

# **Digital Multimeter**

## **Users Manual**

Read this manual thoroughly before use



# WARRANTY

This instrument is warranted to be free from defects in material and workmanship for a period of one year. Any instrument found defective within one year from the delivery date and returned to the factory with transportation charges prepaid, will be repaired, adjusted, or replaced at no charge to the original purchaser. This warranty does not cover expandable items such as battery or fuse. If the defect has been caused by a misuse or abnormal operating condition, the repair will be billed at a nominal cost.


# SAFETY INFORMATION

This meter has been designed according to IEC 61010 concerning electronic measuring instruments with a measurement category ( CAT III 600V ) and pollution degree 2.


## **Warning**

**To avoid possible electric shock or personal injury, follow these guidelines:**

- Do not use the meter if it is damaged. Before you use the meter, inspect the case. Pay particular attention to the insulation surrounding the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads before you use the meter.

- Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- Do not operate the meter around explosive gas, vapor, or dust.
- Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- Before use, verify the meter's operation by measuring a known voltage.
- When measuring current, turn off circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.
- When servicing the meter, use only specified replacement parts.
- Use caution when working with voltage above 30V ac rms, 42V peak, or 60V dc. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards on the probes.
- When making connections, connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Remove the test leads from the meter before you open the battery cover or the case.
- Do not operate the meter with the battery cover or portions of the case removed or loosened.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (  ) appears.

- Warning: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

- To avoid electric shock, do not touch any conductor with hand or skin; and do not ground yourself while using this meter.
- When in Data Hold mode, the symbol "  " is displayed. Caution must be used because hazardous voltage may be present.
- Do not use the meter in a manner not specified by the manufacturer or the safety features provided by the meter may be impaired.
- Adhere to local and national safety codes. Individual protective equipment must be used to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Do not use the meter if the meter, a test lead or your hand is wet.
- For measurements on main or within Measurement Category III/IV circuits, the attached test probes must be set in Measurement Category III/IV mode; otherwise electric shock may occur!
- Remaining endangerment:  
When an input terminal is connected to dangerous live potential it is to be noted that this potential can occur at all other terminals.
- **CAT III** - Measurement Category III is for measurements performed in the building installation. Examples are measurements on distribution boards, circuit breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment, for example, stationary motors with permanent connection to the fixed installation.  
Do not use the meter for measurements within Measurement Category IV.

## Caution

To avoid possible damage to the meter or to the equipment under test, follow these guidelines:


- Disconnect circuit power and discharge all capacitors thoroughly before testing resistance, diode, continuity, temperature or capacitance.
- Use the proper terminals and function for your measurements.
- Before measuring current, check the meter's fuse and turn off power to the circuit before connecting the meter to the circuit.
- Before turning the rotary switch to change function, remove the test leads from the circuit under test.

## Symbols

 Alternating Current

 Direct Current

 DC or AC


 Caution, risk of danger, refer to the operating manual before use.

 Caution, risk of electric shock.

 Earth ground

 Fuse

 Conforms to European Union directives

 The equipment is protected throughout by double insulation or reinforced insulation.

# INTRODUCTION

This instrument is a compact 3 3/4 digits autorange true-rms digital multimeter designed to measure DC and AC voltage, DC and AC current, resistance, continuity, diode, capacitance, frequency, duty cycle and temperature. It features data hold, relative measurement, MIN MAX recording mode, backlight, non-contact ac voltage detection, Bluetooth communication, data recording, and etc. It is easy to operate and is a useful test tool.

