**UA666D**

**Digital AC DC Current Clamp Meter**

**Manual**

**Catalogue**

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**1. Safety Instructions**

|  |
| --- |
| **Warning****To avoid electrical shock or injury, Please read the "Safety Information" and "Warning and related Notes" before used.****In order to make full use of the function of the instrument and to ensure the safety , please read and follow the use of this specification in carefully.** |

This instrument strictly follow GB/T 13978-92 Generic specification for Digital Clamp meter, In accordance with GB4793.1-1995（IEC-61010-1, IEC-61010-2-032）Electronic measuring instruments safety requirements，Belong to the two class of pollution，Voltage standard CAT III 600V

Please follow the safety instructions, ensure the safety of the use of the instrument.

use and protect the item in right condition, the instrument will in satisfactory service.

**1.1 Preparation**

1.1.1 user must comply with the standards of safety rules when use it：

- Protection against electric shock

- To prevent the misuse of the instrument

1.1.2 After receiving instrument, check whether the damaged in transit.

1.1.3 Check and confirm the meter whether damaged or not after shipment,

1.1.4 Test leads must be in good condition. Check the insulation test is damaged, the wire conductor is bare before use,

1.1.5 Use the test leads to ensure safety, it must be replaced with the same or similar rank test if necessary.

**1.2 Use**

1.2.1 Use the correct function and range.

1.2.2 Do not exceed the scope of protection of the range of the indicating value measurement. Do not exceed the scope of protection of the range of the indicating value measurement

1.2.3 When measuring circuit, do not touch the test lead tip (metal parts).

1.2.4 In the measurement, if the measured voltage is higher than 60V DC or 30V AC (RMS), attention should be paid to keep your fingers always after the test finger protection device.

1.2.5 If the voltage between the measuring end and the earth more than AC 600V, don’t measure the voltage.

1.2.6 Before turning the switch changes the measurement function, should be removed test test lead from the circuit

1.2.7Don't live line measurement of resistance, capacitance, diode and continuity test

1.2.8Under the test range off current, resistance, capacitance, diode and continuity test, it should be taken to avoid the instrument connected voltage source.

1.2.9 Capacitor is fully discharge, don't test capacitance

1.2.10 Do not use this instrument in the gas, steam or dust

1.2.11If you notice any abnormal or faulty instruments, should stop using

1.2.12 unless the instrument bottom shell and the battery cover is fastened in situ; it should not use the instrument.

1.2.13Do not store or use the instrument in direct sunlight, 1) When the measured capacitance less than 10 nF, The distributed capacitance of the meter and conductor should be subtracted. Can select relative test mode to test . ( at capacitance mode press button**1.3Mark**

 Note (safety information, important see instructions）

 Can be used for dangerous live conductor.

 Double insulation protection（II）

**CAT III** In accordance with theIEC-61010-1Over voltage standard level (installation) III、The pollution degree of 2 refers to the pulse voltage protection levels.

In line with European standards (EU)

Grounding

**1.4 Maintenance**

1.4.1 Please do not attempt to test lead the shell to adjust or repair instrument, this operation can only be fully understood by technicians

1.4.2 Before test leading the instrument bottom shell and the battery cover, should be removed the test lead from the measured line test lead

1.4.3 In order to avoid false readings may cause electric shock, when the instrument display “” symbol，

The battery should be replaced immediately.

1.4.4 Use a damp cloth and a mild detergent to clean the instrument; do not use abrasive detergents or solvents.

1.4.5 The instrument when not in use should turn off the power,

1.4.6 If you do not use a meter long time, the battery should be removed to prevent damage to the instrument.

**2. Description**

- The instrument is an professional measuring instrument with liquid crystal display and a back light source. The user readings in easily. Single hand operation with overload protection and low battery indicator. For professional, factory, school, lovers or family use, is an ideal Multi-function instrument.

- Used for AC DC voltage、AC current, frequency, resistance, capacitance measurement and the on-off circuit, measurement, temperature measurement .

