INSTRUCTION MANUAL

MT878

STUD, METAL & LIVE WIRE FINDER & MULTIMETER

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1. INTRODUCTION

The MT878 is an auto ranging multimeter integrated with a Stud and Metal detector as well a NCV detector, being a useful tool for professionals across diverse industries. Quickly locates studs behind walls, pinpoint metal objects buried in surfaces, and safely detect AC wires with confidence. The DMM function makes it easy to measure AC Volts, DC Volts, AC and DC Current, Resistance, Temperature, Capacitance, Continuity and Diode Test. In addition a LoZ setting eliminates errors caused by "ghost" voltages.

2. SAFETY

2.1. ⚠ Warnings

- Read, understand and follow Safety Rules and Operating Instructions in this manual before using this meter.
- The meter's safety features may not protect the user if not used in accordance with the manufacturer's instructions.
- Keep fingers away from the metal probe tips when taking measurements.
- Before changing functions using the selector switch, always disconnect the test leads from the circuit under test.
- Comply with all applicable safety codes. Use approved personal protective equipment when working near live electrical circuits - particularly with regard to arc-flash potential.
- Use caution on live circuits. Voltages above 30V AC RMS, 42V AC peak, or 60V DC pose a shock hazard.
- Do not use if the meter or test leads appear damaged.
- Verify operation before using meter by measuring a known live voltage.
- Do not use the meter in wet or damp environments or during lightning storms.
- Do not use the meter or near explosive vapors, dust or gasses.
- Do not use the meter if it operates incorrectly. Protection may be compromised.
- Do not operate meter while Low Battery warning is on. Replace batteries immediately.
- Do not apply voltage or current that exceeds the meter's maximum rated input limits.

2.2. Input Limits

Function	Maximum Input
Voltage AC or DC, Frequency	600V AC/DC
Resistance, Capacitance, Continuity, Diode Test, Temperature	250V AC/DC
Current AC or DC	10A / 600V fast acting Fuse
uA, mA Current AC or DC	500mA / 600V fast acting Fuse.

2.3. International Safety Symbols

This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.

Double insulation

Indicates the terminal(s) so marked must not be connected to a circuit where the voltage with respect to earth ground exceeds the maximum safety rating of the meter.

WARNING This **WARNING** symbol indicates a potentially hazardous situation, which if not avoided,could result in death or serious injury.

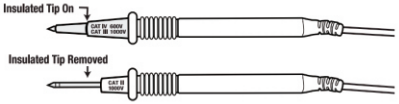
CAUTION This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided,may result damage to the product.

2.4. Safety Category Ratings

Category Rating	Brief Description	Typical Applications
CAT II	Single phase receptacles and connected loads	• Household appliances, power tools • Outlets more than 30ft (10m) from a Cat III source • Outlets more than 60ft (20m) from a Cat IV source
CAT III	Three phase circuits and single phase lighting circuits in commercial buildings	• Equipment in fixed installations such as 3-phase motors, switch gear and distribution panels • Lighting circuits in commercial buildings • Feeder lines in industrial plants • Any device or branch circuit that is close to a Cat III source

The measurement category (**CAT**) rating and voltage rating is determined by a combination of the meter, test probes and any accessories connected to the meter and test probes. The combination rating is the **LOWEST** of any individual component.

Test Leads



WARNING: Operation is limited to CAT II applications when the insulated tips are removed from one or both test probes. Refer to Input Limits section in this manual for maximum voltage ratings.

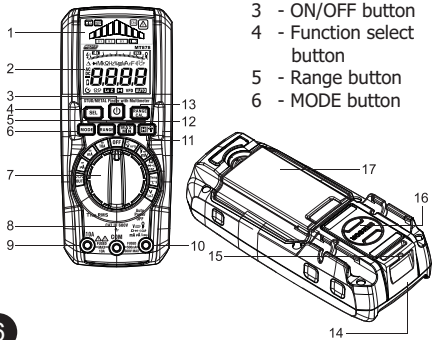
2.5. Maintenance

This multifunction meter is designed to provide years of dependable service, if the following instructions are performed:

1. **KEEP THE METER DRY**. If it gets wet, wipe it off.
2. **USE AND STORE THE METER IN NORMAL TEMPERATURES**. Extreme temperatures can shorten the life of the electronic parts and distort or melt plastic parts.
3. **HANDLE THE METER GENTLY AND CAREFULLY**. Dropping it can damage the electronic parts or the case.
4. **KEEP THE METER CLEAN**. Wipe the case occasionally with a damp cloth. **DO NOT** use chemicals, cleaning solvents, or detergents.
5. **USE ONLY NEW BATTERIES OF THE RECOMMENDED SIZE AND TYPE**. Remove old or weak batteries so they do not leak and damage the unit. Do not use different brands of batteries together.
6. **IF THE METER IS TO BE STORED FOR A LONG PERIOD OF TIME**, the battery should be removed to prevent damage to the unit.

