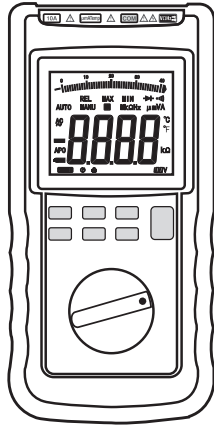
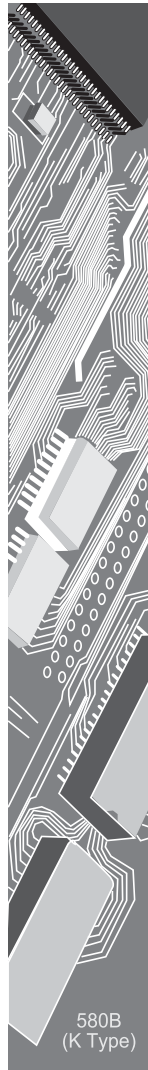


# DIGITAL INSULATION MULTIMETER

## INSTRUCTION MANUAL



Read this manual thoroughly before use



## WARRANTY

This instrument is warranted to be free from defects in material and workmanship for a period of one year. Any instrument found defective within one year from the delivery date and returned to the factory with transportation charges prepaid, will be repaired, adjusted, or replaced at no charge to the original purchaser. This warranty does not cover expandable items such as batteries or fuses. If the defect has been caused by a misuse or abnormal operating conditions, the repair will be billed at a nominal cost.

## GENERAL DESCRIPTION

This autorange digital meter is a battery-powered multimeter with insulation measurement. It has a 4000-count large display.

### It can be used to measure :

1. DC and AC voltage
2. DC and AC current
3. Resistance
4. Diode
5. Continuity
6. Frequency
7. Insulation resistance
8. Temperature ( $^{\circ}\text{C}/^{\circ}\text{F}$ )

## SAFETY INFORMATION


This meter has been designed according to IEC-61010: in pollution degree 2, and measurement category (CAT II 600V, CAT III 300V).

### Warning

To avoid possible electric shock or personal injury, follow these guidelines:










- a. Do not use the meter if it is damaged. Before you use the meter, inspect the case. Pay particular attention to the insulation surrounding the connectors.
- b. Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads before you use the meter.
- c. Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- d. Do not operate the meter around explosive gas, vapor, or dust.
- e. Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- f. Before use, verify the meter's operation by measuring a known voltage.
- g. When measuring current, turn off circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.
- h. When servicing the meter, use only specified replacement parts.
- i. Use caution when working above 30V ac rms, 42V peak, or 60V dc. Such voltages pose a shock hazard.
- j. When using the probes, keep your fingers behind the finger guards on the probes.
- k. When making connections, connect the common test lead before you

connect the live test lead. When you disconnect test leads, disconnect the live test lead first.

- l. Remove the test leads from the meter before you open the battery cover or the case.
- m. Do not operate the meter with the battery cover or portions of the case removed or loosened.
- n. To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator ( "  " ) appears.
- o. When in Relative Mode or in MIN mode, the symbol "REL" or "MIN" is displayed. Caution must be used because hazardous voltage may be present.
- p. After you press the **TEST** button to start insulation resistance test, the meter's terminal outputs high voltage. To avoid electric shock, don't touch any conductor with hand or skin.
- q. To avoid electric shock, do not touch any naked conductor with your hand or skin. Comply with local and national safety requirements when you work in hazardous locations.
- r. Use correct protective equipment, as required by local or national authorities when you work in hazardous areas.
- s. Do not work alone.
- t. Do not use the meter in a manner not specified by this manual or the safety features of the meter may be impaired.
- u. Remaining endangerment:  
When an input terminal is connected to dangerous live potential it is to be noted that this potential at all other terminals can occur!
- v. Overvoltage installation categories per IEC 61010-1, 2000: The Meter is designed to protect against transients in these categories:

**CAT I:** From high-voltage low-energy sources, e.g., electronic circuits or a copy machine.

**Symbols**

-  Alternating Current
-  Direct Current
-  DC or AC
-  Caution, risk of danger, refer to the operating manual before use.
-  Caution, risk of electric shock.
-  Earth (ground) Terminal
-  Fuse
-  Conforms to European Union directives
-  The equipment is protected throughout by double insulation or reinforced insulation.

