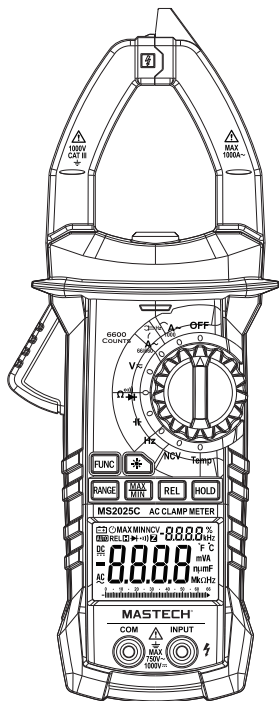


# MASTECH®

## MS2025C

### AC Digital Clamp Meter User Manual



# MASTECH®

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## 1. Safety Information



### WARNING

Be extremely careful when using this meter. Improper use of this device can result in electric shock or destruction of the meter. Take all normal safety precautions and follow the safeguards suggested in this manual. To exploit full functionality of the meter and ensure safe operation, please read carefully and follow the directions in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

This meter is designed and manufactured according to safety requirements of EN 61010-1, EN 61010-2-032, EN 61010-2-033 concerning electronic measuring instruments with a measurement CAT III 1000V and pollution degree 2 and safety requirements for hand-held clamps for electrical measurement and test.











### 1.1 Preparation

- 1.1.1 When using the meter, the user should comply with standard safety rules:
  - General shock protection
  - Prevent misusing the meter
- 1.1.2 After receiving the meter, please check for damage that may have occurred during the transport.
- 1.1.3 If the meter is store and shipped under hard conditions, please confirm if the meter is damaged.
- 1.1.4 Probe should be in good condition. Before use, please check whether the probe insulation is damaged and if the metal wire is bare.
- 1.1.5 Use the probes provided with the meter to ensure safety. If necessary, replace the probe with another identical probe or one with the same specification.

## 1.2 Usage


- 1.2.1 When using, select the right function and measuring range.
- 1.2.2 Don't exceeding indicated values in each measuring range.
- 1.2.3 When measuring circuits with the meter connected, do not touch the probe tip (metal part).
- 1.2.4 When measuring, if the voltage to be measured is more than 60 V DC or 30 V AC (RMS), always keep your fingers behind the finger protection device.
- 1.2.5 Do not measure between measuring end and ground that is more than 1000V DC or 750V AC.
- 1.2.6 For manual measuring range, when the value to be measured is unknown in advance, choose the highest measuring range first and then lower ranges in sequence until the correct range is found.
- 1.2.7 Before rotating selector switch to change measuring function, remove the probe from the circuit to be measured.
- 1.2.8 Don't measure resistors, capacitors, diodes and circuits connectws to power.
- 1.2.9 During the test of current, resistors, capacitors, diodes and circuit connections, be careful to avoid connecting the meter with the voltage source.
- 1.2.10 Do not measure capacitance before capacitor is discharged completely.
- 1.2.11 Do not use the meter in explosive gas, vapor or dusty environments.
- 1.2.12 If you find any abnormal phenomena or failure on the meter, stop using the meter.
- 1.2.13 Unless the meter bottom case and the battery cover are completely fastened completely, do not use the meter.
- 1.2.14 Don't store or use the meter in direct sunlight, high temperature or high humidity.

## 1.3 Symbols

	Note-Important safety information, refer to the instruction manual.
	Application around and removal from UNINSULATED HAZARDOUS LIVE conductors is permitted.
	Caution, possibility of electric shock
	Equipment protected throughout by double insulation or reinforced insulation.
	Conforms to UL STD. 61010-1, 61010-2-032, 61010-2-033; Certified to CSA STD C22.2 NO. 61010-1, 61010-2-032, 61010-2-033
	Complies with European (EU) safety standards
	Earth (ground) TERMINAL
	Direct current
	Alternating current
	Both direct and alternating current