3. DESCRIPTION

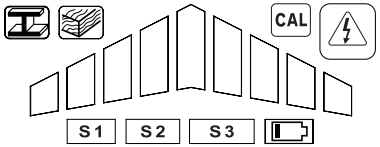
3.1. Meter Description



1 - LED Display
2 - LCD Display
3 - ON/OFF button
4 - Function select button
5 - Range button
6 - MODE button
7 - Rotary function switch
8 - COM input jack
9 - 10A input jack
10 - Positive input jack
11 - HOLD/Backlight button
12 - MAX/MIN button
13 - Stud Range button/Calibration
14 - NCV Sensor area
15 - Marking notch
16 - Stud/Metal sensor area
17 - Battery Cap

Note: 1-LED display, 3-Functian select button, 4-0N/OFF button, 13-Calibration/Stud Range button and 14/15/16 only use in Stud/Metal/NCV detection, others for Multimeter.

3.2. Symbols Used on LED Display (STUD/METAL Finder)



	Metal detection	S1	Select range 1: 0 to ½" 10 to 13mm)
	Stud detection	S2	Select range 2: 0 to 1" (0 to 25mm)
CAL	Calibration symbol	S3	Select range 3: 0 to 1½" (0 to 38mm)
	NCV detection		Low battery
	Target display bars		

3.3. Symbols Used on LCD Display (Multimeter)

V	Volts	n	nano (10^{-9})
A	Amperes	μ	μ micro (10^{-6})
F	Capacitance	m	milli (10^{-3})
AC	Alternating current	k	kilo (10^{3})
DC	Direct current	M	mega (10^{6})
▬	Minus sign	OL	Overload
Ω	Ohms		Low battery
)))	Continuity	AUTO	Auto ranging
▶|	Diode test		Display hold

Hz	Hz Hertz (frequency)
%	Percent (duty ratio)
°C	Degree Celsius
°F	Degree Fahrenheit
MAX	Maximum
MIN	Minimum
Δ	Relative mode
	Auto power off
OUT	Square wave signal output
Lo Z	Low Impedance
VFD	Frequency conversion measure
	Current Clamp
	Dangerous voltage indication

4. STUD/METAL FINDER OPERATION

4.1. Operation Tips

- Hold the tool straight up and down, parallel to the studs, and do not rotate the tool.
- During the stud detection, the hand holding the meter cannot leave the meter surface or change its position on the meter. If your hand leaves the surface of the meter during the scanning, the test signal will be affected, the stud detection symbol will flash, and the meter will be reinitialized. When your hand is put back on the surface of the meter again, the display bar may display, and you need to press Range/CAL button to re-calibrate and initialize.
- Keep the meter flat against the wall and do not rock, tilt, or press hard when slowly sliding across the surface being scanned.
- Avoid placing your other hand, or any other part of your body, on the surface being scanned. This will interfere with the meter's performance.
- Depending on the proximity of electrical wiring or pipes to the wall surface, the scanner may detect them in the same manner as studs. Caution should always be used when nailing, cutting, or drilling in walls, floors, and ceilings that may contain these items. You can continue to use metal detection and NCV detection mode to further confirm these items.
- To avoid confusion, remember that studs or joists are normally spaced 16 or 24in. (41 or 61cm) apart and are 1½in. (38 mm) in width. Anything closer together or a different width may not be a stud, joist, or firebreak.

WARNING: Do not rely exclusively on the detector to locate items behind the scanned surface. Use other information sources to help locate items before penetrating the surface. Such additional sources include construction plans, visible points of entry of pipes and wiring into walls, such as in a basement, and in standard 16 and 24in. (41 and 61cm) stud spacing practices.

Note: Replace with a new 9V battery when the low battery symbol is displayed; If the battery power is too low for reliable operation, the meter will beep three times and then turn off the detection function. When the meter turns on the detection mode, it will auto power off after approx. 15 minutes of inactivity.