# FRONT PANEL

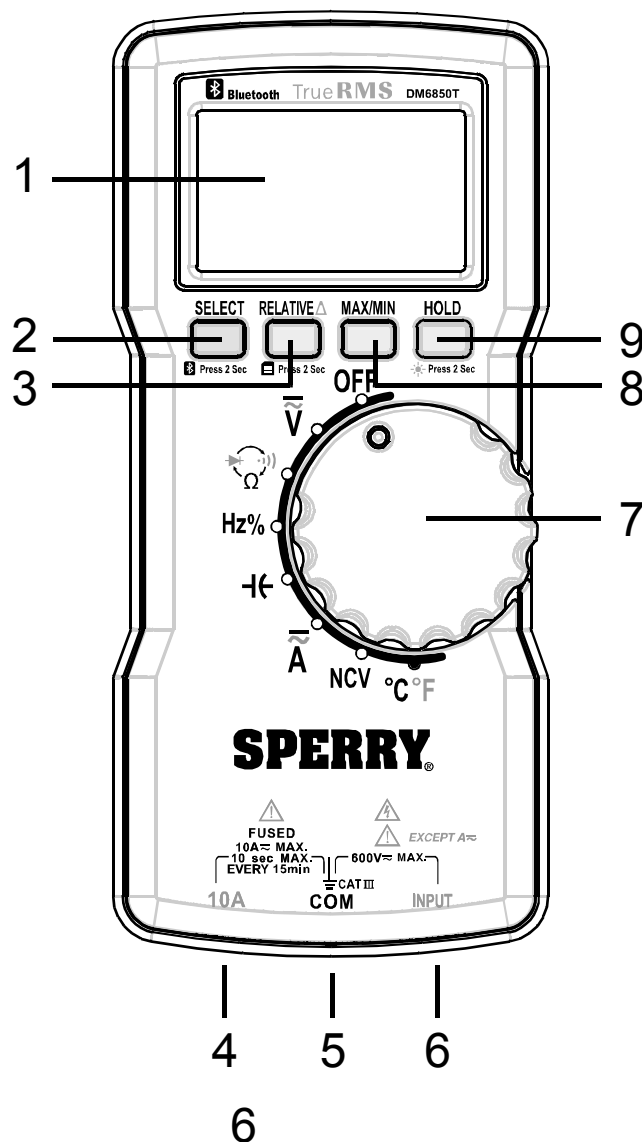


Figure 1



## 1. Display

3 <sup>3</sup>/<sub>4</sub> digits LCD, 4000 counts.

## 2. " SELECT " Button

This " **SELECT** " button can be used to switch the meter between:

- DC voltage and AC voltage measurement functions.
- DC current and AC current measurement functions.
- Resistance, diode and continuity test functions.
- Frequency and duty cycle measurement functions.
- Celsius temperature and Fahrenheit temperature measurement functions.

In addition, you can hold down this " **SELECT** " button for about 2 secs to enable or disable the Bluetooth communication function. When the Bluetooth communication function is enabled, the automatic power-off function is disabled automatically.

## 3. " RELATIVE " Button

This " **RELATIVE** " button can be used to enter or exit Relative mode. In addition, you can hold down this button for about 2 secs to start or stop recording readings in the memory of the meter. When the recording starts, the meter's automatic power-off function is disabled automatically.

For detailed information about the recording function, please read the relevant section of the operation instruction of the communication application.

#### 4. " 10A " Terminal

Input terminal for current measurements.

#### 5. " COM " Terminal

Common ( return ) terminal for voltage, current, resistance, diode, continuity, frequency, duty cycle, capacitance and temperature measurements.

#### 6. " INPUT " Terminal

Input terminal for voltage, resistance, diode, continuity, duty cycle, frequency, capacitance and temperature measurements.

#### 7. Rotary Switch

Used to select desired function as well as to turn on or off the meter.

To save battery power, set this rotary switch in the " **OFF** " position to turn off the meter when the meter is not in use.

#### 8. " MAX/MIN " Button

Used to enter or exit MIN MAX recording mode.

The meter's automatic power-off function will be disabled automatically when the meter enters MIN MAX recording mode.

#### 9. " HOLD " Button

This " **HOLD** " button can be used to enter or exit Data Hold mode. In addition, you can hold down this button for about 2 secs to turn on or off the backlight. The backlight will turn off automatically about 30 secs later after it is turned on.

