

# Metrix+™ 1250A Operating Instruction

## I. General introduction

Welcome to use this product!

This product is one kind of 3 1/2 portable multipurpose automatic measuring range instrument, may measure the AC/ DC voltage, the AC current, resistance, frequency, capacitance, continuity test, diode. The measuring appliance is loaded with guards against the surge electric discharge, protect the appliance to be more effective. This measuring appliance structure is exquisite, the operation is easy, it is your ideal test service tool!

## II. Safety Rules and Notes

2.1 The instrument design conforms to EN1010-1 1000V CATII Safety requirements for standards. Please read this manual carefully before use.

 Warning, be careful!

 Danger of being hit by high-pressured electric!

 Dual insulation protection.

2.2 when measure, do not surpass the greatest stipulated input value.

2.3 In the process of measuring, do not turn switch to change the measuring range at random, in case to destroy the measuring appliance.

2.4 The measuring appliance can display the mark while the voltage is bigger than DC36V and AC25V, remind the user that the measured voltage has surpassed the safety voltage, please operate carefully.

2.5 measuring appliances should avoid the straight sunlight, the high temperature, and moisture.

2.5 after use, must release the power switch to turn off the power

2.7 if it doesn't use for a long time, should take out the battery, in case the battery leaks to damage the parts.

## III. Features

### 3.1 General Features

3.1.1 take the CMOS big scale integrated circuit as the core, in AC / DC voltage, the AC electric current, the resistance, the frequency and the electric capacity measure it can automatically transform the measuring range, making it more convenient.

3.1.2 greatest display: 1999

3.1.3 automatic cathode display: Displays " - "

3.1.4 Maximum span of jaw: 30mm.

3.1.5 batteries insufficient display: Displays "".

3.1.6 Auto power OFF

After turning on the instrument and without turning the function switch or pressing any button, the instrument will automatically enter into sleep mode after 15 minutes, to save battery power. when it is in the sleep mode you can press the any button to wake up the instrument. If you don't need the automatic sleep mode, you should hold down the SELECT button to turn on the instrument, and then the symbol "⊕" will not be display on the LCD.

3.1.7 working condition: 0°C~40°C, 75%RH (max)

3.1.8 storage environment: -10°C~60°C, 80%RH (max)

3.1.9 battery : 3V (AA1.5V×2)

3.1.10 External dimensions: 249 (L) × 89 (W) × 38 (H) mm

3.1.11 Weight: About 360g (including battery's weight)

### 3. 2 Technical index

Accuracy: ± (% reading + word count) , Guarantee period of one year

Guaranteed accuracy Temperature: 23 ° C ± 5 ° C

Relative humidity: < 70%.

#### 3. 2. 1 DCV

Range	Accuracy	Resolution
200mV	±(0.5% of rdg + 5 digit )	0.1mV
2V		1mV
20V		10mV
200V		100mV
1000V	±(0.8% of rdg + 5 digit )	1V

Input resistance: about 10MΩ.

Overload protection :DC/AC 600V.

#### 3. 2. 2 ACV

Range	Accuracy	Resolution
2V	±(1.2% of rdg + 5 digit )	1mV
20V		10mV
200V		100mV
700V		1V

Input resistance : about 10MΩ. Frequency: 10Hz~1kHz.

display: TRUE RMS(sinusoidal waveform RMS calibration).

Overload protection: 1000V Peak value

frequency function, then carry on measure. Frequency measurement range is 10~20KHz.

#### 3.2.3 ACA

Range	Accuracy	Resolution
2A	±(2%rdg+10digit)	1mA
20A		10mA
200A		100mA
1000A		1A

AC Conversion Type: TRUE RMS responding, calibrated readings consistent with sinusoidal waveform RMS. Frequency Range:50~60Hz.

#### 3.2.4 resistance Ω

range	Accuracy	Resolution
200Ω	±(0.8% of rdg + 5 digit )	0. 1Ω
2KΩ		1Ω
20KΩ		10Ω
200KΩ		100Ω
2MΩ	±(2% of rdg + 5 digit )	1KΩ
20MΩ		10KΩ

Overload protection : 250Vvirtual value.

Open voltage approximately :1V

#### 3.2.5 Capacitance

Range	Accuracy	Resolution
20nF	±(3% of rdg + 10 digit )	0.01nF
200nF		0.1nF
2uF		1 nF
20uF		10nF
200uF		100nF
2mF		1uF

Overload protection : 250Vvirtual value.

#### 3.2.6 FREQ

Range	Accuracy	Resolution
200Hz	±(0.5% of rdg + 5 digit )	0.1Hz
2kHz		1 Hz
20kHz		10 Hz
200kHz		10 0Hz
2MHz		1k Hz
20MHz		10k Hz

Overload protection : 250Vvirtual value, input delicacy:2V.

Caution: if the measured frequency is above 30V, please push "SELECT" key at AC electric voltage measuring range to get to the frequency function, then carry on measure.

#### 3. 2. 7 Diode positive voltage

Display of similar diode positive voltage. Measuring condition: positive DC electric current 1mA, reverse DC voltage approximate 2.2V.

#### 3. 2. 8 Continuity Test

When the transited resistance is smaller than about 50Ω,the buzzer beeps. Test condition: Open-circuit voltage is about 2V.

## IV. Application method

(1) jaws (2) Trigger

(3) Rotary switch: This switch is used to select functions

(4) "SELECT" button: When push the key continuously, change the range of all function for a proper range you need.

(5) "RANGE" button: One may change the measuring range by pressing this button, push this key to cycle from small to large range of each function

(6) MAX-MIN button: This is the maximum and minimum data hold button that acts in a trigger mode. Press this key to display the MAX value, and then press this key to display the MIN value. Press the MAX/MIN button for more than 2 seconds to exit the data logging mode.

