

TLA6000 Series Logic Analyzers Installation Manual



071-2771-00

Tektronix

**TLA6000 Series
Logic Analyzers
Installation Manual**

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- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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[W2 – 15AUG04]

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Use proper power cord. Use only the power cord specified for this product and certified for the country of use.

Connect and disconnect properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Ground the product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe all terminal ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

The inputs are not rated for connection to mains or Category II, III, or IV circuits.

Connect the probe reference lead to earth ground only.

Power disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do not operate without covers. Do not operate this product with covers or panels removed.

Do not operate with suspected failures. If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Avoid exposed circuitry. Do not touch exposed connections and components when power is present.

Use proper fuse. Use only the fuse type and rating specified for this product.

Do not operate in wet/damp conditions.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry.

Provide proper ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Terms in This Manual These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Symbols and Terms on the Product

These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.

The following symbol(s) may appear on the product:



CAUTION
Refer to Manual



WARNING
High Voltage



Protective Ground
(Earth) Terminal



Earth Terminal



Chassis Ground



Mains Disconnected
OFF (Power)



Mains Connected
ON (Power)



Standby

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Compliance Information

This section lists the EMC (electromagnetic compliance), safety, and environmental standards with which the instrument complies.

EMC Compliance

EC Declaration of Conformity – EMC

Meets intent of Directive 2004/108/EC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1:2006, EN 61326-2-1:2006. EMC requirements for electrical equipment for measurement, control, and laboratory use. ^{1 2 3}

- CISPR 11:2003. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2:2001. Electrostatic discharge immunity
- IEC 61000-4-3:2002. RF electromagnetic field immunity
- IEC 61000-4-4:2004. Electrical fast transient/burst immunity
- IEC 61000-4-5:2001. Power line surge immunity
- IEC 61000-4-6:2003. Conducted RF immunity
- IEC 61000-4-11:2004. Voltage dips and interruptions immunity ⁴

EN 61000-3-2:2006. AC power line harmonic emissions

EN 61000-3-3:1995. Voltage changes, fluctuations, and flicker

European contact.

Tektronix UK, Ltd.
Western Peninsula
Western Road
Bracknell, RG12 1RF
United Kingdom

¹ This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

² Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.

³ For compliance with the EMC standards listed here, high quality shielded interface cables should be used.

⁴ Performance Criterion C applied at the 70%/25 cycle Voltage-Dip and the 0%/250 cycle Voltage-Interruption test levels (IEC 61000-4-11).

**Australia / New Zealand
Declaration of
Conformity – EMC**

Complies with the EMC provision of the Radiocommunications Act per the following standard, in accordance with ACMA:

- CISPR 11:2003. Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN 61326-1:2006 and EN 61326-2-1:2006.

Safety Compliance

**EC Declaration of
Conformity – Low Voltage**

Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:

Low Voltage Directive 2006/95/EC.

- EN 61010-1: 2001. Safety requirements for electrical equipment for measurement control and laboratory use.

**U.S. Nationally Recognized
Testing Laboratory Listing**

- UL 61010-1:2004, 2nd Edition. Standard for electrical measuring and test equipment.

Canadian Certification

- CAN/CSA-C22.2 No. 61010-1:2004. Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1.

Additional Compliances

- IEC 61010-1: 2001. Safety requirements for electrical equipment for measurement, control, and laboratory use.

Equipment Type

Test and measuring equipment.

Safety Class

Class 1 – grounded product.

**Pollution Degree
Description**

A measure of the contaminants that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.

- Pollution Degree 1. No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
- Pollution Degree 2. Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.

- Pollution Degree 3. Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
- Pollution Degree 4. Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.

Pollution Degree Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.

Installation (Overvoltage) Category Descriptions

Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:

- Measurement Category IV. For measurements performed at the source of low-voltage installation.
- Measurement Category III. For measurements performed in the building installation.
- Measurement Category II. For measurements performed on circuits directly connected to the low-voltage installation.
- Measurement Category I. For measurements performed on circuits not directly connected to MAINS.

Overvoltage Category Overvoltage Category II (as defined in IEC 61010-1)

Environmental Considerations

This section provides information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling an instrument or component:

Equipment recycling. Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. To avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.



This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Mercury notification. This product uses an LCD backlight lamp that contains mercury. Disposal may be regulated due to environmental considerations. Please contact your local authorities or, within the United States, refer to the E-cycling Central Web page (www.eiae.org) for disposal or recycling information.

Perchlorate materials. This product contains one or more type CR lithium batteries. According to the state of California, CR lithium batteries are classified as perchlorate materials and require special handling. See www.dtsc.ca.gov/hazardouswaste/perchlorate for additional information.

**Restriction of Hazardous
Substances**

This product is classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive.

Preface

This manual contains information needed to install your Tektronix logic analyzer and related accessories.

To prevent personal injury or damage, consider the following requirements before starting service:

- The procedures in this manual should be performed only by qualified service personnel.
- Read the General Safety Summary and Service Safety Summary found at the beginning of this manual.

Be sure to follow all warnings, cautions, and notes in this manual.

TLA6000 Series Logic Analyzers

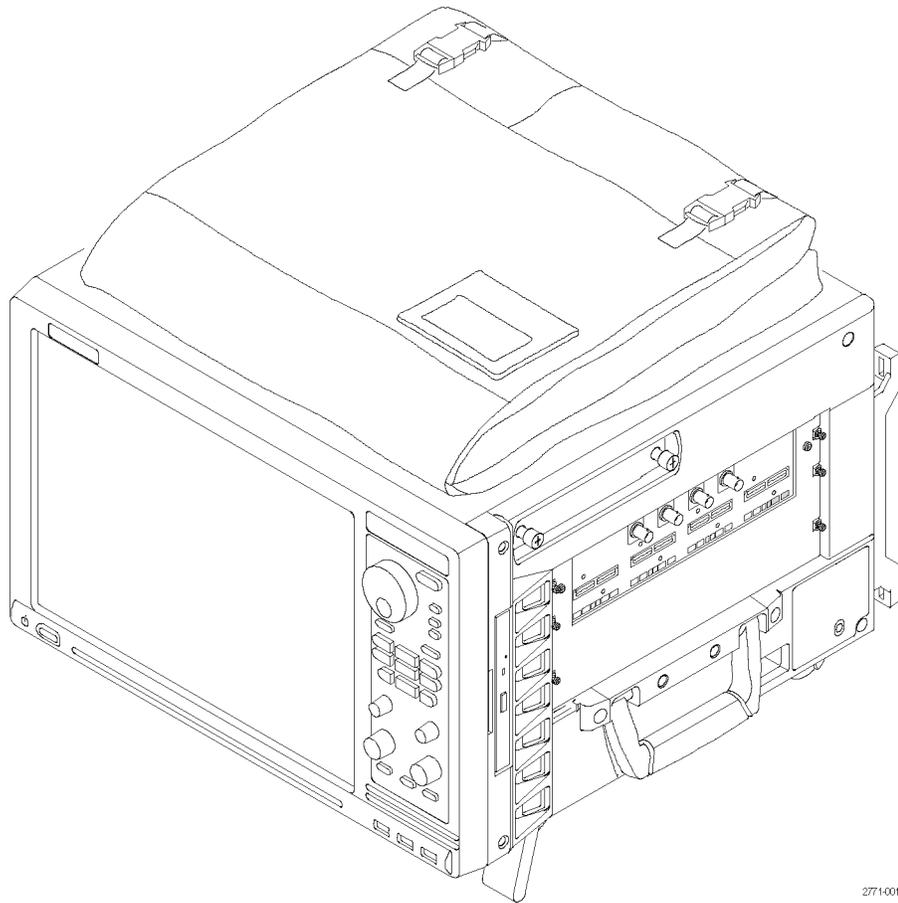
The TLA6000 Series Logic Analyzers are stand-alone logic analyzers consisting of the following instruments:

- TLA6202–68 channel logic analyzer, with 8 GHz MagniVu timing, 235 MHz state clock, 2 Mb record length
- TLA6203–102 channel logic analyzer, with 8 GHz MagniVu timing, 235 MHz state clock, 2 Mb record length
- TLA6204–136 channel logic analyzer, with 8 GHz MagniVu timing, 235 MHz state clock, 2 Mb record length

The logic analyzers are built on the Microsoft Windows operating system, which allows you to install PC-compatible, third-party hardware and software on the instrument.

The user interface operates under the Microsoft Windows operating system. Microsoft recommends the following to make sure your instrument is protected:

- Use an internet firewall.
- Install operating system updates regularly.
- Use up-to-date antivirus software.



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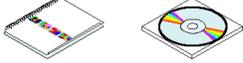
Figure i: TLA6000 series logic analyzer

Documentation

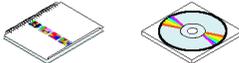
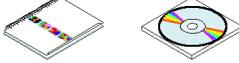
The following table lists related documentation available for your logic analyzer. The documentation is available on the TLA Documentation CD and on the Tektronix Web site (www.tektronix.com/manuals).

For documentation not specified in the table, contact your local Tektronix representative.

Related Documentation

Item	Purpose	Location
TLA Quick Start User Manuals	High-level operational overview	
Online Help	In-depth operation and UI help	

Related Documentation (cont.)

Item	Purpose	Location
Installation Quick Reference Cards	High-level installation information	
Installation Manuals	Detailed first-time installation information	
XYZs of Logic Analyzers	Logic analyzer basics	 www.Tektronix.com
Declassification and Security instructions	Data security concerns specific to sanitizing or removing memory devices from Tektronix products	 www.Tektronix.com
Application notes	Collection of logic analyzer application specific notes	
Product Specifications & Performance Verification Procedures	TLA Product specifications and performance verification procedures	
TPI.NET Documentation	Detailed information for controlling the logic analyzer using .NET	
Field upgrade kits	Upgrade information for your logic analyzer	
Optional Service Manuals	Self-service documentation for modules and mainframes	

Basic Installation

This chapter describes the steps needed to install your Tektronix logic analyzer and related accessories.

Check the Shipping List

Verify that you have received all of the parts of your logic analyzer using the shipping list and the accessories list. (See page 27, *Accessories*.) Also check for the following:

- Power cords are correct for your geographical area
- Correct probes
- Standard accessories
- All optional accessories that you ordered

Site Considerations

Read this section before installing the logic analyzer. This section describes operating considerations and power requirements for your logic analyzer. The environmental considerations apply to all TLA6000 series products.

Table 1: Environmental considerations

Feature		Description
Temperature	Operating	+5 °C to +45 °C
	Nonoperating	-20 °C to +60 °C
Humidity 20% to 80%	Operating	≤30 °C; 80% relative humidity (29 °C maximum wet bulb temperature)
	Nonoperating	8% to 80% (29 °C maximum wet bulb temperature)
Altitude	Operating and Nonoperating	To 3000 m (9843 ft.)



CAUTION. Allow a 15.3 cm (6-in) clearance at the top, back, and sides of the instrument to allow proper cooling. Avoid blocking any exhaust fans or vents when using the instrument on a cart or in an instrument rack. Inadequate clearances can cause the instrument to overheat and shut down.

Use the logic analyzer on a bench, in an instrument rack, or on a cart in the normal position (on the bottom feet). The front feet extend to give a better view of the instrument display.

Table 2: Instrument power considerations

Feature	Description
Voltage range and frequency	90 VAC to 250 VAC at 45 Hz to 66 Hz 100 VAC to 132 VAC at 360 Hz to 440 Hz
Input current	7 A maximum at 90 VAC (70 A surge)
Power consumption	750 W maximum

Chassis Ground Connections

Use the chassis ground connections to connect the grounds of the target system (system-under-test) to the logic analyzer to verify a common ground connection between instruments. (See Figure 1.)



CAUTION. To reduce the risk of ground-loop noise, ground all of the instruments in the system to the logic analyzer using the ground connections shown.

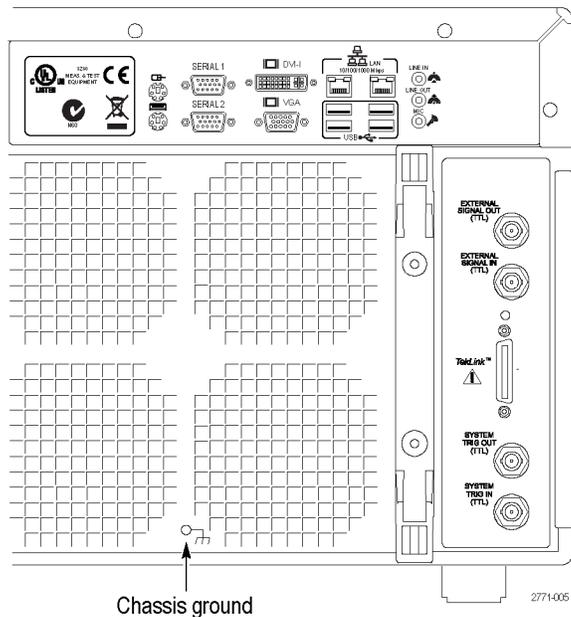


Figure 1: Location of the ground connection on the logic analyzer

Connecting Accessories

After installing the logic analyzer in the desired location, connect the accessories such as an external monitor, keyboard, and printer. (See Figure 2.)

