DIGITAL MULTIMETER

OPERATION MANUAL

WARNING

To avoid electric shock or injured or damage the instrument, please read the manual carefully before operation.

Ⅰ. SAFETY RULES

This series meter meets the standard of IEC1010. Read it

before operation.

1. Check the case of the meter and test leads before operation.

2. Do not input over range when testing.

3. Be careful when measuring voltage over ACV 40V or DCV 60V.

4. When measuring, must select correct function and range.

5. The test lead should be keep away from the tested point when change the function.

6. Do not try to modify the circuit,

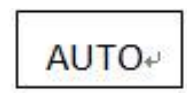
Or you may damage the instrument and endanger personal safety.

7. Safety symbols

“  ” exists high voltage , “  ” dual insulation ,“  ” warning

8. Electric symbols

“  ”GND , “  ”low battery “  ” AC “  ” DC “  ”continuity test “  ”diode “ 

”relative value measurement “ 

”auto range

II.KEY FUNCTION

1.REL: press this key ,readings back to zero , enter into relative measurement ,LCD display “  ” symbol, press it again, out from the relative value measurement function .when at Hz range, can switch to frequency or duty cycle (0.1~99.9%) measurement mode.

2.RANGE key :selecting operation mode of auto range or manual range .the default mode of this meter is auto range , LCD

display“AUTO↵” symbol, press this key will change to manual range, press it one more time to increase a new range, from low to high cycle in turn .press the key for more than 2 seconds, will back to auto range mode.

Ⅲ. SPECIFICATION

3-1. GENERAL

3-1-1 . Displaying : LCD displaying

3-1-2. Max. indication: 3999（3

3/4），auto polarity indication

3-1-3． Measuring method: dual slope A/D transfer

3-1-4． Sampling rate: approx. 3 times/sec

3-1-5． Over range indication: displays “OL”

3-1-6． Low battery indication: “  ” symbol displays

3-1-7． Operation: (0～40)℃，relative humidity <80%

3-1-8． Power：2×1.5V battery

3-1-9． Meas.:124×80×20 mm

3-1-10． Weight: approx. 140g

（including battery）

3-1-11. Accessories: instruction manual, gift box and battery

3-2. TECHNICAL DATA

3-2-1. Accuracy: ±（RDG×a% + digit） at (23±5)℃,<75%RH one year guarantee from production date

3-2-2.DCV

RANGE	ACCURACY	RESOLUTION
400mV	±(0.5% +4)	0.1mV
4V		1mV

40V		10mV
400V		100mV
600V	±(1.0% +4)	1V

Input resistance： 10MΩ

Overload protection: 400Mv range:250V RMS ＜ 10seconds ;other ranges 600VRMS ＜ 10seconds .

3-2-3. ACV True RMS Measurement

RANGE	ACCURACY	RESOLU7TION

400mV	±(1.5%+6)	100μV
4V	±(0.8%+6)	1mV
40V		10mV
400V		100mV
600V	±(1.0%+6)	1V

Input resistance: 10MΩ

Overload protection: 400mV range: 250V RMS ＜10seconds(manual range only). Other ranges 600VRMS＜10seconds.

Frequency response: Sine wave and triangular wave : (40~1000)Hz,

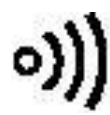
other waveform:(40~400)Hz

Displaying: True RMS response

3-2-4. CONTINUITY TEST

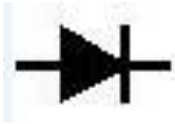
Overload protection: 250VRMS

Warning: do not input voltage at this range.

Range	Display	Test Condition
	Buzzer sound at less than	OCV: about 0.5V

	(50±30)Ω	

RANGE	DISPLAYING VALUE	TEST CONDITION

	Forward voltage drop of diode	Forward DCA is approx. 0.5mA , backward voltage is approx. 1.5V

3-2-5. DIODE

Overload protection:250VRMS

Warning: do not input voltage at this range.

3-2-6.RESISTANCE（Ω）

RANGE	ACCURACY	RESOLUTION

400Ω	±(0.8%+5)	0.1Ω
4kΩ	±(0.8%+4)	1Ω
40kΩ		10Ω
400kΩ		100Ω
4MΩ		1kΩ
40MΩ	±[1.2%+5]	10kΩ

OCV: more than 400mV

Overload protection: 250VRMS.

NOTE: At 400Ω range, you should make the test leads short to measure the wire resistance, then, subtracts from the real

measurement.

3-2-7. CAPACITANCE

RANGE	ACCURACY	RESOLUTION
4nF	±(5.0%+40)	1pF
40nF	±(3.5%+8)	10pF
400nF		100pF
4uF		1nF
40uF		10nF
2000uF	±(5.0%+8)	100 nF

Overload protection: 250VRMS

Warning: do not input voltage at

this range.

3-2-8. Frequency(Hz/DUTY)

Range	Accuracy	Resolution
100Hz	±(0.5% +4)	0.01Hz
1000Hz		0.1Hz
10kHz		1Hz
100kHz		10Hz
1MHz		100Hz
10MHz		1kHz

Input sensitivity: 3V Vp-p (range 10MHz: more than 3.5V Vp-p)
Overload protection: 250V DC/AC peak value.

Ⅳ. OPERATION

4-1. DCV MEASUREMENT

4-1-1. Set the knob to a proper “V” range.

