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TLA7000 Series Logic Analyzers

Installation Manual

www.tektronix.com

077-1747-05

Tektronix

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[W2 – 15AUG04]

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[W9b – 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 AC adapter. Use only the AC adapter specified for this product.

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.*

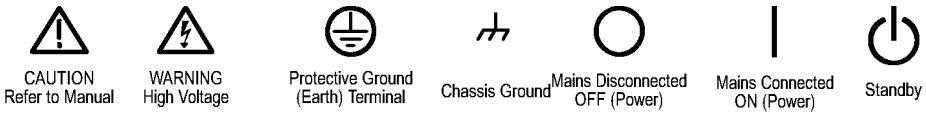
CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

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:



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.

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.

TLA7000 Series Logic Analyzers

The TLA7000 Series Logic Analyzers consist of a 2-module portable mainframe (TLA7012) and a 6-module benchtop mainframe (TLA7016).

The TL708EX TekLink 8-Port Hub and a local area network (LAN) gigabit (Gb) switch expand the system and connect it to your network. A dedicated PC controller (TLA7PC1) is available. You can also load the application software on your PC.

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 ensure your instrument is protected:

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

The TLA7000 series logic analyzers combine high-performance logic analyzer modules with optional application modules or an external Tektronix oscilloscope.

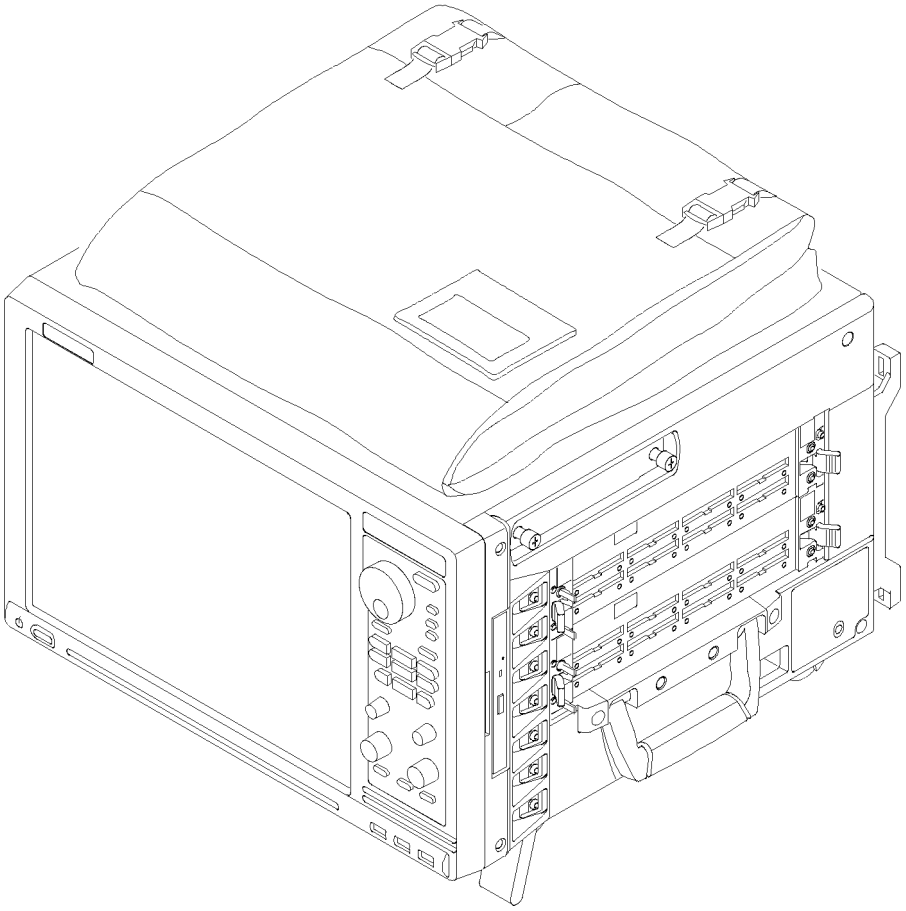


Figure i: TLA7012 Portable Mainframe

Several logic analyzer modules are available in various combinations of channel width, state speed, and memory depth. All of the logic analyzer modules provide simultaneous state and timing measurements through a single probe.

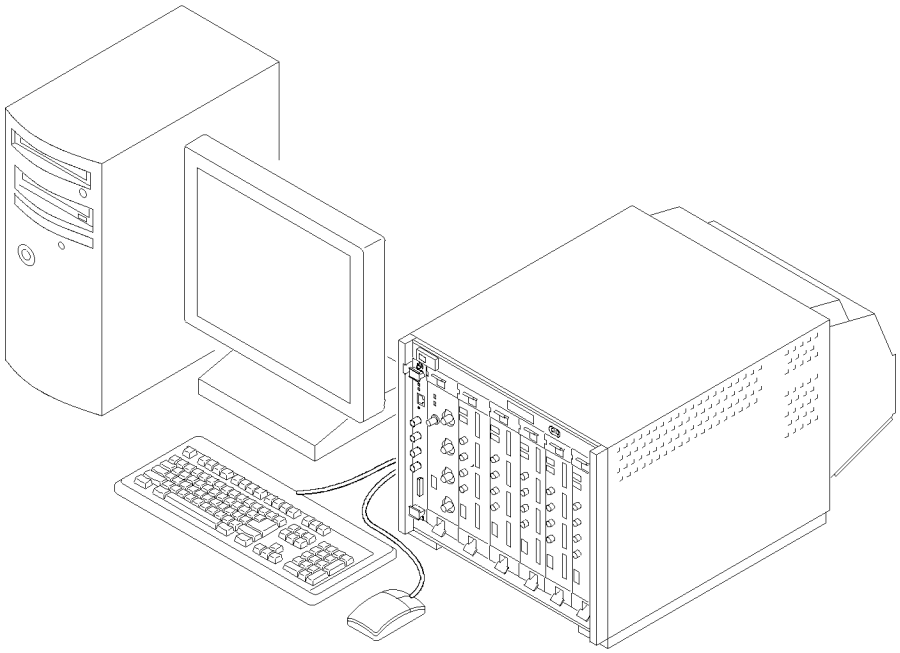


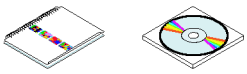
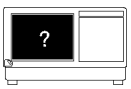
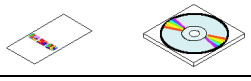
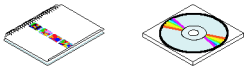
Figure ii: TLA7016 Benchtop Mainframe (with user-supplied PC controller)

Documentation

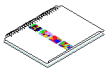
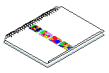
The following table lists related documentation available for your logic analyzer. The documentation is available on the TLA Documentation CD and on the Tektronix Web site (www.tektronix.com/manuals).

