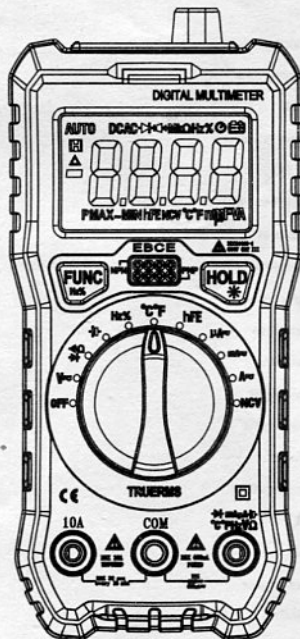


User Manual

DIGITAL MULTIMETER



manual

Content

1.	Security Information	.....1
1.1	Preparation	.....1
1.2	Use	.....2
1.3	logo	.....2
1.4	maintenance	.....3
2.	Description	.....3
2.1	Part	.....4
2.2	Description	.....6
2.3	LCD	.....6
3.	Specifications	.....7
3.1	Summary	.....7
3.2	Technical	.....8
4.	Operation	.....13
4.1	Readings	.....13
4.2	Function	.....13
4.3	Backlight	.....14
4.4	Automatic	.....14
4.5	buzzer	.....15
4.6	Preparation	.....15
4.7	AC	.....15
4.8	AC	.....16
4.9	Resistance	.....17
4.10	Diode	.....18
4.11	Beep	.....19

4.12	Transistor	.....19
4.13	Capacitance	.....20
4.14	Frequency	.....20
4.15	Temperature	.....22
4.16	Non-contact	.....22
5.	Maintenance	.....23
5.1	Replace	.....23
5.2	Replace	.....23
6.	Attachment	.....24
Product warranty		.....24

The instrument performance is stable, the quality of reliability is 3 5/6 digital multimeter, using LCD display, clear reading, intuitive display, easy to operate, can be used to measure the DC voltage, AC voltage sine wave RMS, DC current, AC current sine wave True RMS, resistance, capacitance, frequency, duty cycle, diode, on-off test. As well as unit symbol display, data retention, automatic power and other functions. The machine uses a high-performance MCU processor, with a high cost, the instrument is fully functional, high accuracy, easy to use, is the laboratory, factories, radio enthusiasts and the ideal home tools.

1. Security Information



Warning

Use this instrument with special attention, improper use may cause electric shock or damage to the instrument. In accordance with the usual safety procedures and full compliance with the safety regulations specified in the manual.

In order to make full use of the functions of the instrument and to ensure safe operation, please carefully read and follow the instructions of this manual.

Instrument in line with GB / T 13978-92 digital multimeter general technical conditions, in line with GB4793.1-1995 (IEC-61010-1, IEC-61010-2-032) electronic measuring instruments safety requirements, is a secondary pollution, for CAT IV 600V and CAT III 1000V.

Follow the safe operating instructions to ensure safe use of the instrument.

Appropriate use and protection, the instrument will give you a satisfactory service.

1.1 Preparation

1.1.1 When using the instrument, the user must comply with the standard safety rules:

- Universal anti-shock protection
- Prevent misuse of instruments

1.1.2 After receiving the instrument, check if it is damaged during transport.

1.1.3 In the rough conditions of preservation, shipment, check and confirm whether the

instrument is damaged.

1.1.4 The pen must be in good condition. Before use, check whether the insulation of the test leads is damaged and the wires of the wires are exposed.

1.1.5 Use the table provided with the table to ensure safety, if necessary, must use the same or the same level of the pen to replace.

1.2 Use

1.2.1 When using, you must use the correct function and range.

1.2.2 Do not exceed the protection range of each range to measure the value.

1.2.3 Do not touch the top of the test leads (metal parts) when the meter is connected to the measuring circuit.

1.2.4 In the measurement, if the measured voltage is higher than 60V DC or 30V AC (RMS), should pay attention to keep the fingers always in the table after the finger care device.

1.2.5 Do not measure the voltage when the voltage between the measuring end and the earth exceeds AC 600V.

1.2.6 Before turning the change switch to change the measuring function, remove the test leads from the circuit under test.

1.2.7 Do not live measurement resistance, capacitance, diode and test circuit off.

1.2.8 In the current, resistance, capacitance, diode and line continuity test range, care should be taken to avoid connecting the meter to the voltage source.

