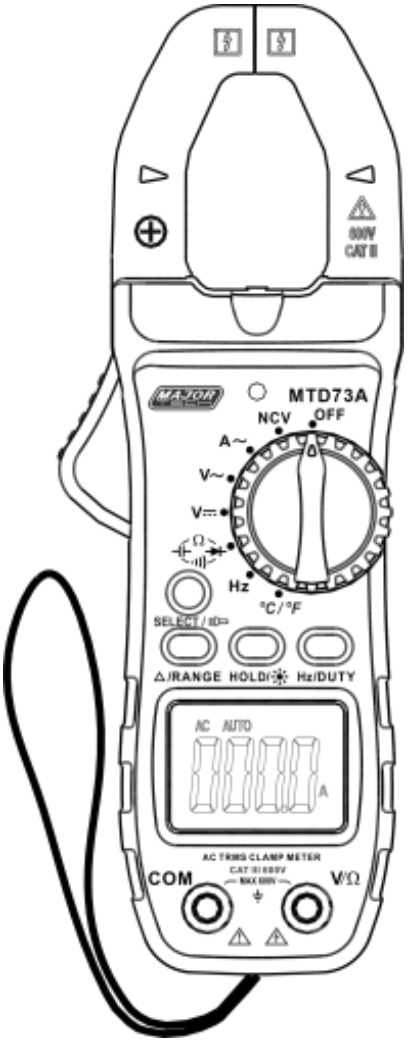
MTD73A
800A AC True RMS
Digital Clamp Meter



Instruction Manual

Safety

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.

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.

WARNINGS

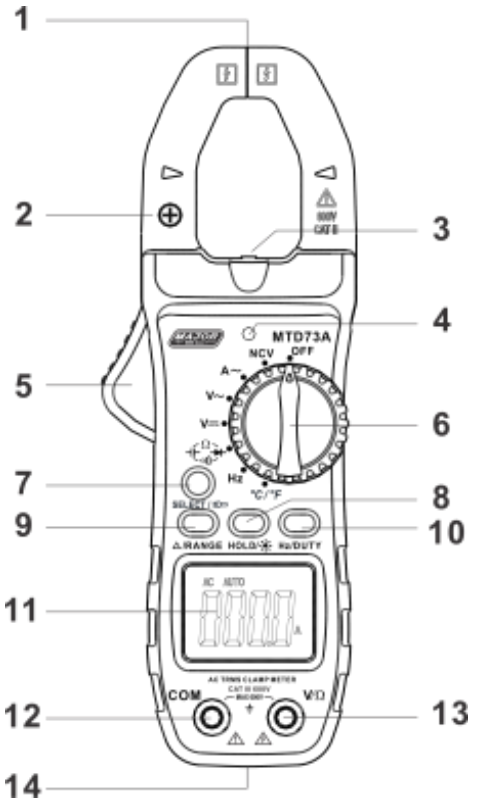
- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- Do not measure current on a circuit whose voltage exceeds 600V.
- When changing ranges always disconnect the test leads from the circuit under test.

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	800A AC
V DC, V AC	600V DC/AC
Resistance, Capacitance, Frequency, Diode Test, Temperature.	250V DC/ AC

Description



Meter Description

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 / Flashlight
8. Data Hold button
9. △ 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

Display icons Description

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)
^{o}C	Celsius units (Temperature)
n, m, µ, M, k	Unit of measure prefixes: nano, milli, micro, mega, and kilo
•)))	Continuity test
	Diode test

Accessories supplied with Meter

Operating manual, 1 x red and 1 x black test lead set, Air temperature probe, 2 x 1.5V AAA Batteries, Carrying case

Specifications

Function	Range	Resolution	Accuracy (% of reading + digits)
AC Current	4A	1mA	< 40A: ±(3.0% rdg + 5digits) > 40A: ±(2% rdg + 5 digits)
	40A	10mA	
	400A	100mA	
	800A	1A	

Over range protection: Maximum input 1000A

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

Frequency Response: 40Hz to 1kHz True RMS

Function	Range	Resolution	Accuracy (% of reading + digits)
AC Voltage (Auto Ranging)	4V	1mV	±1.0% of rdg ± 5digits
	40V	10mV	
	400V	100mV	
	600V	1V	

