

Note:
When frequency/duty cycle measurement has been completed, disconnect the connection between the testing leads and the circuit under test, and remove the testing leads away from the input terminals of the Meter.

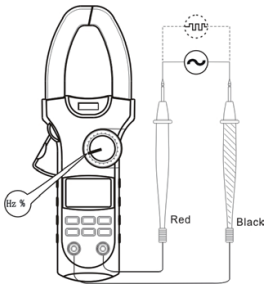


Figure 7

F. Measuring DC/AC Current (See Figure 8)

⚠ Warning
The operating temperature must be 0℃ ~40℃ when measuring current.

To measure current, do the following:

1. Set the rotary switch to 40A \div , 400A \div , or 1000A \div . DC measurement mode is a default. Press **SELECT** to switch to AC measurement mode.
2. Press the lever to open the transformer jaw. Hold it tight and don't release.
3. Center the conductor within the transformer jaw, then release the lever slowly until the transformer jaw is completely closed. Make sure the conductor to be tested is placed at the center of the transformer jaw, otherwise it will cause $\pm 1.0\%$ additional reading error. The Meter can only measure one conductor at a time, to measure more than one conductor at a time will cause deviation.

Note (DC Measurement) :

- The built-in Hall components are very sensitive not only to the magnet but also to heat and machines reaction force. Any shock will cause change to the reading in the short time.
- When the Meter does not display 0 before measurement, press **ZERO** to zeroing.
- When measuring DC current, if the reading is positive, then the current direction is from up to down (see Figure 8: the front case face up while the bottom case face down).

To obtain a more accurate DC current reading, follow the procedure as below:

- Turn off the current to the tested conductor.
- Press the lever to open the transformer jaw.
- When the reading is stable at the minimal, press ZERO to display zero
- Turn on the current to the tested conductor. read out the reading after the Meter is stable.



Figure 8

Note(AC Measurement):

- The meter will zero automatically.
- When the measuring current >1A, Pressing \rightarrow Hz button can measure frequency/duty cycle(the reading for reference only)
- AC Conversion:
UT207A/UT208A: AC-coupled and RMS responded.
UT209A: AC-coupled and True RMS responded.
Input the sinewave.
- Non-sine wave must follow the below data to adjust:
Peak factor: 1.4~2.0, add 1.0% on the stated accuracy.
Peak factor: 2.0~2.5, add 2.5% on the stated accuracy
Peak factor: 2.5~3.0, add 4.0% on the stated accuracy.

G. Measuring Temperature (UT208A Only, See Figure 9)

To measure temperature measurement, connect the Meter as follows:

1. Insert the red temperature probe into the **VΩHz** terminal and the black temperature probe into the **COM** terminal.
2. Set the rotary switch to $^{\circ}\text{C}$ measurement mode.
3. Place the temperature probe to the object being measured. The measured value shows on the display.

Note

- When the Meter is at $^{\circ}\text{C}$ range, display "**OL**" to remind user to insert temperature probe.
- The Meter automatically displays the room temperature when the temperature probe is inserted but without any input.
- The included point contact temperature probe can only be used up to 230℃. For any measurement is higher than that, the rod type temperature probe must be used.

- When the temperature measurement has been completed, disconnect the connection between the temperature probe and the object under test, and remove the temperature probe away from the input terminals of the Meter.

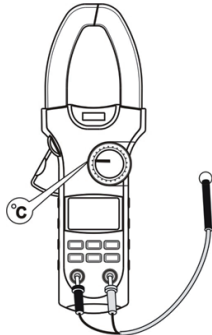


Figure 9

H. Measuring Capacitance (UT208A Only, See Figure 10)

⚠ To avoid harm to you or damage to the Meter from electric shock, do not attempt to input voltages higher than 33V AC or 70V DC.

To measure capacitance, do the following:

1. Insert the red test lead into the **VΩHz** input terminal and black test lead to the **COM** input terminal.
2. Set the rotary switch to \rightarrow Hz \rightarrow measurement mode. Press the select button to switch to \rightarrow Hz measurement mode.
3. To improve the accuracy when measuring small capacitance, press ZERO with test leads open in order to subtract the residual capacitance of the meter before making connections to the test leads.