1.2.9 Do not measure the capacitance until the capacitor is fully discharged.

1.2.10 Do not use this instrument near explosive gas, steam or dust.

1.2.11 If you notice any abnormality or malfunction of the instrument, stop using it.

1.2.12 Do not use the instrument unless the instrument case and battery cover are fully fastened in place.

1.2.13 Do not store or use the instrument in direct sunlight, high temperature, high humidity.

1.3 Symbol



Note (important safety information, see instruction manual)



Can be used on dangerous live conductors.



Double Insulation Protection (Class II)

CAT III in accordance with IEC-61010-1 standard over-voltage (installation) level

III, pollution level 2 refers to the level of pulse withstand voltage protection provided.


CE Meet the European Community (EU) standards

⏏ Grounded

1.4 Maintenance

1.4.1 Do not attempt to open the bottom case to adjust or repair the instrument. This operation can only be performed by a technician who is fully aware of the instrument and the risk of electric shock.

1.4.2 Before opening the instrument case or battery cover, remove the test leads from the circuit under test.

1.4.3 In order to avoid false alarms that may cause errors, when the meter displays the  symbol, Replace the battery immediately.

1.4.4 Use a damp cloth and mild detergent to clean the meter, do not use abrasives or solvents.

1.4.5 When the instrument is not in use, turn off the power and turn the range switch to the OFF position.

1.4.6 If the instrument is not used for a long time, remove the battery to prevent damage to the instrument.

2. Description

- instrument for the portable, professional measuring instruments, with LCD digital display, and a backlight.

Users are easy to read. The range switch is easy to measure with one hand operation, with overload protection and low battery indication. Whether professional, factory, school, enthusiast or family use, are an ideal

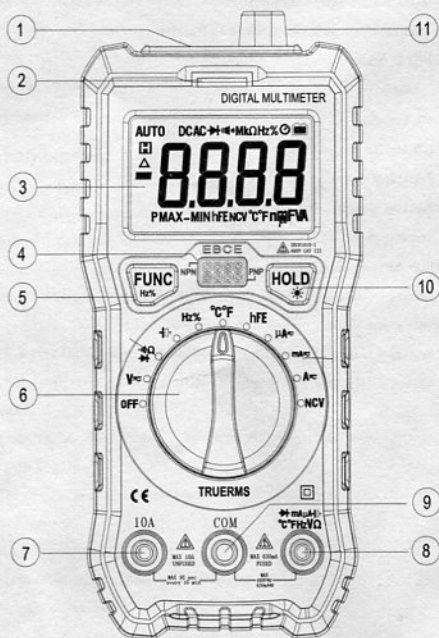
Multi-function instrument.

- instrument for AC current, DC current, AC voltage sine wave true RMS, DC voltage, frequency, duty cycle, resistance, capacitance measurement and line off, diode testing, temperature measurement.

- The instrument has an automatic range function.
- The meter has a reading hold function.
- The instrument has an automatic shutdown function.

2.1 Part Name

- (1) illumination
- (2) NCV indicator
- (3) LCD display
- (4) Transistor Tester
- (5) function selection button (FUNC)
- (6) transfer switch 3
- (7) High current input 10A input
- (8) resistance, capacity, voltage, frequency, temperature, diode and on-off input jack
- (9) common jack
- (10) Reading / Reading Illumination button (HOLD) *
- (11) contact voltage detection zone



2.2 Switch and button and input jacks

HOLD
* Button: used for reading hold or backlight control.

FUNC Button: Used to measure the function switch. The switch between the diode and the buzzer is used to switch between the diode and the buzzer; the temperature is used to switch between degrees Celsius and Fahrenheit; the Hz% is used for frequency and duty cycle measurement functions. In the AC voltage file can switch to the measurement frequency and duty cycle state.

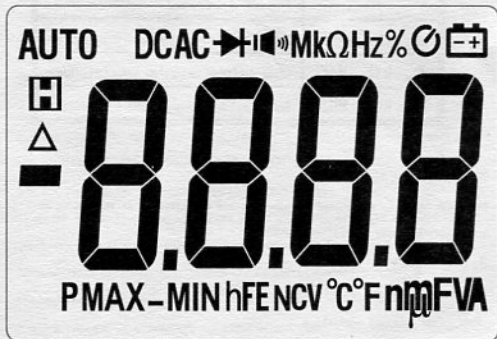
OFF position: Used to turn off the power.

mA/V/Hz/V Jack: voltage, resistance, frequency, duty cycle, capacitance, diodes, line off, and temperature input terminals.

