

# USER'S MANUAL

## I. SUMMARIZE

This instrument is a 6000 counts hand-held automatic range True RMS digital clamp meter. The circuit design of the meter takes the large-scale integrated circuit  $\Sigma/\Delta$  analog-to-digital converter as the core, and it has the full-range overload protection circuit. It can be used to measure AC and DC voltage, low-pass filter VFC voltage, low impedance Low Z voltage, AC and DC current, resistance, diode, continuity test, capacitance, frequency, duty cycle, temperature and other parameters, and has data hold, relative value measurement, surge current measurement function, torch function, NCV function, live wire judgment, under-voltage display and automatic shutdown function.

## II. OPEN PACKING FOR CHECKING

Open the box, take out the meter, checking the items

below if they are missing or damaging:

K type probe (-20°C ~250°C)	1pc
1.5VAAA battery	2pcs
Manual	1pc
Test lead	1pair
Carrying bag	1pc

Please contact with your supplier if you find out any problems.

### **III. SAFETY NOTES**

The meter's design is in accordance with the CE certification, IEC61010 related terms, in conformity with double insulation, Safety standard for overvoltage CAT III 600V. If you fail to use the clamp meter in accordance with the relevant operating instructions, the protection provided by the clamp meter will be weakened or lost.

1. Check the clamp meter and test lead before use to prevent any damage or abnormal phenomenon. If you find test lead and housing insulation is obviously damaged, and the LCD has no display, etc., or you think the clamp meter cannot work

properly, please do not use it again.

2. Do not use clamp meter before the back cover and battery cover are not properly covered to avoid electric shock.

3. Remember that the fingers do not exceed the hand part of the test lead range when measuring, do not contact exposed electricity wires, connectors, unused inputs or measured circuits to prevent electric shock.


4. The function switch must be placed in the correct position before measurement. It is strictly forbidden to change range during measurement to prevent damage to the clamp meter.

5. Do not apply more than **DC1500V/AC1000V** voltage between the terminal of the clamp meter and the ground to avoid electric shock and damage to the clamp meter.

6. Be careful when measuring voltage higher than 36V DC, 25V AC to avoid electric shock.

7. Use the clamp meter according to the instructions of manual, and it is forbidden to measure the voltage or current higher than the allowable input value.

Before making online resistance, capacitance, diode, or circuit on-off measurements, you must first cut off all power supplies in the circuit and discharge all capacitors to avoid the measurement results is not accurate.











8. When the LCD displays the " " sign, please replace the battery in time to ensure the measurement accuracy. When you not plan to use this clamp meter for a long time, you should remove the battery.

9. Do not change the internal wiring of the clamp meter to avoid damage of the instrument and hidden danger of the user.

10. Do not store or use the clamp meter in a high temperature, high humidity, flammable, explosive and strong electromagnetic field environment.

11. Please use a soft cloth and neutral detergent to clean the case of the clamp meter for maintenance, do not use abrasive and solvent to prevent the case from being corroded, damaging the instrument and endangering safety.

#### IV. ELECTRIC SYMBOL


	Warning		DC
	High voltage damage		AC
	Ground		AC and DC
	Dual insulation		Accord with the order of European Union
	Low battery		Fuse

#### V. GENERALSPECIFICATION

5.1. Max. Indication: 5999, 3 times / sec.

5.2. Polarity indication: The positive and negative polarities automatically display.

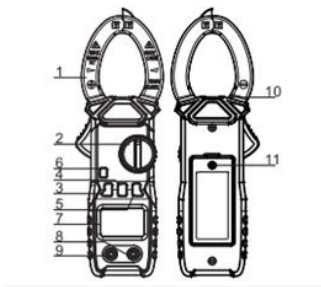
5.3. Over range indication: LCD displays OL or -OL