# UNDERSTANDING THE DISPLAY

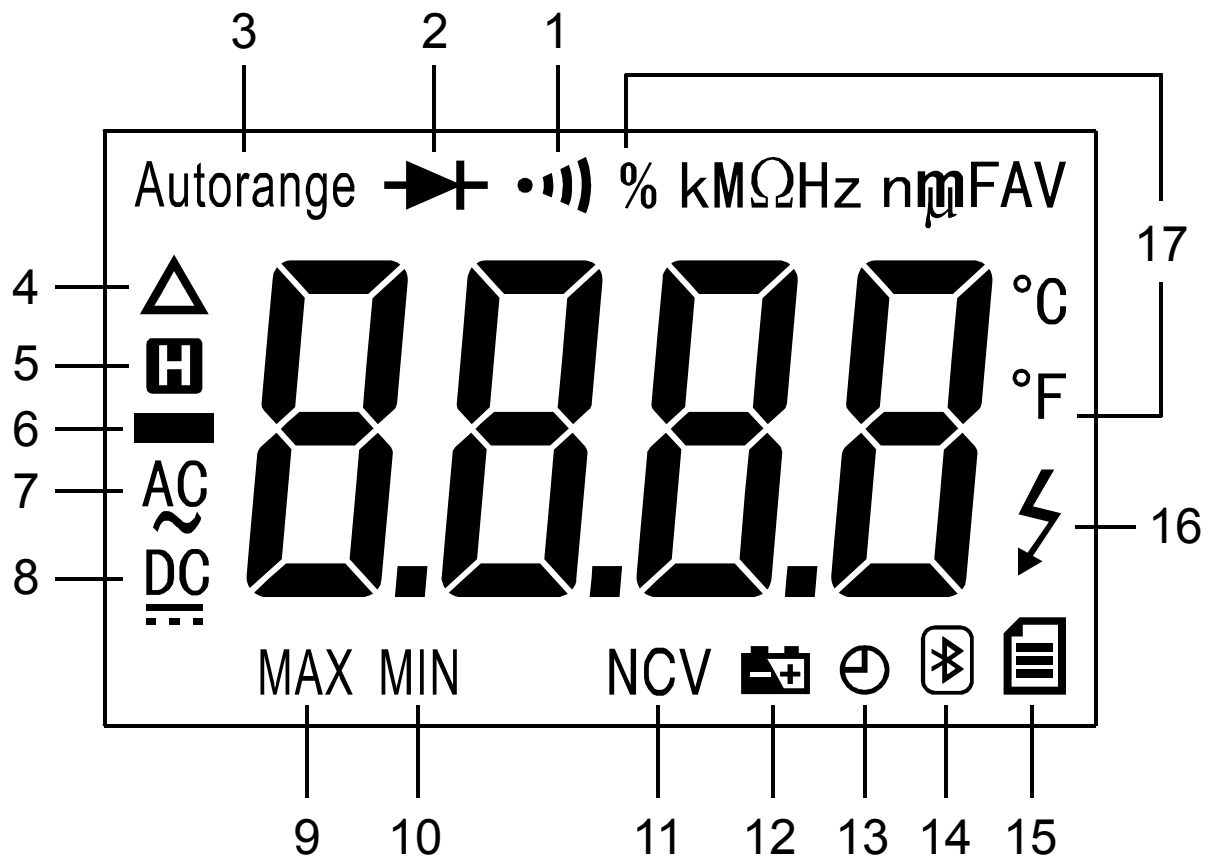














Figure 2

## Explanations:

1.  ..... Continuity test is selected.
2.  ..... Diode test is selected.
3. Autorange ..... Autorange mode is selected.
4.  ..... Relative mode is active.
5.  ..... Data hold is enabled.
6.  ..... Negative sign

7.  ..... AC
8.  ..... DC
9. MAX ..... Maximum reading is being displayed.
10. MIN ..... Minimum reading is being displayed.
11. NCV ..... Non-contact ac voltage detection is selected.
12.  ..... The batteries are low and must be replaced immediately.
13.  ..... Automatic power-off function is enabled.
14.  ..... Bluetooth communication function is enabled.
15.  ..... Data recording is ongoing and the meter is saving readings in the memory of the meter.
16.  ..... Dangerous voltage is present, be cautious.