Note:

- Disconnect circuit power and discharge all high-voltage capacitors before testing Capacitors.
- When capacitance measurement has been completed, disconnect the connection between the testing leads and the circuit under test and remove the test leads away from the input terminals of the Meter.

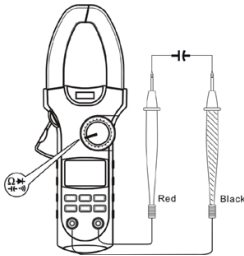


Figure 10

Technical Specifications

A.General Specifications:

- Display: 3 3/4 digits LCD display, Maximum display 3999.
- Polarity: Auto
- Overloading: Display **OL** or **-OL**.
- Low Battery Indication: Display \rightarrow Hz.
- Sampling: 3 times per second.
- Measurement Deviation: The conductor being measured is not placed in the center of the jaw during AC/DC current measurement, it will cause extra $\pm 1\%$ deviation based on the stated accuracy.
- Drop Test: 1 meter drop test passed.
- Max. Jaw Opening: 55mm diameter.
- Max. Current conductor size: 45mm diameter.
- Electro-Magnetic: When carrying out measurement near the electro-magnetic, it may cause unstable or wrong reading.
- Power: 1 x 9V battery (6LF22 1604A)
- Dimensions: 285.3mm x 105mm x 44.5mm
- Weight: Approximate 533g (battery included)

B. Environmental Requirements

- The Meter is suitable for indoor use.
- Altitude: Operating: 2000m; Storage: 10000m
- Safety/ Compliances: IEC 61010 CATII 600V, CATIII 300V, Double Insulation and Pollution Degree 2.
- Temperature and humidity:
Operating: 0℃~30℃ ($\leq 85\%$ R.H)
30℃~40℃ ($\leq 75\%$ R.H)
40℃~50℃ ($\leq 45\%$ R.H)
Storage: -20℃~+60℃ ($\leq 85\%$ R.H)

Accuracy Specifications

Accuracy: $\pm(a\%$ reading + b digits), guarantee for 1 year.
Operating temperature: 23℃ $\pm 5^{\circ}\text{C}$
Relative humidity: $\leq 80\%$ R.H
Temperature coefficient: 0.1 \times (specified accuracy)/1℃

A. DC Voltage

Range	Resolution	Accuracy	Overload protection
400mV	0.1mV	$\pm(0.8\%+3)$	DC1000V/AC750V
4V	0.001mV	$\pm(0.8\%+1)$	
40V	0.01V		
400V	0.1V		
1000V	1V	$\pm(1.0\%+3)$	

Remark: Input Impedance: 10M Ω .

B. AC Voltage

Range	Resolution	Accuracy	Overload protection
400mV	0.1mV	$\pm(1.2\%+20)$	DC1000V/AC750V
4V	0.001V	$\pm(1.2\%+3)$	
40V	0.01V		
400V	0.1V		
750V	1V	$\pm(1.2\%+5)$	

Remarks:

- Input Impedance: 10M Ω
- Frequency Response: 40Hz~400Hz
- AC Conversion:
UT207A/UT208A: AC-coupled and average-responded.
UT209A: AC-coupled and True RMS-responded.
Input the sinewave.
- Non-sine wave must follow the below data to adjust:
Peak factor: 1.4~2.0, add 1.0% on the stated accuracy
Peak factor: 2.0~2.5, add 2.5% on the stated accuracy
Peak factor: 2.5~3.0, add 4.0% on the stated accuracy.