5.4. Low battery indication: “” symbol displays

5.5. Operation temperature: 0~40°C, relative humidity <75%

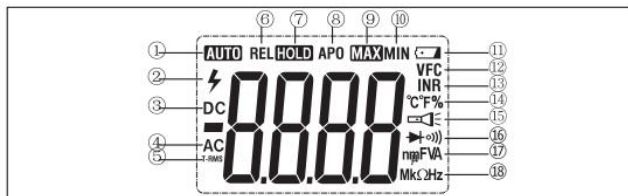
- 5.6. Storage environment:  $-10^{\circ}\text{C}\sim 50^{\circ}\text{C}$ , relative humidity  $<85\%\text{RH}$ ;
- 5.7. Power: Four 1.5V AAA battery LR03
- 5.8. The Max. opening size of the clamp head:  
Diameter 40mm
- 5.9. Max. measuring current wire: Diameter **39mm**
- 5.10. Size:  $230\times 75\times 40$  mm
- 5.11. Weight: approx. 313g (including batteries)

## VI. APPEARANCE STRUCT



1. Clamp jaw
2. Range knob
3. Relative value measurement / Torch switch
4. Data hold and backlight
5. Reset / Surge current
6. Select key / low pass filter
7. LCD
8. Input terminal
9. COM terminal
10. Torch
11. Battery cover screw

## VII. DISPLAY SCREEN



①	Auto range	⑩	Minimum
②	High pressure	⑪	Low battery
③	DC	⑫	Low-pass filter
④	AC	⑬	Surge current

⑤	TRUE RMS value	⑭	Celsius, Fahrenheit, duty cycle
⑥	Relative value	⑮	Torch
⑦	Data hold	⑯	Diode, continuity
⑧	Auto shut-down	⑰	Capacitance, voltage, current.
⑨	Maximum	⑱	Ohm, Kilo ohm, Mega ohm, Frequency

## VIII. Button FUNCTION

Button Introduction: short press  $< 2$  seconds, long press  $\geq 2$  seconds

### 1. Data hold button (HOLD B/L)

Press the HOLD B/L key to enter the reading hold measurement mode, and press the HOLD B/L button again to exit it.

Long press the HOLD B/L key to turn on the backlight, and then long press the HOLD B/L key to turn it off. The backlight will be turned off automatically after 15 seconds since you turned it on.

### 2. Selection key (SELECT/V.F.C)



Short press: Press this key at the NCV range to switch between NCV and live wire judgment tests. Press this key at voltage or current range to switch between AC and DC voltage/current test. Press this key at the frequency range to switch between frequency and duty cycle test. Press this key at temperature range to switch between Celsius and Fahrenheit tests. Short press this key at resistance range to switch among resistance, capacitance, diode, and continuity tests.

Long press: Long press this key at the AC voltage range, the screen of the meter will appear V. F. C character, and the meter can perform low-pass filter voltage test.

### 3. Relative value measurement (REL/ )

Short press: Press this key at the AC/DC voltage range, capacitance range, AC current, and temperature range to enter relative value measurement.

Long press: Long press this button to turn on/off the torch light.

### 4. Surge current test (ZERO/ INR)

Short press: Press this key at the DC current range to clear the open circuit base value.

Long press: Long press this key at the AC current range, the screen will flash "----" and the INR character, now you entered the surge current test mode. Long press this button again to turn off the Surge current test, and the INR character will disappear.

#### 5. Automatic shutdown function

In order to save power consumption and prolong battery life, the meter will turn on the AP0 automatic shutdown function by default after it is turned on. If the user does not operate the meter within 14 minutes, the meter will beep 3 times to prompt. If there is still no operation, after another 1 minute, the meter will have a long beep before automatically turn off the power. When starting up again, you need to turn the range switch to the OFF range, and then turn it to the required function range again or press the V. F. C key to wake it up.

At the shutdown state, hold down the SELECT/V. F. C button while turning the range switch. After the

meter enters the normal measurement state, the automatic shutdown function can be canceled, and the "APO" symbol will no longer be displayed on the LCD screen. When the meter is at the automatic shutdown mode, if the user does not operate the meter within 15 minutes, the meter will still beep every 15 minutes to remind the user to shut down.

## **IX. OPERATE INSTRUCTIONS**

### **1. AC current and surge current measurement**

(1). Set the dial knob to the current range, the meter defaults to AC current measurement, Short press the V.F.C. key to switch the DC current measurement.