**CAT III:** MEASUREMENT CATEGORY III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.

## 1.4 Maintenance

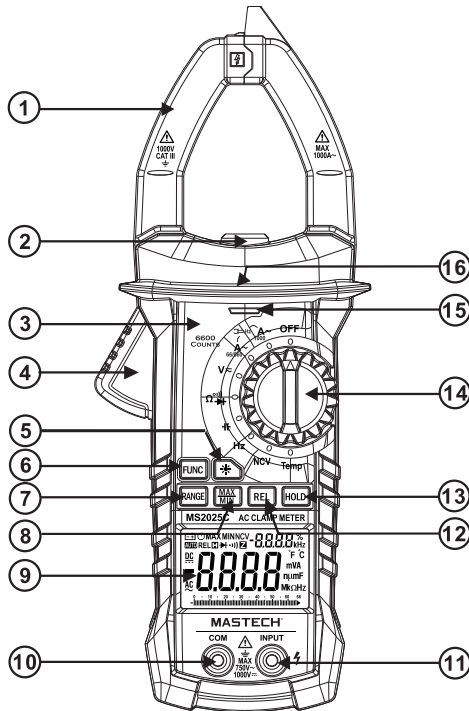
- 1.4.1 Don't try to open the meter bottom case to adjust or repair. Such operations can only be performed by technicians who fully understand the meter and electrical shock hazard.
- 1.4.2 Before opening the meter bottom case or battery cover, remove probe from the circuit to be measured.
- 1.4.3 To avoid wrong readings causing electric shock, when " " appears on the meter display, replace the battery immediately.

- 1.4.4 Clean the meter with damp cloth and mild detergent. Do not use abrasives or solvents.
- 1.4.5 Power off the meter when the meter is not used. Switch the measuring range to OFF position.
- 1.4.6 If the meter is not used for long time, remove the battery to prevent the meter being damaged.

## 2. Description

- The meter is a portable, professional measuring instrument with LCD display and back light for easy reading by users. Measuring range switch is operated by single hand for easy operation with overload protection and low battery indicator. It is an ideal multifunction meter for professionals, factories, schools, fans and family use.
- The meter is used to measure AC current, AC voltage, DC voltage, frequency, duty ratio, resistance, capacitance measurement, temperature, NCV and circuit connection, and to make diode tests.
- The meter has an auto measuring range function.
- The meter has a test data dual display function.
- The meter has a reading hold function.
- The meter has a relative test function.
- The meter has max. and min. display function.
- The meter has a manual measuring range selection function.
- The meter has a back light function.
- The meter has a auto power-off function.

## 2.1 Part Name



- (1) Current clamp head  
used for current measurement.
- (2) Clamp head light
- (3) Panel
- (4) Trigger
- (5) Backlight key  
used for backlight control.
- (6) Function choice button (FUNC)  
used for measuring function switch.
- (7) **RANGE** button  
used for switching between automatic measuring range and manual measuring range.
- (8) Maximum/minimum choice button  
used for maximum/minimum display function.
- (9) LCD display
- (10) **COM** jack:  
voltage, resistance, frequency, temperature, capacitance, diode, circuit connection common wire connecting terminal.
- (11) **INPUT** jack  
voltage, resistance, frequency, temperature, capacitance, diode, circuit connection input wire connecting terminal.
- (12) Relative measurement button (REL)  
used for switch to enter relative measurement state.
- (13) Reading hold (HOLD)  
used for reading hold.
- (14) **Transfer switch**  
used for selecting function and measuring range, or used for shutting off the power..
- (15) NCV indicator
- (16) Protective Barrier (to warn the operator of the limit of safe access)

## 2.2 LCD Display



AC	Alternating Current
DC	Direct Current
▶	Diode
•  )	Buzzer continuity
AUTO	Automatic measuring range mode
MAX	Maximum measurement state
MIN	Minimum measurement state
REL	Relative measurement mode
⏻	Automatic power-off state
🔋	Low Battery
H	Reading hold state
%	Percentage (duty ratio)
mV,V	Millivolt, Volt (voltage)
A	Amperes (Current)
nF,μF,	Nano farad, Microfarad, Millifarad
Ω,kΩ,MΩ	Ohm, Kilohm, Megohm (resistance)
Hz,kHz,MHz	Hertz, Kilohertz, Megahertz (frequency)

## 3. Specifications

The meter should be recalibrated under the condition of 18°C~28°C, relative humidity less than 75% .