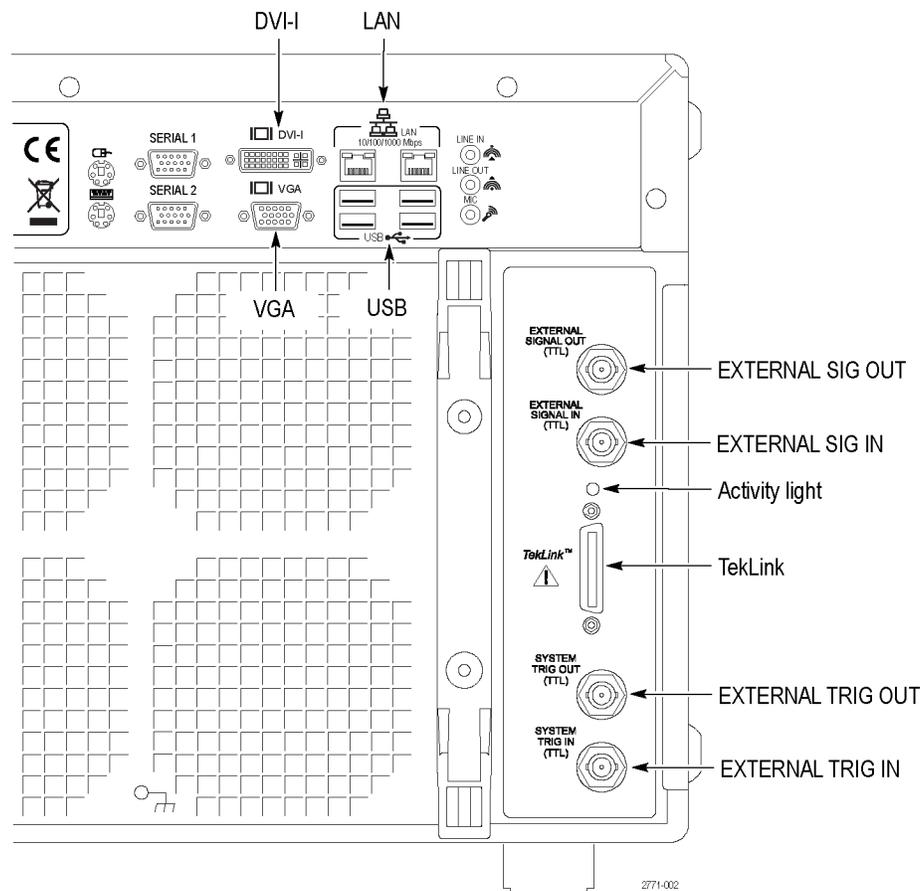


Figure 2: Accessories connections

Additional Accessory Connection Information Connect additional accessories as needed. (See Table 3.)

Table 3: Additional accessory connection information

Item	Description
Monitor	<p>There are two display ports on the logic analyzer: VGA, and DVI-I (digital/analog out). Simulscan mode displays the same information on the internal display and the external monitor connected to either Primary or Secondary.</p> <p>To change the display settings, right-click the mouse on the desktop, and select Properties > Settings > Advanced > Intel Graphics. Note that some of the display settings may not function until you connect an external monitor.</p> <p>To connect a VGA monitor to the DVI-I connector, use a VGA-to-DVI adapter. Part numbers for accessories and options are listed at the end of this manual. (See page 27, <i>Accessories and Options</i>.) If you use a nonstandard monitor, you may need to change the Windows display settings to obtain the proper resolution.</p>
LAN	<p>Connect the logic analyzer to your network through the Gbit LAN connectors. Remotely control the logic analyzer through a LAN switch using a PC (loaded with the TLA application software).</p>
Printer	<p>The instruments send printer information to the USB ports. Use any of the four USB ports for your printer.</p>

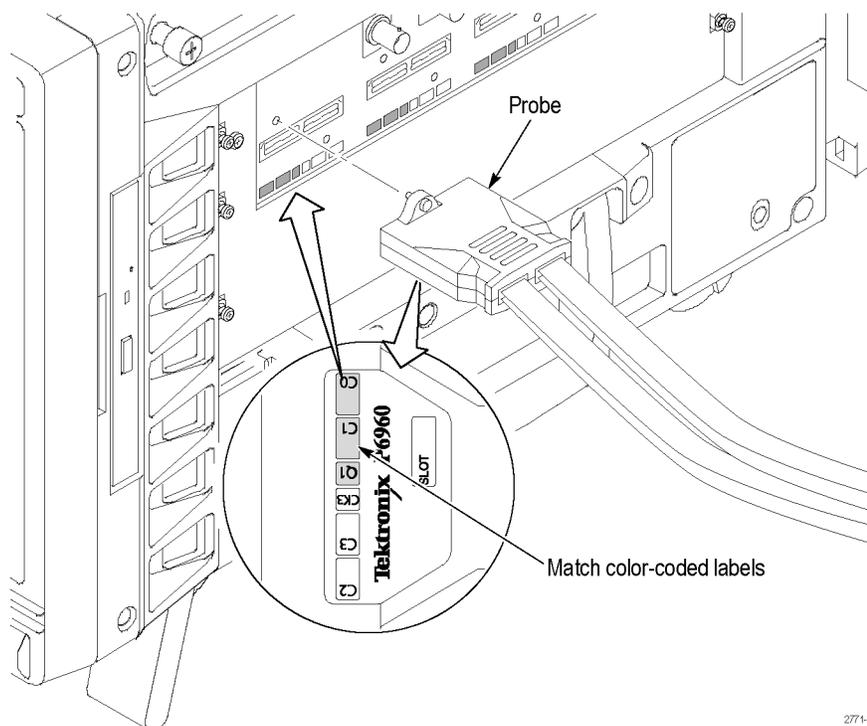
Connecting Probes

After you have connected all the accessories, connect the probes to the logic analyzer.

For additional information on the individual probes, refer to the instructions that accompanied your probes. (See Figure 3.)



CAUTION. *When attaching the probe to the logic analyzer, you must use care to evenly tighten probe screws until they are snug. First slightly tighten screws, then snug each screw to 4 in-lbs (maximum). Under tightening the probe screws can result in intermittence. Over tightening can result in stripped screws.*



2771-003

Figure 3: Connecting probes to the logic analyzer

First Time Operation

Use the information in this section to turn on the logic analyzer for the first time.



CAUTION. Connecting the accessories after turning on the logic analyzer may damage the accessories. Connect accessories before applying power to the logic analyzer.

