

# SDM Series Digital Multimeter



## Quick Start EN04B



SIGLENT TECHNOLOGIES CO.,LTD



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## General Safety Summary

Read the following safety precautions carefully to avoid any personal injuries or damages to the instrument and any products connected to it. To avoid potential hazards, please use the instrument as specified.

### **Use proper power line.**

It's only allowed to use the special power line which is approved by local state.

### **Ground the instrument.**

The instrument is grounded through the protective terra conductor of the power line. The ground conductor must be connected to the earth to avoid electric shock. Make sure the instrument is grounded correctly before connecting its input or output terminals.

### **Connect the signal wire correctly**

The potential of the signal wire is equal to the earth, so do not connect the signal wire to a high voltage.

### **Observe all terminal ratings**

Please observe all ratings and sign instructions on the instrument to avoid fire or electric shock. Before connecting the instrument, please read the manual carefully to gain more information about the ratings.

### **Do not operate with suspected failures**

If you suspect that the product is damaged, please contact SIGLENT's qualified service personnel to inspect it. Any repair and adjustment to the product or replacing a component should be done by qualified personnel only.

### **Avoid circuit or wire exposure**

Don't touch exposed contacts or components when the power is on.

### **Don't operate without covers.**

Don't operate the instrument with covers or panels removed.

### **Use proper fuse.**

It's only allowed to use the specified fuse for the instrument.

### **Use proper overvoltage protection.**

Make sure there is no overvoltage (like voltage caused by thunder and lightning) reaching to the instrument, otherwise the operator may suffer an electric shock.

### **Antistatic protection.**

Static electricity will cause damages to the instrument, so test in antistatic areas as far as possible. Ground its inner and outer conductors to release the static electricity temporarily before connecting the cable to the instrument.

**Keep good ventilation.**

Improper ventilation will cause the rise of the instrument's temperature. Keep good ventilation and check the vent and fan regularly when using it.

**Keep the surface of the instrument clean and dry.****Do not operate in wet or damp conditions.****Do not operate in flammable or explosive environment.**

The disturbance test of all the models meets the limit values of A in the standard of EN 61326-1:2020.

**Input terminal protection limitation**

Protection limitation is defined for the input terminal:

**1. Main input (HI and LO) terminal**

**HI** and **LO** terminals are used for Voltage, Resistance, Capacitance, Continuity, Frequency, Diode and temperature measurement. Two protection limitations are defined:

- **HI-LO protection limitation:** 1000VDC or 750AVC. It's the maximum measurable voltage. The limitation can be expressed as 1000Vpk.
- **LO-ground protection limitation:** **LO** terminal can "float" 500Vpk relative to the ground safely. The maximum protection limitation of **HI** terminal relative to the ground is 1000Vpk. Therefore, the sum of the "float" voltage and the measured voltage can't exceed 1000Vpk.

**2. Sampling (HI Sense and LO Sense) terminal**

**HI Sense** and **LO Sense** are used for 4-wire Resistance measurement. Two protection limitations are defined:

- **HI Sense – LO Sense protection limitation:** 200Vpk.
- **LO – LO Sense protection limitation:** 2Vpk.

**3. Current input (I) terminal**

**I** and **LO terminals** are used for current measurement. The maximum current which go through the **I** terminal is limited to 10A by the fuse on the back panel.

**NOTE:**

Voltage on the current input terminal corresponds to voltage on **LO** terminal. To keep good protection, only use the fuse of specified type and level to replace this fuse.

## **IEC Measurement Category II Overvoltage Protection**

SDM Series Digital Multimeter provides overvoltage protection for line-voltage mains connections meeting both of the following conditions to avoid the danger of electric shock:

1. The HI and LO input terminals are connected to the mains under Measurement Category II conditions as following.
2. The maximum line voltage of the mains is 300VAC.

### **WARNING:**

IEC Measurement Category II includes electrical devices connected to mains at an outlet on a branch circuit, such as most small appliances, test equipments, and other devices that plug into a branch outlet or socket. SDM series is capable of making measurements with the **HI** and **LO** inputs connected to mains in such devices (up to 300VAC) or the branch outlet itself. However, the **HI** and **LO** terminals of the Multimeter can't be connected to mains in permanently installed electrical devices such as the main circuit-breaker panels, sub-panel disconnected boxes and permanently wired motors. Such devices and circuits are prone to exceed the protection limits of SDM series.

