

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

SDoC identification Number¹: Klein Tools Tough Clamp Meters range SDOC

Issuer details


Name ² (of New Zealand manufacturer or importer): <input type="text" value="Hamer Limited"/>	Contact Address: <input type="text" value="85a Falsgrave Street
Phillipstown
Christchurch
New Zealand"/>
Telephone: <input type="text" value="+64 3 3662483"/>	
New Zealand Company No. (if applicable): <input type="text" value="965939"/>	
Email Address: <input type="text" value="sales@hamer.co.nz"/>	

Details

Products:
Klein Tools 'TOUGH' Meter range of Multimeters and Clamp Meters.
Cat #'s CL110, CL210, CL310, CL600, CL700 & CL800.

HAMER Ltd confirms on inspection that the above article is not unsafe to use in NZ and the above article meets the safety requirements and principles of AS/NZ3000 and should be used in accordance within the manufacturer's instructions.

Declaration

Signed for and on behalf of: <input type="text" value="Hamer Limited"/> <input type="text" value="Product Manager"/> 	Issuer Identification (as affixed to the article) <input type="text" value="Klein Tools Inc.
450 Bond Street
Lincolnshire, IL 60069-4225,
United States of America."/> <input type="text" value="DATE: 25<sup>th</sup> January 2016"/>
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SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CL110

CAT



1 m

INSTRUCTION MANUAL 400A AC Auto-Ranging Digital Clamp Meter

- AUTO-RANGING
- DATA HOLD
- RANGE HOLD
- AUDIBLE CONTINUITY

600V \approx
400A \approx
20M Ω



ESPAÑOL pg. 13

FRANÇAIS pg. 25

KLEIN TOOLS 

For Professionals... Since 1857™



Intertek



SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

GENERAL SPECIFICATIONS

Klein Tools CL110 is an automatically ranging digital clamp-meter that measures AC current via the clamp, and AC/DC voltage, resistance and continuity via test-leads.

- **Operating Altitude:** 6562 ft. (2000 m)
- **Relative Humidity:** <95% non-condensing
- **Operating Temp:** 32° to 122°F (0° to 50°C)
- **Storage Temp:** 14° to 122°F (-10° to 50°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 8.66" x 3.03" x 1.61" (220 x 77 x 41 mm)
- **Weight:** 9.88 oz. (280 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL 61010-1, UL 61010-2-032, UL 61010-2-033.
Certified to: CAN/CSA C22.2 NO. 61010-1, 61010-2-032, 61010-2-033, IEC EN 61010-1, 61010-2-032, 61010-2-033, IEC EN 61326-1.
- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 3.3 ft. (1m)
- **Safety Rating:** CATIII 600V, Class 2, Double insulation
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy
AC Voltage (V AC)	200.0mV	0.1mV	±(2.5% + 10 digits)
	2.000V	1mV	
	20.00V	10mV	
	200.0V	100mV	
DC Voltage (V DC)	600V	1V	±(1.0% + 8 digits)
	200.0mV	0.1mV	
	2.000V	1mV	
	20.00V	10mV	
	200.0V	100mV	
DC Voltage (V DC)	600V	1V	±(1.0% + 3 digits)
	200.0mV	0.1mV	
	2.000V	1mV	
	20.00V	10mV	

Input Impedance: 10MΩ

Frequency Range: 45 to 400Hz

Maximum Input: 600V AC RMS or 600V DC

AC Current (A AC)	2.000A	1mA	±(2.5% + 30 digits)
	20.00A	10mA	
	200.0A	100mA	
	400A	1A	
AC Current (A AC)	200.0A	100mA	±(2.0% + 10 digits)
	400A	1A	
	2.000A	1mA	
	20.00A	10mA	

Frequency Range: 50 to 60Hz

Resistance	200.0Ω	0.1Ω	±(1.2% + 5 digits)
	2.000KΩ	1Ω	
	20.00kΩ	10Ω	
	200.0kΩ	100Ω	
	2.000MΩ	1kΩ	
	20.00MΩ	10kΩ	
Resistance	20.00MΩ	10kΩ	±(1.2% + 3 digits)
	200.0kΩ	100Ω	
	2.000MΩ	1kΩ	
	20.00MΩ	10kΩ	
	200.0kΩ	100Ω	
	2.000MΩ	1kΩ	

Maximum Input: 600V AC RMS or 600V DC

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V DC or 600V AC RMS

- **Continuity Check:** Audible signal <10Ω, max current 1.5mA
- **Sampling Frequency:** Approx. 3 samples per second
- **Auto Power off:** After ~15 minutes of inactivity
- **Overload:** "OL" indicated on display
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3 ½ digit, 2000 Count LCD

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

⚠ WARNINGS

To ensure safe operation and service of the meter, 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.
- Use only with CAT III or CAT IV rated test leads.
- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

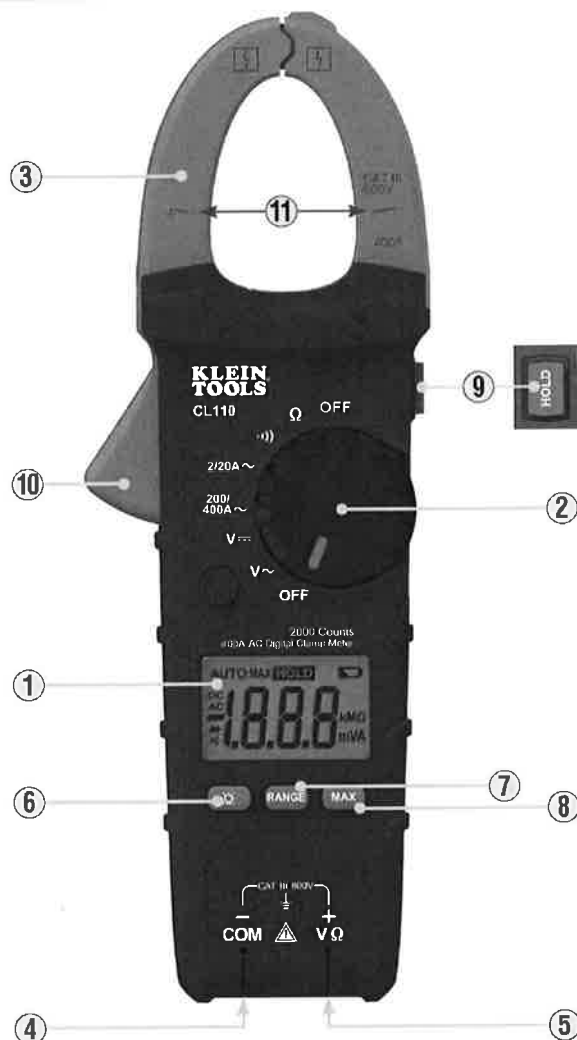
~	AC (Alternating Current)	—	DC (Direct Current)
Ω	Resistance (in Ohms)	•))	Audible Continuity
□	Double Insulated Class II	⊕	Ground
⚠	Warning or Caution	⚡	Risk of Electrical Shock
V	Voltage (Volts)	A	Amperage (Amps)

SYMBOLS ON LCD

AC	AC (Alternating Current)	DC	DC (Direct Current)
—	Negative Reading	HOLD	Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
🔋	Low Battery	•))	Audible Continuity
M	Mega (value x 10 ⁶)	k	kilo (value x 10 ³)
m	milli (value x 10 ⁻³)	V	Volts
A	Amps	Ω	Ohms

4

FEATURE DETAILS



NOTE: There are no user-serviceable parts inside meter.

- | | |
|-----------------------------|---|
| 1. 2000 count LCD display | 7. "RANGE" button |
| 2. Function selector switch | 8. "MAX" (Maximum) button |
| 3. Clamp | 9. Data Hold button |
| 4. "COM" jack | 10. Clamp trigger (press to open clamp) |
| 5. "VΩ" jack | 11. Arrow markings |
| 6. Backlight button | |

5

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch (2) from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch (2) to either of the OFF settings. By default, the meter will automatically power OFF after 15 minutes of inactivity. If the meter automatically powers OFF while in a measurement setting, rotate Function Selector (2) switch to any other setting (excluding the OFF setting) to power ON the meter.

BACKLIGHT

Press Backlight button symbol (6) to turn ON or OFF the backlight. The backlight does not automatically power OFF.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the "RANGE" button (7).

1. Press the "RANGE" button (7) to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button (7) to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button (7) for more than one second (**AUTO** is reactivated).

MAX

When the "MAX" button (8) is pressed, the meter keeps track of the Maximum value as the meter continues to take samples.

1. When measuring, press "MAX" button (8) to display the maximum value. If a new maximum occurs, the display updates with that new value.
2. Press "MAX" button (8) again to return to normal measuring mode.

DATA HOLD

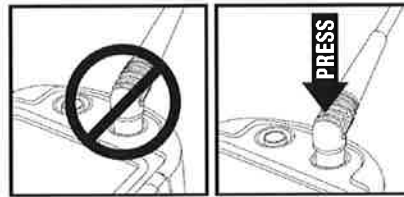
Press the Data Hold button (9) to hold the current measurement on the display. Press again to return to live measuring mode.

6

OPERATING INSTRUCTIONS

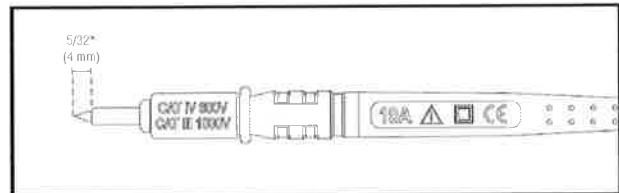
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



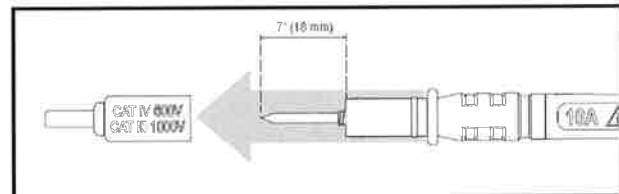
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



7

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

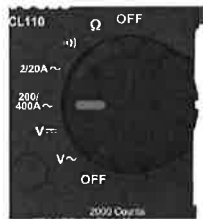
AC CURRENT (LESS THAN 400A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp in line with the arrow markings (11).



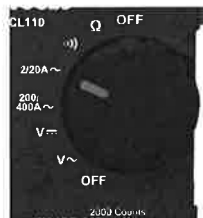
To measure current:

1. Rotate the Function Selector switch (2) to the 200/400 A setting.



2. Place clamp around wire. The current measurement will be shown in the display.

NOTE: If the measurement is less than 20A, rotate the Function Selector switch (2) to the 2/20 A setting for improved resolution.



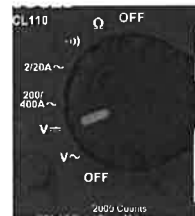
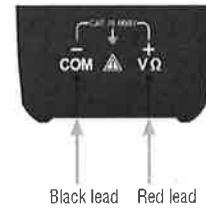
⚠ Disconnect test leads when measuring with the clamp.

8

OPERATING INSTRUCTIONS

AC/DC VOLTAGE (LESS THAN 600V)

1. Insert RED test lead into VΩ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the DC Voltage V $\overline{\text{---}}$ or AC Voltage V \sim setting. Note "DC" or "AC" on the display.



OR



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

NOTE: To access mV range for VAC V \sim the "RANGE" button (7) must be used.

9

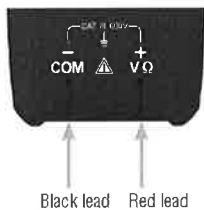
SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack ⑤, and BLACK test lead into COM jack ④, and rotate function selector switch ② to the Resistance Ω setting. The resistance symbol Ω will appear on the display.
2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.

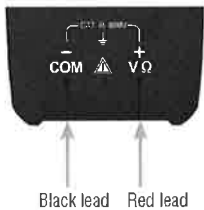


NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

⚠ DO NOT attempt to measure resistance on a live circuit.

CONTINUITY

1. Insert RED test lead into V Ω jack ⑤ and BLACK test lead into COM jack ④, and rotate function selector switch ② to the Continuity \bullet setting.
2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 10 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open, display will show "OL".




⚠ DO NOT attempt to measure continuity on a live circuit.