4.2. Button Introduction 1

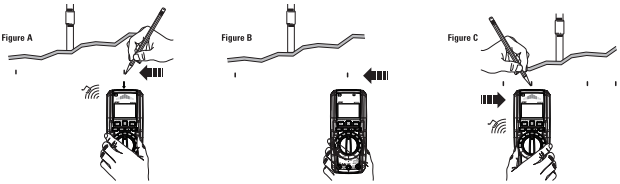
- ⏻ **ON/OFF button:** Press the ⏻ to turn on or turn off the detection mode (metal detection/stud detection/NCV detection) of the meter.
- **SEL button:** This button is only valid in the detection mode. When the meter turns on detection mode, press the SEL button once to switch the detection mode on. The switching sequence of detection mode is **Metal Detection → Stud Detection → NCV Detection → Metal Detection.**

- **Range/CAL button:** The calibration function only valid in the **Metal/Stud** detection mode, and the range setting is only valid in the stud detection mode.

4.3. Metal Detection

- Metal detection has interactive calibration to adjust its sensitivity to metal, which can be used to find the precise location of metal objects in walls, floors, and ceilings. For maximum metal sensitivity, turn the meter on in the air by pressing the **Range/CAL** button to re-calibrate and initialize. This will ensure that it calibrates away from any metal objects. Maximum sensitivity is ideal for quickly finding the approximate location of metal. With reduced sensitivity, the area where metal is indicated will be smaller. But in both cases, the metal target is in the center of the area where the meter indicates metal is present.
- Place the sensor side of the meter flat on the wall to be measured.
- Press the ⏻ **ON/OFF** button to turn on the detection mode of the meter. If it is not in metal detection mode, press the **SEL** button to select the metal detection mode, the symbol is on, the meter auto-calibrates and the CAL (calibration symbol) is on, when the calibration is completed, the CAL (calibration symbol) is off to indicate that the instrument is ready for detection.

A. (Figure A) Slowly slide the meter across the wall surface. Mark the point through the marking notch where you get the highest metal indication (the target display bars will all turn on, and the beeper will beep continuously). Continue in the same direction until display bars reduce. Reverse direction and mark the spot where the target display bars are all on from the reversed direction. The midpoint of the two marks is the location of the center of the metal object.



If the unit indicates metal over a large area, you can refine the scanning area to more accurately locate the metal target by following steps A and B below.

B. (Figure B) To further pinpoint the location of the metal target, scan the area again. Move the meter to one of the previous marks, press the **Range/CAL** button to re-calibrate and initialize. This will reset the meter to a lower sensitivity of metal detection and narrow the scan area.

C. (Figure C) To continue to reduce sensitivity and further refine the

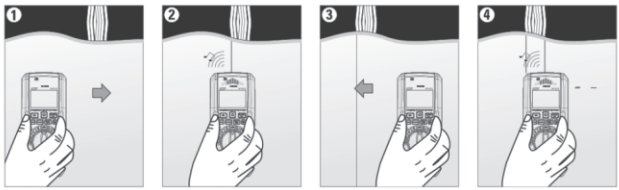
scanning area, repeat step B. This procedure can be repeated multiple times to narrow the field even further.

Note: If the meter is directly placed on the metal surface for calibration, it will result in an error display, the metal symbol is always on, and other symbols flash, the beeper will beep. Move the meter to another place and re-calibrate.

Note: When the meter is working in metal detection mode and the NCV detection symbol flashes, it means that the meter detects AC voltage within the defined detection range.

4.4. Stud Detection

- Place the sensor side of the meter flat on the wall to be measured.
- Press the ⏻ **ON/OFF** button to turn on the detection mode of the meter. If it is not in stud detection mode, press the **SEL** button to select the stud detection mode, the symbol is on, the meter auto-calibrates and the CAL (calibration symbol) is on, when the calibration is completed, the CAL (calibration symbol) is off to indicate that the instrument is ready for detection.
- Slowly slide the meter across the wall surface. Mark the point through the marking notch where you get the highest stud indication (the target display bars will all turn on, and the beeper will beep continuously). It means you have located the edge of the stud. Continue in the same direction until display bars reduce. Reverse direction and mark the spot where the target display bars are all on from the reversed direction. The midpoint of the two marks is the location of the center of the stud *object*.