### 3.1 General

- 3.1.1 Auto measuring range.
- 3.1.2 Full measuring range overload protection
- 3.1.3 The maximum allowable voltage between measurement end and ground: 1000V DC or 750 AC RMS
- 3.1.4 Operational height: maximum 2000m
- 3.1.5 Display: LCD
- 3.1.6 Displayed maximum value: digit 6599.
- 3.1.7 Polarity indication: automatic indication, '-' means negative polarity.
- 3.1.8 Exceeding measuring range display: '0L' or '-0L'
- 3.1.9 Sampling rate: about 3 times/sec., simulation bar: 30 times/sec.
- 3.1.10 Unit display: has function and power unit display.
- 3.1.11 Auto off time: 15 minutes
- 3.1.12 Power supply: DC 9V battery  
(battery type: NEDA 1604, 006P or 6F22)
- 3.1.13 Battery undervoltage indication: LCD displays symbol 🔋 .
- 3.1.14 Temperature coefficient: less than 0.1×accuracy/°C
- 3.1.15 Operational temperature: 18°C ~28°C
- 3.1.16 Storage temperature: -10°C ~ 50°C
- 3.1.17 Dimension: 238x92x50mm
- 3.1.18 Weight: about 390g (include battery)

## 3.2 Technical Indicators

Environment temperature: 23±5°C, relative humidity (RH): <75%

### 3.2.1 AC Current

Measuring	Resolution	Accuracy
66A	0.01A	±(2.5% of reading+6 digits)
660A	0.1A	
1000A	1A	

- Maximum input current: 1000A AC
- Frequency range: 40 ~ 100Hz
- Response: True RMS
- Minimum Current for Frequency Measurement: 20A or 150A
- Minimum Current for Clamp Measurement: 1.0A

### 3.2.2 Temperature

Measuring range	Resolution	Accuracy
-20°C~1000°C	1°C	±(3% of reading+3 digits)
-4°F~1832°F	1°F	±(3% of reading+3 digits)

- Overload protection: 250V DC or AC (RMS)

### 3.2.3 DC voltage

Measuring range	Resolution	Accuracy
660.0mV	0.1mV	±(0.8% of reading+2 digits)
6.600V	0.001V	
66.00V	0.01V	±(0.7% of reading+2 digits)
660.0V	0.1V	
1000V	1V	±(0.8% of reading+2 digits)

- Input impedance: 10MΩ
- Overload protection:

660mV range: 250V DC or AC (RMS).

6.6V-1000V ranges: 1000V DC or 750V AC (RMS)

- Maximum input voltage: 1000V DC

#### Note:

In the small voltage measuring range, when the probe is not connected with the circuit to be tested, and the meter may have fluctuating readings, which is normal and caused by the meter's high sensitivity. When the meter is connected with the circuit to be tested, you will get actual measured value.

### 3.2.4 AC Voltage

Measuring range	Resolution	Accuracy
660.0mV	0.1mV	±(1.5% of reading + 10 digits)
6.600V	0.001V	±(0.8% of reading + 3 digits)
66.00V	0.01V	
660.0V	0.1V	
750V	1V	±(1.0% of reading + 4 digits)

- Input impedance: 10MΩ
- Overload protection:
  - 660mV range: 250V DC or AC (RMS).
  - 6.6V-750V ranges: 1000V DC or 750V AC (RMS)
- Maximum input voltage: 750V AC
- Frequency range: 40 ~ 400Hz
- Response: True RMS

#### Note:

In the small voltage measuring range, when the probe is not connected with the circuit to be tested, and the meter may have fluctuating readings, which is normal and caused by the meter's high sensitivity. When the meter is connected with the circuit to be tested, you will get actual measured value.