## 17. Units:

<b>mV, V</b>	Unit of voltage mV: Millivolt ; V: Volt $1V = 10^3mV$
<b>A</b>	Unit of current A: Ampere
<b><math>\Omega</math>, k<math>\Omega</math>, M<math>\Omega</math></b>	Unit of resistance $\Omega$ : Ohm; k $\Omega$ : Kiloohm; M $\Omega$ : Megohm $1M\Omega = 10^3k\Omega = 10^6\Omega$
<b>nF, <math>\mu</math>F</b>	Unit of capacitance nF: Nanofarad; $\mu$ F: Microfarad $1\mu F = 10^3nF$
<b><math>^{\circ}</math>C, <math>^{\circ}</math>F</b>	Unit of temperature $^{\circ}$ C: Celsius degree; $^{\circ}$ F: Fahrenheit degree
<b>Hz, kHz, MHz</b>	Unit of frequency Hz: Hertz; kHz: Kiloherztz; MHz: Megahertz $1MHz = 10^3kHz = 10^6Hz$
<b>%</b>	Unit of duty cycle %: Percent

# GENERAL SPECIFICATION

**Display:** 3 3/4 digits LCD

**Negative Polarity Indication:** Negative sign "—" shown on the display automatically

**Sampling Rate:** About 2 to 3 times per second

**Low Battery Indication:** "  " shown on the display

**Memory:** 2MB

**Max. Record Length:** Continuous 36 hours; the meter records reading one time per second

**Battery:** 1.5V battery, AAA or equivalent, 2 pieces

**Operating Environment:** Temperature: 0°C to 40°C  
Relative Humidity: < 75%

**Storage Environment:** Temperature: -10°C to 50°C  
Relative Humidity: < 85%

**IP Degree:** IP20

**Operating Altitude:** 0 ~ 2000m

**Dimensions:** 176 X 81 X 17.5mm

**Weight:** About 194g ( including batteries )

## SPECIFICATIONS

Accuracy is specified for a period of one year after calibration and at 18°C to 28°C, with relative humidity < 75%.

Accuracy specifications take the form of:

**± ( [ % of Reading ] + [ number of Least Significant Digits ] )**

Except where specified specially, accuracy is specified from 5 % to 100% of range.

## DC Voltage

Range	Resolution	Accuracy	Overrange Indication
400mV	0.1mV	± (0.8% + 5)	_____ [1]
4V	0.001V		
40V	0.01V		
400V	0.1V	± (1.0% + 5)	
600V	1V		

**Input Impedance:** About 10MΩ

**Overload Protection:** 600V DC/AC

[1] When the voltage being measured is more than 600V, the built-in buzzer will sound. When the voltage is more than 610V, " OL " will be shown on the display.

## AC Voltage

Range	Resolution	Accuracy	Overrange Indication
4V	0.001V	± (1.0% + 5)	_____ [1]
40V	0.01V	± (1.2% + 8)	
400V	0.1V		
600V	1V		

**Input Impedance:** About 10MΩ

**Frequency Range:** 50Hz ~ 1kHz

**Reading:** True rms

**Crest Factor:** 3.0

**Overload Protection:** 600V DC/AC

[1] When the voltage being measured is more than 600V, the built-in buzzer will sound. When the voltage is more than 610V, " OL " will be shown on the display.

## DC Current

Range	Resolution	Accuracy	Overrange Indication
4A	0.001A	$\pm (1.2\% + 5)$	_____ [1]
10A	0.01A	$\pm (2.0\% + 10)$	

**Overload Protection:** 12A/600V Fast fuse

**Max. Allowable Input Current:** 10A ( For measurements > 2A: duration < 10 seconds, interval > 15 minutes )

[1] When the current being measured is more than 10A, the built-in buzzer will sound. When the current is more than 10.1A, " OL " will be shown on the display.

## AC Current

Range	Resolution	Accuracy	Overrange Indication
4A	0.001A	$\pm (1.5\% + 5)$	_____ [1]
10A	0.01A	$\pm (3.0\% + 10)$	



**Frequency Range:** 50Hz ~ 1kHz

**Reading:** True rms

**Crest Factor:** 3.0

**Overload Protection:** 12A/600V Fast fuse

**Max. Allowable Input Current:** 10A ( For measurements > 2A:  
duration < 10 seconds, interval > 15 minutes )

**[1]** When the current being measured is more than 10A, the built-in buzzer will sound. When the current is more than 10.1A, " OL " will be shown on the display.

