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1.General Information

This digital multimeter is designed and manufactured in compliance with EN/IEC-61010 safety requirements on electronic measuring instruments and hand-held digital multi-meters.

It is compliant with EN/IEC61010 requirements pertaining to 600V CAT IV,1000V CATIII and requirements on pollution degree 2. Please read carefully this Operation Manual and pay attention to safety guidelines before operating this meter.

1.1.Safety information

1.1.1.Safety instructions

- Before operating this meter; the operator must observe all standard safety procedures in the two respects below :
 - ◇ Safety procedures against electric shock.
 - ◇ Safety procedures against unintended use.
- To ensure your personal safety, please use the test lead that accompanies the meter. Before operating this meter ensure that the test lead is flawless.

1.1.2.Safety considerations

- When the meter is used in the vicinity of the equipment that produces strong electromagnetic interferences, the reading on the meter will grow unstable and even produce serious errors.
- Don't operate the meter or pen-shaped meter whose appearance is damaged.
- The safety function of the meter will become null if the meter is not properly operated.
- The meter must be operated with great care when working in the vicinity of an exposed conductor or bus line.
- The meter is prohibited from being used in the vicinity of any explosive gas, vapor or dust.
- The measurement must be made with correct input terminals and functions and within the allowable measuring range.
- To prevent the meter from being damaged, the value to be input shall not exceed the extremes allowed by each measuring range.
- When the meter has already been connected to the line being measured, the

operator is prohibited from touching the input terminal that is not in service.

- When the voltage measured exceeds 48Vdc or 30Vac (valid value), the operator shall be careful enough to avoid electric shock.
- When making measurement with a test lead, place your fingers behind its protective ring.
- When switching to another measuring range, be sure that test lead has already been taken off the measured circuit.
- For all DC functions, to prevent potential electric shock as a result of incorrect reading, please first use AC functions to check the absence of any AC voltage. Then, select DC voltage measuring range equivalent to or greater than that for AC voltage.
- Before the tests on electric resistance, diode, capacitor or continuity, the operator must cut off the power supply to the circuit to be measured, and discharge all high-voltage capacitors within the circuit to be measured.
- The electric resistance measurement or continuity test cannot be carried out in any live electrical circuit.
- Before the current measurement, the operator must first examine the protective tube of the meter. Before connecting the meter to the circuit to be measured, the operator must first power off the aforesaid circuit.
- Before repairing TV sets or measuring power switching circuit, the operator must be careful enough to prevent high amplitude voltage impulse from damaging the meter.
- This meter uses 3 x 1.5V AAA batteries that must be correctly installed into the battery compartment.
- When  appears, the batteries must be replaced immediately. The low level of a battery will result in incorrect reading on the meter; which is likely to bring electric shock or personal injury to the operator.
- In measurement, CAT III voltage and CAT IV voltage shall not exceed 1000V and 600V respectively.
- The meter shall not be in service if its case (or part of its case) is dismantled.

1.1.3.Safety symbol

The safety symbols that appear on the meter's body and in this Operation Manual:

	Warning, an important safety symbol. The operator must consult this Operation Manual before using the meter. Unintended use may lead to the damage to the device or its components.
	AC (alternating current)
	DC (direct current)
	AC/DC
	Ground
	Double insulation protection
	Fuse
	Compliant with European Union Directive
	High voltage warning
1000V CAT III	1000V CAT III over-voltage protection
600V CAT IV	600V CAT IV over-voltage protection

1.1.4.Maintenance practices for safety

- The operator must first pull out the test lead when the meter's case is opened or the battery cover is dismantled.
- The designated replacement parts must be used at the moment of maintenance.
- The operator must cut off all relevant power supplies before opening the meter: At the same time, the operator must avoid damage to the meter's elements by ensure that he himself doesn't carry any static.
- The meter can only be calibrated, repaired and maintained by professionals.

- When the meter's case is opened, the operator must understand the fact that the presence of some capacitance may promise the dangerous voltages even if the power supply to the meter is cut off.
- The operator should stop using and maintain the meter immediately if any abnormality has been observed on the meter. The operator must see to it that the meter cannot be in service unless it is proved conforming.
- When the meter is left idle for a long period, the operator shall remove the battery and place it in a place free from high temperature and humidity.