If the unit indicates a stud over a large area, you can reduce the range and repeat the above scanning steps. If the display bar displays during the test, but cannot reach the full display, continue to slowly slide the meter, the display bar display decrease. Try to increase the range and repeat the above scanning steps. In the stud detection mode, hold down the **Range/CAL** button to switch the detection range, there are S1 (0 to ½" or 0 to 13mm), S2 (0 to 1" or 0 to 25mm) and S3 (0 to 1½" or 0 to 38mm) three ranges can be selected.

Note: If the meter is directly placed on the metal or other material surface for calibration, it will result in an error display, the stud symbol is always on, and other symbols flash, the beeper will beep. Move the meter to another place and re-calibrate. After the meter is calibrated on the wall, taking it away from the wall surface will also cause error to display.
Note: If there is a stud, such as wooden beam on the back of the wall where the meter is calibrated, when the meter slide away from the stud, the stud detection symbol flashes, indicating that the stud is missing. Short press the **Range/CAL** button to re-calibrate and initialize.
Note: When the meter is in stud detection mode, if the NCV detection symbol flashes, it means that the meter detects AC voltage within the defined detection range.

4.5. NCV Detection

WARNING: DO NOT ASSUME THERE ARE NO LIVE ELECTRICAL WIRES IN THE WALL. DO NOT TAKE ACTIONS THAT COULD BE DANGEROUS IF THE WALL CONTAINS A LIVE ELECTRICAL WIRE. ALWAYS TURN OFF THE ELECTRICAL POWER, GAS, AND WATER SUPPLIES BEFORE PENETRATING A SURFACE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN ELECTRIC SHOCK, FIRE, AND/OR SERIOUS INJURY OR PROPERTY DAMAGE.

- NCV (Non Contact Voltage) detection mode only can be used to detect the AC Voltage. The detection range is 12~1000VAC, the detection distance is related to the voltage and whether the wire is shielded. If the wire to be tested is shielded, the wire will not be detected.
- Press the ⏻ **ON/OFF** button to turn on the detection mode of the meter, if it is not in NCV detection mode, press the **SEL** button to select the NCV detection mode, the ⚠ symbol is on. It means NCV detection mode is ready.
- Before using the NCV detection mode of the meter, make sure that the target display bar can be displayed normally. Check meter on a known live AC voltage that is within the defined detection range of the tester.
- Slowly slide the meter across the wall surface, if the meter detects AC voltage within the defined detection range, the target display bar will display, and the beeper will beep. The beeping rate will increase and the display bar display segment increase as the meter gets closer to the voltage source. If the meter detects high voltage, the display bar will fully display and the beeper will beep continuously.

Note: The tester cannot determine the actual voltage. The voltage level where the tester switches from the low to high voltage mode is effected by insulation type and thickness, distance from the voltage source, and other factors.

4.6. Stud Finder Specifications

Stud scanning range	0~1½"(38mm) through drywall
Metal scanning range	0-3"(76mm) magnetic metal 0~1½"(38mm) non-magnetic metal
Live AC Wires (without shielding)	0~2"(50mm)
Result indication	Multi-color LED display and buzzer

5. MULTIMETER OPERATION

5.1. Button Introduction 2

- **MODE Button**: Press the MODE key to select AC/DC Voltage, AC/DC Current, Frequency, duty cycle, Ohms, Diode Test, Continuity, Capacitance or Temperature. When working in AC Voltage mode, press the MODE key for >2 seconds to turn the VFD function on or off. When working in mV Voltage mode, press the MODE key for >2 seconds to turn the Current Clamp Measurements function on or off .
- **RANGE Button:** When the meter is first turned on, it automatically goes into Auto Ranging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:
  1. Press the RANGE button, the "**AUTO**" symbol will turn off.
  2. Press the RANGE button to step through the available ranges until you select the range you want.
  3. Hold down the RANGE button for 2 seconds to exit the Manual Ranging mode and return to Auto Ranging, the "**AUTO**" symbol will display.

Note: When working in the Square wave mode, press the RANGE key to select Square wave frequency. When working in the Current Clamp function, press the RANGE key to select 40.00A or 400.0A range.