## Resistance

Range	Resolution	Accuracy	Overrange Indication
400Ω	0.1Ω	± (1.2% + 5)	_____ [1]
4kΩ	0.001kΩ	± (1.0% + 5)	
40kΩ	0.01kΩ		
400kΩ	0.1kΩ		
4MΩ	0.001MΩ	± (1.2% + 5)	
40MΩ	0.01MΩ	± (1.5% + 5)	

**Open Circuit Voltage:** About 1V

**Overload Protection:** 600V DC/AC

**[1]** When the resistance being measured is > 40MΩ, " OL " will be shown on the display.

## Frequency

Range	Resolution	Accuracy
9.999Hz	0.001Hz	± (1.0% + 5)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	
9.999MHz	0.001MHz	± (2.0% + 5)

**Input Voltage:** 1V rms ~ 20V rms

**Overload Protection:** 600V DC/AC

## Duty Cycle

Range	Resolution	Accuracy
5% – 95%	0.1%	± (2.0% + 5)

**Input Voltage:** 4Vp-p ~ 10Vp-p

**Frequency Range:** 4Hz ~ 1kHz

## Capacitance

Range	Resolution	Accuracy
9.99nF	0.01nF	$\pm (3.5\% + 20)$
99.99nF	0.01nF	$\pm (2.5\% + 5)$
999.9nF	0.1nF	$\pm (3.5\% + 5)$
9.999 $\mu$ F	0.001 $\mu$ F	$\pm (5.0\% + 5)$
99.99 $\mu$ F	0.01 $\mu$ F	
999.9 $\mu$ F	0.1 $\mu$ F	

**Overload Protection:** 600V DC/AC

## Temperature

Range	Resolution	Accuracy
-20°C ~ 1000°C	1°C	-20°C ~ 0°C: $\pm (5.0\% + 4^\circ\text{C})$
		0°C ~ 400°C: $\pm (1.0\% + 3^\circ\text{C})$
		400°C ~ 1000°C: $\pm (2.0\% + 3^\circ\text{C})$
-4°F ~ 1832°F	1°F	-4°F ~ 32°F: $\pm (5.0\% + 8^\circ\text{F})$
		32°F ~ 752°F: $\pm (1.0\% + 6^\circ\text{F})$
		752°F ~ 1832°F: $\pm (2.0\% + 6^\circ\text{F})$

**Temperature Sensor:** K Type thermocouple



**Overload Protection:** 600V DC/AC

**Note:**

1. Accuracy does not include error of the thermocouple probe.
2. Accuracy specification assumes ambient temperature is stable to  $\pm 1^\circ\text{C}$ . For ambient temperature changes of  $\pm 5^\circ\text{C}$ , rated accuracy applies after 1 hour.

3. The meter's operating temperature must be between 18°C and 28°C; otherwise measurement accuracy is not guaranteed.
4. When the measured temperature is lower than -55°C ( or -68°F ) the display will show " OL " and the negative sign " - ". When the measured temperature is higher than 1010°C ( or 1851°F ), the display will show " OL ".


## Diode and Continuity Test


Range	Description	Remark
	The approx. forward voltage drop of the diode will be displayed.	Open Circuit Voltage: about 4V
	<p>The built-in buzzer will sound if the resistance is less than about 30Ω.</p> <p>If the resistance is between 30Ω and 100Ω, the buzzer may or may not sound.</p> <p>If the resistance is more than 100Ω, the buzzer will not sound.</p>	Open Circuit Voltage: about 2.2V

**Overload Protection:** 600V DC/AC

# OPERATING INSTRUCTION


## Data Hold Mode

Press the " **HOLD** " button to enter Data Hold mode. The present reading is held on the display and the "  " symbol appears on the display as an indication.

To exit Data Hold mode, just press this button again. The "  " symbol disappears.

## Using Relative Mode

Relative mode is available in all measurement functions except frequency and duty cycle measurement functions. Selecting Relative mode causes the meter to store the present reading as a reference for subsequent measurements.

1. Set the meter in desired function.
2. Connect the meter to a desired circuit ( or object ) properly to get a reading, which is to be used as a reference for subsequent measurements.
3. Press the " **RELATIVE** " button. The meter enters the Relative mode and stores the present reading as a reference for subsequent measurements. The symbol "  " appears as an indicator and the display reads zero.

4. In subsequent measurements, the display shows the difference between the reference and the new measurement.
5. To exit Relative mode, just press the "**RELATIVE**" button again. The symbol " $\Delta$ " disappears.

**Note:**

1. The meter enters manual range mode and stays in the present range when you enter the Relative Mode.
2. When the display shows "OL", it indicates overrange condition.
3. When you use Relative mode, the actual value of the object under test must not exceed the full-range reading of the present range.
4. For non-contact ac voltage detection function, Relative mode is not available.