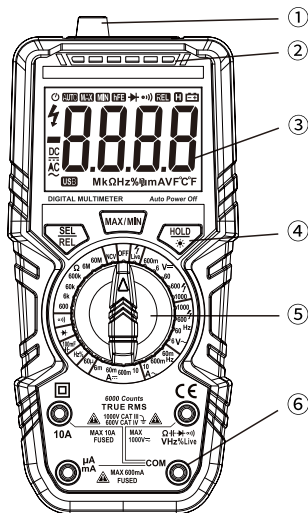
1.1.5. Input protection measures

- The meter can sustain the maximum input voltage of 1000V (DC) or 1000V (AC) at the moment of voltage measurement.
- The meter can sustain the maximum AC voltage of 1000V or equivalent voltage (valid value) when the tests on frequency electric resistance, continuity and diode are carried out.
- The protective tube (F800mA/1000V) is used for protection purpose when mA and mA current measurements are carried out.
- The protective tube (F11A/1000V) is used for protection purpose when A current measurements are carried out.

2. A Schematic Diagram for the Meter

This meter is a hand-held digital multi-meter with the function of displaying True RMS, it is a large-screen LCD unit with backlight and illumination light functions so that the user can easily recognize reading. It is equipped with the function of overload protection and the indicator of battery under voltage. Either for professionals, factories, schools, enthusiasts or households, it is an ideal multi-functional meter.

2.1. A Schematic Diagram for the Meter



- ①. Non-contact voltage detection area ②. Non-contact voltage indicator
③. LCD screen ④. key ⑤. Rotary switch ⑥. input socket

2.2. Description of the symbols on the display unit

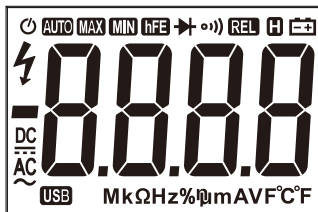


Table.1 (Symbols)

Symbol	Description
	Battery Under Voltage indicator/ Low Battery ⚠ To avoid electric shock or personal injury as a result of incorrect reading, promptly replace the battery when the battery under voltage indicator appears.
	Auto power off indicator
	High voltage warning
	Negative input polarity indicator
	Alternating current
	Direct current
	Continuity test mode
	Diode test mode
	Automatic range measurement mode
	Data hold mode
	Duty ratio
	Non-contact AC voltage detection mode
	Live line judgment mode
	Unit of temperature(°C : Celsius, °F: Fahrenheit)
	Amplification factor of a transistor
	V: V, the unit of volt mV: Millivolt, 1×10^{-3} or 0.001 volt
	A: Ampere, the unit of current. mA: Milliampere, 1×10^{-3} or 0.001 ampere μA: Microampere, 1×10^{-6} or 0.000001 ampere
	Ω: Ohm, the unit of electric resistance. kΩ: Kilohm, 1000 Ohm MΩ: Megaohm, 1,000,000 Ohm

Hz、kHz、MHz	Hz: Hz, the unit of frequency kHz: kHz, 1×10^3 Hz MHz: MHz, 1×10^6 Hz or 1000 kHz
mF、 μ F、nF	mF: Millifarad, 1×10^{-3} or 0.001 farad μ F: Microfarad 1×10^{-6} or 0.000001 farad nF: nF, 1×10^{-9} or 0.000000001 farad

2.3. Description of functional keys

Key	Description of functions
SEL	Function selection switching key
REL	Relative value measurement on/off key
HOLD	Data hold key
	Back light and work light key
MAX/MIN	Maximum, minimum measurement on/off key

2.4. Description of input socket

Input socket	Description
COM	All public input terminals to be measured are connected to test leads in black or the public output plugs of exclusive multi-function test sockets.
  C/°F VΩHz% live	Positive input terminals (connected to a test lead in red) for capacitor measurement, diode measurement, beep on/off test, temperature measurement (Instrument only) voltage measurement, electric resistance, frequency, duty ratio and live/earth line judgment.
μ A、mA	μ A and mA positive input terminal (connected to a test lead in red).
10A	10A positive input terminal (connected to a test lead in red).