COM jack: Voltage, resistance, frequency, duty cycle, capacitors, diodes, line off and temperature and other common terminals.

Transfer Switch: Used to select functions and ranges.

2.3 LCD Monitor



AC, DC	AC, DC
	Diode, beep off
AUTO	Automatic range mode
NCV	Non - contact AC voltage detection
hFE	Transistor test state
°C °F	Temperature measurement state
	BATTERY VOLTAGE IS INSUFFICIENT
H	Read the hold state
	Automatic shutdown indicator
%	Percentage (duty cycle)
mV, V	MV, volts (voltage)
A	Ampere (current)
nF, μ F, mF	Nafala, microfarads, cents Farah
Ω , k Ω , M Ω	Ohm, kilohm, megohm (resistance)
Hz, kHz, MHz	Hertz, kilohertz, megahertz (frequency)

3. Specification

The meter shall be designated for one year and recalibrated at 18 ° C to 28 ° C and a relative humidity of less than 75%.

3.1 Summary

Automatic range and manual range.

Full range overload protection.

The maximum voltage allowed between the measuring end and the ground: 600V DC or AC 600Vrms

fuse protection: uA, mA file 0.2A / 250V self-recovery fuse; 10A file without

insurance tube.

Working height: max 2000m

Display: 6000counts LCD display

Maximum display value: 1999 number

Polarity indication: automatic indication, '-' indicates negative polarity.

Overrange display: 'OL' or '-OL'.

Sampling time: about 3 times / sec

Unit display: with function, power unit display.

automatic shutdown time: no letter when about 15 minutes

Power supply: DC power supply 9V

Battery Type: 6F22 9V Battery Battery

Battery undervoltage indication: LCD display symbol.

Temperature coefficient: less than 0.1 × accuracy / °C

Operating temperature: 18 °C ~ 28 °C

Storage temperature: -10 °C ~ 50 °C

Size: 140 (L) × 68 (W) × 49 (H) mm

Weight: about 226g (including battery)

3.2 Technical indicators

Ambient temperature: 23 ± 5 °C Relative humidity: <75%

3.2.1 True rms zero input

3.2.1.1 The measurement of sine wave signal, the use of true RMS measurement method than the traditional average response method error is small.

3.2.1.2 True RMS The instrument can accurately measure the sine wave signal, but if it is on the AC function, the instrument may display 1 to 50 if the measured signal is not input (shorted at the AC voltage range and the input terminal) Word between a reading. These deviations are normal. Within the specified measuring range, they do not affect the accuracy of the multimeter to measure alternating current.

3.2.1.3 True RMS requires that the input signal reach a certain level for measurement. Therefore, the AC voltage and current range is specified between 2% and 100% of full scale.

3.2.2 DC voltage

Range	Resolution	Accuracy
6V	0.001V	$\pm (0.5\% \text{ of reading} + 5 \text{ words})$
60V	0.01V	
600V	0.1V	$\pm (0.8\% \text{ of reading} + 5 \text{ words})$

- Input impedance: 10M Ω

- Maximum input voltage: 600V DC or 600V AC (rms)

Note:

In the small voltage range, the pen is not connected to the circuit under test, the instrument may have beating the reading.

This is normal, this is because the instrument caused by high sensitivity, does not affect the actual measurement results.

3.2.3 AC voltage

Range	Resolution	Accuracy
6V	0.001V	$\pm (0.8\% \text{ of reading} + 3 \text{ words})$
60V	0.01V	
600V	0.1V	$\pm (1.0\% \text{ of reading} + 10 \text{ words})$

- Input impedance: 10M Ω

- Maximum input voltage: 600V AC (RMS) or 600V DC

- Frequency range: 40 ~ 1000Hz True RMS

Note:

In the small voltage range, the pen is not connected to the circuit under test, the instrument may have beating the reading.

This is normal, this is because the instrument caused by high sensitivity, does not affect the actual measurement results.

3.2.4 Alternating current

Range	Resolution	Accuracy
600.0uA	0.1uA	$\pm (1.5\% \text{ of reading} + 10 \text{ words})$
6000uA	1uA	
60.00mA	0.01mA	
600.0mA	0.1mA	$\pm (2.5\% \text{ of reading} + 10 \text{ words})$
6A	0.001A	
10A	0.01A	

- Overload protection: mA range fuse (self-recovery fuse 200mA / 250V)

10A range without insurance

- Maximum input current: mA: 600mA DC or AC rms;

10A: 10A DC or AC rms;

When the measured current is greater than 5A, the continuous measurement time is not longer than 15 seconds, after the measurement to stop the current measurement for more than 1 minute.