• MAX/MIN Button:

1. Press the **MAX/MIN** button to activate the **MAX/MIN** mode. In MAX mode, the "**MAX**" symbol will appear on the LCD display, the meter will display and hold the maximum reading and will update when a higher "**MAX**" occurs. Press the **MAX/MIN** button again to view the lowest reading. The "**MIN**" symbol will appear on the LCD display, the meter will display and hold the minimum reading and will update when a lower "**MIN**" occurs.
2. Hold down the **MAX/MIN** button to end **MAX/MIN** and return to normal operation.

Note: The meter does not auto-range when the **MAX/MIN** mode is active, the display will read OL if the range is exceeded. When this occurs, exit **MAX/MIN** and use the **RANGE** button to select a higher range.

MAX/MIN mode does not work on Frequency, Duty Cycle, Diode Test, Continuity, Square wave and Capacitance.

- **HOLD/ Backlight Button:** Press the **HOLD** key to turn hold on or off. Hold down the Backlight key to turn the Backlight on or off.

Note: Replace with a new 9V battery when the low battery symbol is displayed. When the meter turns on the multimeter mode, it will auto power off after approx. 15 minutes of inactivity. To disable the auto power off feature, hold down the MODE button and then turn the meter on.

5.2. Operating Instruction

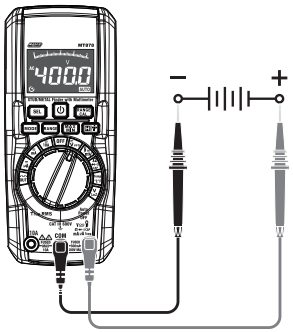
5.2.1. AC/DC Voltage (Frequency, Duty Cycle, VFD) Measurements

WARNING: Observe all safety precautions when working on live voltages.

CAUTION: Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the VAC/VDC/Hz/%/VFD 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. Touch the black test probe tip to the neutral side of the circuit. Touch the red test probe tip to the "live" side of the circuit.
4. Read the AC voltage in the display.
5. Press the MODE button to indicate "Hz".
6. Read the frequency in the display.
7. Press the MODE button again to indicate "%".
8. Read the % of duty cycle in the display.
9. Press the MODE button to indicate "DC V".
10. Read the DC voltage in the display.
11. When working in AC Voltage mode, press and hold the MODE key for >2 second to indicate "VFD".
12. Read the voltage in the display.
13. To exit VFD mode press and hold the MODE key for >2 second.

NOTE: When it is greater than 30V, the LCD will display a high voltage danger symbol "ϟ".



5.2.2. mV Voltage (Current Clamp) Measurements

WARNING: Observe all safety precautions when working on live voltages.

1. Set the rotary function switch to **AC/DC** mV position .
2. To select AC or DC mV voltage, press the **MODE** button until the "~" (AC) or "⎓" (DC) symbol appears on the LCD display.
3. Insert the black test lead into the **COM** input jack and the red test lead into the Positive input jack.
4. Touch the test lead probes to the circuit under test. If measuring DC voltage, touch the red test lead to the positive side of the circuit and the black test lead to the negative side of the circuit.
5. Read the mV voltage on the LCD display.
6. Hold down the MODE key for >2 second to indicate "Ω" and "**A**".
7. To select AC or DC Current, press the MODE button until the "~ " (AC) or "⎓" (DC) symbol appears on the LCD display. Press the **RANGE** key to select 40.00A or 400.0A range.

8. Insert the Current Clamp black test lead banana plug into the negative **COM** jack; Insert the Current Clamp red test lead banana plug into the positive V jack.
9. Read the Current in the display.
10. To exit Current Clamp mode hold down the MODE key for >2 second.

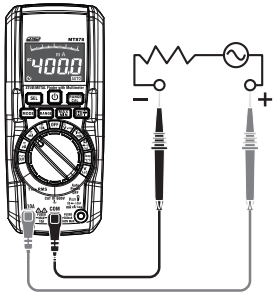
NOTE: The range of the Multimeter and the Current Clamp should be matched one by one. **The Current Clamp (MT783) is an optional extra.**

5.2.3. AC/DC Current Measurements

WARNING: Observe all safety precautions when working on live voltages. Measurements in the 10A range should be limited to 30 seconds maximum every 15 minutes.

1. Insert the black test lead into the **COM** input jack.
2. For current measurements up to 10A AC/DC, set the rotary function switch to the **10A** position and Insert the red test lead into the **10A** input jack.
3. For current measurements up to 400mA AC/DC, set the rotary function switch to the mA position and Insert the red test lead into the **Positive** input jack.