2.5. Accessories

- | | |
|---|--------|
| ❶ Operation Manual | One |
| ❷ Test lead | A pair |
| ❸ Type thermocouple
(depends on different model, only for the meter with it) | A pair |
| ❹ Battery 1.5V AAA | ×3 |

3. Operational guidelines

3.1. Normal operation

3.1.1. Measurement mode

There are different measurement modes for frequency measurement, AC voltage, AC current and temperature of the meter. The test mode selection operation is as follows:

1. Frequency measurement position: press the key “**SEL**” to select frequency (Hz) or duty ratio (%) measurement mode.
2. AC voltage position and AC current position: press the key “**SEL**” to select voltage/frequency or current/frequency measurement mode.
3. Temperature measurement position: press the key “**SEL**” to select Celsius (°C) or Fahrenheit (°F) measurement mode.

3.1.2. Relative Value Measurement

The meter is equipped with a relative value measurement function. In this mode, the value displayed on the meter = actual value - set reference value. Follow the operations below to enter or exit the relative measurement operation:

1. Set the meter to the measurement function you want, let the probes contact the object you want to set as the reference value, and the meter displays the measured value.
2. Press “**REL**” (Long press for 2 seconds in AC voltage and AC current) to store the measured value as reference value and enter the relative measurement mode, the meter displays “**REL**”.
3. Measurement, the meter will display “actual value - set reference value”

4. Press “REL” (Long press for 2 seconds in AC voltage and AC current) again to exit the relative value measurement mode and the “REL” sign fades.

Note: There is no relative value measurement mode for continuity , Live frequency, duty ratio, temperature, and diode measurements.

3.1.3.Maximum/Minimum

The meter is equipped with a maximum value and minimum value a holding function. Follow the operations below to enter or exit this function:

1. Set the meter to the measurement function you need.
2. Press “MAX/MIN” to enter the maximum value holding mode and the meter displays “MAX”.
3. Press “MAX/MIN” again to enter the minimum value holding mode and the meter displays “MIN”.
4. Press “MAX/MIN” again and hold it for more than 2 seconds, the meter returns to normal measurement mode.

Note: This function is not available for NCV, live, capacitance, frequency, duty ratio, continuity and diode.

3.1.4.Hold mode

In the hold mode, the reading can be maintained on the display unit. Changing the measurement function position or pressing the key “HOLD” again to exit the hold mode.

Hold mode : entry and exit

1. Press the key “HOLD” and the reading will be held and the symbol “H” will appear on the LCD screen.
2. Press the key “HOLD” again to restore the meter to its status for normal measurement.

3.1.5.Backlight & lighting

The meter is equipped with the functions of backlight and lighting so that the operator can access measurement results even if he is in a darker place. The backlight function can be enabled or disabled by the steps below :

1. Press the key “” for over 3 seconds to enable backlight and illumination light.
2. Press the key “” again for over 3 seconds to manually disabled backlight and illumination light; wait for 15 seconds until the backlight and illumination light are automatically disabled.

3.1.6. Auto power off

1. After turning on meter, the symbol  will be displayed in the upper left corner of the LCD display. If there is no operation in 15 minutes, the instrument will emit "beep beep" sound and enter sleep mode.
2. The meter can be rebooted when the operator presses any key in the auto power off mode.
3. If press the **HOLD** button to turn on the meter, the symbol  in the upper left corner of the LCD display will disappear and the automatic shutdown function will be canceled.

3.2. Measurement guidelines

3.2.1. Measurement of AC voltage and DC voltage



WARNING

- To avoid any electric shock and/or damage to the meter; do not attempt a voltage measurement if the voltage (valid value) is 1,000V for DC current or 1000V for AC current.
- To avoid any electric shock and/or damage to the meters don't attempt to impose between any public termina and ground any voltage whose valid value is over 1,000V for DC current or 1000V for AC current.

The meter provides DC voltage measuring ranges as follows: 600.0mV, 6.000V, 60.00V, 600.0V and 1000V, and AC voltage measuring ranges: 6.000V, 60.00V, 600.0V and 1000V.

