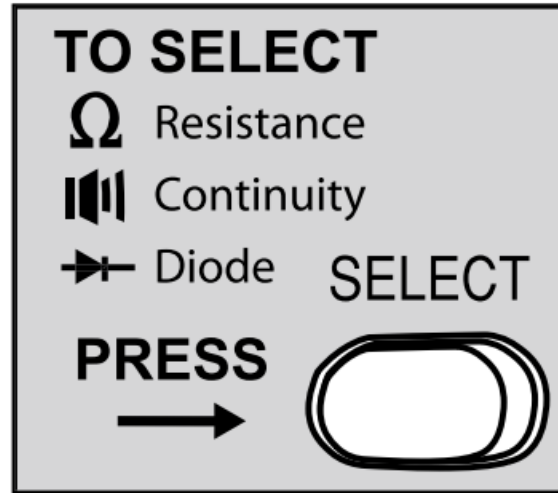
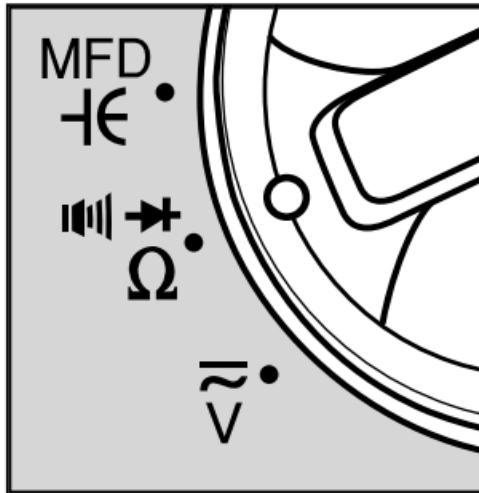
6. Resistance: <40M Ω

Features: **HOLD** **RANGE** **MAX/MIN**



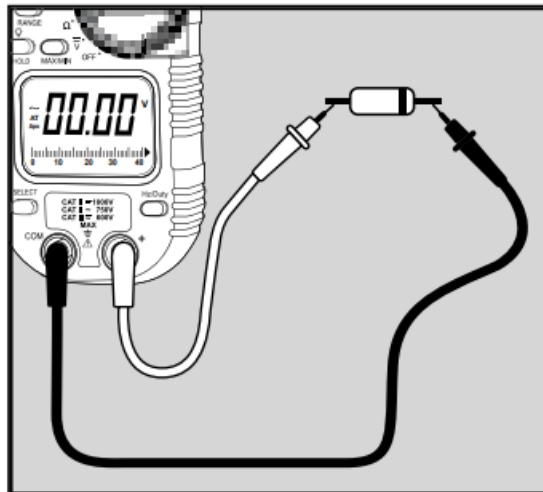
- **!** Do not measure resistance on a live circuit.

7. Diode / Continuity



Diode / Continuity Features: Continued on Reverse

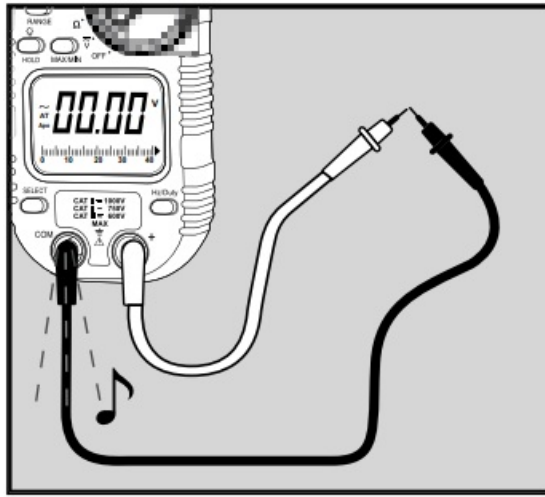
Diode Features: **HOLD** **MAX/MIN**



Display shows:

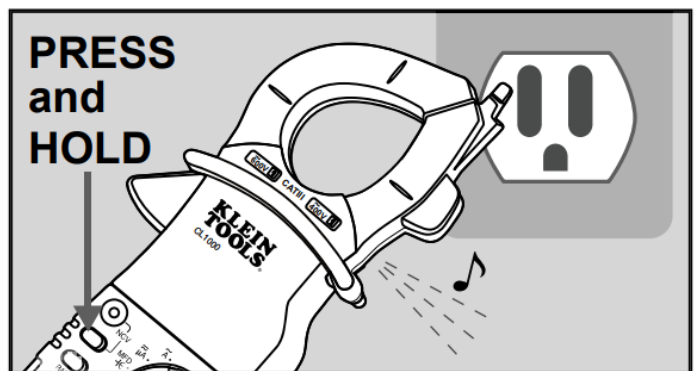
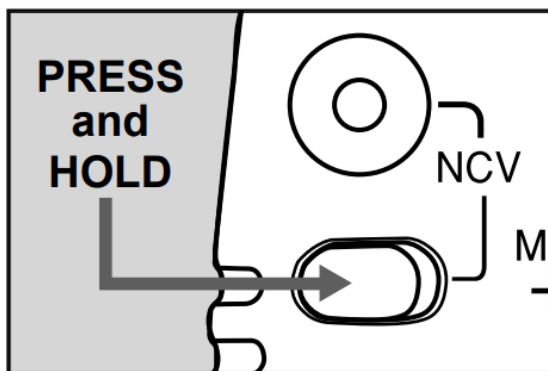
- Forward voltage drop if forward biased.
- "O.L." if reverse biased.

Continuity Features: **HOLD** **MAX/MIN**



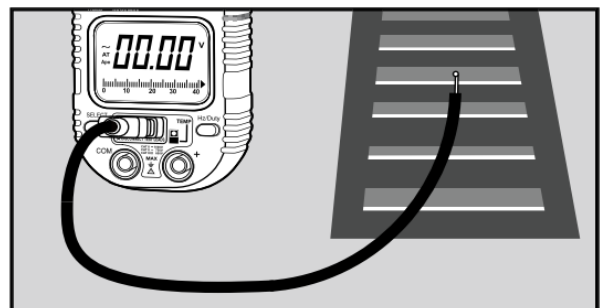
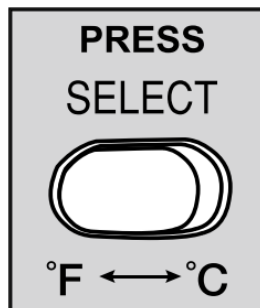
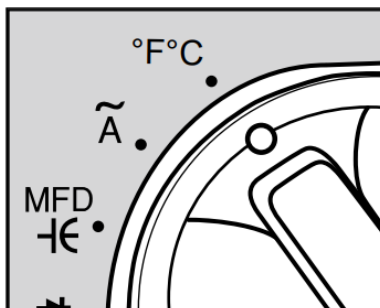
- Display shows resistance.
- Buzzer sounds if less than 30Ω.

8. Non Contact Voltage (NCV): > 25V AC










9. Temperature

Features: **HOLD** **MAX/MIN** **REL**



- ⚠ Do not apply voltage to thermocouple.
- Fahrenheit range: -22° to 752°F
- Celsius range: -30° to 400°C

SYMBOLS USED ON LCD

	AC Measurement		DC Measurement
	Negative DC Value	AT	Auto Range Active
O.L.	Overload: Range Exceeded	Apo	Auto Power-Off Active
	Low Battery	HOLD	Hold Active
MIN	Minimum Reading	MAX	Maximum Reading
%	Duty Cycle Mode	Hz	Frequency Mode
V	Voltage Measurement	A	Current in Amps
	Resistance in Ohms		Diode Test
F	Capacitance in Farads		Continuity Test
n	Nano 10-9	μ	Micro 10 -6
m	Milli 10-3	k	Kilo 10 3
M	Mega 10 6	°C	Degrees Celsius
°F	Degrees Fahrenheit		

