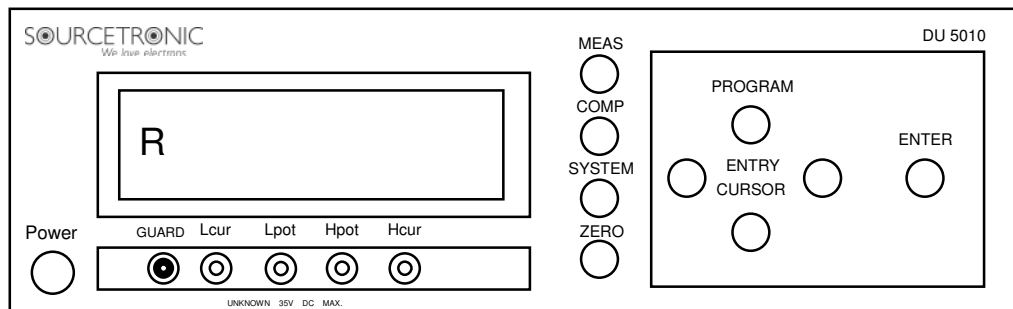


# Manual

## Micro Ohmmeter DU 5010 / 5011

Version: 10/2007



Device type:	DU 5010 / 5011
Serial No.:	
Manufactured in:	

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# Warranty

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## **SAFETY SUMMARY**

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or specific WARNINGS given elsewhere in this manual will violate safety standards of design, manufacture, and intended use of the instrument. *SOURCETRONIC* assumes no liability for the customer's failure to comply with these requirements.

### **BEFORE APPLYING POWER**

Verify that the product is set to match the available line voltage and the correct fuse is installed.

### **PROTECTIVE GROUNDING**

Make sure to connect the protective grounding to prevent an electric shock before turning on the power.

### **NECESSITY OF PROTECTIVE GROUNDING**

Never cut off the internal or external protective grounding wire, or disconnect the wiring of protective grounding terminal. Doing so will cause a potential shock hazard that may bring injury to a person.

### **FUSES**

Only fuses with the required rated current, voltage, and specified type( normal blow, time delay, etc. ) should be used. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.




### **DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE**

Do not operate the instrument in the presence of flammable gases or fumes.

### **DO NOT REMOVE THE COVER OF THE INSTRUMENT**

Operating personnel must not remove the cover of the instrument. Component replacement and internal adjustment can be done only by qualified service personnel.

## SAFETY SYMBOLS

	<b>DANGER</b> - High voltage.
	<b>Explanation:</b> To avoid injury, death of personnel, or damage to the instrument, the operator must refer to an explanation in the instruction manual.
	<b>Protective grounding terminal :</b> To protect against electrical shock in case of a fault. This symbol indicates that the terminal must be connected to ground before operation of equipment.
<b>WARNING</b>	The <b>WARNING</b> sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a <b>WARNING</b> sign until the indicated conditions are fully understood and met.
<b>CAUTION</b>	The <b>CAUTION</b> sign denotes a hazard. It calls attention to an operating procedure, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a <b>CAUTION</b> sign until the indicated conditions are fully understood and met.



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# 1. Safety Before Operation

The tester must be operated under correct AC power source and use correct fuse for protection purposes. The AC power line requirement is as follows

AC Line Voltage : 115/230 VAC  $\pm$  10%

AC Line Frequency : 50/60 Hz.

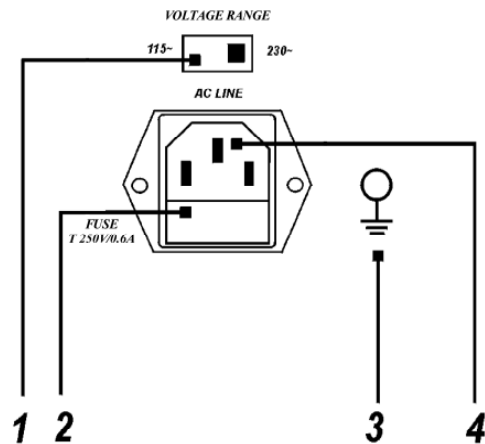
Power Consumption : 40 VA Max.