Measurement of AC voltage or DC voltage:

1. Turn the rotary switch to the position $V \overline{\text{---}}$ or $V \sim$.

2. Connect the test lead in black and test lead in red to **COM** input socket and  input socket respectively.
3. Use another two ends of the test lead to measure the voltage of the circuit to be measured. (In parallel connection with the circuit to be measured).
4. Read the measured voltage value on LCD screen. When DC voltage measurement is attempted, the display unit will show the voltage polarity of the circuit connected to the pen-shaped meter in red.

Notes :

- ① Within the measuring range of DC voltage of 600mV and AC voltage of 6V even if there is no input or no connection to the test lead, the meter will display some information. In this situation, press short circuit “  ” and "COM" terminal to reset the meter to zero.
- ② Within the AC voltage function, press the key “ **SEL** ” to measure the frequency of the AC voltage source. Please refer to the relevant part for frequency measurement.
- ③ The value of the AC voltage measured with this meter is True RMS (root mean square). These measurements are accurate for sine wave and other waves (without DC offset), square wave, triangular wave and step wave.

3.2.2. Electric resistance measurement



WARNING

- To avoid the meter or the measured equipment from damage, do not attempt a resistance measurement unless the operator has already cut off all power sources for the circuit to be measured and fully discharged all high-voltage capacitors.

Ohm is the unit of electric resistance (Ω).

The measuring ranges of electric resistance of this meter are 600.0 Ω , 6.000k Ω , 60.00k Ω , 600.0k Ω , 6.000M Ω , 60.00M Ω .

Measurement of electric resistance :

1. Turn the rotary switch to the appropriate position.
2. Connect the test lead in black and test lead in red to **COM** input socket and  **VHz% live** input socket respectively.
3. Use another two ends of the test lead to measure the electric resistance of the circuit to be measured.
4. Read the measured electric resistance value on LCD screen.

Notes :

- ① The measured value of the electric resistance of the circuit differs a bit from the rated value of the electric resistance.
- ② To ensure measurement accuracy, in attempting a low resistance measurement, first put two pen-shaped meters in short circuit and capture the resistance reading of these short circuits. Then subtract the aforesaid reading from the measured resistance.
- ③ At 60M Ω position, you have to wait a few seconds before the reading grows stable. This is quite normal for a high resistance measurement.
- ④ When the meter is in open circuit, the display unit will show “OL”, that indicates the measured value is over the measuring range.

3.2.3.Diode test



WARNING

● To avoid the meter or the measured equipment from damage, do not attempt a diode test unless the operator has already cut off all power sources for the circuit to be measured and fully discharged all high-voltage capacitors.

Diode test outside the circuit :

1. Turn the rotary switch to the position  .
2. Connect the test leads in black and in red to **COM** input socket and  **VHz% live** input socket respectively.
3. Connect the test leads in black and in red to the positive and negative poles of

the diode to be tested respectively.

4. The meter displays the forward bias value of the diode to be tested. If the polarity of the test lead is reversed, the meter will display “OL”. A normal diode still produces a forward voltage drop of 0.5V to 0.8V, the reverse bias voltage reading depend on the variation in electric resistance of other channels between two pen-shaped meters.

3.2.4. Beep continuity test



WARNING

- To avoid the meter or the measured equipment from damage, do not attempt a beep continuity test unless the operator has already cut off all power sources for the circuit to be measured and fully discharged all high-voltage capacitors.

Steps for a continuity test :

1. Turn the rotary switch to the position .
2. Connect the test lead in black and test lead in red to **COM** input socket and  **VHz% live** input socket respectively.
3. Use another two ends of the test lead to measure the resistance of the circuit to be measured. If the measured distance is no more than 40 Ω , the sensor LED (green indicator) will be on and the beeper will sound continuously. If the measured resistance is between 40 Ω and 60 Ω the sensor LED (red indicator) will be on.

3.2.5. Capacitance measurement



WARNING

- To avoid the meter or the measured equipment from damage, do not attempt a capacitance measurement unless the operator has already cut off all power sources for the circuit to be measured and fully discharged all high-voltage capacitors. Use the DC voltage position to determine that all capacitors have been discharged.

