

## OPERATION MANUAL OF DIGITAL LCR METER

### 1、General

This meter is a steady performance, battery-driven 3 1/2 digital LCR meter, which has the figure of unit symbol displaying, accuracy reading and wide range measurement. This meter has the function of measuring inductance, resistance, capacitance test. In addition, it's ideal for testing SMD type components. Plus, the meter offers advanced features, such as the ability to perform precision measurements. It is an ideal hand-held tool for labs, factories and radio-technology.

Please read this operation manual carefully before your operation!

### 2、Characteristic

#### 2-1. General characteristic

Display: LCD display, Max. 1999

Inductance measure: 0.1uH~20H

Capacitance measure: 0.1pF~2000uF

Resistance measure: 0.01Ω~20MΩ

Zero adjust: Capacitance under 20nF is manual ministrant zero adjust.

Over range: display "1"

Low battery indication: "⚡" symbol display

Sampling rate: 0-5s

Working temperature: 0~40℃

Relative humidity : less than 80%

Meter size: 185mm×93mm×35mm (length×width×height)

Weight: Approx.290g (including 9V battery)

Power: one 9V battery (6F22 or equivalent)

Standard accessories: test leads, operation manual

#### 2-2. Electric characteristic

Accuracy: ±(% of reading + number of digit) at 23 ± 5℃, relative humidity<75%. One year guarantee since production date.

##### 2-2-1. Capacitance

Range	Accuracy	Resolution
200pF	± (2.5%+5)	0.1pF
2nF		1pF
20nF		10pF
200nF		100pF
2 μ F		1000pF
20 μ F		0.01 μ F
200 μ F		0.1 μ F
2000 μ F	± (3.0%+5)	1 μ F

##### 2-2-2. Inductance

Range	Accuracy	Resolution
200uH	± (2.0%+5)	0.1uH
2mH		1uH
20mH		10uH
200mH		100uH
2H		1mH
20H	± (4.0%+10)	10mH

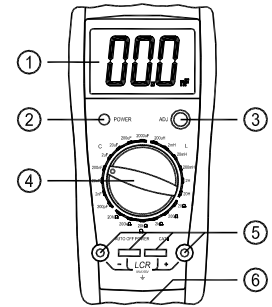
##### 2-2-3. RESISTANCE

Range	Accuracy	Resolution
20 Ω	± (1.0%+5)	0.01 Ω
200 Ω		0.1 Ω
2k Ω		1 Ω
20k Ω		10 Ω
200k Ω		100 Ω
20M Ω	± (2.0%+5)	10k Ω

### 3、Operation

#### 3-1 Panel description (SEE FIG.1)

- 1) LCD display: display the measuring value, unit and "⚡" symbol;
- 2) Power switch: turn on/off the power;
- 3) Zero Adjust switch: zero adjust switch before measurement under range 20nF;
- 4) Function knob: select range;
- 5) Input jack: test input COM;
- 6) Battery case.



#### 3-2 Matters need attention before measurement

- When "⚡" signal displays at the state of power on, should replace the battery to ensure the accuracy;
- Do not switch the function knob when measuring.
- Capacitance measurement function is used to measure the capacitance value, can't used to measure the figure of merit of reactive power. It perhaps gets a wrong reading if measure the capacitance value of resistance; before measuring, it should release the capacitor completely. Beware of polarity when connects the polar capacitor. Do not connect the test COM with voltage source; otherwise it will cause grievous damage. Do not connect the test leads short-circuit, otherwise it will lead to the loss of extra heavy current, and it will have over range display in all ranges. Please do not measure the capacitance on wire, though it can measure, it will cause the big error and damage the meter (if the wire is not power off or there exists the voltage, capacitance or without releasing the capacitance completely).
- Under range 20nF maybe there is no way to zero adjust when using SMD test clip (the clip's capacitance is bigger than 20pF);
- Inductance measurement function is used to measure the inductor value, can't used to measure the figure of merit of reactive power. It perhaps gets a wrong reading if measure the inductance value of resistance;
- Please do not measure the inductance on line to avoid damaging the meter.
- Before measuring, it should release the capacitor completely to avoid damage.

#### 3-3 Capacitance measurement

Set the function knob to a proper capacitance range;

- 1) On the range under 20nF, setting the zero adjust switch till the LCD displays “000” ( but it must insert the test leads or SMD test clip);
- 2) Insert the capacitor under tested to the “COM” or clip by test leads, the value will displayed on LCD, which will read as unit of the selected range directly. If it displays “1” , it means over range measure. If there is “1” or “00” before the displayed select a lower range to increase the measurement resolution.

**Note**

- 1) If the capacitance under measured is unknown beforehand, should set the range knob from the lower to the highest range,
- 2) If capacitance breakdown, it will display over range in all ranges; when there’ s a lower leaky capacitance, it will display over range or a big value which is much bigger than the normal value. If turn off capacitance, the reading will display “0” at all ranges;
- 3) When test the small (pF) capacitance, the test leads more short more better, when measuring, test points of test leads should be close to the pin of capacitance under measured to zero adjust, thus can get a higher accuracy.
- 4) When use any test leads, please remember the test leads perhaps lead to a bigger capacitance. Firstly, it should measure the capacitance value in the condition of the test leads is out of measurement, write down the open-circuited value and deduct it from the test value, it will get a correct test result, this result is the same under the other test condition;
- 5) Many capacitors (especially the electrolytic capacitor) have wide capacitance of condenser. If the test result is bigger than the nominal value, there is no necessary to be surprised at it, except the blocking capacitor. Usually the test result is seldom smaller than the rated value.
- 6) When range changes, and the test value have significant changes, it usually can examine the resist of leaky capacitor. At the low range, the existent effect of leaky capacitance can reduce.

**3-4 Inductance measure way**

- 1) Set the function knob to a proper inductance range;
- 2) Insert the inductor under tested to the “COM” or clip by test leads, the value will displayed on LCD, which will read as unit of the selected range directly. If it displays “1” , it means over range measure. If there is “1” or “00” before the displayed select a lower range to increase the measurement resolution.

**Note**

- 1) If the range under measured is unknown beforehand, should set the range knob from the lower to the highest range,
- 2) In order to avoid leading into the stray induction, should use the short wire when the tiny inductance;
- 3) This meter can’ t be used to test inductance’ s figure of merit. e.g.: it perhaps gets a wrong reading when test the inductance of resistance.

**4、Auto power off**


The meter will be into sleeping mode when stopping working for 20 minutes; if you want to measure you should restart the power. It won’ t be power off when it LCD display full range 20%.

**5、Maintenance**

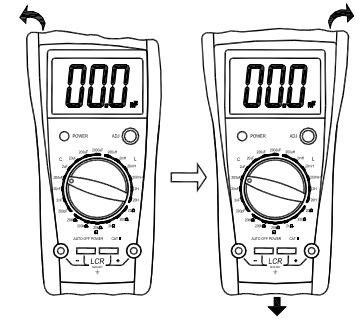
Do not try to modify the electric circuit.

**Note:**

- 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;
- 5) When  signal displays, should replace the battery following the steps:

- 1) Take off the holster. (see the fig.);
- 2) Unlock the screw and remove the battery case.
- 3) Take out the old battery and replace the new one. It’s better to use alkaline battery for longer life
- 4) Fit on the battery case and lock the screw;
- 5) Fit on the holster as the opposite way.



- The specifications are subject to change without notice.
- The content of this manual is regarded as correct, error or omits. Please contact with factory.
- We herby 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.