

3008

MULTI TESTER

Instruction Manual

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HIOKI

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Introduction

Thank you for purchasing the HIOKI "Model 3008 MULTI TESTER." To obtain maximum performance from the instrument, please read this manual first, and keep it handy for future reference.

Overview

This tester is designed for maintenance of industrial power lines (Max 600 VAC,DC).It is designed in safety and complete protection against shorting accident, High-power fuse protects up to 50 kA. Supply current limiting resistance of 10 Ω restricts short-circuit current.

NOTE:The term "industrial power line" refers to electrical lines that supply power to electrical equipment and industrial machinery in factories, buildings, etc. It does not include indoor lines in ordinary residences (lines protected by fuses or circuit breakers.)

Safety Information

DANGER

Mishandling this instrument during use could result in injury or death, as well as damage to the instrument. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from instrument defects.

This Instruction Manual provides information and warnings essential for operating this equipment in a safe manner and for maintaining it in safe operating condition. Before using this equipment, be sure to carefully read the following safety notes.

Safety symbols

	In the manual, this mark indicates explanations which it is particularly important that the user read before using the equipment.
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The following symbols are used in this Instruction Manual to indicate the relative importance of cautions and warnings.

DANGER	Indicates that incorrect operation presents extreme danger of accident resulting in death or serious injury to the user.
WARNING	Indicates that incorrect operation presents significant danger of accident resulting in death or serious injury to the user.
CAUTION	Indicates that incorrect operation presents possibility of injury to the user or damage to the equipment.
NOTE	Denotes items of advice related to performance of the equipment or to its correct operation.

Inspection

When the unit is delivered, check and make sure that it has not been damaged in transit. If the unit is damaged, or fails to operate according to the specifications, contact your dealer or HIOKI representative.

Operating Precautions

Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

DANGER

- Observe the following precautions to avoid electric shock. Always verify the appropriate setting of the range selector switch before connecting the test leads. Disconnect the test leads from the measurement object before switching the range selector switch.
- Before taking a measurement, check the position of the range switch. Do not measure voltage outside the set voltage range or voltage at levels in excess of the measurement limit. Doing so may damage the instrument or cause an accident resulting in injury or death.
- Do not input voltage to the resistance measurement ranges. Doing so may damage the instrument or cause an accident resulting in injury or death.
- If the end of a test lead short-circuits lines with a voltage between them, this is very dangerous and can lead to a serious accident. Exercise great care when measuring voltage.

WARNING

- Before using the unit, inspect it and check the operation to make sure that the unit was not damaged due to poor storage or transport conditions. If damage is found, contact your dealer or HIOKI representative.
- To prevent electric shock, do not allow the unit to become wet and do not use the unit when your hands are wet.
- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.

CAUTION

- If the protective functions of the unit are damaged, either remove the unit from service or post warnings to prevent others from using the unit inadvertently.
- Note that the unit may be damaged if voltage or current in excess of the measurement range is input.
- Do not store or use the unit where it will be exposed to direct sunlight, high temperatures, high humidity, or condensation. If exposed to such conditions, the unit may be damaged, the insulation may deteriorate, and the unit may no longer satisfy its specifications.
- After use, be sure to turn the power switch off.

NOTE

- If the meter pointer is not positioned in the 0 scale value, use the zero adjuster to adjust it correctly.
- If the fuse is blown, or the test leads are damaged, any range does not operate. To check the test leads wiring and fuse blowing, refer to **3. Fuse and Test Leads Continuity Check in Battery and Fuse Replacement**.
- If the meter cover becomes electrostatically charged, values may display incorrectly because of attractive forces on the needle. In this case, apply anti-static treatment to inhibit electrostatic charge buildup. The efficacy of such electrostatic treatments dissipates over time, so the treatment may need to be reapplied periodically.

Measurement Procedure

Pre-Operation Inspection

To avoid the possibility of electric shock or incorrect measurement, check the following items before using the instrument.

WARNING

Before using the instrument check that the body of the instrument is not damaged. Also make sure that the insulation on the test leads is undamaged and that no bare conductors are improperly exposed. Using the product in such conditions could cause an electric shock, so contact your dealer or Hioki representative for replacements. (Model 9060 TEST LEAD)

- For voltage measurement, short the test leads and check that 0 V is indicated.
- For resistance measurement, short the test leads and adjust the reading to zero using the zero ohm adjuster (0 Ω ADJ knob).
- Measure a test item with a known value (battery, AC supply, resistor, etc.) to check that the instrument is functioning correctly.

Voltage Measurement (AC, DCV)

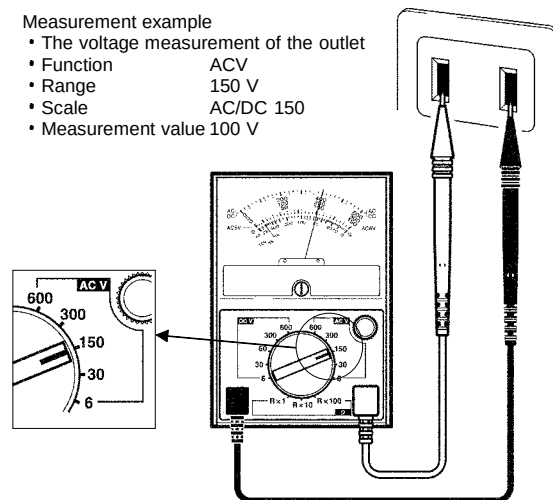
DANGER

The maximum permissible input is 600 VAC/DC. Do not measure voltage in excess of these limitations (including the fuse interrupting rating), as doing so may damage the unit or cause an accident that might result in injury or death.

