INSTRUCTION MANUAL

MT715

AC TRMS OPEN JAW CLAMP METER

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1. Introduction

The MT715 is a hand held digital open jaw clamp meter. The instrument LCD adopts a negative display, rotary switch with backlight indication, which facilitates the user to operate the instrument under dark/dim conditions. The MT715 is idea for Industrial and domestic applications where high current measurement is required.

1.1. Measurements:

- AC/DC Voltage
- Low Input Impedance Test AC/DC Voltage
- Resistance
- Capacitance
- Continuity
- Diode
- Non Contact Voltage

1.2. Features:

- Negative LCD display
- Auto Power OFF
- Data Hold and Flash Light
- Fork Clamp Current
- Backlit Range Markings

2. Safety

2.1 International Safety Symbols

•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

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

2.2. 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.

2.3. 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 1000V.
- When selecting ranges always disconnect the test leads from the circuit under test.
- Replace the batteries as soon as the low battery indicator "  " appears.

2.4. 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 if damaged 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.

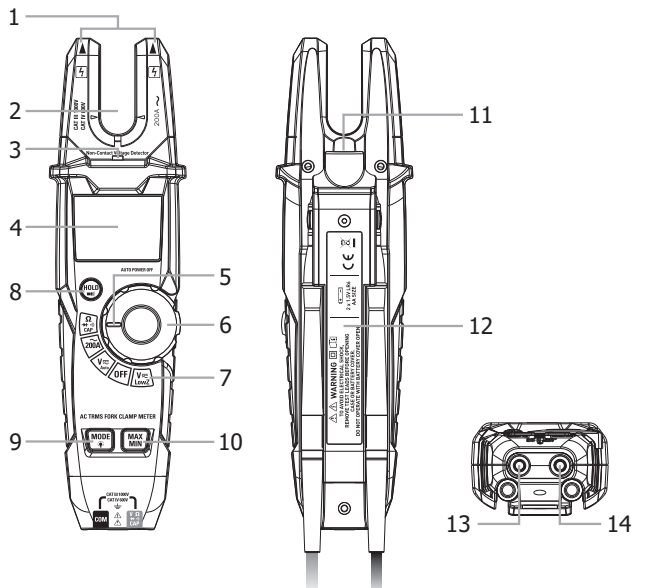
Input Limits

Function	Maximum Input
A AC	200A
V AC/DC	1000V AC/DC
V AC/DC (Low Input Impedance)	600V AC/DC
Resistance, Capacitance, Diode Test	300V AC/DC

3. Description

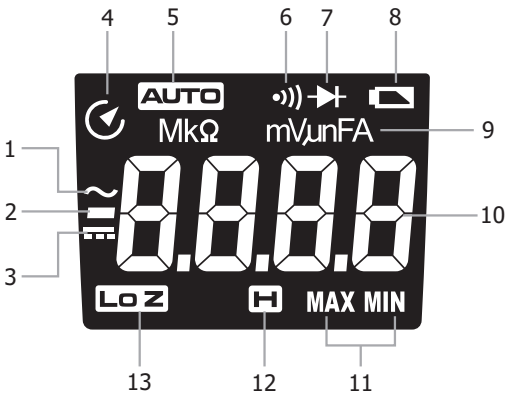
3.1. Meter Description

1-NCV Indicator Test
2-Current Fork
3-Non-Contact AC Voltage Indicator Light
4-Negative LCD Display
5-Knob Indicator - Backlit
6-Rotary Selector Switch
7-Range Markings - Backlit
8-Data Hold and Flashlight Button
9-M0DE and Backlight Button
10-MAX/MIN Button
11-Flashlight
12-Battery Cover
13-COM Input Jack
14-**VΩ⊣◀•))) CAP** Input Jack



3.2. Symbols Used on LCD Display

1-Alternating Voltage and Current
2-Minus Sign
3-Direct Voltage and Current
4-Auto Power Off
5-Auto Range Mode
6-Continuity Test
7-Diode Test
8-Low Battery
9-Units of Measure List
10-Measurement Display Digits
11-Maximum/Minimum
12-Data Hold
13-Low Impedance Input Mode