(2). Press and hold the trigger to open the clamp head and use the clamp head to grab the measured conductor, then slowly release the trigger until the clamp head is completely closed, please make sure whether the measured conductor is clamped in the center of the clamp head, otherwise, it will occur additional errors. The clamp meter can only measure one current conductor at a time. If two or more current conductors are measured at the same time,

the measurement readings will be wrong.

(3). Read the True RMS of AC current directly from the display.

(4). You can test relative value by short press the REL key and the REL character will appear on the screen of the meter. Press again to exit the relative value measurement and the character REL on the screen will also disappear.

(5). Long press the ZERO/INR button at the AC current range to perform surge current measurement, and the character INR will appear on the screen at the same time. At this time to start the electric appliance, the maximum current of the instantaneous start of the electrical appliance can be measured.

Long press this key again to exit the surge current measurement, and the character INR will also disappear. The surge current measurement is about the True RMS of the maximum current within 200ms.

 Note:

a. The current measurement function must be operated between 0°C~40°C. Hold the trigger and

don't release it suddenly. The Hall element is a sensitive device, which is not only sensitive to magnetism, but also to thermal and mechanical stress in different degree, and impact will cause the reading to change in a short time.

b. In order to ensure the accuracy of the measurement data, the measured conductor must be placed in the center of the clamp head. Otherwise,  $\pm 1.0\%$  additional error of the reading will occur.

c. When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

## **2. DC current measurement**

(1). Turn the meter knob to the current range, the meter defaults to AC current measurement. Short press the V.F.C button can convert to DC current measurement.

(2). If the open circuit display of the meter is not zero, short press the ZERO/INR key to clear it. After measuring the high current, because the clamp head will remain magnetic and will not disappear so quickly, the LCD display will have a base value.

(3). Press and hold the trigger to open the clamp head

and use the clamp head to grab the measured conductor, then slowly release the trigger until the clamp head is completely closed, please make sure whether the measured conductor is clamped in the center of the clamp head, otherwise, it will occur additional errors. The clamp meter can only measure one current conductor at a time. If two or more current conductors are measured at the same time, the measurement readings will be wrong.

(4). Read the measured current value directly from the display.

 Note:

a. The current measurement function must be operated between 0°C and 40°C. At the DC current measurement, if the reading is positive, the direction of the current is from up to down (the panel is up and the back cover is down). Hold the trigger and don't release it suddenly. The Hall element is a sensitive device, which is not only sensitive to magnetism, but also to thermal and mechanical stress in different degree, and impact will cause the reading to change in a short time.

b. In order to ensure the accuracy of the measurement data, the measured conductor must be placed in the center of the clamp head. Otherwise,  $\pm 1.0\%$  additional error of the reading will occur.

c. After the DC current (especially high current) test is completed, the open circuit base value may be too large. Please do an AC current test to eliminate the residual magnetic signal generated by the clamp head through the AC electric field.

d. When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

### **3. AC voltage measurement $V_{\sim}$ and low-pass filter voltage V. F. C measurement**

(1). Insert the red test lead into the "  $V_{\sim}$  Live °C °F " ,

jack and the black test lead into the COM jack.


(2). Turn the meter knob to the voltage range, short press the V.F.C button to switch the AC voltage measurement, and connect the red and black test leads in parallel to the measured power supply or load.

(3). Read the True RMS of AC voltage directly from

the display.

(4). Long press V. F. C key at AC voltage range to turn on/off low-pass filter voltage measurement. The low-pass filter can measure the composite sine wave signal generated by the inverter and variable frequency motor.

 Note:

- a. Do not input voltage higher than **DC/1500V or AC/1000V**. Although it is possible to measure higher voltage, it may easily damage the meter.
- b. When measuring high voltage, pay special attention to avoid electric shock.
- c. Disconnect the test lead from the measured circuit after all measurement operations are completed.
- d. When the measured voltage is higher than 24V DC/AC safe voltage, the LCD of this meter displays the high-voltage warning prompt "  " for alarm reminder.
- e. When measuring voltage above 36V, pay attention to wear safety protection equipment.