- Automatic range

- Data keep

- Auto power off

- Relative measurement

**2.1 Part name**

⑴ Current clamp head: For current measurement

⑵ The torch of head lamp

⑶ Panel

⑷ Reading / backlight button（ ）

⑸ LCD Monitor

⑹ Common socket

⑺ Resistor, voltage, capacitance, frequency and diode test Continuity input jack

(8)Torch and relative value button

(9) NCV button and alarm

(10) Power button ( )

(11)NCV zone



**2.2 Switches and buttons instructions**

 Button used to control reading or backlight.

**NCV**：Used for NCV function。

 **:** Power on and off。

 : Voltage, resistance, frequency of the input terminal.

**COM**: Voltage, resistance, frequency of the common terminal.

**2.3 LCD显示器**



|  |  |
| --- | --- |
| **T-RMS** | Ture RMS |
| **DC、AC** | DC and AC current |
| 按键表傻瓜表面板图 负功能符号 | Negative readings |
| **智能钳表丝印图2019A 003（晶华微） - 副本** | Low battery |
|  **REL** | Relative value |
| 智能钳表丝印图2019A （晶华微008） - 副本 | Square output |
| **HOLD** | Data hold |
| **AUTO** | Auto mode |
| **APO** | Auto power off  |
| **MAX、MIN** | max and min value |
| 智能钳表丝印图2019A009 （晶华微） - 副本 | Torch |
| 按键表傻瓜表面板图 二极管符号 | Diode test |
| 按键表傻瓜表面板图 功蜂鸣器符号 | Continuity |
| **℃ ℉** | Temperature |
| **Ω, kΩ, MΩ** | resistance |
| **Hz, kHz，MHZ** | frequency |
| **nF,μF，mF** | Capacitance |
| **NCV** | Non-contact voltage test |
| **μA,mA,A** | Current |
| **mV, V** | Voltage |
| **%** | Duty ratio |

**3. Specifications**

The instrument shall specify the period of one year，during in 18℃ ～ 28℃、The relative humidity is less than 75% under the conditions of re calibration.

**3.1 Overview**

Automatic measurement and manual measurement

Overload protection

The maximum voltage allowed between the measuring terminal and earth：600V DC or 600V AC

 Display：LCD

Maximum：5999 display

Polar indication：Automatic indicator，‘-’,Display negative

Over range display：‘0L’ or ‘-0L’。

Sampling time: about 3 times / sec

Display unit and power display

Automatic power off：10Minutes

Open Jaw is 25mm; test Line OD less than23mm

Power：DC current 3V；

Battery type：1.5V AAA

Battery voltage indication：LCD Symbol

Temperature coefficient：less 0.1

operating temperature：18℃ ～ 28℃

Storage temperature：-10℃ ～ 50℃

 Size：184.0×66.0×32.5mm

weight：about 190g（Including battery）

**3.2 Technical indicators**

Environment temperature：23±5℃ Relative humidity：<75%

**3.2.1 AC Current**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 60A | 0.01A | ±（2.5% + 8） |
| 400A-600A | 0.1A | ±（3.0% + 10） |

-Min input current：0.8A AC

- Max input：600A AC

- Frequency：45Hz ~65Hz

- When ac current is measured, the meter automatically opens an internal low-pass filter to filter out high-frequency current.

**3.2.2 DC Current**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 60A | 0.01A | ±（2.0% + 8） |
| 600A | 0.1A |

-Min input current：0.9A AC

- Max input：600A AC

**3.2.3 DC voltage**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 6V | 0.001V | ±（0.5% + 3） |
| 60V | 0.01V |
| 600V | 0.1V | ±（0.8% + 5） |

- Min/ input voltage：0.9V DC

- Input impedance：10MΩ

-Maximum/ input voltage：600V AC （Effective value）OR 600V DC

**3.2.4 AC voltage**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 6V | 0.001V | ±（1.0% + 5） |
| 60V | 0.01V |
| 600V | 0.1V | ±（1.2% + 5） |