### **NOTE:**

Voltages above 300VAC only can be measured in circuits that are isolated from mains. However, there may be transient overvoltage in circuits that are isolated from mains. SDM series is able to withstand occasional transient overvoltage up to 2500Vpk. Please don't use this instrument to measure circuits that transient overvoltage may exceed this level.

## Safety Terms and Symbols

**Terms in this manual.** Terms may appear in this manual:

|                      |                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>WARNING</b>       | Warning statements indicate the conditions and behaviors that could result in injury or loss of life.                     |
| <b>CAUTION</b>       | Caution statements indicate the conditions and behaviors that could result in damage to this product or other properties. |
| <b>CAT I (600V)</b>  | IEC Measurement Category I. The highest measurable voltage is 600Vpk in the HI-LO terminal.                               |
| <b>CAT II (300V)</b> | IEC Measurement Category II. Inputs may be connected to mains (up to 300VAC) under Category II overvoltage conditions.    |

**Terms used in this product.** These terms may appear in the product:

|                |                                                                                 |
|----------------|---------------------------------------------------------------------------------|
| <b>DANGER</b>  | Indicates direct injury or hazards that may happen.                             |
| <b>WARNING</b> | Indicates potential injury or hazards that may happen.                          |
| <b>CAUTION</b> | Indicates potential damage to the instrument or other property that may happen. |

**Symbols used in this product.** These symbols may appear on the product:



Hazardous  
Voltage



Warning



Protective  
Earth Ground



Test Ground



Chassis Ground

# Allgemeine Sicherheitsübersicht

Lesen Sie die folgenden Sicherheitshinweise sorgfältig durch, um Verletzungen oder Schäden am Gerät und an den daran angeschlossenen Produkten zu vermeiden. Um mögliche Gefahren zu vermeiden, verwenden Sie das Gerät bitte wie angegeben.

## **Verwenden Sie ein geeignetes Netzkabel**

Verwenden Sie nur das für das Gerät vorgesehene und im jeweiligen Land zugelassene Netzkabel.

## **Erden Sie das Gerät**

Das Gerät ist über den Schutzleiter der Netzleitung geerdet. Um einen elektrischen Schlag zu vermeiden, vergewissern Sie sich bitte, dass das Gerät korrekt geerdet ist, bevor Sie die Eingangs- oder Ausgangsklemmen des Geräts anschließen.

## **Schließen Sie das Messkabel richtig an**

Die Kabelschirmung (Masse) des Messkabels ist gleich dem Potential der Erde, schließen Sie das Messkabel also nicht an eine hohe Spannung an.

## **Überprüfen Sie die Nennwerte aller Klemmen**

Um Feuer oder einen elektrischen Schlag zu vermeiden, beachten Sie bitte alle Angaben und Hinweise auf dem Gerät. Bevor Sie das Gerät anschließen, lesen Sie bitte das Handbuch sorgfältig durch, um weitere Informationen über die Nennwerte zu erhalten.

## **Verwenden Sie einen ordnungsgemäßen Überspannungsschutz**

Stellen Sie sicher, dass keine Überspannung (z. B. durch ein Gewitter) an das Gerät gelangen kann, da sonst die Gefahr eines elektrischen Schlages besteht.

## **Schutz vor Elektrostatik**

Betreiben Sie das Gerät in einer Umgebung, die vor elektrostatischer Entladung geschützt ist, um Schäden durch statische Entladung zu vermeiden. Erden Sie vor dem Anschließen immer sowohl den Innen- als auch den Außenleiter des Kabels, um statische Aufladung abzubauen.

## **Für gute Belüftung sorgen**

Eine unzureichende Belüftung kann zu einem Temperaturanstieg führen, der schließlich das Gerät beschädigt. Sorgen Sie daher für eine gute Belüftung und überprüfen Sie regelmäßig die Ansaugung und den Lüfter.

