HIOKI

9465-10 9465-11

PIN TYPE LEAD

Instruction Manual

EN

Oct. 2024 Revised edition 7 9465F980-07

HIOKI



HIOKI E.E. CORPORATION

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Introduction

Thank you for choosing the Hioki 9465-10/9465-11 Pin Type Lead. To ensure your ability to get the most out of this product over the long term, please read this manual carefully and keep it available for future reference.

The latest edition of the instruction manual

The contents of this manual are subject to change, for example as a result of product improvements or changes to specifications. The latest edition can be downloaded from Hioki's website



https://www.hioki.com/global/support/download/

Overview

The 9465-10/9465-11 Pin Type Lead is a four-terminal pin-type lead assembly that can be used for various maintenance works, including that of emergency batteries and electric vehicles (EV) involving equipotential tests, that require its pins to be brought into contact with difficult-to-access objects to be measured

Use of the coaxial pin with a maximum outside diameter of 2.9 mm allows you to perform measurement using a hole for inspection made on a battery

Inspection and Maintenance

Initial Inspection

When you open the package, carefully inspect the product to ensure that everything is in good condition, and that no damage occurred during shipping. If the product seems to have been damaged or does not work as specified, contact your authorized Hioki distributor or reseller.

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 authorized Hioki distributor or reseller.
- Pack the product so that it will not sustain damage during shipping, and include a description of existing damage. We cannot accept responsibility for damage incurred during shipping

Safety Information

This manual contains information and warnings essential for safe operation of the product and for maintaining it in safe operating condition. Before using it, be sure to carefully read the following safety precautions

! DANGER

Mishandling this product 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. Hioki disclaims any responsibility for accidents or injuries not resulting directly from product defects

Safety Symbol



In this manual, the A 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.

DANGER Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.

Indicates that incorrect operation presents a possibility of injury to the user or damage to the product.

Indicates information or content that is particularly **IMPORTANT** important from the standpoint of operating or maintaining the product.

Precautions for Use

Observe the following precautionary information to ensure that the product can be used safely and in a manner that allows it to perform as described in its specifications

DANGER

- · To prevent an electric shock, be careful to avoid shorting live lines with the pin type leads tip.
- Do not use the product to measure circuits that exceed its ratings or specifications. Damage to the product or overheating can cause bodily injury.
- To prevent an electric shock and short-circuit, turn off all power before connecting leads.

CAUTION

- To avoid breaking the leads, do not bend or pull them.
- To avoid damage to the product, protect it from physical shock when transporting and handling. Be especially careful to avoid physical shock from dropping.
- The ends of the leads are sharp. Be careful to avoid injury. Attach the protective sleeves when the product is not in use

To avoid damage, do not contact the 9465-10/9465-11 Pin Type Lead tip against the object under measurement at a tilted angle.



Procedure

Preliminary Checks

Check the product for any damage that may have occurred during storage or shipping, and perform functional checks before use. If you find any damage to the product, please contact your authorized Hioki distributor or reseller for

Points to check include the pin operation and whether the pin and cable lock are loose. As loose screwing of the cable lock and other components can result in damage, be sure to tighten them securely before use.

DANGER

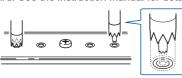
Confirm that the insulation on the using the test leads are undamaged and that no bare conductors are improperly exposed before use. If you find any damage to the product that leads to an electric shock, please contact your authorized Hioki distributor or reseller for repair.

- Make sure the device to which connect the pin type lead is powered
- 2 Connect the pin type lead to the input terminal of the

Plug the ▲ mark on the red lead into the red ▲ marked jack on the device, and plug the A mark on the black lead into the black **A** marked jack on the device.

3 Perform zero adjustment.

Be sure to use the 9454 Zero Adjustment Board or the Z5038 0 ADJ Board. See the instruction manual for details of connectable devices



Connect the 9465-10/9465-11 to an object under measurement. Attach the protective sleeves when not in use.