- Frequency response: 40Hz ~ 1000Hz True RMS.

3.2.5 DC

Range	Resolution	Accuracy
600.0uA	0.1uA	$\pm (1.0\% \text{ of reading} + 5 \text{ words})$
6000uA	1uA	
60.00mA	0.01mA	
600.0mA	0.1mA	$\pm (2.0\% \text{ of reading} + 10 \text{ words})$
6A	0.001A	
10A	0.01A	

- Overload protection: mA range fuse (self-recovery fuse 200mA / 250V)

10A range without insurance

- Maximum input current: mA: 600mA DC or AC rms;

10A: 10A DC or AC rms;

When the measured current is greater than 5A, the continuous measurement time is not longer than 15 seconds, after the measurement to stop the current measurement for more than 1 minute.

3.2.6 Frequency

Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm (1.0\% \text{ of reading } + 3\text{words})$
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99KHZ	0.01kHz	
999.9KHZ	0.1KHZ	
9.999MHz	0.001MHz	

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

- Input voltage range: 600mV ~ 10V AC (with the measured frequency increases, the input voltage should also increase)

3.2.7 Duty cycle

Range	Resolution	Accuracy
0.1 ~ 99.9%	0.1%	$\pm 3.0\%$

- Frequency response: 10 ~ 10MHz

- Input voltage range: 600mV ~ 10VAC (with the measured frequency increases, the input voltage should also increase)

- Maximum input voltage: 250V AC (rms)

3.2.8 Resistance


Range	Resolution	Accuracy
600 Ω	0.1 Ω	$\pm (0.8\% \text{ of reading } + 3\text{words})$
6k Ω	0.001k Ω	
60k Ω	0.01k Ω	

600k Ω	0.1k Ω	$\pm (1.2\% \text{ of reading } + 3\text{words})$
6M Ω	0.001M Ω	
60M Ω	0.01M Ω	

- Open circuit voltage: approx. 1.0V

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


3.2.9 Line off test

Range	Resolution	Function
	0.1 Ω	If the measured resistance is less than 50 Ω , the buzzer inside the instrument may sound or may not sound. Less than 10 Ω will be pronounced

- Open circuit voltage: approx. 1.0V

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

3.2.10 Diode test

Range	Resolution	Function
	0.001V	Displays the approximate diode forward voltage

- Forward DC current of about 1mA

- Reverse DC voltage of about 3.0V

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

3.2.11 Transistor test

Range	Description	Test Conditions
hFE	The display reads the approximate value of hFE (0~1000)	Base current of about 10uA; Vce about 2.8V

3.2.12 Capacitance

Range	Resolution	Accuracy
9.999nF	0.001nF	± (4.0% of reading +3words)
99.99nF	0.01nF	
999.9nF	0.1nF	
9.999μF	0.001μF	
99.99μF	0.01μF	
999.9μF	0.1μF	± (5.0% of reading +3words)
9.999mF	0.001mF	
99.99mF	0.01mF	Not calibrated

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

3.2.13 Temperature test

Range	Accuracy	Resolution
-20°C—300°C	± (1.0%+4d)	1°C
301°C—1000°C	± (1.9%+5d)	1°C
-4°F—600°F	± (1.2%+6d)	1°F
601°F—1832°F	± (1.9%+6d)	1°F

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

4. Operation guide

4.1 readings remain

In the course of the measurement, if you want to keep the reading, press the **HOLD** key, the display value of the monitor will be locked, and then press the key to release the reading.

4.2 Function selection

- 1) In the voltage range, press "FUNC" key, will be in the AC voltage, DC voltage cycle between the switch.
- 2) In the resistor, diode, buzzer file, press the "SEL" button, will be in the resistance, on-off detection, diode three file cycle switch.
- 3) In the frequency, duty cycle file, press the "FUNC" key, will be in the frequency,

duty cycle between the switch.

4) In the temperature range, press the "FUNC" key, will be in degrees Celsius and Fahrenheit cycle switch.

5) In the current file, press "FUNC" key, will be in the AC current, DC current cycle between the switch





4.3 backlight and lighting

1) During the measurement, if the ambient light is too dark, the reading is difficult, press the **HOLD** key for more than 2 seconds, turn on the backlight and the lights, and turn off automatically after about 15 seconds.