AC Line Voltage is selective (Please refer to table 1-1)

Table 1-1 AC Line Voltage Selection Table

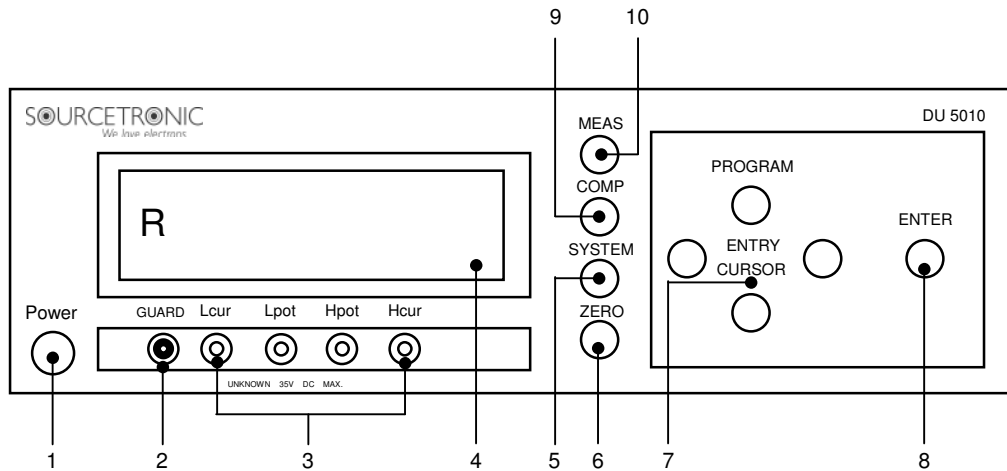
Selected Voltage	AC Voltage Range	Fuse Used
115V	100 / 120 V	T0.6A/250Vac
230V	220 / 240 V	T0.3A/250Vac

1. Voltage Selector Switch
2. Fuse Holder
3. Ground Terminal
4. Power Plug



## 2. Panel Layout

### 2.1 FRONT PANEL LAYOUT



#### 1. POWER AC Power ON/OFF

To activate AC power ON / OFF. IN is ON. OUT is OFF.

#### 2. GUARD Grounding Terminal

This terminal is the actual ground of the tester. Connecting direct to the test fixture will have interference screening effect.

#### 3. UNKNOWN TERMINALS

There are four testing terminals connecting to the testing leads or test fixture. They are

*Hcur*: High Current Driver

*Hpot*: High Voltage Terminal

*Lpot*: Low Voltage Terminal

*Lcur*: Low Current Sensor

- Note: When device under test has polarity connect the (+) terminal to the *Hpot* terminal and the (-) terminal to the *Lpot* terminal.

- Warning: Make sure to discharge before connecting to the tester when the device under test has residual voltage.

#### 4. LCD DISPLAY

The large 240 x 64 dot LCD display is used which enables all setting parameters, test and comparison results displayed in a comprehensive way.

#### 5. CONFIG: System setting button

This button controls setting of trigger mode, alarm, interface and calibration data.

#### 6. ZERO: Zeroing operation button

Zeroing operation can be activated by pushing this button. However, make sure the terminals are either open or short as desired. The tested value will be offset and noted as zero. After the operation is completed a word "ZERO" is displayed on the upper right hand corner.

#### 7. CURSOR/ENTRY

There are four cursors keys as [<] Left , [>] Right, [^] Up, or [v] Down. They are used to select operation mode when it is in selection mode. When it is in number entering mode [<] is move the unit number to the left and [>] is to move the unit number to the right. [^] is to decrease the number due to enter and [v] is to increase the number due to enter.

#### 8. ENTER:

This key is to confirm data set or change of parameters in selection or set up mode.