## 3.2.5 Frequency

3.2.5.1 Clamp head measuring frequency (through mode A):

Measuring range	Resolution	Accuracy
66.00Hz	0.01Hz	±(1.5% reading + 5 digits)
660.0Hz	0.1Hz	

- The input signal range: ≥12AAC (RMS) (input current will increase when the frequency to be measured increases)

- Maximum input current: 1000A (RMS)

3.2.5.2 Through mode V:

Measuring range	Resolution	Accuracy
66.00Hz	0.01Hz	±(1.5% reading + 5 digits)
660.0Hz	0.1Hz	
6.600kHz	0.001kHz	

- The input voltage range: ≥200mV AC (RMS) (input voltage will increase when the frequency to be measured increases)

- Input impedance: 10MΩ

- Maximum input voltage: 750V AC (RMS)

3.2.5.3 Through mode HZ/DUTY:

Measuring range	Resolution	Accuracy
66.00Hz	0.01Hz	±(0.5% of reading + 2 digits)
660.0Hz	0.1Hz	
6.600kHz	0.001kHz	
66.00kHz	0.01kHz	

Measuring range	Resolution	Accuracy
660.0kHz	0.1kHz	±(0.5% of reading + 2 digits)
6.600MHz	0.001MHz	
66.00MHz	0.01MHz	

- Overload protection: 250V DC or AC (RMS)


## 3.2.6 Resistance

Measuring range	Resolution	Accuracy
660.0Ω	0.1Ω	±(0.8% of reading + 3 digits)
6.600kΩ	0.001kΩ	
66.00kΩ	0.01kΩ	
660.0kΩ	0.1kΩ	±(1.2% of reading + 3 digits)
6.600MΩ	0.001MΩ	
66.00MΩ	0.01MΩ	

- Open circuit voltage: about 1.0V

- Overload protection: 250V DC or AC (RMS)

## 3.2.7 Diode test


Measuring range	Resolution	Function
	0.001V	Display approximate diode forward voltage value

- Forward DC current is about 1mA

- Backward DC voltage is about 3.2V

- Overload protection: 250V DC or AC (RMS)

## 3.2.8 Circuit Continuity Test

Measuring range	Resolution	Accuracy
	0.1Ω	If the resistance of circuit to be measured is less than 50Ω, the meter's built-in buzzer may sound.



- Open circuit voltage: about 1.0V
- Overload protection: 250V DC or AC (RMS)

### 3.2.9 Capacitance

Measuring range	Resolution	Accuracy
6.600nF	0.001nF	±(4.0% of reading + 5 digits)
66.00nF	0.01nF	
660.0nF	0.1nF	
6.600μF	0.001μF	
66.00μF	0.01μF	
660.0μF	0.1μF	
6.600mF	0.001mF	
66.00mF	0.01mF	

- Overload protection: 250V DC or AC (RMS)

### 3.2.10 Duty cycle

Measuring range	Resolution	Accuracy
0.1~99.9%	0.1%	±(3.0%)

## 4. Operating Guidance

### 4.1 Reading Hold

- 4.1.1 In the process of measurement, if reading hold is required, press “**HOLD**” key, the value on the display will be locked.
- 4.1.2 Press the “**HOLD**” key again to cancel reading hold.

### 4.2 Relative measurement

- 4.2.1 Relative measurement only can be used to measure current, voltage, resistance, capacitance and temperature.

- 4.2.2 Press the “**REL**” key to enter relative measurement mode. The automatic measuring range will be disabled. Press “**REL**” key again to restore automatic measuring range.

**Note:** When measuring, to use relative measurement, input corresponding measuring range first through the probe.

### 4.3 Manual measuring range choice



Use RANGE key to select automatic or manual measuring range. The preset selection is automatic measuring range.





Press to switch to manual measuring range. In the manual measuring range mode, click once to change to a higher grade, and click again to change to the top grade. Continue to press this key to change to the bottom grade. If this key is pressed more than 2 seconds, the meter will switch back to the automatic measuring range.

