
Installation Guide

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For Safety information, Warranties, and Regulatory information,
see the pages behind the index.

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Agilent Technologies
LogicWave

In This Book

This book:

- Shows how to install and care for the LogicWave logic analyzer.
- Describes the LogicWave specifications and characteristics.

See Also

The online help for information on using LogicWave.

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Setting Up LogicWave

Shows how to install the Agilent Technologies LogicWave logic analyzer and provides instructions on caring for the instrument.

Installing LogicWave

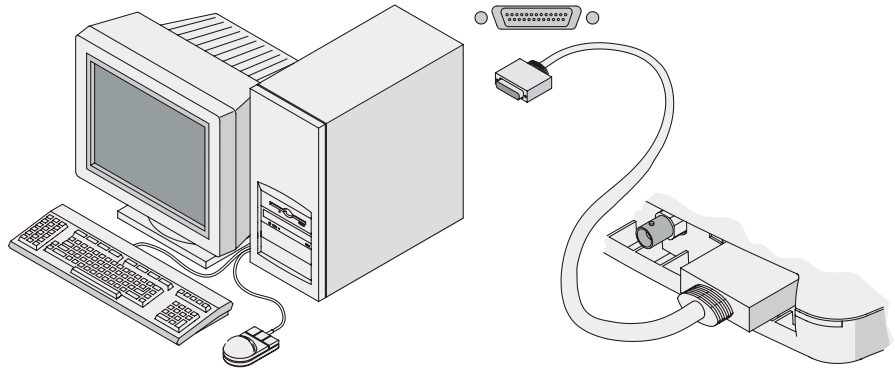
This section provides instructions for setting up the LogicWave logic analyzer and connecting it to a device under test.

The logic analyzer user interface requires a host computer (PC) with the following characteristics (or better):

- Pentium 90 MHz
- Windows 95/98/NT/2000
- 16MB RAM
- 10MB available space on the hard disk drive
- Available parallel port (no pass-through devices installed)
- Available LPT1 peripheral device designator

The host computer (PC) running the logic analyzer interface can be either powered on or off. The interface software is installed on the PC.

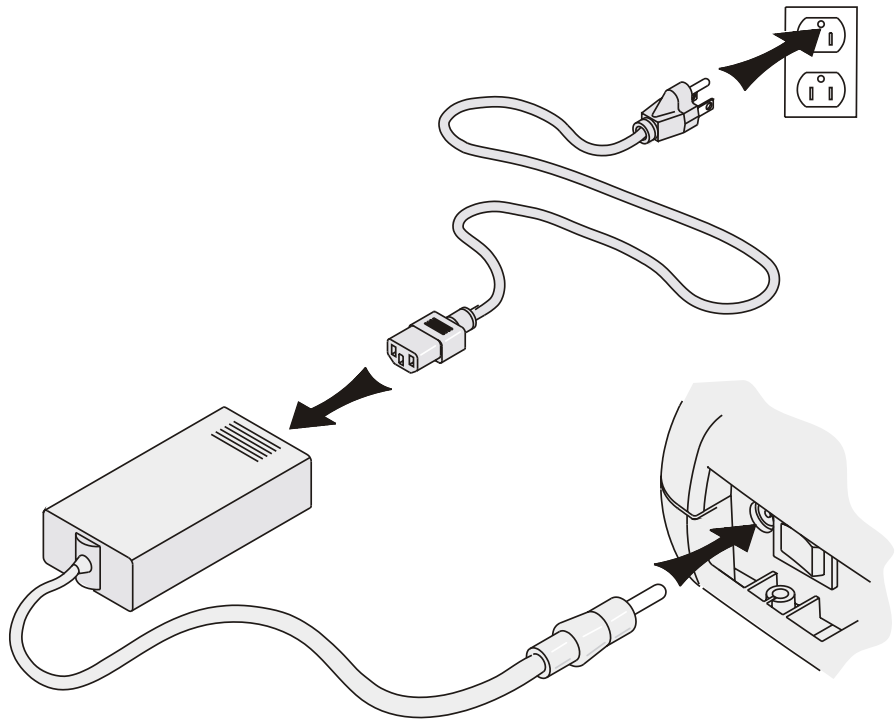
Step 1. Connect the logic analyzer to a host computer (PC)



- 1** Connect the small end of an HP C2946A parallel port printer cable to the PARALLEL connector on the rear panel of the logic analyzer
- 2** Connect the large end of the printer cable to the PC's parallel port.
- 3** Apply power to the PC if it is not turned on.