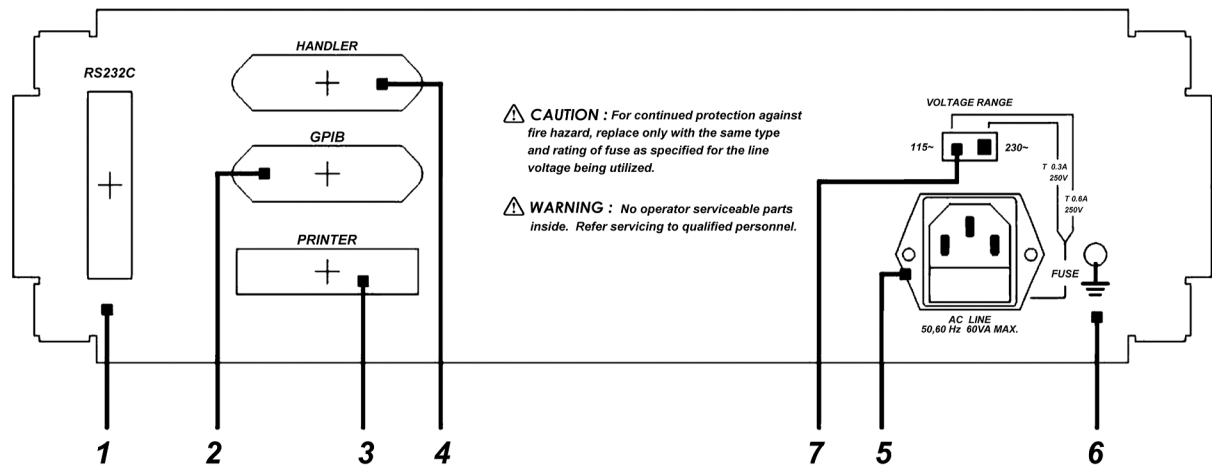
#### 9. COMP.: Comparison mode key.

When this key is pressed comparison mode is activated. Under this mode the LCD display displays information as comparison set up data and comparison results. (Please refer to comparison function manual for details)

#### 10. MEAS.: Measurement mode key.

When this key is pressed measurement mode is activated. Under this mode the LCD display will display all set up parameters and test values.

## 2.2 REAR PANEL LAYOUT



### 1. RS232 Interface: Optional Accessory

This is a standard serial RS232 Interface 25 pin connector. Connecting through a standard communication cable to a computer the tester can be remote control and monitor by a PC.

(Please refer to RS232 Interface user manual for details)

### 2. GP-IB Interface: Optional Accessory

This is a standard IEEE-488 Interface which enables connection to a PC for remote control and monitoring. Also it can communicate with one or more instruments which have GP-IB interface for auto-testing capability.

(Please refer to GP-IB Interface manual for details)

### 3. Printer Interface: Optional Accessory

This is a standard parallel interface which enable connection to a printer for permanent print out for all test conditions and test results.

(Please refer to Printer Interface manual for details)

### 4. Handler Interface: Optional Accessory

This is an optional interface which enables communication to a remote handler for auto-test and sorting function.

(Please refer to Handler Interface manual for details)

### 5. AC Line Input Socket:

This is a standard 3 pins AC Line input socket complete with a built-in fuse for over current protection. Usage of correct socket and fuse will conform to international safety standards.

- Note : Please check to use correct AC Line Voltage which must be matched to the voltage set in the voltage selector.

#### 6. Ground Terminal:

This is the grounding terminal connected the metal chassis and the ground pin of the power socket.

Connection this terminal to the proper ground can prevent any electrical shock accident.