Input impedance 10MΩ. Overload protection 1000V DC or 750V AC peak value

Frequency response 600V at 40Hz to 1kHz (sine), other ranges 50/60Hz (all wave)

Function	Range	Resolution	Accuracy (% of reading + digits)
DC Voltage (Auto Ranging)	400mV	0.1mV	±1.0% of rdg ± 5digits
	4.00V	1mV	±0.5% of rdg ± 5digits
	40.0V	10mV	
	400V	0.1V	
	600V	1V	

Input impedance on 400mV range > 40MΩ all other ranges 10MΩ. Overload protection 1000V DC or 750V AC peak value

Function	Range	Resolution	Accuracy (% of reading + digits)
Resistance (Auto Ranging)	400Ω	0.1Ω	±0.8% of rdg ± 5digits
	4kΩ	1Ω	±0.8% of rdg ± 3digits
	40kΩ	10Ω	
	400kΩ	100Ω	
	4MΩ	1kΩ	
	40MΩ	10kΩ	±1.0% of rdg ± 5digits

Input Protection: 250V DC or 250V AC RMS

Note: a. On 400Ω range, short the test leads to measure lead resistance, then subtract the value from the real measurement b. When measuring resistance over 1MΩ, it is normal that the reading reacts slowly, wait until reading is stable.

Warning DO NOT apply voltage to this range

Function	Range	Resolution	Accuracy (% of reading + digits)
Capacitance (Auto-ranging)	4nF	0.nF	±(5% reading + 20 digits)
	40nF	0.01nF	
	400nF	0.1nF	±(2.5% reading + 5 digits)
	4uF	0.001µF	
	40uF	0.01µF	
	400uF	100nF	±(5% reading + 10 digits)
	4mF	1uF	
	40mF	10uF	

Input Protection: 250V DC or 250V AC RMS
Ensure capacitors are discharged before measuring value
Warning DO NOT apply voltage to this range

Function	Range	Resolution	Accuracy (% of reading + digits)
Frequency (Auto Ranging)	10Hz	0.01Hz	±(0.5% reading + 4 digits)
	100Hz	0.1Hz	
	1kHz	1Hz	
	10kHz	10Hz	
	100kHz	100Hz	
	1MHz	1kHz	
	10MHz	10kHz	

Input Protection: 250V DC or 250V AC RMS
Input sensitivity > 0.7V
Warning DO NOT apply voltage to this range

Function	Range	Resolution	Accuracy (% of reading + digits)
Temperature	-40°C to 1000°C	1°C	< 400°C: +1.0% of rdg ± 5°C ≥ 400°C: +1.5% of rdg ± 5°C

Input Protection: 250V DC or 250V AC RMS
Sensor: Type K Banana Plug Thermocouple
Warning DO NOT apply voltage to this range

Function	Testing Condition	Reading
Diode	Forward DCA is approx. 0.8mA, open circuit Voltage MAX. 2.2V	Diode forward voltage drop
Continuity	Open circuit Voltage MAX. 2V	Buzzer makes a continuous sound while resistance is less than (50Ω)

Input Protection: 250V DC or 250V AC RMS
Warning DO NOT apply voltage to Continuity range

General Specifications

Clamp jaw opening	28mm approx.
Display	4000 Count (3-3/4 digits backlit LCD
Low Battery indication	 is displayed
Over-range indication	'OL' display
Measurement rate	3 readings per second, nominal
Temperature sensor	Type K thermocouple 4mm terminals
Input Impedance	10MΩ (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	2000 meters (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	123 (W) x 270 (D) x 39 (H)mm
Weight	280g
Safety	For indoor use and in the requirement For double insulation IEC1010-1(2001): EN61010-2-030, EN61010-2-032, EN61010-2-033 Overvoltage Category III 600V, Pollution Degree 2.