To ensure the PC's parallel port is properly configured, interrupt the PC's boot process by pressing [F2] on the keyboard. Scroll down to the parallel port configuration and observe the current parallel port data transfer mode. Ensure either Enhanced Capabilities Port (ECP), Byte, or Nibble mode is selected (Enhanced Parallel Port (EPP) mode will not work). If none of the correct transfer modes is selected, you need to change the transfer mode according to the instructions for your PC.

Step 2. Connect the power cable

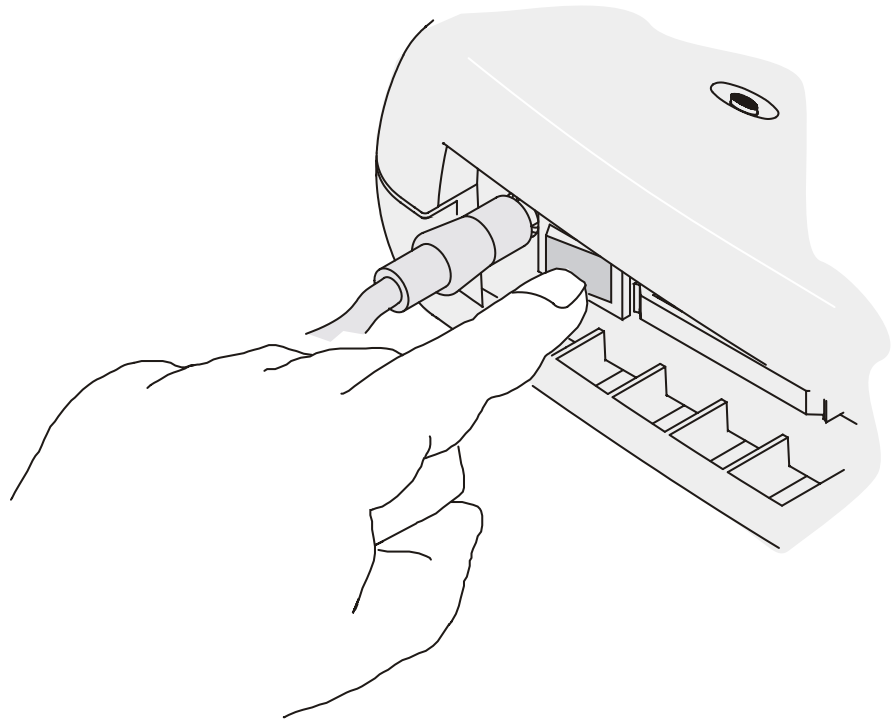


CAUTION:

Use only the supplied power supply (HP F1044B) and cord. Failure to use the proper power supply could result in equipment damage.

- 1 Connect the power cord to the power supply input.
- 2 Connect the power supply output cable to the power input connector on the rear panel of the logic analyzer.