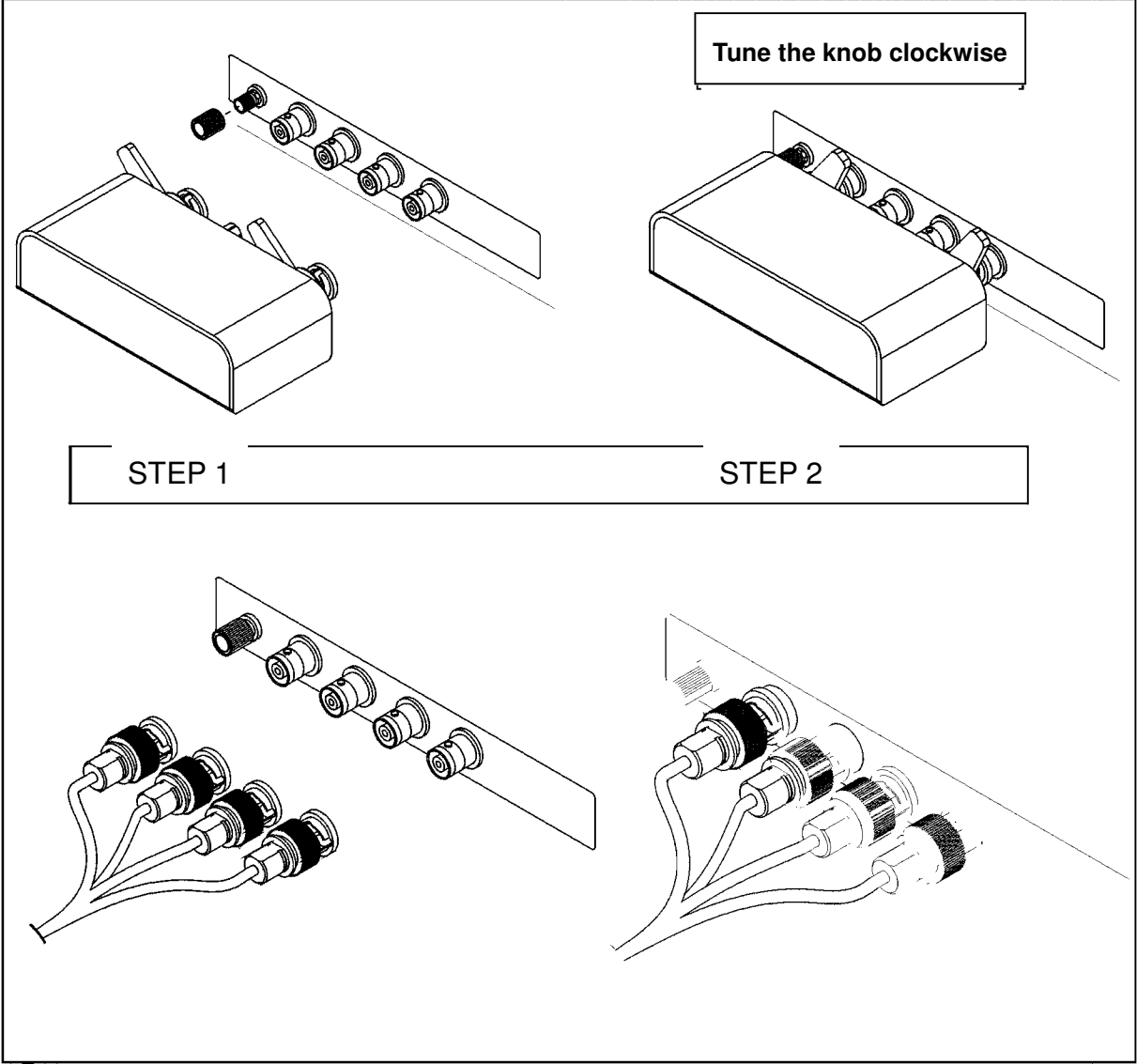
- Note : Please assure to connect this ground terminal properly to ground for safety purposes.

#### 7. Voltage Selector:

To select correct operation voltage as marked.

- Note : Please check and assure to use correct fuse for corresponding voltage.

### 2.3 Test Fixture and Test Leads Connection Diagram



Picture 2-1 TEST FIXTURE (LEADS) CONNECTION DIAGRAM

## 2.4 OPERATION INSTRUCTION

Testing Parameters Setting. (Press the [MEAS] entering into measuring stage at any mode.)