- CAT II:** From equipment supplied from the fixed installation, e.g., Televisions, PCs, portable tools and household appliances.
- CAT III:** From equipment in fixed equipment installations, e.g., installation panels, feeders and short branch circuits, and lighting systems in large buildings.

**Caution**

To avoid possible damage to the meter or to the equipment under test, follow these guidelines:

- a. Disconnect circuit power and discharge all capacitors before testing resistance, diode, continuity, temperature and insulation resistance.
- b. Use the proper terminals, function, and range for your measurements.
- c. Before measuring current, temperature and insulation resistance, check the meter's fuse and turn off the power to the circuit before connecting the meter to the circuit.
- d. Before rotating the range switch to change functions, disconnect test leads from the circuit under test.
- e. Remove test leads from the meter before opening the meter case or the battery cover.

**INSTRUCTION**

**Function/Range Switch**

Turn on the meter by selecting a measurement function. The meter provides a standard display for the function ( range, measurement units, etc.). Use the relevant buttons to select other functions, such as Data Hold, range selection, Relative mode and so on.  
For more detailed information about the function/range switch, see Figure 1 and Table 1.

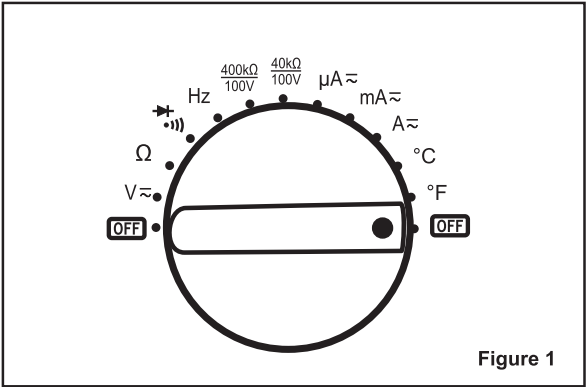


Figure 1

## Function/Range Switch Instruction

Table 1

Switch Position	Measurement Function
$V \approx$	<b>CAT II measurements:</b> DC or AC voltage measurements from 0V to 600V <b>CAT III measurements:</b> DC or AC voltage measurements from 0V to 300V
$\Omega$	Resistance measurements from 0 $\Omega$ to 40M $\Omega$ .
$\rightarrow +$	Diode test. Displays " 0L " above 2V.
$\bullet  )$	Continuity test. Buzzer turns on at <30 $\Omega$ and turns off at >50 $\Omega$ .
Hz	Frequency measurements from 1Hz to 400kHz
$\mu A \approx$	DC or AC current measurements from 0 $\mu A$ to 4000 $\mu A$
mA $\approx$	DC or AC current measurements from 0mA to 400mA.
A $\approx$	DC or AC current measurements from 0.4A to 10A
$\frac{400k\Omega}{100V}$	Insulation resistance measurements from 0.1k $\Omega$ to 400k $\Omega$ , and open circuit test voltage is 100V.
$\frac{40k\Omega}{100V}$	Insulation resistance measurements from 0.1k $\Omega$ to 40k $\Omega$ , and open circuit test voltage is 100V.
$^{\circ}C$	Celsius degree measurements
$^{\circ}F$	Fahrenheit degree measurements

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## Input Terminal Instruction

The terminals are indicated in Figure 2, and explained in Table 2.

