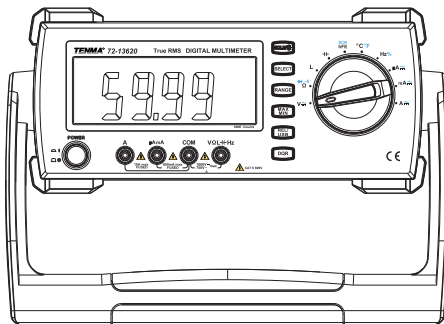


TENMA®

72-13620

Benchtop Digital Multimeter User Manual



⚠ Warning: When the measured voltage is greater than 600V, The instrument cannot be used for measurements in CAT II, CAT III and CAT IV environment

I. Introduction

72-13620 is a professional 6000 count benchtop multimeter with high accuracy and outstanding performance. It supports multiple measurements:

- AC/DC voltage
- AC/DC current
- Resistance
- Frequency
- Capacitance
- Inductance
- Audion (hFE)
- Diode(LED)
- Thyristor(SCR)
- Continuity

Please carefully read and comply with all warnings and cautions in this manual.

II. Open box inspection

Open the package box and take out the instrument. Please check whether the following items are deficient or damaged and contact your supplier immediately if they are.

- User Manual(DVD-R)-----1pc
- Test leads-----1pair
- Alligator clip test line-----1pair
- Power line-----1pc
- Software DVD-----1pc
- USB cable-----1pcs
- Warranty-----1pc

III. Safety instructions

Safety standards

This instrument strictly follows the EN 61010-1: 2010, EN 61326: 2013, RoHS, pollution grade II safety standard, CAT II 600V.

⚠ Unplug the power cord when the instrument is not in use.

⚠ Note: In the case that the instrument is not used in accordance with the operation instructions, the protection provided by the instrument may be weakened or lost.

CLEANING

Be sure meter is turned off and wipe with a clean ,dry lint-free cloth.

Do not use abrasive cleaners or solvents

Power cord

specification:

| Name | Description | Rating | Approval NO. |
|-----------|------------------------------|----------|--------------|
| CORD | H05VVF 3X0.75mm ² | 300/500V | 116006 |
| PLUG | XR-T002 | 16A 250~ | 40036455 |
| CONNECTOR | XR-W002 | 10A 250~ | 40040244 |

- 1) Before using the instrument, please check if there is any item which is damaged or behaving abnormally. If any abnormal item is found (such as: test lead bared, housing case damaged, LCD broken, etc.), please stop using the instrument. It is strictly prohibited to use an instrument without shell cover. Otherwise, there is a danger of electric shock.
- 2) If test lead is damaged, replace with the same type or of the same specifications.
- 3) Do not touch bare wire, connectors, input terminal or circuit being measured.
- 4) Use caution to measure voltage >DC 60V or AC 36Vrms, keep fingers behind finger guard to prevent shock hazard.
Before each use, verify operation by testing a known working circuit that is within the rating of this unit.
- 5) When measuring unknown voltage, switch the dial to the maximum range position.
- 6) Do not impose voltage or current exceeding the specified ones on the instrument.
- 7) Functional dial should be switched to proper position. After each measure, disconnect the test leads with the circuit. Pull out the power line if not use for long time. Do not switch the functional dial during measurement.

- 8) Do not use or store the instrument in high temperature, high humidity, flammable, explosive or strong magnetic field environments.
- 9) Do not change the internal circuit of the instrument in order to avoid the damage to the instrument and users.
- 10) Switch off the power supply after measurement


IV. General specifications

- 1) Max voltage between input terminal and COM jack: 1000V DC/750V AC
- 2) Fuse Type:
 - 10A Jack: F1 (12A H 1000V) Fuse (Φ6.3x32) mm
 - mA/μA Jack: 600mA H 1000V Fuse (Φ6.3x32) mm
- 3) Display: Max value: 5999; refresh 2~3 times/s
- 4) Range: Auto
- 5) Polarity: Auto
- 6) Overrange indicator: OL
- 7) Operating temperature: 0~40°C (32°F~104°F)
- 8) Operating Altitude: 0-2000m
- 9) Storage temperature: -10°C~50°C (14°F~122°F)
- 10) Relative humidity: ≤75% at 0°C~30°C; ≤50% at 30°C~40°C
- 11) Electromagnetic compatibility:
 - RF=1V/m, overall accuracy=specified accuracy+5% of range.
 - RF>1V/m, no specified calculation.
- 12) Power Supply: AC 100V/120V/127V/220V/230VAC/240V, 45-440Hz, 28VA max Protection fuse being used:
 - For AC 100V/120V/127V, AC 250V T 250mA
 - For AC 220V/230V/240V, AC 250V T 125mA
- 13) Dimension: 320mm*265mm*110mm
- 14) Weight: 3100g (accessories excluded)
- 15) Temperature coefficient: 0.1*(specified accuracy)/°C (<18°C or ≥28°C)