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	
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

Related Documentation (cont.)

Item	Purpose	Location
Declassification and Securities 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 all of the steps needed to install your Tektronix logic analyzer and its related accessories. It is written from the perspective that you purchased most of the items uninstalled and you intend to install all of the pieces. If you purchased a logic analyzer with modules already installed, you should still review this chapter and perform the steps that apply to your situation.

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 99, *Accessories*.) Also check for the following:

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



CAUTION. *This notice applies only to the TLA7016 Benchtop Mainframe with Option A6. (See Table 18 on page 102.)*

A special high-current power cord set is provided and is for use exclusively with this product.

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 TLA7000 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 ensure proper cooling. Avoid blocking any exhaust fans or vents when using the instrument on a cart or in a rackmount. Inadequate clearances can cause the instrument to overheat and shut down.*

Portable Mainframe Site Considerations

You can use the portable mainframe on a bench 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. You can also mount the mainframe in an instrument rack.

Table 2: Portable mainframe 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

Benchtop Mainframe Site Considerations

The Benchtop Mainframe is designed to operate on a bench, on a cart, or in a rackmount environment. If you need to stack more than two benchtop mainframes, install the mainframes in a rack.

WARNING. *To avoid personal injury, never lift or move a benchtop mainframe by yourself. The size and weight of the mainframe requires two people to lift or move it.*

Do not stack more than one benchtop mainframe on top of another benchtop mainframe. Always use a rackmount kit to ensure that the mainframes are secure and will not fall.

Table 3: Benchtop mainframe 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	16.5 A maximum at 90 VAC (70 A surge)
Power Consumption	1450 W maximum Refer to the appendix in the back of this manual for mainframe power consumption information with modules installed. (See page 93, *Mainframe Power Information*.)

Support Hardware Site Considerations

The TLA7PC1 Benchtop PC Controller, TL708EX Hub, and GbE switch units can operate separately on your workbench, equipment rack, or cart. You can also mount them to your benchtop mainframe using the brackets provided with the benchtop mainframe.

Table 4: TLA7PC1 and TL708EX power considerations

Product		Description
TLA7PC1	Voltage range and frequency	100 VAC to 200 VAC at 50 Hz to 66 Hz
	Input Current	3 A maximum at 100 VAC
	Power Consumption	300 W maximum
TL708EX	Voltage range and frequency	90 VAC to 250 VAC at 45 Hz to 66 Hz
	Input Current	2 A maximum at 100 VAC
	Power Consumption	200 W maximum

Installing the Bracket Kit

If you are using your benchtop logic analyzer outside of a rackmount environment, you can use the bracket kit to mount the PC controller, GbE switch, and TL708EX Hub together with your benchtop mainframe. (See Figure 1 on page 4.) Use the following procedure:

1. Place the components you want to mount on top of the logic analyzer, putting the heaviest units lowest in the stack.
2. A left and right-side bracket is included in the kit, along with mounting screws. Align one of the brackets to the frame of the logic analyzer so that the bracket reaches all of the components, but minimize the extra bracket height above the top unit.
3. Fasten the bracket to the logic analyzer with one of the 8-32, P2 Pozidriv screws preinstalled on the bracket.
4. Repeat steps 2 and 3 for the bracket on the other side of the logic analyzer.
5. If necessary, relocate the instrument brackets on the components you are mounting. For example, the brackets on the TL708EX Hub come mounted to the back of the unit, with installation instructions on the bottom of the unit.
6. Using the 10-32, P2 Pozidriv screws preinstalled on the brackets, fasten the components to the brackets.

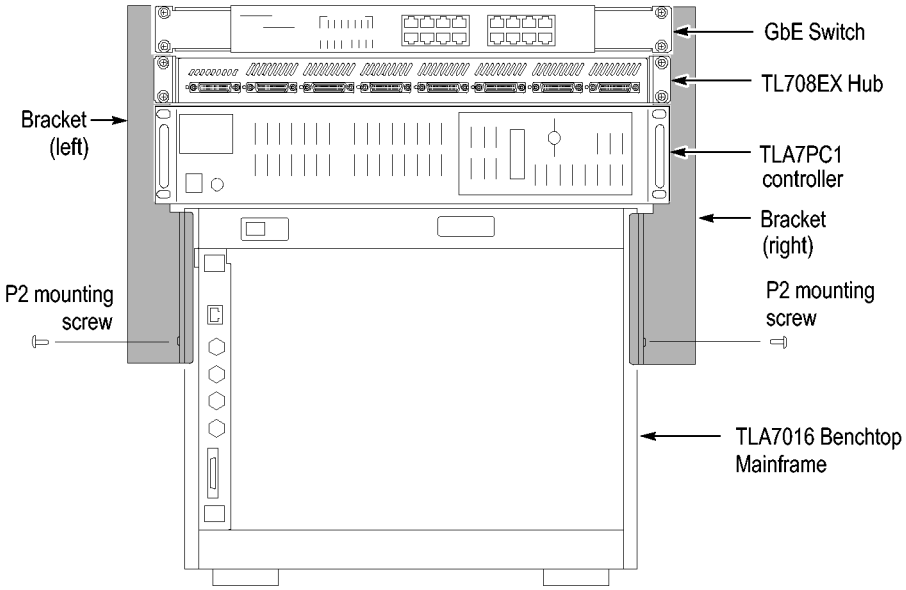


Figure 1: Bracket kit for the TL708EX Hub, TLA7PC1 controller and GbE switch installed on a TLA7016

Chassis Ground Connections

Use the chassis ground connections to connect the grounds of the target system (system-under-test) to the logic analyzer to ensure a common ground connection between instruments. (See Figure 2 on page 5.)