Turning the Logic Analyzer On

Follow these steps to turn the logic analyzer on:

1. Connect the power cord to the logic analyzer.
2. If you have an external monitor, connect the power cord and turn on the monitor.
3. Press the On/Standby switch to turn on the logic analyzer. (See Figure 4.)
4. Wait for the logic analyzer to complete the power-on self tests.

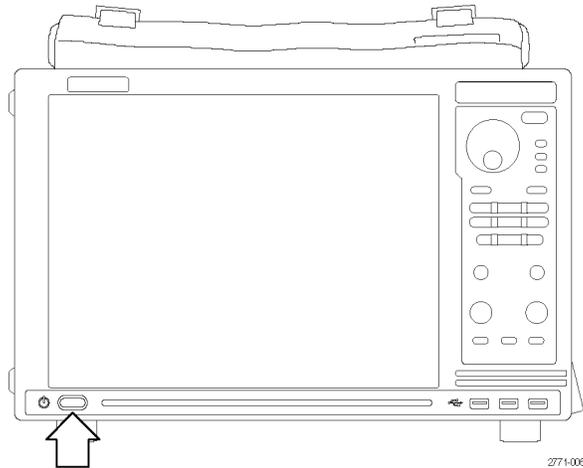


Figure 4: On/Standby switch location

Turning off the Logic Analyzer

To power off the logic analyzer, press the On/Standby switch. The logic analyzer has a built-in soft power-off function that safely powers off the logic analyzer when you press the On/Standby switch.



WARNING. To avoid the chance of electrical shock when opening the instrument or accessing any location that may have a voltage applied, always unplug the instrument to disconnect it from the mains power. Do not unplug the instrument when it is powered on otherwise you can damage the instrument.

Creating Operating System Restore Discs

The instrument does not ship with an operating system restore disc. Use the following procedure to create a set of discs that enable you to restore the operating system if the need arises.



CAUTION. Restoring the operating system reformats the hard disk drive. All saved data, including the operating system restore file on the hard disk will be lost. Create the operating system restore discs before attempting to restore the operating system.

NOTE. This procedure creates a set of restore discs for the Microsoft Windows operating system. After restoring the operating system, use the TLA Application disc to reinstall the TLA application software. (See page 15, Reinstalling the TLA Application Software.)

Complete the following steps to create a set of restore discs. You will need blank discs (one for each backup file).

1. Insert a blank disc in the instrument DVD drive.
2. Click Start > All Programs > Nero 8 > Nero Express Essentials.
3. Click Image > Project > Copy.
4. Click Disk Image or Saved Project.
5. Navigate to C:\backup.
6. Select file backup1 and click Open.
7. Click the Verify data on disk after burning check box to enable this function.
8. Click the Burn button. The application writes the backup file to the disc and then verifies that the data matches the source file.
9. When the application reports that the write process has completed successfully, remove the disc and label it appropriately (include backup file name, instrument name, instrument serial number, and date).
10. Copy the disk image files (*.iso) located in the C:\backup directory to a network location, a separate hard disk, or optical media for backup purposes.
11. Store the backup discs as defined by your company policy.

NOTE. *You can only use restore discs on the instrument that created them.*

Performing the Incoming Inspection

Incoming inspection consists of verifying the basic operation of the logic analyzer. The power-on diagnostics check the basic functionality. The diagnostics run every time you turn on the logic analyzer.

You can also verify more detailed functionality by running the self-calibration and extended diagnostics.

NOTE. *Allow the logic analyzer to warm up for 30 minutes before running the self-calibration.*

To run self-calibration and diagnostics, perform the following:

1. Disconnect any probes attached to the instrument.
2. Select the System menu and click Calibration and Diagnostics.
3. Run the self-calibration, and then run the extended diagnostics by selecting the proper tab. Results of the tests display on the individual property page.

NOTE. *The time required to run the self-calibration on the logic analyzer depends on the number of acquisition channels. Logic analyzers with a large number of channels may take several minutes to run the self-calibration.*

Checking the Logic Analyzer Probes (Optional)

Connect the logic analyzer probes to a signal source and (if necessary) adjust the threshold levels for the probes to acquire the signals. Use the threshold and activity indicators in the LA Setup window to verify signal activity at the probe tips.

To check the mainframe diagnostics not covered by the TLA Application software, run the TLA Mainframe Diagnostics located under the Windows Start menu using the following path: Start > All Programs > Tektronix Logic Analyzer > TLA Mainframe Diagnostics. Exit the TLA Application before running the external diagnostics.

Backing Up User Files

Back up your user files on a regular basis. Use the Windows backup tools or copy the files to another media. Always keep a backup copy of files that you access on a regular basis.

Removing the Replaceable Hard Disk Drives



CAUTION. *To avoid permanently damaging the replaceable hard disk drive, do not remove it while the instrument is powered on. Always power off the instrument before removing the hard disk drive.*

1. Verify that the instrument is powered off.
2. Pull on the replaceable hard disk drive cartridge to remove it from the chassis.

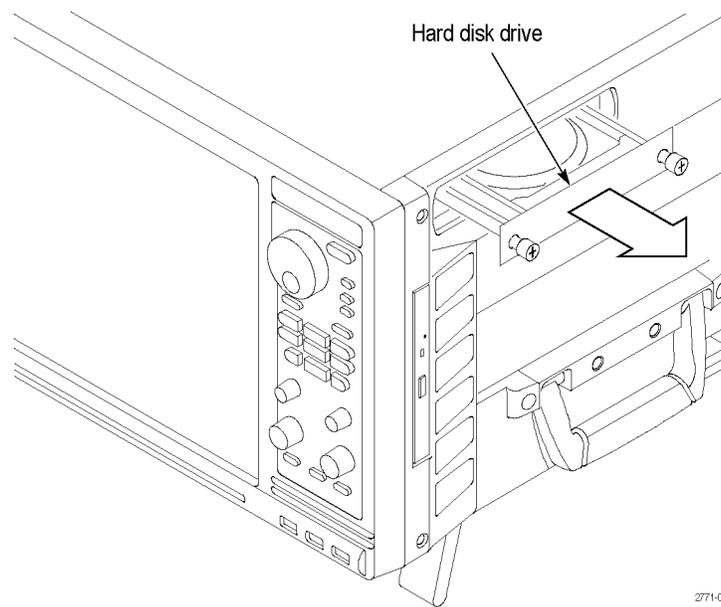


Figure 5: Accessing the replaceable hard disk drive

Connecting Probes to the Target System

The logic analyzer connects to the target system through the probes. The logic analyzer probes allow you to connect to the target system in several different ways. For probe-specific connection details, refer to the appropriate probe instruction manual or browse through the Tektronix Web site.