- Min/ input voltage：1.0V DC

-Input impedance：10MΩ

- Maximum/ input voltage：600V AC （Effective value）or 600V DC

- Frequency range：40Hz ~1000Hz

**3.2.5 Frequency**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 99.99Hz | 0.01Hz | ±（0.1% + 2） |
| 999.9Hz | 0.1Hz |
| 9.999kHz | 0.001kHz |
| 99.99KHZ | 0.01kHZ |
| 999.9KHZ | 0.1KHZ |

- Overload protection：250V DC or AC（Effective value）

- Input voltage ：≥ 200mV~10VPP（Effective value）

**3.2.6** **Capacitance**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 6.000nF | 0.001nF | ±（5.0% + 20） |
| 60.00nF | 0.01nF | ±（2.0% + 5） |
| 600.0nF | 0.1nF |
| 6.000μF | 0.001μF |
| 60.00μF | 0.01μF | ±（2.0% + 5） |
| 600.0μF | 0.1μF |
| 6.00mF | 0.001mF | ±（5.0% + 5） |
| 60.00mF | 0.01mF | Not define |

- Overload protection：250V DC or AC（Effective value）

**3.2.7 Temperature test**

|  |  |  |
| --- | --- | --- |
| Range | Accuracy | Resolution |
| －20℃－300℃ | ±(1.0%+4d) |  1℃ |
| 301℃－1000℃ | ±(1.9%+5d) | 1℃ |
|  -4℉－600℉ | ±(1.2%+6d) | 1℉ |
| 601℉－1832℉ | ±(1.9%+6d) | 1℉ |

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

**3.2.8 Resistance**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Accuracy |
| 6kΩ | 0.001kΩ | ±（0.8% + 3） |
| 60kΩ | 0.01kΩ |
| 600kΩ | 0.1kΩ |
| 6MΩ | 0.001MΩ | ±（1.2% + 3） |
| 10MΩ | 0.1MΩ |

- Overload protection：600V DC or AC（Effective value）

**3.2.9 Diode test**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Function |
|  | 0.001V | Show the approximate diode forward voltage value |

- Positive DC current 1mA

- Reverse DC voltage 3.0V

- Overload protection：250V DC or AC（Effective value）

**3.2.10 Continuity test**

|  |  |  |
| --- | --- | --- |
| Range | Resolution | Function |
|  | 0. 1Ω | If the measured line resistance is less than 50, enclosing the instrument may sound a buzzer |

- Overload protection：600V DC or AC（Effective value）

**4. Operations Guide**

**4.1 Data keep**

In the process of measurement, such as the need to keep reading, push“H/ ”key，The display value will be locked, then press the button so that relieve reading。

**4.2 Backlight and lighting clamp head Torch**

1）if the ambient light is too dark, difficulties to get resulting, press the “ H/ ”key more than 2seconds，Open the back light, automatically shut down in about 30 seconds.

2) Press the  button 2 second, then can open the torch. The torch cannot auto power off. Need press above button again.

**4.3 Automatic power off**

1）Without operation after 10 minutes ，The meter will enter the sleep state automatically shut down to save power. 2 minutes before the shutdown, each 1 minutes the buzzer 1 sound prompt, dormant into a long sound after that before the shutdown.

**4.4 Measurement**

1）Toggle the switch and open power, If the battery and voltage

Is not enough（about≤2.4V

The LCD display“”symbol then the battery should be replaced

2） “”symbol，The input voltage or current should not exceed the value indicated, this is to protect the internal circuit from being damaged.

3）Connect the public test line, and then connected test line is When in wiring, The test should be removed first line charged dismantling wiring.

**4.5 AC Current measurement**

|  |
| --- |
| **Warning****An electric shock hazard.****In current clamp measurements before the test probe is removed from the instrument.** |

1）Hold the trigger, open the pliers, and clamp a wire of the circuit under test in the pliers。

 2）When the measured signal is greater than or equal to 0.02A, the main screen of the instrument will display the measured current value, and the secondary screen will display the frequency value of the current (note: the meter will only display the frequency value if the current is greater than or equal to 0.02A)

**Noted**

1）On current test mode , should move off the V/R and COM test probe

2）The correct measurement results cannot be obtained by clamping two or more wires of the circuit under test at the same time.

