

9320-01

LOGIC PROBE

Instruction Manual

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EN

HIOKI

<http://www.hioki.com>



Our regional contact information

HEADQUARTERS
81 Koizumi
Ueda, Nagano 386-1192 Japan

HIOKI EUROPE GmbH
Rudolf-Diesel-Strasse 5
65760 Eschborn, Germany
hioki@hioki.eu

1808EN
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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 of one (1) year 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 9320-01 LOGIC PROBE. To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Overview

The 9320-01 is a logic probe with indicator. It is connected to the logic input unit for the MR8870, MR8875, MR8880, MR8827, or MR8847 Memory HiCorders. It is equipped with a selector for each channel, so that the input type can be switched between digital input and contact input for each channel. This makes it possible to use this probe for a variety of applications such as measurement of electronic circuits and operation timing of mechanical relays.

Inspection and Maintenance

Initial Inspection

When you receive the device, 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.

Confirming package contents

- 9320-01 LOGIC PROBE 1
- IC clip leads 1
- Alligator clip leads 1
- Carrying case 1
- Instruction manual 1

Preliminary Checks

- Before using the device 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 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.

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 cannot accept responsibility for damage incurred during shipping.

Safety Information

This device is designed to conform to IEC 61010 Safety Standards and has been thoroughly tested for safety prior to shipment. However, using the device in a way not described in this manual may negate the provided safety features. Before using the device, be certain to carefully read the following safety notes:

⚠ DANGER
Mishandling during use could result in injury or death, as well as damage to the device. Be certain that you understand the instructions and precautions in the manual before use.

Symbols Affixed to the Instrument

⚠ Indicates cautions and hazards. Refer to the "Usage Notes" section of the instruction manual for more information.

In this document, the risk seriousness and the hazard levels are classified as follows.

⚠ DANGER Indicates an imminently hazardous situation that will result in death or serious injury to the operator.

⚠ WARNING Indicates a potentially hazardous situation that may result in death or serious injury to the operator.

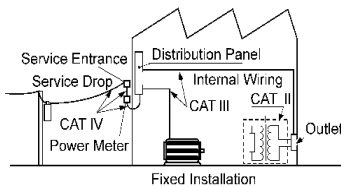
⚠ CAUTION Indicates a potentially hazardous situation that may result in minor or moderate injury to the operator or damage to the device or malfunction.

NOTE Indicates advisory items related to performance or correct operation of the device.

Measurement categories

To ensure safe operation of measurement devices, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT II to CAT IV, and called measurement categories.

- CAT II:** Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
- CAT II** covers directly measuring electrical outlet receptacles.
- CAT III:** Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.
- CAT IV:** The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).



Using a measurement device in an environment designated with a higher-numbered category than that for which the device is rated could result in a severe accident, and must be carefully avoided. Use of a measurement instrument that is not CAT-rated in CAT II to CAT IV measurement applications could result in a severe accident, and must be carefully avoided.

Usage Notes

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

⚠ DANGER

- The main unit's GND and the logic input terminals GND are not insulated. Handle these items carefully in order to avoid electric shock or a short circuit accident.
- The maximum input voltage is 50 VDC. Attempting to measure voltage in excess of the maximum input could destroy the device and result in personal injury or death.

⚠ WARNING
Do not allow the device to get wet, and do not take measurements with wet hands. This may cause an electric shock.

⚠ 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.
- 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.

NOTE
This device may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Specifications

Accuracy guaranteed for one year at 23°C±5°C (73°F±9°F), 35% RH to 80% RH													
The number of channels 4 (having a common ground with the main unit and between channels.)													
Input type	Digital input / Contact input Input type can be selected for each channel. Open collector outputs can be directly measured using contact inputs.												
Input resistance	1 MΩ±5% (Digital input: 0 V to +5 V) 500 kΩ or more (Digital input: +5 V to +50 V)												
Pull-up resistance	2 kΩ (Contact inputs: supplied with a voltage of +5V via the input terminal)												
Detecting level	<table border="1"> <thead> <tr> <th></th> <th>Digital input Threshold value</th> <th>Contact input Detecting resistance value</th> </tr> </thead> <tbody> <tr> <td>1.4 V range</td> <td>1.4 V±0.3 V</td> <td>more than 1.5 kΩ opened (Output L) less than 500 Ω shorted (Output H)</td> </tr> <tr> <td>2.5 V range</td> <td>2.5 V±0.4 V</td> <td>more than 3.5 kΩ opened (Output L) less than 1.5 kΩ shorted (Output H)</td> </tr> <tr> <td>4.0 V range</td> <td>4.0 V±0.5 V</td> <td>more than 25 kΩ opened (Output L) less than 8 kΩ shorted (Output H)</td> </tr> </tbody> </table>		Digital input Threshold value	Contact input Detecting resistance value	1.4 V range	1.4 V±0.3 V	more than 1.5 kΩ opened (Output L) less than 500 Ω shorted (Output H)	2.5 V range	2.5 V±0.4 V	more than 3.5 kΩ opened (Output L) less than 1.5 kΩ shorted (Output H)	4.0 V range	4.0 V±0.5 V	more than 25 kΩ opened (Output L) less than 8 kΩ shorted (Output H)
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Response pulse width	500 ns or more												
Maximum input voltage	0 V to +50 VDC												
Maximum rated current	100mA												
Operating temperature and humidity ranges	0°C to 40°C (32°F to 104°F), 80% RH (no condensation)												
Storage temperature and humidity ranges	-10°C to 50°C (14°F to 122°F), 90% RH (no condensation)												
Operating environment	Altitude up to 2000 m (6562-ft.), Pollution degree 2, indoors												

Dimensions	Approx. 62W x 94H x 20D mm (2.44"W x 3.70"H x 0.79"D) (excluding protrusions)
Connector cable length	Approx. 1500 mm (59")
Probe tip cable length	Approx. 300 mm (11.8")
Mass	Approx. 150 g (5.3 oz.) (including connector cable, excluding input leads)
Accessories	IC clip leads, Alligator clip leads, Carrying case, Instruction Manual
Applicable Standards	
Safety	EN 61010
EMC	EN 61326 Class A
Product warranty period	1 year

Parts Names

NOTE
When replacing the leads, pull out the leads while pressing the connector knob downward.

Alligator clip leads
For contact input

Input selector
Switches the input type

- Digital input (DIGITAL) (Input for measuring digital ICs.)
- Contact input (CONTACT) (Input for measuring contacts.)

Threshold value selector
Switches the threshold value.

Indicator
Indicates the input condition of each channel.

- Digital input
Lights when the level signal (H) is input
- Contact input
Lights when alligator clips are shorted.

IC clip leads
For digital input

8-pin connector
For details on connection, refer to the instruction manual of the each instrument.

Using Method

When measuring digital signals (Digital input)

1. Connect the IC clip leads to the device.
2. Set the input selector to DIGITAL.
3. Connect the alligator clip to the circuit ground.
4. Use the threshold value selector to select the threshold value.
5. Connect the IC clips to the measurement object.

When measuring the contact signal (Contact input)

1. Connect the Alligator clip leads to the device.
2. Set the input selector to CONTACT.
3. Connect the alligator clips to the measurement object.