4. For current measurements up to 4000uA AC/DC, set the rotary function switch to the uA position and Insert the red test lead into the **Positive** input jack.
5. Press the **MODE** button to select AC or DC current, the "⁓" (AC) or "⎓" (DC) symbol will be shown on the LCD display.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. Touch the black test probe tip to the neutral side of the circuit. Touch the red test probe tip to the "live" side of the circuit.
8. Apply power to the circuit.
9. Read the current on the LCD display.



5.2.4. Resistance Measurements

WARNING: Never test resistance on a live circuit.

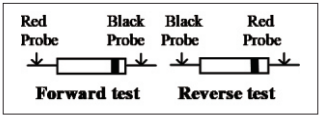
1. Set the rotary function switch to the **Ω** /⊣◀/·))/**CAP** position.
2. Press the **MODE** button until the "**Ω**" symbol appears on the LCD display.
3. Insert the black test lead into the **COM** input jack and the red test lead into the **Positive** input jack.
4. Touch the test lead probes to the component under test. If the component is installed in a circuit, it is best to disconnect one side before testing to eliminate interference with other devices.
5. Read the resistance in on the LCD display.

5.2.5. Diode Test

WARNING: Never test diodes in a live circuit.

1. Set the rotary function switch to then**Ω** /⊣◀/·))/**CAP** position.
2. Press the **MODE** button until the "⊣◀" symbol appears on the LCD display.
3. Insert the black test lead into the **COM** input jack and the red test lead into the Positive input jack.

4. Touch the test lead probes to the diode under test.
5. Forward voltage will indicate 0.4 to 0.7 on the LCD display. Reverse voltage will indicate "**OL**". Shorted devices will indicate near O and an open device will indicate "**OL**" in both polarities.



5.2.6.Continuity Test

WARNING: Never test continuity on a live circuit.

1. Set the rotary function switch to the **Ω**/⊣/·))/**CAP** position.
2. Press the **MODE** button until the "⊣" symbol appears on the LCD display.
3. Insert the black test lead into the **COM** input jack and the red test lead into the Positive input jack.
4. Touch the test lead probes to the device or wire under test.
5. A beeper will sound if the resistance is approx 50 ohms or less and the resistance reading will be shown on the LCD display.

5.2.7. Capacitance Measurements

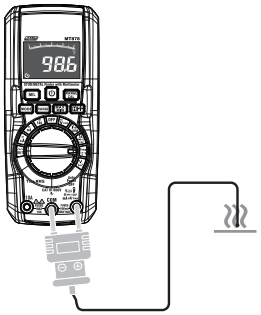
WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords

1. Set the rotary function switch to the **Ω** /⊣/ ·))/**CAP** position.
2. Press the **MODE** button until the "**nF**" symbol appears on the LCD. Insert the red test lead banana plug into the Positive jack.
4. Touch the test leads to the capacitor to be tested. Wait until the readings settle before ending the test.
5. Read the capacitance value in the display.

5.2.8. Temperature Measurements

WARNING: Do not apply the temperature probe to live circuits.

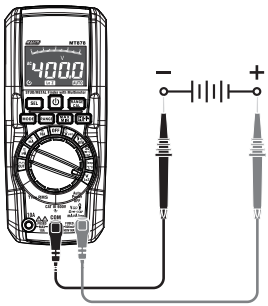
1. Set the rotary function switch to the Temp **°C °F** position.
2. Press the **MODE** button to select readings in °F or °C.
3. Connect the Temp Probe to the Banana Plug Adapter. Note the - & + markings on the adapter. Connect the adapter to the meter, making sure the-side goes into the **COM** input jack and the + side goes into the **Positive** input jack.
4. Touch the tip of the Temperature Probe to the object being measured.
5. Read the temperature on the LCD display.



5.2.9. Lo Z AC/DC Voltage Measurements

WARNING: Observe all safety precautions when working on live voltages. Do not connect to circuits that exceed 600V AC RMS or 600V DC when the meter is set to Lo Z.

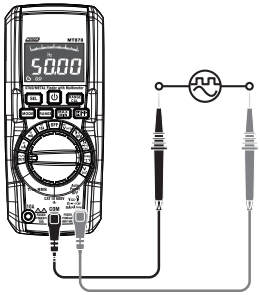
Lo Z is used to check for "ghost" voltage. Ghost voltages are present when non-powered wires are in close proximity to powered wires. Capacitive coupling makes it appear that non-powered wires are connected to a real source of voltage. The Lo Z setting places a load on the circuit, which greatly reduces the voltage reading when connected to ghost voltage.



