

9500, 9500-10

4-TERMINAL PROBE

Instruction Manual

2013 Revised edition 5 Printed in Japan
9500A980-05 13-09H

Warranty
Warranty forms will be provided with the instrument. The warranty is valid for one (1) year from the date of purchase. Please contact the distributor for further information on warranty.

Introduction
Thank you for purchasing the HIOKI Model 9500, 9500-10 4-Terminal Probe. To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Initial Inspection
When you receive the device, inspect it carefully to ensure that it is not damaged during shipping. If damage is evident, or if it fails to meet the specifications, contact your dealer or HIOKI representative.

Overview
The 9500 is a 4-terminal probe, alligator-clip-type 4-terminal probe to the measurement terminals on the HIOKI Chemical Impedance Meter and Model RM3543 Resistor Tester, and The9500-10 4-Terminal Probe, alligator-clip-type 4-terminal probe connects directly to the terminals on the HIOKI IM Series (LCR Meters, Resistor Testers)

Safety Information
Follow the instructions and precautions to ensure safe operation and to obtain the full performance of the various functions.

Warnings
Misuse of the device during use could result in injury or damage to the device. Be certain that you are following the instructions and precautions in the manual. We disclaim any responsibility for injuries not resulting directly from device use.

When occurring under conditions of normal use in construction Manual and Product Precautionary Markings free of charge. This warranty is valid for a period of one (1) year from the date of purchase. Please contact the distributor for further information on warranty.

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Safety Symbols

	In the manual, the symbol indicates particularly important information that the user should read before using the device. The symbol printed on the device indicates that the user should refer to a corresponding topic in the manual (marked with the symbol) before using the relevant function.
	Indicates DC (Direct Current).

The following symbols in this manual indicate the relative importance of cautions and warnings.

- WARNING** Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
- CAUTION** Indicates that incorrect operation presents a possibility of injury to the user or damage to the device.
- NOTE** Indicates advisory items related to performance or correct operation of the device.

Symbols for Various Standards

	This symbol indicates that the product conforms to safety regulations set out by the EC Directive.
	WEEE marking: This symbol indicates that the electrical and electronic appliance is put on the EU market after August 13, 2005, and producers of the Member States are required to display it on the appliance under Article 11.2 of Directive 2002/96/EC (WEEE).

Usage Notes

Before using the device for the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your dealer or HioKI representative.

WARNING

Before using the device, make sure that the insulation on the probes is undamaged and that no bare conductors are improperly exposed. Using the device in such conditions could cause an electric shock, so contact your dealer or HioKI representative for repair.

CAUTION

- Do not store or use the device where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the device may be damaged and insulation may deteriorate so that it no longer meets specifications.
- Do not use the device where it may be exposed to corrosive or combustible gases. The device may be damaged.
- This device is not designed to be entirely water- or dust-proof. Do not use it in an especially dusty environment, nor where it might be splashed with liquid. This may cause damage.
- To avoid damage to the device, protect it from physical shock when transporting and handling. Be especially careful to avoid physical shock from dropping.
- Stop use and contact your dealer or HioKI representative if the probe is contaminated with an excess amount of water, oil, or dust.
- Which 4-terminal probe can be used depends on the measuring device to which this product is connected. Using a wrong probe may increase the measurement error.

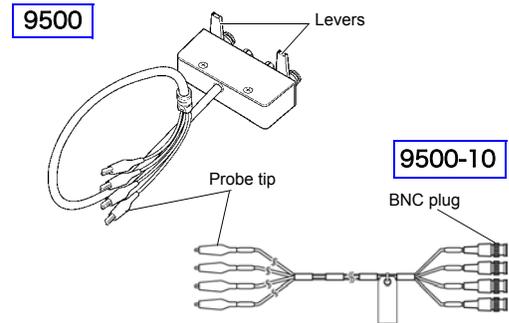
NOTE

For more information about how to use the instrument with which you are using the probe, refer to that instrument's instruction manual.

Specifications

Probe	Rubber-sheathed alligator-clip-type
Frequency measurement range	9500: DC to 1 MHz 9500-10: DC to 200 kHz
Maximum rated voltage	±40 V DC (42 V _{peak} (Measurement signal + bias voltage))
Maximum rated current	1 A _{peak} (Measurement signal + bias current)
Length	Approx. 1000 mm (39.37") (not including connection terminal)
Measurable conductor diameter	diameter 0.3 to 2 mm
Mass	9500: Approx. 230 g (8.1 oz.) 9500-10: Approx. 140 g (4.9 oz.)
Cable	9500: 75 Ω coaxial cable 9500-10: 50 Ω coaxial cable
Operating temperature and humidity	0 to 40°C (32 to 104°F), 80%RH or less. (non-condensing)
Storage temperature and humidity	-10 to 55°C (14 to 131°F), 80%RH or less. (non-condensing)
Operating environment	Indoors, Pollution Degree 2 altitude up to 2000 m (6562 feet)
Accessories	Instruction manual
Applicable standards (Safety)	EN61010

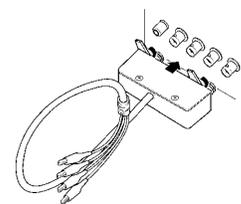
Names of Parts



Connection Methods

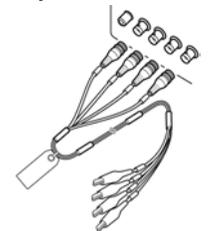
9500

Orienting the probe so that the side printed with the model number is on top, plug it into the instrument's measurement terminals and secure in place with the levers on the left and right.



9500-10

BNC plug of H_{cur}, H_{pot}, L_{cur} and L_{pot} connected properly to the measurement terminals of each of the instruments



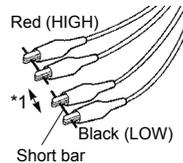
Open and Short Correction

When using the Model 3532-80 Chemical Impedance Meter and IM Series, perform open and short correction to increase measurement precision.

You will need: Two short bars

A short bar is a device that shorts the measurement cable's terminals. Use short bars with as low an impedance as possible. When using a metal wire or similar object as the short bar, use as thick and short a wire as possible.

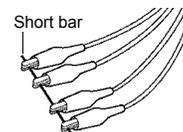
Open correction



Short the probe's H_{cur} and H_{pot} terminals (red) with one short bar and its L_{cur} and L_{pot} terminals (black) with the other, so that there is no connection between the high and low terminals. Perform open correction.

*1: Leave the high and low terminals as far apart as they will be when connected to the measurement sample.

Short correction



Short the probe's H_{cur}, H_{pot}, L_{cur} and L_{pot} terminals in this order, with a short bar and perform short correction.

NOTE

- To perform zero adjustment with the Model RM3543 Resistance HiTester, follow the directions in the RM3543 instruction manual.
- For more information about instrument operation, refer to the instrument's instruction manual.

Measurement Procedures

Attach the rubber-sheathed alligator clips at the end of the probe to the measurement sample and make measurements.

NOTE

- Exercise caution as dirt on the connection surfaces of electrodes or the measurement sample may prevent proper contact, making accurate measurement impossible.
- Open correction and measurement of high-impedance elements are susceptible to the effects of external induced noise and stray capacitance. It is recommended to use guarding, for example by making measurements on a metal plate that has been connected to the guard terminal. (For more information about guarding, refer to the instrument's instruction manual.)

Maintenance and Service

- To clean the device, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
- If the device seems to be malfunctioning, contact your dealer or HioKI representative. Pack the device so that it will not sustain damage during shipping, and include a description of existing damage. We do not take any responsibility for damage incurred during shipping.