



## MAJOR TECH MT765 AC TRMS Clamp Meter with IR Thermometer Instruction Manual

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INSTRUCTION MANUAL  
MT765  
AC TRMS CLAMP METER  
WITH IR THERMOMETER



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## SAFETY

### 1.1. International Safety Symbols



This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present.



Double insulation.

## **1.2. Safety Notes**

- Do not exceed the maximum allowable input range of any function.
- Do not apply voltage to meter when resistance function is selected.
- Set the function switch OFF when the meter is not in use.

## **1.3. Warnings**

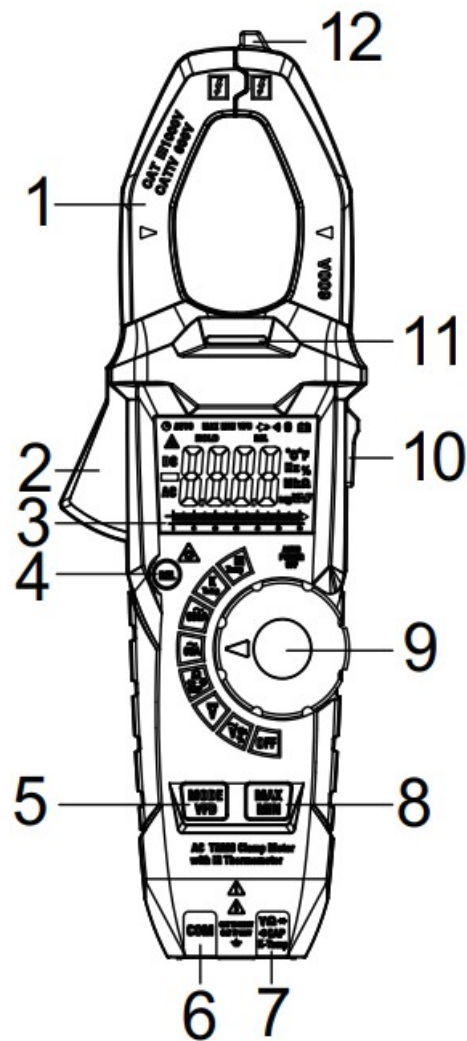
- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- When changing ranges always disconnect the test leads from the circuit under test.
- Do not exceed the maximum rated input limits.

## **1.4. Cautions**

- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery.
- Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- Use great care when making measurements if the voltages are greater than 25VAC RMS or 35VDC. These voltages are considered a shock hazard.
- Remove the battery if the meter is to be stored for long periods.
- Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not “live”.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.


## **METER DESCRIPTION**



### **2.1. Meter Description**

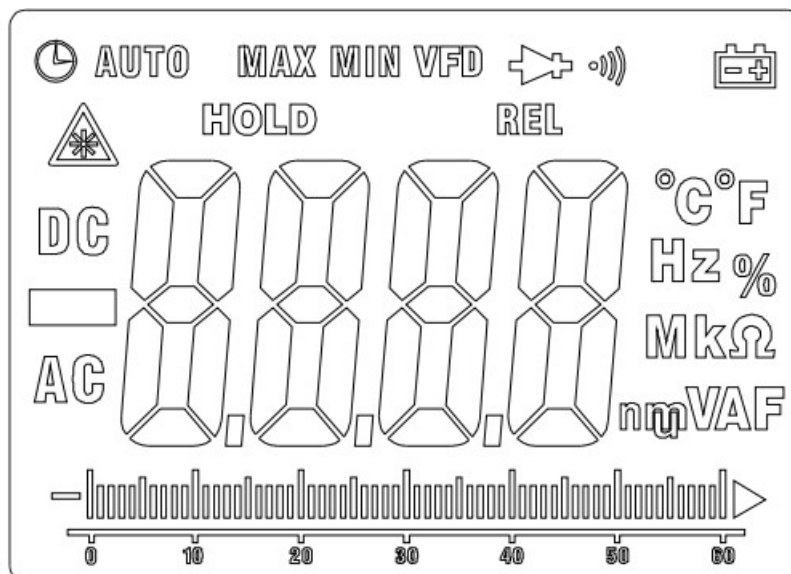





1. Current clamp
2. Clamp trigger
3. LCD display
4. Relative / IR Laser button
5. MODE/VFD button
6. COM input jack
7. V /  $\Omega$  / CAP / TEMP / Hz jack
8. MAX/MIN button
9. Rotary Function switch
10. Data Hold / Flashlight button
11. Non-contact AC voltage indicator light
12. Non-contact AC voltage indicator