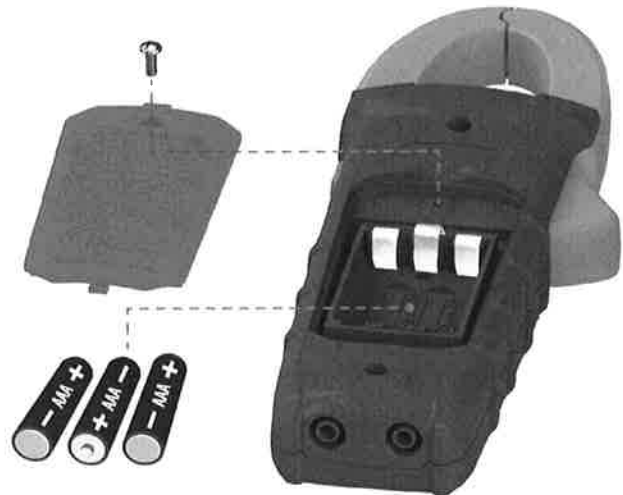
10

MAINTENANCE

BATTERY REPLACEMENT

When  indicator is displayed on LCD, batteries must be replaced.

1. Remove screw from battery door.
2. Replace 3 x AAA batteries (note proper polarity).
3. Replace battery door and fasten securely with screw.



⚠ To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.

⚠ To avoid risk of electric shock, do not operate meter while battery door is removed.

11

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. **Do not use abrasive cleaners or solvents.**

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL/RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

CUSTOMER SERVICE

KLEIN TOOLS, INC.
450 Bond Street
Lincolnshire, IL 60069
1-877-775-5346

customerservice@kleintools.com
www.kleintools.com

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CL210

CAT



1m

INSTRUCTION MANUAL 400A AC Auto-Ranging Digital Clamp Meter



- AUTO-RANGING
- DATA HOLD
- RANGE HOLD
- TEMPERATURE
- AUDIBLE CONTINUITY

600V \approx
400A \approx
20M Ω



ESPAÑOL pg. 15

FRANÇAIS pg. 29

KLEIN TOOLS
EST. 1857

For Professionals... Since 1857™



SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

GENERAL SPECIFICATIONS

Klein Tools CL210 is an automatically ranging digital clamp-meter that measures AC current via the clamp, AC/DC voltage, resistance and continuity via test-leads, and temperature via a thermocouple probe.

- **Operating Altitude:** 6562 ft. (2000m)
- **Relative Humidity:** <95% non-condensing
- **Operating Temp:** 32° to 122°F (0° to 50°C)
- **Storage Temp:** 14° to 122°F (-10° to 50°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 8.66" x 3.03" x 1.61" (220 x 77 x 41 mm)
- **Weight:** 9.88 oz. (280 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL 61010-1, UL 61010-2-032, UL 61010-2-033.
 Certified to: CAN/CSA C22.2 NO. 61010-1, 61010-2-032, 61010-2-033, IEC EN 61010-1, 61010-2-032, 61010-2-033, IEC EN 61326-1
- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 3.3 ft. (1m)
- **Safety Rating:** CATIII 600V, Class 2, Double insulation
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy
AC Voltage (V AC)	200.0mV	0.1mV	±(2.5% + 10 digits)
	2.000V	1mV	±(2.0% + 5 digits)
	20.00V	10mV	
	200.0V	100mV	
	600V	1V	
DC Voltage (V DC)	200.0mV	0.1mV	±(1.0% + 8 digits)
	2.000V	1mV	±(1.0% + 3 digits)
	20.00V	10mV	
	200.0V	100mV	
	600V	1V	

Input Impedance: 10MΩ
Frequency Range: 45 to 400Hz
Maximum Input: 600V AC RMS or 600V DC

AC Current (A AC)	2.000A	1mA	±(2.5% + 30 digits)
	20.00A	10mA	±(2.0% + 10 digits)
	200.0A	100mA	
	400A	1A	

Frequency Range: 50 to 60Hz

Resistance	200.0Ω	0.1Ω	±(1.2% + 5 digits)
	2.000KΩ	1Ω	±(1.2% + 3 digits)
	20.00kΩ	10Ω	
	200.0kΩ	100Ω	
	2.000MΩ	1kΩ	
	20.00MΩ	10kΩ	±(2.0% + 5 digits)

Maximum Input: 600V AC RMS or 600V DC

Temperature	-40° to 1832°F	1°F	≤0°F ±(2.8% + 12 digits) >0°F ±(2.8% + 6 digits)
	-40° to 1000°C	1°C	±(2.8% + 6 digits)

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V AC RMS or 600V DC

- **Continuity Check:** Audible signal <10Ω, max current 1.5mA
- **Sampling Frequency:** 3 samples per second
- **Auto Power off:** After ~15 minutes of inactivity
- **Overload:** "OL" indicated on display
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3 ½ digit, 2000 Count LCD

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

⚠ WARNINGS

To ensure safe operation and service of the meter, 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.
- Use only with CAT III or CAT IV rated test leads.
- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

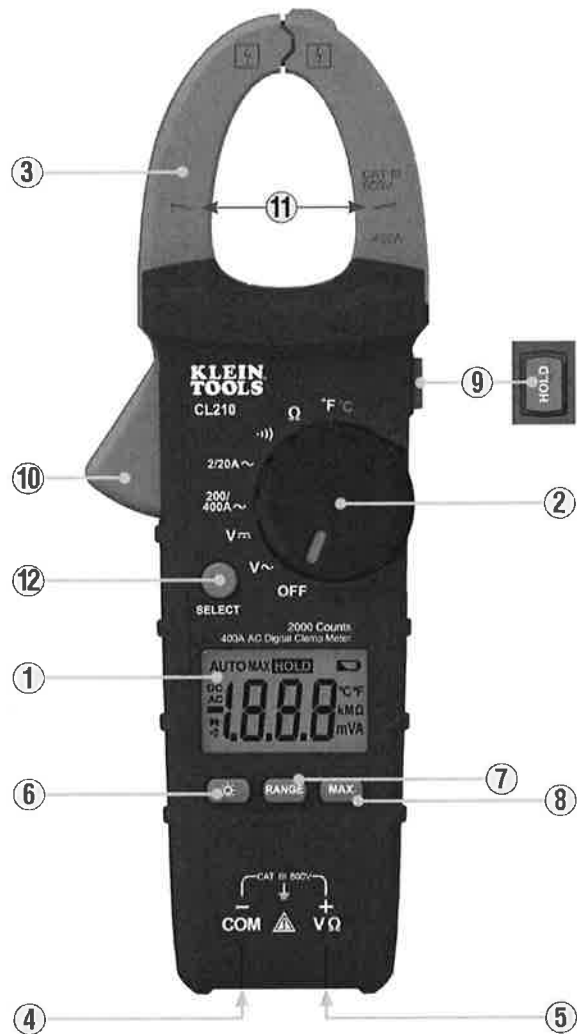
~	AC (Alternating Current)	—	DC (Direct Current)
Ω	Resistance (in Ohms)	•))	Audible Continuity
⊠	Double Insulated Class II	⚡	Ground
⚠	Warning or Caution	⚡	Risk of Electrical Shock
V	Voltage (Volts)	A	Amperage (Amps)
°F/°C	Temperature (Fahrenheit / Celsius)		

SYMBOLS ON LCD

AC	AC (Alternating Current)	DC	DC (Direct Current)
—	Negative Reading	HOLD	Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
🔋	Low Battery	•))	Audible Continuity
°F	Degrees (Fahrenheit)	°C	Degrees (Celsius)
M	Mega (value x 10 ⁶)	k	kilo (value x 10 ³)
m	milli (value x 10 ⁻³)	V	Volts
A	Amps	Ω	Ohms

4

FEATURE DETAILS



NOTE: There are no user-serviceable parts inside meter.

- | | |
|-----------------------------|---|
| 1. 2000 count LCD display | 7. "RANGE" button |
| 2. Function selector switch | 8. "MAX" (Maximum) button |
| 3. Clamp | 9. Data Hold button |
| 4. "COM" jack | 10. Clamp trigger (press to open clamp) |
| 5. "VΩ" jack | 11. Arrow markings |
| 6. Backlight button | 12. "SELECT" button |

5

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch (2) from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch (2) to the OFF setting. By default, the meter will automatically power OFF after 15 minutes of inactivity. If the meter automatically powers OFF while in a measurement setting, rotate Function Selector (2) switch to any other setting (excluding the OFF setting) to power ON the meter.

"SELECT" BUTTON (FOR SECONDARY FUNCTIONS)

The "SELECT" button (12) activates the secondary function for the temperature setting, switching between °F and °C. The default setting (°F) is printed on the meter in white; the secondary setting (°C) is printed on the meter in orange.

BACKLIGHT

Press Backlight button symbol (6) to turn ON or OFF the backlight. The backlight does not automatically power OFF.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the "RANGE" button (7).

1. Press the "RANGE" button (7) to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button (7) to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button (7) for more than one second (**AUTO** is reactivated).

MAX

When the "MAX" button (8) is pressed, the meter keeps track of the Maximum value as the meter continues to take samples.

1. When measuring, press "MAX" button (8) to display the maximum value. If a new maximum occurs, the display updates with that new value.
2. Press "MAX" button (8) again to return to normal measuring mode.

DATA HOLD

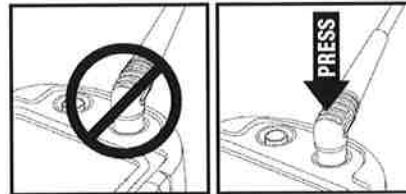
Press the Data Hold button (9) to hold the current measurement on the display. Press again to return to live measuring mode.

6

OPERATING INSTRUCTIONS

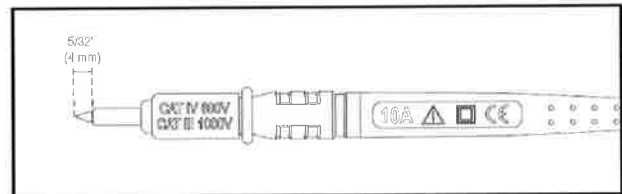
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



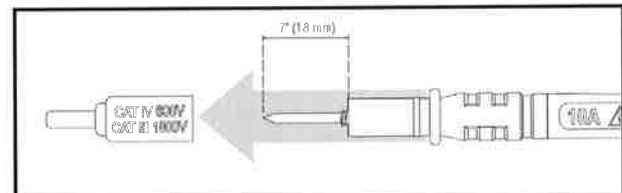
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



7

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

AC CURRENT (LESS THAN 400A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp in line with the arrow markings (11).



To measure current:

1. Rotate the Function Selector switch (2) to the 200/400 A setting.



2. Place clamp around wire. The current measurement will be shown in the display.

NOTE: If the measurement is less than 20A, rotate the Function Selector switch (2) to the 2/20 A setting for improved resolution.



⚠ Disconnect test leads when measuring with the clamp.

8

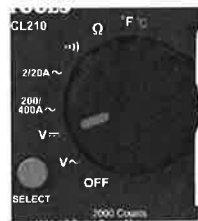
OPERATING INSTRUCTIONS

AC/DC VOLTAGE (LESS THAN 600V)

1. Insert RED test lead into VΩ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the DC Voltage V_{DC} or AC Voltage V_{AC} setting. Note "DC" or "AC" on the display.



Black lead Red lead



OR



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

NOTE: To access mV range for V AC V_{AC} the "RANGE" button (7) must be used.

9

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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OPERATING INSTRUCTIONS

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Resistance Ω setting. The resistance symbol Ω will appear on the display.
2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.



Black lead Red lead



NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

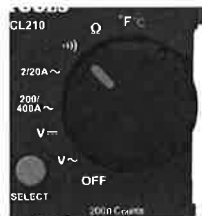
⚠ DO NOT attempt to measure resistance on a live circuit.

CONTINUITY

1. Insert RED test lead into V Ω jack (5) and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity (•) setting.
2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 10 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open, display will show "OL".



Black lead Red lead



⚠ DO NOT attempt to measure continuity on a live circuit.

10

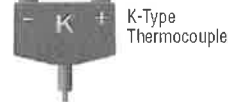
OPERATING INSTRUCTIONS

TEMPERATURE

1. Insert K-type thermocouple into the V Ω (5) and COM (4) jacks (observe polarity markings on thermocouple and meter), and rotate function selector switch (2) to the Temperature °F/°C setting.

NOTE: The meter defaults to Fahrenheit scale in this mode. To enter Celsius scale, press the "SELECT" button (12) once. Ensure that the appropriate icon (either °F or °C) appears on the display.

2. To measure temperature, make contact between the thermocouple tip and the object being measured. When thermocouple tip and object are in thermal equilibrium, the measurement on the display will stabilize. The meter will auto-range to display the measurement in the most appropriate range.



⚠ Remove thermocouple before switching meter to other measurement functions.

⚠ The thermocouple included with the original purchase is suitable for temperatures below 446°F / 230°C only. To measure higher temperatures, a K-type thermocouple with the appropriate measurement range should be used.