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

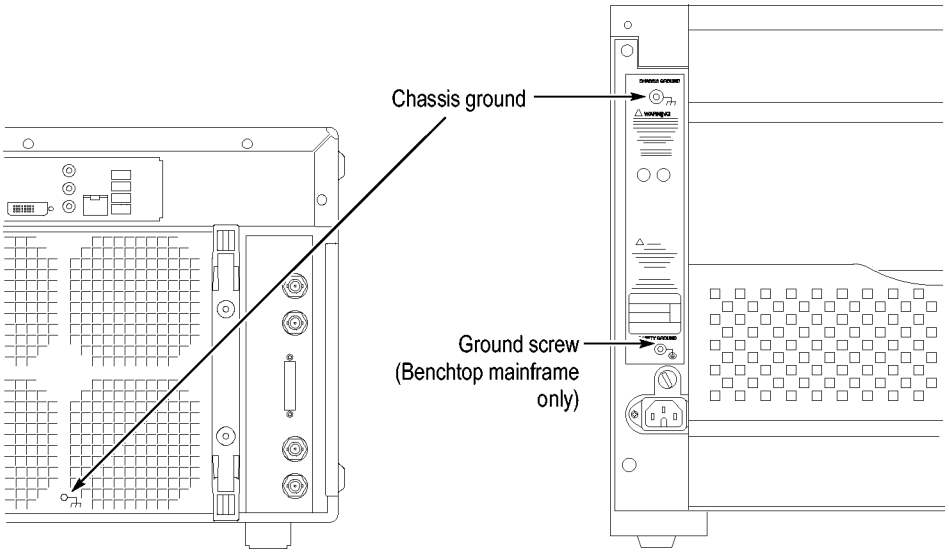


Figure 2: Location of the ground connection on the TLA7000 logic analyzers

Mainframe Configurations

Use this section to make the connections between the logic analyzer mainframes and the support hardware: the controller, network switch, router, and TL708EX Hub. Then connect the peripheral components such as the display, keyboard, and other accessories. (See page 48, *Connecting Accessories*.)

First Time Setup Considerations

The first time you start up your instrument you should decide if you are going to connect to a network. Plan to connect to a network if you want to:

- Share files over the network
- Print to a shared printer
- Control the instrument remotely

The TLA7000 series mainframes can be set up in several configurations, depending on the number of mainframes you want to use and whether you want to connect to a network. The following table shows the network configurations that can be set up.

Table 5: Mainframe Network Configurations

Configuration	Network Services Available	TLA7PC1 or User-Supplied PC	TLA7016
Stand-alone — no LAN connection	None — stand-alone	Configure with DHCP. Leave TCP/IP properties set to DHCP, but if there is no LAN connection and thus no DNS service, Windows assigns a nonroutable IP address 169.254.xxx.xxx [1]	Configure with static IP. Recommend nonroutable IP address 169.254.xxx.xxx using preset IP address capability on TLA7016
Connected to private LAN	Only DHCP (no DNS)	Configure with DHCP. [1]	Configure with DHCP. Use router with DHCP service.
Connected to corporate LAN	Both DHCP and DNS	Configure with DHCP	Configure with DHCP

[1] A hosts file is required to minimize the time needed to resolve IP addresses when DNS (Domain Naming Service) is not available (for example, DNS is often provided by a Windows Server). (See page 7, *TLA7016 Network Search Performance*.)

Connecting to a Network

If you want to control the mainframe remotely from your PC, you need to load the TLA application software. (See page 32, *Installing the TLA Application Software on a PC*.) If you use the optional TLA7PC1 PC-based controller, it is preloaded with the TLA Application software. You may need help from your IT department or network administrator to complete the network configuration.

Networking Overview

The TLA7000 series instruments communicate between the controller and mainframes via GbE (gigabit Ethernet) connections using IP (Internet Protocol) standards. Because of the size of typical TLA data files, GbE components are the preferred network hardware over more typical 100BaseT networks. Use at least a Cat5e cable for your network connections.

All connected devices must have unique IP addresses to operate on a network. This can be achieved by manually entering a static address in the TLA, or if your network has a DHCP (Dynamic Host Control Protocol) server, it can dynamically provide an address that meets these needs.

TLA7016 Network Search Performance. The TLA Application software requires a DNS (Domain Name Service) service to translate TLA7016 host names into IP addresses. If there is not a DNS service available on the network, then you may experience long search times when attempting to locate TLA7016 mainframes on your network.

To eliminate this long search time, Tektronix recommends that you include a hosts file on your PC under <Windows folder>\system32\drivers\etc directory. (An example of the contents of this file is shown below.)

120.0.0.1	localhost
192.168.0.19	TLA7016_Lab1
192.168.0.20	TLA7016_Lab2
192.168.0.21	TLA7016_Lab3

TLA IP Address Lease Time. To facilitate reliable network operation, DHCP-assigned IP addresses have a "lease time" where they are normally "leased" to a device for a preset time, for example, one day or one week. After the lease time expires, the actual IP address may change.

If the lease expires causing an IP change, all network connections between the TLA and host will also expire, stopping network communications and causing the TLA application to terminate. The TLA application must be restarted to correct this condition.

If you plan to operate the TLA application remotely for extended periods of time (whether acquiring data or not), then lease times must be set to a period of time that guarantees that the IP address does not change. Talk to your network administrator if you have questions.

Network Security

The user interface on the logic analyzer system operates under the Microsoft Windows XP Professional Operating System. Tektronix strongly recommends the following to ensure your instrument is protected:

- All TLA mainframes are configured to enable the standard Windows XP firewall by default. Windows provides details for changing firewall settings in the Control Panel.
- Install operating system updates regularly
- Use up-to-date antivirus software

NOTE. *To use your instrument over a network you must join either a workgroup or a domain. If you plan to control your instrument remotely, both the instrument and the remote computer must be in either the same workgroup or the same domain on the network.*

If you plan to connect to a network, you will need the following information from your IT department or network administrator to complete your network configuration:

- Workgroup or Domain name
- IP address, either DHCP (default) or static
- Domain Name Service (DNS)
- Other network information from your network administrator

The Teklink/TLA7000 series mainframes require the following services:

- DNS
- DHCP

Firewall Blocking Network Ports. If you are having problems with any of the following applications, your firewall may be blocking communications using the following network ports:

- TLA Application - port 111
- TPI.NET - port 9000
- Windows XP Remote Desktop - port 3389

NOTE. *Tektronix recommends that you conduct a network installation site survey with the help of your network administrator to determine the networking requirements. A recommended site survey form is available at the end of this document.* *(See page 105, TLA7000 Network Installation Site Survey.)*

First Time Network Setup

Check with your network administrator to determine whether your instrument should use the Microsoft Workgroup model or the Microsoft Domain model. Power on your instrument and use the following table to answer the Windows questions.