## DISPLAY ICONS

1. **AC DC** .....AC (alternating current) and DC (direct current)
2.  .....Minus sign
3. **8.8.8.8** .....6000 count (0 to 5999) measurement reading with 61 segment Analogue Bargraph
4. **AUTO** ..... Auto Range mode

5.  .....Diode test mode
6.  .....Audible Continuity
7. **HOLD** .....Data Hold mode
8. °C, °F, u,m, V,A,K,M,Ω .....Units of measure list



9. **Hz%** .....Frequency/duty cycle test mode
10. **REL** ..... Relative mode
11. **VFD**..... VFD mode
12.  .....IR Laser Point
13.  .....Auto power off
14.  .....Low battery indicator

## SPECIFICATIONS

### 4.1. AC Current (50/60Hz)

Range & Resolution	Accuracy (% of reading + digits)
60.00A	±(2.5% + 10 digits)
600.0A	±(2.8% + 8 digits)

### 4.2. AC Voltage

Range & Resolution	Accuracy (% of reading + digits)
6.000V	$\pm(1.5\% + 5 \text{ digits})$
60.00V	
600.0V	
1000V	

#### 4.3 DC Voltage

Range & Resolution	Accuracy (% of reading + digits)
600.0mV	$\pm(0.8\% + 4 \text{ digits})$
6.000V	$\pm(1.2\% + 5 \text{ digits})$
60.00V	
600.0V	
1000V	

#### 4.4 Resistance

Range & Resolution	Accuracy (% of reading + digits)
600.0 $\Omega$	$\pm(1.5\% + 6 \text{ digits})$
6.000K $\Omega$	$\pm(2.0\% + 5 \text{ digits})$
60.00K $\Omega$	$\pm(2.8\% + 10 \text{ digits})$
600.0K $\Omega$	
6.000M $\Omega$	
60.00M $\Omega$	$\pm(2.8\% + 10 \text{ digits})$

#### 4.5 Capacitance

Range & Resolution	Accuracy (% of reading + digits)
999.9nF	$\pm(4\% \text{ reading} + 6 \text{ digits})$
9.999 $\mu$ F	
99.99 $\mu$ F	
999.9 $\mu$ F	
9.999mF	$\pm(6.0\% \text{ reading} + 15 \text{ digits})$
99.99mF	

#### 4.6. Frequency Sensitivity: >8Vrms

Range & Resolution	Accuracy (% of reading + digits)
5-9.999Hz	$\pm(1.5\% \text{ reading} + 6 \text{ digits})$
99.99Hz	
999.9Hz	
9.999KHz	

#### 4.7. Duty Cycle Sensitivity: >8Vrms

Range & Resolution	Accuracy (% of reading + digits)
20.0% to 80.0%	$\pm(1.2\% \text{ reading} + 5 \text{ digits})$

#### 4.8. Temp (type-K) (probe accuracy not included)


Range & Resolution	Accuracy (% of reading + digits)
-20.0 to 1000°C	$\pm(3\% \text{rdg} + 3^\circ\text{C})$
-4.0 to 1800.0°F	$\pm(3\% \text{rdg} + 6^\circ\text{F})$

#### 4.9. IR Temp (D:S=4:1)

Range & Resolution	Accuracy (% of reading + digits)
-30.0 to 350.0°C	$\pm(2\% \text{rdg} + 2^\circ\text{C})$
-22.0 to 662.0°F	$\pm(2\% \text{rdg} + 4^\circ\text{F})$

**Note:** Accuracy is given as  $\pm(\% \text{ of reading} + \text{counts of least significant digit})$  at  $23^\circ\text{C} \pm 5^\circ\text{C}$ , with relative humidity less than 80%RH. The precision index mentioned above refers to the accuracy of 40%~60% range of each measurement range. The accuracy index of the current measured outside the measuring range increased by 1.5%, and the accuracy of other measurement functions increased by 1%. Check waveform is sine wave. Current accuracy assessment shall be based on the position of clamp center.