V.Display screen



| | | | | | |
|----|--------------|----------------|----|--------------|--|
| 1 | C | Capacitance | 11 | hFE | Audion magnification |
| 2 | AUTO | Auto range | 12 | | Diode& thyristor polarity |
| 3 | RANGE | Manual range | 13 | | Thyristor/continuity/ |
| 4 | MAX | Maximum value | 14 | Reading | |
| 5 | MIN | Minimum value | 15 | Unit | |
| 6 | HOLD | Data hold | 16 | | Stimulation bargraph |
| 7 | RELΔ | Relative value | 17 | | High voltage |
| 8 | SER | Series | 18 | L | Inductance |
| 9 | PAL | Parallel | 19 | D Q R | Capacitance loss factor, inductance quality factor, equivalent resistance measurement. |
| 10 | USB | USB connection | | | |

| | | |
|-----|---|---------------------|
| 20. |  | Negative value |
| 21. | AC | Alternative current |
| 22. | DC | Direct current |

15.Measurement units:

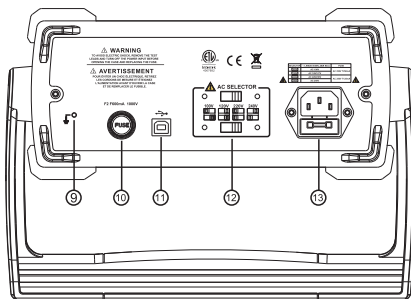
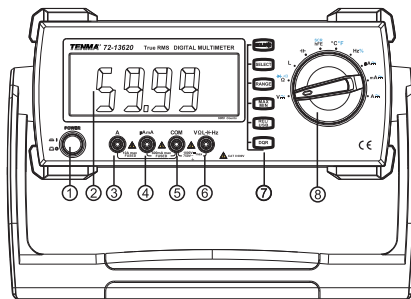
| | |
|-------------------|-------------------------|
| mV、V | Voltage |
| μA、mA、A | Current |
| Ω、kΩ、MΩ | Resistance |
| nF、μF、mF | Capacitance |
| μH、mH、H | Inductance |
| Hz、kHz、MHz | Frequency |
| β | Thyristor magnification |
| °C/°F | Temperature |

VI. Functions

| Position | Input terminal | Functions (measurement modes) |
|---|---|-------------------------------|
| V$\overline{\text{---}}$ | V \longleftrightarrow COM | DC voltage |
| V\sim | V \longleftrightarrow COM | AC voltage |
| Ω | V \longleftrightarrow COM | Resistance |
| $\bullet \rightarrow \parallel$ | V \longleftrightarrow COM | Continuity |
| Hz % | V \longleftrightarrow COM | Frequency/ duty ratio |
| C | V \longleftrightarrow COM | Capacitance |
| L | V \longleftrightarrow COM | Inductance |
| D | V \longleftrightarrow COM | Capacitance loss factor |
| Q | V \longleftrightarrow COM | Inductance quality factor |
| R | V \longleftrightarrow COM | Equivalent resistance |
| $\mu\text{A mA } \overline{\text{---}}$ | $\mu\text{A mA } \longleftrightarrow$ COM | DC current |
| A$\overline{\text{---}}$ | A \longleftrightarrow COM | DC current |
| $\mu\text{A mA } \sim$ | $\mu\text{A mA } \longleftrightarrow$ COM | AC current |
| A\sim | A \longleftrightarrow COM | AC current |
| $\rightarrow \vdash$ | V-COM Multifunction socket (UT-S03A) | Diode(LED) |
| hFE | Multifunction socket (UT-S03A) | Audion magnification |
| SCR | Multifunction socket (UT-S03A) | Thyristor measurement |
| $^{\circ}\text{C}/^{\circ}\text{F}$ | Multifunction socket (UT-S03A) | Temperature |

