HIOKI
9320
9320-01
LOGIC PROBE
INSTRUCTION MANUAL

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Introduction
Thank you for purchasing the HIOKI "Model 9320/ 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 is a logic probe with indicator. It is connected to the logic input unit for the 8800 series 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.
The 9320-01 is connected to the logic input unit for the 8807/08 MEMORY HiCORDER. The 8 pin connector to logic input unit differs in, from 9320 from 9320-01.
It is possible to use the 9320 for 8807/08 by using optional 9323 CONVERSION CABLE.

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

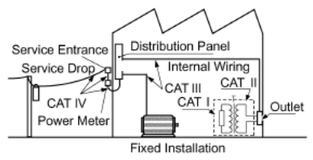
⚠DANGER
This device is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the device. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from device defects.

Safety Symbol
⚠	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.

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.
⚠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.

Overvoltage categories (CAT)
This device complies with CAT I safety requirements.
To ensure safe operation of measurement devices, IEC 60664 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called overvoltage categories. These are defined as follows.
CAT I: Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar device.
CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
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).



Fixed Installation

Higher-numbered categories correspond to electrical environments with greater momentary energy. So a measurement device designed for CAT III environments can endure greater momentary energy than a device designed for CAT II.
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.

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 dustproof. 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.

Specifications
Accuracy guaranteed for one year at 23±5°C (73±9°F), 35 to 80%RH

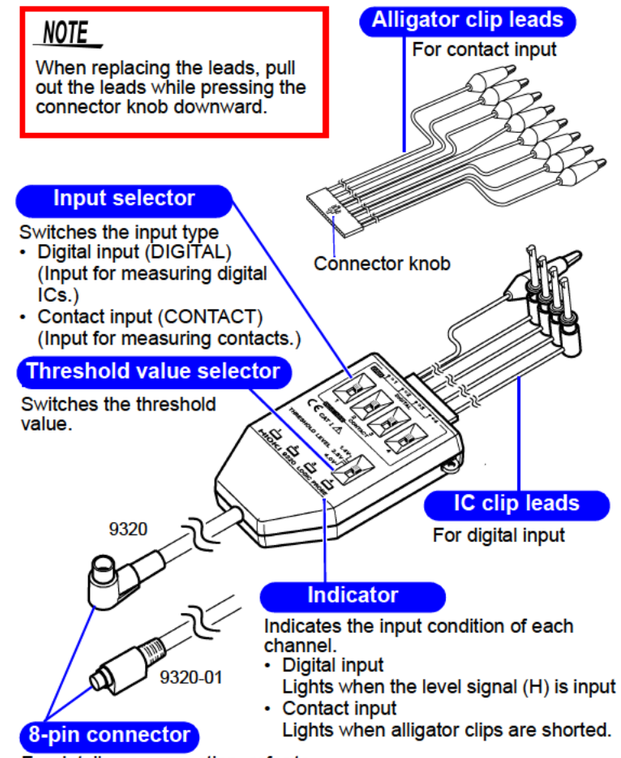
The number of channels	4 (having a common ground with the main unit and between channels.)
Input type	Digital input / Contact input Input type can be selected for each channel. Open collector outputs can be directly measured using contact inputs.
Input resistance	• Digital input: 1 MΩ±5% (0 to +5 V), 500 kΩ or more (+5 to +50 V) • Contact inputs: approx. 2 kΩ (supplied with a voltage of +5V via the input terminal)

Detecting level

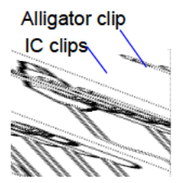
	Digital input Threshold value	Contact input Detecting resistance value	
1.4 V range	1.4 V±0.3 V	more than 1.5 kΩ less than 500Ω	opened (Output L) shorted (Output H)
2.5 V range	2.5 V±0.4 V	more than 3.5 kΩ less than 1.5 kΩ	opened (Output L) shorted (Output H)
4.0 V range	4.0 V±0.5 V	more than 2.5 kΩ less than 8 kΩ	opened (Output L) shorted (Output H)

Response time	Less than 500 ns
Maximum input voltage	0 to +50 VDC
Operating temperature and humidity ranges	0 to 40°C (32 to 104°F), 80%RH (no condensation)
Storage temperature and humidity ranges	-10 to 50°C (14 to 122°F), 90%RH (no condensation)
Operating environment	Altitude up to 2000 m (6562-ft.), 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 Pollution degree 2, Overvoltage category I (anticipated transient overvoltage 330 V)
EMC	EN 61326 Class A

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

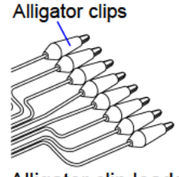


For details on connection, refer to the following instruction manuals.
- 9320: 8800 series Memory HiCorder's manual.
- 9320-01: 8807/08 MEMORY HiCORDER's manual.

Using Method
When measuring digital signals (Digital input)


IC clip leads

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)


Alligator clip leads

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.