C. Resistance

Range	Resolution	Accuracy	Overload protection
400 Ω	0.1 Ω	±(1.2%+2)	DC1000V/AC750V
4k Ω	0.001K Ω	±(1.0%+2)	
40k Ω	0.01K Ω		
400k Ω	0.1K Ω		
4M Ω	0.001M Ω	±(1.2%+2)	
40M Ω	0.01M Ω	±(1.5%+2)	

D. Continuity Test

Range	Resolution	Accuracy	Overload Protection
\rightarrow Hz	0.1 Ω	Around $\leq 10 \Omega$, the buzzer beeps. (Open circuit voltage approx 0.4V)	DC1000V /AC750V

Remarks:

- The buzzer beep when the resistance of a circuit under test is $<10 \Omega$.
- The buzzer may or may not beeps when the resistance of a circuit $> 10 \Omega$

E. Diode Test

Range	Resolution	Accuracy	Overload Protection
\rightarrow Hz	1mV	0.5V~0.8V (Open circuit voltage approx. 1.5V)	DC1000V /AC750V

F. Frequency

Range	Resolution	Accuracy	Overload Protection
400Hz	0.1Hz	$\pm(0.1\%+3)$	DC1000V/AC750V
4kHz	0.001kHz		
40kHz	0.01kHz		
400kHz	0.1kHz		
4MHz	0.001MHz		
40MHz	0.01MHz		

Remarks: Input Sensitivity as follows:

When $\leq 100\text{kHz}$: $\geq 300\text{mV rms}$
When $> 100\text{kHz}$: $\geq 600\text{mV rms}$
Input amplitude a: $300\text{mV} \leq a \leq 10\text{V rms}$

G. Duty Cycle

Range	Resolution	Accuracy	Overload Protection
0.1%~99.9%	0.1%	For reference only	DC1000V/AC750V

H. DC Current

Range	Resolution	Accuracy	Overload protection
40A	0.01A	$\pm(2.0\%+5)$	1000A DC/AC
400A	0.1A	$\pm(2.0\%+3)$	
1000A	1A	$\pm(1.5\%+5)$	

I. AC Current

Range	Resolution	Accuracy	Frequency Response	Overload protection
40A	0.01A	$\pm(2.5\%+8)$	50Hz ~ 60Hz	1000A DC/AC
400A	0.1A	$\pm(2.5\%+5)$		
1000A	1A	$\pm(2.0\%+2)$		

J. Temperature (UT208A only)

Range	Resolution	Accuracy	Overload Protection
-40℃~1000℃	1℃	-40℃~0℃: $-(8\%+5)$	1K Ω
		0℃~400℃: $\pm(2.5\%+3)$	
		400℃~1000℃: $\pm(3\%+3)$	

K. Capacitance(UT208A only)

Range	Resolution	Accuracy	Overload Protection
4nF	0.001nF	For reference only	DC1000V/AC750V
40nF	0.01nF	±(4.0%+3)	
400nF	0.1nF		
4μF	0.001μF		
40μF	0.01μF	±(5.0%+10)	
100mF	0.1μF		

Maintenance

This section provides basic maintenance information including battery replacement instruction.

⚠ Warning

Do not attempt to repair or service your Meter unless you are qualified to do so and have the relevant calibration, performance test, and service information.

To avoid electrical shock or damage to the Meter, do not get water inside the case.

A. General Service

- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- To clean the terminals with cotton bar with detergent, as dirt or moisture in the terminals can affect readings.
- Turn the Meter power off when it is not in use.
- Take out the battery when it is not using for a long time.
- Do not use or store the Meter in a place of humidity, high temperature, explosive, inflammable and strong magnetic field.

B. Replacing the Battery (See Figure 11)

⚠ Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator " \rightarrow Hz" appears.

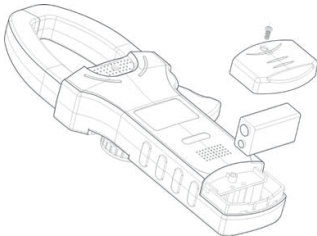


Figure 11

Make sure the transformer jaw and the tests leads are disconnected from the circuit being tested before opening the case bottom.

To replace the battery:

1. Turn the Meter off and remove all the connections from the input terminals
2. Turn the Meter's front case down.
3. Remove the screw from the battery compartment, and separate the battery compartment from the case bottom.
4. Take out the old battery and replace with a new 9V battery (6LF22, 1604A).
5. Rejoin the case bottom and the battery compartment, and reinstall the screw.

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This operating manual is subject to change without notice.