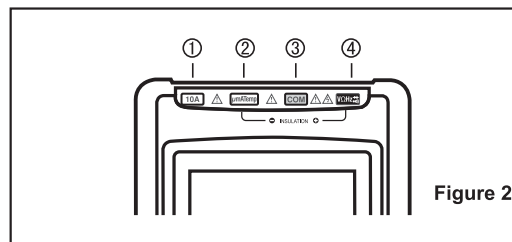


Figure 2

### NOTE

#### " 10A " Terminal :

The max. permitted input current is dc or ac 10A.  
Fuse : 10A/690V, fast action  
For inputs > 2A : measurement duration < 15 secs,  
interval > 15 minutes

#### " $\mu A$ Temp " Terminal :

The max. permitted input current is dc or ac 400mA.  
Fuse : 400mA/690V, fast action

#### " V $\Omega$ Hz $\rightarrow||$ " Terminal :

For CAT II measurements, the max. permitted input voltage is 600V dc or ac rms.  
For CAT III measurements, the max. permitted input voltage is 300V dc or ac rms.

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Table 2

Item	Description
①	Input terminal for DC/AC current measurements of less than 10A.
②	Test current input terminal in insulation resistance measurements. Input terminal for DC/AC current measurements of less than 400mA. Input terminal for the positive ( + ) plug of the K Type thermocouple for temperature measurements.
③	An optional shield terminal in insulation resistance measurements. Common (return) terminal for the other measurements.
④	Input terminal for voltage, continuity, resistance, diode and frequency measurements. Test voltage output terminal in insulation resistance measurements.

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## Button Instruction

The meter's buttons are shown in Figure 3 and described in Table 3.

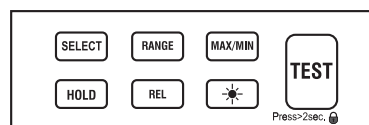


Figure 3

Table 3

Button	Description
SELECT	In voltage or current measurements, pressing this button switches the meter between ac and dc functions. When the rotary switch is in $\rightarrow  $ position, pressing this button switches the meter between diode and continuity measurements.
RANGE	Changes the meter from autorange mode (default) to manual range mode. Press and hold to return to autorange mode.
MAX/MIN	Press the button, the display shows the symbol " MAX " and the maximum reading. Press the button again, the display shows the symbol " MIN " and the minimum reading. Press the button once more, the display shows the flickering " MAX " and " MIN " along with the present reading. Press and hold down for more than 1 second to exit the MAX MIN mode, the display shows the present reading.

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Table 3 (continued)

<b>HOLD</b>	Press to freeze the present reading, it means the meter stays in Data Hold mode. Press again to release the display. In MIN, MAX or REL mode, this button functions normally. In Data Hold mode, the "REL" and "MAX/MIN" buttons are disabled.
	Turns the backlight on and off. The backlight goes off automatically after about 1 minute.
<b>TEST</b>	Starts or stops an insulation resistance test when the rotary switch is in the insulation test position ( $\frac{400k\Omega}{100V}$ , $\frac{40k\Omega}{100V}$ ).  Press this button to enter fixed time insulation resistance test mode, the meter outputs a high voltage for 60 seconds to measure insulation resistance.  Press and hold down this button for more than 2 seconds to start insulation resistance test, the meter outputs high voltage continuously to measure insulation resistance. The test will not stop until you press this button again.
<b>REL</b>	Press this button, the meter enters the Relative mode and store the present reading as a reference for subsequent measurements, "REL" appears on the display, the display reads zero. Press this button again, "REL" flickers, and the display shows the reference. Press and hold down this button for more than 1 second, the meter exits the Relative mode.

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## LCD Display

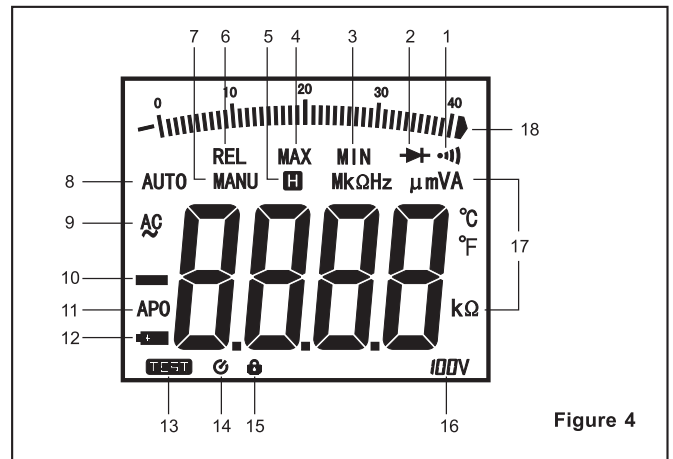


Figure 4

Table 4

	Indicator	Description
1		Continuity test is selected.
2		Diode test is selected.
3	<b>MIN</b>	Minimum reading is being displayed.
4	<b>MAX</b>	Maximum reading is being displayed.