VII. Structure

1. Power switch
2. Display screen
3. 10A jack
4. $\mu\text{A}/\text{mA}$ jack
5. COM jack
6. Function jack(voltage, resistance, inductance, capacitance, frequency, continuity, diode, duty ratio)
7. Buttons:
 - Data hold/backlight
 - Function switch
 - Range switch
 - Max/min value
 - Relative value/USB connection
 - Loss factor/ quality factor/ equivalent resistance
8. Function dial
9. Grounding
10. Fuse dial (F2 600mA)
11. USB port
12. AC voltage switch
13. Socket



Symbols on meter

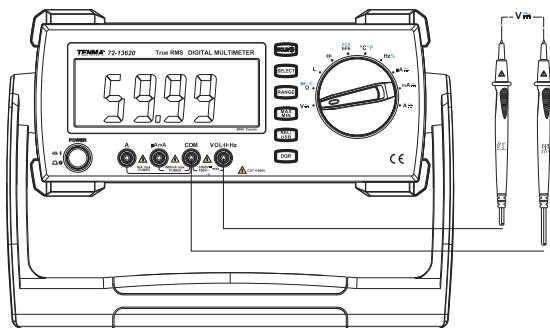
| | |
|---------------|---|
| | Power on |
| | Power off |
| | Direct current |
| | Alternating current |
| | Ground Terminal |
| | Caution, possibility of electric shock |
| | Warning or caution, To ensure safe operation and service of this meter, follow all warnings and instructions detailed in this manual. |
| | USB port |
| | Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. |
| | Comply with European Union Directive |
| | Conforms to UL STD. 61010-1, 61010-030, Certified to CSA STD. C22.2 No. 61010-1, 61010-030. |
| CAT II | It is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation. |

VIII. Operation instructions

Note: Select the corresponding input terminal. Functional dial should be switched to proper position

1. DC voltage measurement

- Insert red test lead to V jack, black lead to COM jack.
- Switch the dial to **V_{DC}** position, press **SELECT** button to enter DC measurement mode (figure 1). Connect the test leads to the load in parallel.
- Reading displayed.
- Press **RANGE** button to manually switch the range. Press **RANGE** 5 times to enter mV range.

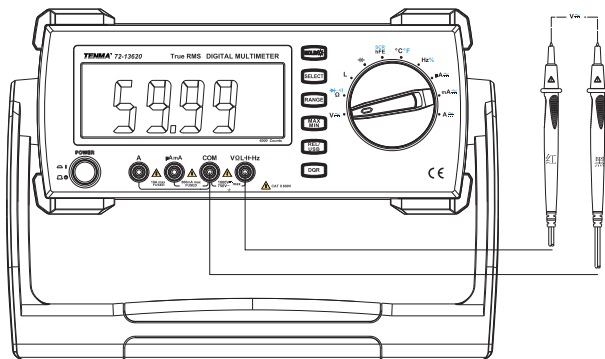


⚠ Note:

- Do not input voltage over 1000V, or it may pose shock hazard.
- Use caution to measure high voltage
- After each measurement, disconnect test leads and circuit being measured.

2.AC voltage measurement

- Insert red test lead to V jack, black lead to COM jack.
- Switch the dial to **V** position, press **SELECT** button to enter AC measurement mode (figure 1). Connect the test leads to the load in parallel.
- Reading displayed. (Sine wave true RMS)
- Press **RANGE** button to manually switch the range. Press **RANGE** 5 times to enter mV range.

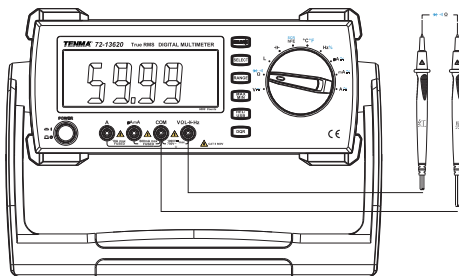


⚠ Note:

- Do not input voltage over 750V, or it may pose shock hazard.
- Use caution to measure high voltage
- After each measurement, disconnect test leads and circuit being measured.