2) During this period, if the **HOLD** key for more than 2 seconds will manually turn off the backlight and lighting.

Backlight and lighting of the luminous body for the LED, the working current is large, although the instrument has a timer circuit (timing time of about 15 seconds), but often use the backlight and lighting will shorten the battery life, so unnecessary Of the circumstances, should be used as little as possible backlight.

note:

When the battery voltage $\leq 7.5V$, the display shows  (undervoltage) symbol. However, in the case of using a backlight or an illuminator, the  symbol may be displayed when the battery voltage is $\geq 7.5V$ due to a large operating current, and the  symbol may not show the accuracy of the measurement. Then do not replace the battery, in the absence of backlight, the case of normal use of light until the  symbol display re-line replacement.

4.4 automatic shutdown

1) If there is no operation for any 15 minutes after power on, the instrument will go to sleep automatically to save power. 1 minute before the shutdown, the buzzer has 5 prompts, shut down before a long sound into the dormant state. (Note: automatic shutdown is still 3 ~ 5mA of the working current, a long time do not use the best to go to OFF or unplug the battery)

2) automatically shut down, press the FUNC key, the instrument to resume working status.
Or turn the knob switch to OFF, and then rotate to the desired range.


3) If the "FUNC" key is pressed while the unit is turned on, the auto power off function is canceled.


4.5 buzzer

When the key is pressed or the function switch is on, the buzzer will sound "Beep" (about 0.25 seconds). If the measured voltage or current is greater than the set alarm value, for example, the AC voltage is greater than 600V, The voltage is greater than 600V, AC and DC current greater than 10A, the buzzer will continue to pronounce, as over-range warning; automatically shut down about 1 minute before the buzzer will be issued five consecutive warning, before the shutdown buzzer will send a long warning; When the automatic shutdown function is canceled, every 15 minutes will be issued 5 consecutive warning.

4.6 Preparation for measurement

1) toggle the switch and turn on the power. If the battery voltage is low (about $\leq 7.5V$), the display

Display "", then you should replace the battery.

2) "" sign indicates that the input voltage or current should not exceed the indicated value, which is to protect the internal wiring from damage.

3) Place the changeover switch in the desired measurement function and range.

4) When wiring, connect the common test leads and connect the live test leads. Remove the live test line when removing the wiring.

4.7 AC and DC voltage measurement



Warning

Risk of electric shock


When measuring high voltage, pay special attention to avoid electric shock.


Do not enter a voltage higher than 600V DC or 600V AC rms to prevent electrical shock or damage to the instrument.

Do not apply more than 600V DC or 600V AC rms voltage between the common and the earth to prevent electrical shock or damage to the instrument.

The DC voltage range of the instrument is: 6.000V, 60.00V, 600.0V, 600V

The AC voltage range is: 6.000V, 60.00V, 600.0V, 600V

1) Place the diverter switch  in the AC / DC voltage position. Select the AC or DC voltage function as required.

2) Connect the red and black test leads to COM and  the input socket respectively.

3) Measure the other ends of the test pen and connect them to the voltage source or load.


4) Read the measured voltage value from the LCD monitor. When measuring the DC voltage, the display will be the same time

Displays the polarity of the voltage to which the red test leads are connected.

note:

1) In the small voltage range, such as DC 6V or AC 6V range, the pen is not connected to the measured electrical

The LCD will have a beating reading, which is normal, this is because the instrument caused by high sensitivity, when the instrument connected to the circuit under test, you will get a real measurement.

2) "" indicates that the maximum input voltage is 600V AC or 600V DC.

3) If the meter detects a reading greater than 600V DC or 600Vrms AC, a "beep" alarm sounds.

4.8 AC and DC current measurement



Warning

Risk of electric shock

not attempt to perform current measurement on the circuit when the voltage between open circuit and ground exceeds 250V. If the fuse is blown during measurement, it damage the instrument or damage yourself.

In order to avoid damage to the instrument or equipment under test, before the current measurement, please check the instrument fuse. When measuring, use the correct input socket, function and range. Do not connect the other end of the test leads in parallel to any circuit when the test leads are inserted in the current input receptacle

The AC and DC current range of the instrument is 600uA, 6000uA, 60mA, 600mA, 10A.