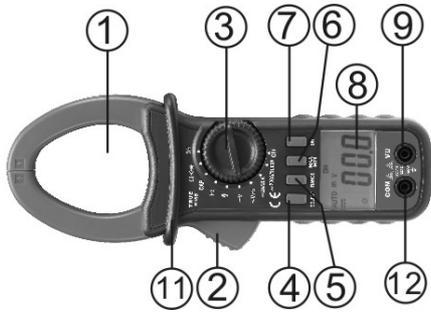
(7) "DH" button: The user may hold the present reading and keep it on the display by push the "DH" button. Press the button again to cancel the data-hold function

(8) LCD

(9) "VΩ"jack: This is positive input terminal

(10) "COM" jack: This is negative(ground) input terminal

(11) Barrier



#### 4.2 DC/AC voltage measure

Turn the Rotary switch to “V”. Then plug black lead in “COM” socket, and plug red lead in “VΩ” socket. connect the test lead with the two ends of the circuit and then directly read the reading on the LCD display .

If manually choose measuring scope is needed, press RANGE key to choose.

Don't measure the peak voltage more than 600V, otherwise it might damage the instrument ,if the screen only displays OL, it means that the tested voltage is higher than 610V.

3. Push the SELECT key in the ACV function to enter the voltage frequency measurement mode, it can measure the the frequency range from 10Hz to 20KHz with voltage higher than AC 2V~600V.

#### 4.3 Measurement of AC current

Turn the range switch into the range “~200A/600A”, clamp the wire of the measured current, shall put the wire into the canter of the completely closing clamp mouth as soon as possible, directly get the reading. When the reading is less, turn the range switch at ~2A/20A range to measure again.

Note:1. When measuring current ,the clamp might hold only one wire, it is null to catch one more another wire

#### 4.4 Resistances

- 1) turn the Range switch to the range to  $\Omega$  (with diode symbol) position, and this time the measuring appliance will be set for the resistance measuring range.
- 2) Insert red lead into the VΩ jack, black lead into " COM " jack.
- 3) Connect the pen with the beginnings and ends of the test circuit to read the resistance value.
- 4) If the manual choice measuring range scope is needed, push RANGE to choose.  
When the leads is overloaded input, display monitor can display " OL ".

#### 4. 5 Measurement of forward voltage of diode

(1) turn the Range switch to “ $\Omega$  (with diode symbol) (with arrow)” position. push “SELECT” key to (with arrow) measuring range. insert the red lead to “V/Ω” jack, insert the black lead to “COM” jack. (red pen “+”)

(2) connect the test leads to the two ends of the measured to read positive voltage.

(3) when the diode is reverse connected or the input end leads the way, the display monitor can display " OL ".

#### 4. 6 Continuity Testing

(1) Turn the Range switch to “ $\Omega$  (with diode symbol) (with arrow)” position, push “SELECT” key to (with diode symbol) measuring range. Insert red lead to “VΩ” jack, insert black lead to “COM” Jack.

(2)If the measured resistance is less than about 50Ω, the buzzer will beep. This is continuity testing.

##### ⚠Caution:

- a. when the input end leads the way, it displays “OL”.
- b. the measured circuit should be measured under the off-power condition , because any overload signal would make the buzzer beep, thus cause wrong measure.

#### 4. 7 Capacitance measure

**⚠Warning!** When measure the electric capacity, must guarantee the measured capacitor has sent the electricity out, if the big electric capacity contains the oversized non-electric capacity ingredient, possibly affects the measuring accuracy.

- (1) turn the Range switch to “CAP” position .
- (2) insert the red lead to “VΩ” jack, insert black lead to “COM” jack.
- (3) connect the test leads to the two ends of the measured capacitor, could get the capacity value.
- (4) capacity position can not set the measuring range manually, no simulation strip display. when the capacity value is big, the measure may need about 10 seconds .

#### 4. 6 Measurement of frequency

- (1) Turn the Rotary switch to “Hz” function.
- (2) Plug red test lead in “VΩ” terminal and plug black lead in “COM” terminal.
- (3) Connect the leads with measured circuit and then read the reading.
- (4)when the voltage exceeding 30V, please enter the Voltage frequency measurement mode by push the SELECT key in the “ACV” measurement function.

#### 4.10 Phase line recognition

Turn the Rotary switch to the “7” function, then the LCD display “EF”, Insert the red test lead into the VΩ jack. The black test lead can be used. The red test lead is in contact with or close to the live conductor or the electrical switch or socket. When a voltage is detected, the meter displays “---”. When the higher the induced voltage, the more the number of "-" is displayed, the denser the buzzer alarm sound flicker.

##### ⚠Caution:

1. even if there is no indication, voltage may still exist. Do not judge the wire whether there is voltage absolutely throught the non contact voltage testing, the testing may be effected by many factors such as the socket design, the insulation thickness and types etc.
2. Interference source of external environment, such as flash, motor etc, may false trigger the non contact voltage testing.

#### V. Maintenance

**⚠warning!** before open the cover or the battery cover, cut off the power source and test pen and any input signal, in case electric shock.

5. 1 when the meter displays “ $\square \pm$ ”, must replace the battery. Open the battery cover, replace with the same type new battery to keep it work well.
5. 2 keep the meter and test pen clean, dry and not damaged, could use the clean cloth or cleanser to clean the cover, do not use abrasive or solvent.
5. 3 avoid damage, shake, shock, avoid high temperature and strong magnetic field.
5. 4 should be corrected at least once per year

#### VI. Accessories

- 6.1 Test lead: 1 set
- 6.2 users manual: 1 piece