

### PINCHER PROBE Instruction Manual

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9143A980-01 02-12H

#### Introduction

Thank you for purchasing the HIOKI "9143 PINCHER PROBE." To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

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#### Overview

This HIOKI 9143 PINCHER PROBE can be directly connected to the measurement terminals ("UNKNOWN" terminals) of the HIOKI C HiTESTER or LCR HiTESTERs for testing a chip component.

#### Inspection and Maintenance

##### Initial Inspection

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

##### Preliminary Checks

- Before using the product the first time, verify that it operates normally to ensure that the no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.
- Before using the product, make sure that the insulation on the probes 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 repair.

##### Maintenance and Service

- To clean the product, 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 product seems to be malfunctioning, contact your dealer or Hioki representative. Pack the product carefully so that it will not be damaged during shipment, and include a detailed written description of the problem. Hioki cannot be responsible for damage that occurs during shipment.

#### Specifications

Probe	Pincher type Electrode tip spacing: 0 to approx. 6 mm
Probe length	Approx. 1100 mm (43.31")
Cable type	1.5C-2V or equivalent x 4, with BNC molded connector
Maximum input voltage	±30 VDC max. (depends on specifications of main unit)
Residual parameter values	C<1 pF, L<0.5 μH, R<0.05 Ω (at 1 kHz, nominal values)
Mass	Approx. 180 g (6.3 oz.)
Operating environment	Indoors, altitude up to 2000 m (6562-ft.)
Operating temperature and humidity range	0 to 40°C (32 to 104°F), 80%RH or less (with no condensation)
Storage temperature and humidity range	-10°C to 55°C (14 to 131°F), 80%RH or less (with no condensation)
Accessory	Instruction Manual

Measurable range	<input type="checkbox"/> Product specifications x 1	<input type="checkbox"/> Product specifications x 2.5
	<input type="checkbox"/> Product specifications x 3	<input type="checkbox"/> Not measurable

For product specifications, refer to the manual of the measuring instrument to be used with the probe.

Comparison of Accuracy using 3503, 3511-50, and 3522-50:

Range	DC	1 mHz	100 Hz	1 kHz	10.01 kHz
100 MΩ					
10 MΩ					
1 MΩ					
100 kΩ					
10 kΩ					
1 kΩ					
100 Ω					
10 Ω					
1 Ω					
100 mΩ					

Comparison of Accuracy using 3532-50, and 3532-80:

Range	4 Hz -	100 Hz -	1.001 kHz -	10.01 kHz -	100.1 kHz -	1.001 MHz -
100 MΩ						
10 MΩ						
1 MΩ						
100 kΩ						
10 kΩ						
1 kΩ						
100 Ω						
10 Ω						
1 Ω						
100 mΩ						

Please check a HIOKI catalog for instruments to which this product can be connected.

#### Safety

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

**⚠ WARNING**  
 Mishandling during use could result in injury or death, as well as damage to the product. 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 product defects.

#### Safety Symbol

**⚠** In the manual, the **⚠** symbol indicates particularly important information that the user should read before using the product.

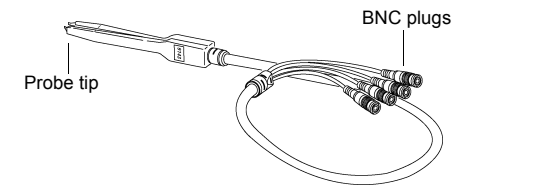
The following symbols in this manual indicate the relative importance of cautions and warnings.

- ⚠ 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 product.
- NOTE** Advisory items related to performance or correct operation of the product.

#### Usage Notes

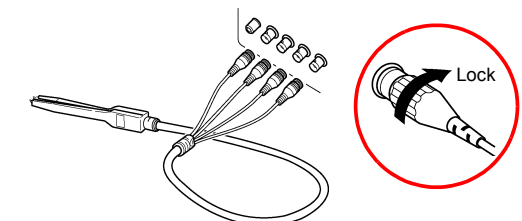
- ⚠ CAUTION** Do not store or use the product where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the product may be damaged and insulation may deteriorate so that it no longer meets specifications.
- Do not use the product where it may be exposed to corrosive or combustible gases. The product may be damaged.
- This product is not designed to be entirely water- or dust-proof. To avoid damage, do not use it in a wet or dusty environment.
- To avoid damage to the product, protect it from vibration or shock during transport and handling, and be especially careful to avoid dropping.
- If the fixture has gotten seriously wet, oily, or dusty, stop using it and send it for service at an approved HIOKI service facility.
- Please refer to the instruction manual for the instrument to which this product is connected for how to use the instrument and apply direct current voltage.

#### Parts Names



#### Connecting the Probe

**⚠ CAUTION**  
 When disconnecting the BNC connector, be sure to release the lock before pulling off the connector. Forcibly pulling the connector without releasing the lock, or pulling on the probe, can damage the connector.



Connect the BNC connector to the measurement terminals (UNKNOWN) of the tester  
 Red plugs: connect to H<sub>CUR</sub> or H<sub>POT</sub> terminal  
 Black plugs: connect to L<sub>CUR</sub> or L<sub>POT</sub> terminal

#### Open and Short Circuit Compensation

To enhance the accuracy of measurement, perform the open and short circuit compensation.

**NOTE**  
 Procedures for connecting and using this product vary according to the instrument with which it is used. Refer to the instruction manual for the specific instrument.

##### Open circuit compensation

Open the probe tip electrodes and compensate for open circuits. The space between the electrodes must equal the sample width.

##### Short circuit compensation

Close the probe tip electrodes and compensate for short circuits. Be sure to apply adequate force when closing the electrodes.

#### Measurement

Hold the sample between the probe tip electrodes for measurement.

**⚠ CAUTION**  
 To avoid damage to the tester, do not short circuit between the electrode of the test probe with the DC bias voltage still being applied.

##### NOTE

- The contact resistance varies with the actual force applied to the sample held between the probe electrodes. Changes in contact resistance may affect the measurement of a low-impedance element and short-circuit compensation. Be sure to apply adequate force when holding a sample between the electrodes.
- Confirm that contact surfaces of the electrodes and sample are clean. A dirty surface may result in contact failure and thereby cause measurement error.
- The measured value obtained when testing a high impedance element or performing open-circuit compensation may sometimes be unreliable due to their vulnerability to external interference or floating capacitance. In this case, reliable testing can be performed by the use of guarding, that is, connecting a metallic plate to the GUARD terminal and carrying out the measurement on the metallic plate. (For guarding, see the instruction manual of the respective tester.)