#### **4. LowZ low impedance AC voltage measurement**



- (1). Insert the red test lead into the "  $V\Omega-HLive^{\circ}C^{\circ}F$  " jack and the black test lead into the COM jack.
- (2). Turn the meter knob to the low impedance AC voltage measurement range, and connect the test leads in parallel to the measured power supply or load.
- (3). Read the True RMS of AC voltage directly from the display.

 Note:

- a. Do not input voltage higher than AC300V. Although it is possible to measure higher voltage, it may easily damage the meter.
- b. When measuring high voltage, pay special attention to avoid electric shock.
- c. Test a known voltage before use the meter, it is to confirm whether the product function is correct.
- d. After using LowZ low impedance function range, please wait 3 minutes before perform LowZ (low impedance  $\leq 3k\Omega$ ) voltage measurement, in order to eliminate false voltages, the LowZ function of the meter will provide a low impedance on the

entire wire circuit to obtain more accurate measurements.

e. When the measured voltage is higher than 24V AC safe voltage, the LCD of this meter displays the high-voltage warning prompt " ⚡ " for alarm reminder and please wear safety protection equipment.

## 5. DC voltage measurement

(1). Insert the red test lead into the "  $V\Omega-H$  Live  $^{\circ}C^{\circ}F$  " jack and the black test lead into the COM jack.

(2). Turn the meter knob to the voltage range, the meter will defaults to DC voltage measurement, and connect the red and black test leads in parallel to the measured power supply or load.


(3). Read the measured voltage value from the display.

 Note:

a. Do not input voltage higher than DC/1500V or AC/1000V. Although it is possible to measure higher voltage, it may easily to damage the meter.

- b. When measuring high voltage, pay special attention to avoid electric shock.
- c. Disconnect the test lead from the measured circuit after all measurement operations are completed.
- d. When the measured voltage is higher than 24V DC/AC safe voltage, the LCD of this meter will displays the high-voltage warning prompt " ⚡ " for alarm reminder.
- e. When measuring voltage above 36V, please pay attention to wear safety protection equipment.

## 6. Resistance measurement

- (1). Turn the knob to the "  "range, the meter defaults to the resistance range.
- (2). Insert the red test lead into the "  $V\Omega-H$  Live  $^{\circ}C^{\circ}F$  " jack and the black test lead into the COM jack.
- (3). Connect the test lead wire to both ends of the measured resistance, and directly read the reading on the LCD screen.

 Note:

- a. If the tested resistor is under open circuit or the resistance of the measured resistor exceeds the maximum range of the meter, the display will show "OL"
- b. When measuring on-line resistance, all power supplies in the measured circuit must be turned off before the measurement, and all capacitors are released completely. In order to ensure the measurement is correct.
- c. When measuring low resistance, the test leads will have about  $0.1\Omega$ - $0.2\Omega$  measurement error. In order to obtain accurate readings, you can perform relative value measurement. First, short-circuit to input the resistance value of the test lead, then press the REL button, and then perform low resistance measurement after the meter automatically subtracts the short-circuit display value of the test lead.
- d. If the resistance value is higher than  $0.5\Omega$  when the test leads are short-circuited, you need to check whether the test leads are loose or other reasons.
- e. When measuring resistance above  $1M\Omega$ , it may

take a few seconds for the reading to stabilize. It is normal for high resistance measurements. In order to obtain stable readings, you can buy an extra short alligator clip test line instead of our standard test leads to do the measurement.

f. Do not input voltage higher than DC 42V or AC 30V to avoid personal safety injury.

g. Disconnect the test lead from the measured circuit after all measurement operations are completed.

## **7. Diode and continuity test**

(1) Insert the red test lead into the "  $V\Omega-H$  Live °C°F " jack and the black test lead into the COM jack.

(2) Turn the knob to the resistance range, short press "V.F.C" to select diode or continuity test measurement mode.

(3) When under continuity test, if the resistance of the tested circuit is less than  $50\ \Omega$ , the built-in buzzer will sound.

