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Statement

In accordance with international copyright law, no part of this manual may be reproduced in any form (including storage, retrieval or translation into other languages) without prior permission and written consent. Changes may be made to this manual in future versions without notice.

Safety Statement

 **Caution: The "Caution" symbol indicates conditions and operations that may cause damage to the tester or equipment.**

Performing this operation requires careful attention. Improper execution or failure to follow the operating steps may result in damage to the tester or equipment. Do not proceed with any operation indicated by the "Caution" symbol, unless these conditions are met or fully understood.

Before using this tester, please read the manual carefully and pay attention to the relevant safety warnings.

Safety Requirements

WARNING

To avoid potential electric shock or personal injury, please strictly comply with the following guidelines:

- Always exercise extreme caution when using this tester.
- Do not measure live objects. Ensure that the resistance or metal object to be measured is de-energized before measurement. Otherwise, there is a risk of damaging the tester.
- If the test lead breaks and exposes metal during use, stop using the tester immediately.
- Do not place or store the tester for extended periods in high-temperature, humid environments, areas with condensation, or under direct sunlight.
- This tester is a precision instrument and requires regular maintenance. Keep the instrument and test leads clean. Do not drop or subject it to pressure.
- Use, disassembly, and maintenance of this tester must be performed by authorized personnel.
- Do not use the tester if it or the test leads are damaged, or if it fails to operate normally. If in doubt, send the tester for repair.

- Replace the batteries promptly when the low battery indicator appears.
- Do not use the tester near explosive gases or vapors.
- Disconnect all test leads before opening the case or battery cover. Never operate the tester with the case or battery cover open.
- When working in hazardous locations, always comply with local and national safety regulations and use appropriate protective equipment.

1. Overview

The DC Low Resistance Tester, also known as a micro-ohmmeter or ohmmeter, adopts the four-wire measurement method for precise and reliable testing. It is mainly used for measuring the conductor resistance of cables, contact resistance of switches, connectors, and relays, connection resistance between metal components, low-value resistance, and resistance of connecting conductors between ground grids and electrodes. The resistance measurement range of the DC Low Resistance Tester is $0.001\text{m}\Omega \sim 300.0\text{k}\Omega$. It can store 99 sets of data and enables comparison and judgment of measured values against preset reference values.

2. Specifications

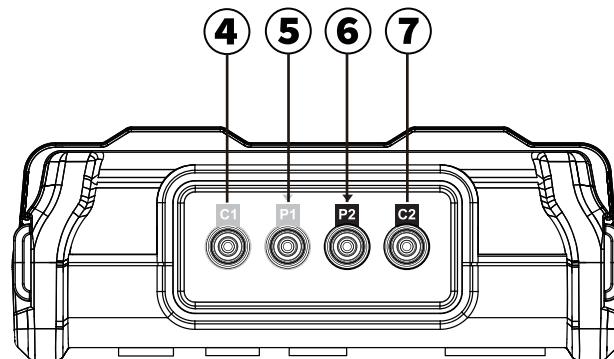
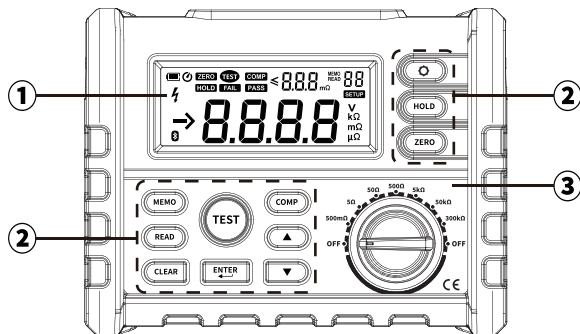
Measurement Principle	Four-wire method
Measurement Current	$\leq 334\text{mA}$
Open-circuit Voltage	$\leq 4\text{V}$
Measurement Power	$\leq 1.34\text{W}$
Measurement Speed	Approx. 3 times/second
Max. Accuracy	$\pm 0.1\%$ FS (Full Scale)
Max. Resolution	$1\mu\Omega$
Comparison Function	Directly displays PASS or FAIL results by comparing with preset values
Data Storage	Max. 99 Sets
Auto Power Off	Auto power-off after approx. 5 minutes of inactivity