3）In order to obtain accurate readings, the conductor under test should be placed as far as possible in the center of the current clamp.

4）“****Represents the maximum input ac current of 400A.

5）Please hold the clamp head when the current measurement machine to open the clamp head and nose pliers head clip conductor under test, and then slowly let go of the trigger, until the clamp head closed completely, please be sure to test whether the conductor is picking up in the middle of the tong head, not in the tong head center will produce additional error, clamp table can only measure electrical conductor, a conductor if two or more current is measured at the same time, the measuring reading will be wrong.

6) Meter can test current automatically, but the current need >0.8A , （need decrease the no-zero value ）if the test current very small ，then can press then change to manual range of AC current mode

**4.6 DC current measurement**

|  |
| --- |
| **Warning****An electric shock hazard.****In current clamp measurements before the test probe is removed from the instrument.** |

1）Hold the trigger, open the pliers, and clamp a wire of the circuit under test in the pliers。

 2）When the measured signal is greater than or equal to 0.02A, the main screen of the instrument will display the measured current value, and the secondary screen will display the frequency value of the current (note: the meter will only display the frequency value if the current is greater than or equal to 0.02A)

**Noted**

1）On current test mode , should move off the V/R and COM test probe

2）The correct measurement results cannot be obtained by clamping two or more wires of the circuit under test at the same time.

3）In order to obtain accurate readings, the conductor under test should be placed as far as possible in the center of the current clamp.

4）“****Represents the maximum input ac current of 400A.

5）Please hold the clamp head when the current measurement machine to open the clamp head and nose pliers head clip conductor under test, and then slowly let go of the trigger, until the clamp head closed completely, please be sure to test whether the conductor is picking up in the middle of the tong head, not in the tong head center will produce additional error, clamp table can only measure electrical conductor, a conductor if two or more current is measured at the same time, the measuring reading will be wrong.

6) Meter can test current automatically, but the current need >0.9A , （need decrease the no-zero value ）if the test current very small ，then can press then change to manual range of DC current mode



**4.7 Voltage measurement**

|  |
| --- |
| **Warning** **An electric shock hazard.** **When the measurement of high voltage, please pay special attention to avoid electric shock** **Do not enter the effective value of voltage higher than AC600V** |

1) Use black test lead is inserted into the COM socket, the red test lead is inserted into the socket,

2） Connect the other two ends of the meter pen to the voltage source or load for measurement

 3 ）Read the voltage value on the LCD

**notice：**

1）when the measured signal is greater than or equal to 0.5v, the meter will display the dc voltage of course measured; When the measured signal is less than 0.5v, the meter will default to the resistance value and display the internal resistance value of the measured signal.

2）“****”show the maximum input voltage is 600V AC or 600V DC.

3） If the instrument to measure more than 600V AC, issued an alarm

4) Can select test the voltage manually

**4.8 Resistance test**

|  |
| --- |
| **Warning****The risk of electric shock****In the measurement of impedance on the line, should be determined to disconnect the power supply circuit, capacitor circuit completely discharge.** |

1. Use black test lead is inserted into the COM socket, the red test lead is inserted into the socket

2）Use the test lead connected with the voltage source or load to measurement

3）Display readings on LCD

**notice：**

1) When the measured resistance is more than 10 m Ω, LCD will display "--" outrange state; When the measured resistance is less than 50 Ω instrument buzzer will send out alarm

 2）If the measured resistance value is higher than 1**M**Ω, the instrument may take a few seconds to stable reading, it is normal for high resistivity readings

**4.9 Capacitance test**

|  |
| --- |
| **Warning****The risk of electric shock****In the measurement of impedance on the line, should be determined to disconnect the power supply circuit, capacitor circuit completely discharge.** |

1. Use black test lead is inserted into the COM socket, the red test lead is inserted into the socket

3）Capacitor circuit completely discharge then do the capacitance measurement

4）Display readings on LCD

**notice：**

1) When the measured capacitance less than 10 nF, The distributed capacitance of the meter and conductor should be subtracted. Can select relative test mode to test . ( at capacitance mode press button

**4.10 Frequency test**

|  |
| --- |
| **Warning****The risk of electric shock****In the measurement of impedance on the line, should be determined to disconnect the power supply circuit, capacitor circuit completely discharge.** |

1. Use black test lead is inserted into the COM socket, the red test lead is inserted into the socket

2）Use the test lead connected with the voltage source or load to measurement

3）Display readings on LCD

**notice：**

1) When the measured resistance is less than 10 Hz, LCD will display "0.00" When the measured resistance is less than 10MHZ, the instrument can test but the test resolute is not accuracy.