### 4.4 Function switch

- 4.4.1 In the DC current measurement state, press the “**FUNC**” key, and the meter will enter AC current measurement state. Presses “**FUNC**” key again, and the meter will enter DC current measurement state again.
- 4.4.2 In the resistance grade, press the “**FUNC**” button to switch among resistance, diode and continuity detection.

## 4.5 Back light and clamp head light



- 4.5.1 In the process of measurement, if ambient light is too dark to read, press “” key to turn on the backlight. The backlight will automatically turn off after about 30 seconds.
- 4.5.2 During this period, pressing “” key will turn off backlight.
- 4.5.3 In the current grade, the meter will turn on backlight and clamp head light. Backlight is LED with high working current. If backlight is used often, it will shorten battery life, so use backlight only when necessary.

Note: When battery voltage  $\leq 7V$ , LCD displays “” (low voltage) symbol. But when using the backlight, the battery voltage will drop due to the high working current and the “” symbol may display. (When the “” symbol shows, accuracy of measurement is not guaranteed). At this time, don't replace the battery. Continue to use the meter normally without using the backlight, and replace the battery only when the “” symbol shows under normal use.

## 4.6 Automatic power-off

- 4.6.1 If there is no operation during any 15 minute period after turning the machine on, the meter will enter a suspended state and automatically power off to save the battery. Within 1 minute before shutdown, the buzzer will sound 3 times. Immediately before shutting down, the buzzer will make a long sound.
- 4.6.2 After automatic power-off, press the “**FUNC**” key to restore the meter to normal function.
- 4.6.3 Holding any other key except “**FUNC**” key and “**HOLD**” more than 2 seconds when powering on will cancel the automatic power-off function.

## 4.7 Measurement preparation

- 4.7.1 Turn the transfer switch to turn on the power. When battery voltage is low (about  $\leq 7V$ ), LCD displays “” symbol. Replace the battery immediately.
- 4.7.2 “” symbol means that input voltage or current should not be more than the indicated value. This is to protect the internal line from damage.
- 4.7.3 Place transfer switch to the required measuring function and range.
- 4.7.4 When connecting line, please connect the common test line first, then connect charged test line. When removing line, remove charged test line first.


## 4.8 Current Measurement

### WARNING

**Electric shock hazard.  
Remove the probe from the meter before  
measuring with current clamp.**

- 4.8.1 Place measuring switch in position A~. At this time, the meter is in the AC current measurement state.
- 4.8.2 Hold the trigger, open clamp head, and clip one lead of measurement circuit to be tested in the clamp.
- 4.8.3 LCD will show readings.

Note:

- 1) Clamping two or more leads of circuit to be tested simultaneously will give invalid readings.
- 2) To get accurate readings, place the lead to be tested at the center of current clamp.
- 3) “” indicates that maximum input AC current is 1000A.

## 4.9 AC voltage measurement

### WARNING


**Electric shock hazard.**

**Pay special attention to avoid shock when measuring high voltage.**

**Don't input voltage more than AC750V RMS.**

- 4.9.1 Insert black probe to the **COM** jack and insert red probe to the **INPUT** jack.
- 4.9.2 Place transfer switch to AC voltage **V<sub>~</sub>** position. Press the "**FUNC**" key to select AC voltage measurement state.
- 4.9.3 Connect the probe with voltage source or both ends of load in parallel for measurement.
- 4.9.4 LCD will show readings..

### **Note:**

- 1). In the small voltage measuring range, the probe is not connected with the circuit to be tested, and the meter may have fluctuating readings, which is normal and caused by the meter's high sensitivity. When the meter is connected with the circuit to be tested, you will get actual measured value.
- 2). In the relative measurement mode, the automatic measuring range is disabled.
- 3) "" means that maximum input voltage is 750V AC.

## 4.10 DC voltage measurement

### WARNING


**Electric shock hazard.**

**Pay special attention to avoid shock when measuring high voltage.**

**Don't input voltage more than DC1000V .**

- 4.10.1 Insert black probe to the COM jack and insert red probe to the INPUT jack.
- 4.10.2 Place transfer switch to AC voltage **V<sub>~</sub>** position. Press the "**FUNC**" key to select AC voltage measurement state.
- 4.10.3 Connect the probe with voltage source or both ends of load in parallel for measurement.
- 4.10.4 LCD will show readings. Polarity indication shows the load connected with the red probe.