Specifications

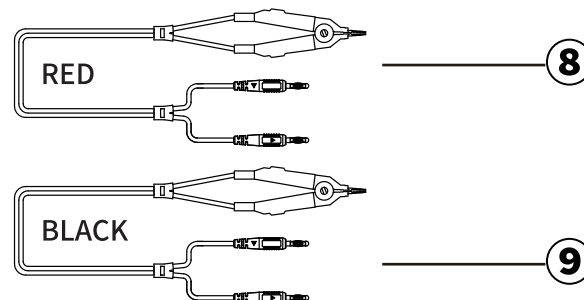
Battery Level Indication	3-segment bar graph display
Readings Zeroing	Readings below 10% of full scale can be cleared by pressing the Zero Key
Operating Temperature	-10~45°C; below 75% RH
Storage Temperature	-20~55°C; below 75% RH
Battery	DC 1.5V x 6 LR14 batteries
Dimensions	194mm x 150mm x 72mm
Weight	912g (excluding batteries)
Applicable Standards	IEC 61000-4-3 Electromagnetic Compatibility, JJG 724-1991 Verification Regulation for DC Digital Ohmmeter, JJG 116-1993 Verification Regulation for DC Resistance, DL/T 967-2005 Verification Regulation for Loop Resistance Testers and DC Resistance Rapid Testers

3. Tester Introduction

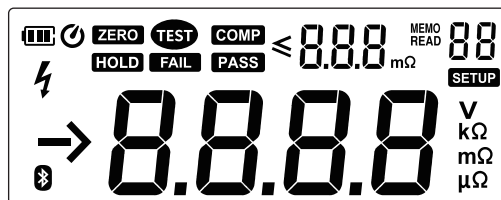
3.1 Component Description



①	Display Area	⑥	P2 Terminal Port
②	Function Key Area	⑦	C2 Terminal Port
③	Range and Function Switch	⑧	Red Test Clip
④	C1 Terminal Port	⑨	Black Test Clip
⑤	P1 Terminal Port		



3.2 Display Description

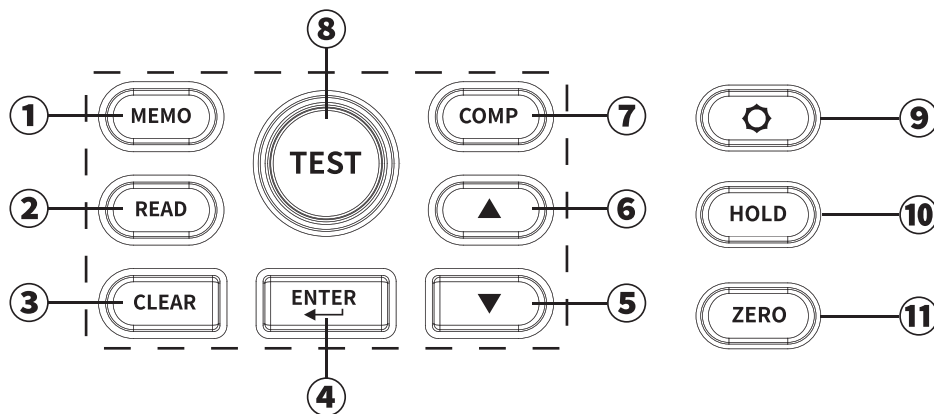


Indicator	Description	Indicator	Description
	Battery Level Indicator		Negative reading indicator
	Auto Power Off Indicator		Over-range indicator
ZERO	Readings Zeroing Indicator		Comparison range indicator
HOLD	Data Hold Indicator	MEMO	Data storage indicator
TEST	Test Running Indicator	READ	Data reading indicator
COMP	Comparison Function Indicator	kΩ	Resistance unit: kilohm (1×10^3 ohms)
PASS	Reading within Comparison Range Indicator	mΩ	Resistance unit: milliohm (1×10^{-3} ohms)
FAIL	Reading out of Comparison Range Indicator	μΩ	Resistance unit: microohm (1×10^{-6} ohms)

3.3 Display Information Description

Indicator	Description
<i>NO</i>	Prompt when no stored data is available in data reading mode.
<i>FU</i>	Prompt when the data storage is full in data storage mode.
<i>Clr</i>	Prompt to clear all stored data in data reading mode.
⁴ <i>UE-H</i>	Prompt when the test clip detects live voltage at the test end.