1. Set the rotary function switch to the V Lo Z position.
2. To select AC or DC voltage, press the **MODE** button until the AC "~" or DC "⎓" symbol appears on the LCD display.
3. Insert the black test lead into the **COM** input jack and the red test lead into the V input jack.
4. Touch the test leads to the circuit under test. If measuring DC voltage, touch the red test lead to the positive side of the circuit and the black test lead to the negative side of the circuit.
5. Read the voltage on the LCD display.

5.2.10. Square Wave Output

1. Set the rotary function switch to the 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. A simple waveform generator is needed for electronic experiments, with continuous square-wave signals output between red lead and black lead.
4. Press the **RANGE** Button to select a different frequency output.



WARNING: Do not enter high voltage.

Note: When the meter only works in multimeter mode, if the NCV detection symbol flash, it means that the meter detects AC voltage within the defined detection range.

6. REPLACING THE BATTERY

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage.

7. REPLACING THE FUSES

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the fuse door.

1. Disconnect the test leads from the meter.
2. Rotate 180 degrees to open the back cover of battery for the 500mA/600V fast and remove the rear cover for the 10A/600V fast.
3. Gently remove the old fuse and install the new fuse into the holder.
4. Always use a fuse of the proper size and value (500mA/600V fast blow for the uA/mA range or 10A/600V fast blow for the 10A range).
5. Replace and secure the rear cover.

WARNING: To avoid electric shock, do not operate your meter until the fuse cover is in place and fastened securely.

8. SPECIFICATIONS

8.1. Multimeter Specifications

8.1.1. AC True RMS Voltage

Range	Resolution	Accuracy ±(% of reading + digits)
40.00mV	0.01mV	±(0.9% + 9 digits)
400.0mV	0.1mV	
4.000V	0.001V	±(1.2% + 3 digits)
40.00V	0.01V	±(1.2% + 5 digits)
400.0V	0.1V	
600V	1V	

All AC voltage ranges are specified from 5% of range to 100% of range.
AC Voltage Bandwidth: 50Hz to 60Hz (ALL WAVE) 50Hz to 1KHz (SINE WAVE)

8.1.2. DC Voltage

Range	Resolution	Accuracy ±(% of reading + digits)
40.00mV	0.01mV	±(0.9% + 9 digits)
400.0mV	0.1mV	
4.000V	0.001V	±(0.5% + 8 digits)
40.00V	0.01V	
400.0V	0.1V	
600V	1V	

8.1.3. DC Current

Range	Resolution	Accuracy ±(% of reading + digits)
400.0uA	0.1uA	±(1.0% + 5 digits)
4000uA	1uA	
40.00mA	0.01mA	
400.0mA	0.1mA	±(1.0% + 8 digits)
4.000A	0.001A	±(2.0% + 3 digits)
10.00A	0.01A	±(2.0% + 5 digits)

Specifications Continue on next page

8.1.4. AC True RMS Current

Range	Resolution	Accuracy ±(% of reading + digits)
400.0uA	0.1uA	(1.0% + 5 digits)
4000uA	1uA	
40.00mA	0.01mA	
400.0mA	0.1mA	±(1.2% + 8 digits)
4.000A	0.001A	±(2.0% + 3 digits)
10.00A	0.01A	±(2.0% + 5 digits)

All AC Current ranges are specified from 5% of range to 100% of range.
AC Current Bandwidth: 50Hz to 60Hz (ALL WAVE) 50Hz to 400Hz (SINE WAVE)

8.1.5. Current Clamp Measurements

Range	Resolution	Accuracy ±(% of reading + digits)
AC 40.00A	0.01A	±(2.5% + 10 digits)
DC 40.00A	0.01A	
AC 400.0A	0.1A	±(2.8% + 10 digits)
DC 400.0A	0.1A	

All AC Current ranges are specified from 5% of range to 100% of range, AC Current bandwidth: 50/60Hz

8.1.6. Resistance

Range	Resolution	Accuracy ±(% of reading + digits)
400.0Ω	0.1Ω	±(1.2% + 5 digits)
4.000kΩ	0.001KΩ	
40.00kΩ	0.01KΩ	
400.0kΩ	0.1KΩ	
4.000MΩ	0.001MΩ	±(2.5% + 8 digits)
40.00MΩ	0.01MΩ	±(3.0% + 8 digits)