### **Note:**

- 1) In the small voltage measuring range, the probe is not connected with the circuit to be tested, and the meter may have fluctuating readings, which is normal and caused by the meter's high sensitivity. When the meter is connected with the circuit to be tested, you will get actual measured value.
- 2) In the manual measuring range mode, the LCD only shows "OL" or "-OL", which indicates overrange. Choose a higher measuring range.
- 3) "" means that maximum input voltage is 1000V DC.

## 4.11 Frequency And Duty Ratio Measurement

### 1) Clamp head measuring frequency (through AC current):



**Electric shock hazard.**  
Remove the probe from the meter before measuring with current clamp.

- (1) Measuring switch is placed to position A .
- (2) Hold the trigger, open clamp head, clip one lead of measurement circuit to be tested in the clamp.
- (3) Press **Hz/%** key to switch to frequency measuring state.
- (4) Read the current value on the LCD display.
- (5) Pressing **Hz/%** again can enter duty ratio measuring state.

#### Note:

- (1) Clamping two or more leads of circuit to be tested simultaneously will not get the correct measuring results.
- (2) Frequency measurement range is 10Hz~1kHz the frequency to be tested is less than 10Hz, or if frequency is higher than 10 kHz, accuracy is not guarantee
- (3) Duty ratio measuring range is 10 ~ 95%.
- (4) "**Δ**" means that maximum input current is 1000AAC (RMS).

## 2) In Voltage Measurement Mode:



**Electric shock hazard.**  
Pay special attention to avoid shock when measuring high voltage.  
Don't input voltage more than AC 750 RMS.

- (1) Insert black probe to **COM** jack, insert red probe to **INPUT** jack.
- (2) Place transfer switch to **V<sub>~</sub>** or  **$\bar{m}$ V** position, press **FUNC** to enter AC voltage measurement state.
- (3) Press "**Hz/%**" key to switch to frequency measuring state.
- (4) Connect the probe with signal or both ends of load in parallel for measurement.
- (5) Read on the LCD.
- (6) Pressing "**Hz/%**" again can enter duty ratio measuring state.

#### Note:

- (1) Frequency measurement range is 10Hz~1kHz  
When the frequency to be tested is less than 10Hz, the LCD will show "00.0" Measuring frequency higher than 10kHz is possible, but accuracy is not guarantee
- (2) Duty ratio measuring range is 10 ~ 95%.
- (3) "**Δ**" means that maximum input voltage is 750V AC (RMS).

## 3) In HZ/DUTY Measurement Mode:



**Electric shock hazard.**  
Pay special attention to avoid shock when measuring high voltage.  
Don't input voltage more than AC 250V RMS.

- (1) Insert black probe to **COM** jack, insert red probe to **INPUT** ack.
- (2) Transfer switch is placed to position **HZ**.
- (3) Connect the probe with signal or both ends of load in parallel for measurement.
- (4) Read on the LCD.
- (5) Pressing “**HZ/%**” again can enter duty ratio measuring state.

## Note:

Frequency measurement range is 10Hz~1kHz When the frequency to be tested is more than 10Hz, the LCD will show “00.0” measuring frequency higher than 10 kHz is possible, but accuracy is not guarantee

## 4.12 Resistance test

### WARNING

**Electric shock hazard.**

**When measuring circuit impedance, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.**

- 4.12.1 Insert black probe to the **COM** jack and insert red probe to the **INPUT** jack.
- 4.12.2 Place measuring range switch in  $\Omega \rightarrow$  position. The meter is in the measurement state.
- 4.12.3 Connect the probe to the both ends of resistor or circuit to be tested for measurement.
- 4.12.4 LCD will show readings.