Step 3. Turn on power



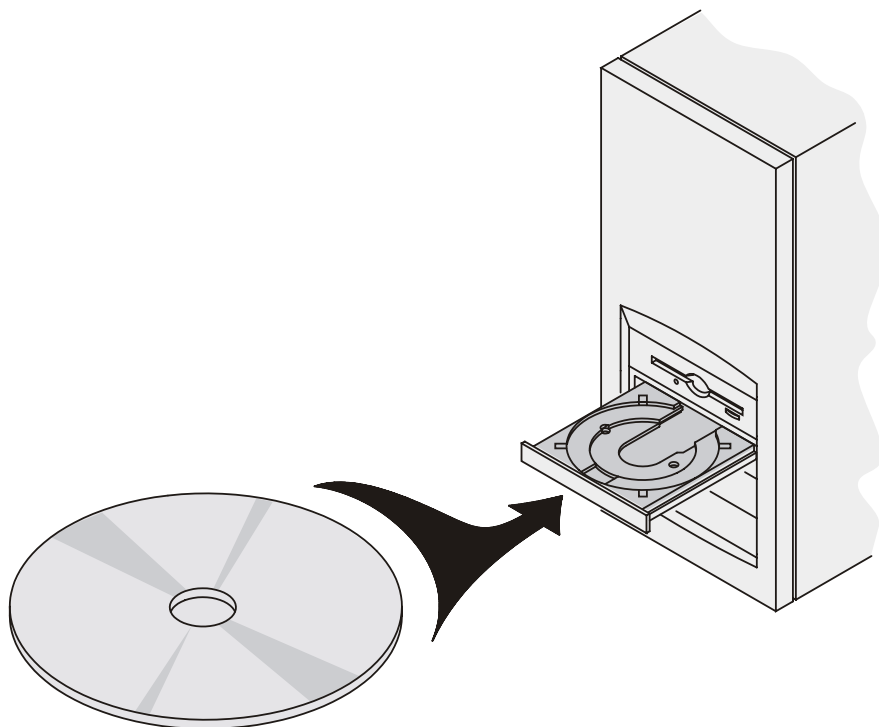
CAUTION:

Do not block the air intake vents on the bottom of the logic analyzer.



- 1** Turn the power switch to the on (“1”) position.
- 2** Wait approximately 15 seconds for the logic analyzer to power up and settle.

Step 4. Install software

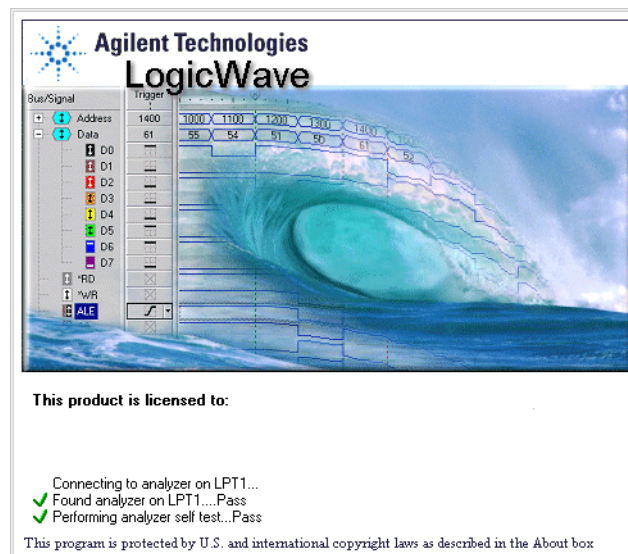


See Also

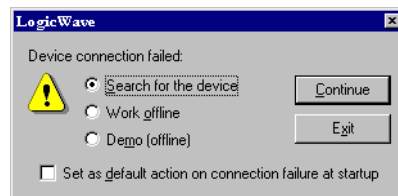
Refer to the instructions on the installation CD.

Step 5. Start the LogicWave user interface

- 1 Start the Agilent LogicWave application from the Start menu or using a shortcut.
- 2 Observe the start dialog. If the LogicWave was found, a self-test will auto-initiate and the LogicWave interface indicates “Connected”.



- 3 If automatic connection to the logic analyzer fails, then a Device Connection Failed dialog box will appear. Select “Search for the device,” then select Continue.



Chapter 1: Setting Up LogicWave
Installing LogicWave

- 4 The LogicWave Communication Setup window will appear. Select the E9340A device, then select Connect.