Measure current

- 1) Turn the rotary switch to the appropriate gear. Select AC or DC current function as needed.
- 2) Connect the black test lead to the COM input socket. If the measured current is less than 200mA, connect the red test pen to the mA input socket. If the measured current is between 200mA and 10A, connect the red test lead to the 10A input socket.
- 3) Disconnect the circuit to be tested. Connect the black test pen to one end of the disconnected circuit (the lower voltage) and connect the red test lead to the other end of the circuit that is broken (its voltage is high).
- 4) Connect the power to the circuit and read out the displayed readings. If the display only displays "OL", this means that the input exceeds the selected range and the rotary switch should be placed in a higher range.

4.9 Resistance measurement



Warning

Risk of electric shock.

To avoid damage to the instrument or equipment under test, all power supplies of the circuit under test and all high voltage capacitors should be fully discharged before measuring the resistance.

The unit of measurement of the resistance is ohm (Ω)

The resistance range of the instrument is: 600.0 Ω 、6.000k Ω 、60.00k Ω 、600.0k Ω 、6.000M Ω 、60.00M Ω 。

Measuring resistance:

- 1) Turn the rotary switch to the Ω file. (Native default resistance range)
- 2) Insert the black test lead into the COM jack and the red test lead into the mA μ A Ω jack.
- 3) Measure the resistance of the circuit under test with the other ends of the test pen.
- 4) Read the measured resistance value from the LCD monitor.

Note:

- 1) The measured resistance value on the circuit is usually different from the resistance rating.
- 2) In the measurement of low resistance, in order to measure the accuracy of the two short-circuit test pen, read the pen short-circuit electricity, resistance, measured in the measured resistance to be subtracted after the resistance value.
- 3) In the 20M Ω file, the instrument may take several seconds to stabilize the reading, which is normal for high resistance measurements.
- 4) When the meter is open, the display will show "OL", indicating the measured value overrange range.

4.10 Diode test



Warning

Risk of electric shock.

In order to avoid damage to the instrument or equipment under test, before measuring the diode, all the power supply of the circuit under test should be cut off and all high voltage capacitors should be fully discharged.

Test a diode outside the circuit

- 1) Turn the rotary switch Ω to the file and press the "FUNC" button to switch to the test state.
- 2) Insert the black test lead into the COM jack and the red test lead into the mA μ A Ω the jack.
- 3) Connect the diode anode at the other end of the red test lead, and connect the diode to the other end to test the diode cathode.
- 4) The meter will show the approximate value of the forward voltage drop of the diode

under test. If the polarity of the test leads is reversed, the meter will display "OL".

In the circuit, the normal diode should produce a forward voltage drop of 0.5V to 0.8V; however, the reverse bias reading will depend on the resistance change of the other channels between the two test leads.

4.11 Beep off test




Warning

Risk of electric shock.

To avoid damage to the instrument or equipment under test, disconnect all power from the circuit under test and discharge all high voltage capacitors fully before the beep off test.

To perform on-off test:

1) Turn the rotary switch to the  file and press the "FUNC" button to switch to the test state.

2) Insert the black test lead into the COM jack and the red test lead into the jack.

3) Connect the red and black test leads to the resistance of the circuit under test. If the resistance of the circuit under test is less than 50Ω, the buzzer inside the instrument will sound. If less than 5% buzzer will sound.

Note:

If the pen is open or the measured line resistance is greater than 200Ω, the display shows "OL".

4.12 Transistor measurement



Risk of electric shock.

Do not apply voltages up to 36V DC or AC rms at the common and hFE ends to prevent electrical shock or damage to the instrument.

1) Turn the rotary switch to the hFE position.

2) first determine the transistor is NPN or PNP type, and then the transistor of the e, b, c three feet into the hFE test seat corresponding hole.

3) The hFE approximation of the transistor to be measured is read by the liquid crystal display.

4.13 Capacitance measurement



Risk of electric shock.

To avoid damage to the instrument or equipment under test, all power supplies of the circuit under test and all high voltage capacitors should be fully discharged before measuring the capacitance. Use the DC voltage file to determine that the capacitors have been discharged.

The capacitance range of this instrument is 10.00nF, 100.0nF, 1.000uF, 10.00 uF, 100.0 uF, 1000.0 uF, 10.00mF, 100.0mF.

1) Turn the rotary switch to the gear position.

2) Insert the black test lead into the COM jack and the red test lead into the jack.

3) After the capacitor is completely discharged, the other end of the black test pen is connected to the measured capacitance. And the measured capacitance value is read by the liquid crystal display.