#### 4.10. General Specifications

Basic Functions	Range
Clamp size	Opening 1.3" (33mm) approx
TRMS	The AV voltage and AC current of this meter is measured by True RMS. True RMS measurement is different from mean measurement. The mean measurement method can only measure the symmetric waveform, such as sine wave. TRMS measurements can reliably measure any irregular waveform and obtain valid values for AC voltage or AC current.
Diode Test	Test current of 0.3mA typical; Open circuit voltage 3.2V DC typical.
Continuity Check	Threshold <50Ω; Test current < 0.5mA
Low Battery Indication	 is displayed
Overrange Indication	"OL" is displayed
Measurements Rate	2 per second, nominal
Input Impedance	≥10MΩ (VDC and VAC)
Display	6000 counts LCD
AC Current	50-60Hz (AAC)
AC Voltage bandwidth	50-1000Hz (VAC)
Operating Temperature	5 to 40°C (41 to 104°F)

Storage Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C (104°F)
Storage Humidity	<80%
Operating Altitude	2000 meters (7000ft.) maximum.
Over voltage	Category III 1000V, Category IV 600V.
Battery	3x "AAA" 1.5V Battery
Auto OFF	approx. 15 minutes
Safety	For indoor use and in accordance with Over voltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient over voltages less than Over voltage Cat. III

## OPERATION

**NOTES:** Read and understand all Warning and Caution statements in this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

### 5.1. AC Current Measurements

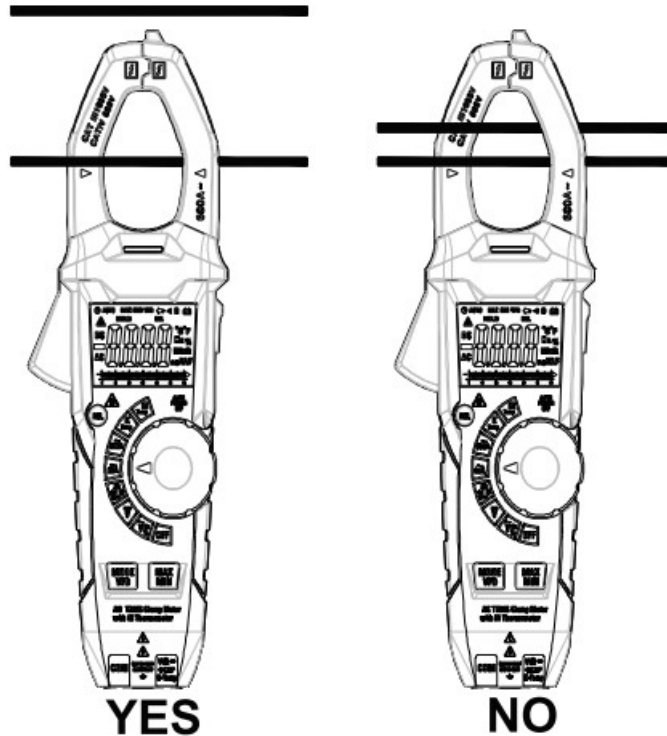
**WARNING:** Ensure that the test leads are disconnected from the meter before making current clamp measurements.

1. Set the Function switch to the 600A AC, 60A AC range.
2. If the range of the measured is not known, select the higher range first then move to the lower range if



necessary.

3. Press the trigger to open jaw. Fully enclose one conductor to be measured. The clamp meter LCD will display the reading.



