

HIOKI

9321

9321-01

LOGIC PROBE

INSTRUCTION MANUAL

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Introduction

Thank you for purchasing the HIOKI "Model 9321/ 9321-01 LOGIC PROBE". To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Overview

The 9321 is a logic probe with indicator. It is connected to the logic input unit for 8800 series Memory HiCorders. This probe detects presence of AC or DC voltage, making it possible to measure the operation timing of relay sequence circuits. Each channel is floated so that connection is easy.

The 9321-01 is connected to the logic input unit for the 8807/ 8808/ 8855/ 8860/ 8861 MEMORY HiCORDERs. The 8-pin connector to logic input unit differs in, from 9321 from 9321-01. It is possible to use the 9321 for 8807/ 8808/ 8855/ 8860/ 8861 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

- 9321 or 9321-01 LOGIC PROBE 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.
	Indicates a grounding terminal.

The following symbols in this manual indicate the relative importance of cautions and warnings.

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

Measurement categories (Overvoltage categories)

This device complies with CAT II safety requirements. To ensure safe operation of measurement devices, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called measurement categories. These are defined as follows.

CAT I: Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar device.

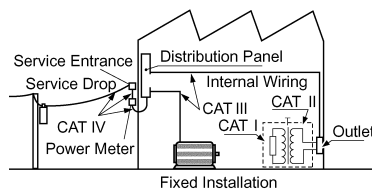
CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)

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. Never use a CAT I measuring device in CAT II, III, or IV environments. The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.



Usage Notes



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

⚠ DANGER

- The maximum input voltage of Low range is 150 Vrms and High range is 250 Vrms. Attempting to measure voltage in excess of the maximum input could destroy the device and result in personal injury or death.
- The maximum rated voltage between input terminals and ground is 250 Vrms. Attempting to measure voltages exceeding 250 Vrms with respect to ground could damage the device and result in personal injury.

⚠ WARNING

- Do not allow the device to get wet, and do not take measurements with wet hands. This may cause an electric shock.
- A high voltage is applied to the input section of the logic probe. During connection and signal input, never touch by hand the connection side beyond the clip cover barrier indicating the touching limit (see Parts Names).

⚠ 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 (insulated)	
Input voltage range	LOW	HIGH
Input resistance	More than 30 kΩ	More than 100 kΩ
Sensitivity (Output: L)	0 to 10 VAC ±(0 to 15) VDC	0 to 30 VAC ±(0 to 43) VDC
Sensitivity (Output: H)	60 to 150 VAC ±(20 to 150) VDC	170 to 250 VAC ±(70 to 250) VDC
Response time	(↑)	Less than 1 ms
	(↓)	Less than 3 ms
		with 100 VDC
		with 200 VDC
Maximum input voltage	150 V rms	250 V rms
Maximum rated voltage to earth	250 V rms	
Dielectric strength	2.3 kVAC/ 1 min (between unit and channels, between channels)	
Insulation resistance	More than 100 MΩ / 500 VDC (between unit and channels, between channels)	

This device detects absolute values so that negative DC voltages can be applied.

The above values for AC voltages are those obtained with sine wave signals of 50/60 Hz.

The 9321/ 9321-01 LOGIC PROBE makes an ON/OFF judgement for the input signal within the range above. At input voltages between sensitivity L and H, it can not make ON/OFF judgements of input signals correctly.

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 128H x 20D mm (2.44"W x 5.04"H x 0.79"D) (excluding protrusions)

Connector cable length Approx. 1500 mm (59")

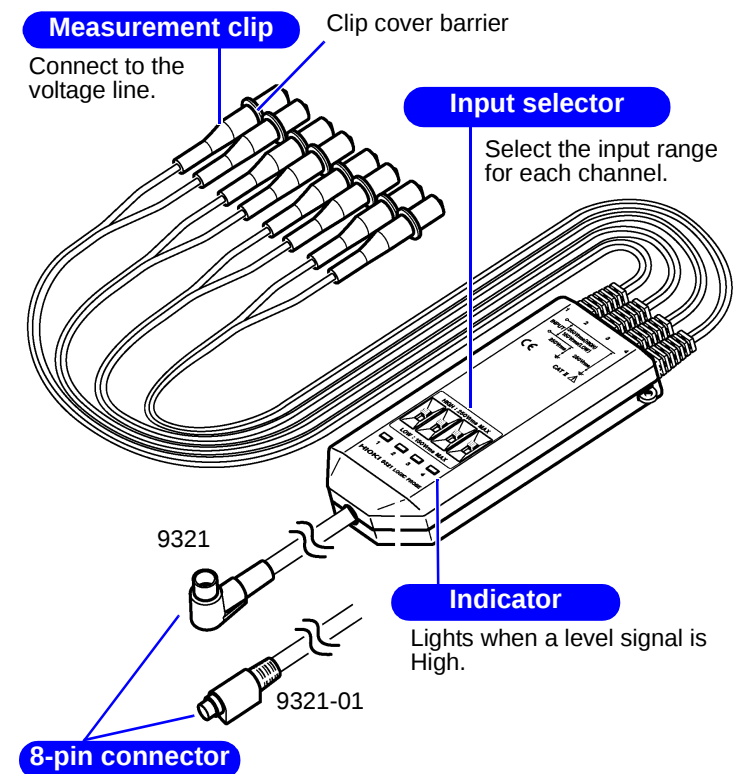
Probe tip cable length Approx. 1000 mm (39.37")

Mass Approx. 320 g (11.3 oz.)

Accessories Carrying case, Instruction Manual

Applicable Standards
Safety EN 61010
Pollution degree 2, Measurement category II (anticipated transient overvoltage 2500 V)
EMC EN 61326 Class A

Parts Names



For details on connection, refer to the following instruction manuals.

- 9321: 8800 series Memory HiCorder's manual.
- 9321-01: 8807/08, 8855 MEMORY HiCORDER's manual.

Using Method

⚠ CAUTION

Note that the device may be damaged if the applied voltage exceeds the measurement range.

- Set the input selector in accordance with the measured voltage.
LOW range: On/off for 100 VAC and 24 VDC, etc.
HIGH range: On/off for 200 VAC, etc.
- Since the inputs are bipolar, polarity should be disregarded.
- Because the inputs are insulated, each channel is connectable to independent potential points.