(4) In the diode measurement mode, connect the red test lead and black test lead to the positive and

negative pole of the diode respectively, and the LCD will display the forward voltage drop of the diode.

 Note:

▶ If the open circuit or polarity of the measured diode is reversely connect, the display will show "OL".

▶ When measuring diode and continuity test, all power supplies in the measured circuit must be turned off before the measurement, and all capacitors should release completely.

▶ The open circuit voltage of the diode test is about 3.9V, the open circuit voltage of the continuity test is about 2V, and the range of the measurement range is 600Ω.

▶ Do not input voltage higher than DC 42V or AC 30V to avoid personal safety injury.

▶ Disconnect the test lead from the measured circuit after all measurement operations are completed.

## **8. Capacitance measurement**

(1). Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the

COM jack.

(2). Turn the meter knob to the resistance range, and short press the V.F.C key to switch the capacitance measurement.

(3). Connect the test lead to both ends of the measured capacitor and confirm whether the polarity is correct.

(4). Read the capacitance value of the measured circuit load under test directly from the display. It is recommended to use an extra short alligator clip test line to do the capacitance measurement to reduce the influence of distributed capacitance.

(5). When measuring the capacitance less than 10nF, you can perform relative value measurement to ensure the accuracy of the measurement , that is, short press the REL key to perform the measurement, and the character REL will appear on the screen at the same time. Press it again to exit the relative value measurement, and the character REL will also disappear.

 Note:

a. If the tested capacitor is under short circuit or

the capacitance value of the measured capacitor exceeds the maximum range of the meter, the display will show "0L".

b. It will take a long time for the measurement if capacitance higher than  $600\mu\text{F}$ . In order to ensure the accuracy of measurement, it is recommended that all the capacitors should release completely before measurement. It is more important for the capacitor with high voltage to avoid damage to the meter and personal safety injury.

c. Disconnect the test lead from the measured capacitance after all measurement operations are completed.

d. Do not input higher than 36V AC and DC voltage signals at the capacitance range.

## **9. Frequency measurement**

(1). Insert the red test lead into the " $\text{V}\Omega\text{-Hz}\text{Live}^{\circ}\text{C}^{\circ}\text{F}$ " jack and the black test lead into the COM jack.

(2). Turn the knob to Hz, and connect the test leads in parallel to the measured signal source.



(3). Short press the SELECT/V.F.C button to switch the frequency or duty cycle test.

(4). Read the measured frequency or duty cycle value directly from the display.

 Note:

► When measuring frequency, it must meet the requirements of input amplitude a:

10Hz-100kHz:  $1V_{rms} \leq \text{input amplitude} \leq 20V_{rms}$ .

100kHz-10MHz:  $3V_{rms} \leq \text{input amplitude} \leq 20V_{rms}$ .

► Duty cycle: 10%-90% range is suitable for 10Hz-1kHz square wave; 30%-70% range is suitable for 1kHz-10kHz square wave; input amplitude:  $3V_{pp} \leq \text{input amplitude} \leq 20V_{pp}$ . Do not input the measured frequency voltage higher than  $20V_{rms}$  to avoid personal injury.

► Disconnect the test lead from the measured circuit after all measurement operations are completed.

## **10. Temperature measurement**

(1). Turn the meter knob to °C/°F, and the meter screen will display the current ambient temperature.

(2). Insert the temperature K-type plug into the corresponding hole.

(3). Use the temperature probe to measure the surface of the measured object, and read the measured Celsius value directly from the screen after a few seconds.

(4). Press the SELECT/V.F.C button to switch between Fahrenheit and Celsius measurement.

 Note:

a. The ambient temperature of the instrument should not exceed the range of 18-28°C, otherwise it will cause measurement error, which is more obvious in low temperature environment.

b. Do not input voltage higher than DC 42V or AC 30V to avoid personal injury.

c. Remove the temperature probe after complete all measurement operations.

### **11. Live Wire Recognition Live**

(1). Turn the knob to the NCV range, the meter defaults to NCV measurement, short press the SELECT/V.F. C button to switch the Live function, and the LCD displays Live.

(2). Insert the red test lead into the "  $V\Omega-H$  Live °C °F "

jack, and touch the measured position with the red test lead.