Table 6: First time network setup

	Stand-alone	Workgroup	Domain
Protect your PC.	N/A	Choose "Help protect my PC by turning on Automatic Updates now"	
What's your computer's name? (Wait several minutes after answering)	Check with your network administrator for the standard naming convention of your organization. If your organization does not have a naming convention, choose a name that follows the suggestions given.		
What's your administrator password?	You must have an administrator account to install most software, change the workgroup, perform Windows updates, or change firewall settings. Check with your network administrator for the appropriate password. The default administrator password on all TLA systems is blank.		
Is this computer in a domain?	No (Is given Workgroup membership)		Yes. Enter the domain name that your instrument will log onto.
Enter your domain settings.	N/A		Enter the name/password of user who can add the instrument to the domain.
Checking your Internet connectivity	Press 'Skip'	Wait for this to finish	
How will this computer connect to the Internet?	N/A		Choose the appropriate answer
Setting up a high-speed connection	N/A		Enter either the fixed IP/DNS assigned by your network administrator or select "Obtain Automatically".
(If LAN is connected) Will this computer connect to the Internet directly or through a network?	N/A	Choose 'Yes through a network'	N/A
(If LAN is not connected) Windows unable to determine LAN connectivity	N/A	Set up a LAN later.	N/A
Ready to register with Microsoft	Windows is already enabled to run on your instrument. This registration is to allow Microsoft to contact you.		
Who will use this computer?	Entering names here allows administrator permissions for multiple users on the instrument. By default, their passwords are blank.		

The network switch and TLA7PC1 Controller are described below; see your router manual for specific router information.

Network Switch. The 16 port network switch controls the data flow between the controller and mainframes. Connect the GbE switch between the logic analyzer mainframe and the TLA7PC1 Controller or an external PC (loaded with the TLA application). (See Figure 3.)

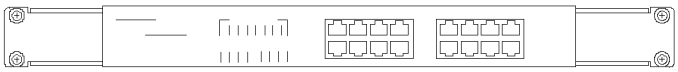


Figure 3: Network switch

TLA7PC1 Benchtop PC Controller. This optional PC-based controller is preloaded with the TLA Application software and connects to the benchtop mainframe through the GbE switch. The controller is housed in a 19 in-wide chassis for mounting to your instrument rack. You can also mount the controller to the benchtop mainframe using the benchtop bracket kit. (See page 4, *Installing the Bracket Kit*.) The controller includes two removable hard disk trays located behind a lockable front door. One tray holds the main hard disk drive. The other tray can be filled with a SATA hard disk drive provided by the user. (See Figure 4.)

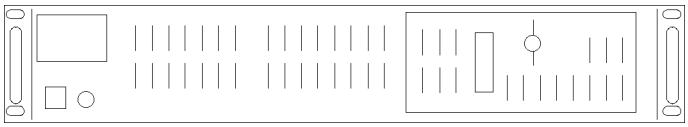


Figure 4: TLA7PC1 Benchtop PC Controller

Preset IP Addresses

You may need to change the IP address of the benchtop mainframe(s), depending on the number of mainframes you have connected in your test system, and the requirements of the network that it will be connected to.

A preset list of recommended IP addresses is programmed into the benchtop mainframe. (See Table 7.) You can also set a specific address. (See page 36, *Changing the TLA7016 Factory Network Settings*.)

To cycle through the list of preset IP addresses, do the following:

1. Press and hold the reset button on the TLA7016 Interface Module. (See Figure 5.)

   The front-panel display cycles every 2-3 seconds to the next preset address. (See Table 7.)

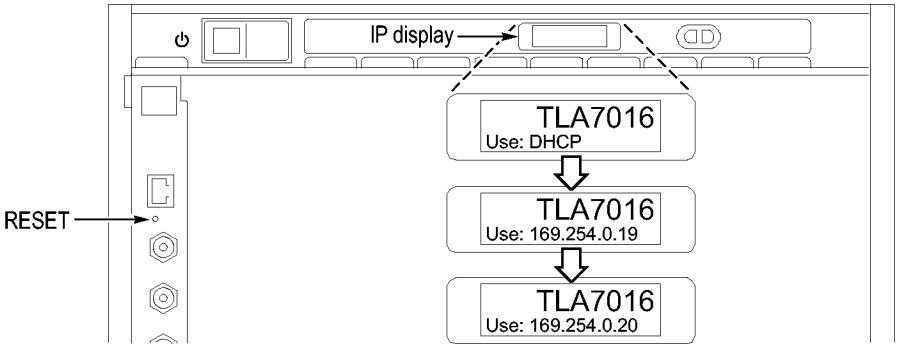


Figure 5: Setting the IP address

2. Release the reset button when the desired address is displayed.

The following addresses are available and displayed sequentially, beginning with the DHCP selection:

Table 7: Preset IP addresses

Selection	IP address	Subnet mask	Default gateway	Comments
Use: DHCP	–	–	–	IP addressing provided by a DHCP-capable router
Use: 169.254.0.19	169.254.0.19	255.255.0.0	0.0.0.0	Static, non-routable address used for direct PC connection
Use: 169.254.0.20	169.254.0.20	255.255.0.0	0.0.0.0	Static, non-routable address used for direct PC connection
Use: 192.168.0.19	192.168.0.19	255.255.0.0	0.0.0.0	Static, non-routable address used for private LAN with DHCP-capable router
Use: 192.168.0.20	192.168.0.20	255.255.0.0	0.0.0.0	Static, non-routable address used for private LAN with DHCP-capable router
Factory default	–	–	–	Return to factory settings (Use DHCP and restore default Host Name to TLA7016_<Mainframe S/N>)
No change	–	–	–	Retain current IP address and Host Name

Instrument Installations

The following configurations are described in order of complexity. The most common setup is as a stand-alone mainframe.

- Stand-alone TLA7012 portable
- Stand-alone TLA7016 benchtop (requires a separate controller)
- TLA7016 benchtop on a private LAN
- TLA7016 benchtop on a corporate LAN

NOTE. *You must have TLA Application software Version 5.6 or higher installed on the controller PC. (See page 32, Installing the TLA Application Software on a PC.)*

Stand-alone Installation (Portable Mainframe)

If you plan to use the portable mainframe as a stand-alone instrument, do the following:

1. Set up the instrument in a convenient location relative to your target system.
2. Connect the peripheral components that you plan to use. (See page 48, *Connecting Accessories*.)
3. Install the modules. (See page 44, *Installing Modules*.)
4. Refer to the *TLA Quick Start User Manual* and to the online help for operating information.

The following figure shows the stand-alone setup for the portable mainframe.

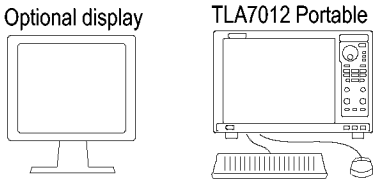


Figure 6: Portable mainframe setup (up to two modules)

Network Configuration Overview

The benchtop mainframe requires an external PC controller; you can use the TLA7PC1 Benchtop PC Controller or your PC loaded with the TLA application software. The controller and mainframes communicate through Ethernet connections.

