



INSTRUCTION MANUAL
MTD70T
600A AC TRUE RMS
DIGITAL CLAMP METER



TRUERMS





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1. 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.
-  Application around and removal from uninsulated hazardous live conductors is permitted.

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.
- Remove the battery if meter is to be stored for longer than 60 days.

1.3. Warnings

- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- Do not measure current on a circuit whose voltage exceeds 600V.
- When changing ranges always disconnect the test leads from the circuit under test.

1.4. Cautions

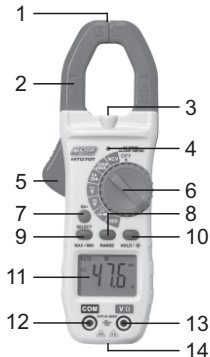
- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery or fuses.
- Inspect the condition of the test leads and the meter itself for any damage before operating 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.
- 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.

Function	Maximum Input
A AC	600A AC
V DC, V AC	1000V DC/AC
Resistance, Capacitance, Frequency, Diode Test, Temperature.	250V DC/AC

2. Descriptions

2.1. Meter Descriptions


- 1 - NCV Test
- 2 - Current clamp
- 3 - LED Flashlight
- 4 - Non-contact AC voltage indicator light
- 5 - Clamp trigger
- 6 - Rotary Function switch
- 7 - SELECTOR mode range button
- 8 - Data Hold button
- 9 - Δ REL button for Relative Measurement
- 10 - Flashlight and LCD backlight button
- 11 - LCD display
- 12 - COM input jack
- 13 - V Ω Diode Continuity CAP TEMP Hz% jack
- 14 - Battery Cover



2.2. Display Icons

Button	Operation Performed
HOLD	Data Hold
Minus sign	Negative reading display
0 to 3999	Measurement display digits
NCV	Non-Contact Voltage
AUTO	Auto Range mode
DC	Direct Voltage
AC	Alternating Current/Voltage
	Low battery
mV or V	Milli-volts or Volts (Voltage)
Ω	Ohms (Resistance)
A	Amperes (Current)
F	Farad (Capacitance)
Hz/%	Hertz (Frequency)/Percent(duty ratio)
$^{\circ}\text{C}$	Celsius units (Temperature)
n, m, μ , M, k	Unit of measure prefixes: nano, milli, micro, mega, and kilo
	Continuity test
	Diode test

3. General Specifications

Basic Functions	Range
Clamp jaw opening	28mm approx.
Display	2000 Count (2-1/2 digits backlit LCD)
Low Battery indication	 is displayed
Over-range indication	'OL' display
Measurement rate	3 readings per second, nominal
Input Impedance	10M (VDC and VAC)
AC response	Average Reading (AAC and VAC)
ACV Bandwidth	2KHZ
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F 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	2000meters (7000ft.) maximum.
Battery	2 x 1.5V AAA Battery
Battery life	Approx. 30h (backlight ON), Approx. 100h (backlight OFF)
Auto power OFF	After approx. 15 minutes
Dimensions	185 x 65 x 37mm
Weight	180g
Safety	For indoor use and in the requirement For double insulation IEC1010-1(2001): EN61010-2-030, EN61010-2-032, EN61010-2-033 Over voltage Category III 600V, Pollution Degree 2.

4. Specifications

4.1. AC True RMS Current

Range	Resolution	Accuracy (% of reading + digits)
2.000A	1mA	±3.0% of rdg±5 digits
20.00A	10mA	
200.0A	100mA	
600A	1A	

Over range protection: Maximum input 600A

Accuracy specified from 5% to 100% of the measuring range

Frequency Response: 50Hz to 60Hz True RMS

4.2. AC Voltage True RMS

Range	Resolution	Accuracy (% of reading + digits)
200mV	0.1mV	±1.5% of rdg±10 digits
2.00V	1mV	±1.0% of rdg±5 digits
20.0V	10mV	
200V	0.1V	
600V	1V	±1.2% of rdg±5 digits

Input impedance 10M Ω . protection 600V DC or RMS of AC.

Frequency response 60V at 40Hz to 1kHz (sine), other ranges 50/60Hz (all wave).

4.3. DC Voltage

Range	Resolution	Accuracy (% of reading + digits)
200mV	0.1mV	±0.5% of rdg±5 digits
2.00V	1mV	
20.0V	10mV	
200V	0.1V	
600V	1V	±1.2% of rdg±5 digits

Input impedance on 200mV range >40M Ω all other ranges 10M Ω .

Overload protection 600V DC or RMS of AC.

4.4. Resistance (Auto Ranging)

Range	Resolution	Accuracy (% of reading + digits)
200.0 Ω	0.1 Ω	±0.8% of rdg±5 digits
2.000k Ω	1 Ω	±0.8% of rdg±1 digits
20.00k Ω	10 Ω	
200.0k Ω	100 Ω	
2.000M Ω	1k Ω	
20.00M Ω	10k Ω	±1.2% of rdg±5 digits

Input Protection: 250V DC or Peak value of AC.