3.4 Key Description



① Data Storage Key

Enables the storage function to save the current measurement data to the tester's internal memory. Data is stored sequentially from 01 to 99.

② Data Reading Key

Enables the data reading function to retrieve data stored in the tester's internal memory. Press the key again to exit the data reading mode.

③ Delete Key

Clears stored data. When the data reading function is enabled, pressing this key prompts a deletion confirmation. Press the Confirm Key to clear all stored data.

④ Confirm Key

Confirms the currently prompted operation. Used with the Delete Key to clear the data storage area.

⑤ Page Down Key

1. In data reading mode: Press to scroll backward through stored sequence number (from highest to lowest).
2. In comparison mode: Press to adjust the comparison value (from highest to lowest).

⑥ Page Up Key

1. In data reading mode: Press to scroll forward through stored sequence number (from lowest to

highest).

2. 2. In comparison mode: Press to adjust the comparison value (from lowest to highest).

⑦ Compare Function Key

Enables the measurement value comparison function to compare the measured reading against preset values. When within the comparison range, the LCD displays "**PASS**"; when outside the range, it displays "**FAIL**". Press again to exit the comparison mode.

⑧ Test Key

Starts or stops resistance measurement. When resistance measurement is enabled, the key emits a red light and the LCD displays "**TEST**".

⑨ Backlight Key

Enables or disables the screen backlight.

⑩ Data Hold Key

Enables or disables the data hold function. When enabled, the LCD displays "**HOLD**".

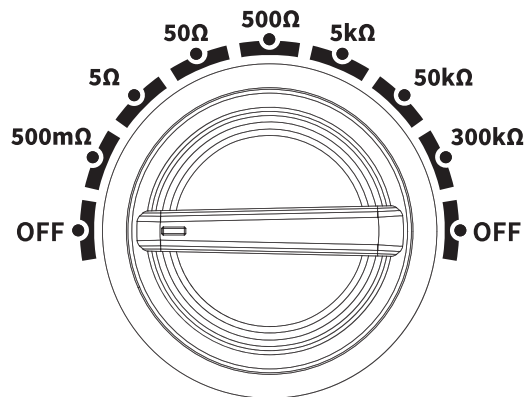
⑪ Zero Key

Enables or disables the reading zeroing function. When enabled, the LCD displays "**ZERO**".

3.5 Range Description

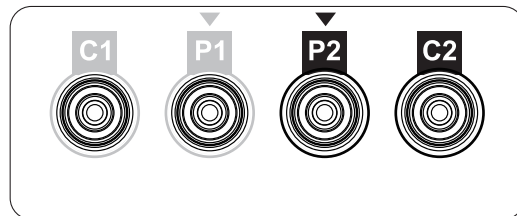
The function modes are selected via the rotary switch and are defined as follows:

Power off	Turn off the tester
500mΩ	Resistance measurement range: 0.000mΩ~550.0mΩ
5Ω	Resistance measurement range: 0.000Ω ~ 5.500Ω
50Ω	Resistance measurement range: 0.00Ω ~ 55.00Ω
500Ω	Resistance measurement range: 0.0Ω ~ 550.0Ω
5kΩ	Resistance measurement range: 0.000kΩ ~ 5.500kΩ
50kΩ	Resistance measurement range: 0.00kΩ ~ 55.00kΩ
300kΩ	Resistance measurement range: 0.0kΩ ~ 300.0kΩ



3.6 Terminal Port Specifications

Port	Description
C1	Current output terminal for four-wire measurement
P1	Positive signal input terminal for four-wire measurement
P2	Negative signal input terminal for four-wire measurement
C2	Current input terminal for four-wire measurement



4. Range and Accuracy

Ambient Temperature: $23 \pm 5^{\circ}\text{C}$.