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Table 4 ( Continued )

	Indicator	Description
5		Data Hold is enabled.
6	<b>REL</b>	Relative mode is active.
7	<b>MANU</b>	Manual range mode is selected.
8	<b>AUTO</b>	Autorange mode is selected
9		AC
10		Negative sign
11	<b>APO</b>	Automatic power-off is enabled.
12		Battery is low and should be replaced immediately.  <b>Warning</b> To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as this low battery indicator appears.
13		Insulation resistance test indicator. It appears when insulation test voltage is present.  <b>Note:</b> The " $\nabla\Omega Hz$ " terminal outputs high voltage. Be cautious.
14		Insulation resistance test is in Fixed Time Test mode.
15		Insulation resistance test is locked so that you can perform the test continuously.
16	<b>100V</b>	Voltage of 100V is selected for Insulation resistance test

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## 17. Units on the LCD

Table 5

mV, V	Voltage unit mV: Millivolt ; V: Volt; $1V=10^3mV$
μA, mA, A	Current unit μA: Microamp; mA: Milliamp; A: Ampere; $1A=10^3mA=10^6\mu A$
Ω, kΩ, MΩ	Resistance unit Ω: Ohm; kΩ: Kilohm; MΩ: Megohm; $1M\Omega=10^3k\Omega=10^6\Omega$
Hz, kHz, MHz	Frequency unit Hz: Hertz; kHz: Kilohertz; MHz: Megahertz; $1MHz=10^3kHz=10^6Hz$
°C, °F	Temperature unit °C: Celsius degree; °F: Fahrenheit degree;


## 18. Analog Bar Graph

The length of its lit segments is proportional to the present reading on the LCD. The bar graph is like the needle on an analog meter. It has an overload indicator () on its right and a negative polarity indicator () on its left. Because the bar graph updates 10 times faster than the digital display, the bar graph is useful for making peak and null adjustments and for observing rapidly changing inputs.

The number of lit segments indicates the measured value and is relative to the full-scale value of the selected range. In the 400V range, for example, the major divisions on the scale represent 0V, 100V, 200V, 300V and 400V. An input of ~100V lights the negative sign and the segments up to the "10" on the scale.

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GENERAL SPECIFICATION

Maximum Voltage between any Terminal and Earth Ground: 600V dc or ac rms  
Fuse Protection for "µmATemp" Jack Inputs : 400mA, 690V, Fast, Min. Interrupt Rating 20000A  
Fuse Protection for "10A" Jack Inputs : 10A, 690V, Fast, Min. Interrupt Rating 20000A  
Display: 3 3/4-digit LCD, with a max. reading of 3999  
Overrange Indication: " OL " shown on the LCD.  
Negative Polarity Indication: " — " displayed automatically  
Sampling Rate: 2~3 times/sec  
Temperature Coefficient: 0.2 x (specified accuracy)/°C (<18°C or >28°C)  
Operating Temperature: 0°C~40°C, < 75%RH  
Storage Temperature: -20°C~60°C, < 85%RH  
Operating Altitude: 0 to 2000 meters  
Battery: 6 X 1.5V, AA or equivalent  
Low Battery Indication: "  " shown on the display  
Dimensions: 198 X 99 X 56mm  
Weight: about 580g ( including batteries )

DC Current

Range	Resolution	Accuracy
400µA	0.1µA	± (1.2%+3)
4000µA	1µA	
40mA	0.01mA	± (1.5%+3)
400mA	0.1mA	
10A	0.01A	± (2.0%+5)

