

HIOKI

9327

LOGIC PROBE

INSTRUCTION MANUAL

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Introduction

Thank you for purchasing the HIOKI "Model 9327 LOGIC PROBE". To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Overview

The 9327 is a logic probe with indicator. It is connected to the logic input unit for the 8855 MEMORY HiCORDER. 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

- 9327 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 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.

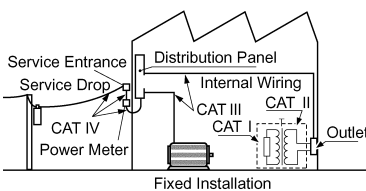
| | |
|------------------|--|
| ⚠ DANGER | Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user. |
| ⚠ WARNING | Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user. |
| ⚠ CAUTION | Indicates that incorrect operation presents a possibility of injury to the user or damage to the device. |

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).

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

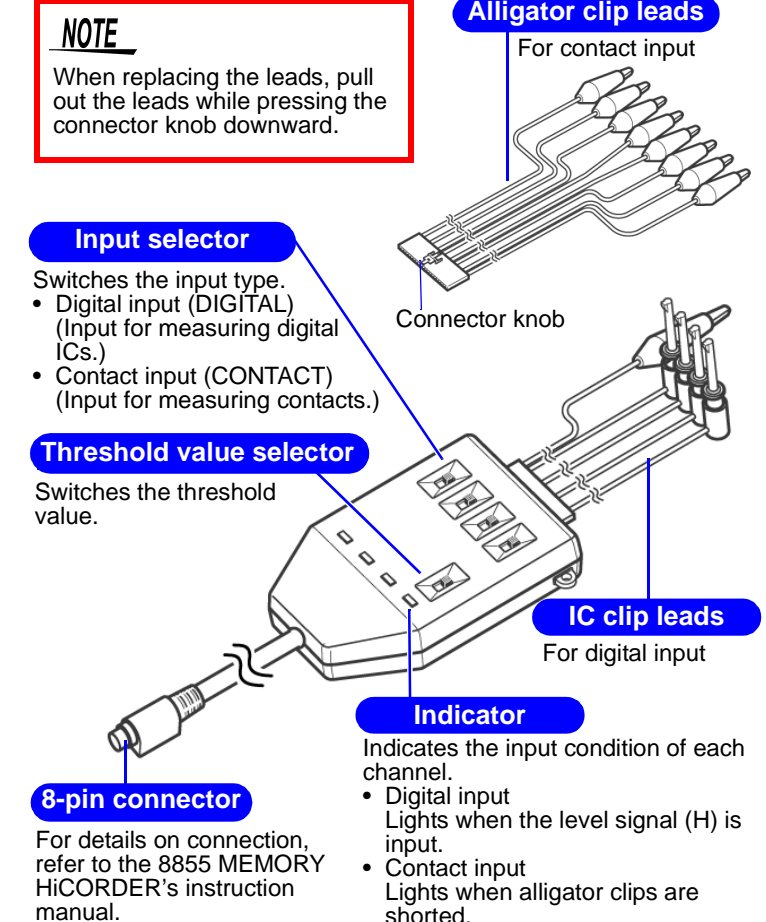
- Do not store or use the device where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the device may be damaged and insulation may deteriorate so that it no longer meets specifications.
- This device is not designed to be entirely water- or 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.

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 channels. Open collector outputs can be directly measured using contact inputs. | | | | | | | | | | | | |
| Input resistance | 1 MΩ±5% (Digital input: 0 to +5 V) 500 kΩ or more (Digital input: +5 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 500Ω 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 2.5 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 500Ω 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 2.5 kΩ opened (Output L) less than 8 kΩ shorted (Output H) |
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| 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 2.5 kΩ opened (Output L) less than 8 kΩ shorted (Output H) | | | | | | | | | | | |
| Response pulse width | 100 ns or more | | | | | | | | | | | | |
| Maximum input voltage | 0 to +50 VDC | | | | | | | | | | | | |
| Operating temperature | 0 to 40°C (32°F to 104°F), 80%RH (no condensation and humidity ranges) | | | | | | | | | | | | |
| Storage temperature | -10 to 50°C (14°F to 122°F), 90%RH (no condensation and humidity ranges) | | | | | | | | | | | | |
| 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") | | | | | | | | | | | | |

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|----------------------|--|
| 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



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 clip to the measurement object.