

LiMiT

Digital Multimeter



23

LiMiT

- measure with pleasure

Operating manual

Illustrations

fig.1. DC/AC Voltage Measurement

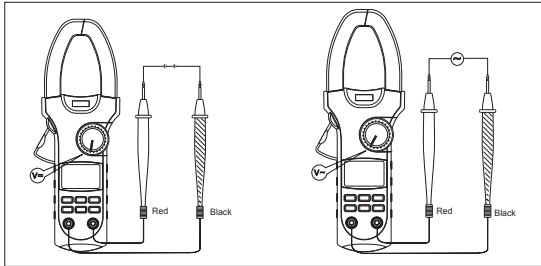


fig.2. Measuring Resistance

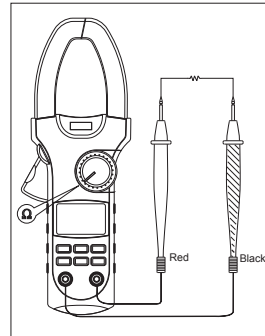


fig.3. DC Current Measurement

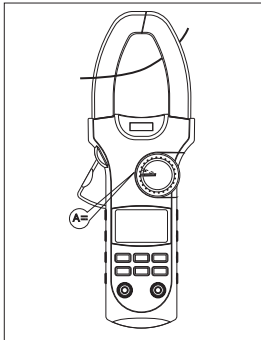
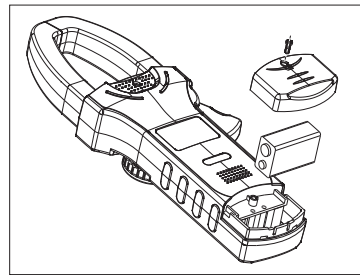


fig.4. Replacing the Battery



A. DC Voltage

Range	Resolution	Accuracy	Overload protection
6.600V	1mV	$\pm (0.8\%+1)$	600V DC/AC
66.00V	10mV		
600.0V	100mV		

B. AC Voltage


Range	Resolution	Accuracy	Overload protection
6.600V	1mV	$\pm (1.2\%+5)$	600V DC/AC
66.00V	10mV		
600.0V	100mV		

C. Resistance


Range	Resolution	Accuracy	Overload protection
660.0 Ω	0.1 Ω	$\pm (1.2\%+2)$	250VAC
6.600k Ω	1 Ω	$\pm (1\%+2)$	
66.00k Ω	10 Ω		
660.0k Ω	100 Ω		
6.600M Ω	1k Ω	$\pm (1.2\%+2)$	
66.00M Ω	10k Ω	$\pm (1.5\%+2)$	

Tables

D. Diode Test

Range	Resolution	Accuracy	Overload protection
	1mV	0.5V~0.8V (Open circuit voltage approx. 3.0V)	250VAC

E. Continuity Test

Range	Resolution	Accuracy	Overload protection
	0.1Ω	Around $\leq 30\Omega$, the buzzer beeps. (Open circuit voltage approx. -1.2V)	250VAC

F. Frequency

Range	Resolution	Accuracy	Overload protection
660.0Hz	0.1Hz	$\pm (0.1\%+3)$	250VAC
6.600kHz	0.001kHz		
66.00kHz	0.01kHz		
660.0kHz	0.1kHz		
6.600MHz	0.001MHz		
66.00MHz	0.01MHz		

G. Duty Cycle

Range	Resolution	Accuracy	Overload protection
0.1%~99.9%	0.1%	For reference only	250VAC

H. DC Current

Range	Resolution	Accuracy	Overload protection
66.00A	0.01A	$\pm (1.5\%+40)$	1000A DC/AC
1000A	1A	$\pm (1.5\%+8)$	

Tables

I. AC Current

Range	Resolution	Accuracy	Frequency Response	Overload protection
66.00A	0.01A	$\pm (2\%+40)$	50Hz ~ 60Hz	1000A DC/AC
1000A	1A	$\pm (2\%+8)$		

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Overview

This Operating Manual covers information on safety and cautions. Please read the relevant information carefully and observe all the Warnings and Notes strictly.

Limit 23 is a clampmeter/multimeter for professional use. The instrument have autorange and the display have large digits, shows rotary switch position witch makes this instrument easy to handle for the user. For indoor use.

General Specifications

Measuring range and accuracy see page 2-5.

- Auto range.
- Display shows selected function.
- Maximum Display: 6666 or 3 5/6 digits.
- True RMS for Voltage AC.
- Surge current Current AC.
- Displays shows OL when the instrument is overloaded.
- Max conductor diameter for clamp 45 mm.
- Display backlight. Automatic off after 1 minute.
- Sleep mode. Instrument turn off automatic if not active for 15 minutes. Beeps 3 times before turn off.

- Measurement Speed: Updates 3 times /second.
- Temperature: Operating: 0°C~30°C
 Storage: -20°C~60°C
- Battery 1 pcs 9 V Type 6F22.
- Safety/Compliances: IEC61010 CAT II 600V/ CAT III 300 V over voltage and double insulation standard.
- Certification: CE

Safety Information

This Meter complies with the standards IEC61010: in pollution degree 2, category CAT II 600V, CAT III 300V over voltage and double insulation.