Overload Protection:  
Protection for the "µmATemp" jack inputs: Fuse, 400mA/690V, Fast  
Protection for the "10A" jack inputs: Fuse, 10A/690V, Fast  
( For inputs > 2A : measurement duration < 15 secs, interval > 15 minutes )

AC Current

Range	Resolution	Accuracy
400µA	0.1µA	± (1.5%+3)
4000µA	1µA	
40mA	0.01mA	± (1.8%+3)
400mA	0.1mA	
10A	0.01A	± (2.5%+5)

Frequency Response: 40Hz ~ 400Hz  
Response: Average, calibrated in rms of sine wave.  
Overload Protection:

Protection for the "µmATemp" jack inputs: Fuse, 400mA/690V, Fast  
Protection for the "10A" jack inputs: Fuse, 10A/690V, Fast  
( For inputs > 2A : measurement duration < 15 secs, interval > 15 minutes )

SPECIFICATIONS

Accuracy is specified for a period of one year after calibration and at 18°C to 28°C, with relative humidity < 75%. Accuracy specifications take the form of: ± ([% of Reading] + [number of Least Significant Digits])

DC Voltage

Range	Resolution	Accuracy
400mV	0.1mV	± (1.0% + 5)
4V	0.001V	± (0.8% + 3)
40V	0.01V	
400V	0.1V	
600V	1V	± (1.0% + 5)

Input Impedance: the 400mV range: >1000MΩ  
the other ranges: 10MΩ  
Max. Permitted Input Voltage: 600V dc (for CAT II measurements only)  
300V dc (for CAT III measurements only)

AC Voltage

Range	Resolution	Accuracy
4V	0.001V	± (1.0% + 5)
40V	0.01V	
400V	0.1V	
600V	1V	± (1.2% + 5)

Input Impedance: 10MΩ  
Frequency Range: 40Hz ~ 400Hz  
Response: Average, calibrated in rms of sine wave  
Max. Permitted Input Voltage: 600V dc (for CAT II measurements only)  
300V dc (for CAT III measurements only)

Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	± (1.0%+5)
4kΩ	0.001kΩ	± (1.0%+3)
40kΩ	0.01kΩ	
400kΩ	0.1kΩ	
4MΩ	0.001MΩ	
40MΩ	0.01MΩ	± (1.8%+5)



Open Circuit Voltage: the 400Ω range: about -1.2Vdc  
the other ranges: about -0.45Vdc

Frequency

Range	Resolution	Accuracy
4kHz	0.001kHz	± (0.8%+3)
40kHz	0.01kHz	
400kHz	0.1kHz	
4MHz	1kHz	not specified
40MHz	10kHz	
100MHz	0.1MHz	

Measurement Range: 500mV rms ~ 20V rms

Diode and Continuity

Range	Introduction	Test Condition
	The approx. forward voltage drop of the diode will be displayed.	Open Circuit Voltage : about 3V
	The built-in buzzer will sound if the resistance is less than about 30Ω.	Open Circuit Voltage : about -1.2V

## Temperature

Range	Resolution	Accuracy
-20°C ~ 750°C	1°C	-20°C ~ 0°C: $\pm(6.0\%+5)$
		0°C ~ 400°C: $\pm(1.5\%+5)$
		>400°C: $\pm(1.8\%+5)$
-4°F ~ 1382°F	1°F	-4°F ~ 32°F: $\pm(6.0\%+9)$
		32°F ~ 752°F: $\pm(1.5\%+9)$
		>752°F: $\pm(1.8\%+9)$

Overload Protection: Fuse, 400mA, fast action.

### Note:

1. Accuracy does not include error of the thermocouple probe.
2. Accuracy specification assumes ambient temperature is stable to  $\pm 1^\circ\text{C}$ . For ambient temperature changes of  $\pm 5^\circ\text{C}$ , rated accuracy applies after 1 hour.