11

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

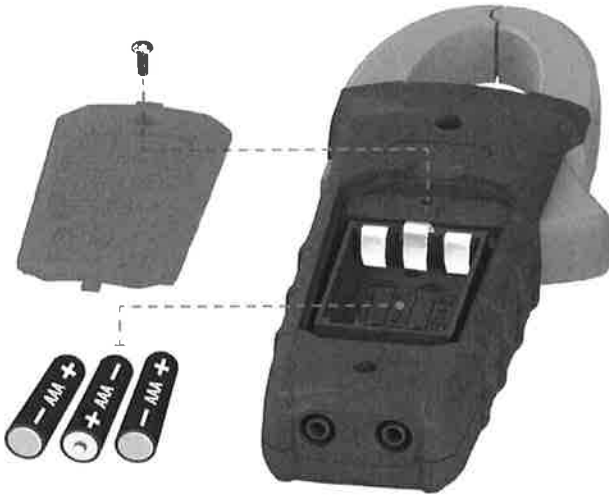
ENGLISH

MAINTENANCE


BATTERY REPLACEMENT

When  indicator is displayed on LCD, batteries must be replaced.

1. Remove screw from battery door.
2. Replace 3 x AAA batteries (note proper polarity).
3. Replace battery door and fasten securely with screw.



 **To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.**

 **To avoid risk of electric shock, do not operate meter while battery door is removed.**

12

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. **Do not use abrasive cleaners or solvents.**

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL / RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

CUSTOMER SERVICE

KLEIN TOOLS, INC.
450 Bond Street
Lincolnshire, IL 60069
1-877-775-5346

customerservice@kleintools.com
www.kleintools.com

ENGLISH

CL310 **CAT III**  1m

INSTRUCTION MANUAL
400A AC Auto-Ranging
Digital Clamp Meter

True RMS
Measurement
Technology

°F  °C

- AUTO-RANGING
- DATA HOLD
- RANGE HOLD
- TEMPERATURE
- AUDIBLE CONTINUITY

600V 
400A 
40MΩ



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FRANÇAIS pg. 37

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GENERAL SPECIFICATIONS

Klein Tools CL310 is an automatically ranging true root mean square (TRMS) digital clamp meter that measures AC current via the clamp, AC/DC voltage, resistance, continuity, frequency, capacitance, and tests diodes via test-leads, and temperature via a thermocouple probe.

- **Operating Altitude:** 6562 ft. (2000m)
- **Relative Humidity:** <95% non-condensing
- **Operating Temp:** 32° to 122°F (0° to 50°C)
- **Storage Temp:** 14° to 122°F (-10° to 50°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 8.66" x 3.03" x 1.61" (220 x 77 x 41 mm)
- **Weight:** 9.88 oz. (280 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL 61010-1, UL 61010-2-032, UL 61010-2-033.
 Certified to: CAN/CSA C22.2 NO. 61010-1, 61010-2-032, 61010-2-033, IEC EN 61010-1, 61010-2-032, 61010-2-033, IEC EN 61326-1.
- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 3.3 ft. (1m)
- **Safety Rating:** CATIII 600V, Class 2, Double insulation
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy
AC Voltage (V AC)	4.000V	1mV	±(1.5% + 5 digits)
	40.00V	10mV	±(1.2% + 5 digits)
	400.0V	100mV	
	600V	1V	±(1.5% + 5 digits)
DC Voltage (V DC)	400.0mV	0.1mV	±(1.0% + 8 digits)
	4.000V	1mV	±(0.8% + 3 digits)
	40.00V	10mV	
	400.0V	100mV	
	600V	1V	

Input Impedance: 10MΩ

Frequency Range: 45 to 400Hz

Maximum Input: 600V AC RMS or 600V DC

AC Current (A AC)	Range	Resolution	Accuracy
AC Current (A AC)	4.000A	1mA	±(2.5% + 30 digits)
	40.00A	10mA	±(2.5% + 10 digits)
	400.0A	100mA	±(2.0% + 10 digits)

Frequency Range: 50 to 60Hz

Resistance	Range	Resolution	Accuracy
Resistance	400.0Ω	0.1Ω	±(1.2% + 5 digits)
	4.000KΩ	1Ω	±(1.2% + 3 digits)
	40.00kΩ	10Ω	
	400.0kΩ	100Ω	
	4.000MΩ	1kΩ	
	40.00MΩ	10kΩ	±(2.0% + 5 digits)

Maximum Input: 600V AC RMS or 600V DC

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy
Capacitance	40.00nF	0.010nF	±(4% + 25 digits)
	400.0nF	0.100nF	±(4% + 8 digits)
	4.000µF	0.001µF	
	40.00µF	0.010µF	
	400.0µF	0.100µF	±(10% + 9 digits)
4.000mF	0.001mF		

Maximum Input: 600V AC RMS or 600V DC

Temperature	-40° to 1832°F	1°F	≤0°F ±(2.8% + 12 digits) >0°F ±(2.8% + 6 digits)
	-40° to 1000°C	1°C	±(2.8% + 6 digits)

Frequency	10Hz to 1MHz	0.001Hz to 1kHz	±(0.1% + 5 digits)
Duty Cycle	0.1% to 99.9% (≤100kHz)	0.01%	±1.5% (Range: 10% – 90%)

Sensitivity: 250mV and < 20V RMS

Maximum Input: 600V AC or 600V DC RMS

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V DC or 600V AC RMS

- **Diode Test:** Approx. 1mA, open circuit voltage ~3.0V DC
- **Continuity Check:** Audible signal <10Ω, max current 1.5mA
- **Sampling Frequency:** 3 samples per second
- **Auto Power off:** After ~15 minutes of inactivity.
- **Overload:** "OL" indicated on display
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3-3/4 digit, 4000 Count LCD











4

⚠ WARNINGS





To ensure safe operation and service of the meter, 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.
- Use only with CAT III or CAT IV rated test leads.
- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

	AC (Alternating Current)		AC/DC Voltage
	Resistance (in Ohms)		Audible Continuity
	Double Insulated Class II		Ground
	Warning or Caution		Risk of Electrical Shock
	Diode		Capacitance
Hz	Frequency	%	Duty-cycle
V	Voltage (Volts)	A	Amperage (Amps)
°F/°C	Temperature (Fahrenheit / Celsius)		

SYMBOLS ON LCD

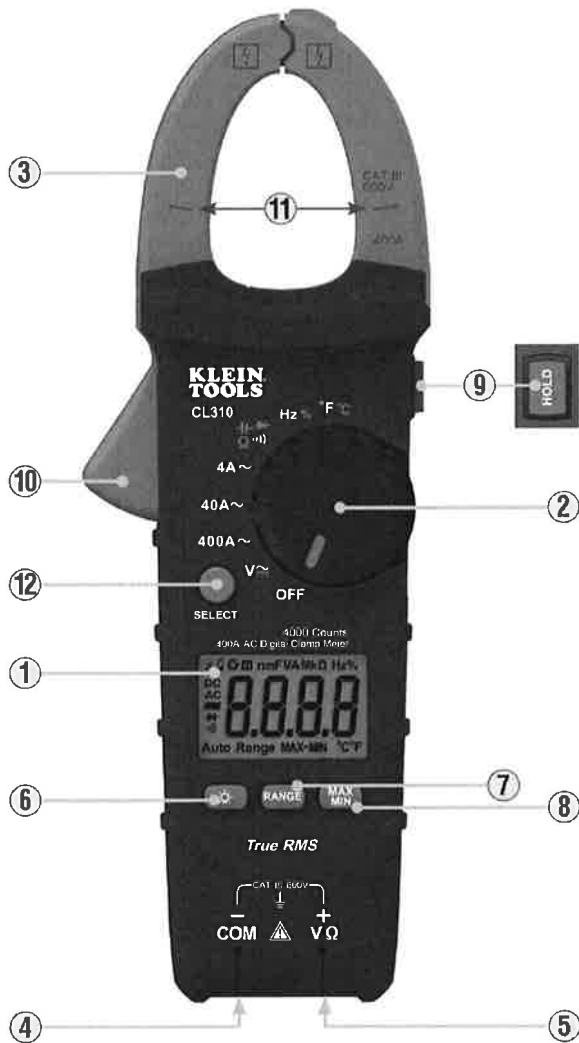
AC	AC (Alternating Current)	DC	DC (Direct Current)
-	Negative Reading		Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
MIN	Minimum Value Hold		Auto Power Off
	Low Battery		Audible Continuity
°F	Degrees (Fahrenheit)	°C	Degrees (Celsius)
M	Mega (value x 10 ⁶)	k	kilo (value x 10 ³)
m	milli (value x 10 ⁻³)	µ	micro (value x 10 ⁻⁶)
n	nano (value x 10 ⁻⁹)	V	Volts
A	Amps	Ω	Ohms
Hz%	Frequency/Duty Cycle		

5

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FEATURE DETAILS




NOTE: There are no user-serviceable parts inside meter.

- | | |
|-----------------------------|---|
| 1. 4000 count LCD display | 7. "RANGE" button |
| 2. Function selector switch | 8. "MAX/MIN" button |
| 3. Clamp | 9. Data Hold button |
| 4. "COM" jack | 10. Clamp trigger (press to open clamp) |
| 5. "VΩ" jack | 11. Arrow markings |
| 6. Backlight button | 12. "SELECT" button |

6

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch (2) from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch (2) to the OFF setting. By default, the meter will automatically power OFF after 15 minutes of inactivity. If the meter automatically powers-OFF while in a measurement setting, rotate Function Selector (2) switch to any other setting (excluding the OFF setting) to power ON the meter. To deactivate the power OFF functionality press and hold the "SELECT" button (12) before powering ON from the OFF setting. When auto power OFF is deactivated, the Auto Power Off icon  will not be visible in the display.

"SELECT" BUTTON (FOR SECONDARY FUNCTIONS)

The "SELECT" button (12) activates the secondary function for each application accessible by the function selector switch (2). For voltage, it toggles between AC and DC. For the other functions, it switches between °F and °C, between Hz and % Duty-cycle, and between Continuity, Resistance, Capacitance and Diode-Test. The default function for each application is printed on the meter in white; the secondary function or functions for each setting is printed on the meter in orange.

BACKLIGHT

Press Backlight button symbol (6) to turn ON or OFF the backlight. The backlight does not automatically power OFF.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the "RANGE" button (7).

1. Press the "RANGE" button (7) to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button (7) to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button (7) for more than one second (**AUTO** is reactivated).

7

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FUNCTION BUTTONS

MAX/MIN

When the "MAX/MIN" button (8) is pressed, the meter keeps track of the Maximum and Minimum values and the difference between the Maximum and Minimum values as the meter continues to take samples.

1. When measuring, press "MAX/MIN" button (8) to toggle between the Maximum value (MAX), the Minimum value (MIN), and the difference between Maximum and Minimum (MAX-MIN) values. If a new maximum or minimum occurs the display updates with that new value.
2. Press "MAX/MIN" button (8) for more than one second to return to normal measuring mode.

DATA HOLD

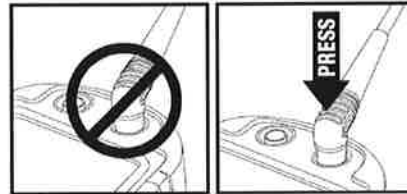
Press HOLD (9) to hold the measurement on the display. Press HOLD (9) again to release the display to return to live measuring.

8

OPERATING INSTRUCTIONS

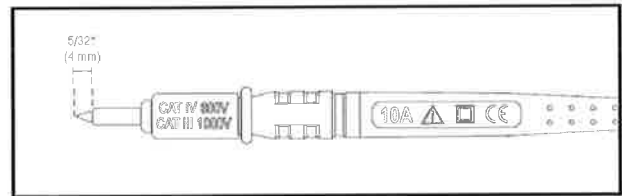
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



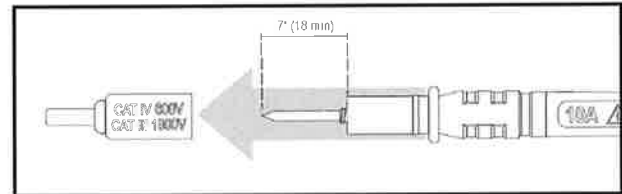
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



9

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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OPERATING INSTRUCTIONS

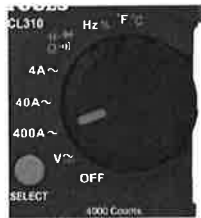
AC CURRENT (LESS THAN 400A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp in line with the arrow markings (11).