Note:

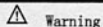
1) To improve the accuracy of the measured value below 10nF, the distributed capacitance of the meter and conductor should be subtracted.

2) When measuring large capacitance, it takes some time to stabilize the reading.

3) Measure the polarity of the capacitor, pay attention to the corresponding polarity, to avoid damage to the instrument.

4.14 Frequency and duty cycle measurements

1) Through AC voltage range:



Warning

Risk of electric shock.

When measuring high voltage, pay special attention to avoid electric shock. Do not enter voltages above 600V AC rms to prevent electrical shock or damage to the meter.

Do not apply more than 600V AC rms voltage between the common and the earth to prevent electrical shock or damage to the instrument.

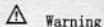
- 1) Place the changeover switch in the AC voltage range.
- 2) Connect the red and black test leads to COM and the input socket respectively.
- 3) Press the "FUNC" key to switch to the frequency measurement state
- 4) with the other end of the test pen and then connected to the voltage source or load at both ends of the measurement.
- 5) Read the measured frequency value from the LCD monitor.
- 6) Press "FUNC" again to enter the duty cycle measurement state.

Note:

- (1) frequency measurement range of 10Hz ~ 10kHz, if the measured frequency is lower than 10Hz, the LCD display "00.0"; measuring less than 10kHz frequency is possible, but does not guarantee the measurement accuracy.
- (2) duty cycle measurement range of 10 ~ 95%.

(3) "  " Indicates that the maximum input voltage is 600 V AC (rms).

2) Through HZ / DUTY file:



Warning

Risk of electric shock.

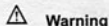
Do not measure any frequency above 250V DC or AC rms to prevent electrical shock or damage to the meter.

- 1) Set the changeover switch to Hz.
- 2) Connect the red and black test leads to COM and the input socket respectively.
- 3) Connect the other ends of the red and black test leads to the signal source or the load at both ends.
- 4) Read the measured frequency value from the LCD monitor.
- 5) Press "FUNC" again to enter the duty cycle measurement state.

Note:


Frequency measurement range of 10Hz ~ 10MHz, if the measured frequency is lower than 10Hz, the LCD display "000.0"; measuring more than 10MHz frequency is possible, but does not guarantee the measurement accuracy.

4.15 Temperature Measurement



Warning

Do not input more than 30V DC voltage in the temperature measurement file to avoid damage or damage to the instrument

- 1) Rotate the changeover switch to the temperature measurement range and press (press "FUNC") in degrees Celsius or Fahrenheit.
- 2) Connect the negative (black) and positive (red) of the K-type thermocouple to the COM input  and input holes, respectively.
- 3) Place the other end (test end) of the thermocouple on the surface of the object to be measured.
- 4) to be read stable by the liquid crystal display to read the measured temperature value.

Note:

The maximum temperature of the K-type thermocouple with random dispensing is 250 °C

4.16 Non - contact voltage measurement (NCV)

The function range switch is set to NCV range position. At this time, the instrument displays "NCV" and "EF" symbol, and the top of the instrument is close to the object to be tested such as mains, power switch, socket and so on. When the detected voltage is greater than 110V (AC RMS), the instrument NCV indicator will be lit and the buzzer will sound an alarm.

note:

- 1) The voltage may still be present even if there is no indication. Do not rely on non-contact voltage detectors to determine if there is voltage on the shielded wire. The detection operation may be affected by factors such as socket design, insulation thickness and type.

2) When the instrument input terminal input voltage, due to the presence of induced voltage, the voltage sensor indicator may also be bright.

3) External sources of interference (such as flash, motor, etc.) may be mistakenly triggered by non-contact voltage detection.

5 Maintenance

5.1 Replacement battery



In order to avoid the wrong reading caused by electric shock or personal injury, instrument display appears



Symbol, you should replace the battery immediately.

To avoid electrical shock or personal injury, turn off the battery cover before replacing the battery, and check that the test leads have been disconnected from the measuring circuit.

Follow the steps below to replace the battery

- 1) Turn off the instrument power supply.
- 2) Remove all test leads from the input socket.
- 3) Unscrew the captive screws of the battery cover and remove it.
- 4) Remove the battery cover.
- 5) Replace the new 6F22 9V battery
- 6) Install the battery cover as it is, tighten the screws.

Note:

The polarity of the battery can not be installed.

5.2 Replace the pen



Warning

When changing the test leads, you must replace the same or the same grade of the test leads. Table pen must be intact, table pen level: 1000V 10A.