Warning

To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:.

- Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastics. Pay attention to the insulation around the connectors.

- Inspect the test leads for damages insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and the grounding.
- The rotary switch should be placed in the right position and no any changeover of range shall be made during measurement is conducted to prevent damage of the Meter.
- Never attempt an in-circuit current measurement where the voltage between terminals and ground is greater than 600 V.
- When the Meter working at an effective voltage over 60V in DC or 42V rms in AC, special care should be taken for there is danger of electric shock.
- Do not use or store the Meter in an environment of high temperature; humidity, explosive, inflammable and strong magnetic fields. The performance of the Meter may deteriorate after dampened.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes and current.
- Replace the battery as soon as the battery indicator appears. Whit to low battery, the Meter might produce false readings that can lead to electric shock and personal injury.

Functional buttons

Select

• Change between DC and AC for voltage and current measurement.

• Change between resistance, continuity and diod test.

MAX/MIN

• Starts recording of maximum and minimum values. Press button for 1 second to exit max/min mode.



• ON/OFF for display backlight. Backlight automatic off after 1 minute.

Hold

• ON/OFF for hold function. H shows on display when value is frozen.

θHz

• Change between Hz and duty cycle % when the meter is at %Hz, V or A position.

ZERO

• Zeroing the display before measuring DC current.

Voltage measurement DC and AC (See fig 1)

1. Insert red test lead into the VΩHz terminal and black test lead into the COM terminal.

2. Set the rotary switch to V position.

3. Select DC or AC with select button. Display shows DC or AC.

4. Connect the test leads across with the object being measured. The measured value shows on the display.

Current measurement DC (See fig 3).

1. Set the rotary switch to 66 A — or 1000 A — .Display shows DC. Start with 1000 A when the value is unknown.
2. Open the jaws and center one of the conductor. Make sure the conductor is placed at center of the jaw. Only one conductor at each time can be measured. The measured value shows on the display.

Note. If the meter not display 00,00 when it is at 66 A — range press zero button to zeroing.

When the meter is at 1000 A — range it displays 0 and it is not allowed to press zero button.

Current measurement AC (See fig 3).

1. Set the rotary switch to 66 A \sim or 1000 A \sim .Display shows AC. Start with 1000 A when the value is unknown.
2. Open the jaws and center one of the conductor. Make sure the conductor is placed at center of the jaw. Only one conductor at each time can be measured. The measured value shows on the display.

Surge current measurement

1. Set the rotary switch to 1000 A \sim .
2. Press select button when the meter display minimum reading. The display value shows ---- and INRUSH symbol.

3. Turn on the electrical equipment to measure the moment start up current. The meter is locked to the highest measurement range.
4. Press select button for 1 second to exit surge current mode.

Resistance measurement (See fig 1)

1. Insert red test lead into the V Ω Hz terminal and black test lead into the COM terminal.
2. Set the rotary switch to Ω position.
3. Push select button to select resistance function. Displays shows Ω .
4. Connect the test leads across with the object being measured. The measured value shows on the display.

Note

- The test leads can add 0.1 Ω to 0.3 Ω of error to resistance measurement. To obtain precision readings in low-resistance measurement, that is the range of 200 Ω , short-circuit the input terminals beforehand and record the reading obtained. This is the additional resistance from the test lead.
- OL displays when the circuit is open or the resistor value is higher than max range.

Frequency and Duty Cycle measurement (See fig 2)

1. Insert red test lead into the V Ω Hz terminal and black test lead into the COM terminal.

2. Set the rotary switch to %Hz position.
3. Push θ Hz button to select Hz or Duty Cycle function. Displays shows Hz or %.
4. Connect the test leads across with the object being measured. The measured value shows on the display.
5. When meter is on V or A measuring mode frequency or duty cycle can be measured by pushing θ Hz button.

Diode test (See fig 2)

Use the diode test to check diodes, transistors, and other semiconductor devices. The diode test sends a current through the semiconductor junction, and then measures the voltage drop across the junction. A good silicon junction drops between 0.5V and 0.8V.

To test a diode out of a circuit, connect as follows:

1. Insert red test lead into the V Ω Hz terminal and black test lead into the COM terminal.
 2. Set the rotary switch to diode position.
 3. Push select button to select diode function. Displays shows diode symbol.
 4. For forward voltage drop readings on any semiconductor component, place the red test lead on the component's anode and place the black test lead on the component's cathode.
- The measured value shows on the display.

Continuity test (See fig 2)

To test for continuity, connect as follows:

1. Insert red test lead into the VQHz terminal and black test lead into the COM terminal.
2. Set the rotary switch to continuity position.
3. Push select button to select continuity function. Displays shows continuity symbol.
4. Connect the test leads across with the object being measured. The buzzer sounds if the resistance of a circuit under test is between 30Ω and 100Ω .

Replacing the Battery (See figure 4)

Replace battery as soon battery symbol is shown on display.

1. Disconnect the connection between the testing leads and the circuit under test when battery indicator appears on the display.
2. Turn the Meter to OFF position.
3. Remove the screw, and separate the battery lid.
4. Replace the battery with 1 pcs 9 V Type 6F22.
5. Rejoin the battery lid and the screw.