## 5.2. AC/DC Voltage Measurements

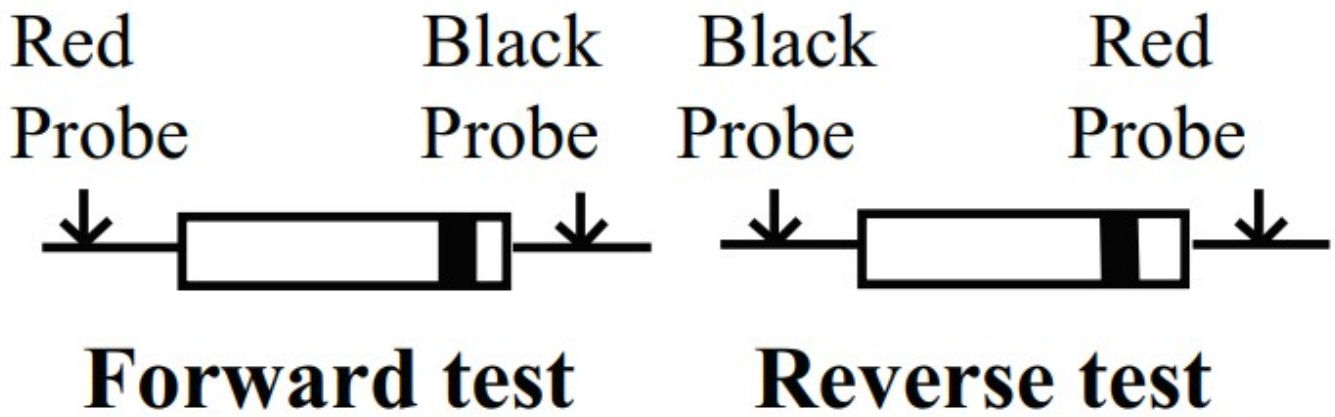
1. Insert the black test lead into the negative COM terminal and the red test lead into the positive V terminal.
2. Set the function switch to the ACV or DCV position.
3. Connect the test leads in parallel to the circuit under test.
4. Read the voltage measurement on the LCD display.

## 5.3. Resistance Measurements

1. Insert the black test lead into the negative COM terminal and the red test lead into the positive V/ $\Omega$  terminal.
2. Set the function switch to the  $\Omega \rightarrow + \bullet \bullet \bullet$  position.
3. Press the MODE button until " $\Omega$ " appears in the display.
4. Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the device under test so the rest of the circuit will not interfere with the resistance reading.
5. For Resistance tests, read the resistance on the LCD display.

## 5.4. Diode, Continuity and Capacitance Measurements

1. Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the positive diode jack.
2. Set the function switch to the  $\Omega \rightarrow + \bullet \bullet \bullet$  position.
3. Press the **MODE** button until " $\rightarrow +$ " appears in the display.
4. Touch the test probes to the diode under test. Forward voltage will indicate 0.4V to 0.7V. Reverse voltage will indicate "**OL**". Shorted devices will indicate near 0mV and an open device will indicate "**OL**" in both polarities.



For Continuity tests, if the resistance is  $<50\Omega$ , a tone will sound.

#### 5.5. Capacitance Measurements

**WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the rotary function switch to the  $\Omega \rightarrow + \bullet \text{ ) ) )$  CAP position.
2. Insert the black test lead banana plug into the negative (COM) jack.  
Insert the red test lead banana plug into the positive (V) jack.
3. Press the MODE button select capacitance measurement.
4. Touch the test leads to the capacitor to be tested.
5. Read the capacitance value in the display.

#### 5.6. Frequency or % Duty Cycle Measurements

1. Set the rotary function switch to the "AC, Hz%" position.
2. Insert the black lead banana plug into the negative COM jack and the red test lead banana plug into the positive V jack.
3. Select Hz or % duty with the Hz/% button.
4. Touch the test probe tips to the circuit under test.
5. Read the frequency on the display.