## **MIN MAX Recording Mode**

The MIN MAX recording mode stores minimum and maximum input values. When the input goes below the stored minimum value or above the stored maximum value, the meter stores the new value.

**To use the MIN MAX recording mode:**

1. Make sure that the meter is in desired function.
2. Press the "**MAX/MIN**" button to enter MIN MAX recording mode. The display shows the maximum reading of all readings taken since the meter entered this mode, and "MAX" is shown on the display as an indication.

Press this " **MAX/MIN** " button to toggle between the minimum reading ( " MIN " appears ) and the maximum reading ( " MAX " appears ).

3. To exit MIN MAX recording mode and erase all the stored readings, press and hold down this " **MAX/MIN** " button for about 2 secs; the meter will return to normal operation.

**Note:**

1. When the meter enters MIN MAX recording mode, the automatic power-off feature will be disabled, and in addition, the meter will exit autorange mode automatically and go into manual range mode and stay in the present range if it is in autorange mode.
2. When the display shows " OL ", it indicates overrange condition.
3. For frequency, duty cycle and capacitance measurement functions, MIN MAX recording mode is not available.

## **Measuring DC or AC Voltage**

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in  $\tilde{V}$  position.
3. If you want to measure DC voltage, press the " **SELECT** " button until the display shows "  $\underline{\underline{DC}}$  ".

If you want to measure AC voltage, press the " **SELECT** " button until the display shows "  $\underline{\underline{AC}}$  ".

4. Connect the test leads across the source or circuit to be tested.
5. Read the reading on the display. For DC voltage measurements, the polarity of the red test lead connection will be indicated as well.

**Note:**

1. Before the test leads are connected to the circuit to be tested, the display may show an unstable reading. This is normal and will not affect measurements.
2. To avoid electric shock to you or damage to the meter, do not apply a voltage higher than 600V between the terminals.




## Measuring DC or AC Current

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **10A** " jack.
2. Set the rotary switch in  $\tilde{A}$  position.
3. If you want to measure DC current, press the " **SELECT** " button until the display shows "  $\underline{\underline{DC}}$  ".  
If you want to measure AC current, press the " **SELECT** " button until the display shows "  $\tilde{A}$  ".
4. Turn off power to the circuit to be tested, then discharge all capacitors.
5. Break the circuit path to be tested, and connect the test leads in series with the circuit.



6. Turn on power to the circuit, then read the display. For DC current measurements, the polarity of the red test lead connection will be indicated as well.



## Measuring Resistance

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in  position. Then press the " **SELECT** " button until both the symbols "  " and "  " are absent from the display.
3. Connect the test leads across the resistor to be tested.
4. Read the reading on the display.

### Note:

1. For resistance measurements  $> 1\text{M}\Omega$ , the meter may take a few seconds to stabilize reading. This is normal for high-resistance measurements.
2. When the input is not connected, i.e. at open circuit, " OL " will be displayed as an overrange indication.
3. Before measurement, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.



## Continuity Test

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in  position. Then press the " **SELECT** " button until the symbol "  " appears on the display.
3. Connect the test leads across the circuit to be tested.
4. If the resistance is lower than about  $30\Omega$ , the built-in buzzer will sound.


### Note:

Before test, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

## Diode Test

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack. ( Note: The polarity of the red test lead is positive "+". )
2. Set the rotary switch in  position. Then press the " **SELECT** " button until the symbol "  " appears on the display.
3. Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode of the diode.
4. The display shows the approximate forward voltage drop of the diode. If the connection is reversed, " OL " will be shown on the display.

# Measuring Capacitance

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in  position.
3. Thoroughly discharge the capacitor to be tested, and then connect the test leads to the two leads of the capacitor.

Note: When measuring electrolytic capacitor, the black test lead must be connected to the cathode of the capacitor and the red test lead must be connected to the anode of the capacitor.

4. Wait until the reading is stable, then read the reading on the display.

## Note:

1. Because of the stray capacitance of the test leads and the input circuit of the meter, the display may show a reading other than zero before the test leads are connected to the capacitor to be tested. It is normal and this reading must be subtracted from the subsequent measurements.
2. Before measurement, make sure that the capacitor to be tested has been discharged thoroughly.
3. For measurements  $> 10\mu\text{F}$ , it may take about 30 seconds for the meter to stabilize reading.

