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## Operating Instructions



The unit complies  
with the applicable  
EC regulations



Fig. 1: 07124-12 Digital multimeter, 600V AC/DC, 10A DC, 20 MΩ

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## 1 SAFETY INSTRUCTIONS



- Check the meter cover before use. Do not use this meter if broken or damaged.
- Use only safety connecting cords.
- Check the insulation of the test leads, whether it is damaged or its conductor is exposed or whether the test leads are bent. If the test leads are damaged in some way, change to a new one first and then use this meter.
- Checking the meter: measure the voltage. If the meter does not work properly, do not use it and send it back for repair.
- Do not input the voltage which exceeds the rated voltage of the meter on the input terminal.
- Avoid operating the meter when exposed to more than 60V DCV or 30V ACV, resulting in possible electric shock.
- Choose an appropriate input terminal and range.
- Do not measure voltage and current above their measurement ranges. When not sure about the range, turn to the MAX range and test. Before continuity measurement (online), cut off the power of the circuit which is under test and keep all the capacitance out of power.
- When using the test leads, keep your fingers behind the ring guard.
- Do not use or stock the meter under high temperature, high humidity, under flammable or combustible conditions and in a strong electromagnetic field.
- When doing maintenance, please use a soft cloth and neutral detergent to clean the surface. Do not use any abrasive or solvent, otherwise it will corrode the cover and cause damage.

## Safety symbols



Exists dangerous voltage



GND



Dual insulation



Refer to the safety instructions



Low battery

## 2 PURPOSE AND CHARACTERISTICS

The instrument is a pocket digital multimeter which is used to measure DCV, ACV, and DCA, and perform resistance, diode and continuity tests.

### Safety Notes



1. Do not input a value above the range when measuring.
2. When measuring voltage higher than 36V DCV, 25V ACV, check the connection and insulation of the test leads to avoid electric shock.
3. Keep the test leads away from the testing point when changing measurement function and range.
4. Don't add voltage to the input terminal when measuring resistance.

## 3 GENERAL CHARACTERISTICS

1. Display: 22mm digit height LCD display
2. Max. indication: 1999 (3<sup>1</sup>/<sub>2</sub>) auto polarity indication
3. Sampling rate: approx. 3 times/ sec
4. Above-range Indication "1" is displayed
5. Low-battery indication: " " symbol is displayed
6. Operation environment: (0~40)°C, relative humidity <80%
7. Power: 9V battery (NEDA1604/6F22 or equivalent)
8. Dimensions: 145×85×30mm (length×width×height)
9. Weight: approx. 170g (including 9V battery)
10. Accessories: Operating manual, test leads and 9V battery

## 4 TECHNICAL DESCRIPTION

Accuracy:  $\pm (a\% \times \text{reading} + d)$

Environment: (23±5)°C

Relative humidity <75%

### 4.1 DCV

Range	Accuracy	Resolution
200 mV	$\pm(0.5\%+4)$	100 $\mu$ V
2 V		1 mV
20 V		10 mV
200 V		100 mV
600 V	$\pm(1.0\%+5)$	1 V

- Input impedance: 1M $\Omega$  for all ranges.

### 4.2 ACV

Range	Accuracy	Resolution
200 V	$\pm(1.2\%+10)$	100 mV
600 V		1 V

- Input impedance: 1M $\Omega$ .
- Frequency response: (40~200)Hz

### 4.3 DCA

Range	Accuracy	Resolution
20 $\mu$ A	$\pm(1.5\%+3)$	0.01 $\mu$ A
200 $\mu$ A		0.1 $\mu$ A
2 mA		1 $\mu$ A
20 mA		10 $\mu$ A
200 mA		100 $\mu$ A
10 A	$\pm(2.0\%+5)$	10 mA

- Max. input current: 10A (no more than 6 seconds).
- Overload protection: 200mA/250V; 10A/250V fuses.

### 4.4 Resistance

Range	Accuracy	Resolution
200 $\Omega$	$\pm(0.8\%+5)$	0.1 $\Omega$
2 k $\Omega$	$\pm(0.8\%+3)$	1 $\Omega$
20 k $\Omega$		10 $\Omega$
200 k $\Omega$		100 $\Omega$
20 M $\Omega$	$\pm(1.0\%+15)$	10 k $\Omega$

- Overload protection: 250V DC/AC peak value



**Note:** At range 200 $\Omega$ , first short-circuit the meter pens to measure the wire resistance. Then subtract it from the real measurement.

### 4.5 Diode and continuity test

Range	Display	Testing condition
	Forward voltage drop of diode	Forward DCA is approx. 1mA, Backward voltage is approx. 3V
	Buzzer makes a long sound while resistance is less than (70±20) $\Omega$	Open voltage is approx. 3V

- Overload protection: 250V DC/AC peak value

### 4.6 DC voltage measurement

1. Apply the black test lead to the "COM" terminal and the red test lead to the "V/ $\Omega$ " terminal.
2. Set the knob to a proper DCV range and connect the test leads diagonally to the electric circuit under test. The LCD displays polarity and voltage under test connected by the red test lead.