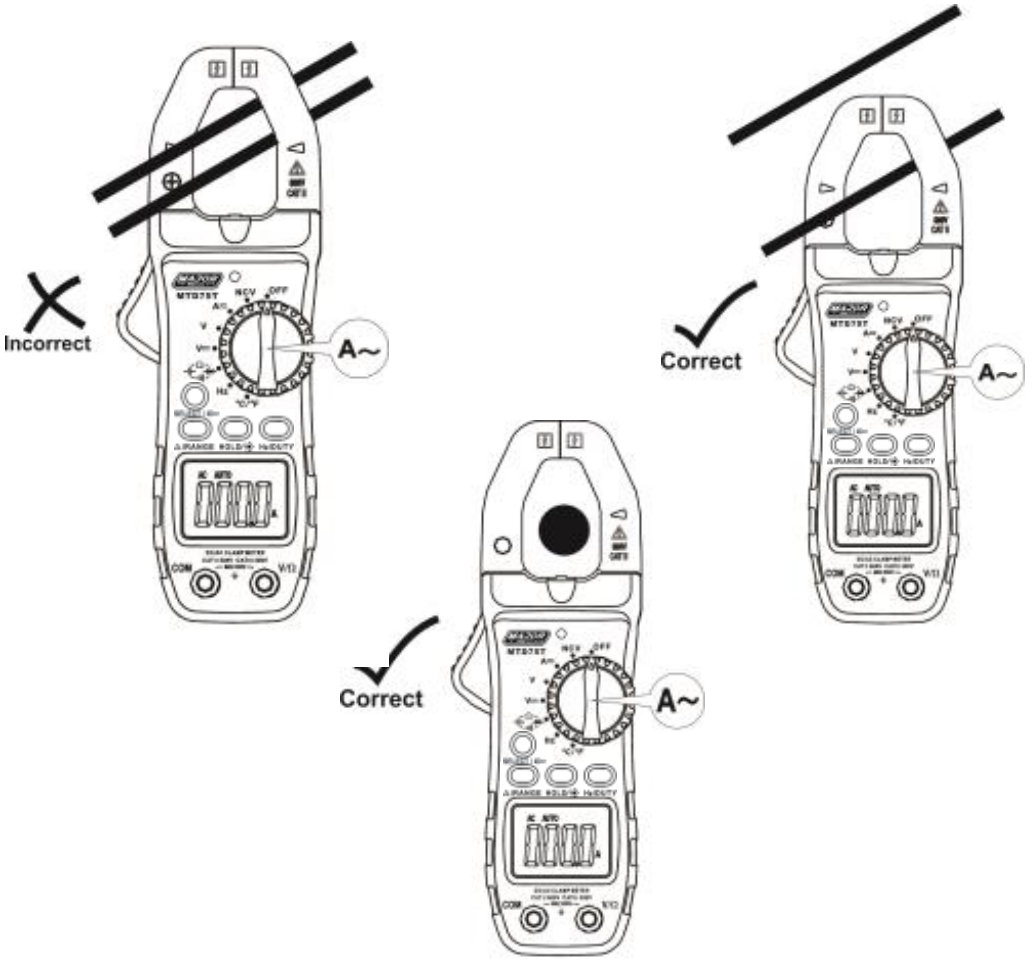
Operation

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.

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 A~ Range. If the approx. range of the measurement is not known, select Auto Range.
2. Press the △/**REL** button to zero the meter display.
3. Use SELECT Button to select AC
4. Press the trigger to open jaw. Fully enclose only one conductor. For optimum results, centre the conductor in the jaw.
5. The clamp meter LCD will display the reading.