## **Vermeiden Sie freiliegende Schaltkreise oder Komponenten**

Berühren Sie keine freiliegenden Kontakte oder Bauteile, wenn das Gerät eingeschaltet ist.

## **Richtige Sicherung verwenden**

Verwenden Sie nur die angegebene Sicherung.

**Betreiben Sie das Gerät nicht ohne Abdeckungen**

Betreiben Sie das Gerät nicht, wenn Abdeckungen oder Verkleidungen entfernt sind.

**Betreiben Sie das Gerät nicht bei vermuteten Defekten**

Wenn Sie vermuten, dass das Gerät beschädigt ist, lassen Sie es vor dem weiteren Betrieb von qualifiziertem Servicepersonal überprüfen. Jegliche Wartung, Einstellung oder Austausch, insbesondere von Schaltkreisen oder Zubehör, muss von SIGLENT autorisiertem Personal durchgeführt werden.

**Nicht in feuchter Umgebung betreiben**

Um einen Kurzschluss im Geräteinneren oder einen elektrischen Schlag zu vermeiden, betreiben Sie das Gerät nicht in feuchter Umgebung.

**Betreiben Sie das Gerät nicht in explosionsgefährdeten Umgebungen**

Um Schäden am Gerät oder Personenschäden zu vermeiden, ist es wichtig, das Gerät nicht in explosionsgefährdeter Umgebung zu betreiben.

**Halten Sie die Produktoberflächen sauber und trocken**

Um den Einfluss von Staub und/oder Feuchtigkeit in der Luft zu vermeiden, halten Sie die Oberfläche des Geräts bitte sauber und trocken.

**Sicherheit bei der Handhabung**

Bitte behandeln Sie das Gerät während des Transports vorsichtig, um Schäden an Tasten, Drehknopfschnittstellen und anderen Teilen auf den Bedienfeldern zu vermeiden.

**Es dürfen nur Tastköpfe verwendet werden, die den Spezifikationen des Herstellers entsprechen**

Bei Verwendung von 2X/.../10000X-Sondenbaugruppen müssen die Sondenbaugruppen durch eine doppelte oder verstärkte Isolierung von den gemessenen Stromkreisen isoliert sein.

Alle Sondenbaugruppen sollten die Anforderungen von UL 61010-031 und CAN/CSA-C22.2 Nr. 61010-031-07 erfüllen.

Das Gerät darf nicht so positioniert werden, dass es schwierig ist, die Trennvorrichtung (abnehmbarer Stecker) zu bedienen.

Wenn das Gerät auf eine Weise verwendet wird, die nicht vom Hersteller angegeben ist, kann der Schutz, den das Gerät bietet, beeinträchtigt werden.

## Sicherheitsbegriffe und symbole

**Begriffe in diesem Handbuch.** Diese Begriffe können in diesem Handbuch vorkommen:



### **WARNUNG**

Warnhinweise weisen auf Bedingungen oder Praktiken hin, die zu Verletzungen oder zum Verlust des Lebens führen können.



### **VORSICHT**

Vorsichtshinweise weisen auf Bedingungen oder Praktiken hin, die zu Schäden an diesem Produkt oder anderen Gegenständen führen können.

**Begriffe auf dem Produkt.** Diese Begriffe können auf dem Produkt erscheinen:

### **GEFAHR**

Weist auf direkte Verletzungen oder Gefahren hin, die auftreten können.

### **WARNUNG**

Weist auf mögliche Verletzungen oder Gefährdungen hin, die auftreten können.

### **VORSICHT**

Weist auf mögliche Schäden am Gerät oder an anderen Gegenständen hin, die eintreten können.

**Symbole auf dem Produkt.** Diese Symbole können auf dem Produkt erscheinen:



Hazardous  
Voltage



Protective  
Earth Ground



Warning



Terminal Ground



Power Switch

Wenn Sie solche Symbole auf dem Produkt finden, ziehen Sie das Handbuch zu Rate, um die Art der potenziellen Gefahr und die zu ergreifenden Maßnahmen zu erfahren

## Daily Maintenance and Cleaning

### Maintenance

When storing or placing the instrument, please avoid the liquid crystal display from direct sunlight for a long time.

#### NOTE:

- To avoid damages to the instrument or test leads, please don't place them in mist, liquid or solvent.