If the pen insulation is damaged, such as wire wire exposed, you must replace the test

pen.

6. Attachment

- | | | | |
|----|-------------------|------------------|----|
| 1) | Table pen | Grade: 1000V 10A | 一付 |
| 2) | Instruction | | 一本 |
| 3) | Temperature probe | | 一付 |
| 4) | Battery | 6F22 9V | 一支 |

- * The contents of this manual are subject to change without notice *
- * The contents of this manual are considered correct, if the user found errors, omissions, etc., please contact the manufacturer *
- * The Company does not assume any accidents and hazards caused by incorrect operation of the user *
- * The functions described in this manual do not serve as a reason for the use of the product for special purposes *

Product warranty instructions

Product certification is your instrument in the use of failure, seeking repair services must have, and then you purchase the invoice at the same time to be effective.

1) When your multimeter in use fails, please contact our maintenance department as soon as possible, consultation, so as not to delay your use and warranty period.

2) The product of the Company from the date of purchase from the warranty service. In the event of failure during the warranty period, the company professionals to confirm the reasons for the failure of non-users, the company free warranty service.

3) If the warranty period is exceeded, the cost will be charged (repair fee + component fee).

4) Even during the warranty period, maintenance fees are charged in the following cases.
(1) due to improper use of the user or accidental disaster events and damage to the components and burn the circuit board.

(2) non-professional staff of the company open shell, inspection, modification.

(3) failure to comply with the instructions specified in the operation.

(4) not the company's products do not maintain repair.


(5) due to maintenance caused by postage, transportation and other users themselves.

(6) multimeter battery, table pen, temperature probe and other functional accessories and supplies are not free warranty list.

- 2) When the instrument input terminal input voltage, due to the presence of induced voltage, the voltage sensor indicator may also be bright.
- 3) External sources of interference (such as flash, motor, etc.) may be mistakenly triggered by non-contact voltage detection.

5 Maintenance

5.1 Replacement battery

 In order to avoid the wrong reading caused by electric shock or personal injury, instrument display appears

 Symbol, you should replace the battery immediately.

To avoid electrical shock or personal injury, turn off the battery cover before replacing the battery, and check that the test leads have been disconnected from the measuring circuit.

Follow the steps below to replace the battery

- 1) Turn off the instrument power supply.
- 2) Remove all test leads from the input socket.
- 3) Unscrew the captive screws of the battery cover and remove it.
- 4) Remove the battery cover.
- 5) Replace the new 6F22 9V battery
- 6) Install the battery cover as it is, tighten the screws.

Note:

The polarity of the battery can not be installed.

5.2 Replace the pen



Warning

When changing the test leads, you must replace the same or the same grade of the test leads. Table pen must be intact, table pen level: 1000V 10A.

If the pen insulation is damaged, such as wire wire exposed, you must replace the test

pen.

6. Attachment

- | | | | |
|----|-------------------|------------------|----|
| 1) | Table pen | Grade: 1000V 10A | 一付 |
| 2) | Instruction | | 一本 |
| 3) | Temperature probe | | 一付 |
| 4) | Battery | 6F22 9V | 一支 |

- * The contents of this manual are subject to change without notice *
- * The contents of this manual are considered correct, if the user found errors, omissions, etc., please contact the manufacturer *
- * The Company does not assume any accidents and hazards caused by incorrect operation of the user *
- * The functions described in this manual do not serve as a reason for the use of the product for special purposes *

Product warranty instructions

Product certification is your instrument in the use of failure, seeking repair services must have, and then you purchase the invoice at the same time to be effective.

- 1) When your multimeter in use fails, please contact our maintenance department as soon as possible, consultation, so as not to delay your use and warranty period.
- 2) The product of the Company from the date of purchase from the warranty service. In the event of failure during the warranty period, the company professionals to confirm the reasons for the failure of non-users, the company free warranty service.
- 3) If the warranty period is exceeded, the cost will be charged (repair fee + component fee).
- 4) Even during the warranty period, maintenance fees are charged in the following cases.
 - (1) due to improper use of the user or accidental disaster events and damage to the components and burn the circuit board.
 - (2) non-professional staff of the company open shell, inspection, modification.
 - (3) failure to comply with the instructions specified in the operation.
 - (4) not the company's products do not maintain repair.
 - (5) due to maintenance caused by postage, transportation and other users themselves.
 - (6) multimeter battery, table pen, temperature probe and other functional accessories and supplies are not free warranty list.