## Note:

- 1) When the input end is open, LCD shows “0L” out-of-range condition.
- 2) When the resistance to be tested > 1M $\Omega$ , the meter reading will stabilize after a few seconds, which is normal for high resistance readings

## 4.13 Diode Test

- 4.13.1 Insert black probe to the COM jack and insert red probe to the INPUT jack.
- 4.13.2 Place measuring switch in position  $\Omega \rightarrow$ .
- 4.13.3 Press the “**FUNC**” key to switch to  $\rightarrow$  measuring state.
- 4.13.4 Connect the red probe to diode anode and connect the black probe to diode cathode to make test.
- 4.13.5 LCD will show readings.

## Note:

- 1) What the meter shows is an approximation of diode forward voltage drop.
- 2) If the probe has reverse connection or the probe is open, the LCD will show “0L”

## 4.14 Circuit continuity test

### WARNING

**Electric shock hazard.**

**When measuring circuit continuity, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.**

- 4.14.1 Insert black probe to the **COM** jack, insert red probe to the INPUT jack.
- 4.14.2 Place measuring switch in position  $\Omega \rightarrow$ .
- 4.14.3 Press the “**FUNC**” key to switch to  $\rightarrow$  circuit continuity measuring state.
- 4.14.4 Connect the probe to the both ends of circuit to be tested for measurement.
- 4.14.5 If the resistance of circuit to be measured is less than 50 $\Omega$ , the meter's built-in buzzer may sound.
- 4.14.6 LCD will show readings.

## Note:

If the probe is open or circuits resistance to be tested is more than  $400\Omega$ , the display will show "OL".

## 4.15 Capacitance measurement



### WARNING

**Electric shock hazard.**

**To avoid electric shock, before measuring capacitance, discharge capacitance completely.**

- 4.15.1 Insert black probe to the **COM** jack, insert red probe to the **INPUT** jack.
- 4.15.2 Place measuring switch in position **⌚**.
- 4.15.3 After discharging capacitor completely, connect the probe to the ends of capacitor to be tested.
- 4.15.5 LCD will show readings.

## Note:

- 1) When measuring bulk capacitor, stable readings will take some time.

## 4.16 Temperature Measurement

- 4.16.1 Insert the temperature probe into the **COM**, **INPUT** jack.
- 4.16.2 Place measuring switch in position **Temp**.
- 4.16.3 LCD will show readings.

## 4.17 NCV (non-contact voltage detection)

- 4.17.1 Turn the meter to NCV grade
- 4.17.2 Place the meter top close to the conditor. When test voltage is greater than 110 Vac (RMS), the meter induction voltage indicator will turn on and buzzer will give dripping alarm sound.

## Note:

1. Even there is no indication, voltage may still exist. Don't use non-contact voltage detector to judge whether there is voltage in the wire. Detection

operation could be affected by socket design, insulation thickness, type and other factors.

2. When inputting voltage on the meter input terminal, due to the existence of the induced voltage, voltage induction indicator also may light.
3. Interference sources in the external environment (such as flashlight, motor, etc.) may trigger erroneous non-contact voltage detection.

## 5. Maintenance

### 5.1 Replace battery



### WARNING

**To avoid electric shock, make sure that the test leads have been clearly move away from the circuit under measurement before opening the battery cover.**

- 5.1.1. If the symbol "**⚡**" appears, it means that the batteries should be replaced.
- 5.1.2. Loosen the screw of the battery cover and remove it.
- 5.1.3. Replace the used battery with a new one.
- 5.1.4. Return the battery cover and tighten the screw.

**Note:** The battery polarity can't be reversed.

## 5.2 Replace Probe

Replace test leads if leads become damaged or worn.



### WARNING

Use meet EN 61010-031 standard, rated CAT III 1000V, or better test leads.



### WARNING

To avoid electric shock, make sure the probes are disconnected from the measured circuit before removing the rear cover. Make sure the rear cover is tightly screwed before using the instrument.

## 6. Accessories

1)	Test Probe	1 pair
2)	K-type temperature Probe	1 pcs
3)	Operating Manual	1 pcs
4)	9V DC battery (6FF2)	1 pcs
5)	Case	1 pcs