Specifications Continue on next page

8.1.7. Capacitance

Range	Resolution	Accuracy ±(% of reading + digits)
99.99nF	0.01nF	±(3.5% + 40 digits)
999.9nF	0.1nF	±(3.0% + 5digits)
9.999uF	0.001uF	
99.99uF	0.01uF	±(3.5% + 5 digits)
999.9uF	0.1uF	
9.999mF	0.001mF	±(4.0% + 10 digits)
99.99mF	0.01mF	±(5.0% + 20 digits)

8.1.8. Frequency (Electrical)

Range	Resolution	Accuracy ±(% of reading + digits)
10Hz to 10kHZ	0.001HZ to 0.001KHZ	±(1.2% + 5 digits)

Sensitivity: >10V RMS

8.1.9. Duty Cycle

Range	Resolution	Accuracy ±(% of reading + digits)
0.5% to 99.9%	0.1%	±(1.2% + 5 digits)

Pulse width: 100µs - 100ms, Frequency: 40Hz to 10kHz

8.1.10. Temperature

Range	Resolution	Accuracy ±(% of reading + digits)
0°F to 1832°F	1°F	±(1.5% + 9°F)
-18°C to 1000°C	1°C	±(1.5% + 5°C)

8.1.11. Square Wave Output Frequency (Manual-ranging)

Range	Accuracy ±(% of reading + digits)
50, 100, 200, 300, 400, 500, 1k, 2k, 3k, 4k, 5k, 6k, 7k, 8k, 9k, 10kHz	±(1.2% + 5 digits)

NOTE: Accuracy is stated at 18°C to 28°C (65°F to 83°F) and less than 75% RH.
Note: Accuracy specifications consist of two elements:
• (% reading) – This is the accuracy of the measurement circuit.
• (+ digits) – This is the accuracy of the analog to digital converter.

8.2. General Specifications

Function	Range
Insulation	Class 2, Double Insulation
Diode Test	Test current approx. 1mA open circuit voltage of 3V typical
Continuity	Test Audible signal if the resistance is <50Ω
Low Battery Indication	"▯" is displayed
Display	4000 counts backlit LCD with bargraph
Over Range Indication	"OL" is displayed
Polarity	Minus symbol "-" is displayed for negative polarity
Measurement Rate	3 readings per second, nominal
Auto Power Off	approx. 15 minutes
Input Impedance	>10MΩ AC and DC Voltage
AC Response	True RMS
AC Voltage Bandwidth	50Hz to 1kHz
AC Current Bandwidth	50Hz to 400Hz
Batteries	One 9V battery
Fuse	10A/600V fast acting Fuse, 500mA/600V fast acting Fuse
Operating Environment	5°C to 40°C (41°F to 104°F)
Storage Environment	-10°C to 50°C (14°F to 122°F)
Operating Humidity	Max 80% up to 87°F (31°C) decreasing linearly to 50% at 104°F (40°C)
Storage Humidity	<80%
Dimensions	6.5" x 2.75" x 1.77"/0.72lb (165 x 70 x 45mm
Weight	326g
Safety	Complies with UL 61010-1 v.3 for measurement Category III 600V, Pollution Degree 2

9. WARRANTY

Warranty Coverage

Major Tech warrants its test instruments to be free from defects in materials or workmanship under normal use and service for a period of two (2) years from the date of shipment. This warranty is extended exclusively to the original purchaser, provided the online Product Registration has been completed on either www.major-tech.com or www.majortech.com.au, depending on which country the product was purchased. This warranty is non-transferable.

Exclusions

This warranty does not cover:

- Disposable batteries and fuses
- Damage caused by leaking batteries (damaging the meter and components)
- Normal wear and tear of mechanical components
- Failures caused by use outside the product's specifications
- Any product which, in the opinion of Major Tech, has been misused, contaminated, or damaged due to neglect.

Check Procedure

Prior to contacting Major Tech or a distributor regarding a warranty claim, please check the following:

- Batteries are installed correctly
- Battery condition – either replace disposable batteries or ensure rechargeable batteries are charged where applicable
- Test leads are inserted in the correct terminals and are fully inserted, no damage to test leads.

Contact Information

For any warranty claims or inquiries, please contact either Major Tech or the distributor from whom the product was purchased.

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