## Measuring Frequency

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in **Hz%** position. Then press the " **SELECT** " button until " **Hz** " appears on the display.
3. Connect the test leads across the source or circuit to be tested.
4. Read the reading on the display.

### Note:

1. The voltage of input signal should be between 1V rms and 20V rms. The higher the frequency of the signal, the higher the required input voltage.
2. For measurements  $< 10\text{Hz}$ , the amplitude of the input signal must be more than 2V rms.

## Measuring Duty Cycle

1. Connect the black test lead to the " **COM** " jack and the red test lead to the " **INPUT** " jack.
2. Set the rotary switch in **Hz%** position. Then press the " **SELECT** " button until " **%** " appears on the display.
3. Connect the test leads to the circuit to be tested.
4. The reading on the display is the duty cycle reading of the square wave being measured.

**Note:**

1. The voltage of the input signal should be between 4Vp-p and 10Vp-p.
2. After you remove the measured signal from the meter, its reading may still remain on the display. Pressing the "**SELECT**" button twice will zero the display.

## Measuring Temperature

**Note**

To avoid possible damage to the meter or other equipment, remember that while the meter is rated for -20°C to +1000°C and -4°F to 1832°F, the K Type Thermocouple provided with the meter is rated to 250°C. For temperature out of that range, use a higher rated thermocouple.

The K Type Thermocouple provided with the meter is a present, it is not professional and can only be used for non-critical measurements.

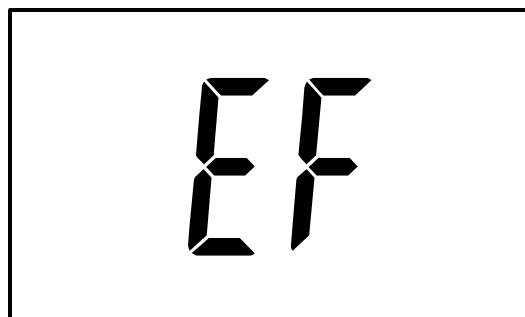
**For accurate measurements, use a professional thermocouple.**

1. Set the rotary switch to °C°F position.
2. Press the "**SELECT**" button to select celsius or fahrenheit temperature measurement, the display will show the corresponding unit.

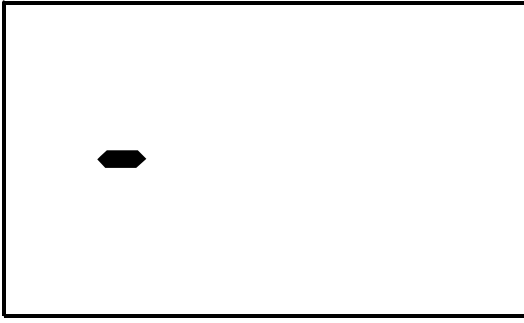
3. Connect the negative " – " plug of the K type thermocouple to the " **COM** " jack and the positive " + " plug of the K type thermocouple to the " **INPUT** " jack.
4. Connect the sensing end of the thermocouple to the object to be tested.
5. Wait a while, then read the reading on the display.

## **Non-Contact AC Voltage Detection**

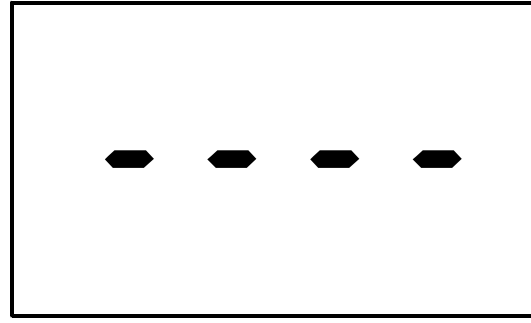
1. Set the rotary switch in **NCV** position. The display shows " **EF** " ( refer to Figure 3 ).
2. Move the top of the meter close to the object to be tested. When the meter detects ac voltage, the built-in buzzer will beep and the display will indicate the intensity of the detected electric field. The intensity of the detected electrical field is indicated by the number of the bar-graph segments at the vertical center of the display and the beeping rate of the built-in buzzer. The higher the intensity of the detected electric field, the larger the number of the bar-graph segments ( refer to Figures 4 and 5 ), and the faster the beeping rate of the buzzer.