This section covers configuring your network settings and establishing communication between the controller and benchtop mainframes. After making the cable connections, all of the network configuration options generally follow these steps:

1. Start the controller and mainframe and exit any TLA applications.
2. Establish LAN connectivity using the Windows Networking tools (set the IP addresses, and if necessary, get user names and passwords from your IT group).
3. Start the TLA application on the controller.
4. Find and connect to the TLA mainframe through software control.
5. Repeat for all mainframes in the test system.
6. Operate the TLA from the controller or remote computer.

Stand-alone Installation (Benchtop Mainframe)

After making connections with either a crossover cable (peer-to-peer) or a LAN cable, get the IP addresses to use for the controller and mainframes.

The following figure shows the stand-alone setup for the benchtop mainframe.

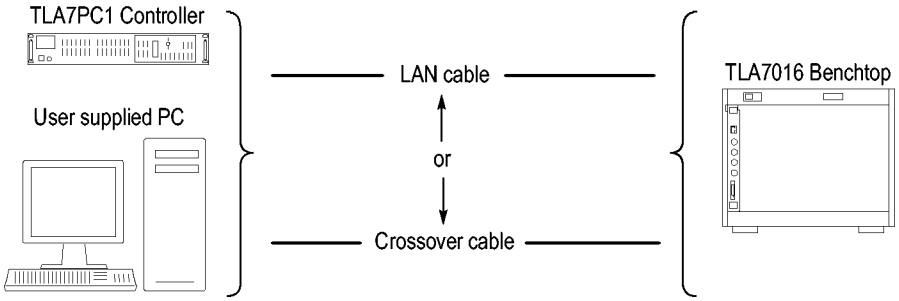


Figure 7: Benchtop mainframe setup (up to six modules)

Configure the PC Controller IP Address to a Static Address. Complete the following steps to set the IP address of the PC controller as a static address.

1. From the Control Panel on the controller, select **Network Connections**.
2. Right-click the Local Area Connection icon that corresponds to your local LAN card and select **Properties** from the menu. The Properties dialog box appears. (See Figure 8.)

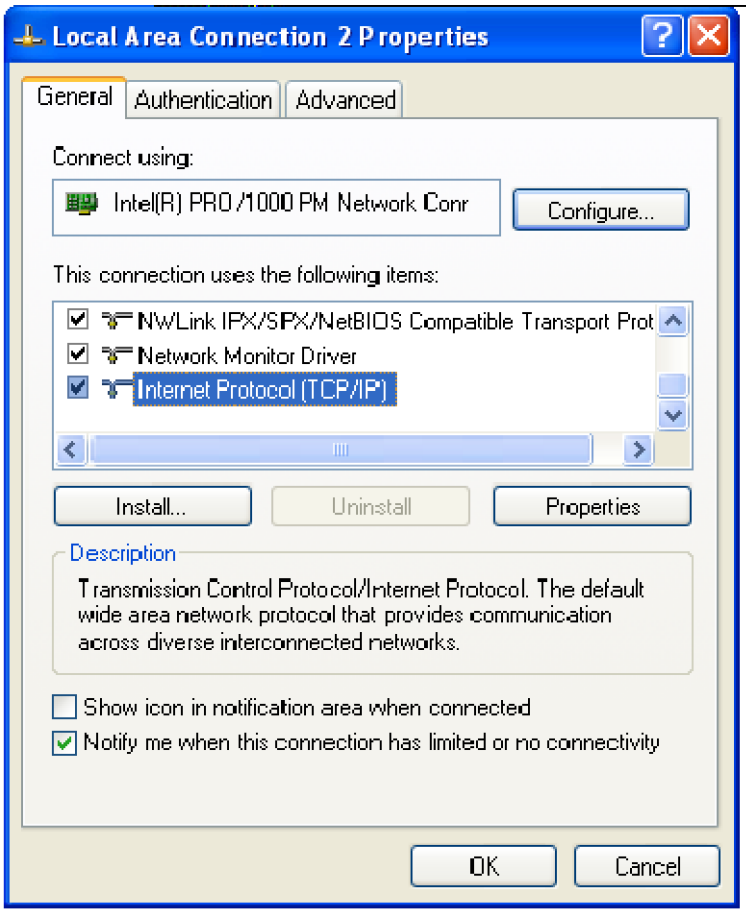


Figure 8: LAN Connection dialog box

3. Scroll down the list and select **Internet Protocol (TCP/IP)**; and then click **Properties**. The Internet Protocol (TCP/IP) Properties dialog appears. (See Figure 9.)

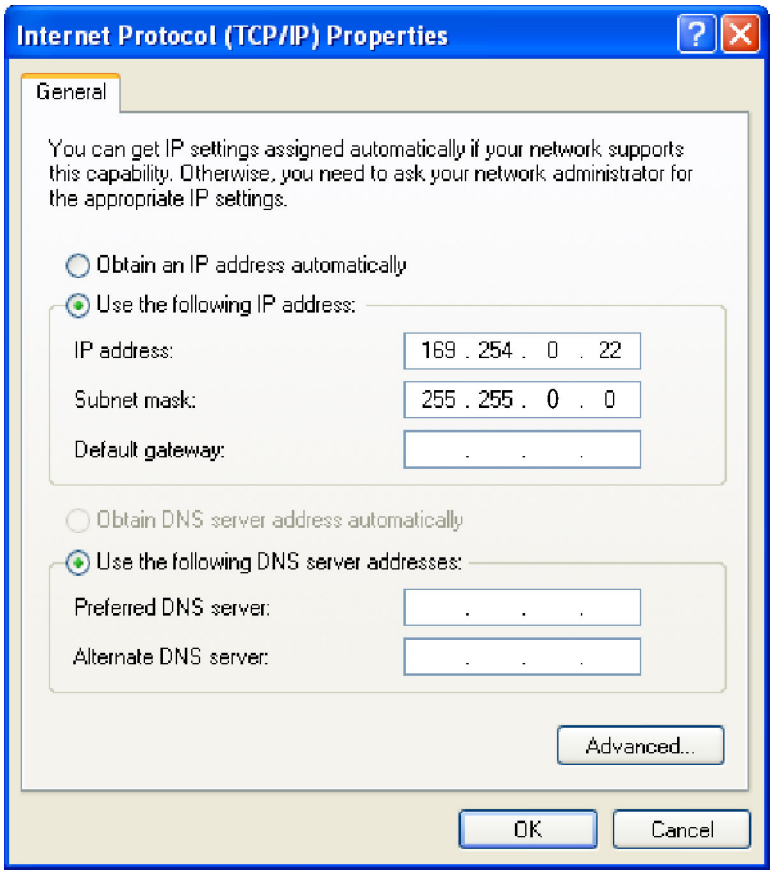


Figure 9: IP Properties dialog box

4. Select **Use the following IP address**.
5. Enter the IP address **169.254.0.22** and Subnet mask **255.255.0.0** for the controller. No Default gateway or DNS server information is required.
6. Click **OK** and close the dialog boxes.