4. Specifications

4.1. Specifications

Function	Range	Resolution	Accuracy ±(% of reading+digits)
AC Current	200.0A	100mA	±(3% + 5 digits)

Over range protection: Maximum input 200A.
Frequency Response: 50 to 60Hz

Function	Range	Resolution	Accuracy ±(% of reading+digits)
AC True RMS Voltage (Auto Ranging)	6.000V	1mV	±(1.2% + 5 digits)
	60.00V	10mV	±(1.2% + 2 digits)
	600.0V	100mV	
	1000V	1V	±(1.5% + 2 digits)

Input Impedance: 10MΩ; Low Input Impedance Test Voltage: ±3kΩ MAX 600V AC
Accuracy Specified from +3.0% of rdg +8 digits;
Over Range Protection: 1000V RMS; Frequency Response: 50 to 1000Hz (sine wave), 50/50(All wave)

Function	Range	Resolution	Accuracy ±(% of reading+digits)
DC Voltage (Auto Ranging)	6.000V	1mV	±(0.9% + 5 digits)
	60.00V	10mV	±(1.0% + 2 digits)
	600.0V	100mV	
	1000V	1V	±(1.2% + 2 digits)

Input Impedance: 10MΩ; Low Input Impedance Test Voltage: ±3kΩ MAX 600V AC
Accuracy Specified from +3.0% of rdg +8 digits;
Over Range Protection: 1000V

Function	Range	Resolution	Accuracy ±(% of reading+digits)
Resistance	600.0Ω	0.1Ω	±(1% + 4 digits)
	6.000kΩ	1Ω	±(1.5% + 4 digits)
	60.00kΩ	10Ω	
	600.0kΩ	100Ω	
	6.000MΩ	1kΩ	±(2.5% + 4 digits)
	60.00MΩ	10kΩ	±(3.5% + 4 digits)

Over Range Protection: 300V RMS

Function	Range	Resolution	Accuracy ±(% of reading+digits)
Capacitance	60.00nF	0.01nF	±(3% + 5 digits)
	600.0nF	0.1nF	
	6.000μF	1nF	
	60.00μF	0.01μF	
	600.0μF	0.1μF	±(3.5% + 10 digits)
	4000μF	1μF	±(5.0% + 10 digits)

*>6nF no specification; Over Range Protection: 300V RMS

Function	Testing Condition	Reading
Diode	Test current of 1.5mA typical Open circuit voltage <3VDC typical	Forward voltage drop of Diode
Continuity	Test current <0.35mA	Buzzer makes a long sound, While resistance is less than (50Ω)

Over Range Protection: 300V RMS.

4.2. General Specifications

Clamp Jaw Opening	16mm approx.
Display	6000 Counts Negative LCD Display
Continuity Check	Buzzer sounds at less than 50Ω
Diode Test	Test current of 0.35mA typical; Open circuit voltage <3VDC typical
Low Battery Indication	" " is displayed
Over-Range Indication	"OL" display
Measurement Rate	3 readings per second, nominal
Input Impedance	10MΩ (VDC and VAC)
Low Input Impedance	~3KΩ (VDC and 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 decreasing linearly to 50% at 40°C
Storage Humidity	<80%
Operating Altitude	2000 meters maximum
Drop Protection	2m
Battery	Two (2) x 1.5V AA Batteries
Battery Life	Without Knob, Rotary Button, Flashlight & backlight ~100h With Knob, Rotary Button, Flashlight & backlight ~40h
Auto Power Off	After approx. 15 minutes
Dimensions	230 x 44 x 66mm
Weight	259g
Safety	For indoor use and in accordance with the requirements for double insulation to IEC1010-1 (2001): EN61010-1 (2001) Overvoltage Category III 1000V and Category IV 600V, Pollution Degree 2.

5. 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 AC Current.
2. Place the current fork around the middle of the test lead.
3. The clamp meter LCD will display the reading.

INCORRECT

CORRECT

5.2. AC (True RMS)/DC Voltage Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **VΩ ⇥ CAP** terminal
2. Automatically change between AC or DC
3. Connect the test leads in parallel to the circuit under test
4. Read the voltage measurement on the LCD display

5.3. Low Z Voltage Measurements

NOTES: Observe all safety precautions when working on live voltages. Do not connect to circuits that exceed 600V AC/DC when the meter is set to Low Z.