**4.11 Temperature Measurement**

|  |
| --- |
| **Warning****Do not enter a temperature higher than 60V AC voltage 30V AC voltage to avoid damage or instrument damage** |

1) Turn the switch to the temperature measurement position and select (press " ") Celsius or Fahrenheit as required.

2) Connect the negative terminal (black) and the positive terminal (red) of the K type thermocouple to the **COM** input jack and input jack separately.

3) The other end of the thermocouple (test side) close to the surface of the measured object.

4) To be read by the liquid crystal display to read the measured temperature value.

**Note：**

K-type thermocouple distribution of the highest measurement temperature of 250

**5. Non-contact voltage detector NCV**

|  |
| --- |
| **Warning** |
| **Even if no indication but the voltage may still exist. Don't rely on non contact voltage detector to determine whether there is a voltage shielded wire. The operation may affect the detection by socket design, insulation thickness and different types** |

Press NCV button， “NCV”symbol， When clamp head close to mains phase line or power switch, socket the detected voltage is close to the 110V（AC RMS），display “－”，When the induction voltage is higher，display “－” will became much more ，With buzzer alarm.（This instrument also set a clamp head AC induction signal function, used to clamp head near line or by an electric switch and electric socket. When using this 15function, don't insert test leads

**Noted:**

1. Even if there is no alarm indication, the voltage may still exist. Do not rely on contactless voltage detectors to determine whether the shielding line has a voltage. Probe operation may be affected by socket design, insulation thickness and type.

2) In NCV detection mode, the meter does not simultaneously measure voltage, resistance, and current.

**6. Maintenance**

**6.1 Replace the battery**

|  |
| --- |
| **Warning****Before opening the instrument of the battery cover, please removed the test leads from measuring circuit so that to avoid the risk of electric shock.** |

1) if “”symbol display，please replace the battery。

2) Unscrew fastening screws of the battery cover and move away.

3) replace the old battery

**notice：**

The battery polarity cannot be reversed

**6.2 Change Test Leads**

|  |
| --- |
| **Warning****Please use the same test leads or same level test leads** **if you need replace the test leads . the test leads level: 1000V 10A.** |

If one damaged insulation, such as wire wire exposed, must be replaced.

**7. Accessories**

|  |  |  |  |
| --- | --- | --- | --- |
| 1） | Test lead | level：1000V 10A | one |
| 2） | Manual |  | one |
| 3） | battery | 1.5V AAA  | two |

﹡The contents of this manual are subject to change without notice

﹡The contents of this brochure is believed to be correct, if users find errors, please contact the manufacturer.

﹡The company is not responsible for the accident and harm caused by user wrong operation \*

﹡This manual describes the function, not for other special use

**Warranty**

Please show your product certification when you need repair service or something wrong with items, it is effective show one and purchase invoice in together

 1）Please contact with our company or repair service department when your clamp meter appear faults as soon as possible, don't delay your use and warranty period.

 2）Our company provide warranty service for one year from the date of purchase。The company provides free warranty service after professional confirm the problem is not by user sabotage during the warranty period

 3）Repair need charges (repairs components fee) more than the warranty period

 4）All of the following will charge the cost of repair even in the warranty period.

 ⑴Improper use or accidental disasters caused damage of components and circuit board burn

⑵Non-professional personnel open shell, check and modification

⑶Does not follow the instructions to operation caused problems⑷No maintenance and repair of the other company products

⑸users offer the maintenance of postage and transportation fees

⑹Clamp meter’s battery, probe, temperature probe and other functional accessories not included free warranty list