Configure the Benchtop Mainframe IP Address to a Static Address.

To complete the setup, set the IP address of the benchtop mainframe as a static address. You can do this one of two ways: use the preset addresses described in step 7, or specify an address using the *Changing the TLA7016 Factory Network Settings* procedure. (See page 36, *Changing the TLA7016 Factory Network Settings*.)

7. On the TLA7016 Interface Module, press and hold the RESET button until the IP address 169.254.0.19 shows in the TLA7016 front panel display. (See Figure 5 on page 11.) The front-panel display cycles every 2-3 seconds to the next preset address. (See Table 7 on page 11.)
8. Start the TLA application by double-clicking the TLA Application icon on the controller. The TLA Connection dialog box appears. (See Figure 10.)

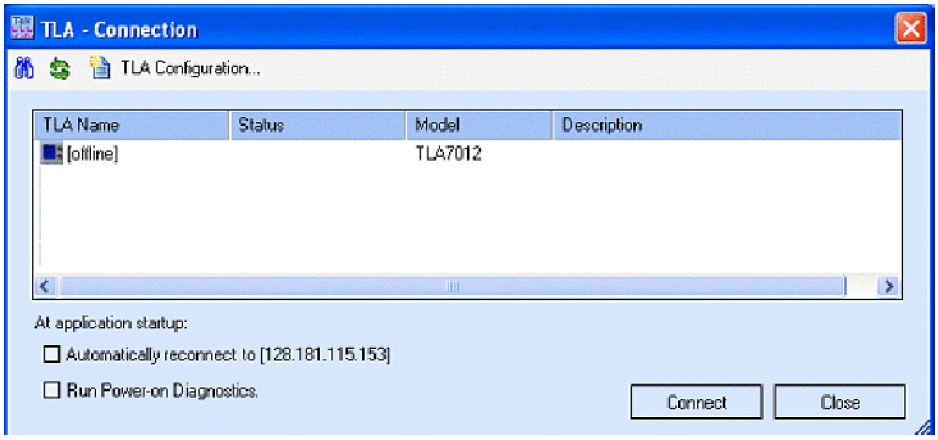


Figure 10: TLA Connection dialog box

9. Select the mainframe in the TLA Connection dialog box, and then click the **Connect** button. The application opens on the controller display.

10. If the mainframe is not displayed in the Connection dialog box:

a. Click (Search icon) to open the TLA Network Search dialog box. (See Figure 11.)

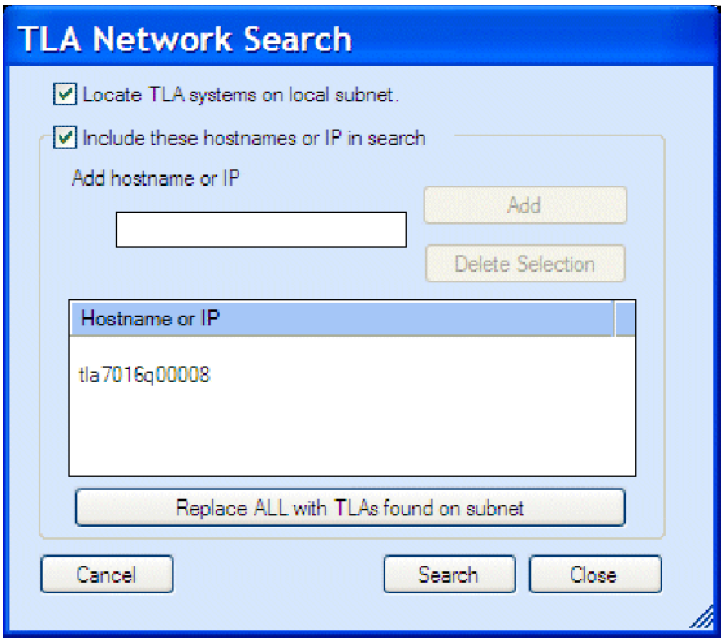


Figure 11: TLA Network Search dialog box

b. Verify that **Locate TLA systems on local subnet** is checked.

c. Verify that **Include these hostnames or IP in search** is checked.

d. If you know the hostname or IP address of the TLA, add it to the list of hosts to search.

e. Click **Search**.

When the search is complete, the mainframe is listed in the display.

11. Select the mainframe and click the **Connect** button. The application opens on the controller display.

12. For information about operating your logic analyzer, refer to the *TLA Quick Start User Manual* and to the online help.

Private LAN (Benchtop Mainframe)

The benchtop mainframe requires an external PC controller; you can use the TLA7PC1 Benchtop PC Controller or your PC loaded with the TLA application software. The controller and mainframes communicate through Ethernet connections.

You need a GbE network switch for optimum file transfer speed between the controller and the benchtop mainframe. For stand-alone installations, you must also connect a router to the network switch to assign IP addresses through DHCP. Routers can be purchased from other vendors; the D-Link model DI-604 met the requirements at the time of publication.

The following figure shows the private LAN setup for the benchtop mainframe.

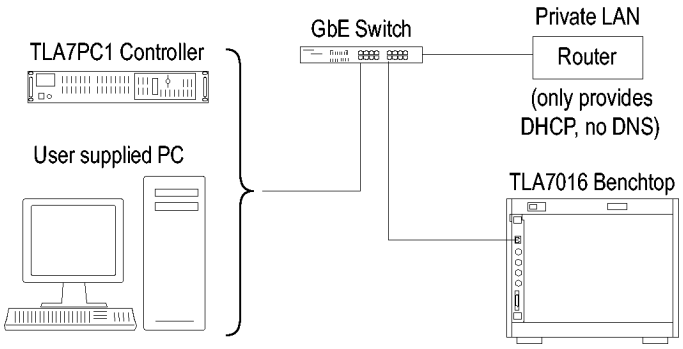


Figure 12: Benchtop mainframe private LAN setup (up to six modules)

Configure the Setup. To configure the benchtop mainframe in a private LAN setup, do the following:

1. Make the cable connections from the controller, through the switch and router, to the mainframe.

2. Connect the peripheral components that you plan to use. (See page 48, *Connecting Accessories*.)

3. Connect the power cord to the router and power on the router.

4. Connect the power cords and power on the controller and mainframe.

5. From the Control Panel on the controller, select **Network Connections**.

6. Right click the Local Area Connection icon that corresponds to your local LAN card and select **Properties**. The Properties dialog box appears. (See Figure 13.)