Ambient Humidity: 45~75% RH.

External Magnetic Field: No external electric field interference

Battery Voltage: No low-voltage prompt

Temperature Coefficient: Testing outside the specified temperature range (i.e., below 18°C or above 28°C) increases measurement error by $(\pm 0.01\%)/^{\circ}\text{C}$.

Function Gear	Range	Test Range	Resolution	Test Current	Accuracy
500mΩ	10mΩ	0.000mΩ~9.999mΩ	0.001mΩ	333.3mA	$\pm (0.1\%\text{FS}+20\text{dgt})$
	100mΩ	10.00mΩ~99.99mΩ	0.01mΩ		
	500mΩ	100.0mΩ~550.0mΩ	0.1mΩ		
5Ω	5Ω	0.000Ω~5.500Ω	0.001Ω	100mA	
50Ω	50Ω	0.00Ω~55.00Ω	0.01Ω	10mA	
500Ω	500Ω	0.0Ω~550.0Ω	0.1Ω	1mA	
5kΩ	5kΩ	0.000~5.500kΩ	0.001kΩ	100uA	
50kΩ	50kΩ	0.00~55.00kΩ	0.01kΩ	10uA	
300kΩ	300kΩ	0.0~300.0kΩ	0.1kΩ	3uA	

$1\text{m}\Omega=1000\mu\Omega$. $1\Omega=1000\text{m}\Omega$. $1\text{k}\Omega=1000\Omega$.

Over-range indication: The ">" symbol is displayed on the screen when the reading exceeds the selected range.

5. Operating Instructions

5.1 Power On/Off

Rotate the rotary switch from the "Off" position to any resistance range position. After powering on, the "🌀" symbol is displayed in the upper left corner of the LCD screen. The tester will automatically power off after approximately 5 minutes of inactivity. Once automatically powered off, the tester cannot be reactivated by pressing keys. To restart, rotate the switch to the "Off" position and then power on again.

5.2 Battery Voltage Check

After powering on, wait 3~5 seconds. The battery level is displayed in the upper-left corner of the LCD screen. When the battery is fully charged, the "🔋" symbol will be displayed. If the battery symbol shows "🔋", it indicates low battery. Stop testing and replace the battery with a new one immediately. If the "🔋" symbol is displayed during testing, stop testing immediately. Otherwise, the measurement accuracy and stability may be affected.

5.3 Resistance Test

Precautions Before Measurement

⚠ Caution: This tester must not be used to measure the resistance of live objects such as batteries, as this may damage the tester.

1. Remove any dust or dirt from the test leads before testing.
2. Remove any insulating or oxidized layers from the surface of the measured object before measurement to prevent poor contact conductivity from affecting accuracy.
3. Before testing, ensure a reliable connection is made between the test leads and the device under test.
4. The 500mΩ range uses a higher test current. It is recommended to shorten the duration of each measurement and perform repeated tests at intervals.
5. When testing low resistance (500.0mΩ range), perform a zero adjustment first to improve measurement accuracy. To zero the reading: connect the test leads to the tester's terminals as specified, then clamp the test clips in the following sequence: Black (marked with ▲) → Red (marked with ▲) → Black (unmarked with ▲) → Red (unmarked with ▲), as shown in Figure 5-1. Press the Test Key. After the reading on the screen stabilizes, briefly press the Zero Key. The "Zero" symbol will be displayed on the screen, indicating that the zero adjustment is complete. (Note: When measuring low resistance, failure to perform correct zero adjustment will affect measurement accuracy.)