The measuring ranges for the capacitance of this meter are 6.000nF, 60.00nF, 600.0nF, 6.000 μ F, 60.00 μ F and 600.0 μ F, 6mF, 100mF.

Measurement of capacitance :

1. Turn the rotary switch to the position **100mF**.
2. Connect the test leads in black and in red to **COM** input socket and  input socket respectively.
3. Use another two ends of the test lead to measure the capacitance of the capacitor to be measured, and capture the measured value on LCD screen.

Note :

- ① The measurement of a large capacitance requires a given period of stabilization of reading.
- ② To avoid damage to the meter, the measurement of a capacitor with polarities requires much attention to its polarity.

3.2.6.Measuring frequency/duty ratio

WARNING

- To avoid any electric shock and/or damage to the meter, do not attempt a frequency measurement if the voltage is over 1000V for DC current or AC current (valid value).

Measuring frequency/duty ratio :

1. Turn the rotary switch to the position **Hz%**.
2. Connect the test leads in black and in red to **COM** input socket and  input socket respectively.
3. Use another two ends of the test lead to measure the frequency of the circuit to be measured.
4. Read the measured frequency on LCD screen.
5. Press “**SEL**” to switch the display duty ratio.

3.2.7.Current measurement

**WARNING**

- Do not attempt a measurement on the current in a circuit, if when the voltage between the open-circuit voltage and the ground is over 250V. If the fuse is blown at the moment of measurement, you are likely to damage the meter or get yourself hurt.
- To avoid any damage to the meter or equipment to be measured, do not attempt a current measurement unless you have examined the meter's protective tube. In attempting a measurement, you should use the correct input sockets, function positions and measuring ranges. When a test lead is inserted into the current input socket, do not put the other end of the test lead in parallel connection with any circuit.

The meter provides DC current measuring ranges as follows : 60.00 μ A, 6.000mA, 60.00mA, 600.0mA and 10.00A.

AC current measuring ranges : 60.00mA、 600.0mA and 10.00A.

Measurement of current :

1. Turn the rotary switch to the appropriate position.
2. Connect the test lead in black to **COM** input socket. Connect the test lead in red to a **mA** input socket when the measured current is less than **600mA** , connect the test lead in red to a **10A** input socket when the measured current is 600mA~10A.
3. Disconnection of the circuit to be measured Connect the test lead in black to the end of disconnected circuit (the voltage is lower) and connect the test lead in red to the end of the disconnected circuit (voltage is higher).
4. Connect the power to the circuit and capture the displayed reading. If the display unit only shows “**OL**”, it means the input is over the selected measuring range. At this moment, turn the rotary switch to a higher measuring range.
5. In the AC current function, press “**SEL**” to switch the frequency of the AC current source.

3.2.8.NCV test (non-contact voltage detection)

Turn the rotary switch to **NCV** position, and place the top of the meter approach the conductor. If the meter detects the AC voltage, the indicators for signal density (high, medium and low) will be on in accordance with the detected density, while the beeper will sounds alarms at different frequencies.

Note :

1. Voltage may still remain in the absence of any indication. The operator shall not rely on non-contact voltage detector to check the presence of voltage. The detection operation may be affected by various factors, including socket design, insulation thickness and type.
2. When the voltage is input into the meter's input terminal, the voltage sensor LED may be on as a result of induced voltage.
3. External sources of interference (like flashlight and motor) may trigger non-contact voltage detection.

3.2.9. Live line test

1. Turn the rotary switch to the position **Live**.
2. Connect the test lead in red to  **VHz live** input socket.
3. When the red test lead is inserted into jack **L** of power socket or approaches a live conductor; if the meter detects AC voltage, the meter's indicator for the intensity (high, medium and low) of induced voltage signal will be on and the beeper sounds alarms for different intensities.

3.2.10. Measuring temperature (depends on different model,only for the meter with it)

Put the range switch at the gear of **°C / °F** , Insert the red plug of the thermocouple into the end of  **°C/°F VΩHz live** , and insert the black plug of the thermocouple into **COM** socket. Directly read the temperature value from the display screen after the reading is stable.