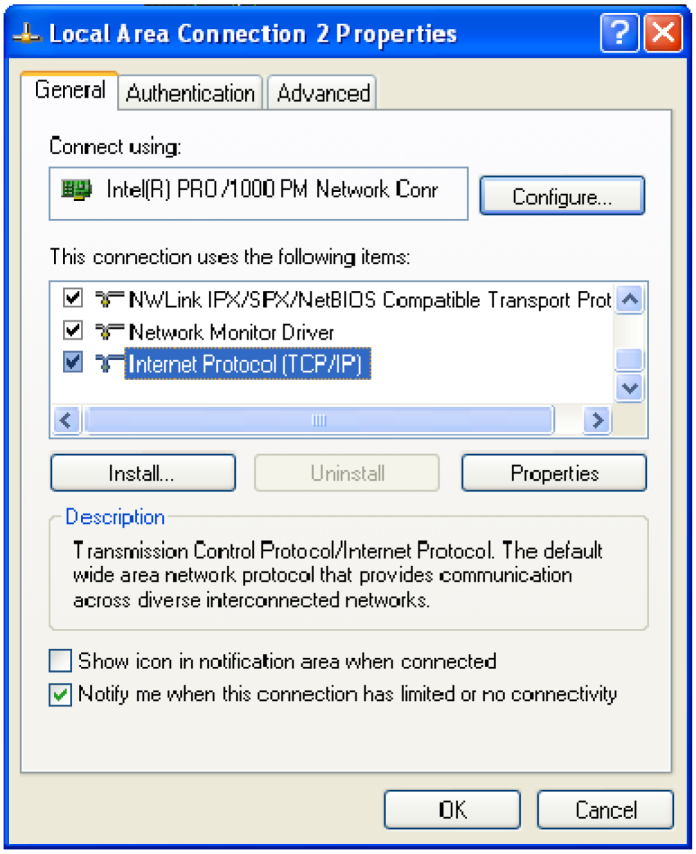


Figure 13: LAN Connection dialog box

7. Scroll down the list and select **Internet Protocol (TCP/IP)**, and then click **Properties**. The Internet Protocol (TCP/IP) Properties dialog box appears. (See Figure 14.)

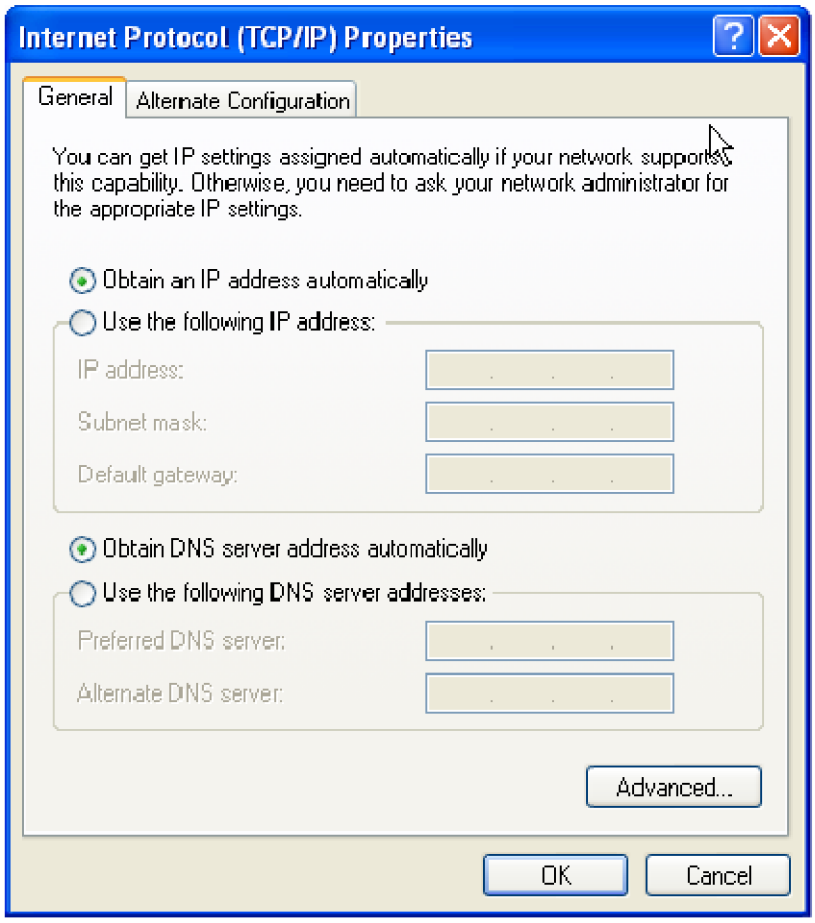


Figure 14: IP Properties dialog box

8. Select **Obtain an IP address automatically**.
9. Click **OK** and close the dialog boxes.
10. Start the TLA application by double-clicking the TLA Application icon on the controller. The TLA Connection dialog box appears. (See Figure 15.)

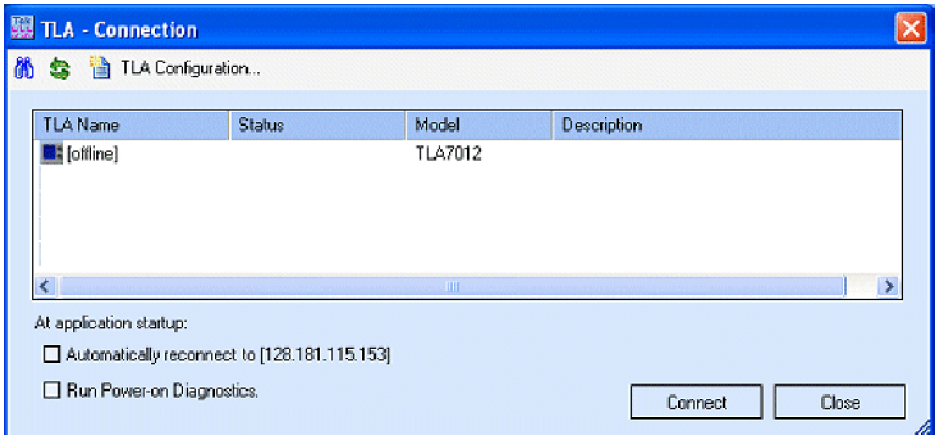


Figure 15: TLA Connection dialog box

11. Select the mainframe in the TLA Connection dialog box, and then click the **Connect** button. The application opens on the controller display.