ELECTRICAL SPECIFICATIONS

DC Voltage Measurement

Range	Resolution	Accuracy
400mV ~ 400V	0.1mV ~ 0.1V	± (0.5% + 4 digits)
1000V	1V	± (0.8% + 10 digits)

Overload Protection: 1000V

AC Voltage Measurement

Range	Resolution	Accuracy
400mV ~ 750V	0.1mV ~ 1V	± (2.0% + 5 digits)

Overload Protection: 750V RMS

Frequency Response: 40 to 400 Hz

Minimum Voltage for Frequency Measurement: 200mV

Response: Averaging

DC Current Measurement

Range	Resolution	Accuracy
400μA	0.1μA	± (1.2% + 3 digits)
2000μA	1μA	

Overload Protection:

- Voltage: 600V RMS
- Current: 2000 μ A

AC Current Measurement

Range	Resolution	Accuracy
400 μ A	0.1 μ A	\pm (2.0% + 5 digits)
2000 μ A	1 μ A	\pm (1.5% + 5 digits)
40A	0.01A	\pm (2.9% + 15 digits)
400A	0.1A	\pm (1.9% + 8 digits)

Overload Protection:

- Voltage: 600V RMS
- Current: 2000 μ A

Frequency: 45 to 400Hz

Minimum Current for Frequency Measurement: 400 μ A or 20A

Response: Averaging

Resistance Measurement

Range	Resolution	Accuracy
400 Ω ~ 4M Ω	0.1 Ω ~ 0.001M Ω	\pm (1.0% + 4 digits)
40M Ω	0.01M Ω	\pm (2.0% + 4 digits)

Overload Protection: 600V RMS

Capacitance Measurement

Range	Resolution	Accuracy
40nF ~ 4000 μ F	0.01nF ~ 1 μ F	\pm (3.5% + 6 digits)

Overload Protection: 600V RMS

Frequency Measurement

Range	Resolution	Accuracy
99.99Hz ~ 499.9kHz	0.01Hz ~ 0.1kHz	\pm (0.1% + 4 digits)

Overload Protection: 600V RMS

Sensitivity: 1.8V RMS

Duty Cycle Measurement

Range	Resolution	Accuracy
0.1 ~ 99.9%	0.1%	$\pm (0.2\% \text{ per kHz} + 0.1\% + 5 \text{ digits})$

Overload Protection: 600V RMS

Diode Test

Overload Protection	Range	Test Current	Open Circuit Voltage
600V RMS	2.0V	Appx. 0.25mA	1.6V DC

Continuity Test

Overload Protection	Open Circuit Voltage
600V RMS	0.44V

Temperature Measurement

Range	Resolution	Accuracy
-22°~14°F (-30°~-10°C)	0.1°F (0.1°C)	$\pm 5.4 \text{ F } (\pm 3.0 \text{ C})$
15°~752°F (-9°~400°C)	0.1°F (0.1°C)	$\pm (1.0\% + [3.6 \text{ F or } 2.0 \text{ C}])$

Overload Protection: 30V RMS

Non Contact Voltage Detector

On Voltage
Appx. 25V AC

WARRANTY

See www.kleintools.com, contact Klein Tools at 1-877-775-5346, or visit a distributor for warranty information.

CLEANING

Turn instrument off and disconnect test leads. Clean the instrument by using a damp cloth. Do not use abrasive cleaners or solvents.

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 Specifications section, allow the instrument to return to normal operating conditions before using it.



KLEIN TOOLS®

139660

Instruction Manual

CL1100

FUNCTIONS

- DARTH BOLDLIGHT
- WORKALIGHT
- BARK DETECTOR
- REAR JERRY
- 2-5 A DUST
- 2000 COUNT LED
- AUTO FREQUENCY RANGE
- NON CONTACT VOLTAGE TESTER
- TEMPERATURE

KL **AM**
LIMITED

V **Ω** **Hz** **°C**

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