4. Technical parameters

4.1. Overall parameters

- Operating environment :
 - ◇ CAT IV 600V and CAT III 1000V, Pollution level: 2.
 - ◇ Altitude < 2000 m.
 - ◇ Working temperature & humidity: 0~40 °C (The requirements will not be considered when temperature is less than 10°C and relative humidity is below 80%).
 - ◇ Storage temperature & humidity : -10~60°C (batteries shall be removed when RH is below 70%).
- Coefficient of temperature: $0.1 \times \text{accuracy} / ^\circ\text{C}$ (<18°C or >28°C).
- Allowable max voltage between terminal to be measured and ground : 1000V DC or 1000V AC RMS.
- Fuse protection : mA position: fuse (F800mA/1000V); A position: fuse (F 11A/1000V).
- Rotation rate: about 3 times/sec.
- Display : 6000 counts displayed on LCD screen. Automatically display the symbol for unit in accordance with measurement function position.
- Over-range indication: the LCD screen will display “OL” .
- Battery low voltage indication: “ ” will be displayed when the battery voltage is below the normal operating voltage.
- Input polarity indication: “ — ” is automatically displayed.
- Power supply: 3 x 1.5V AAA batteries.
- External dimensions: 194mm(L) × 90 mm(W) × 56mm(H).
- Weight: about 380g (battery included) .

4.2. Precision indicator

Accuracy: $\pm(\% \text{ reading} + \text{digit})$. Accuracy is applicable for one year after calibration.
 Reference conditions: Ambient temperature 18°C to 28°C, relative humidity not greater than 80%.

4.2.1.DC voltage

Range	Resolution	Accuracy
600mV	0.1mV	$\pm (0.5\% \text{ reading} + 3 \text{ digits})$
6V	1mV	
60V	10mV	
600V	100mV	
1000V	1V	

Input impedance : 10M Ω .

Maximal input voltage : 1000V DC or 1000V AC RMS.

4.2.2.AC voltage

Range	Resolution	Accuracy
6V	1mV	$\pm (0.8\% \text{ reading} + 3 \text{ digits})$
60V	10mV	
600V	100mV	$\pm (1.0\% \text{ reading} + 10 \text{ digits})$
1000V	1V	

Input impedance : 10M Ω .

Maximal input voltage : 1000V DC or 1000V AC RMS.

Frequency response : 40Hz-1kHz True RMS.

4.2.3.Frequency and Duty Ratio

Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm (1\% \text{ reading} + 3 \text{ digits})$
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	
9.999MHz	0.001MHz	
1%~99%	0.1%	$\pm (3\% \text{ reading} + 5 \text{ digits})$

Input voltage range : 200mV-10V AC RMS.

Overload protection : 1000V DC or 1000V AC RMS.

4.2.4. Resistance

Range	Resolution	Accuracy
600 Ω	0.1 Ω	$\pm (0.8\% \text{ reading} + 3 \text{ digits})$
6k Ω	1 Ω	
60k Ω	10 Ω	
600k Ω	100 Ω	
6M Ω	1k Ω	
60M Ω	10k Ω	$\pm (1.2\% \text{ reading} + 30 \text{ digits})$

Overload protection : 1000V DC or 1000V AC RMS.

Open-circuit voltage: about 1V.

4.2.5. Diode

Function	Range	Resolution	Testing conditions
	6V	0.001V	Forward DC current: about 1mA; Open-circuit voltage: about 3.2V. The display unit shows the approximate value of the diode's forward voltage drop.

Overload protection : 1000V DC or 1000V AC RMS.

4.2.6. Beeper continuity

Function	Range	Resolution	Description	Testing conditions
	600 Ω	0.1 Ω	When the built-in beeper sounds and the accompanying green indicator is on, the measured resistance shall not be over 40 Ω , The red indicator will be on when the resistance is 40 Ω -60 Ω .	Open-circuit voltage: about 1V

Overload protection : 1000V DC or 1000V AC RMS.