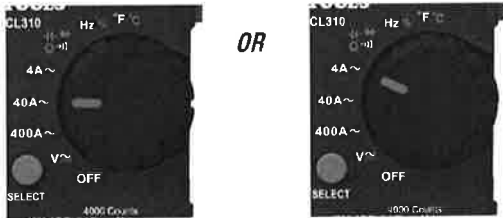
To measure current:

1. Rotate the Function Selector switch (2) to the 400 A setting.



2. Place clamp around wire. The current measurement will be shown in the display.

NOTE: If the measurement is less than 40A, rotate the Function Selector switch (2) to the 40 A setting for improved resolution. If the measurement is less than 4A, rotate the Function Selector switch (2) to the 4 A setting for improved resolution.



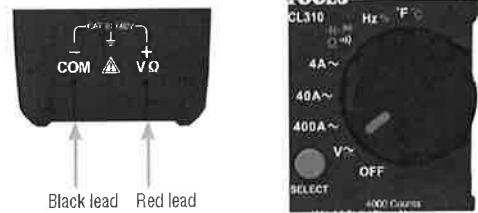
⚠ Disconnect test leads when measuring with the clamp.

10

OPERATING INSTRUCTIONS

AC/DC VOLTAGE (LESS THAN 600V)

1. Insert RED test lead into VΩ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the V setting for AC or DC measurements. The meter defaults to AC measurement. To measure DC, press the "SELECT" button (12) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected. Note "AC" or "DC" on the display.



Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

11

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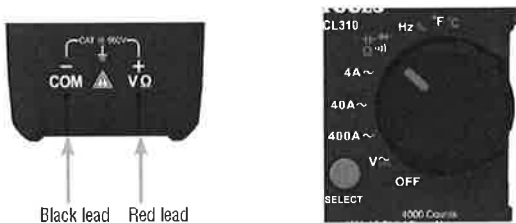
OPERATING INSTRUCTIONS

CONTINUITY

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Capacitance/Diode-Test Ω setting.

NOTE: The meter defaults to Continuity testing in this mode. Ensure that the Continuity Testing icon (🔊) is visible on the display. If not, press the "SELECT" button (12) repeatedly until the 🔊 icon is shown.

2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 10 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open display will show "OL".



⚠ DO NOT attempt to measure continuity on a live circuit.

12

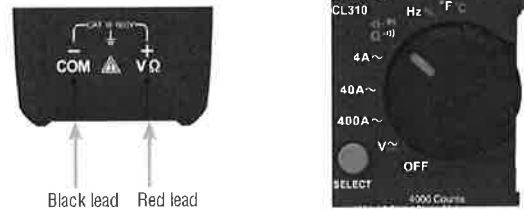
OPERATING INSTRUCTIONS

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Capacitance/Diode-Test Ω setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SELECT" button (12) once to enter Resistance testing mode. The Resistance icon Ω will appear on the display.

2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.



NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

⚠ DO NOT attempt to measure resistance on a live circuit.

13

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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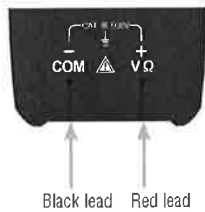
OPERATING INSTRUCTIONS

CAPACITANCE

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Capacitance/Diode-Test \rightarrow setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SELECT" button (12) twice to enter Capacitance testing mode. The Capacitance icon \rightarrow will appear on the display. The meter should read **0 nF** with test leads open.

2. Remove power from circuit.
3. Measure capacitance by connecting test leads across the capacitor. The meter will auto-range to display the measurement in the most appropriate range.



14

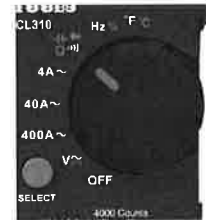
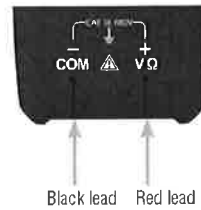
OPERATING INSTRUCTIONS

DIODE TEST

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Capacitance/Diode-Test \rightarrow setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SELECT" button (12) three times to enter Diode testing mode. The Diode icon \rightarrow will appear on the display.

2. Touch test leads to diode. A reading of 200-800mV on display indicates forward bias, "OL" indicates reverse bias. An open device will show "OL" in both polarities. A shorted device will show approximately 0mV.

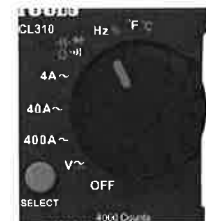
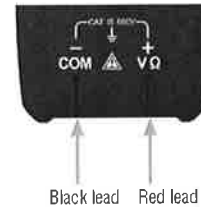


FREQUENCY / DUTY-CYCLE

1. Insert RED test lead into V Ω jack (5) and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Frequency/Duty-Cycle Hz% setting.

NOTE: The meter defaults to Frequency testing in this mode. To enter Duty-Cycle testing mode, press the "SELECT" button (12) once. Ensure that the appropriate icon (either Hz or %) appears on the display.

2. Measure by connecting test leads across the circuit.



15

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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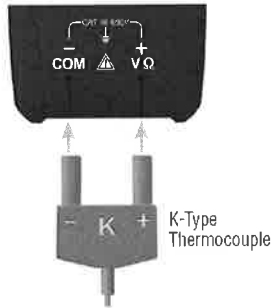
OPERATING INSTRUCTIONS

TEMPERATURE

1. Insert K-type thermocouple into the VΩ (5) and COM (4) jacks (observe polarity markings on thermocouple and meter), and rotate function selector switch (2) to the Temperature °F/°C setting.

NOTE: The meter defaults to Fahrenheit scale in this mode. To enter Celsius scale, press the "SELECT" button (12) once. Ensure that the appropriate icon (either °F or °C) appears on the display.

2. To measure temperature, make contact between the thermocouple tip and the object being measured. When thermocouple tip and object are in thermal equilibrium, the measurement on the display will stabilize. The meter will auto-range to display the measurement in the most appropriate range.




⚠ Remove thermocouple before switching meter to other measurement functions.

⚠ The thermocouple included with the original purchase is suitable for temperatures below 446°F / 230°C only. To measure higher temperatures, a K-type thermocouple with the appropriate measurement range should be used.

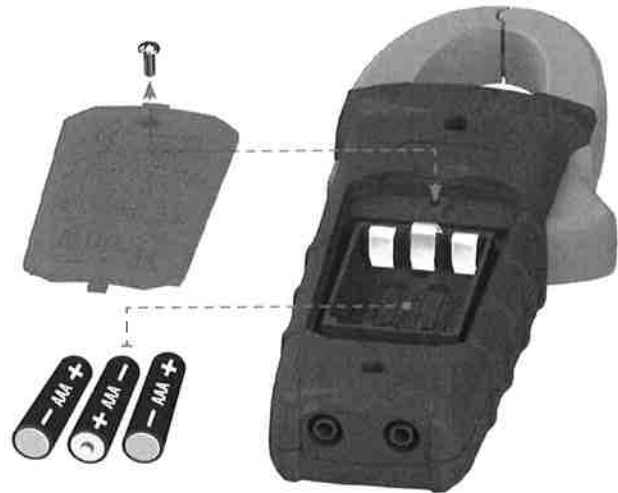
16

MAINTENANCE

BATTERY REPLACEMENT

When  indicator is displayed on LCD, batteries must be replaced.

1. Remove screw from battery door.
2. Replace 3 x AAA batteries (note proper polarity).
3. Replace battery door and fasten securely with screw.



⚠ To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.

⚠ To avoid risk of electric shock, do not operate meter while battery door is removed.

17

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. ***Do not use abrasive cleaners or solvents.***

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL / RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

CUSTOMER SERVICE

KLEIN TOOLS, INC.

450 Bond Street
Lincolnshire, IL 60069
1-877-775-5346

customerservice@kleintools.com
www.kleintools.com

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CL600



INSTRUCTION MANUAL
600A AC Auto-Ranging
Digital Clamp Meter

True RMS
Measurement
Technology

- NON-CONTACT VOLTAGE TESTER
- AUTO-RANGING
- DATA HOLD
- RANGE HOLD
- AUDIBLE CONTINUITY
- DIODE TEST



1000V \approx
600A \approx
60MΩ



ESPAÑOL pg. 15

FRANÇAIS pg. 29



Intertek



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SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

GENERAL SPECIFICATIONS

Klein Tools CL600 is an automatically ranging true root mean square (TRMS) digital clamp-meter that measures AC current via the clamp, and measures AC/DC voltage, resistance, continuity, and tests diodes via test-leads.

- **Operating Altitude:** 6562 ft. (2000m)
- **Relative Humidity:** <80% non-condensing
- **Operating Temp:** 32° to 104°F (0° to 40°C)
- **Storage Temp:** 14° to 140°F (-10° to 60°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 9.09" x 3.82" x 1.54" (231 x 97 x 39 mm)
- **Weight:** 11.8 oz. (335 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL STD 61010-1, 61010-2-032, 61010-2-033.

Certified to: CSA STD C22.2 # 61010-1,
61010-2-032, 61010-2-033.
IEC EN 61010-1, 61010-2-032,
61010-2-033, 61326-1.

- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 6.6 ft. (2m)
- **Safety Rating:** CAT IV 600V, CAT III 1000V, Class 2, Double insulation

CAT III: Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.

CAT IV: Measurement category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.

- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy (50/60 Hz)
AC Voltage (V AC)	6.000V	1mV	±(1.5% + 5 digits)
	60.00V	10mV	±(1.2% + 5 digits)
	600.0V	100mV	
	1000V	1V	±(1.5% + 5 digits)
DC Voltage (V DC)	600mV	0.1mV	±(1.0% + 8 digits)
	6.000V	1mV	±(1.0% + 3 digits)
	60.00V	10mV	
	600.0V	100mV	
	1000V	1V	
			±(1.2% + 3 digits)

Input Impedance: 10MΩ

Frequency Range: 50 to 400Hz

Maximum Input: 1000V AC RMS or 1000V DC

AC Current (A AC)	Range	Resolution	Accuracy
	60.00A	10mA	±(2.0% + 8 digits)
	600.0A	100mA	±(2.0% + 5 digits)

Frequency Range: 50 to 60Hz

Function	Range	Resolution	Accuracy
Resistance	600.0Ω	0.1Ω	±(1.5% + 5 digits)
	6.000KΩ	1Ω	
	60.00kΩ	10Ω	
	600.0kΩ	100Ω	
	6.000MΩ	1kΩ	
	60.00MΩ	10kΩ	±(2.0% + 10 digits)

Maximum Input: 600V AC RMS or 600V DC

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V AC RMS or 600V DC

- **Diode Test:** Max. 1.5mA, open circuit voltage ~3.0V DC
- **Continuity Check:** Audible signal <50Ω, current <0.35mA
- **Sampling Frequency:** 3 samples per second
- **Auto Power off:** After ~30 minutes of inactivity.
- **Overload:** "OL" indicated on display, overload protection 1000V in Voltage setting, 600V RMS in all other settings
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3-5/6 digit, 6000 Count LCD

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

⚠ WARNINGS

To ensure safe operation and service of the meter, 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.
- Use only with CAT IV rated test leads.
- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

~	AC	— —	DC
Ω	Resistance (in Ohms)	•))	Audible Continuity
⊞	Double Insulated Class II	⊥	Ground
▶	Diode	A	Amperage (Amps)
V	Voltage (Volts)		

⚠ Warning or Caution

To ensure safe operation and service of this meter, follow all warnings and instructions detailed in this manual.

⚠ Risk of Electrical Shock

Improper use of this meter can lead to risk of electrical shock. Follow all warnings and instructions detailed in this manual.

⚠ Risk of Electrical Shock

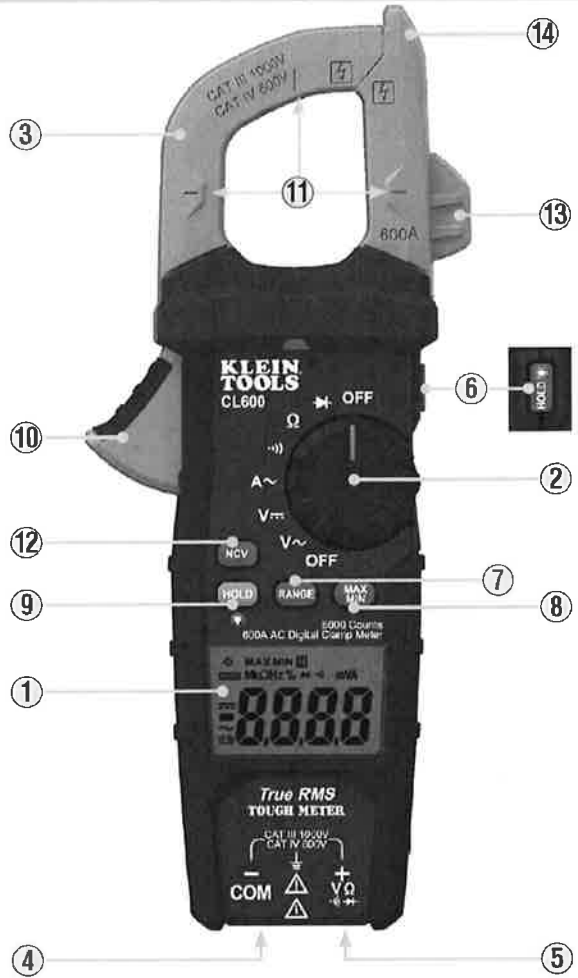
Application around and removal from UNINSULATED HAZARDOUS LIVE conductors is permitted.