## Insulation Test

**Measurement Range** : 0.1k $\Omega$  to 400k $\Omega$

**Test Voltages** : 100V

**Nominal Test Current** (1k $\Omega$ /V) : 1mA

**Shortcircuit Test Current** :  $\geq 1.2\text{mA}$

Range	Resolution	Accuracy
40k $\Omega$	0.01k $\Omega$	$\pm(5.0\%+5)$
400k $\Omega$	0.1k $\Omega$	

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### To use MIN MAX recording :

1. Make sure the meter is in the desired function and range.
2. Press the **MAX/MIN** button to activate the MIN MAX mode and the display shows the maximum reading, meanwhile "MAX" appears as an indicator.
3. Press the **MAX/MIN** button to step through the minimum reading ( "MIN" appears ), and the present reading ( "MAX" and "MIN" flicker ), and the maximum reading ( "MAX" appears ), and so on.
4. To exit and erase stored readings, press and hold down the **MAX/MIN** button for more than 1 second or turn the range switch.

## Manual Ranging and Autoranging

The meter defaults to autorange mode in measurement functions which have both autorange mode and manual range mode. When the meter is in autorange mode, "AUTO" is displayed.

1. To enter the manual range mode, press the **RANGE** button, the meter enters the manual range mode, "AUTO" turns off, "MANU" turns on. Each press of the **RANGE** button increases the range. When the highest range is reached, the meter wraps to the lowest range.
2. To exit the manual range mode, press and hold down the **RANGE** button for about 2 seconds. The meter returns to the autorange mode.

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## OPERATION INTRODUCTION

### Using Relative Mode

Selecting relative mode causes the meter to store the present reading as a reference for subsequent measurements.

1. Press **REL** button, the meter enters the Relative mode and store the present reading as a reference for subsequent measurements, and "REL" appears on the display as an indicator. The display reads zero.
2. When you perform a new measurement, the display shows the difference between the reference and the new measurement.  
**TIP:** Press **REL** button again, "REL" flickers on the display. The display shows the reference.  
Press **REL** button once more, the meter returns to Relative mode.
3. Press and hold down **REL** button for more than 1 second, the meter exits the Relative mode.

### Data Hold Mode

Press the **HOLD** button to hold the present reading on the display, "H" is shown on the display as an indicator. To exit the Data Hold mode, press the button again. The indicator "H" disappears.

### MIN MAX Recording Mode

The MIN MAX mode records minimum and maximum values of all input values since this mode is activated.

When the inputs go below the recorded minimum value or above the recorded maximum value, the meter records the new value.

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### Measuring DC or AC Voltage

1. Connect the black test lead to the "**COM**" jack and the red test lead to the "**V $\Omega$ Hz**" jack.
2. Set the range switch to the **V $\approx$**  range.  
Select ac or dc voltage measurement with the **SELECT** button.  
( The symbol "**AC**" appears when ac voltage measurement is selected. )
3. Select autorange mode or manual range mode with the **RANGE** button.  
If you use manual range mode and don't know the magnitude of the voltage to be measured beforehand, select the highest range and then reduce it range by range until satisfactory resolution is obtained.
4. Connect the test leads across the load to be measured.
5. Read LCD display. For dc voltage measurements, the polarity of the red lead connection will be indicated as well.

### Note :

To avoid electric shock to you or damages to the meter, do not attempt to measure a voltage higher than 600V CAT II or a voltage higher than 300V CAT III although readings may be obtained.

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## Measuring DC or AC Current

1. Connect the black test lead to the "COM" jack. If the current to be measured is less than 400mA, connect the red test lead to the "µATemp" jack. If the current is between 400mA and 10A, connect the red test lead to the "10A" jack instead.
2. Set the range switch to "A~", "mA~" or "µA~" range.
3. Select ac or dc current measurement with the **SELECT** button.  
(The symbol "AC" appears when ac current measurement is selected.)
4. Turn off power to the circuit which you want to measured.  
Discharge all capacitors.
5. Break the circuit path to be measured, connect the test leads in series with the circuit.
6. Turn on power to the circuit, then read the display.  
For dc current measurements, the polarity of the red test lead connection will be indicated as well.