(3). If meter has audible and visual alarm, the tested wire connected to the red test lead is a live wire. If it is no change, the tested wire is not a live line.

 Note:

a. The range must be operated in accordance with safety rules.

b. This function only detects AC standard main live wire (AC 110V~AC 380V).

## **12. Non-contact AC voltage induction measurement NCV**

(1). Turn the knob to NCV range, the meter defaults to NCV measurement, and the LCD displays NCV.

(2). The NCV induction voltage range is 48V~250V. Put the upper part of the clamp head of the instrument close to the measured charged electric field (AC power line, socket, etc.), when the instrument sensing AC voltage electric field, the meter will display “----” and the buzzer issued "drop, drop" alarm sound. As the intensity of the induction electric field increases, the more horizontal sections


of "----" displays on the LCD, and the higher the sound frequency of the buzzer

## X. TECHNICAL CHARACTERISTIC

Accuracy calibration, ambient temperature  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , humidity less than 75%RH.

### 1. AC current ACA

Range	Accuracy	Resolution	Overload protection
60A	$\pm(4.0\%+10)$	0.01A	1000A
600A		0.1A	
1000A		1A	

 Frequency response: 50Hz~60Hz; Display: the current True RMS;

The accuracy is 5% to 100% of the range, and the open circuit of the current range allows  $\leq 10$  words of remaining readings;

When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

Long press the ZERO/INR button at the AC current range to perform the surge current test, and the screen appears character "INR", if long press it again,

the character INR will disappear.

## 2. Direct current DCA

Range	Accuracy	Resolution	Overload protection
60A	$\pm(4.0\%+10)$	0.01A	1000A
600A		0.1A	
1000A		1A	

⚠ Accuracy is 5% to 100% of the range, you can short press the ZERO button to clear the open circuit base value before test.

When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

## 3. AC voltage(V~)

Range	Accuracy	Resolution	Overload protection
6V	$\pm(1.0\%+10)$	0.001V	1500VDC/ 1000VAC
60V		0.01V	
600V	$\pm(1.0\%+12)$	0.1V	
1000V		1V	

⚠ Display: Voltage True RMS;

Input impedance:  $\geq 10M\Omega$ ;

Frequency response: sine wave and triangle wave

40Hz~1k Hz;

Press the V.F.C button at the AC voltage range to switch the low-pass filter measurement;

V.F.C low-pass filter frequency response: sine wave and triangle wave 40Hz~200Hz;

V.F.C low-pass filter measurement accuracy is  $\pm (5.0\%+10)$

The accuracy is 5% to 100% of the range, and the voltage range short-circuit allows  $\leq 5$  words of remaining readings.

#### 4. DC voltage


Range	Accuracy	Resolution	Overload protection
600mV	$\pm (0.5\%+7)$	0.1mV	1500VDC / 1000VAC
6V		0.001V	
60V		0.01V	
600V	$\pm (1.0\%+10)$	0.1V	
1500V		1V	

Input impedance:  $\geq 10M\Omega$ ;

The accuracy is 5% to 100% of the range, and the voltage range short-circuit allows  $\leq 5$  words of remaining readings.

## 5. Low impedance AC voltage LowZ V~

Range	Accuracy	Resolution	Overload protection
6V	$\pm (1.0\%+10)$	0.001V	300V DC/AC
60V		0.01V	
300V	$\pm (1.0\%+12)$	0.1V	

 Display: AC voltage True RMS;

Input impedance:  $\leq 3\text{k}\Omega$ ;

Frequency response: sine wave and triangle wave  
40Hz~1k Hz;

The accuracy is 5% to 100% of the range, and the voltage range short-circuit allows  $\leq 5$  words of remaining readings.

## 6. Resistance

Range	Accuracy	Resolution	Overload protection
600 $\Omega$	$\pm (1.0\%+5)$	0.1 $\Omega$	250V DC/AC
6k $\Omega$		0.001k $\Omega$	
60k $\Omega$		0.01k $\Omega$	
600k $\Omega$		0.1k $\Omega$	
6M $\Omega$		0.001M $\Omega$	

20M $\Omega$	$\pm (1.5\%+15)$	0.01M $\Omega$	
60M $\Omega$	$\pm (2.5\%+20)$	0.01M $\Omega$	

Open circuit voltage: about 1V;

The accuracy is 5% to 100% of the range.