3. Resistance measurement

- Insert red test lead to Ω jack, black lead to COM jack.
- Switch the dial to Ω position, press **SELECT** button to enter resistance measurement mode (figure 2).
Connect the test leads to the load in parallel.
- Reading displayed.
- Press **SELECT** button to manually switch the range.



Note:

- If the resistor is open or over the range, the “OL” symbol will be displayed on the screen.
- Before measuring resistance, switch off the power supply of the circuit, and fully discharge all capacitors.
- When measuring low resistance, the test leads will produce 0.1 Ω ~0.2 Ω measurement error. To obtain accurate measurement, short the test leads and use REL function.
- If the resistance when shorted is more than 0.5 Ω , please check if test leads are loosened or damaged.
- When measuring high resistance above 1M Ω , it is normal to take a few seconds to steady the readings. For steady readings, short test line can be used for measure.
- Do not input voltage over 30V (sine wave RMS), (peak value 42V) or DC 60V.
- After each measurement, disconnect test leads and circuit being measured.

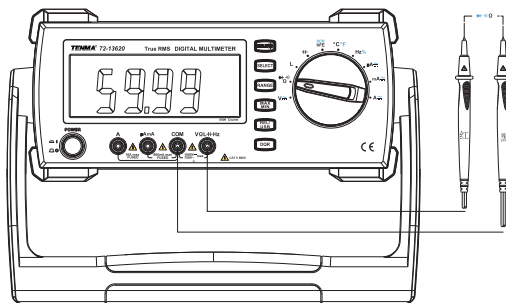
4. Diode measurement

Method 1:


- Insert red test lead to \rightarrow jack, black lead to COM jack.
- Switch the dial to \rightarrow position, press **SELECT** button to enter diode measurement mode (figure 2). Connect the test leads to the load in parallel.
When \leftarrow appears, positive pole: red test lead; negative pole: black test lead
When \rightarrow appears, pole: black test lead; negative pole: red test lead
- Display reading of positive onset voltage of PN junction.

Method 2:

- Insert UT-S03A (multi-function socket) to the corresponding socket.(figure3)
- Insert the diode or LED pin to the socket marked with DIODE
When \leftarrow appears, positive pole: right side of socket; negative pole: left side of socket
When \rightarrow appears, positive pole: left side of socket; negative pole: right side of socket
- Display reading of positive onset voltage of PN junction.



6. Inductance measurement

- Insert red test lead to L jack, black test lead to COM jack.
- Switch the dial to L position, connect test leads with the inductance in parallel.
- Reading is displayed.
- Press  to switch Q/R functions, long-press this button to return to inductance measurement.

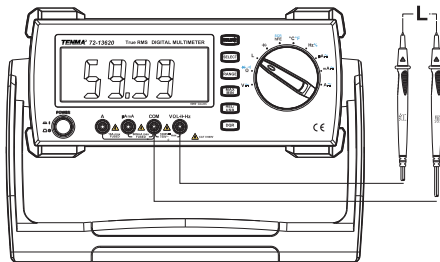
Note:

- Before measurement, please switch off all power supply and fully discharge all capacitors.
- For accuracy, please reset the reading to 0 before measurement.

Method:

When the test leads are shorted and frequency is 10kHz, press REL to reset the reading to zero.

- For inductance over 1H, it takes long time to steady the reading
- Values of capacitance loss factor (D) and inductance quality factor (Q) are only for reference.
- Do not input voltage over 30V (sine wave RMS), (peak value 42V) or DC 60V.
- Disconnect test leads with the circuit after measurement.



7.Capacitance measurement

- Insert red test lead to C jack, black test lead to COM jack.
- Switch the dial to \overline{C} position, connect test leads with capacitor in parallel.
- Reading is displayed,
- Press $\overline{Q/R}$ to switch Q/R functions, long.press this button to return to capacitance measurement.

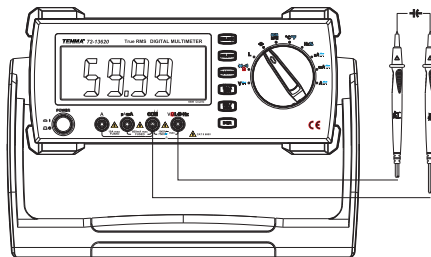
⚠ Note:

- If the circuit being measurement is shorted or the capacitance is over range, OL will appear.
- There may be dozens of remaining digits because of the intrinsic capacitors. Please reset the reading to 0 before measurement.