**Figure 3**



**Figure 4**




**Figure 5**

**Note:**


1. If the magnitude of an ac voltage is not within the meter's detecting capacity or the distance between an ac voltage and the meter is not within the meter's detecting capacity, the meter can not detect this ac voltage.
2. Before use, verify the meter's operation by detecting a known ac voltage.
3. Because of the meter's detection limit, a line ( or conductor ) under test may be live even if the built-in buzzer does not beep and the display does not indicate the intensity of electric field. To avoid electric shock, do not touch any conductor with hand or skin.
4. The meter's electric field intensity indication is affected by the magnitude of the ac voltage of the conductor under test, the distance between the meter and the conductor, the insulation of the conductor, and etc.

## Automatic Power-Off

The meter will turn off automatically and go into Sleep mode if you have not operated the meter for about 15 minutes. To arouse the meter from Sleep, just press a button or turn the rotary switch.

To disable the automatic power-off function, turn the rotary switch from the " **OFF** " position to other position while holding down the " **SELECT** " button; the display will not show the "  " symbol.

## Bluetooth Communication

This multimeter has Bluetooth communication function. To enable this function, press and hold down the " **SELECT** " button for about 2 secs; the symbol "  " will appear on the display as an indication.

By using Bluetooth communication function, this multimeter can communicate with Android or iOS based smart device with Bluetooth connectivity. After you install and run the free communication app on the Android or iOS based smart device and turn on the Bluetooth function of this device, you can monitor the multimeter measurements, view graphical plot of measurement readings and etc through this app. For more detailed information about this app, please see the operation instruction of this app.



# MAINTENANCE

## **Warning**

Except replacing fuse and battery, never attempt to repair or service the meter.

Store the meter in a dry place when not in use. Don't store it in an environment with intense electromagnetic field.

## **General Maintenance**

Periodically wipe the case with a damp cloth and a little mild detergent. Do not use abrasives or solvents.

Dirt or moisture in the terminals can affect readings.


Clean the terminals as follows:

1. Turn off the meter and remove all the test leads from the meter.
2. Shake out any dirt which may exist in the terminals.
3. Soak a new swab with alcohol.
4. Work the swab around in each terminal.

If the meter does not seem to work properly, check and replace ( as needed ) the batteries or fuse; and/or review this manual to verify correct operation.


# Battery and Fuse Replacement

## Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (  ) appears.

To prevent damage, electric shock or personal injury, use only replacement fuse specified.

Before opening the battery cover or the case, turn off the meter and remove the test leads.

When the symbol "  " appears on the display or if the meter operates abnormally or can not be turned on, replace the batteries immediately. To replace the batteries, remove the screw on the battery cover and remove the battery cover. Replace the exhausted batteries with new ones of the same type ( 1.5V battery, AAA or equivalent ), make sure that the polarity connections are correct. Reinstall the battery cover and the screw.

To replace fuse, remove the screws on the back cover and remove the back cover. Replace the blown fuse with a new one of the same ratings. Reinstall the back cover and the screws.

The meter uses one fuse: 12A/600V, Fast action, Min. Interrupt Rating 10kA, Ø 6.35X32mm

# ACCESSORIES

**Manual:** 1 piece

**Test Lead:** 1 pair

**Alligator Clip:** 1 pair

**Adapter:** 1 piece ( for capacitance measurements )

# PRESENT

**K Type Thermocouple:** 1 piece

# NOTE

1. This manual is subject to change without notice.
2. Our company will not take the other responsibilities for any loss.
3. The contents of this manual can not be used as the reason to use the meter for any special application.

**Zhangzhou Eastern Intelligent Meter Co., Ltd**  
**Eastern Industrial Park, Jintang Road, Jinfeng**  
**Economic Development Zone, Xiangcheng District,**  
**Zhangzhou, Fujian, China**

### **DISPOSAL OF THIS ARTICLE**

Dear Customer,  
If you at some point intend to dispose of this article,  
then please keep in mind that many of its  
components consist of valuable materials, which  
can be recycled.

Please do not discharge it in the garbage bin, but  
check with your local council for recycling facilities  
in your area.