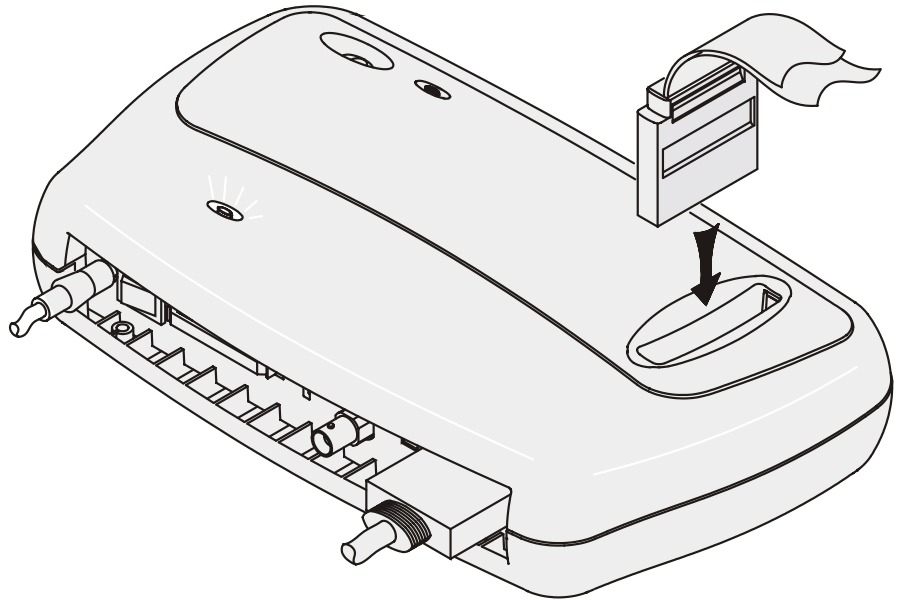


- 5 At the Welcome window, select OK.



- 6 In the Setup Properties dialog, click OK

Step 6. Connect probe cables

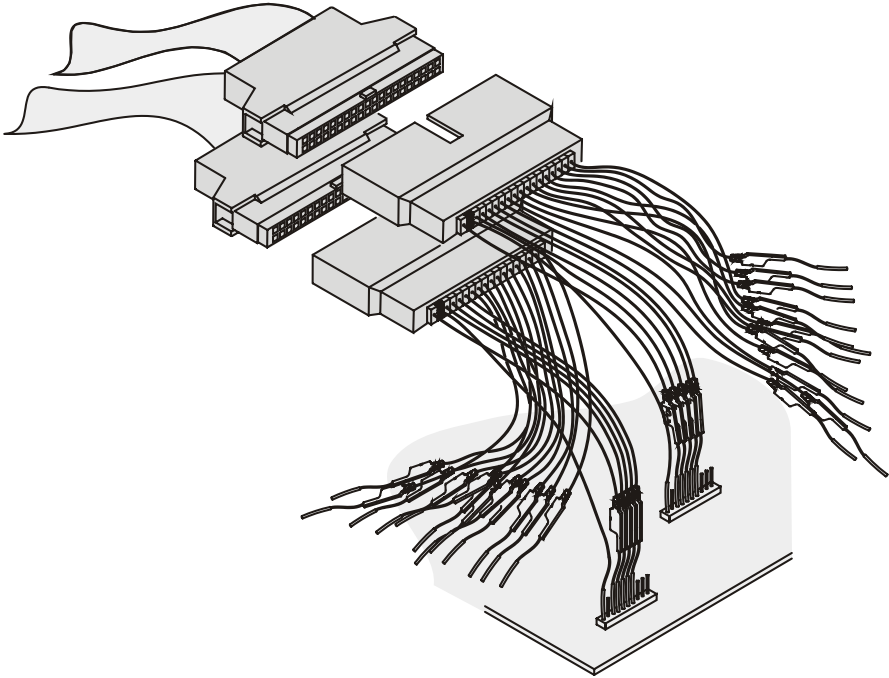


CAUTION:

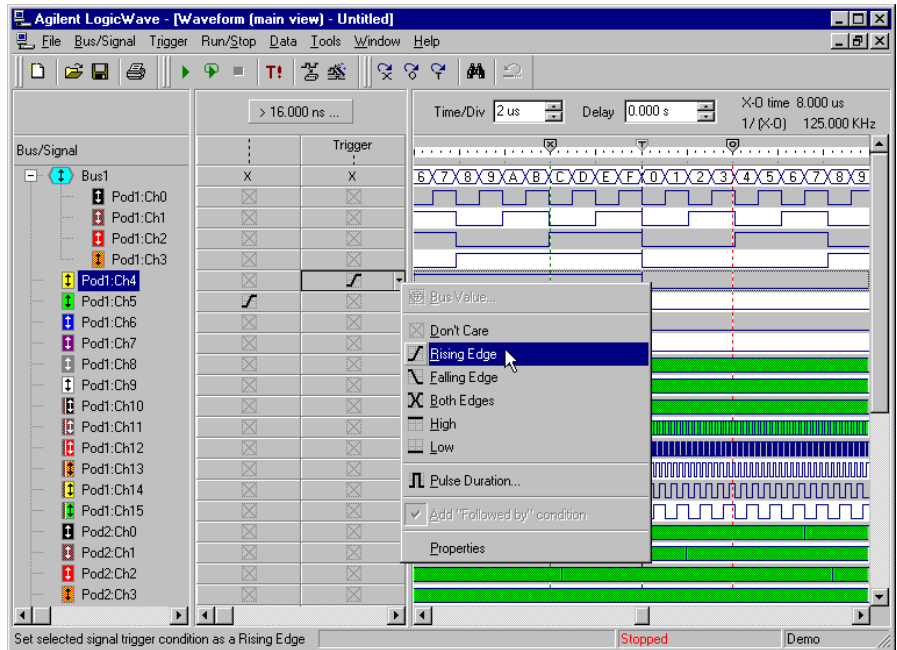
Use only the probe cable that is provided.



Step 7. Probe the device under test



Step 8. Make measurements



See Also

Refer to the online help for more information on using LogicWave.

Caring for LogicWave

This section provides instructions on caring for the LogicWave logic analyzer.

To clean the instrument

- With the logic analyzer turned off and unplugged, use mild detergent and water to clean the instrument.

Specifications and Characteristics

Describes the specifications, characteristics, and other characteristics and requirements of the Agilent Technologies LogicWave E9340A logic analyzer.

What is a Specification?

A specification is a numeric value, or range of values, that bounds the performance of a product parameter. The product warranty covers the performance of parameters described by specifications. Products shipped from the factory meet all specifications. Additionally, products sent to Agilent Customer Service Centers for calibration, and returned, meet all specifications. Specifications are verified by *calibration procedures*.

What is a Calibration Procedure? Calibration procedures verify that products or systems operate within the specifications. Parameters covered by specifications have a corresponding calibration procedure. Calibration procedures include both performance tests and system verification procedure. Calibration procedures are traceable and must specify adequate calibration standards.

Calibration procedures verify products meet the specifications by comparing measured parameters against a pass-fail limit. The pass-fail limit is the specification less any required guardband.

The term "calibration" refers to the process of measuring parameters and referencing the measurement to a calibration standard rather than the process of adjusting products for optimal performance.

What is a Characteristic?

Characteristics describe product performance that is useful in the application of the product, but that is not covered by the product warranty. Characteristics describe performance that is typical of the majority of a given product, but not subject to the same rigor associated with specifications. Characteristics are verified by *function tests*.

What is a Function Test? Function tests are quick tests designed to verify basic operation of a product. Function tests include operator's checks and operation verification procedures. An operator's check is normally a fast test used to verify basic operation of a product. An operation verification procedure verifies some, but not all, specifications, and often at a lower confidence level than a calibration procedure.