4-1-2. The default mode of this meter is auto range , LCD display“ AUTO ” symbol, press “RANGE” key change to manual range, it can select the range of 400mV,4V,40V,400V,600V.

4-1-3. connect the test lead to the circuit under tested, the voltage

and polarity of the point which the red test lead connect to will shown on LCD.

NOTE:

1. If LCD displays “OL” when you use manual range, it means over range, should set the knob to a higher range.
2. Do not input voltage over DC 600V, or, the circuit might be damaged.
3. Be careful when measuring high voltage circuit.

4-2. ACV MEASUREMENT

4-2-1. Set the knob to a proper “V” range.

4-2-2. The default mode of this meter is auto range , LCD display“ AUTO ” symbol, press “RANGE” key change to manual range, it can select the range of 400mV,4V,40V,400V,600V.

4-2-3. Connect the test lead to the circuit under tested, the voltage value of the two point which the test lead connect to will shown on LCD.

NOTE:

1. If LCD displays “OL” , it means over range, should set the knob to a higher range.
2. Do not input voltage over 600V，or, the circuit might be damaged.
3. Be careful when measuring high volt circuit.

4-3. CONTINUITY TEST

4-3-1. Set the knob to “  ” range.

4-3-2.Apply test leads to two points of tested circuit, if the

inner buzzer sounds, the resistance is less than (50±30)Ω.

NOTE:

Do not input any voltage at this range .

4-4. DIODE MEASUREMENT

4-4-1.Set the knob to “  ” range,

4-4-2.Positive measurement: connect the red test lead to the anode terminal and the black one to the cathode

terminal of the diode under tested. The LCD will display the approx value of the diode forward voltage drop.

4-4-3. Reverse measurement: connect the red test lead to the cathode terminal and the black one to the anode terminal of the diode under tested. The LCD display “OL”.

4-4-4. Diode testing including positive and reverse

measurement, if not in conformity with the above test result, means the diode is damaged.

4-5.RESISTANCE MEASUREMENT

4-5-1.Set the function knob to “ Ω ” range, connect test leads crossly to the resistor under tested.

4-5-2.Press the “RANGE” key to select the mode of auto/manual range

4-5-3. If the measured resistance is

low ,it should make the test leads short, press the “ REL↵ ” key once, then measure the resistance.

NOTE:

1. When use the manual range measurement mode, if have no idea of the measured resistance range beforehand, should set the range knob to a higher one.
2. If resistance is over selected range value, “OL” displays,

should set the knob to a higher range. When measuring value is over 1MΩ, the reading will take a few seconds to be stable, it's normal for high resistance measuring.

3. When input terminal is in open circuit, overload display "OL"
4. When measuring in line resistor, be sure that power is turned off and all capacitors are released completely.
5. Do not input any volt at this

range.

4-6.CAPACITANCE MEASUREMENT ⊣⊢

4-6-1.Set the function switch to “ ⊣⊢ ”range.

4-6-2.I f the LCD displayed value is not zero ,press “ REL↵ ” key back to zero.

4-6-3.Apply the test lead to the capacity polarity (red test lead polarity is “ +” ,the black test lead polarity is “—”), the LCD will display

capacity value .

NOTE:

1. Do not input voltage and current at this range .

2. Press the “REL↵” key to make the displayed value back to zero to ensure the accuracy of the measurement.

3. The operation mode is auto range only at this range .

4. When measure the high-end signals over 80% at 4nF range, will automatic convert range.

5. Release the capacitor completely before measuring.
6. The input reading stability is over 15 seconds at 2000 μF

4-7.FREQUENCY MEASUREMENT

4-7-1.Set the range knob to "Hz/DUTY" ,connect the test lead to the circuit under tested .

4-7-2.Press the " REL↵ " key to switch frequency and duty circle,LCD display the

readings of frequency and duty circle under tested .

NOTE:

1. The operation mode is auto range only at this range .
2. In noise environment, should better use the shielded cable when measure the small signal.
3. Do not touch the high voltage circuit.
4. Do not input the value over DC 250V or AC peak value to avoid damage the instrument.

4-8.AUTO POWER OFF

After stop working for 15 minutes, the meter will be into sleep mode. If the meter into auto power off mode, should switch the knob to “off” range to restart the power.

Ⅴ. MAINTANENCE

Do not try to modify the circuit.

1. Keep the meter away from water, dust and shock.
2. Do not store and operate the

meter under the condition of high temperature, high humidity, combustible, explosive and strong magnetic place.

3. Wipe the case with a damp cloth and detergent, do not use abrasives and alcohol.

4. If do not operate for a long time, should take out the battery to avoid leakage.

4-1. When  signal displays, should replace the battery following the steps:

4-1-1. Unlock the button and remove the battery case.

4-1-2. Take out the old battery and replace the new one. It's better to use alkaline battery for longer life.

4-1-3. Fit on the battery case and lock the button.

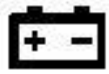
4-2. Fuse replacement

Use the same type fuse as specified.

6. TROUBLE SHOOTING

If the meter does not work properly, check the meter as following:

CONDITIONS	WAY TO SOLVE
NO DISPLAYING	●The power is not turned on ●replace battery

 symbol displays	●replace battery
BIG ERROR	●replace battery

●The specifications are subject to change without notice.

- **The content of this manual is regarded as correct, error or omits Pls. contact with factory.**
- **We hereby will not be responsible for the accident and damage caused by improper operation.**
- **The function stated for this User Manual cannot be the reason of special usage.**

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