

9268, 9268-01, 9268-10

DC BIAS VOLTAGE UNIT

Instruction Manual

EN

Aug. 2018 Revised edition 10 Printed in Japan
9268A980-10 18-08H

Warranty

Warranty malfunctions occurring under conditions of normal use in conformity with the Instruction Manual and Product Precautionary Markings will be repaired free of charge. This warranty is valid for a period three (3) years from the date of purchase. Please contact the distributor from which you purchased the product for further information on warranty provisions.

Introduction

Thank you for purchasing the HIOKI Model 9268, 9268-01, 9268-10 DC BIAS VOLTAGE UNIT. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.



Overview

The 9268, 9268-01 DC BIAS VOLTAGE UNIT is an optional unit, which can be connected between a HIOKI LCR, Z HiTESTER and a fixture. The 9268-10 DC BIAS VOLTAGE UNIT is an optional unit, which can be connected between a HIOKI IM Series (LCR Meters, Impedance Analyzers) and the fixture, to allow a DC bias voltage to be applied to a capacitor or other component. The internal circuits of 9268, 9268-01 and 9268-10 are all different. Please use the correct circuit specified by the tester to be connected.

Specifications

Measurement frequency range	42 Hz to 5 MHz (9268-10 : 40 Hz to 8 MHz) When connected to Model 3522 or 3522-50: 100.1 Hz to 100 kHz		
Maximum apply voltage	Between the terminals of H-L and external DC bias apply terminal : ±40 VDC (9268, 9268-10), ±4 VDC (9268-01)		
Maximum voltage to earth	Between the H terminal and chassis, external DC bias terminal and chassis : ±40 VDC (9268, 9268-10), ±4 VDC (9268-01) Between the L terminal and chassis : ±0.5 VDC		
Internal resistance (reference value)	1 kΩ (9268, 9268-10), 100 Ω (9268-01)		
Residual parameters (reference value)	Residual impedance : 50 mΩ + 2 × π × Frequency × 50 nH Floating capacitance : 2 pF max. (at 100 kHz)		
Specifications of the LCR HiTester x α			
Coefficient α			
Measurement accuracy (9268-01)	Range	100 kHz or less	100.1 kHz or more
	1 kΩ or less	1.5	1.5
	10 kΩ or more	1.5+0.2xf _L	5+1xf _H
	f _L : test frequency [kHz]		f _H : test frequency [MHz]

Symbols for Various Standards

	Indicates the Waste Electrical and Electronic Equipment Directive (WEEE Directive) in EU member states.
	Indicates that the product conforms to regulations set out by the EU Directive.

Dimensions and Mass

Approx. 116W x 45H x 55D mm (4.57"W x 1.77"H x 2.17"D) (excluding protrusions),
9268: Approx. 250 g (8.8 oz.), 9268-01: Approx. 270 g (9.5 oz.), 9268-10: Approx. 240 g (8.5 oz.)

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)

Operating environment

Indoors, Pollution Degree 2, altitude up to 2000 m (6562-ft.)

Applicable Standards

EN61010

Accessory

Instruction Manual

Product warranty period

3 years

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

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 no damage occurred during storage or shipping. If you find any damage, contact your dealer or HIOKI representative.

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.




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.
	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

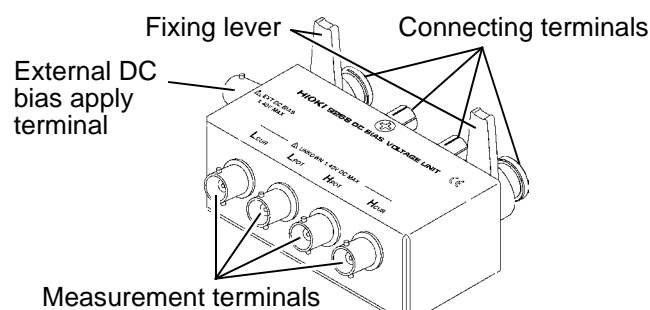
Indicates that incorrect operation presents a possibility of injury to the user or damage to the product.

NOTE

Advisory items related to performance or correct operation of the product.