- Note:**
- On 200 Ω range, short the test leads to measure lead resistance, then subtract the value from the real measurement.
 - When measuring resistance over 1M Ω , it is normal that the reading reacts slowly, wait until reading is stable.

4.5. Diode & Continuity

Function	Testing Condition	Reading
Diode	Forward DCA is approx. 0.8mA, open circuit Voltage MAX. 2.2V	Forward voltage drop of Diode
Continuity	Test current MAX. 1.5mA	Buzzer makes a continuous sound while resistance is less than (50 Ω)

Input Protection: 250V DC or 250V AC RMS

Warning DO NOT apply voltage to Continuity range

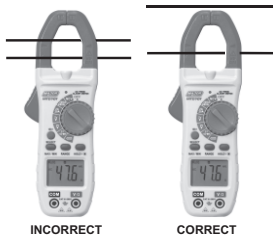
5. Operation

NOTES: Read and understand all Warning and Caution statements in this 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 200A/600A range if the approximate range of the measurement is not known.
2. Set Function switch to 2A/20A for low current readings.
3. Press the trigger to open jaw. Fully enclose only one conductor. For optimum results, center the conductor in the jaw.
4. The clamp meter LCD will display the reading.



5.2. AC Voltage Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V/ Ω** terminal.
2. Set the function switch to the **V \sim** position.

3. Connect the test leads in parallel to the circuit under test.
4. Read the voltage measurement on the LCD display.

5.3. DC Voltage Measurements

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

5.4. Resistance Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V/Ω** terminal.
2. Set the function switch to the **Ω** position.
3. 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.
4. For Resistance tests, read the resistance on the LCD display.

5.5. Continuity Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V/Ω** terminal.
2. Set the function switch to the **→+⦿** position.
3. Use **SELECT** Button to select **⦿**. The display icons will change when the **SELECT** button is pressed.
4. Touch the Test Probe tips across the circuit or component under test.
5. If the resistance is $< 50\Omega$, the buzzer tone will sound.

5.6. Diode Test

1. Insert the black test lead into the negative COM terminal and the red test lead into the positive V/Ω terminal.
2. Set the function switch to **→+⦿** position
3. Use **SELECT** Button to select **→+**. The display icons will change when the **SELECT** button is pressed.
4. Touch the test probe tips to the diode or semiconductor junction under test. Note the meter reading.
5. Reverse the test lead polarity by reversing the red and black leads. Note the reading
6. The diode or junction can be evaluated as follows:
 - If one reading displays a value (typically 0.400V to 0.900V) and the other reading displays OL, the diode is good.
 - If both readings display OL device is open.
 - If both readings are very small or "0", the device is shorted.

5.7. 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 (LIVE) conductor or insert into the hot (LIVE) side of the electrical outlet.
2. If AC voltage is present, the detector red LED 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.


5.8. Data HOLD

To freeze the LCD reading, press the **HOLD** button. While data hold is active, the **HOLD** icon appears on the LCD. Press the **HOLD** button again to return to normal operation.

5.9. Flashlight & LCD Backlight

The LCD is equipped with backlighting for easier viewing, especially in dimly lit areas. Press the  button for 3 seconds to turn the Flashlight and LCD backlight on. Press once again to turn the Flashlight and backlight off. The both work simultaneously.

5.10. Range Function

Press the **RANGE** key to activate the manual mode and to disable the Auto range function. The symbol "**AUTO**" disappears from the upper left part of the display. In manual mode, press the **RANGE** key to change measuring range: the relevant decimal point will change its position. The **RANGE** key is not active in positions . In Auto range mode, the instrument selects the most appropriate ratio for carrying out measurement. If a reading is higher than the maximum measurable value, the indication "OL" appears on the display. Press and hold the **RANGE** key for more than 1 second to exit the manual mode and restore the Auto range mode.

5.11. Automatic Power OFF

In order to conserve battery life, the meter will automatically turn off after approximately 15 minutes. To turn the meter on again, turn the rotary function switch to the **OFF** position and then to the desired function range. To cancel the auto power off function, press **SELECT** button and turn on the power with the rotary switch at the same time.


6. Maintenance

WARNING: To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input terminals, and turn OFF the meter before opening the case. Do not operate the meter with an open case.

6.1. Cleaning and Storage

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for 60 days or more, remove the battery and store it separately.

6.2. Battery Replacement

1. When the LCD displays , please replace the battery to ensure correct readings
2. Remove the Phillips head screw that secures the rear battery door
3. Open the battery compartment
4. Replace the 2x 1.5V AAA battery, recommend Alkaline batteries for longer use
5. Secure the battery compartment



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