### 2.4.1 Setting Test Range

1. Auto Range Mode ---- Auto Select the Best Range
  - A. Press the [<] or [>] enabling the reverse cursor moving to the decided testing category as shown below.



- B. Press the [ENTER], [^] or [v] to show all test range at all parameter categories as shown below.



- C. Choose and use the [^] or [v] to select the desired test range **AUTO** and to confirm it by pressing the [ENTER] key.

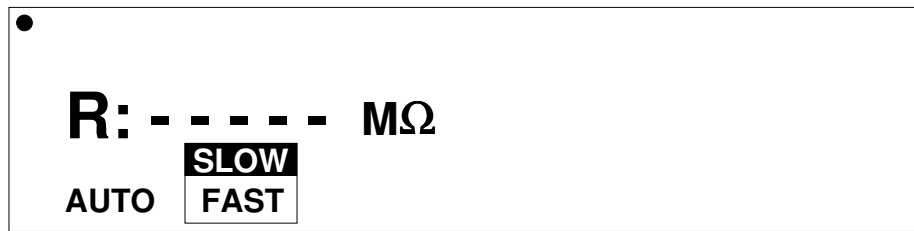
\*5010: 200mohm to 200Kohm 7 ranges, 5011 : 20mohm to 2Mohm 9 ranges

### 2.4.2 Setting Test Speed

- A. Press the [<] or [>] enabling the reverse cursor moving to the decided testing category as shown below.



- B. Press the [ENTER], [^] or [v] to show all test timing at all parameter categories as shown below.

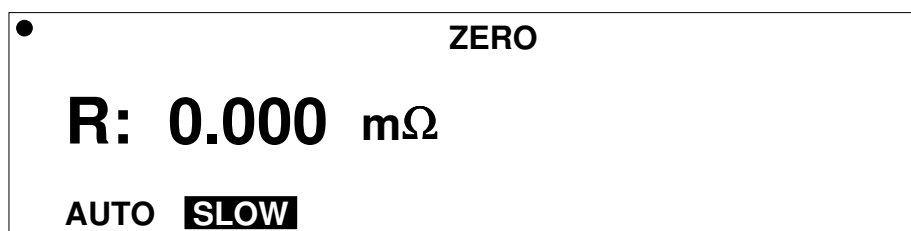


C. Choose and use the [ $\wedge$ ] or [ $\vee$ ] to select the desired test timing and to confirm it by pressing the [ENTER] key.

\* FAST : 14meas./sec. SLOW : 6meas./sec.

## 2.5 ZERO offset procedure

To ensure either the test fixture or the test leads is connected to the four terminals in the UNKNOWN position. Also the test clips on the test fixture or the test leads must be short circuit. and to confirm it by pressing the [ENTER] key as shown below.



Should the LCD display displays **ZERO FAIL** tester reflects that the residual resistance value detected on the four terminals at the UNKNOWN is too high and is over the value that can be offset. Check the test fixture or the test leads to see if it is properly short circuit and is connected to the four terminals correctly. Try to do the zeroing procedure again after problem is rectified.

## 2.6 Config. Setup Parameter (CONFIG.)

CONFIG setup parameters stored will be used when unit is power up. Amended parameter will be updated and stored in the system memory. To initiate CONFIG setup mode it can be done by pressing the [CONFIG] key on the front panel and the LCD is displayed as below.

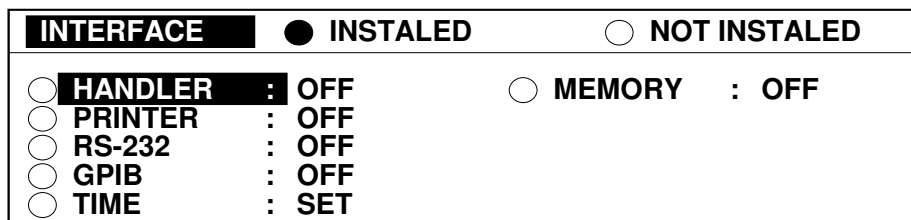


There are two setup modes; **INTERFACE** for interface set up and **UTILITY** for other system parameter set up.