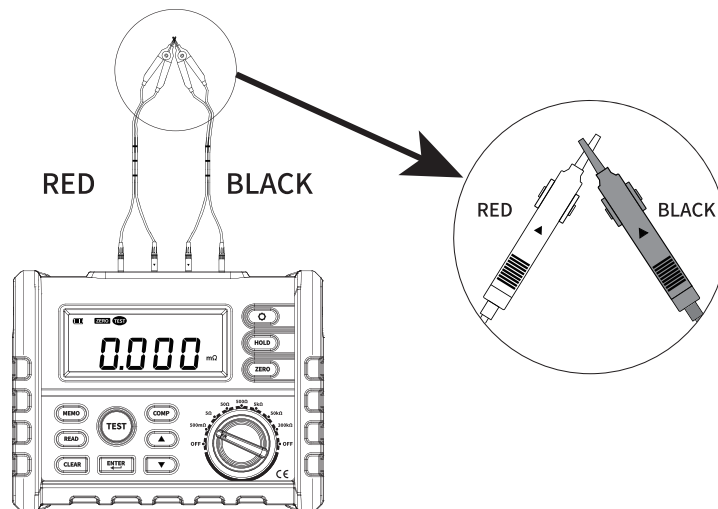


Figure 5-1

1. Before measurement, connect the test leads to the corresponding terminals to the markings, then select the appropriate range for testing. Incorrect connection of the test leads will affect measurement accuracy and stability. If the resistance range of the measured object is unknown, start with the largest range. After powering on, connect the test leads as shown in Figure 5-2, then press the Test Key to measure the resistance.