SYMBOLS ON LCD

~	AC Measurement	— —	DC Measurement
-	Negative Reading	⊞	Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
MIN	Minimum Value Hold	🔋	Low Battery
⏻	Auto Power Off	•))	Audible Continuity
k	kilo (value x 10 ³)	M	Mega (value x 10 ⁶)
m	mili (value x 10 ⁻³)	Ω	Ohms
V	Volts	A	Amps

4

FEATURE DETAILS



NOTE: There are no user-serviceable parts inside meter.

- | | |
|---------------------------------|---|
| 1. 6000 count LCD display | 8. "MAX/MIN" button |
| 2. Function selector switch | 9. Data Hold / Backlight button #2 |
| 3. Clamp | 10. Clamp trigger (press to open clamp) |
| 4. "COM" jack | 11. Arrow markings |
| 5. "VΩ" jack | 12. Non-Contact Voltage Testing Button |
| 6. Data Hold / Backlight button | 13. Test lead holder for test probe |
| 7. "RANGE" button | 14. Non-Contact Voltage Testing Sensor |

5

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch (2) from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch (2) to either of the OFF settings. By default, the meter will automatically power OFF after 30 minutes of inactivity. If the meter automatically powers OFF while in a measurement setting, rotate Function Selector switch (2) to any other setting (excluding the OFF settings) to power ON the meter. To deactivate the power OFF functionality press and hold the "RANGE" button (7) before powering ON from the OFF setting. When auto power OFF is deactivated, the Auto Power Off icon (6) will not be visible in the display.

DATA HOLD

Press either of the Data Hold / Backlight buttons (8) or (9) to hold the measurement on the display. Press again to release the display to return to live measuring.

BACKLIGHT

Press and hold either of the Data Hold / Backlight buttons (8) or (9) for more than one second to turn ON the backlight. The backlight will automatically power OFF after 3 minutes of inactivity.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the Range button (7).

1. Press the "RANGE" button (7) to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button (7) to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button (7) for more than one second (**AUTO** is reactivated).

6

FUNCTION BUTTONS

MAX/MIN

When the "MAX/MIN" button (8) is pressed, the meter keeps track of the Maximum and Minimum values and the difference between the Maximum and Minimum values as the meter continues to take samples.

1. When measuring, press "MAX/MIN" button (8) to toggle between the Maximum value (MAX) and the Minimum value (MIN).
2. Press "MAX/MIN" button (8) for more than one second to return to normal measuring mode.

NON-CONTACT VOLTAGE TESTING

Press the NCV button (12) to test for AC voltage using the integrated non-contact voltage meter. Approach the conductor under test leading with the sensing antenna (14). The red LED flashes to show warning signals when AC voltage is detected.

TEST LEAD HOLDER

When working with test leads, one test probe may be mounted in the test lead holder (13) to facilitate natural two-handed operation with the clamp in one hand and a single test probe in the other.



7

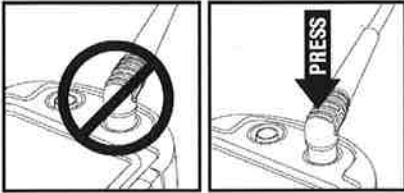
SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

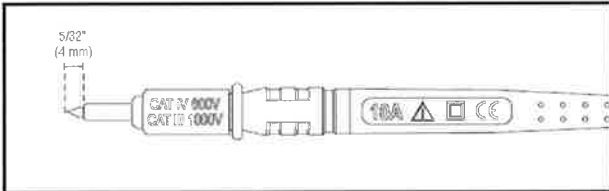
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



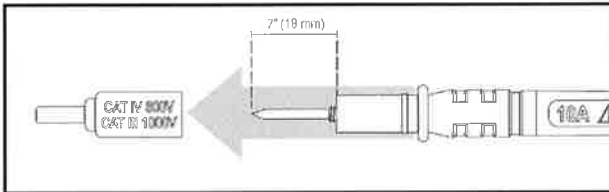
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



8

OPERATING INSTRUCTIONS

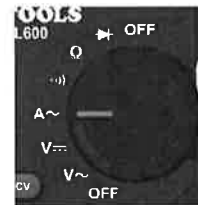
AC CURRENT (LESS THAN 600A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp (3) and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp (3) is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp (3) in line with the arrow markings (11).



To measure current:

1. Rotate the Function Selector switch (2) to the AC current A~ setting.



2. Place clamp (3) around wire. The current measurement will be shown in the display. The meter will auto-range to display the measurement in the most appropriate range.

⚠ Disconnect test leads when measuring with the clamp.

9

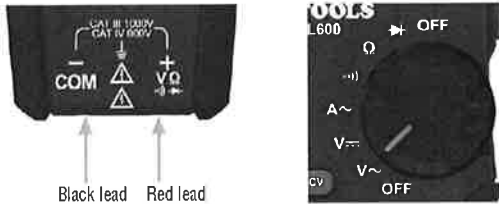
SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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OPERATING INSTRUCTIONS

AC VOLTAGE (LESS THAN 1000V)

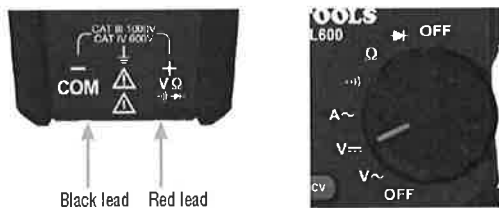
1. Insert RED test lead into V Ω jack ⑤, and BLACK test lead into COM jack ④, and rotate function selector switch ② to the AC voltage V \sim setting.



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

DC VOLTAGE (LESS THAN 1000V)

1. Insert RED test lead into V Ω jack ⑤, and BLACK test lead into COM jack ④, and rotate function selector switch ② to the DC voltage V --- setting.



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

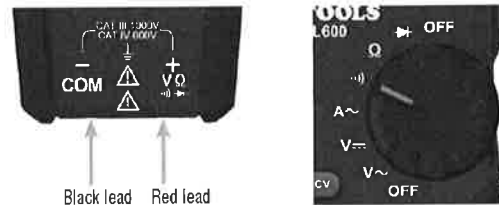
NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

10

OPERATING INSTRUCTIONS

CONTINUITY

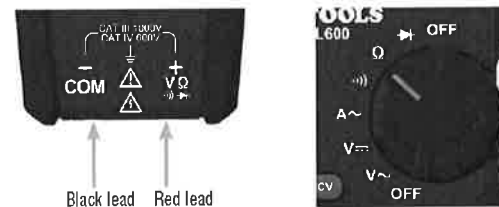
1. Insert RED test lead into V Ω jack ⑤, and BLACK test lead into COM jack ④, and rotate function selector switch ② to the Continuity --- setting.
2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 50 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open display will show "OL".



⚠ DO NOT attempt to measure continuity on a live circuit.

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack ⑤, and BLACK test lead into COM jack ④, and rotate function selector switch ② to the Resistance Ω setting.
2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.



NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

⚠ DO NOT attempt to measure resistance on a live circuit.

11

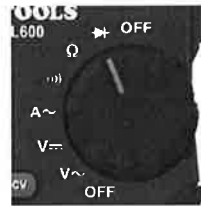
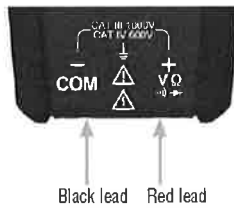
SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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OPERATING INSTRUCTIONS

DIODE TEST

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Diode-Test \rightarrow setting.
2. Touch test leads to diode. A reading of 200-800mV on display indicates forward bias, "OL" indicates reverse bias. An open device will show "OL" in both polarities. A shorted device will show approximately 0mV.



12

MAINTENANCE

BATTERY REPLACEMENT

When E indicator is displayed on LCD, batteries must be replaced.

1. Remove screw from battery door.
2. Replace 2 x AAA batteries (note proper polarity).
3. Replace battery door and fasten securely with screw.



⚠ To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.

⚠ To avoid risk of electric shock, do not operate meter while battery door is removed.

13

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. ***Do not use abrasive cleaners or solvents.***

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL/RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

CUSTOMER SERVICE

KLEIN TOOLS, INC.
450 Bond Street
Lincolnshire, IL 60069
1-877-775-5346

customerservice@kleintools.com
www.kleintools.com

ENGLISH

CL700



INSTRUCTION MANUAL

**600A AC Auto-Ranging
Digital Clamp Meter**

**True RMS
Measurement
Technology**



- NON-CONTACT VOLTAGE METER
- LOW IMPEDANCE
- DATA & RANGE HOLD
- AUDIBLE CONTINUITY
- DIODE TEST
- CAPACITANCE & FREQUENCY



1000V
600A
60MΩ



ESPAÑOL pg. 17

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SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

GENERAL SPECIFICATIONS

Klein Tools CL700 is an automatically ranging true root mean square (TRMS) digital clamp-meter that measures AC current via the clamp, and measures AC/DC voltage, resistance, continuity, frequency, capacitance, and tests diodes via test-leads, and temperature via a thermocouple probe. It also features a Low Impedance (LoZ) mode for identifying and eliminating ghost or stray voltages.

- **Operating Altitude:** 6562 ft. (2000m)
- **Relative Humidity:** <80% non-condensing
- **Operating Temp:** 32° to 104°F (0° to 40°C)
- **Storage Temp:** 14° to 140°F (-10° to 60°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 9.09" x 3.82" x 1.54" (231 x 97 x 39 mm)
- **Weight:** 11.8 oz. (335 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL STD 61010-1, 61010-2-032, 61010-2-033.
 Certified to: CSA STD C22.2 # 61010-1, 61010-2-032, 61010-2-033.
 IEC EN 61010-1, 61010-2-032, 61010-2-033, 61326-1.

- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 6.6 ft. (2m)
- **Safety Rating:** CAT IV 600V, CAT III 1000V, Class 2, Double insulation
CAT III: Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.
CAT IV: Measurement category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy (50/60 Hz)
AC Voltage (V AC)	6.000V	1mV	±(1.5% + 5 digits)
	60.00V	10mV	±(1.2% + 5 digits)
	600.0V	100mV	
	1000V	1V	±(1.5% + 5 digits)
DC Voltage (V DC)	600mV	0.1mV	±(1.0% + 8 digits)
	6.000V	1mV	±(1.0% + 3 digits)
	60.00V	10mV	
	600.0V	100mV	
	1000V	1V	±(1.2% + 3 digits)

Input Impedance: 10MΩ **Frequency Range:** 50 to 400Hz
Maximum Input: 1000V AC RMS or 1000V DC

AC Current (A AC)	Range	Resolution	Accuracy
	60.00A	10mA	±(2.0% + 8 digits)
	600.0A	100mA	±(2.0% + 5 digits)

Frequency Range: 50 to 60Hz

Function	Range	Resolution	Accuracy
Resistance	600.0Ω	0.1Ω	±(1.5% + 5 digits)
	6.000KΩ	1Ω	
	60.00kΩ	10Ω	
	600.0kΩ	100Ω	
	6.000MΩ	1kΩ	±(2.0% + 10 digits)
	60.00MΩ	10kΩ	

Maximum Input: 600V AC RMS or 600V DC

Function	Range	Resolution	Accuracy
Capacitance	60.00nF	0.010nF	±(5.0% + 35 digits)
	600.0nF	0.1nF	±(3.0% + 5 digits)
	6.000µF	0.001µF	
	60.00µF	0.01µF	
	600.0µF	0.1µF	±(5.0% + 5 digits)
	6000µF	1µF	

Maximum Input: 600V AC RMS or 600V DC

Function	Range	Resolution	Accuracy
Temperature (Fahrenheit)	-14° to 32°F	0.1 to 1°F	±(2.0% + 9°F)
	33° to 752°F		±(1.0% + 5.4°F)
	753° to 1000°F		±(2.0% + 9°F)
Temperature (Celsius)	-26° to 0°C	0.1 to 1°C	±(2.0% + 5°C)
	1° to 400°C		±(1.0% + 3°C)
	401° to 538°C		±(2.0% + 5°C)

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

ELECTRICAL SPECIFICATIONS

FREQUENCY (AUTO-RANGING)

9.999Hz	0.001Hz	±(1.0% + 5 digits)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	1Hz	
99.99kHz	10Hz	
500.00kHz	100Hz	

Sensitivity: >8V RMS

Maximum Input: 600V DC or 600V AC RMS

DUTY CYCLE

1% to 99.9%	0.1%	±(1.2% + 2 digits)
-------------	------	--------------------

Pulse width: 0.1 – 100ms

Frequency width: 5Hz to 10kHz

Sensitivity: >8V RMS

Maximum Input: 600V DC or 600V AC RMS

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V AC RMS or 600V DC

- **Diode Test:** Max. 1.5mA, open circuit voltage ~3.0V DC
- **Continuity Check:** Audible signal <50Ω, test current <0.35mA
- **Sampling Frequency:** 3 samples per second
- **Low Impedance (Low Z):** Input impedance >3kΩ
Max input 600V RMS
- **Auto Power off:** After ~30 minutes of inactivity
- **Overload:** "OL" indicated on display, overload protection
1000V in Voltage setting, 600V RMS in all other settings
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3-5/6 digit, 6000 Count LCD

⚠ WARNINGS

To ensure safe operation and service of the meter, 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.
- Use only with CAT IV rated test leads.