### Cleaning

Please often clean the instrument and test leads according to the use of them.

- Wipe the external ash of the instrument and test leads by a soft rag. Be careful not to scratch the transparent plastic protective screen when cleaning the liquid crystal screen.
- Use a soft rag that has been soaked by water to clean the instrument after cutting off the power. Or use 75% isopropyl alcohol of water solvent to get a more thorough cleaning.

#### NOTE:

- To prevent the surface of the instrument or test leads from damages, please don't use any corrosive or chemical cleaning reagents.
- Please make sure the instrument is already dry before restarting it to avoid short circuits or personal injuries caused by water.

## General Inspection

### • Inspect the shipping container

Please keep the damaged container or cushioning material until the contents of the shipment have been checked completely and the instrument has passed the electrical and mechanical test.

Damages of the instrument caused by the shipment will be compensated by the shipper or carrier. **SIGLENT** will not be responsible for the free repair or replacement.

### • Inspect the instrument

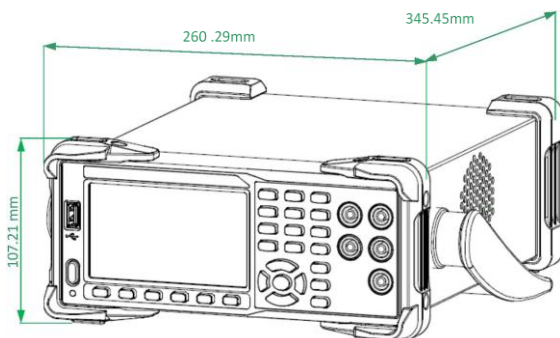
If there exit any mechanical damages or lacking of components, or the instrument fails the electrical and mechanical test, please contact your **SIGLENT** sales.

### • Check the accessories

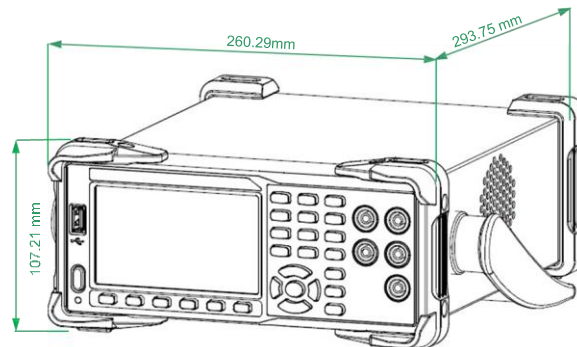
Check the accessories according to the packing list carefully. If there exit any accessories damaged or missing, please contact your **SIGLENT** sales.

## Appearance and Size

SDM3065X

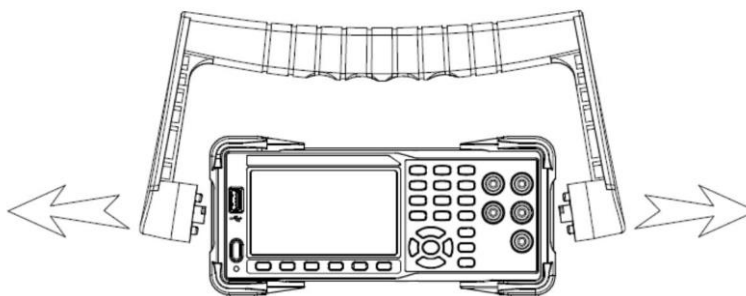


SDM3045X SDM3055X

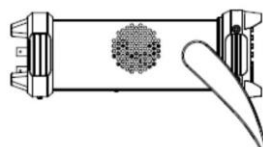
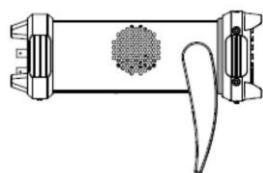
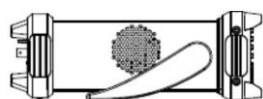


## To adjust the Handle

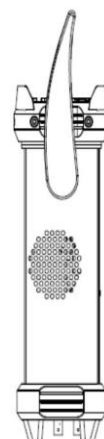
Please grip the handle by the two sides and pull it outward to adjust the handle position of the Multimeter. Then rotate the handle to the appropriate position. Please operate as the following figure:



Handle Adjustment



Horizontal Position



Carrying Position

## Panel Introduction



Figure 1 Front Panel



Figure 2 Rear Panel

### Front Panel

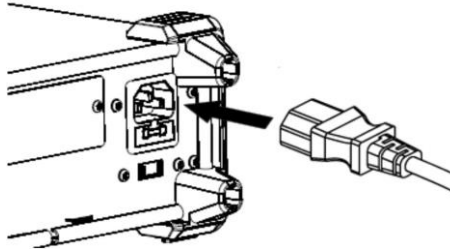
- A. LCD Display
- B. USB Host
- C. Power Key
- D. Menu Operation Keys
- E. Measurement and Assistant Function Keys
- F. Range and Direction Keys
- G. Signal input terminals

### Rear Panel

- A. Power Socket
- B. Power Fuse
- C. AC Voltage Selector
- D. Inspection card (option)
- E. USB Device
- F. LAN
- G. VMC Output
- H. Ext trigger
- I. Current Input Fuse

## Connect Power Cord

Before connect the instrument to a power source, please select the AC voltage selector on the rear panel of your multimeter according to the power supply. Then connect the power cord as shown in the following figure.



Connect Power Cord

Press the Power key on the front panel to start up the multimeter.

If unable to start up the multimeter, take the follow steps:

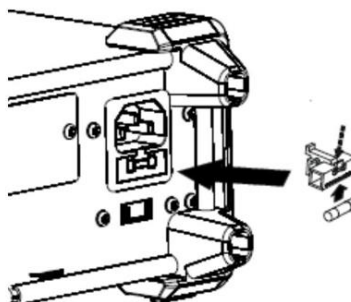
1. Check the power cord connection.
2. After the inspection, if the power key is not lit, please take out the fuse and check, change the fuse if needed.
3. After the above inspections, the power key is still not lit, please contact **SIGLENT** for help.

## Power Selection

The Multimeter is able to operate on multiple power distribution standards and must be set up according to the supply voltage. If the selected supply voltage doesn't match the working voltage while using, the setting of the Multimeter's supply voltage must be changed. The power selector is located under the power fuse on the rear panel.

## Change the Power Fuse

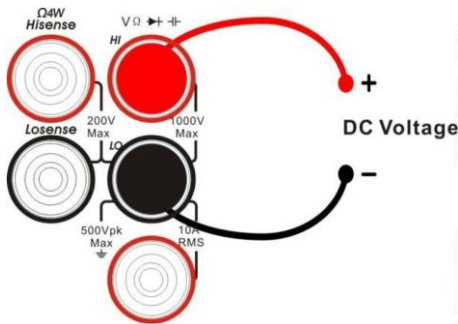
The power fuse is located in the fuse block on the back panel. The Multimeter has installed a power fuse before leaving the factory. It's a kind of fast-melt, no-burst, F300mA, 5×20mm one.



Change the fuse

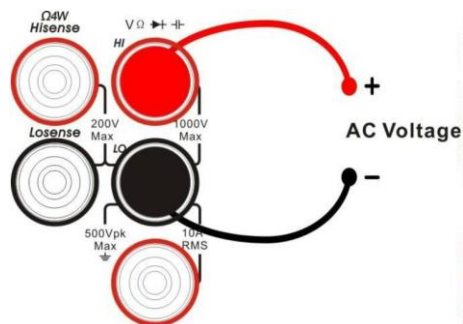
## Connect Test Leads

### DC Voltage Measurement



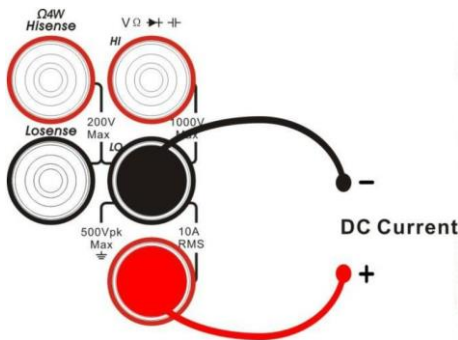
Connect the test leads and tested circuit as the following figure, red test lead to the HI Terminal and black lead to the LO Terminal.