### 2.6.1 Interface Setup

This setup is only effective when corresponding interface option is installed.

Use the [^] or [v] to move the reverse cursor to **INTERFACE** and press the [ENTER] to initiate interface set up mode and the display is shown as below.



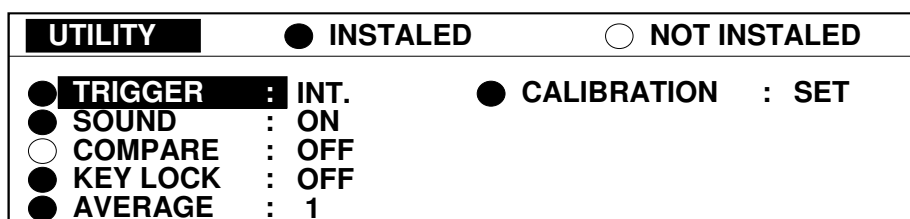
Any Interface Setup

Any interface will be highlighted as a ● when it has been installed otherwise a ○ is displayed indicated that the interface has not been installed.

Using the [^] or [v] to move the reverse cursor to the required interface block and press the [ENTER] to confirm initiating the interface setup.

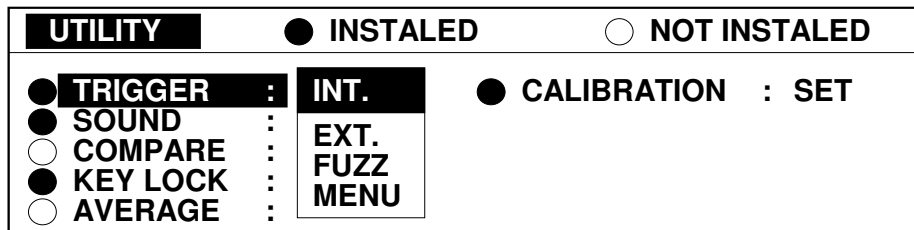
### 2.6.2 Utility Setup

Use the [^] or [v] moving the reverse cursor to **UTILITY** and to confirm it by pressing the [ENTER] as shown below.



1. Setting Trigger Mode (TRIGGER)

- A. Use the [^] or [v] moving the reverse cursor to **TRIGGER** and to confirm it by pressing the [ENTER] as shown below.



- B. Use the [^] or [v] moving the reverse cursor to initiate TRIGGER setup mode and to confirm it by pressing the [ENTER] as shown.

**INT.** : The trigger mode is internal and continuous mode.

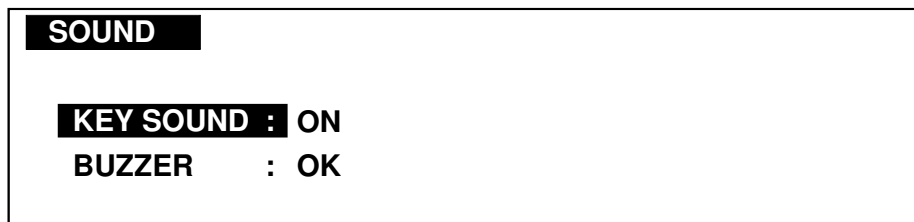
**EXT.** : The trigger mode is depended by HANDLER interface or the [MEAS.] in front panel.

**FUZZ**: The trigger mode is depended by comparator mode. It will measure and continue to auto-scan which the unknown connect.

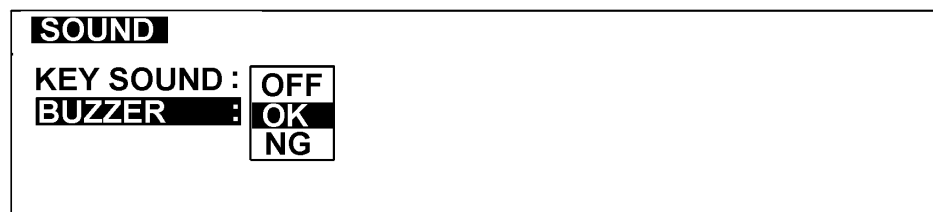
**MENU**: The trigger mode is depended by hi power transformer test mode.