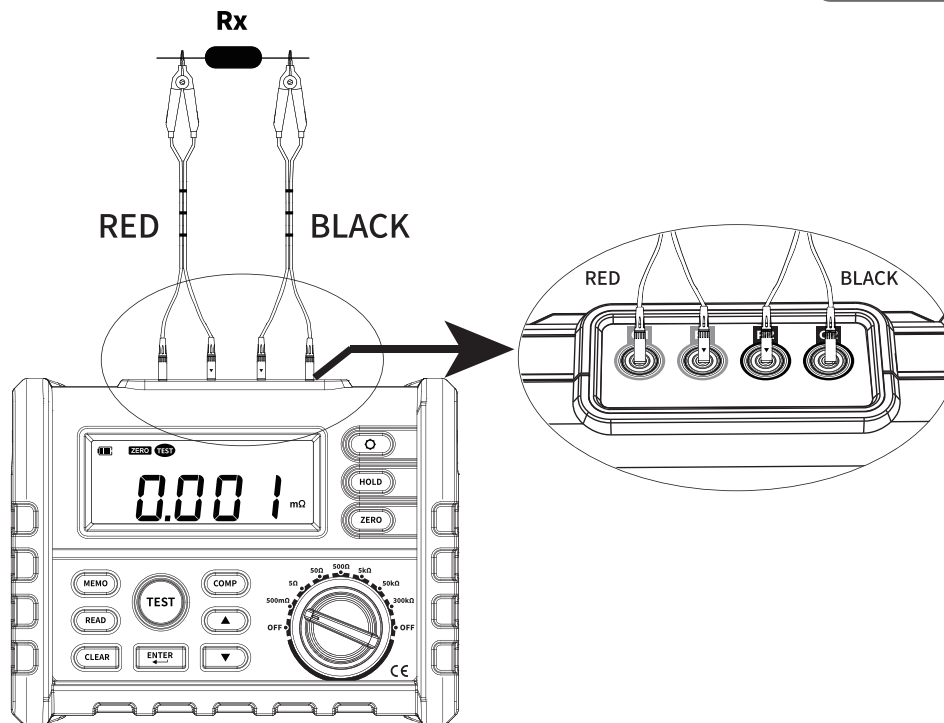


Figure 5-2

Figure 5-3 Schematic Diagram of Testing a Resistor

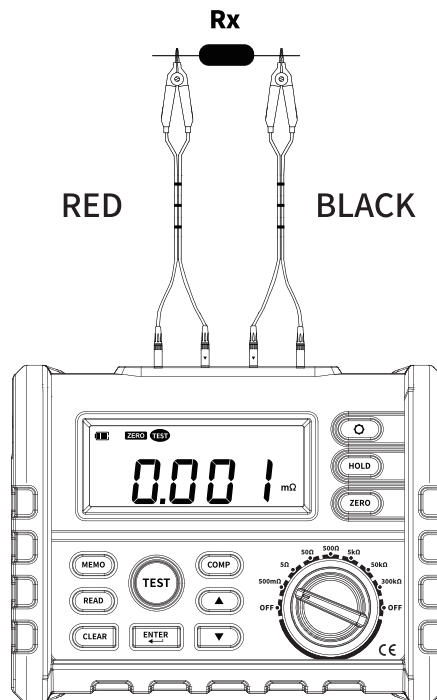


Figure 5-3

Figure 5-4 Schematic Diagram of Testing the Contact Resistance of a Grounding Copper Bar