IMPORTANT

Measurement values when using four-terminal measurement (Differences in measurement values due to measurement leads used)

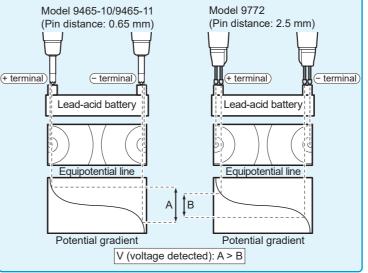
Depending on the object under measurement, such as a lead-acid battery, measurement values may vary due to the measurement lead used. Since these differences in measurement values are due to the shapes and dimensions of the leads used in four-terminal measurement, measurement values taken using any lead represent the true values for that lead only. When judging battery wear using changes in resistance values with time, be sure to use measurement leads having the same dimensions. Reference example (measurement of an MSE-200 valve-regulated stationary lead-acid battery)

Note: Resistance values vary according to the materials and structure of the terminals of the object under measurement.

Measurement lead (Distance between the current-impression pin and the voltage measurement pin)	Measurement values using the BT3554 Battery Tester
9465-10/9465-11 Pin Type Lead (0.65 mm)	0.538 mΩ
9772 Pin Type Lead (2.5 mm)	0.490 mΩ

See the BT3554 Battery Tester manual for detailed technical descriptions

Differences in measurement values are physical phenomena resulting from differences in the distances (dimensions) between current-impression pins and voltage-measurement pins. The greater the battery terminal resistance in comparison to the battery's internal resistance, the more marked these differences become. The following diagram shows how differences in voltage detected result from differences in distance when measuring a lead-acid battery



Specifications

Maximum rated line-to- 30 V AC rms, 42.4 V AC peak, 60 V DC ground voltage Rated current 2 A AC/DC continuous Operating temperature 0°C to 40°C (32°F to 104°F), 80% RH or less and humidity range (non-condensing)

-10°C to 50°C (14°F to 122°F), 80% RH or less Storage temperature and humidity range (non-condensing) Operating environment Indoor use, altitude up to 2000 m (6562 ft.) 9465-10: Approx. 1900 mm (74.8 in.) Length 9465-11: Approx. 3900 mm (153.5 in.) Weight 9465-10: Approx. 180 g (6.3 oz.) 9465-11: Approx. 200 g (7.1 oz.) Instruction manual Accessory Model 9465-90 Tip Pin Option

To purchase optional equipment, please contact your authorized Hioki distributor or reseller. Optional equipment is subject to change with no advance notice. Check Hioki's website for the latest information.

Part Names

The illustration shows the 9465-10.

Conductive contact pin (coaxial pin) Grip Cable lock Cable SENSE connector Protective sleeves are placed on pin for protection during transport. Remove the sleeves before use. Pin base SOURCE connector Enlarged view of pin (Unit: mm) 13.5

Replacing the Tip Pin (Option)

When the tip conductive contact pin is broken or worn, it can be replaced Please order the 9465-90 Tip Pin which is a combination of the conductive contact pin and the pin base (resin part).

- Turn off the power of the device and remove the measurement lead.
- 2 Unscrew the cable lock to unlock the cable. (The cable is locked by screwing the cable lock.)



Model 9465-90 Tip Pin

To prevent broken wires: do not pull the cable, and do not twist the cable.

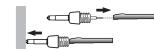
3 Hold the pin base so that the cable won't rotate, and then rotate the grip to loosen it.



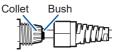
4 Hold the transparent tube and pull the pin base to remove the tip pin. Transparent tube



5 Attach the new 9465-90 Tip Pin. While pressing the tip pin against a hard plate etc. so that the tip pin does not pop out, push it into the transparent tube.



Assemble the pin type lead in the reverse order of disassembling. Do not pull or twist the cable.



- Have the bush stick out about 1 mm from the collet not to break the cable. Be careful not to push the bush too deeply.
- 7 To avoid broken wires and contact failures, after tightening the cable lock, gently tug and twist the cable to check it is firmly held.
- Check the performance.

Measure an object under measurement with a known resistance. Make sure that the measured resistance is correct before using the pin type lead