Product Overview

This chapter describes the product controls and connectors of the logic analyzers. Refer to the *TLA Quick Start User Manual* for operating information on the logic analyzer.

Front Panel Controls

Use the front-panel controls to operate most of the logic analyzer. (See Figure 6.)

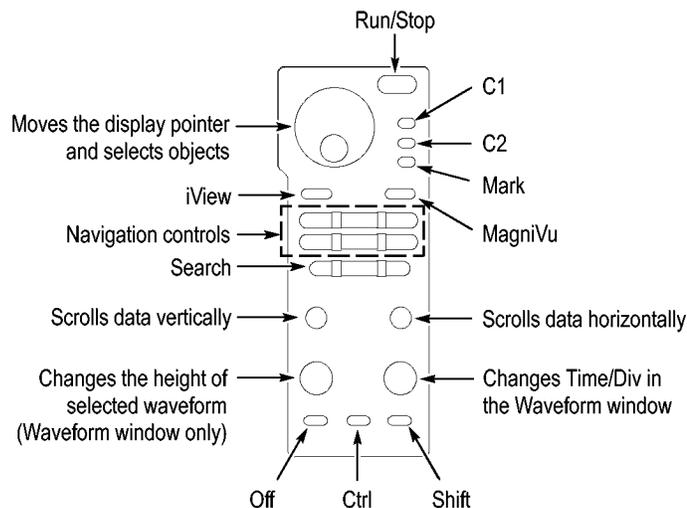


Figure 6: Logic analyzer front panel

External Connectors

The following mainframe external connections are available. (See Figure 7 on page 12.)

- System Trigger In and System Trigger Out, used to receive or send a trigger from/to an external source
- External Signal In and External Signal Out, used to receive or send a signal from/to an external source
- TekLink, used to coordinate trigger signals, input/output signals, and time references between mainframes
- Accessory connections, such as USB, LAN, and audio/video outputs

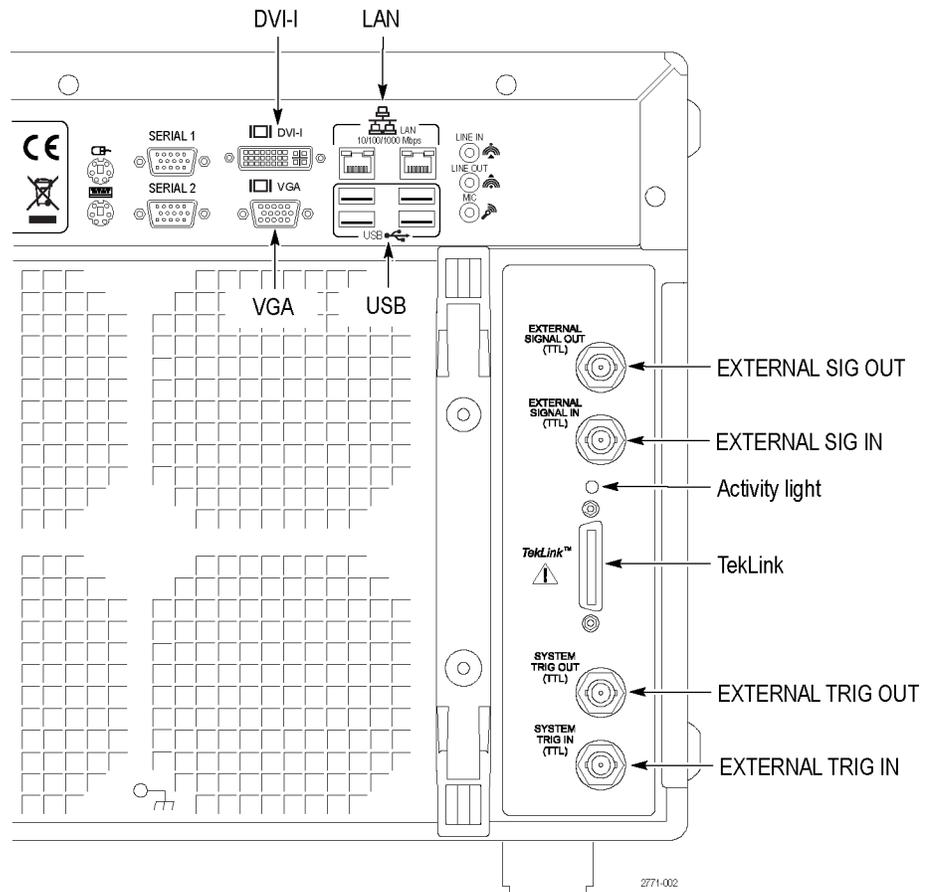


Figure 7: External connectors

Restoring and Reinstalling Software

Most of the software is installed when your instrument is shipped from the factory. Refer to this section if you need to reinstall your software. These instructions refer only to reinstalling the TLA application software and operating system. To upgrade to a newer TLA application software version, contact your local Tektronix representative. This section also provides information on installing related logic analyzer software on a PC for remote operation or for offline applications.

NOTE. *If you install or reinstall software on a remote PC, make sure that the software version matches that of the main application on the logic analyzer.*

Restoring the Instrument Operating System

You can restore the instrument operating system from either a file on the instrument hard disk drive or from the set of instrument restore discs. (See page 6, *Creating Operating System Restore Discs.*) The preferred restore method is to use the hard disk restore file.



CAUTION. *Restoring the operating system reformats the hard disk drive. All saved data including the files that allow you to create the restore discs will be lost. Create the restore discs and then save important files to external media before restoring the operating system.*

Restoring the Operating System from the Instrument Hard Disk

The instrument contains an operating system restore file on a separate partition of the hard drive.

1. Restart the instrument. During the startup process, you will see the following message at the top of the screen:

Starting Acronis Loader press F5 for Acronis Startup Recovery Manager

2. Repeatedly press the F5 key until the Acronis True Image Tool opens. There is a short delay from the time the message appears until the instrument proceeds with the normal instrument startup. If the instrument does not open the Acronis application, power off the instrument, and then power on the instrument and try again.
3. Click Restore.
4. In the Confirmation dialog box, click Yes to restore the instrument operating system, or No to exit the restore process. The restore process takes approximately 30 minutes; the actual time depends on the instrument configuration.

Restoring the Operating System from the Restore Discs

You can only use the restore discs on the instrument that created them.