4

⚠ WARNINGS

- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

~	AC	⎓	AC/DC
Ω	Resistance (in Ohms)	🔊	Audible Continuity
⊞	Double Insulated Class II	⏚	Ground
▶	Diode	⏏	Capacitance
Hz	Frequency	%	Duty-cycle
°F/°C	Temperature (Fahrenheit / Celsius)	⏚	Low Impedance
V	Voltage (Volts)	A	Amperage (Amps)

⚠ Warning or Caution

To ensure safe operation and service of this meter, follow all warnings and instructions detailed in this manual.

⚡ Risk of Electrical Shock

Improper use of this meter can lead to risk of electrical shock. Follow all warnings and instructions detailed in this manual.

⚡ Risk of Electrical Shock

Application around and removal from UNINSULATED HAZARDOUS LIVE conductors is permitted.

SYMBOLS ON LCD

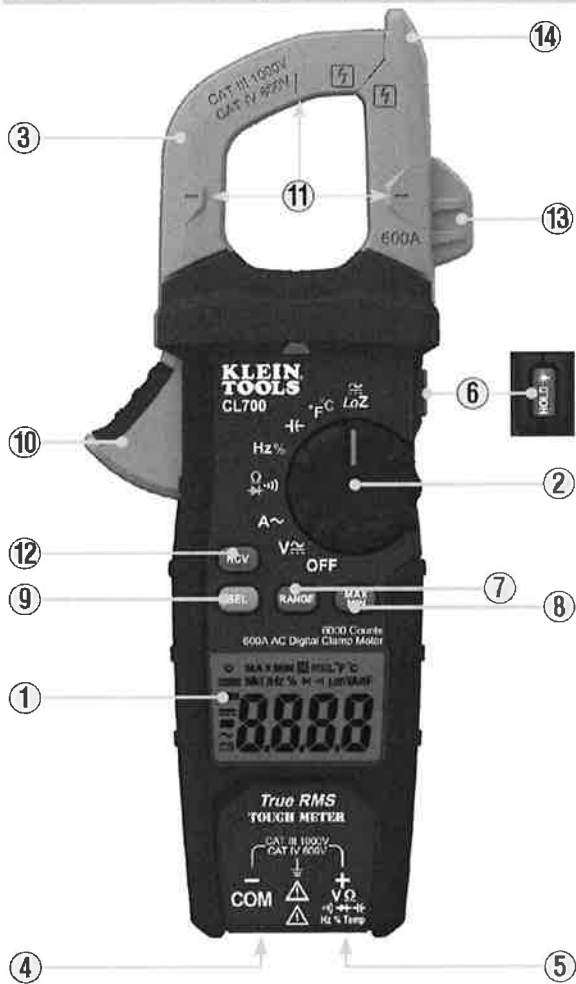
~	AC Measurement	⎓	DC Measurement
-	Negative Reading	⏏	Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
MIN	Minimum Value Hold	🔋	Low Battery
⏏	Auto Power Off	🔊	Audible Continuity
▶	Diode Test	k	kilo (value x 10 ³)
M	Mega (value x 10 ⁶)	m	mili (value x 10 ⁻³)
μ	micro (value x 10 ⁻⁶)	n	nano (value x 10 ⁻⁹)
Ω	Ohms	V	Volts
A	Amps	F	Farads
Hz	Frequency (Hertz)	%	Duty Cycle
°F	Degrees (Fahrenheit)	°C	Degrees (Celsius)

5

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FEATURE DETAILS




NOTE: There are no user-serviceable parts inside meter.

- | | |
|---------------------------------|---|
| 1. 6000 count LCD display | 8. "MAX/MIN" button |
| 2. Function selector switch | 9. "SEL" (select) button |
| 3. Clamp | 10. Clamp trigger (press to open clamp) |
| 4. "COM" jack | 11. Arrow markings |
| 5. "VΩ" jack | 12. Non-contact Voltage Testing Button |
| 6. Data Hold / Backlight button | 13. Test lead holder for test probe |
| 7. "RANGE" button | 14. Non-Contact Voltage Testing Sensor |

6

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch ② from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch ② to the OFF setting. By default, the meter will automatically power OFF after 30 minutes of inactivity. If the meter automatically powers OFF while in a measurement setting, rotate Function Selector switch ② to any other setting (excluding the OFF setting) to power ON the meter. To deactivate the power OFF functionality press and hold the "SEL" button ⑨ before powering ON from the OFF setting. When auto power OFF is deactivated, the Auto Power Off icon  will not be visible in the display.

"SEL" (SELECT) BUTTON (FOR SECONDARY FUNCTIONS)

The "SEL" button ⑨ activates the secondary function for each application accessible by the function selector switch ②. For voltage and low impedance it toggles between AC and DC, for the other functions it switches between °F and °C, between Hz and % Duty-Cycle, and between Continuity, Resistance, and Diode-Test. The default function for each application is printed on the meter in white; the secondary function or functions for each setting is printed on the meter in orange.

DATA HOLD

Press the Data Hold / Backlight button ⑥ to hold the measurement on the display. Press again to release the display to return to live measuring.

BACKLIGHT

Press and hold the Data Hold / Backlight button ⑥ for more than one second to turn ON the backlight. The backlight will automatically power OFF after 3 minutes of inactivity.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the Range button ⑦.

1. Press the "RANGE" button ⑦ to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button ⑦ to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button ⑦ for more than one second (**AUTO** is reactivated).

7

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FUNCTION BUTTONS

MAX/MIN

When the "MAX/MIN" button (8) is pressed, the meter keeps track of the Maximum and Minimum values and the difference between the Maximum and Minimum values as the meter continues to take samples.

1. When measuring, press "MAX/MIN" button (8) to toggle between the Maximum value (MAX) and the Minimum value (MIN). If a new Maximum or Minimum occurs, the display will update with the new value.
2. Press "MAX/MIN" button (8) for more than one second to return to normal measuring mode.

NON-CONTACT VOLTAGE TESTING

Press the NCV button (12) to test for AC voltage using the integrated non-contact voltage meter. Approach the conductor under test leading with the sensing antenna (14). The red LED flashes to show warning signals when AC voltage is detected.

TEST LEAD HOLDER

When working with test leads, one test probe may be mounted in the test lead holder (13) to facilitate natural two-handed operation with the clamp in one hand and a single test probe in the other.

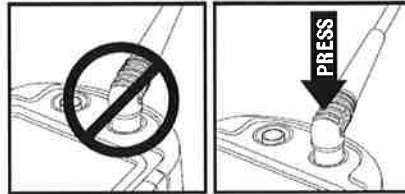


8

OPERATING INSTRUCTIONS

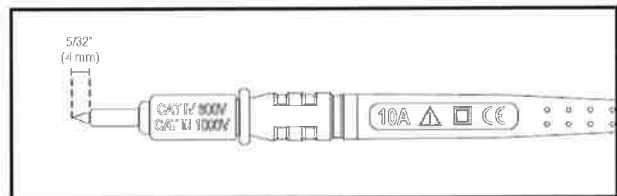
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



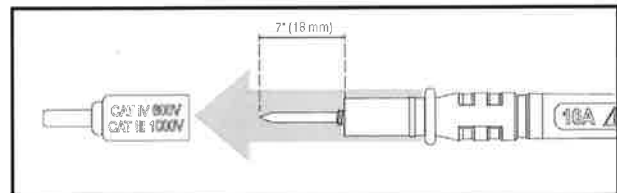
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



9

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

AC CURRENT (LESS THAN 600A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp (3) and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp (3) is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp (3) in line with the arrow markings (11).



To measure current:

1. Rotate the Function Selector switch (2) to the AC current A~ setting.



2. Place clamp (3) around wire. The current measurement will be shown in the display. The meter will auto-range to display the measurement in the most appropriate range.

⚠ Disconnect test leads when measuring with the clamp.

10

OPERATING INSTRUCTIONS

AC/DC VOLTAGE (LESS THAN 1000V)

1. Insert RED test lead into VΩ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the AC/DC voltage V~ setting. The meter defaults to AC measurement. To measure DC, press the "SEL" button (9) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected. Note "AC" or "DC" on the display.



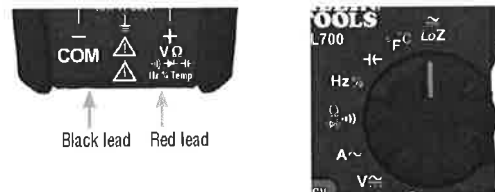
2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

AC/DC LoZ VOLTAGE (LESS THAN 600V)

1. Insert RED test lead into VΩ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the AC/DC LoZ voltage LoZ setting. The meter defaults to AC measurement. To measure DC, press the "SEL" button (9) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected. Note "AC" or "DC" on the display.



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

⚠ Do not attempt to measure voltages greater than 600V in LoZ setting.

11

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

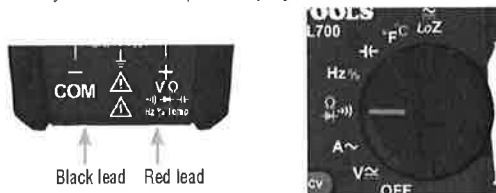
OPERATING INSTRUCTIONS

CONTINUITY

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test Ω setting.

NOTE: The meter defaults to Continuity testing in this mode. Ensure that the Continuity Testing icon \rightarrow is visible on the display. If not, press the "SEL" button (9) repeatedly until the \rightarrow icon is shown.

2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 50 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open, display will show "OL".



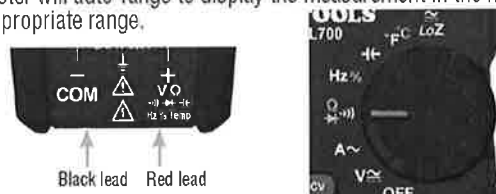
⚠ DO NOT attempt to measure continuity on a live circuit.

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test Ω setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SEL" button (9) once to enter Resistance testing mode. The Resistance icon Ω will appear on the display.

2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.



NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

⚠ DO NOT attempt to measure resistance on a live circuit.

12

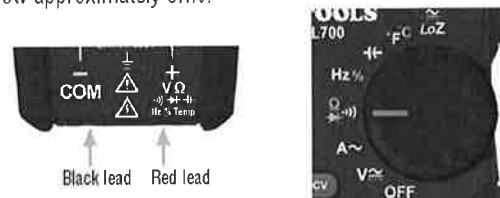
OPERATING INSTRUCTIONS

DIODE TEST

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test \rightarrow setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SEL" button (9) twice to enter Diode testing mode. The Diode icon \rightarrow will appear on the display.

2. Touch test leads to diode. A reading of 200-800mV on display indicates forward bias, "OL" indicates reverse bias. An open device will show "OL" in both polarities. A shorted device will show approximately 0mV.

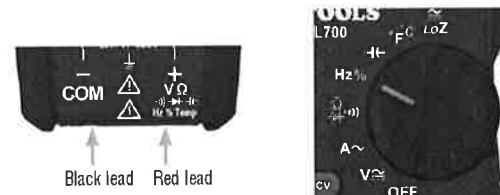


FREQUENCY / DUTY-CYCLE

1. Insert RED test lead into V Ω jack (5) and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Frequency/Duty-Cycle Hz% setting.

NOTE: The meter defaults to Frequency testing in this mode. To enter Duty-Cycle testing mode, press the "SEL" button (9) once. Ensure that the appropriate icon (either Hz or %) appears on the display.