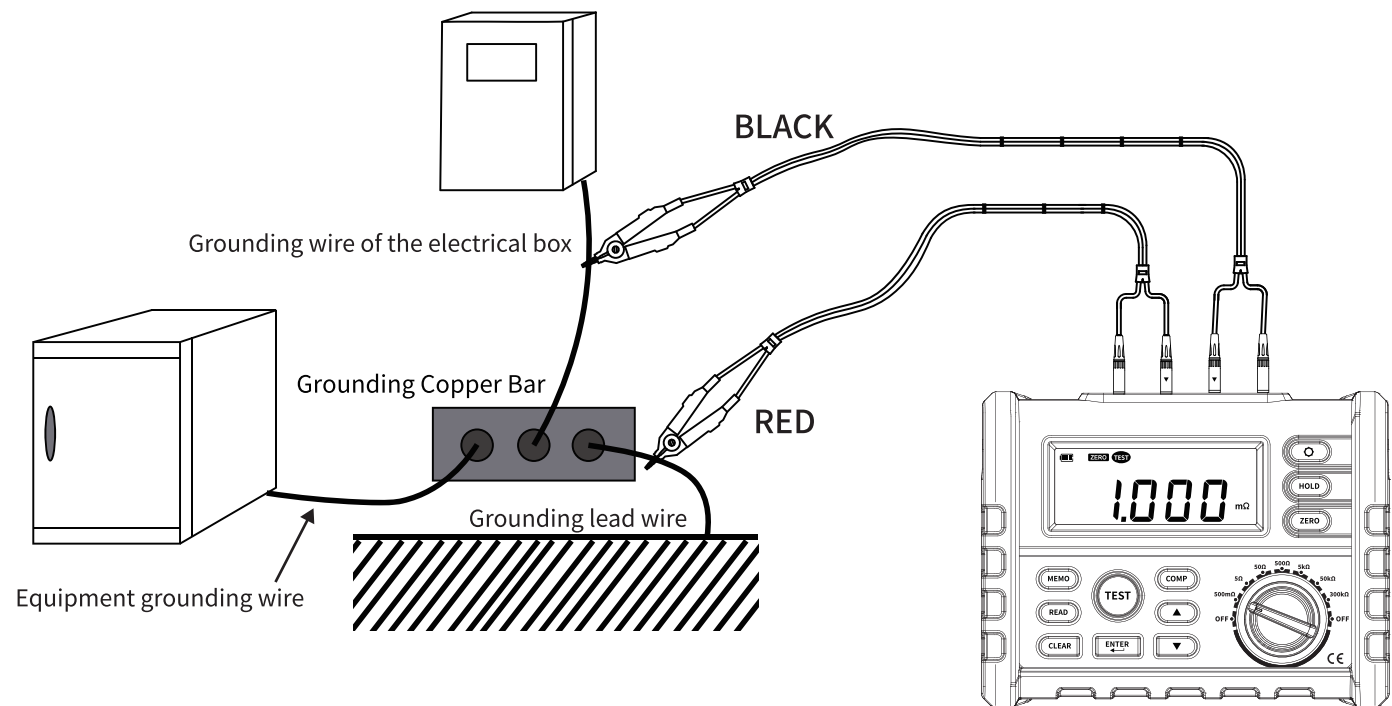


Figure 5-4

Figure 5-5 Schematic Diagram of Testing the Contact Resistance of a Relay

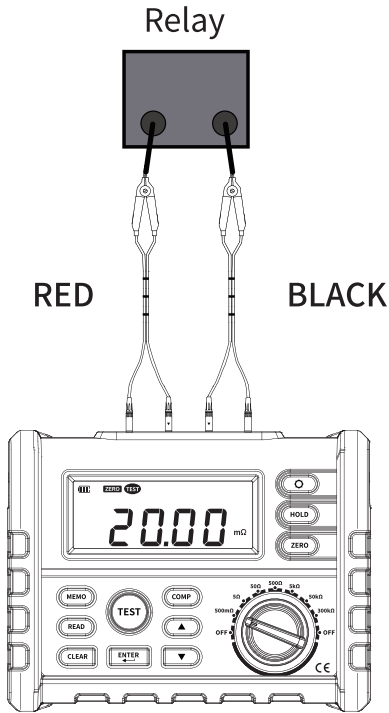


Figure 5-5

Figure 5-6 Schematic Diagram of Testing the Resistance of a Metal Connector

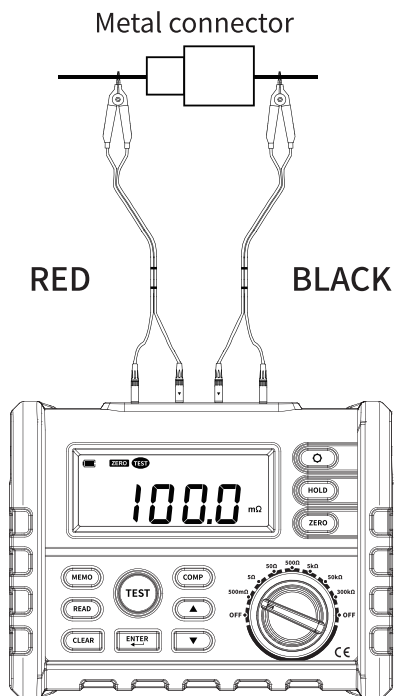


Figure 5-6

Figure 5-7 Schematic Diagram of Testing an Inductive Resistor (DC Resistance of a Coil)

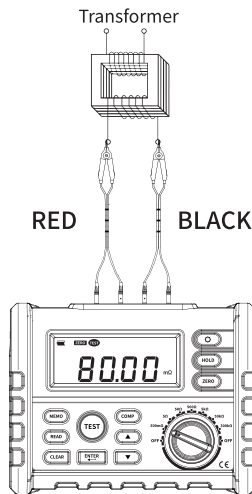


Figure 5-7

5.4 Data Storage

Press the Store Key when the tester is powered on to save the current measurement value. The storage number is displayed in the upper right corner of the LCD screen. Each press of the Store Key increments the storage number sequentially from 01 to 99. The data storage function is not available in data reading mode.

5.5 Data Retrieval

Press the Read Key when the tester is powered on to retrieve stored historical data. The Read Key is invalid during measurement. In data reading mode, press the Page Up or Page Down Key to view the stored data of the corresponding sequence number.

5.6 Data Comparison

Press the Compare Key when the tester is powered on to set a reference value within the current measurement range for comparison. The comparison result is displayed on the LCD screen as "**PASS**" or "**FAIL**". In data comparison mode, press the Page Up or Page Down Key to adjust the reference value.

6. Battery Replacement

 **Warning:** To avoid electric shock and personal injury, replace the batteries promptly when the low-battery indicator appears.

Before replacing the battery, set the tester switch to the OFF position and disconnect all test leads from the circuit under test. Remove the test leads from the tester.

- (1) Unscrew the fastening screw and remove the battery cover.
- (2) Replace the old batteries with new ones, paying attention to the battery polarity marked on the bottom of the battery compartment.
- (3) Replace the battery cover and tighten the screw.

Battery Replacement