NOTE. *This procedure requires a mouse and that the DVD drive is set as the first startup device; this is the default setting. If necessary, you can change the startup setting. (See page 14, Change the BIOS Settings.)*

1. Insert restore disc 1 into the instrument DVD drive.
2. Restart the instrument. The restore software opens automatically if the DVD drive is the first startup device. If the DVD drive is not the first startup device, you need to enable it as the first startup device before performing a restore from the restore discs.
3. Click Restore.
4. In the Confirmation dialog box, click Yes to restore the operating system and instrument application, or No to exit the restore process.
5. When the restore process is completed, remove the restore disc and restart the instrument.
6. Continue with any restore discs when prompted.
7. When prompted, read and accept the end-user license agreement (EULA).
8. Click Next and then configure your regional settings, as needed.
9. Click Next.

The instrument will apply the settings and then restart.

10. After the instrument restarts, reinstall the TLA Application software. (See page 15, *Reinstalling the TLA Application Software.*)

Change the BIOS Settings

Before reinstalling the operating system from the restore discs, you might need to change the BIOS settings to enable starting the logic analyzer from the DVD drive. You might also need to change the BIOS settings if you want to change the video mode to exclude the external display.

1. Restart the logic analyzer and then press the Delete key repeatedly to enter the BIOS setup.
2. In the BIOS setup, go to the Boot menu.
3. Use the on-screen instructions to change the BIOS settings; set the CD/DVD as the first boot device.
4. Save the settings by pressing function key F10 and confirm that you want to save the new settings.

Reinstalling the TLA Application Software

Complete the following steps to reinstall the latest version of the TLA application software. Use these steps as a first resort to recovering from application software problems. If you still experience problems you may have to restore the hard disk image. (See page 13, *Restoring the Instrument Operating System*.)

While using this procedure you will be asked to log on as Administrator. The logic analyzer is initially set up to automatically log on as Administrator (with no password) so you may not see the login prompt. If the network setups have been changed on your instrument, make sure that you log on as Administrator or as a user who has administrator privileges. Failure to do so can prevent the software upgrade from completing successfully.

1. Log on to the instrument as Administrator and quit any applications.
2. Install the TLA Application Software CD in the CD drive of the logic analyzer.
3. If the installation software does not start automatically, click Run in the Windows Start menu to display the Run dialog box. Enter D:\TLA Application SW\Setup.exe in the Run dialog box (if your CD drive is not the D-drive, enter the appropriate letter for your drive).
4. Click OK to perform the installation.

If you have an older version of the software on the hard disk, the installation program will detect it and ask to remove it. Follow the on-screen instructions to remove the software, answering "Yes" to any prompts.

5. After the software is successfully installed, restart the instrument.

Installing the TLA Application Software on a PC

Install the TLA application software on a PC for the following purposes:

- Run the TLA application software in the Offline mode.
- Control a logic analyzer with the same TLA Application Software over a network.

Third-Party Software

To use all of the features of the TLA application software on your PC, you must install additional third-party software. The following third-party software is available on the TLA Application Software CD V5.6, or higher:

- The NI-GPIB-USB software allows you to use the iView software with your PC.
- The SnagIt software is useful for copying screen shots of logic analyzer data for use with other applications.

NOTE. Several third-party software applications are included to use with your logic analyzer. These applications may include software license agreements. Be sure to abide by those license agreements.

Install the NI-GPIB-Software

Complete the following steps to install the third-party software on your PC:

1. Install the first TLA Application Software CD in the CD drive.
2. Browse to the NI-GPIB-USB folder on the CD and run the Setup.exe program.
3. Follow the on-screen instructions and note the items below:
 - When prompted, select the Typical installation option.
 - When the Add GPIB wizard appears, select **GPIB-USB-B**.
 - After restarting the instrument, the NI-488.2 Getting Started wizard displays. This is not needed; select **Do not show at Windows startup**.
 - When you first connect the iView cable, the instrument will detect the new hardware. Select **Install the software automatically (Recommended)**.

Install the SnagIt Software

Complete the following steps to install the SnagIt software on your PC:

1. Browse to the SnagIt folder on the CD and run the Setup.exe program.
2. Follow the on-screen instructions.

Install the TLA Application Software on a PC

Browse to the TLA Application software folder on the CD and run the Setup.exe program. Follow the on-screen instructions to install the TLA application software.

If you have an older version of the software on the hard disk, the installation program will detect it and ask to remove it. Follow the on-screen instructions to remove the software, answering "Yes" to any prompts. Restart the instrument when prompted and run the Setup.exe program again.

Start the software by double-clicking on the TLA Application icon. The TLA Startup dialog box displays.

1. Select an instrument in the TLA Connection dialog box, and then click the Connect button. If your instrument is connected to a network, you can connect to any instrument on your local network that has a TLA server running, enabled, and is not being used by another user.
2. Click Offline to start an offline version of the TLA application software. The TLA Offline software allows you to run the TLA application without connecting to a real instrument. You can analyze previously acquired data from a logic analyzer, create or modify reference memories, or perform system tests without being connected to a real instrument.

Calibrate the Touchscreen

Perform the following steps to calibrate the touchscreen:

1. Go to the Windows desktop and double-click the Touch screen configurator (the pointing Device icon or small mouse graphic). The Touch Screen Properties window appears.
2. Click Calibrate and follow the on-screen instructions to perform the alignment routine. Use a stylus for the best accuracy.

You can also customize some of the functions of your touchscreen in the Touch Screen Properties window. Right-click the selection text to view a description of the function.

Install Other Software

If you purchased any microprocessor support packages, you need to reinstall them after you reinstall the operating system and TLA application. If you do not have a copy of the microprocessor support software, contract your Tektronix Account Manager to order a replacement copy. If you cannot contact the account manager, contact the Tektronix Support Center (refer to *Contacting Tektronix* at the beginning of this document).

Upgrading or Restoring Firmware

You may have to upgrade the firmware on the logic analyzer if the firmware version is not compatible with the TLA application software version. This will be indicated by one or more messages when you start the logic analyzer. The most current firmware for the TLA application software resides in a file on the hard disk of the logic analyzer.

Use the following procedure to upgrade the firmware:

1. Exit the logic analyzer application.
2. Click Start > All Programs > Tektronix Logic Analyzer > TLA Firmware Loader.
3. If the Connection dialog box appears, select the instrument that you want to upgrade (typically the Local instrument) and click Connect.
4. The Firmware Loader dialog box appears. You have the choice of loading either Mainframe and TekLink Firmware or Instrument Module Firmware. Click the Load button corresponding to Mainframe and TekLink Firmware (top part of the dialog box).
5. A list of all the currently installed Mainframe and TekLink firmware displays. The list shows the version currently running and the version available for installation. Select the items that you want to load. If all firmware versions are up-to-date, click Close and go to step 14.
6. Click the Update Firmware button. A dialog box displays a list of available firmware images.
7. Select the appropriate file. Click Open to open the selected firmware image. You must do this for each firmware image selected.
8. The Firmware Load Progress dialog displays. Click the Start Flash Operation button to start the flash operation for the selected flash images. Once the flash operation is started it cannot be canceled.
9. As the flash operation runs, it identifies what steps are being performed. When complete, it will inform you to restart the instrument.
10. Turn off and restart the instrument after the flash operation is complete.