2. Measure by connecting test leads across the circuit.



CAPACITANCE

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Capacitance μ F setting.

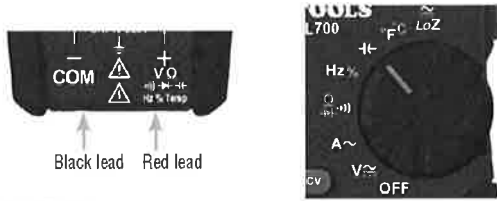
13

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

- Remove power from circuit.
- Measure capacitance by connecting test leads across the capacitor. The meter will auto-range to display the measurement in the most appropriate range.



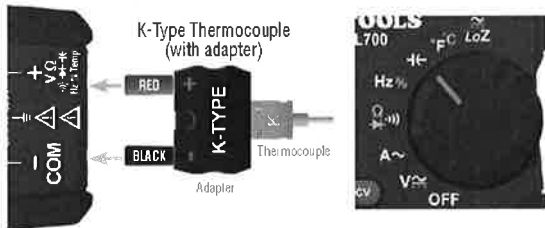
TEMPERATURE

- Insert K-type thermocouple (with adapter) into the VΩ (5) and COM (4) jacks (observe polarity markings on thermocouple and meter), and rotate function selector switch (2) to the Temperature °F/°C setting.

NOTE: The meter defaults to Fahrenheit scale in this mode. To enter Celsius scale, press the "SEL" button (9) once. Ensure that the appropriate icon (either °F or °C) appears on the display.

NOTE: The meter may be set to default to the Celsius scale by powering-ON the meter from the OFF position with the Data Hold & Backlight button (6) depressed. To re-set the default to the Fahrenheit scale repeat the power-ON sequence.

- To measure temperature, make contact between the thermocouple tip and the object being measured. When thermocouple tip and object are in thermal equilibrium, the measurement on the display will stabilize. The meter will auto-range to display the measurement in the most appropriate range.



⚠ Remove thermocouple before switching meter to other measurement functions.

⚠ The thermocouple included with the original purchase is suitable for temperatures below 356°F / 180°C only. To measure higher temperatures, a K-type thermocouple with the appropriate measurement range should be used.

14

MAINTENANCE

BATTERY REPLACEMENT

When indicator is displayed on LCD, batteries must be replaced.

- Remove screw from battery door.
- Replace 2 x AAA batteries (note proper polarity).
- Replace battery door and fasten securely with screw.



⚠ To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.

⚠ To avoid risk of electric shock, do not operate meter while battery door is removed.

15

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. **Do not use abrasive cleaners or solvents.**

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL / RECYCLE



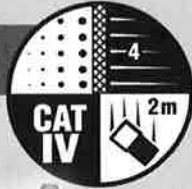
Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

CUSTOMER SERVICE

KLEIN TOOLS, INC.
450 Bond Street
Lincolnshire, IL 60069
1-877-775-5346
customerservice@kleintools.com
www.kleintools.com

ENGLISH

CL800



INSTRUCTION MANUAL
600A AC/DC Auto-Ranging
Digital Clamp Meter

True RMS
Measurement
Technology



- NON-CONTACT VOLTAGE TESTER
- LOW IMPEDANCE
- DATA & RANGE HOLD
- AUDIBLE CONTINUITY
- DIODE TEST
- CAPACITANCE & FREQUENCY



1000V
600A
60MΩ



ESPAÑOL pg. 17

FRANÇAIS pg. 33

TOUGH METER



Intertek

KLEIN TOOLS EST. 1857

For Professionals... Since 1857™



SUPPLIER DECLARATION OF CONFORMITY (SDoC)

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GENERAL SPECIFICATIONS

Klein Tools CL800 is an automatically ranging true root mean square (TRMS) digital clamp-meter that measures AC/DC current via the clamp, measures AC/DC voltage, resistance, continuity, frequency, capacitance, and tests diodes via test-leads, and temperature via a thermocouple probe. It also features a Low Impedance (LoZ) mode for identifying and eliminating ghost or stray voltages.

- **Operating Altitude:** 6562 ft. (2000m)
- **Relative Humidity:** <80% non-condensing
- **Operating Temp:** 32° to 104°F (0° to 40°C)
- **Storage Temp:** 14° to 140°F (-10° to 60°C)
- **Accuracy:** Values stated at 65° to 83°F (18° to 28°C)
- **Temp Coefficient:** 0.1 x (Quoted Accuracy) per °C above 28°C or below 18°C, corrections are required when ambient working temp is outside of Accuracy Temp range
- **Dimensions:** 9.09" x 3.82" x 1.54" (231 x 97 x 39 mm)
- **Weight:** 12.5 oz. (354 g) including batteries
- **Calibration:** Accurate for one year
- **Standards:** Conforms to: UL STD 61010-1, 61010-2-032, 61010-2-033.
 Certified to: CSA STD C22.2 # 61010-1, 61010-2-032, 61010-2-033.
 IEC EN 61010-1, 61010-2-032, 61010-2-033, 61326-1.
- **Pollution degree:** 2
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 6.6 ft. (2m)
- **Safety Rating:** CAT IV 600V, CAT III 1000V, Class 2, Double insulation
CAT III: Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.
CAT IV: Measurement category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

2

ELECTRICAL SPECIFICATIONS

Function	Range	Resolution	Accuracy (50/60 Hz)
AC Voltage (V AC)	6.000V	1mV	±(1.5% + 5 digits)
	60.00V	10mV	±(1.2% + 5 digits)
	600.0V	100mV	
	1000V	1V	±(1.5% + 5 digits)
DC Voltage (V DC)	600mV	0.1mV	±(1.0% + 8 digits)
	6.000V	1mV	±(1.0% + 3 digits)
	60.00V	10mV	
	600.0V	100mV	
	1000V	1V	±(1.2% + 3 digits)

Input Impedance: 10MΩ **Frequency Range:** 50 to 400Hz
Maximum Input: 1000V AC RMS or 1000V DC

AC Current (A AC)	60.00A	10mA	±(2.0% + 8 digits)
	600.0A	100mA	±(2.0% + 5 digits)
DC Current (A DC)	60.00A	10mA	±(2.0% + 8 digits)
	600.0A	100mA	±(2.0% + 5 digits)

Frequency Range: 50 to 60Hz

Function	Range	Resolution	Accuracy
Resistance	600.0Ω	0.1Ω	±(1.5% + 5 digits)
	6.000KΩ	1Ω	
	60.00kΩ	10Ω	
	600.0kΩ	100Ω	
	6.000MΩ	1kΩ	±(2.0% + 10 digits)
60.00MΩ	10kΩ		

Maximum Input: 600V AC RMS or 600V DC

Capacitance	60.00nF	0.010nF	±(5.0% + 35 digits)
	600.0nF	0.1nF	±(3.0% + 5 digits)
	6.000µF	0.001µF	
	60.00µF	0.01µF	±(5.0% + 5 digits)
	600.0µF	0.1µF	
6000µF	1µF		

Maximum Input: 600V AC RMS or 600V DC

Temperature (Fahrenheit)	-14° to 32°F	0.1 to 1°F	±(2.0% + 9°F)
	33° to 752°F		±(1.0% + 5.4°F)
	753° to 1000°F		±(2.0% + 9°F)
Temperature (Celsius)	-26° to 0°C	0.1 to 1°C	±(2.0% + 5°C)
	1° to 400°C		±(1.0% + 3°C)
	401° to 538°C		±(2.0% + 5°C)

3

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

ELECTRICAL SPECIFICATIONS

FREQUENCY (AUTO-RANGING)

9.999Hz	0.001Hz	±(1.0% + 5 digits)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	1Hz	
99.99kHz	10Hz	
500.00kHz	100Hz	

Sensitivity: >8V RMS

Maximum Input: 600V DC or 600V AC RMS

DUTY CYCLE

1% to 99.9%	0.1%	±(1.2% + 2 digits)
-------------	------	--------------------

Pulse width: 0.1 – 100ms

Frequency width: 5Hz to 10kHz

Sensitivity: >8V RMS

Maximum Input: 600V DC or 600V AC RMS

OTHER MEASUREMENT APPLICATIONS

Maximum Input: 600V AC RMS or 600V DC

- **Diode Test:** Max. 1.5mA, open circuit voltage ~3.0V DC
- **Continuity Check:** Audible signal <50Ω, test current <0.35mA
- **Sampling Frequency:** 3 samples per second
- **Low Impedance (Low Z):** Input impedance >3kΩ
Max input 600V RMS
- **Auto Power off:** After ~30 minutes of inactivity
- **Overload:** "OL" indicated on display, overload protection
1000V in Voltage setting, 600V RMS in all other settings
- **Polarity:** "-" on display indicates negative polarity
- **Display:** 3-5/6 digit, 6000 Count LCD

⚠ WARNINGS

To ensure safe operation and service of the meter, 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.
- Use only with CAT IV rated test leads.

4

⚠ WARNINGS

- 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 25V AC RMS or 60V DC. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries when a low battery indicator appears.
- Do not attempt to measure resistance or continuity on a live circuit.
- Always adhere to local and national safety codes. Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS ON METER

~	AC	⎓	AC/DC
Ω	Resistance (in Ohms)	🔊	Audible Continuity
⊞	Double Insulated Class II	⏚	Ground
▶	Diode	⏚	Capacitance
Hz	Frequency	%	Duty-cycle
°F/°C	Temperature (Fahrenheit / Celsius)	⎓	Low Impedance
V	Voltage (Volts)	A	Amperage (Amps)

⚠ Warning or Caution

To ensure safe operation and service of this meter, follow all warnings and instructions detailed in this manual.

⚠ Risk of Electrical Shock

Improper use of this meter can lead to risk of electrical shock. Follow all warnings and instructions detailed in this manual.

⚠ Risk of Electrical Shock

Application around and removal from UNINSULATED HAZARDOUS LIVE conductors is permitted.

SYMBOLS ON LCD

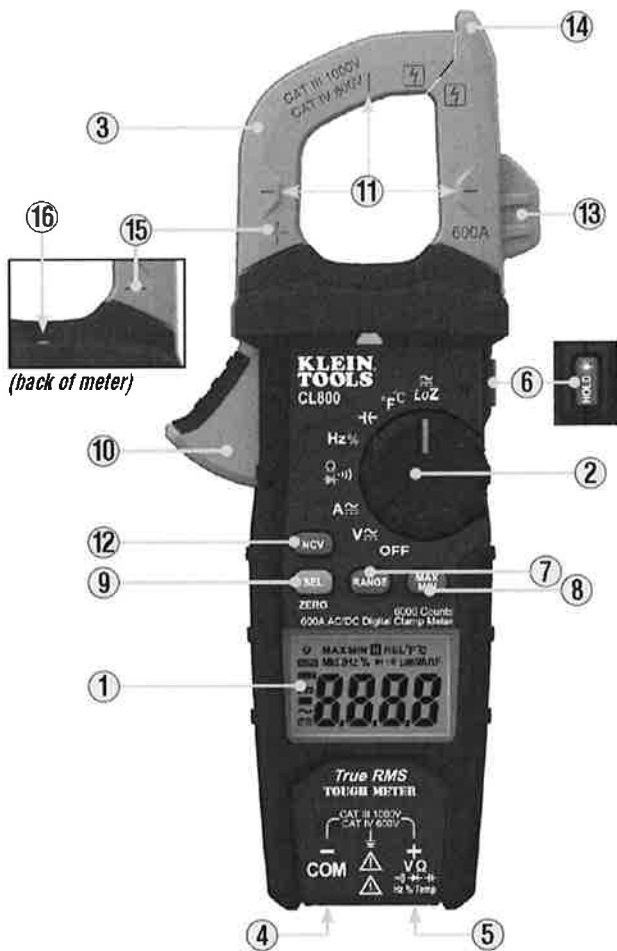
~	AC Measurement	⎓	DC Measurement
-	Negative Reading	🔊	Data Hold
AUTO	Auto Ranging	MAX	Maximum Value Hold
MIN	Minimum Value Hold	🔋	Low Battery
🔊	Auto Power Off	🔊	Audible Continuity
▶	Diode Test	k	Kilo (value x 10 ³)
M	Mega (value x 10 ⁶)	m	milli (value x 10 ⁻³)
μ	micro (value x 10 ⁻⁶)	n	nano (value x 10 ⁻⁹)
Ω	Ohms	V	Volts
A	Amps	F	Farads
Hz	Frequency (Hertz)	%	Duty Cycle
°F	Degrees (Fahrenheit)	°C	Degrees (Celsius)

5

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FEATURE DETAILS




NOTE: There are no user-serviceable parts inside meter.