⚠ Method:

When the test leads in open status and frequency is 1kHz, press REL to reset the reading to zero.

- For capacitor over 600 μ F, it takes long time to steady the reading.
- Before measurement, please switch off all power supply and fully discharge all capacitors.
Pay particular attention to capacitors with high voltage.
- Do not input voltage over 30V (sine wave RMS), (peak value 42V) or DC 60V.
- Disconnect test leads with the circuit after measurement.

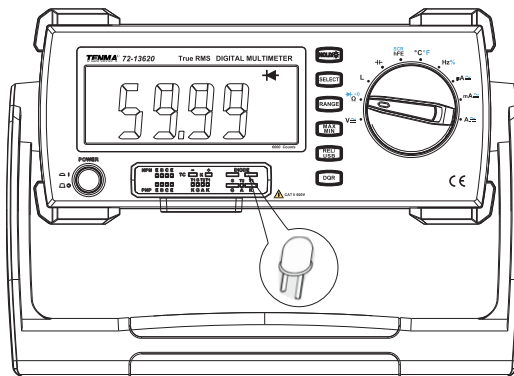


8. Audion measurement


- Insert UT-S03A (multi-function socket) to the corresponding socket.
- Switch the dial to $\frac{SCR}{hFE}$ position, press \square to switch to audion measurement.
- Insert the audion to UT-S03A. Pins of audion should correspond with jacks of UT-S03A.
B(basic), E(emission), C(collector)
- Reading is displayed.

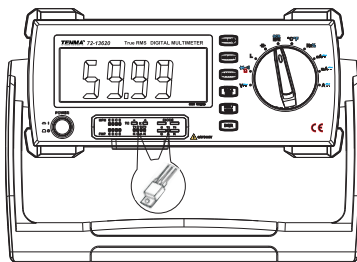
⚠ Note:



- Do not input voltage over 30V (sine wave RMS), (peak value 42V) or DC 60V.
- For accuracy, insert the audion correctly to the multi-function socket. Pay attention to the polarity.



9. Thyristor measurement

- Insert UT-S03A (multi-function socket) to the instrument.
- Switch the dial to $\frac{SCR}{hFE}$ position, press  to switch to thyristor measurement.
- Insert SCR correctly to UT-S03A: G(gate), A(anode), K(cathode)
- Display as following:




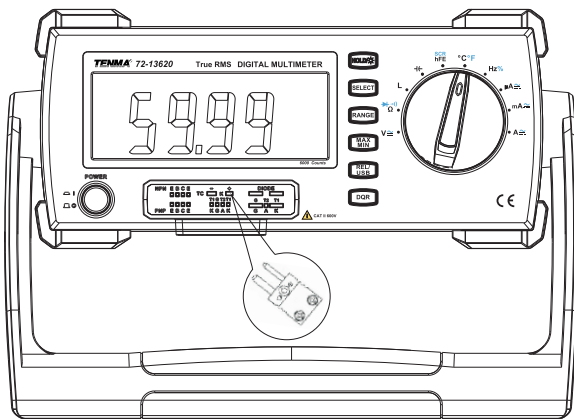
| LCD display | SCR polarity symbol | Status | SCR polarity |
|-------------|---|---------------------------|--------------|
| 0.1V~2V |  | Normal | Two-way |
| 0.1V~2V |  | Normal | One-way |
| ERR | — — — | Bad contact | Unknown |
| OL | — — — | Not connected/bad contact | Unknown |

Note:

- Before measurement, please switch off all power supply and fully discharge all capacitors. Pay particular attention to capacitors with high voltage.
- Do not input voltage over 30V (sine wave RMS), (peak value 42V) or DC 60V.
- Disconnect test leads with the circuit after measurement.

10. Temperature measurement

- Insert UT-S03A(multi-function socket) to the instrument.
- Switch the dial to °C/°F position, press  button to switch temperature unit. OL appears if no thermocouple connected.
- Insert the thermocouple to UT-S03A, pay attention to the polarity. (reverse polarity results in negative reading.)