### AC Voltage Measurement



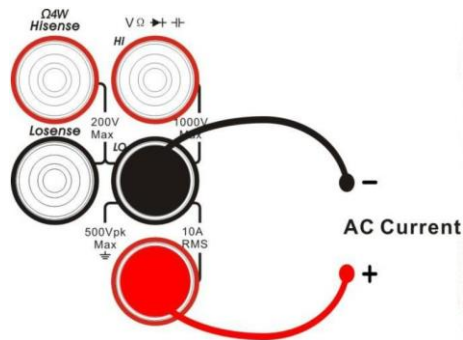
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

### DC Current Measurement



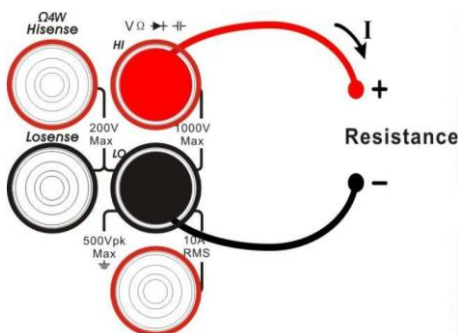
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

### AC Current Measurement



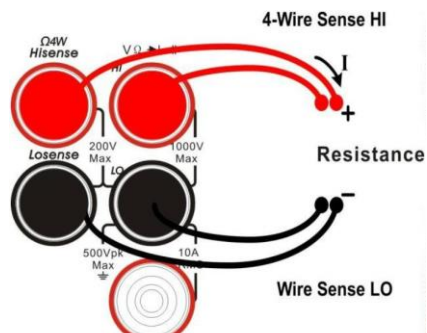
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

### 2-Wire Resistance Measurement



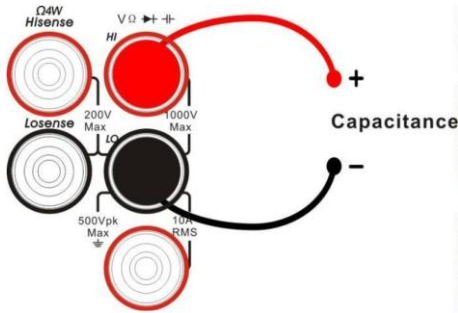
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

### 4-Wire Resistance Measurement



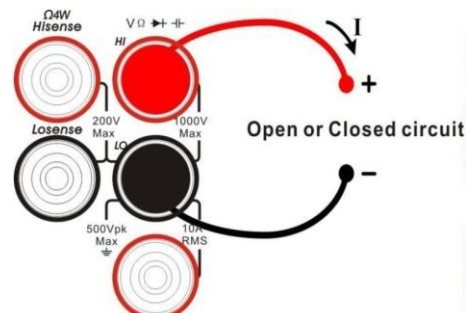
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and HI Sense and black lead to the LO Terminal and LO Sense.

## Capacitance Measurement



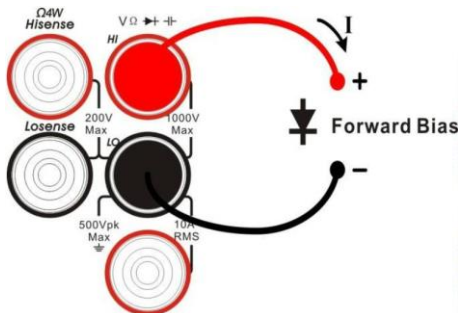
Connect the test leads and tested capacitor as the following diagram, red test lead to the positive pole of the capacitor and black lead to the negative pole.