### Note :

1. If you don't know the magnitude of the current to be measured beforehand, select the highest range and then reduce it range by range until satisfactory resolution is obtained.
2. Never place the test lead probes in parallel with a circuit or component when the test leads are plugged into the current terminals.

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### Note:

Before performing continuity test, make sure that all power to the circuit to be tested has been removed and all capacitors are fully discharged.

## Measuring Frequency

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩHz~" jack.
2. Set the range switch to **Hz** position.
3. Connect the test leads across the source or load to be measured.
4. Read the reading.

### Note:

The voltage of the input signal should be between 500mV rms and 20V rms. If the voltage exceeds 20V rms, the accuracy of reading may be out of the specified accuracy range.

## Diode Test

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩHz~" jack. (The polarity of the red lead is positive "+".)
2. Set the range switch to **→** position.  
Press the **SELECT** button until the symbol "→" appears on the display.
3. Connect the red test lead to the anode of the diode to be tested, and the black test lead to the cathode of the diode.
4. The display shows the approximate forward voltage drop of the diode.  
If the connection is reversed, "OL" will be shown on the display.

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## Measuring Resistance

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩHz~" jack.
2. Set the range switch to **Ω** range.
3. Connect test leads across the load to be measured.
4. Read the reading on the display.

### Note:

1. For measurements > 1MΩ, the meter may take a few seconds to stabilize reading. This is normal for high resistance measurements.
2. When the input is not connected, i.e. at open circuit, "OL" will be displayed as overrange indication.
3. Before measuring in-circuit resistance, make sure that all power to the circuit to be tested has been removed and all capacitors are fully discharged.

## Continuity Test

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩHz~" jack.
2. Set the range switch to **•||** position.  
Press the **SELECT** button until the symbol "•||" appears on the display.
3. Connect the test leads across the circuit to be measured.
4. If the circuit resistance is less than about 30Ω, the built-in buzzer will sound.

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## Measuring Temperature

### Note

To avoid possible damage to the meter or other equipment, remember that while the meter is rated for -20°C to +750°C and -4°F to 1382°F, the K Type Thermocouple provided with the meter is rated to 250°C. For temperatures out of that range, use a higher rated thermocouple.

The K Type Thermocouple provided with the meter is a present, it is not professional and can only be used for non-critical measurements. For accurate measurements, use a professional thermocouple.

1. Connect the negative "−" plug of the K type thermocouple to the "COM" jack, and the positive "+" plug to the "µATemp" jack.
2. Set the range switch to "°C" or "°F" position.
3. Connect the sensing end of the thermocouple to the object to be measured.
4. Wait until the reading is stable, read the reading on the display.

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## Measuring Insulation Resistance

### Note

1. Before you perform insulation resistance test, make sure that the object to be tested is without power.
2. To avoid electric shock, be cautious.  
After you finish insulation resistance test, discharge the tested object fully.
3. To avoid electric shock, do not touch the object under test with your hand or skin, and do not touch any naked conductor with hand or skin. Always place your fingers behind the finger guards on the test leads when using the probes.
4. Before test, make sure that the meter's fuses are good.

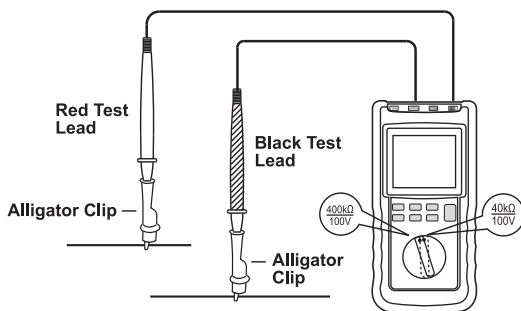


Figure 5

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insulation resistance measurement.

### 7. Discharging the Measured Object

After insulation resistance measurement is finished, you should discharge the measured object in order to avoid electrical shock. Keep the probes on the test points until the object is completely discharged.