- | | |
|---|---|
| 1. 6000 count LCD display | 8. "MAX/MIN" button |
| 2. Function selector switch | 9. "SEL" (select) button |
| 3. Clamp | 10. Clamp trigger (press to open clamp) |
| 4. "COM" jack | 11. Arrow markings |
| 5. "VΩ" jack | 12. Non-Contact Voltage Testing Button |
| 6. Data Hold / Backlight / Worklight button | 13. Test lead holder for test probe |
| 7. "RANGE" button | 14. Non-Contact Voltage Testing Sensor |
| | 15. Polarity markings (for DC current) |
| | 16. Worklight |

6

FUNCTION BUTTONS

ON/OFF

To power ON the meter, rotate the Function Selector switch ② from the OFF setting to any measurement setting. To power OFF the meter, rotate the Function Selector switch ② to the OFF setting. By default, the meter will automatically power OFF after 30 minutes of inactivity. If the meter automatically powers OFF while in a measurement setting, rotate Function Selector switch ② to any other setting (excluding the OFF setting) to power ON the meter. To deactivate the power OFF functionality press and hold the "SEL" button ⑨ before powering ON from the OFF setting. When auto power OFF is deactivated, the Auto Power Off icon  will not be visible in the display.

"SEL" (SELECT) BUTTON (FOR SECONDARY FUNCTIONS)

The "SEL" button ⑨ activates the secondary function for each application accessible by the function selector switch ②. For current, voltage, and low impedance it toggles between AC and DC, for the other functions it switches between °F and °C, between Hz and % Duty-Cycle, and between Continuity, Resistance, and Diode-Test. The default function for each application is printed on the meter in white; the secondary function or functions for each setting is printed on the meter in orange.

DATA HOLD

Press the Data Hold / Backlight / Worklight button ⑥ to hold the measurement on the display. Press again to release the display to return to live measuring.

BACKLIGHT & WORKLIGHT

Press and hold the Data Hold / Backlight / Worklight button ⑥ for more than one second to turn ON the backlight and worklight ⑯ simultaneously. The backlight and worklight will both automatically power OFF after 3 minutes of inactivity.

RANGE

The meter defaults to auto-ranging mode **AUTO**. This mode automatically determines the most appropriate measurement range for the testing that is being conducted. To manually force the meter to measure in a different range, use the Range button ⑦.

1. Press the "RANGE" button ⑦ to manually select measurement range (**AUTO** is deactivated on the LCD). Repeatedly press the "RANGE" button ⑦ to cycle through the available ranges, stopping once the desired range is reached.
2. To return to auto-ranging mode, press and hold the "RANGE" button ⑦ for more than one second (**AUTO** is reactivated).

7

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

FUNCTION BUTTONS

MAX/MIN

When the "MAX/MIN" button (8) is pressed, the meter keeps track of the Maximum and Minimum values and the difference between the Maximum and Minimum values as the meter continues to take samples.

1. When measuring, press "MAX/MIN" button (8) to toggle between the Maximum value (MAX) and the Minimum value (MIN). If a new Maximum or Minimum occurs, the display will update with the new value.
2. Press "MAX/MIN" button (8) for more than one second to return to normal measuring mode.

NON-CONTACT VOLTAGE TESTING

Press the NCV button (12) to test for AC voltage using the integrated non-contact voltage meter. Approach the conductor under test leading with the sensing antenna (14). The red LED flashes to show warning signals when AC voltage is detected.

TEST LEAD HOLDER

When working with test leads, one test probe may be mounted in the test lead holder (13) to facilitate natural two-handed operation with the clamp in one hand and a single test probe in the other.

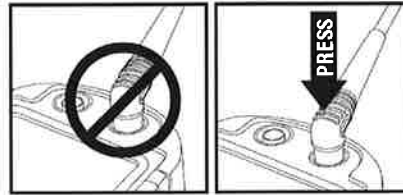


8

OPERATING INSTRUCTIONS

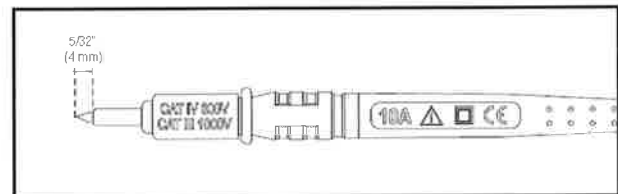
CONNECTING TEST LEADS

Do not test if leads are improperly seated. Results could cause intermittent display readings. To ensure proper connection, firmly press leads into the input jack completely.



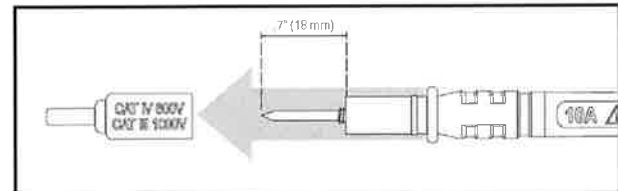
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

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



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III / 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.



9

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

AC/DC CURRENT (LESS THAN 600A)

AC Current is measured by pressing the clamp trigger (10) to open the clamp (3) and placing it around a current-carrying wire. When measuring, care should be taken to ensure that the clamp (3) is completely closed with trigger (10) fully released, and that the wire passes perpendicularly through the center of the clamp (3) in line with the arrow markings (11).



To measure current:

1. Rotate the Function Selector switch (2) to the AC/DC current A setting.

NOTE: The meter defaults to AC measurement. Press the "SEL" button (9) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected.



2. Place clamp (3) around wire. When measuring DC current, align the polarity markings (15) on the clamp with the polarity of the wire to avoid negative readings. The current measurement will be shown in the display. The meter will auto-range to display the measurement in the most appropriate range.

⚠ Disconnect test leads when measuring with the clamp.

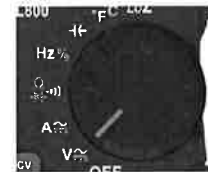
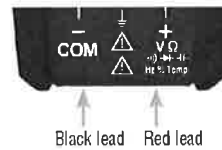
NOTE: If non-zero values are displayed prior to measuring in DC current mode, an offset correction is required. With meter in DC current mode, press and hold the "SEL" button (9) to activate the DC current ZERO function. Subsequent DC current measurements automatically subtract the offset correction for improved accuracy.

10

OPERATING INSTRUCTIONS

AC/DC VOLTAGE (LESS THAN 1000V)

1. Insert RED test lead into $V\Omega$ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the AC/DC voltage V setting. The meter defaults to AC measurement. To measure DC, press the "SEL" button (9) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected. Note "AC" or "DC" on the display.



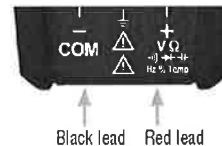
2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

NOTE: If "-" appears on the LCD, the test leads are being applied to the circuit in reverse. Swap the position of the leads to correct this.

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volts.

AC/DC LoZ VOLTAGE (LESS THAN 600V)

1. Insert RED test lead into $V\Omega$ jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the AC/DC LoZ voltage V_{LoZ} setting. The meter defaults to AC measurement. To measure DC, press the "SEL" button (9) to toggle between AC and DC modes. The AC or DC icon on the LCD indicates which mode is selected. Note "AC" or "DC" on the display.



2. Apply test leads to the circuit to be tested to measure voltage. The meter will auto-range to display the measurement in the most appropriate range.

⚠ Do not attempt to measure voltages greater than 600V in LoZ setting.

11

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

CONTINUITY

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test $\Omega \rightarrow \nabla$ setting.

NOTE: The meter defaults to Continuity testing in this mode. Ensure that the Continuity Testing icon ∇ is visible on the display. If not, press the "SEL" button (9) repeatedly until the ∇ icon is shown.

2. Remove power from circuit.
3. Test for continuity by connecting conductor or circuit with test leads. If resistance is measured less than 50 Ω , an audible signal will sound and display will show a resistance value indicating continuity. If circuit is open display will show "OL".



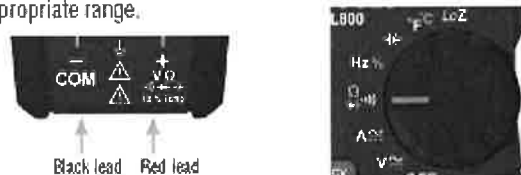
⚠ DO NOT attempt to measure continuity on a live circuit.

RESISTANCE MEASUREMENTS

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test $\Omega \rightarrow \nabla$ setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SEL" button (9) once to enter Resistance testing mode. The Resistance icon Ω will appear on the display.

2. Remove power from circuit.
3. Measure resistance by connecting test leads to circuit. The meter will auto-range to display the measurement in the most appropriate range.



NOTE: When in a Resistance setting and the test leads are open (not connected across a resistor), or when a failed resistor is under test, the display will indicate O.L. This is normal.

⚠ DO NOT attempt to measure resistance on a live circuit.

12

OPERATING INSTRUCTIONS

DIODE TEST

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Continuity/Resistance/Diode-Test $\Omega \rightarrow \nabla$ setting.

NOTE: The meter defaults to Continuity testing in this mode. Press the "SEL" button (9) twice to enter Diode testing mode. The Diode icon \rightarrow will appear on the display.

2. Touch test leads to diode. A reading of 200-800mV on display indicates forward bias, "OL" indicates reverse bias. An open device will show "OL" in both polarities. A shorted device will show approximately 0mV.

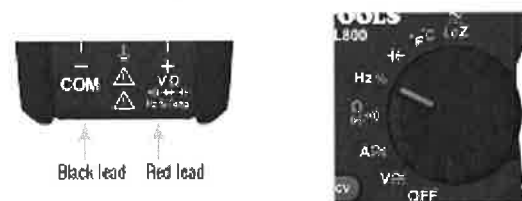


FREQUENCY / DUTY-CYCLE

1. Insert RED test lead into V Ω jack (5) and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Frequency/Duty-Cycle Hz_{avg} setting.

NOTE: The meter defaults to Frequency testing in this mode. To enter Duty-Cycle testing mode, press the "SEL" button (9) once. Ensure that the appropriate icon (either Hz or %) appears on the display.

2. Measure by connecting test leads across the circuit.



CAPACITANCE

1. Insert RED test lead into V Ω jack (5), and BLACK test lead into COM jack (4), and rotate function selector switch (2) to the Capacitance ∇ setting.

13

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

OPERATING INSTRUCTIONS

- Remove power from circuit.
- Measure capacitance by connecting test leads across the capacitor. The meter will auto-range to display the measurement in the most appropriate range.



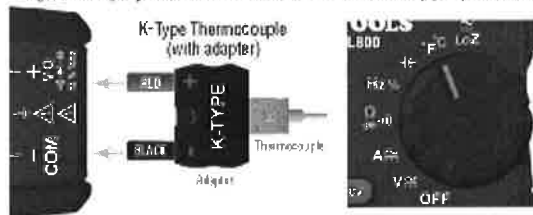
TEMPERATURE

- Insert K-type thermocouple (with adapter) into the VΩ (5) and COM (4) jacks (observe polarity markings on thermocouple and meter), and rotate function selector switch (2) to the Temperature °F/°C setting.

NOTE: The meter defaults to Fahrenheit scale in this mode. To enter Celsius scale, press the "SEL" button (9) once. Ensure that the appropriate icon (either °F or °C) appears on the display.

NOTE: The meter may be set to default to the Celsius scale by powering-ON the meter from the OFF position with the Data Hold & Backlight button (6) depressed. To re-set the default to the Fahrenheit scale repeat the power-ON sequence.

- To measure temperature, make contact between the thermocouple tip and the object being measured. When thermocouple tip and object are in thermal equilibrium, the measurement on the display will stabilize. The meter will auto-range to display the measurement in the most appropriate range.



⚠ Remove thermocouple before switching meter to other measurement functions.

⚠ The thermocouple included with the original purchase is suitable for temperatures below 356°F / 180°C only. To measure higher temperatures, a K-type thermocouple with the appropriate measurement range should be used.

14

MAINTENANCE

BATTERY REPLACEMENT

When indicator is displayed on LCD, batteries must be replaced.

- Remove screw from battery door.
- Replace 2 x AAA batteries (note proper polarity).
- Replace battery door and fasten securely with screw.



⚠ To avoid risk of electric shock, disconnect leads from any voltage source before removing battery door.

⚠ To avoid risk of electric shock, do not operate meter while battery door is removed.

15

SUPPLIER DECLARATION OF CONFORMITY (SDoC)

ENGLISH

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. **Do not use abrasive cleaners or solvents.**

STORAGE

Remove the batteries when meter 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 meter to return to normal operating conditions before using.

WARRANTY

www.kleintools.com/warranty

DISPOSAL / RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

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