Specifications

Maximum state clock	100 MHz
Threshold accuracy	$\pm (100 \text{ mV} + 3\% \text{ of threshold setting})$
Setup/hold time	4.0/0 ns fixed

Characteristics

Characteristics

General

State/timing channels	34
Memory depth	128K timing, 64K state
User interface	Windows® 95/98/NT/2000, PC-hosted (runs as an application on any Pentium® or better, desktop or laptop, with a minimum display resolution of 800x600 -- large fonts are not supported)
"WYDIWYC" timing trigger	"What you draw is what you capture" visual timing trigger setup
Printers	Shared with the host PC - can print to any local or network printer supported by the PC
Probing	100 kohms, 1.5 pF
Dimensions	11.5" x 9" x 2.5" (29.1 x 22.8 x 6.3 cm)
Weight	4.5 pounds (2.1 kg)
I/O Ports	Enhanced Parallel connection to PC for fast display update rates, Trigger IN/OUT BNC
Supported file formats for screen shots	Use Ctrl + Alt + PrintScreen to create bitmap
Configuration and data files	Encoded in binary format (stored to or loaded from host PC); can export acquired data to an ASCII formatted file.
Maximum power supply voltage	115-230V, 50/60 Hz, IA CAT II CAT I = Mains isolated CAT II = Line voltage in appliance and to wall outlet

Timing Analysis

Maximum timing sample rate	250 MHz
Sample period accuracy	±0.01% of sample period
Channel-to-channel skew	2 ns typical, 3 ns max
Timing interval accuracy	± (sample period accuracy + channel-to-channel skew + 0.01% of time interval reading)

State Analysis

Minimum state clock pulse width	3.5 ns
Time tag resolution	8ns or 0.1% (whichever is greater)
Maximum time count between states	34 seconds
Clock qualifiers setup/hold	4.0/0 ns fixed

Triggering

Sequencer speed	125 MHz maximum
State sequence levels	3
Timing sequence levels	2
Port In delay	35 ns between rising edge on Port In BNC and don't care logic analyzer trigger
Port Out delay	120 ns between logic analyzer trigger and rising edge on Port Out BNC

Probes

These are the probe characteristics at the end of the flying leads.

Input resistance	100 kohm \pm 2%
Parasitic tip capacitance	1.5 pF
Minimum input voltage swing	500 mV peak-to-peak
Threshold accuracy	\pm (100 mV + 3% of threshold setting)
Threshold range	TTL, ECL, -6.0 V to +6.0 V adjustable in 50 mV increments
Maximum input voltage	\pm 40 V peak

Characteristics

Operating Environment

Temperature	Instrument: 0°C to 55°C (+ 32°F to 131°F) Disk media: 10°C to 40°C (+ 50°F to 104°F)
Humidity	Up to 95% relative humidity at 40°C
Altitude	4,572 m (15,000 ft)
Indoor use only	
Pollution degree 2	Normally only dry non-conductive pollution occurs. Occasionally a temporary conductivity caused by condensation must be expected.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Agilent Technologies
Manufacturer's Address: Digital Design Product Generation Unit
1900 Garden of the Gods Road
Colorado Springs, CO 80907 USA

declares, that the product

Product Name: Logic Analyzer
Model Number(s): E9340A
Product Option(s): All

conforms to the following Product Specifications:

Safety: IEC 1010-1:1990+A1+A2:1995 / EN 61010-1:1993
UL3111
CSA-C22.2 No. 1010.1:1993

EMC: CISPR 11:1990 / EN 55011:1991 Group 1, Class A
IEC 555-2:1982 + A1:1985 / EN 60555-2:1987
IEC 555-3:1982 + A1:1990 / EN 60555-3:1987 + A1:1991
IEC 801-2:1991 / EN 50082-1:1992 4 kV CD, 8 kV AD
IEC 801-3:1984 / EN 50082-1:1992 3 V/m, {1kHz 80% AM, 27-1000 MHz}
IEC 801-4:1998 / EN 50082-1:1992 0.5 kV Sig. Lines, 1 kV Power Lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly.

This product was tested in a typical configuration with Agilent Technologies test systems.