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.
- For using the tester to which the test fixture is connected and fixture, refer to Instruction Manual of them.
- When the DC bias unit is attached to the tester, be careful not to put any weight on it. This could lead to damage both to the tester and to the DC bias unit.
- The maximum DC bias voltage which can be applied to the 9268, 9268-10 is 40 VDC. The maximum DC bias voltage which can be applied to the 9268-01 is 4 VDC. If a DC bias voltage greater than this limit is applied continuously, the units may be damaged.
- In order to avoid electric shock accident, be absolutely sure not to touch the test terminals while the DC bias voltage is being supplied to them.
- If you disconnect the sample under test from the test terminals with the DC bias voltage still being supplied, then the test sample is left charged, which is very dangerous. In order to avoid electric shock accident, be absolutely sure to discharge the test sample.
- Do not short circuit between the clips of the test probes with the DC bias voltage still being supplied. Doing so may damage the probes or cause a short circuit accident.
- Do not apply a DC bias voltage of more than the withstand voltage to the sample. This could lead to damage to the tester, the DC bias unit, and sample.
- Be careful about the polarity when connecting together, the sample to be tested, and the DC bias power supply.
- It takes a little time for the DC voltage which is being supplied to the sample under test to reach the set voltage, so you should wait for a certain stabilization time period (which depends upon the sample) before performing testing. Be careful, because if you perform testing before this stabilization time period has elapsed, the results will not be reliable.
- After testing is completed, drop the voltage of the external DC bias power supply to zero, and remove the sample under test from the probes after having discharged any electric charge which may have built up.
- If you have removed the sample under test from the probes without first having discharged the accumulated electric charge, you should be careful to do so immediately.
- When using with Model 3522 or 3522-50 turn OFF the EXT.DC BIAS setting. Switching the EXT.DC BIAS setting ON can cause the LCR meter to malfunction.
- When using with IM Series, press the SET EXT button in the DC bias setting of the IM Series.
- When connecting or disconnecting this product from the connected device, plugging it straight to the measurement terminal of the connected device. If the connection is incorrect, connecting terminal is deformed and may affect the measurement.



Connecting the DC Bias Voltage Unit and Test Fixture

DC bias voltage unit.

Plug the fixture into the measurement terminals (UNKNOWN) of the tester, with the product name up. Fasten it in place with the left and right fixing levers.

Test fixture

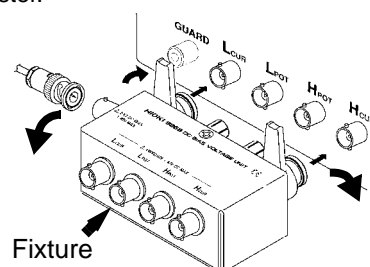
Connect the test fixture (or measurement probe) to the measurement terminals (UNKNOWN) of the tester, so that the H and L terminals match.

External DC bias power supply

Make sure that the external DC bias power supply is turned off, and then plug the cable into the external DC bias apply terminals (BNC terminal) of the 9268, 9268-01, 9268-10 to connect.

NOTE

- A separate external power supply for the DC bias voltage is also required.
- The DC bias power supply cannot be controlled by the main unit of the LCR HiTester.



Measurement Method

For safety reason, follows the procedure carefully.

1. To eliminate measurement errors due to the internal circuit of the DC bias unit, before carrying out measurement, always carry out open-circuit compensation and short-circuit compensation. Carry out the open-circuit compensation and short-circuit compensation with the 9268 (or 9268-01, 9268-10) and fixture (or measurement probe), bias application cable and external DC bias power supply (output voltage is set to 0 V) connected.
2. Fix the sample in the fixture.
3. Set the output voltage of the external DC bias supply to 0 V, then apply the voltage. Next, increase the output voltage setting progressively to reach the required setting.
4. Measure the DC bias characteristics of the sample.
5. Gradually decrease the output voltage of the external DC bias supply until it reaches 0 V.
6. Remove the sample from the fixture.

NOTE

- Since the IM3570 is not be able to compensate the short-circuit while it is connected to the DC bias unit, residual impedance of the specification will be added as an error.
- When carrying out open-circuit compensation or short-circuit compensation using DC bias unit connected to IM Series, turn OFF the DC setting of the correction range of IM Series.
- DC bias unit is not a four-terminal pair structure. When it is in combination with the test fixture probes that is four-terminal pair structure, measurement error increases or the measurement results may be affected by the placement of the probe.