

LiMiT

Digital Multimeter

21



LiMiT

- measure with pleasure

Operating manual

Illustrations

fig.1 DC/AC Voltage Measurement

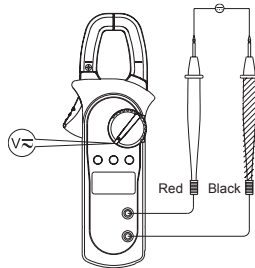


fig.2 Testing for Continuity

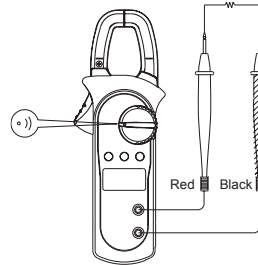


fig.3 DC/AC Current Measurement

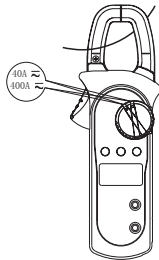
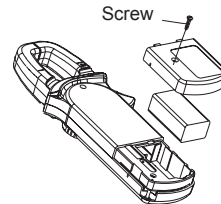


fig.4 Replacing the Battery



A. DC Voltage

Range	Resolution	Accuracy	Overload protection
400.0mV	0.1mV	$\pm(0.8\%+3)$	600V DC/AC
4.000V	1mV	$\pm(0.8\%+1)$	
40.00V	10mV		
400.0V	100mV		
600V	1V	$\pm(1\%+3)$	


B. AC Voltage

Range	Resolution	Accuracy	Overload protection
4.000V	1mV	$\pm(1\%+5)$	600V DC/AC
40.00V	10mV		
400.0V	100mV		
600V	1V	$\pm(1.2\%+5)$	


C. Resistance

Range	Resolution	Accuracy	Overload protection
400.0Ω	100mΩ	$\pm(1.2\%+2)$	600Vp
4.000kΩ	1Ω	$\pm(1\%+2)$	
40.00kΩ	10Ω		
400.0kΩ	100Ω		
4.000MΩ	1kΩ	$\pm(1.2\%+2)$	
40.00MΩ	10kΩ	$\pm(1.5\%+2)$	

D. Diode Test

Range	Resolution	Accuracy	Overload protection
	1mV	Display forward voltage drop nearest value	600Vp

E. Continuity Test

Range	Resolution	Accuracy	Overload protection
	100mΩ	Around $\leq 50\Omega$, the buzzer beeps	600Vp

F. Frequency

Range	Resolution	Accuracy	Overload protection
10Hz	0.001Hz	$\pm(0.1\%+3)$	600Vp
100Hz	0.01Hz		
1kHz	0.1Hz		
10kHz	1Hz		
100kHz	10Hz		
1MHz	100Hz		
10MHz	1kHz	For reference only	

G. Duty Cycle

Range	Resolution	Accuracy	Overload protection
0.1%~99.9%	0.1%	For reference only	600Vp

H. DC Current

Range	Resolution	Accuracy	Overload protection
40.00A	0.01A	$\pm(2\%+5)$	400A DC/AC
400.0A	0.1A	$\pm(2\%+3)$	

I. AC Current

Range	Resolution	Accuracy	Frequency Response	Overload protection
40.00A	0.01A	$\pm(2.5\%+8)$	50Hz ~ 60Hz	400A DC/AC
400.0A	0.1A	$+(2.5\%+5)$		

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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 21 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.

- Auto range.
- Display shows selected function.
- Maximum Display: 3999 or 3 $\frac{3}{4}$ digits.
- Displays OL when the instrument is overloaded.
- Max conductor diameter for clamp 26 mm.
- Sleep mode. Instrument turn off automatic if not active for 15 minutes.
- 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 continuity and diod test.

RELA

- Relative mode for Current measurement.
- Select manual range for Voltage and Resistance measurement.
- Change between Hz and duty cycle %.

Hold

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

Voltage measurement DC and AC (See fig 1)

1. Insert red test lead into the HzDuty%V Ω 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. Push REL Δ button for manual ranging. AUTO disappears from the display. When the value is unknown always start from highest range.
5. Connect the test leads across with the object being measured. The measured value shows on the display.

Current measurement DC and AC (See fig 3).

1. Set the rotary switch to 40 A or 400 A position. Start with 400 A when the value is unknown.
2. Select DC or AC with select button. Display shows DC or AC.

3. 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.
4. Push REL Δ button for relative mode. It subtracts a stored value from the present value. Displays shows Δ .

Resistance measurement (See fig 1)

1. Insert red test lead into the HzDuty%V Ω terminal and black test lead into the COM terminal.
2. Set the rotary switch to Ω position. Displays shows Ω .
3. Push REL Δ button for manual ranging. AUTO disappears from the display. When the value is unknown always start from highest range.
4. Connect the test leads across with the object being measured. The measured value shows on the display.

Note

- The test leads can add 0.1Ω to 0.3Ω of error to resistance measurement. To obtain precision readings in low-resistance measurement, that is the range of 200Ω , 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 HzDuty%V Ω terminal and black test lead into the COM terminal.
2. Set the rotary switch to HzDuty% position.
3. Push REL Δ button to select Hz or Duty Cycle. Displays shows Hz or %.
4. Connect the test leads across with the object being measured. The measured value shows on the display.

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 HzDuty%V Ω 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 HzDuty%VΩ 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 less than 50Ω.

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.