1. Set the range selector switch to the ACV or DCV range proper for the voltage to be measured.
NOTE: If the voltage value is unclear, initially set the range switch to the 600 V range, and after obtaining a reading in this range, change to the range proper for the voltage value.
2. Connect the black test lead to the Negative (-) terminal, and the red one to the Positive (+) terminal.
3. Connect the test leads to the circuit to be measured in parallel, then read the results on the AC/DC scale. When the DCV is selected, if connecting the red test lead to the positive side, and the black one to the negative side, then the pointer deflects normally.

NOTE: When changing the range, disconnect the test leads from the object to be measured.

- Measurement example
- The voltage measurement of the outlet
 - Function ACV
 - Range 150 V
 - Scale AC/DC 150
 - Measurement value 100 V



Resistance Measurement (Ω)

DANGER

Do not input voltage to the resistance measurement functions. Doing so may damage the unit or cause an accident resulting in injury or death.

WARNING

Turn off the power and discharge the capacitors before measuring resistance in a circuit.

1. Set the range selector switch to the proper Ω range. Accurate measurement can be made by selecting a range where the reading will be about the center of the range.
2. Connect the black test lead to the Negative (-) terminal, and the red one to the Positive (+) terminal.
3. Short the test leads, and use the zero ohm adjuster (0 ΩADJ knob) to adjust the pointer to the 0 Ω scale.

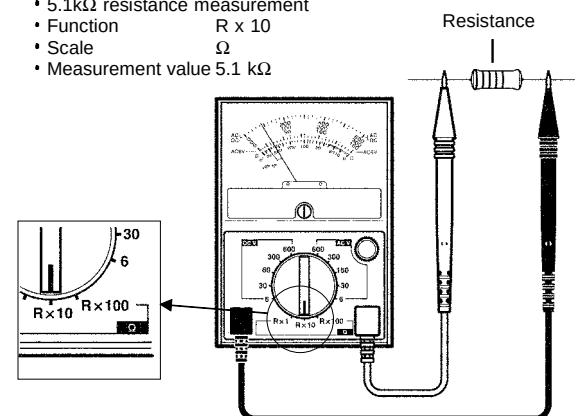
NOTE: If the pointer cannot be adjusted to the 0 Ω scale, replace the battery.

4. Connect the test leads to the circuit to be measured, and read the value from the scale.

NOTE: When changing the range, disconnect the test leads from the object to be measured. For resistance measurement, the indication may be unstable if the ends of the test leads are dirty, and the contact is poor. If the indication is unstable, increase the contact pressure, or clean the ends of the test leads by wiping with alcohol or similar solvent.

5. In order to obtain the true value, it is necessary to multiply the reading shown by the factor for the range in use.

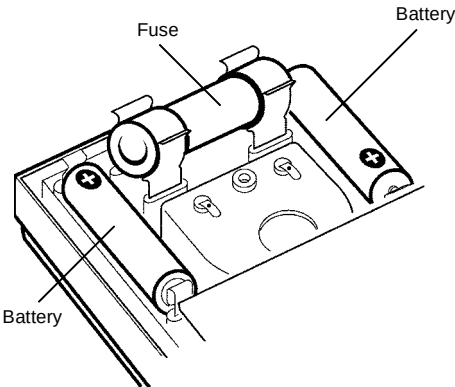
- Measurement example
- 5.1kΩ resistance measurement
 - Function R x 10
 - Scale Ω
 - Measurement value 5.1 kΩ



Battery and Fuse Replacement

⚠ WARNING

- To avoid electric shock when replacing the batteries and fuse, first disconnect the test leads from the object to be measured.
- After replacing the batteries or fuse, replace the case and screws before using the instrument.



1. Battery Replacement

⚠ WARNING

- Do not mix old and new batteries, or different types of batteries. Also, be careful to observe battery polarity during installation. Otherwise, poor performance or damage from battery leakage could result.
- To avoid the possibility of explosion, do not short circuit, disassemble or incinerate batteries.
- Handle and dispose of batteries in accordance with local regulations.
- To avoid corrosion from battery leakage, remove the batteries from the instrument if it is to be stored for a long time.

1. Remove the case back screw and take off the case back.
2. Replace the two batteries.
3. After replacing the batteries, always replace the case back and tighten the screw before using the unit.

2. Fuse Replacement

⚠ WARNING

- Replace the fuse only with one of the specified characteristics and voltage and current ratings. Using a non-specified fuse or shorting the fuse holder may cause a life-threatening hazard.
Fuse type: Interrupting rating 50 kA, 500 V 1 A

1. Remove the case back screw and take off the case back.
2. Replace the fuse with a new one.

NOTE: A spare fuse is provided inside the carrying case. Be sure to supply a new spare fuse if the spare fuse is used to replace a blown fuse.