2. Setting Buzzer Mode (SOUND)

- A. Use the [^] and [v] moving the reverse cursor to **SOUND** and to confirm it by pressing the [ENTER] as shown below.



- B. Use the [^] and [v] moving the reverse cursor to [KEY SOUND] or [BUZZER] and to confirm it by pressing the [ENTER] as shown below.



3. Setting Comparator Mode (COMPARE)

This is an option which compensates the measured values to match with reference standard value. Please refer to attached operation manual when option is ordered.

4. Key Lock (KEY LOCK)

A. Use the [^] and [v] moving the reverse cursor to **KEY LOCK** and to confirm it by pressing the [ENTER] as shown below.

<b>UTILITY</b>	<input checked="" type="radio"/> <b>INSTALED</b>	<input type="radio"/> <b>NOT INSTALED</b>
<input checked="" type="radio"/> <b>TRIGGER</b>	: INT.	<input checked="" type="radio"/> <b>CALIBRATION</b> : SET
<input checked="" type="radio"/> <b>SOUND</b>	: ON	
<input type="radio"/> <b>COMPARE</b>	: ON	
<input checked="" type="radio"/> <b>KEY LOCK</b>	: SET.	
<input checked="" type="radio"/> <b>AVERAGE</b>	: SET.	

B. Use the [^] or [v] moving the reverse cursor to **SET.** and to confirm it by pressing the [ENTER] as shown below.

<b>PASSWORD</b>
INPUT : <input checked="" type="text" value="0"/> 0000000

C. Use the [<] or [>] moving the reverse cursor. And use the [^] or [v] setting to confirm it by pressing the [ENTER].

A PASSWORD is assigned to provide unauthorized person to activated the function. Customer is allowed to assign their own password upon consulting the agent or manufacturer for detail procedure.

5. Setting Calibration (CALIBRATION)

Use the [^] and [v] moving the reverse cursor to **CALIBRATION** and to confirm it by pressing the [ENTER] as shown below.

<b>PASSWORD</b>
INPUT : <input checked="" type="text" value="0"/> 0000000

☛ Note : This function is for calibration purposes. It is used in associated with standard calibration standards. If those are not available and ready for calibration it is strongly recommended not to use this function under any circumstances.

## 3. Specification

### 3.1 Specification

#### 3.1.1 Specification

Model	5010	5011
Measurement Range	200mΩ ~ 200KΩ, 7 range	20mΩ ~ 2MΩ, 9 range
Resolution	10μΩ ~ 10Ω for 7 range	1μΩ ~ 100Ω for 9 range
Measurement Accuracy	±( 0.1% of reading + 5 digits)	
Temperature Coefficient	± ( 0.01% + 0.5 digits) / °C	
Source Current	1μA ~ 1.0A DC	
Open Circuit Voltage	Below 1.0V ~ 4.0V	
Display	LCD 240 x 64 Graphic display, 4 1/2 digits	
Configuration	4-Wire test	
Trigger Mode	INT. / EXT. / FUZZY	
Ranging	Auto or Manual	
Backup status	Measurement status: Measure range, Comparator setting	
Accessories	Test clips, Power cord, Operation manual, Certificate calibration	
Power	115/230 V ± 10%, 50/60 Hz	
Dimensions	360(W) x 110(H) x 350(D) mm	
Weight	Approx.5.0 kg	
<b>Options</b>		
Interface	<b>R:</b> RS-232 Interface <b>G:</b> GP-IB Interface <b>H:</b> Handler Interface condition on set-up function	
Comparator	<b>J:</b> Judgment comparator Reference value & Hi-Lo% Limits setting. Limit of Q.D.R. θ value. GO/NG Judgment & indication with alarm.	
Memory	<b>M:</b> Up to 100 sets of memory	
Fixture	Test Clips (Std. accessory), Test Box, SMD Test Tweezers	

#### 3.1.2 Test Condition

1. Test Signal  
DC Current Source 1μA ~ 1.0A
2. Test Timing  
Slow: 350ms; Fast: 150ms.
3. Test Range  
Auto Range **Auto** / Fixed Range **Hold**.