#### Safety notes:

1. The knob should be set to the highest range if the range of voltage under test is not yet known. Then select the proper range based on the display value.

2. If "1" is displayed, it means the meter is above range. Set the knob to a higher range.
3. Do not attempt to input voltage above 600V. Otherwise it may damage the circuit of the meter.
4. Avoid touching high voltage circuit when measuring it.

#### 4.7 AC voltage measurement

1. Apply the black test lead to the "COM" terminal and the red test lead to the "V/Ω" terminal.
2. Set the knob to a proper ACV range, and connect the test leads diagonally to the electric circuit under test.



##### Safety notes:

1. The knob should be set to the highest range if the range of voltage under test is not known. Then select the proper range based on the display value.
2. If "1" is displayed, it means the meter is above range. Set the knob to a higher range.
3. Do not attempt to input voltage above 600Vrms. Otherwise it may damage the circuit of the meter.
4. Avoid touching high voltage circuit when measuring it.

#### 4.8 DC current measurement

1. Apply the black test lead to the "COM" terminal and the red test lead to the "V/Ω" terminal (max. 200mA), or put the red test lead to "10A" terminal (max. 10A).
2. Set the knob to the proper DCA range and connect the test leads in series to the electric circuit under test. The LCD displays the polarity and current value under test connected by the red test lead.



##### Safety notes:

1. The knob should be set to the highest range if the range of voltage under test is not yet known. Then select the proper range based on the display value.
2. If "1" is displayed, it means the meter is above range. Set the knob to a higher range.
3. The max. input current is 200mA or 10A (depending on the insert position of the red meter pen). Excessive current will melt the fuse. When measuring, if the meter has no reading display, please check the corresponding fuse.

#### 4.9 Resistance measurement

1. Apply the black test lead to the "COM" terminal and the red test lead to the "V/Ω" terminal.
2. Set the knob to the proper resistance range and connect the leads diagonally to the resistance under test.



##### Note:

1. The LCD displays "1" when the resistance is above the selected range. The knob should be adjusted to a higher range. When resistance under test is above 1MΩ, the reading will be stable within a few seconds, which is standard when measuring high resistance.
2. When the input terminal is in open circuit, overload is displayed.
3. When measuring an in-line resistor, be sure that the power is off and all capacitors are released completely.
4. It must be absolutely avoided to input voltage at the range of resistance, though the meter has voltage protection function at this range.

#### 4.10 Diode test

1. Apply the black test lead to the "COM" terminal and the red lead to the "V/Ω" terminal (the polarity of red lead is "+").
2. Set the knob to "→|+" range and connect test leads to the diode under test. The red test lead connects to diode positive polarity and the reading is the approx. value of the diode forward voltage drop.

#### 4.11 Continuity test

Set the knob to the ")))" range and apply test leads to the two points of the tested circuit. If the inner buzzer sounds, the resistance is less than  $(70 \pm 20) \Omega$ .

## 5 MAINTENANCE




##### Safety notes:

1. Do not input voltage above DC 600V or AC 600Vrms.
2. Do not measure voltage on range Ω.
3. Do not use this meter for measurement if the battery is not correctly placed or the back case is not properly attached.
4. Remove the test leads from the testing points and turn off the meter before replacing the battery or fuse.

#### Battery replacement

**Note:** Watch the battery status.

Replace the battery when the LCD displays "  ".

How to proceed:

1. Unscrew the battery cover.
2. Take out the 9V battery and replace it with a new one.
3. Screw the battery cover back on.

**Fuse replacement** (This operation must only be performed in the power-off status.)

1. Unscrew the battery cover to reach the two screws which fasten the black front cover.
2. Unscrew these two screws above the battery compartment and remove the black front cover to access the two fuses.
3. Remove the fuse resp. fuses and reattach the front cover, screws and battery cover.

#### Spare parts

Battery: 9V battery

Fuses: F200mA /250V, Φ5\*20mm, F10A/250V, Φ5\*20mm



##### Warning!

This is a precision multimeter which must not be tampered with.

The operation manual is subject to change without notice.

The company shall not be held liable for any accidents and hazards resulted from the maloperations by the user.

Do not use this multimeter for purposes not described in this manual.

Don't try to modify the internal circuit of this instrument. Users who modify the circuit by themselves take the responsibility of any consequence caused.

## 6 WARRANTY

We give a warranty of 24 months for units supplied by us inside the EU, and a warranty of 12 months outside the EU. The following is excluded from the warranty: Damage that is due to non-compliance with the operating instructions, improper use, or natural wear.

The manufacturer can only be held liable for the function and safety-relevant properties of the unit, if the maintenance, service, and modifications of the unit are performed by the manufacturer or by an institution that is expressly authorised by the manufacturer.

## 7 PRODUCER

Xi'an BeiCheng Electronics Co., Ltd.  
LiuHeng Road, JingHe Industrial Park, North District, Xi'an,  
China (Model 830L)

## 8 WASTE DISPOSAL

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.



Should you no longer require this product, do not dispose of it with the household refuse. Please return it to the address below for proper waste disposal.

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