Low Z is used when there is a suspicion of a "ghost" voltage. Ghost voltages are present when non-powered wires are in close proximity to wires powered by AC voltage. Capacitive coupling between wires make it appear that non-powered wires are connected to a real source of voltage. The Low Z setting places a load on the circuit which dissipates and greatly reduces ghost voltage.

1. Set the rotary function switch to the **Low Z** position.
2. Momentarily press the **MODE** button to select **AC** or **DC** voltage. The **AC** or **DC** symbol will appear 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. 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.
4. Touch the test leads to the circuit under test.
5. Read the voltage 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 V Ω •)) ⏭ **CAP** positive terminal.
2. Set the function switch to the Ω •)) ⏭ **CAP** position.
3. Use the **MODE** button to select Resistance Measurements
4. Touch the test probe tips across the circuit or component under test.
5. 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 V Ω •)) ⏭ **CAP** positive terminal.
2. Set the function switch to the Ω •)) ⏭ **CAP** position.
3. Use the **MODE** button to select continuity "•))". The display icons will change when the **MODE** button is pressed.
4. Touch the test probe tips across the circuit or component under test.
5. If the resistance is at less than 50Ω, a tone will sound.

5.6. Capacitance Measurements

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

1. Set the function switch to the Ω •)) ⊣ **CAP** position.
2. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the V Ω •)) ⊣ **CAP** positive jack.
3. Use the **MODE** button to select **CAP** Measurements.
4. Touch the test probe tips across the part under test.
5. Read the capacitance value in the display.
6. The display will indicate the proper decimal point and value.

For very large values of capacitance measurement it can take several minutes before the final reading stabilizes.

5.7. Diode Measurements

1. Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the V Ω •)) ⊣ **CAP** positive jack.
2. Turn the function switch to Ω •)) ⊣ **CAP** position. Use the **MODE** button to select the diode function if necessary (diode symbol will appear on the LCD when in Diode test mode).
3. Touch the test probe tips to the diode or semiconductor junction under test. Note the meter reading.
4. Reverse the test lead polarity by reversing the red and black leads. Note this reading.
5. 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 "0L" ,the diode is good.
   - If both readings display "0L" the device is open.
   - If both readings are very small or "0", the device is shorted.

5.8. Non-Contact Voltage (NCV) Measurements

The NCV function works on any rotary switch position.

1. Test the detector on a known live circuit before use.
2. Hold the top of the meter very close to the voltage source as shown.
3. If voltage is present. the red light will long lighting.

NOTE: Do not touch the top of the meter when using this function.
NOTE: Test on known live circuit before using.

6. Button

6.1. MODE and Backlight Button
- Press MODE and Backlight Button to select OHM/Diode/Continuity/CAP/ LoZ AC/DC Voltage.
- Press the MODE and Backlight button for over 1 second to turn the button, Knob and Rotary light on.
- Press again for over 1 second to turn the button, Knob and Rotary light off.

6.2. MAX/MIN Button
- Press MAX/MIN Button the maximum and minimum values are measured.
- This mode is activated on each measurement except for continuity test, diode test, capacitance test and AUTO SENSE Voltage mode.
- This mode is disabled keeping pressed MAX/MIN Button or moving the rotary switch.

6.3. DATA HOLD and Flashlight Button
- To freeze the LCD reading, press the HOLD and Flashlight Button.
- While data hold is active, the HOLD icon appears on the LCD.
- Press the HOLD and Flashlight Button again to return to normal.
- Press the HOLD and Flashlight Button for over 1 second to turn the light on.
- Press again for over 1 second to turn the light off.

7. 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 function switch to the OFF position and then to the desired function position.
- To press and hold the **MODE and Backlight Button** to turn the system on, the auto power off function will be cancelled.

8. 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. Remove the Phillips head screw that secures the rear battery door
2. Open the battery compartment.
3. Replace the 1.5V x 2 AA batteries.
4. Secure the battery compartment.

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