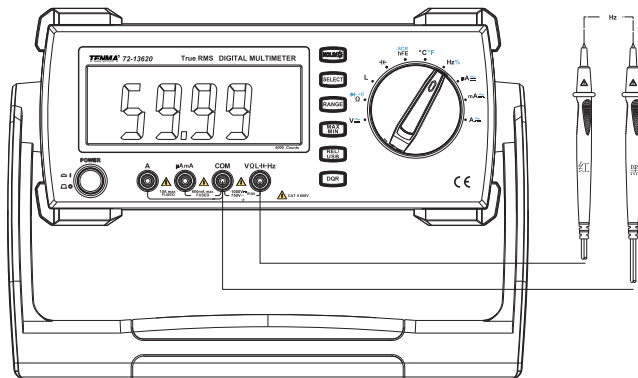


11. Frequency measurement.

- Insert red test lead to Hz% jack, black to COM jack.
- Switch the dial to Hz% position, press **SELECT** to frequency measurement.
- Connect the test leads with frequency source in parallel.
- Reading is displayed.

⚠ Note:

- Do not input over 30V AC or it will pose shock hazard.
- Disconnect test leads with the circuit after measurement.



12. Duty ratio measurement

- Insert red test lead to Hz% jack, black to COM jack.
- Switch the dial to Hz% position, press **SELECT** to enter duty ratio measurement.
- Connect the test leads with signal source in parallel.
- Reading is displayed.

⚠ Note:

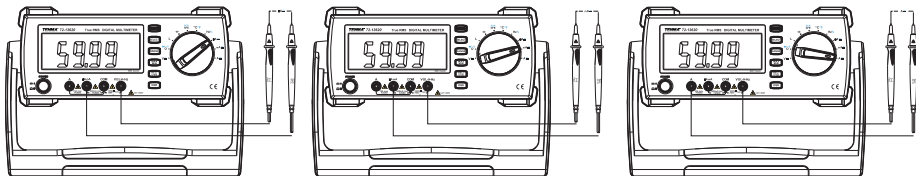
- Do not input over 36V AC or it will pose shock hazard.
- Disconnect test leads with the circuit after measurement.
- Duty ratio measurement function of 72-13620 is only for reference.

13. Current measurement

- Insert red test lead to μA mA or A jack, black to COM jack.
- Switch the dial to $\mu A \approx mA \approx A \approx$ position, press **SELECT** to enter AC/DC measurement.
- Connect the test leads with signal source in series.
- Reading is displayed. When measuring AC current, reading is sine wave RMS.

⚠ Note:

- Before measurement, switch off the power supply of the circuit to be measured, fully discharge all high voltage capacitors.
- If the current is unknown, select the maximum range and reduce it accordingly.
- Do not connect the test leads with circuit in parallel.
- Disconnect test leads with the circuit after measurement.
- When measuring current about 10A, measurement time should be less than 30s with over 15 mins interval or it may pose shock hazard or injury to human.



IX. Technical specifications

Accuracy: \pm (% of reading + least significant digit), 1 year warranty

Ambient temperature: 18°C~28°C

Ambient humidity: \leq 75% RH

1.DC voltage

| Range | Resolution | Accuracy |
|-------|------------|-----------------|
| 600mV | 0.1mV | $\pm (0.5\%+2)$ |
| 6V | 1mV | $\pm(0.3\%+2)$ |
| 60V | 10mV | |
| 600V | 100mV | |
| 1000V | 1V | $\pm(0.5\%+3)$ |