3. After replacing the fuse, always replace the case back and tighten the screw before using the unit.

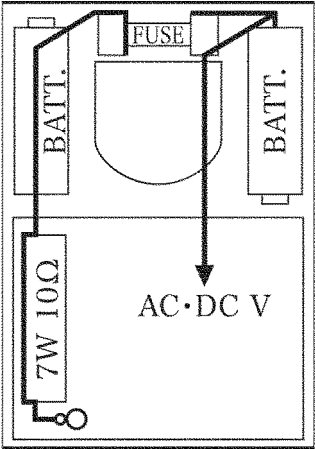
NOTE: If the fuse blown, when measuring industrial power lines, there is a possibility of an internal 3008 failure. Replace the fuse and contact your dealer or HIOKI representative.

3. Fuse and Test Leads Continuity Check

1. Connect the black test lead to the Negative (-) terminal, and the red one to the Positive (+) terminal.
2. Set the range switch to the $\Omega \times 100$ range, and short the test leads.
3. If the pointer deflects, the fuse and test leads conduct (are not blown and damaged).
If the pointer does not deflect, the test leads or fuse may be damaged. Check again after replacing the fuse.

About the Fuse Type Protective Circuit

This tester is provided with a protective resistor ($10\ \Omega$) for prevention of accidental short circuit in measuring power voltage, and has a 1 A Fuse (500 V AC, With a Interrupting rating of 50 kA) connected in series from the terminal (refer to figure.)
If a short circuit occurs in the tester circuit, the protective resistor holds down the short circuit with the fuse.
As the protective resistor keeps excessive short circuit current from running, the arc at the tip etc. of the test bar can be held down to the minimum for greater safety.

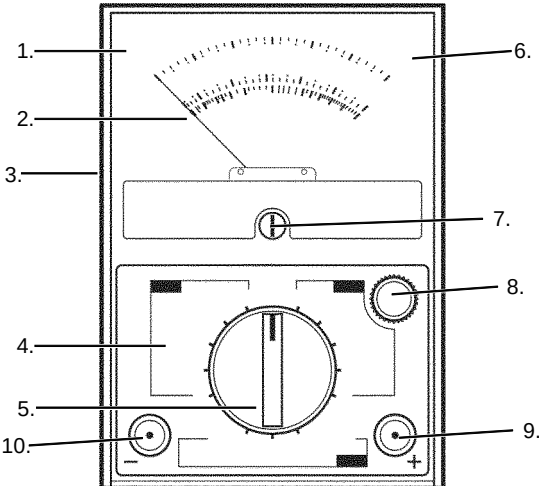


Specifications

Accuracy guaranteed for one year at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($73^{\circ}\text{F} \pm 9^{\circ}\text{F}$), 80%RH or less.)

DCV	0 to 6/30/60/300/600 V 20 k Ω /V , $\pm 2.5\%$ of f.s. reading
ACV	0 to 6/30/150/300/600 V 10 k Ω /V , $\pm 2.5\%$ of f.s. reading
Ω	0 to 10 k Ω , central scale 100 Ω , R x 1/R x 10/R x 100, $\pm 3\%$ of scale length
Protection	Circuit : Fuse-protected, Internal circuit protection using the 10 Ω resistance Meter : Diode-protected
Fuse	Interrupting rating 50 kA, 500 V
Power supply	Rated power voltage 1.5 VDC x 2, R6P manganese battery x 2
Location for Use	Altitude up to 2000 m (6562 feet), indoors
Dimensions and mass	Approx. 94W x 134H x 56D mm, Approx. 350 g Approx. 3.7"W x 5.28"H x 2.2"D, Approx. 12.3 oz.
Maximum permissible input	600 VAC/DC
Accessories	9060 TEST LEAD 1 Spare fuse (Interrupting rating 50 kA, 500 V) 1 manganese battery (R6P) 2 Instruction Manual 1 Carrying case 1

Part Names



Meter Nomenclature

- | | | | |
|---------------------------|--------------------------|------------------|---------------|
| 1. Panel | 2. Pointer | 3. Case back | 4. Face plate |
| 5. Range selector switch | 6. Scale plate | 7. Zero adjuster | |
| 8. Zero ohm adjuster | 9. Positive (+) terminal | | |
| 10. Negative (-) terminal | | | |

Maintenance

Gently wipe dirt from the surface of the unit with a soft cloth moistened with a small amount of water or mild detergent.
Do not try to clean the unit using cleaners containing organic solvents such as benzine, alcohol, acetone, ether, ketones, thinners, or gasoline. They may cause discoloration or damage.

Service

If the unit is not functioning properly, check the batteries, the test leads wiring, and fuse blowing. If a problem is found, contact your dealer or HIOKI representative. Pack the unit carefully so that it will not be damaged during transport, and write a detailed description of the problem. HIOKI cannot bear any responsibility for damage that occurs during shipment.