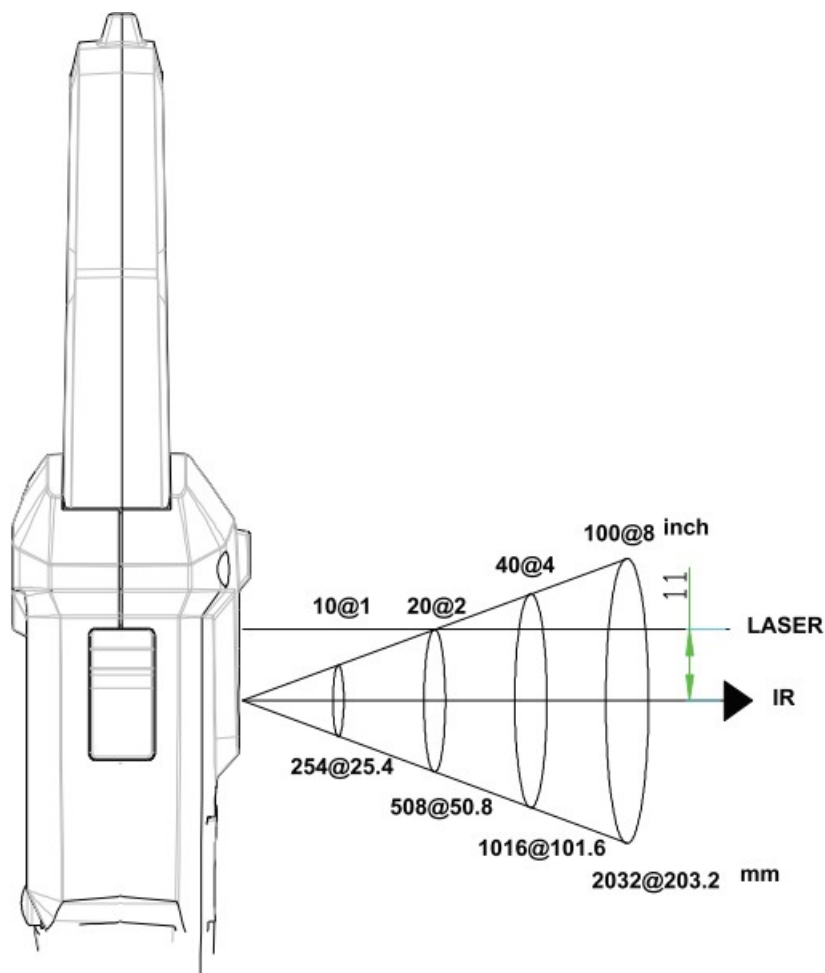
#### 5.7. K-Temperature Measurements

**WARNING:** To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to **K-TEMP**.
2. Insert the Temperature Probe into the negative (COM) and the V jacks, making sure to observe the correct polarity.
3. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes (about 30 seconds).
4. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.

**WARNING:** To avoid electric shock, be sure the thermocouple has been removed before changing to another measurement function.

#### 5.8. IR-Temperature Measurements



1. Set the function switch to IR.
2. Let the instrument aim at the object which will be measured, the reading will be displayed on the LCD.
3. Press “REL/Laser” button to switch on or off the laser.
4. Press “MAX/MIN” button to select MAX/MIN. Hold down the button to exit.
5. Press” HOLD”, the data will freeze on the display, and then press to unfreeze.

### 5.9. Non-Contact AC Voltage Measurements

**WARNING:** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

1. Touch the probe tip to the hot conductor or insert into the hot side of the electrical outlet.
2. If AC voltage is present, the detector light will illuminate.
  - a. **NOTE:** The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.
  - b. **NOTE:** The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation.

### 5.10. Mode Button

To select Diode/Continuity/CAP,VAC/Hz/%, °C/°F.

### 5.11. Data Hold/Flashlight Button

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the right side of the meter (top button). While data hold is active, the HOLD display icon appears on the LCD. Press the data hold button again to return to normal operation. Hold down this button to turn the flashlight ON/OFF.

### 5.12. MIN/MAX Button

Press MIN/MAX to enter MIN, MAX Recording mode (manual range only).

Select the proper range before selecting MIN MAX to ensure that the MIN/MAX reading will not exceed the testing range. Press once to select MIN, press again to select MAX lastly, press again to release the MIN/MAX recording function.

#### 5.13. VFD Button

In ACV mode, hold down the mode key to enter the VFD measurement mode and display VFD. In VFD mode, low-pass filter can reduce the highfrequency noise when measuring AC voltage. VFD mode is mainly used for AC voltage measurement of variable frequency drive and frequency converter.

#### 5.14. REL/ Button

Press REL key to enter the relative value measurement mode, take the current value as the reference and obtain the relative value. Hold down this key to turn on the laser in IR-temp measurement mode, and then press this key to turn off the laser.

## Battery Replacement

1. Remove the one rear head screw
2. Open the battery compartment
3. Replace the Requires Three “AAA” 1.5V Battery.
4. Re-assemble the meter



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## Documents / Resources

	<p><a href="#">MAJOR TECH MT765 AC TRMS Clamp Meter with IR Thermometer</a> [pdf] Instruction Manual MT765, MT765 AC TRMS Clamp Meter with IR Thermometer, AC TRMS Clamp Meter with IR Thermometer, Clamp Meter with IR Thermometer, Meter with IR Thermometer, IR Thermometer</p>
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## References

-  [Major Tech - Innovation | Quality | Excellence](#)
-  [Home - Major Tech Australia](#)