- Input impedance: 10M Ω ; Maximum voltage:1000V

2.AC voltage

| Range | Resolution | Accuracy |
|-------|------------|--|
| 600mV | 0.1mV | 40Hz-1kHz: $\pm(0.6\%+5)$ |
| | | $\geq 1\text{kHz}-10\text{kHz}$: $\pm(1.2\%+5)$ |
| | | $\geq 10\text{kHz}-20\text{kHz}$: $\pm(3\%+5)$ |
| | | $\geq 20\text{kHz}-100\text{kHz}$: $\pm(4\%+5)$ |
| 6V | 1mV | 40Hz-1kHz: $\pm(0.6\%+5)$ |
| | | $\geq 1-10\text{kHz}$: $\pm(1.2\%+5)$ |
| | | $\geq 10-20\text{kHz}$: $\pm(3\%+5)$ |
| | | $\geq 20-100\text{kHz}$: $\pm(4\%+5)$ |
| 60V | 10mV | 40Hz-1kHz: $\pm(0.6\%+5)$ |
| | | $\geq 1-10\text{kHz}$: $\pm(1.5\%+5)$ |
| | | $\geq 10-20\text{kHz}$: $\pm(3\%+5)$ |
| | | $\geq 20-100\text{kHz}$: $\pm(8\%+5)$ |
| 600V | 100mV | 40 Hz-1kHz: $\pm(0.6\%+5)$ |
| | | $\geq 1-10\text{kHz}$: $\pm(3.5\%+5)$ |
| 750V | 1V | 40Hz-1kHz: $\pm(1.2\%+5)$ |
| | | $\geq 1-3\text{kHz}$: $\pm(3\%+5)$ |

- Input impedance: 10M Ω ; Maximum voltage: 750Vrms.
- Frequency response: 40Hz~100kHz.
- Display: Sine wave true RMS (average response)
- In open status, there is residual reading which do not affect accuracy.

3.DC current

| Range | Resolution | Accuracy |
|-------------|-------------|-----------------|
| 600 μ A | 0.1 μ A | $\pm (0.8\%+3)$ |
| 6mA | 1 μ A | |
| 60mA | 10 μ A | |
| 600mA | 100 μ A | $\pm(1.5\%+3)$ |
| 10A | 10mA | $\pm(2\%+5)$ |

- If current $\geq 10A$, measure time should be less than 30s with 15mins interval. In open status, allowable error: ≤ 5 residual digits.

4.AC current

| Range | Resolution | Accuracy |
|-----------------|----------------|---------------------------|
| 600 μ A-6mA | 0.1-10 μ A | 40Hz-10kHz $\pm(1\%+5)$ |
| | | $> 10-15kHz:\pm(2\%+5)$ |
| 60mA-600mA | 100 μ A | 40Hz-5kHz: $\pm(1\%+5)$ |
| | | $> 5kHz-15kHz:\pm(3\%+5)$ |
| 10A | 10mA | 40Hz-1kHz: $\pm(2.0\%+6)$ |
| | | $> 1k-15kHz;\pm(3.0\%+6)$ |

- Frequency response: 40Hz~15kHz.
- If current $\geq 10A$, measure time should be less than 30s with 15mins interval. In open status, allowable error: ≤ 5 residual digits.

5. Resistance

| Range | Resolution | Accuracy |
|-------|------------|------------|
| 600Ω | 0.1Ω | ± (0.8%+5) |
| 6kΩ | 1Ω | ± (1%+5) |
| 60kΩ | 10Ω | |
| 600kΩ | 100Ω | |
| 6MΩ | 1kΩ | ± (2%+5) |
| 60MΩ | 10kΩ | ± (5%+5) |

- Open circuit voltage: -0.5V

6.Capacitance

| Range | Resolution | Accuracy |
|-------|------------|------------|
| 6nF | 1PF | ± (2.5%+5) |
| 60nF | 10PF | ± (1.5%+5) |
| 600nF | 100pF | |
| 6μF | 1nF | ± (3%+10) |
| 60μF | 10nF | |
| 600μF | 100nF | ± (5%+5) |
| 6mF | 1μF | ± (10%+8) |

- Minimum measure range: >8PF;
- If capacitance >6.6mF, OL symbol appears
- Input impedance: 4kΩ

7. Inductance

| Range | Resolution | Accuracy |
|-------|------------|--------------------|
| 600μH | 0.1μH | ± (2.5%+5) |
| 6mH | 1μH | ± (2%+5) |
| 60mH | 10μH | |
| 600mH | 100μH | |
| 6H | 1mH | |
| 60H | 10mH | |
| 100H | 100mH | Only for reference |

- Measure voltage: 0.6V RMS
- Minimum measure range: >16μH
- Input impedance: 4KΩ