## Continuity Testing



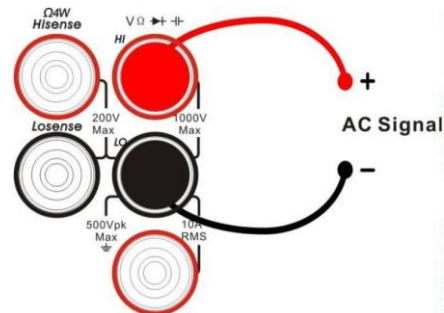
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

## Diode Testing



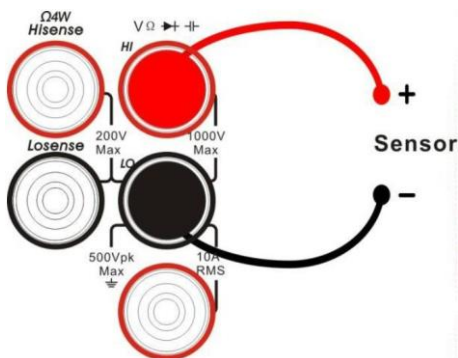
Connect the test leads and tested diode as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

## Frequency/Period Measurement



Connect the test leads as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

## Temperature Measurement

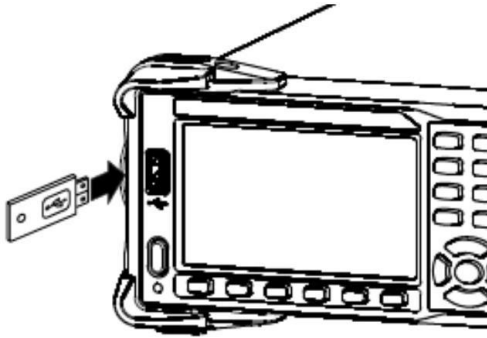


TC and RTD Sensor

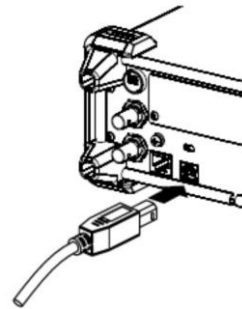
Connect the test leads and tested circuit as the following diagram, red test lead to the HI Terminal and black lead to the LO Terminal.

## Connect USB and LAN Ports

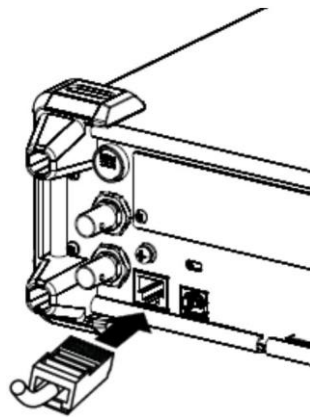
SDM3055 Series Digital Multimeter has plenty of I/O ports. To use any of the ports, follow the next instruction:



Connect USB Host



Connect USB Device



Connect LAN

## Use Safety Lock

You can use the safety lock to lock the multimeter in a fixed place if necessary. The methods are as the following:

1. Align the key into the keyhole in the vertical direction of the back panel.
2. Then rotate clockwise to lock the multimeter.
3. Remove the key at last.

# Troubleshooting

The general failures and consequential solutions are listed below. When you find them, please deal with them in the following corresponding ways. If the problem proves to be unsolvable by yourself, please contact **SIGLENT** for help.

**1. If the screen is still dark with nothing displayed after pressing the power key:**

- 1) Check if the power is correctly connected.
- 2) Check if the power fuse has blown. Replace it if necessary.
- 3) If the instrument still can't start up properly, please contact **SIGLENT**.

**2. The reading doesn't change when connecting an AC current signal:**

- 1) Check if the test lead is correctly connected to the current jack or LO jack.
- 2) Check if the fuse in the current location on the back panel has blown.
- 3) Check if the measure location has switched to the DCI or ACI place correctly.
- 4) Check if the input is ACI but the measure location is in DCI place.

**3. The reading doesn't change when connecting a DC current signal:**

- 1) Check if the test lead is correctly connected to the current jack or LO jack.
- 2) Check if the fuse in the current location on the back panel has blown.
- 3) Check if the measure location has switched to the DCI or ACI place correctly.
- 4) Check if the input is DCI but the measure location is in ACI place.

**4. USB storage can't be recognized:**

- 1) Check if the USB can work normally.
- 2) Make sure that the USB storage being used is of flash type, the instrument does not support USB of hardware type.
- 3) Make sure that the capacity of the USB storage is not too large. It is suggested that the capacity of the USB matches to the multimeter is no larger than 4G.
- 4) Restart the instrument and then insert the USB to check it.
- 5) If it is still in abnormal use, please contact **SIGLENT**.

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