11. Exit the logic analyzer application.
12. Click Start > All Programs > Tektronix Logic Analyzer > TLA Firmware Loader.
13. If the Connection dialog box appears, select the instrument that you want to upgrade (typically the Local instrument) and click Connect.
14. Click the Load button in the Instrument Module Firmware section (bottom part of the dialog box).
15. If the firmware version is less than the FW Required version, then select Load Firmware from the Execute menu.
16. Select the proper firmware file (TLA620X.lod).
17. Click OK. You will be prompted to confirm your action; click Yes.
18. When the process has completed, exit the firmware loader program and power off the logic analyzer. You must power off the logic analyzer to allow the TLA application to start up properly.
19. Locate the big label on the instrument.
20. Record the firmware version that is printed on the label. You will need this information to see that the firmware version matches the label.
21. Power on the logic analyzer.
22. After the logic analyzer completes the power-on diagnostics, select System Properties from the System menu.
23. Click the LA1 tab.
24. Verify that the firmware version matches the version on the label that you recorded in step 20.
25. If the firmware versions do not match, power off the instrument, and update the label.

Appendix A: User Service Procedures

This appendix describes high-level service information and procedures for the Tektronix logic analyzers.

Service Offerings

Tektronix provides service to cover repair under warranty and other services that are designed to meet your specific service needs.

Whether providing warranty repair service or any of the other services listed below, Tektronix service technicians are well equipped to service the logic analyzers. *Services are provided at Tektronix Service Centers and on-site at your facility, depending on your location.*

Warranty Repair Service

Tektronix warrants this product as described in the warranty statements at the front of this manual. Tektronix technicians provide warranty service at most Tektronix service locations worldwide. The Tektronix product catalog lists all service locations worldwide.

Calibration and Repair Service

In addition to warranty repair, Tektronix Service offers calibration and other services that provide cost-effective solutions to your service needs and quality-standards compliance requirements. Our instruments are supported worldwide by the leading-edge design, manufacturing, and service resources of Tektronix to provide the best possible service.

General Care

Protect the instrument from adverse weather conditions. The instrument is not waterproof. Do not store or leave the instrument where the LCD display will be exposed to direct sunlight for long periods of time.



CAUTION. *To avoid damage to the instrument, do not expose it to sprays, liquids, or solvents.*

Preventive Maintenance

Once a year the electrical performance should be checked and the instrument accuracy should be certified (calibrated). This service must be performed by a qualified service technician using the procedures outlined in the appropriate service manual for the Tektronix Logic Analyzer product.

Preventive maintenance mainly consists of periodic cleaning. Periodic cleaning reduces instrument breakdown and increases reliability. Clean the instrument as needed, based on the operating environment. Dirty conditions may require more frequent cleaning than computer room conditions.

Refer to your logic analyzer probe instructions for specific cleaning procedures for the probes and probe connectors.

Cleaning the Flat Panel Display

The LCD flat panel is a soft plastic display and must be treated with care during cleaning.



CAUTION. *Improper cleaning agents or methods can damage the flat panel display.*

Do not use abrasive cleaners or commercial glass cleaners to clean the display surface.

Do not spray liquids directly on the display surface.

Do not scrub the display with excessive force.

Avoid getting moisture inside the instrument while cleaning the display; use only enough solution to dampen the wipe.

Clean the flat panel display surface by gently rubbing the display with a cleanroom wipe (such as Wypall Medium Duty Wipes, #05701, available from Kimberly-Clark Corporation).

If the display is very dirty, moisten the wipe with distilled water or a 75% isopropyl alcohol solution and gently rub the display surface. Avoid using excess force or you may damage the plastic display surface.

Exterior Surfaces

Clean the exterior surfaces with a dry, lint-free cloth or a soft-bristle brush. If dirt remains, use a cloth or swab dampened with a 75% isopropyl alcohol solution. A swab is useful for cleaning in narrow spaces around the controls and connectors. Do not use abrasive compounds on any part of the instrument.



CAUTION. *To avoid damaging the instrument follow these precautions:*

Avoid getting moisture inside the instrument during external cleaning and use only enough solution to dampen the cloth or swab.

Do not wash the front-panel On/Standby switch. Cover the switch while washing the instrument.

Use only deionized water when cleaning. Use a 75% isopropyl alcohol solution as a cleanser and rinse with deionized water.

Do not use chemical cleaning agents; they may damage the instrument. Avoid chemicals that contain benzene, toluene, xylene, acetone, or similar solvents.

In Case of Problems

Review the following sections if you encounter any problems with your instrument. For additional help, contact your local Tektronix Service Representative.

Diagnostics

The logic analyzer runs power-on diagnostics every time you start the TLA application if the box is checked in the Configuration dialog box. View the results of the diagnostics by selecting Calibration and Diagnostics from the System menu. If desired, run more detailed diagnostics by selecting Extended diagnostics. Here you can run all tests, loop on one or more tests, or loop on a test until a failure occurs.

Before running the extended diagnostics, disconnect any attached probes.

TLA Mainframe Diagnostics. The TLA mainframe diagnostics program is a stand-alone application. These diagnostics check the operation of the mainframe beyond the basic PC circuitry. These diagnostics also check the front-panel knobs of the portable mainframe.

CheckIt Utilities. The CheckIt Utilities is a separate application located in the Windows Start Programs menu (Start > Programs > CheckIt Utilities). The diagnostics check the basic PC operations of the controller.

Software Problems

Your logic analyzer comes with most software installed. Before running any of the diagnostics, check the online release notes to verify that the logic analyzer software is compatible with the module firmware.

Many software problems are due to corrupted or missing software files. In most cases the easiest way to solve software problems is to reinstall the software and follow the on-screen instructions. (See page 13, *Restoring and Reinstalling Software*.)

Hardware Problems

If you are certain that you have installed the logic analyzer correctly, run the extended diagnostics (located under the System menu) to identify any problems. If your logic analyzer powers on so that you have access to the desktop, run the CheckIt Utilities software to identify possible controller hardware problems.

You can also run the external TLA mainframe diagnostics to identify problems not covered by other diagnostics. The TLA mainframe diagnostics are located under the Start menu under the Tektronix Logic Analyzer programs.