8. Equivalent resistance (ACR) Ω

| Range | Resolution | Accuracy |
|-------|------------|-----------|
| 60Ω | 0.01Ω | ± (2%+10) |
| 600Ω | 0.1Ω | ± (1%+5) |
| 6kΩ | 1Ω | |
| 60kΩ | 10Ω | |
| 600kΩ | 100Ω | |
| 2MΩ | 1kΩ | ± (5%+5) |



- Minimum measure range: >0.1Ω
- Input impedance: 4KΩ

9. Frequency/ duty ratio



| Range | Resolution | Accuracy |
|--------|------------|--------------------|
| 600Hz | 0.1Hz | $\pm (0.1\%+10)$ |
| 6kHz | 1Hz | |
| 60kHz | 10Hz | |
| 600kHz | 100Hz | |
| 6MHz | 1kHz | |
| 20MHz | 10kHz | |
| 5%~95% | 0.10% | Only for reference |

- Sensitivity: frequency<600KHz, amplitude>1.5Vrms or frequency>600kHz, amplitude>2.5Vrms, minimum input>5Hz.
- Duty ratio measurement only applicable for square wave $\leq 10\text{kHz}$.
 $2\text{Vpp} \leq \text{input amplitude} \leq 30\text{Vpp}$
 Frequency $\leq 1\text{kHz}$, Duty: 5.0%~95.0%
 Frequency >1kHz, Duty: 30.0%~70.0%

10. Diode/audion/thyristor/continuity

| Function | Position | Resolution | Accuracy |
|------------|---|--------------------|--------------|
| Diode |  | 10mV | 0.5~0.8V |
| SCR test | SCR | 10mV | 0.1~2V |
| Audion hFE | hFE | 1 β | No specified |
| Continuity |  | About 0.1 Ω | No specified |

- When measuring hFE, Ib0: about 10 μA ; Vce: about 2.8V
- When measuring diode, Silicon PN junction onset voltage drop: 0.5~0.8V, open status voltage: 8V
- When measuring continuity, in good conducted circuit, resistance <10 Ω , buzzer goes off; in open circuit, resistance>30 Ω , buzzer does not go off.
- When measuring SCR, onset voltage drop: 0.1~2V; open circuit voltage: about 9V.

| Display | SCR polarity indicator | Status | SCR polarity |
|---------|---|----------------------------------|--------------|
| 0.1V~2V |  | Normal | Two-way |
| 0.1V~2V |  | Normal | One-way |
| ERR | --- | SCR bad contact | Unknown |
| OL | --- | SCR not connected or bad contact | Unknown |

11. Temperature





| Range | Resolution | Accuracy |
|---------------|------------|----------|
| -40°C~0°C | 1°C | ±2%+5°C |
| >0°C~400°C | | ±1%+5°C |
| >400°C~1000°C | | ±2%+3°C |
| -40°F~32°F | 1°F | ±2%+9°F |
| >32°F~752°F | | ±1%+9°F |
| >752°F~1832°F | | ±2%+6°F |

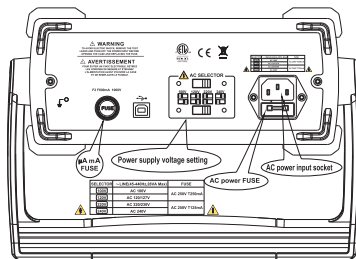
- K-type thermocouple applicable

X. Power supply and Fuse, Power cord, Test probe replacement

1. Power supply setting

- 1) Turn the red switch to the corresponding position
- 2) Setting steps:
 - a. Unplug the power cord
 - b. Turn the red switch to corresponding position
 - c. Selectable positions are shown below

| Position | Voltage | Demonstration | Description |
|----------|-----------|---|-----------------------------|
| 1 | 100V |  | Input corresponding voltage |
| 2 | 120V/127V |  | |
| 3 | 220V/230V |  | |
| 4 | 240V |  | |



2. Fuse replacement

- 1) Unplug the test leads from the instrument.
- 2) Turn off the power supply for the instrument
- 3) Open the fuse housing with a screwdriver.
- 4) Replaced the fuse with new one.

3. test probe replacement

if insulation on probe is damaged, replace it.

WARNING : probe assemblies to be used for MAINS measurements shall be RATED for CAT II 600V and 10A according to EN 61010-031 or better.

4. Power Cord Replacement

if insulation on power cord is damaged, replace it.

Please use AC 250V, 10A or better power cord.

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