4.2.7.Capacitance

Range	Resolution	Accuracy
6nF	0.001nF	$\pm (4.0\% \text{ reading} +30 \text{ digits})$
60nF	0.01nF	$\pm (4.0\% \text{ reading} +5 \text{ digits})$
600nF	0.1nF	
6 μ F	1nF	
60 μ F	10nF	
600 μ F	100nF	
6mF	1 μ F	
100mF	0.01mF	$\pm (5.0\% \text{ reading} +3 \text{ digits})$

Overload protection : 1000V DC or 1000V AC RMS.

4.2.8. DC current

Range	Resolution	Accuracy
60 μ A	0.01 μ A	$\pm (0.8\% \text{ reading} +3 \text{ digits})$
6mA	0.001mA	
60mA	0.01mA	
600mA	0.1mA	
10.00A	10mA	$\pm (1.2\% \text{ reading} +3 \text{ digits})$

Overload protection: fuse for mA range (F800mA/1000V) ; fuse for A range (F11A/1000V) .

Maximal input current : mA position: 600mA DC/AC RMS,

A position: 10A DC/AC RMS.

When the measured current is over 5A, the duration of continuous measurement shall not be over 10 seconds. The current measurement shall be carried out 1 minute after the completion of previous measurement.

4.2.9.AC current

Range	Resolution	Accuracy
60mA	0.01mA	$\pm (1.0\% \text{ reading} +3 \text{ digits})$
600mA	0.1mA	
10A	10mA	$\pm (1.5\% \text{ reading} +3 \text{ digits})$

Overload protection : fuse for mA range (F800mA/1000V) ; fuse for A range (F11A/1000V).

Maximal input current: mA position : 600mA DC/AC RMS,

A position : 10A DC/AC RMS.

When the measured current is over 5A, the duration of continuous measurement shall not be over 15 seconds. The current measurement shall be carried out 1 minute after the completion of previous measurement.

Frequency response: 40Hz-1kHz, True RMS.

4.2.10. Temperature (depends on different model, only for the instruments with it)

Function	Resolution	Accuracy	
°C	1°C	-20°C~1000°C	±(1.0%+3) reading
°F	1°F	-4°F~ 1832°F	

5. Meter maintenance

This section provides the basic information on maintenance, including the descriptions about replacement of protective tubes and batteries.

Do not attempt the meter maintenance unless you are experienced in maintenance and have read the information on calibration, performance test and maintenance.

5.1. General maintenance

WARNING

- To avoid any electric shock or damage to the meters ,do not attempt to clean the inside of the meter .You must remove the line connecting a test lead to input signals, before opening the case or battery cover.

You must regularly use damp cloth and a small quantity of detergent to clean the meter's shell. Don't attempt the use of any abradant or chemical solvent.

The dirty or damp input socket may affect reading.

Steps for cleaning input sockets :

- ① Disenable the meter and pull all test leads out of the input socket.
- ② Clean up all dirty substances on sockets.

- ③ Use a new cotton ball with a detergent or lubricant to clean each socket because lubricant can prevent the socket vulnerable to dampness form pollution.

5.2.Battery & fuse replacement



WARNING

- To avoid any electric shock or personal injury as a result of incorrect reading, replace batteries once the symbol “  ” appear on the display unit.
- Only the designated fuse (600mA/1000V,10A/1000V quick-acting fuse) can be used.
- To avoid any electric shock or personal injury ,don't attempt to open the battery cover to replace batteries, unless you have already powered off the device and carried out an examination to ensure that the test lead has been disconnected from the circuit to be measured.

Please follow these steps to replace the battery:

1. Pull all test pens out of the input socket and turn off the instrument power.
2. Use a screwdriver to loosen the screws holding the battery cover and remove the cover.
3. Take the old battery and replace it with a new 3X1.5V AAA Battery.
4. Install the battery cover and tighten the screws.

Please follow these steps to replace the fuse:

1. Pull all test pens out of the input socket and turn off the instrument power.
2. Remove the silicone sheath, loosen the screw fixing the bottom shell with a screwdriver, and remove the instrument bottom shell.
3. Take away the safety tubes that need to be replaced and replace them with new ones that meet the requirements.
4. Install the bottom shell of the instrument, tighten the screws, and put on the silicone leather cover.