8. If necessary you can use shielding to avoid the possible disturbance caused by leakage current. To do it, connect the "COM" terminal to the outside surface of the object to be tested before performing insulation resistance test.

### Automatic Power-Off

After the meter is turned on, the automatic power-off feature defaults to be enabled and the symbol "APO" appears as an indicator. The display will blank and the meter will go into Sleep mode if you have not pressed any button and rotated the range switch for about 30 minutes. To arouse meter from Sleep, rotate the range switch or press any button except the **TEST** button. Pressing button to arouse the meter may cause the meter to enter Data Hold mode, you can press the **HOLD** button to exit Data Hold mode if you want to perform measurement.

To disable the automatic power-off feature, turn on the meter while pressing and holding down any button except the **HOLD** and **TEST** buttons.

To preserve battery life, set the range switch to **OFF** position when you don't use the meter.

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1. Connect an alligator clip to the probe of the red test lead, connect another alligator clip to the probe of the black test lead. Make sure that the connections are firm.  
Insert the plug of the black test lead into the "μmATemp" jack, then insert the plug of the red test lead into the "VΩHz" jack.
2. The test lead connected to the "μmATemp" jack is a ground line. The test lead connected to the "VΩHz" jack is a live line.  
Set the range switch to **OFF** position, then connect the black test lead to the test point of the object to be measured.
3. Choose desired measurement range :  
To choose the desired measurement range, set the range switch to corresponding range position ("400kΩ 100V" or "40kΩ 100V").
4. Connect the red test lead to another test point of the object.
5. a. If you want to measure insulation resistance in Fixed Time mode, press the **TEST** button and then release it quickly. The display shows the symbol "TEST" as an indicator, the meter starts insulation resistance measurement, and high voltage is being outputted through the terminals.  
Read the reading on the display.  
b. If you want to measure insulation resistance continuously, press and hold down **TEST** button for more than 2 seconds. The display shows "LO".  
c. After insulation resistance measurement starts, the built-in buzzer sounds a beep about every 20 seconds to remind the user.
6. Stopping the Measurement  
In the step 5.a, after you press **TEST** button, the display shows "TEST", it means high voltage is being outputted. About 60 seconds later, "TEST" turns off, it means the high voltage output stops, meanwhile the measurement stops automatically.  
At any time and any condition, you can press the **TEST** button to stop

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## MAINTENANCE

### Warning

Except replacing batteries and fuses, never attempt to repair or service the meter unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

The meter should be stored in dry place when not in use.

### General Maintenance

Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

Dirt or moisture in the terminals can affect readings.

Clean the terminals as follows:


1. Set the range switch to **OFF** position and remove the test leads from the meter.
2. Shake out any dirt which may exist in the terminals.
3. Soak a new swab with alcohol.
4. Work the swab around in every terminal.

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Replacing the Battery and Fuse

Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the battery indicator (  ) appears.

To prevent damage or injury, install only replacement fuse of the same ratings.

Remove test leads from the meter before opening the back cover or the battery cover.

To replace the batteries, remove the screws on the battery cover, remove the battery cover, replace the exhausted batteries with new batteries of the same type (AA or equivalent). Reinstall the battery cover and the screws.

This meter uses two fuses:

- Fuse 1 :** 400mA, 690V, Fast, Min. Interrupt Rating 20000A, Ø10X38mm
- Fuse 2 :** 10A, 690V, Fast, Min. Interrupt Rating 20000A, Ø10X38mm

To replace the fuse, remove the screws on the back cover, move the back cover aside gently, replace the blown fuse with a new one of the same ratings. Reinstall the back cover and the screws.

ACCESSORIES

- Manual:** 1 piece
- Test Lead:** 1 set

PRESENT

K Type Thermocouple: 1 piece

NOTE

1. This manual is subject to change without notice.
2. Our company will not take the other responsibilities.
3. The content of this manual can not be used as the reason to use the meter for any special application.

DISPOSAL OF THIS ARTICLE

Dear Customer,

If you at some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled.

Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.