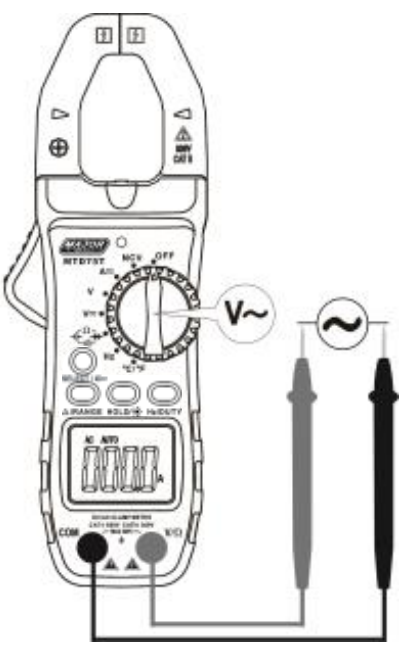


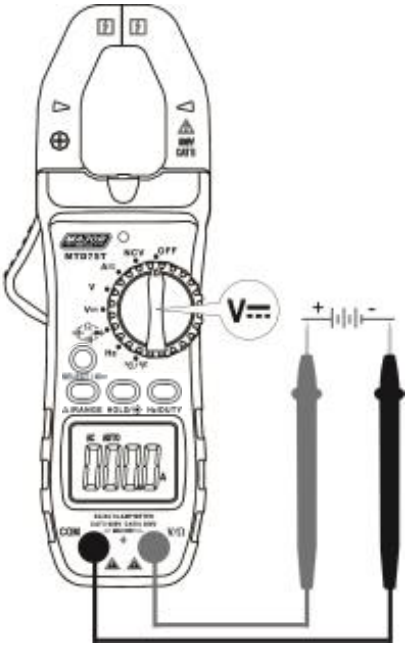
AC Voltage Measurement

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.

DC Voltage Measurement

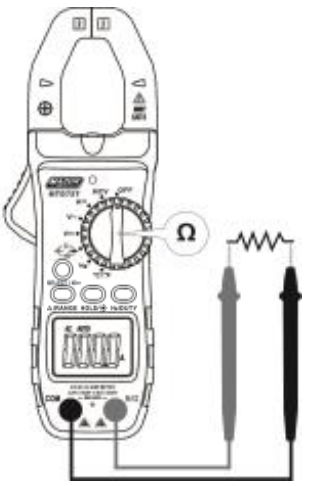
1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V/Ω** terminal.
2. Set the function switch to the V⎓ position.
3. Connect the test leads in parallel to the circuit under test.
4. Read the voltage measurement on the LCD display.





Resistance Measurement

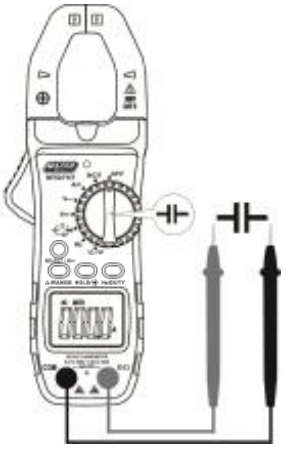
1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V/Ω** terminal.



2. Set the function switch to the  position.
3. Use SELECT Button to select **Ω**
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.

Capacitance Measurement

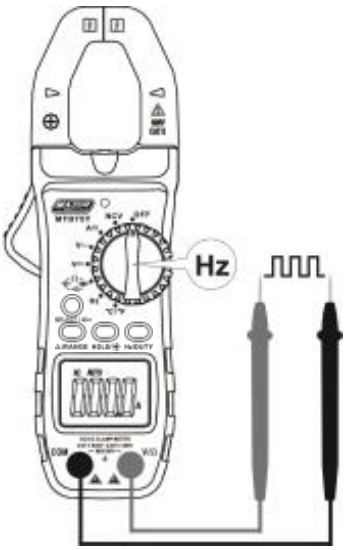
WARNING: To avoid electric shock, discharge the capacitor under test before measuring.



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 **nF**
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. Capacitance value displayed on the LCD display.

Frequency Measurement

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 **Hz** 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. Frequency measurement can be read on the LCD display.



Temperature Measurements

1. Set the function switch to the **°C** position.
2. Insert the Temperature Probe into the negative **COM** and the **V/Ω** positive jacks, observing polarity.
3. Touch the Temperature Probe head to the device under test. Continue to touch the part under test with the probe until the reading stabilizes.
4. Read the temperature on the display. The digital reading will indicate ambient temperature if no probe is inserted.

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

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 < 50Ω, the buzzer tone will sound.

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

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

Data HOLD / ☼ Key

1. 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.
2. The LCD is equipped with backlighting for easier viewing, especially in dimly lit areas. Press the ☼ button for 2 seconds to turn the LCD backlight on and off.

Flashlight

Hold down the **SELECT** Key for 2 seconds to turn on and off the flashlight.

REL Mode

This sets the relative point to measure against the next reading. Press the **REL** key to enter the Relative Measurement Mode, this function resets the display to zero.

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.

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.

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.

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 2 x 1.5V AAA battery, recommend Alkaline batteries for longer use
5. Secure the battery compartment

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