Colorado Springs, 9/10/99



Ken Wyatt, Product Regulations Manager

European Contact: Your local Agilent Technologies Sales and Service Office or Agilent Technologies GmbH, Department ZQ / Standards Europe, Herrenberger Strasse 130, D-71034 Böblingen Germany (FAX: +49-7031-14-3143)

Product Regulations

Safety IEC 1010-1:1990+A1 / EN 61010-1:1993
UL 3111
CSA-C22.2 No. 1010.1:1993

EMC This Product meets the requirement of the European Communities (EC) EMC Directive 89/336/EEC.



ISM 1-A

Emissions EN55011/CISPR 11 (ISM, Group 1, Class A equipment),
IEC 555-2 and IEC 555-3

Immunity	EN50082-1	Code ¹
	IEC 801-2 (ESD) 8kV AD	3
	IEC 801-3 (Rad.) 3 V/m	1
	IEC 801-4 (EFT) 1kV	1

¹Performance Codes:

1 PASS - Normal operation, no effect.

2 PASS - Temporary degradation, self recoverable.

3 PASS - Temporary degradation, operator intervention required.

4 FAIL - Not recoverable, component damage.

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Document Warranty

The information contained in this document is subject to change without notice.

Agilent Technologies makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose.

Agilent Technologies shall not be liable for errors contained herein or for damages in connection with the furnishing, performance, or use of this material.

Safety

This apparatus has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Measuring Apparatus, and has been supplied in a safe condition. This is a Safety Class I instrument (provided with terminal for protective earthing). Before applying power, verify that the correct safety precautions are taken (see the following warnings). In addition, note the external markings on the instrument that are described under "Safety Symbols."

Warning

- Before turning on the instrument, you must connect the protective earth terminal of the instrument to the protective conductor of the (mains) power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. You must not negate the protective action by using an extension cord (power cable) without a protective conductor (grounding). Grounding one conductor of a two-conductor outlet is not sufficient protection.
- Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuseholders. To do so could cause a shock or fire hazard.

- Service instructions are for trained service personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

- If you energize this instrument by an auto transformer (for voltage reduction), make sure the common terminal is connected to the earth terminal of the power source.

- Whenever it is likely that the ground protection is impaired, you must make the instrument inoperative and secure it against any unintended operation.

- Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

- Do not install substitute parts or perform any unauthorized modification to the instrument.

- Capacitors inside the instrument may retain a charge even if the instrument is disconnected from its source of supply.

Safety Symbols



Instruction manual symbol: the product is marked with this symbol when it is necessary for you to refer to the instruction manual in order to protect against damage to the product.



Hazardous voltage symbol.



Earth terminal symbol: Used to indicate a circuit common connected to grounded chassis.

WARNING

The Warning sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning sign until the indicated conditions are fully understood and met.

CAUTION

The Caution sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood or met.

Product Warranty

This Agilent Technologies product has a warranty against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, Agilent Technologies will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Agilent Technologies.

For products returned to Agilent Technologies for warranty service, the Buyer shall prepay shipping charges to Agilent Technologies and Agilent Technologies shall pay shipping charges to return the product to the Buyer. However, the Buyer shall pay all shipping charges, duties, and taxes for products returned to Agilent Technologies from another country.

Agilent Technologies warrants that its software and firmware designated by Agilent Technologies for use with an instrument will execute its programming instructions when properly installed on that instrument. Agilent Technologies does not warrant that the operation of the instrument software, or firmware will be uninterrupted or error free.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

No other warranty is expressed or implied. Agilent Technologies specifically disclaims the implied warranties of merchantability or fitness for a particular purpose.

Exclusive Remedies

The remedies provided herein are the buyer's sole and exclusive remedies. Agilent Technologies shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

Assistance

Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products. For any assistance, contact your nearest Agilent Technologies Sales Office.

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

About this edition

This is the *Agilent Technologies LogicWave Installation Guide*.

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New editions are complete revisions of the manual. Many product updates do not require manual changes, and manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

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