Network Connection Problems

Version 5.6 or higher of the TLA application software allows you to connect the logic analyzer to a network where you can control the instrument from a PC. Verify that the PC and the logic analyzer are connected to the network. The TLA application software must be installed on the PC and the logic analyzer. The TLA server must be running on the logic analyzer.

Complete the following steps to start the TLA server:

1. On the logic analyzer, click Start > Programs > Tektronix Logic Analyzer > TLA Server. An icon with a red circle appears in the toolbar.
2. Right-click the TLA Server icon and select Start TLA Server. The red circle disappears indicating the server is running.

Check with your system administrator to address other network problems.

Check for Common Problems

Use the following table to isolate problems. This list is not exhaustive, but it may help you eliminate problems that are easy to fix, such as an open fuse.

Table 4: Failure symptoms and possible causes

Symptom	Possible causes and recommended action
Instrument does not turn on	<p>Verify that the power cord is connected to the instrument and to the power source.</p> <p>Check that the instrument receives power when you press the On/Standby switch. Check that fans start and that front-panel indicators light.</p> <p>Check that power is available at the power source. Instrument failure: contact your local Tektronix service center.</p>
External monitor does not turn on	<p>Check the monitor power cord connection.</p> <p>Check for failed fuse, if one exists.</p> <p>Check external display connection.</p> <p>Monitor failure: contact the vendor of your monitor for corrective action.</p>
Monitor display is blank	<p>Check that the monitor is connected to the mainframe; replace the cable if necessary.</p> <p>If instrument display is blank, try connecting an external monitor; if both displays are blank, contact your local Tektronix service center.</p> <p>External monitor controls turned down; adjust monitor controls for brightness and contrast.</p> <p>Check the controller BIOS setups for the monitor.</p> <p>Faulty monitor: contact the vendor of your monitor for corrective action.</p>

Table 4: Failure symptoms and possible causes (cont.)

Symptom	Possible causes and recommended action
Instrument turns on but does not complete the power-on sequence	Make sure that the instrument boots from the hard disk drive. Remove any discs from the floppy disk drive. Possible software failure or corrupted hard disk drive. (See page 23, <i>Software Problems</i> .)
Power-on diagnostics fail	Instrument failure: contact your local Tektronix service center.
Instrument does not recognize accessories such as monitor, printer, or keyboard	Check that accessories are properly connected or installed. Try connecting other standard PC accessories or contact your local Tektronix service center.
Windows comes up but the TLA application does not	Instrument not set up to start the TLA application at power-on. Start application from the desktop, by double-clicking the TLA icon located on your desktop. Faulty or corrupt software. Reinstall the application software.
Windows comes up in Safe mode	Exit the Safe mode and restart the instrument. Incompatible hardware and hardware driver software. Either install the hardware driver or remove the incompatible hardware.

Repacking for Shipment

If the logic analyzer is to be shipped to a Tektronix service center for repair, attach a tag to the mainframe or module showing the owner's name and address, the serial number, and a description of the problem(s) encountered and/or service required. Always include the probes so that the entire unit can be tested.

When packing an instrument for shipment, use the original packaging. If it is unavailable or not fit for use, contact your Tektronix representative to obtain new packaging.

Appendix B: Accessories and Options

Accessories

Table 5: Standard accessories

Quantity	Accessory	Part number
1 ea	Power cord clip	343-1213-00
1 ea	Mini keyboard	119-7275-00
1 ea	USB optical wheeled mouse	119-7054-00
1 ea	Front panel cover	200-4939-00
	Product CD, TLA application software V5.7	
	Nero CD and license	
	NIST, Z540-1, and ISO9000 Calibration Certificate	
	Literature package	

Table 6: Optional accessories

Quantity	Accessory	Part number
1 ea	Removable HDD assembly, 80 GB, w/o SW	650-4805-xx
1 ea	Wheeled transit case	016-1522-00
1 ea	Rackmount kit	020-2664-00

Options

Option	Description
18	Add touchscreen
1C	Add iView External Oscilloscope Cable kit
2C	Add USB-iView External Oscilloscope Cable kit
1K	Add LACART Instrument Cart
AM	Enable Analog Mux
PO	Add accessory pouch
TL	Add TekLink cable
1S	Increase to 8 Mb record length @235 MHz state speed
2S	Increase to 32 Mb record length @235 MHz state speed
3S	Increase to 128 Mb record length @235 MHz state speed
1P	Add general purpose P6810 logic analyzer probes
2P	Add Mictor probes
3P	Add DMAX P6960 logic analyzer probes
45	Increase speed to 450 MHz state clock

Option	Description
Manuals	
L0	Add English manuals (TLA6000 Installation Manual and TLA Documentation CD)
L5	Add Japanese manuals (TLA6000 Installation Manual and TLA Documentation CD)
L10	Add Russian manuals (TLA Documentation CD)
L99	No manuals
Service offerings	
CA1	Single calibration event or coverage
C3	Calibration services extended to cover three years
C5	Calibration services extended to cover five years
D1	Calibration data report
D3	Test Data for calibration services in Opt. C3
D5	Test Data for calibration services in Opt. C5
R3	Repair warranty extended to cover three years
R5	Repair warranty extended to cover five years

Table 7: Power cords

Option	Description	Part number
A0	North America, IEC320 C13	161-0104-00
A1	Universal European, IEC320 C13	161-0104-06
A2	United Kingdom, IEC320 C13	161-0104-07
A3	Australia, IEC320 C13	161-0104-14
A4	240 V North American, IEC320 C13	161-0104-08
A5	Switzerland, IEC320 C13	161-0167-00
A6	Japan, IEC320 C13	161-A005-00
A10	China, IEC320 C13	161-0306-00
A11	India/South Africa, IEC320 C13	161-0324-00
A99	No power cord	

Appendix C: Network Installation Site Survey

Photocopy this sheet and use it for your system installation.

Customer:

Installer:

Date:

Networking information (Share with customer IT department)

Item	Description	Value
1	IP address default	DHCP
2	Operating System/Service Pack	
3	Computer name	
4	Admin password	
5	Firewall	Microsoft, enabled
6	Virus Scanner	None
7	Network Port Information	TLA Application – port 111 TPI.NET – port 9000 Windows XP Remote Desktop – port 3389

Network installation information (Provided by IT department)

Item	Description	Value
1	User Name	
2	Default password	
3	Domain name	
4	DNS suffix	
5	IP address (Fixed or DHCP)	
6	Security requirements	
7	Computer naming convention	
8	DNS address	
9	Proxy Server address	
10	RJ45 outlet location/activation	

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