### 7. Continuity test

Range	Accuracy
600 $\Omega$	The resistance value of the circuit disconnection is set to $>50\Omega$ , and the buzzer does not sound; the resistance value of the good circuit is set to: $\leq 50$ , and the buzzer sounds continuously.

Resolution: 0.001 $\Omega$

Open circuit voltage: about 2V

Overload protection: 250V AC/DC

### 8. Diode test

Range	Accuracy
3.3V	The open circuit voltage is about 3.9V, and the PN junction can be measured $\leq 3.9V$ the forward voltage drop value. The normal voltage value of the silicon PN junction is about 0.5~0.8V.

Resolution: 0.001V




Open circuit voltage: about 3.9V

Overload protection: 250V AC/DC

## 9. Capacitance

Range	Accuracy	Resolution	Overload protection
1nF	$\pm (5.0\%+40)$	0.001nF	250V AC/DC
10nF	$\pm (5.0\%+10)$	0.01nF	
100nF		0.1nF	
1 $\mu$ F		0.001 $\mu$ F	
10 $\mu$ F		0.01 $\mu$ F	
100 $\mu$ F		0.1 $\mu$ F	
1mF		0.001mF	
10mF		0.01mF	

 Measured value = measured display value - test lead open circuit value.

Measurement  $\leq 1\mu\text{F}$ , it is recommended to use REL mode to measure and deduct open circuit readings. The accuracy is 5% to 100% of the range.

Large capacitance response time:  $\geq 1\text{mF}$  about 8s; measurement error does not include lead distributed capacitance.

## 10. Frequency Hz / Duty Cycle%

Range	Accuracy	Resolution	Overload protection
10Hz-10MHz	$\pm (0.3\%+3)$	0.01Hz-1kHz	250V DC/AC
10.0%-90.0%		0.1%.	

**△** Frequency input amplitude requirements:

10Hz-100k Hz:  $1V_{rms} \leq \text{input amplitude} \leq 20V_{rms}$ .

100k Hz-10MHz:  $3V_{rms} \leq \text{input amplitude} \leq 20V_{rms}$ .

Duty cycle:

10%-90% range, suitable for 10Hz-1k Hz square wave;


30%-70% range, suitable for 1k Hz-10kHz square wave;

Input amplitude:  $3V_{pp} \leq \text{input amplitude} \leq 20V_{pp}$

### 11. Temperature test °C/°F

Range	Display range	Resolution
$(-20 \sim 1000) ^\circ\text{C}$	$<400^\circ\text{C} \pm (2.0\%+5)$ $\geq 400^\circ\text{C} \pm (1.5\%+15)$	1°C
$(-4 \sim 1832) ^\circ\text{F}$	$<752^\circ\text{F} \pm (2.0\%+5)$ $\geq 752^\circ\text{F} \pm (1.5\%+15)$	1°F

Overload protection: 250V DC/ AC RMS


 The accessory is equipped with a type K (nickel-chromium-nickel-silicon) thermocouple.

If the difference of the ambient temperature inside the machine reaches  $\pm 5^{\circ}\text{C}$ , the accuracy is available after 1 hour.

Open circuit displays the current ambient temperature.

## **XI. INSTRUMENT MAINTENANCE**

1. The power supply of this product is 2 AAA batteries, if the meter meets following conditions, please replace the batteries.

- (1). When LCD displays low battery "" symbol.
- (2). When the brightness of the LCD backlight decreases.
- (3). When the buzzer sound of the meter becomes smaller.

2. General maintenance

(1). The maintenance and service of this instrument must be completed by professional maintenance personnel or designated maintenance service department.

(2). Please take out the battery when it is not used for a long time to avoid corrosion of the instrument caused by battery leakage.

(3) Pay attention to waterproof, dustproof and anti-fall.