### 3.1.3 Measurement Range

Table 3-1 Measurement Range

Range	Measurement Range		
20mΩ	0.001mΩ	to	19.999mΩ
200mΩ	0.01mΩ	to	199.99mΩ
2Ω	0.0001Ω	to	1.9999Ω
20Ω	0.001Ω	to	19.999Ω
200Ω	0.01Ω	to	199.99Ω
2kΩ	0.0001kΩ	to	1.9999kΩ
20kΩ	0.001kΩ	to	19.999kΩ
200kΩ	0.01kΩ	to	199.99kΩ
2MΩ	0.0001MΩ	to	1.9999MΩ

### 3.1.4 Display Screen

The large 240 x 64 dot LCD display is used which enables all setting parameters, test and comparison results displayed in a comprehensive way.

### 3.1.5 Basics Accuracy

The basics accuracy must depend below test condition.

- A. Warm-up time above 30 min.
- B. Must execute calibrator (ZERO).
- C. Operation Temperature between  $23 \pm 5^{\circ}\text{C}$ .
- D. Relative Humidity below 80%.
- E. Test timing is the **SLOW** mode.

### 3.1.6 Zeroing

To ensure either the test fixture or the test leads is connected to the four terminals in the **UNKNOWN** position. Also the test clips on the test fixture or the test leads must be short circuit or open circuit.

### 3.1.7 Memory Function

The instrument storage the data and the stage before turn off. It don't setting all functions.

### 3.1.8 CALIBRATION

This function is for calibration purposes. It is used in associated with standard calibration standards. If those are not available and ready for calibration it is strongly recommended not to use this function under any circumstances.

## 3.2 Special Functions

### 3.2.1 Comparator Function (standard)

HI/LO COMPARE: (501X-J)

Reference value & Hi-Lo% Limits setting. GO/NG Judgment & indication with alarm.

### 3.2.2 Memory 501X-M (optional)

Up to 100 sets of memory

## 3.3 Optional Interface Function

### 3.3.1 Handler Interface (H)

This is an optional interface which enables communication to a remote handler for auto-test and sorting function.

(Please refer to Handler Interface manual for details)

### 3.3.2 RS232 Interface (501x-R)

This is a standard serial RS232 interface 25 pin connector. Connecting through a standard communication cable to a computer the tester can be remote control and monitor by a PC.

(Please refer to RS232 Interface user manual for details)

### 3.3.3 GP-IB Interface (501x-G)

This is a standard IEEE-488 Interface which enables connection to a PC for remote control and monitoring. Also it can communicate with one or more instruments which have GP-IB interface for auto-testing capability.

(Please refer to GP-IB Interface manual for details)

## **3.4 Basics Specification**

### **3.4.1 Power Requirements**

115/230V  $\pm$ 10%, 50/60 Hz, select the voltage switch on rear panel.  
Max. Power 60VA.

### **3.4.2 Operating Temperature and Humidity**

Operating Temperature: 0 °C to 40 °C,  
R.H. < 90%

### **3.4.3 Dimension**

360(W)  $\times$  110(H)  $\times$  350(D) mm.

### **3.4.4 Weight**

About 5.0Kg.

## **3.5 Standard Accessory**

### **3.5.1 User's Manual → The Book**

User's manual can help user to operate the 501x for reference.

### **3.5.2 AC Line Input Socket**

This is a standard 3 pins AC Line input socket complete with a built-in fuse for over current protection. Usage of correct socket and fuse will conform to international safety standards.

### **3.5.3 Power Core transfer (3p—2p)**

### **3.5.4 Fuse**

T 0.6A/250V, or T 0.3A/250V.

### **3.5.5 Test Clips**