12. If the mainframe is not displayed in the Connection dialog box:

a. Click (Search icon) to open the TLA Network Search dialog box. (See Figure 16.)

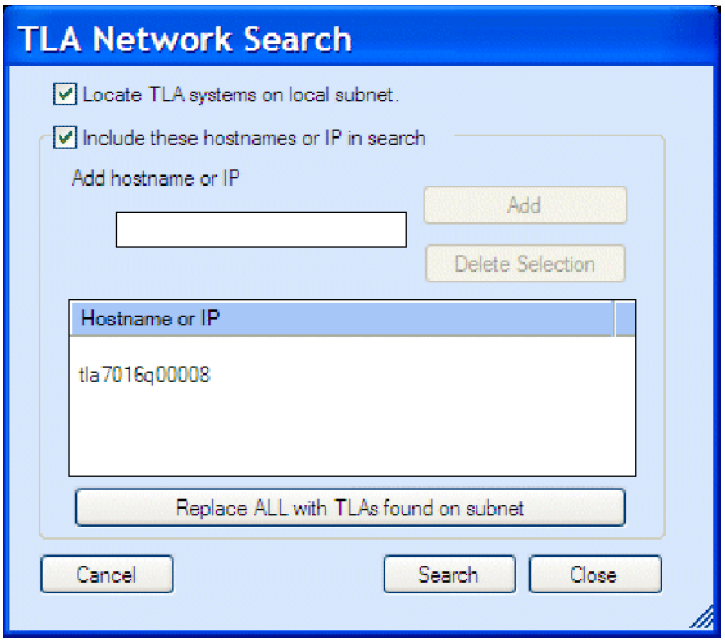


Figure 16: TLA Network Search dialog box

b. Verify that **Locate TLA systems on local subnet** is checked.

c. Verify that **Include these host names or IP in search** is checked.

d. If you know the host name or IP address of the TLA, add it to the list of hosts to search.

e. Click **Search**.

When the search is complete, the mainframe is listed in the display.

NOTE. *You may see a delay in the response time if you have more than three instruments on the LAN. To limit this delay, refer to Multi-mainframe Systems.* *(See page 39, Multi-mainframe Systems.)*

13. Select the mainframe and click the **Connect** button. The application opens the controller display.

14. Refer to the *TLA Quick Start User Manual* and to the online help for operating information.

Corporate LAN (Benchtop Mainframe)

The benchtop mainframe requires an external PC controller; you can use the TLA7PC1 Benchtop PC Controller or your PC loaded with the TLA application software. The controller and mainframes communicate through Ethernet connections. You need a GbE network switch for optimum file transfer speed between the controller and the benchtop mainframe.

The following figure shows the corporate LAN setup for the benchtop mainframe.

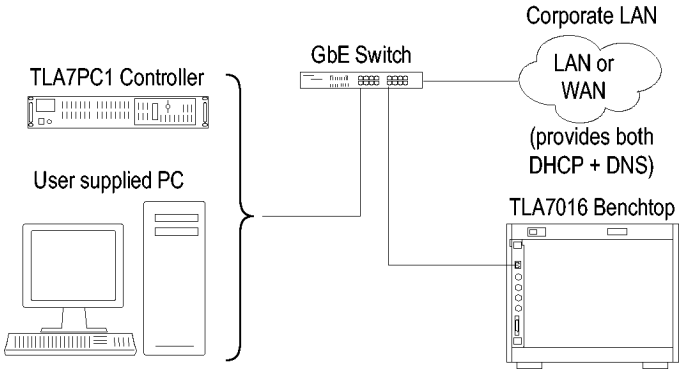


Figure 17: Benchtop mainframe corporate LAN setup (up to six modules)

NOTE. *Tektronix recommends that you conduct a network installation site survey with the help of your network administrator to determine the networking requirements. A recommended site survey form is available at the end of this document.* *(See page 105, TLA7000 Network Installation Site Survey.)*

Configure the Setup. To configure the benchtop mainframe in a corporate LAN setup, you need to contact your IT Administrator for network information, such

as Workgroup or Domain name, and IP address (either static or DHCP) before setting the IP properties for the controller PC and mainframe.

1. Make the cable interconnections. (See Figure 17.)
2. Power on the equipment.
3. From the Control Panel on the controller, select **Network Connections**.
4. Right-click the Local Area Connection icon that corresponds to your local LAN card and select **Properties**. The Properties dialog box appears. (See Figure 18.)

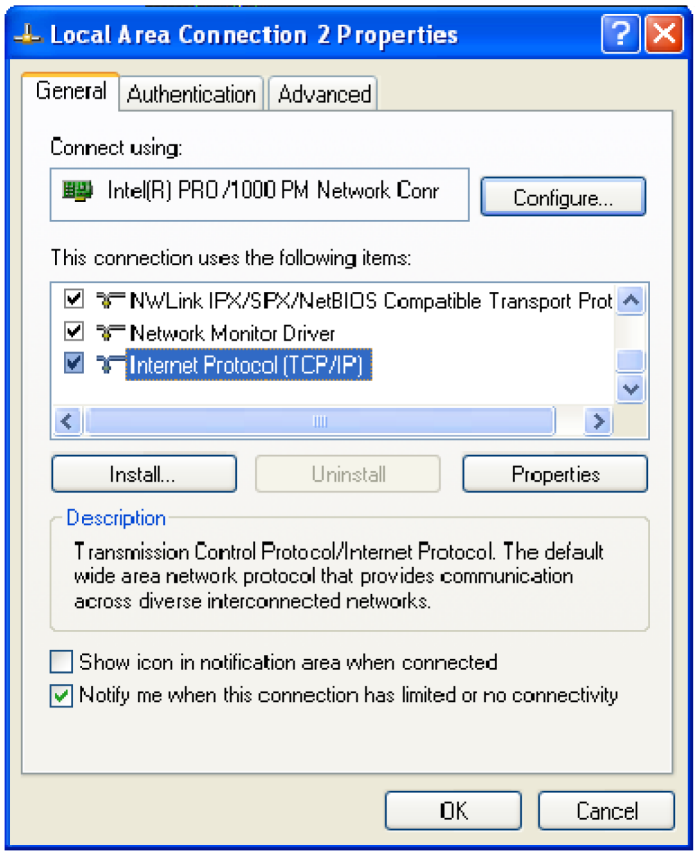


Figure 18: LAN Connection dialog box

5. Scroll down the list and select **Internet Protocol (TCP/IP)**, and then click **Properties**. The Internet Protocol (TCP/IP) Properties dialog appears. (See Figure 19.)

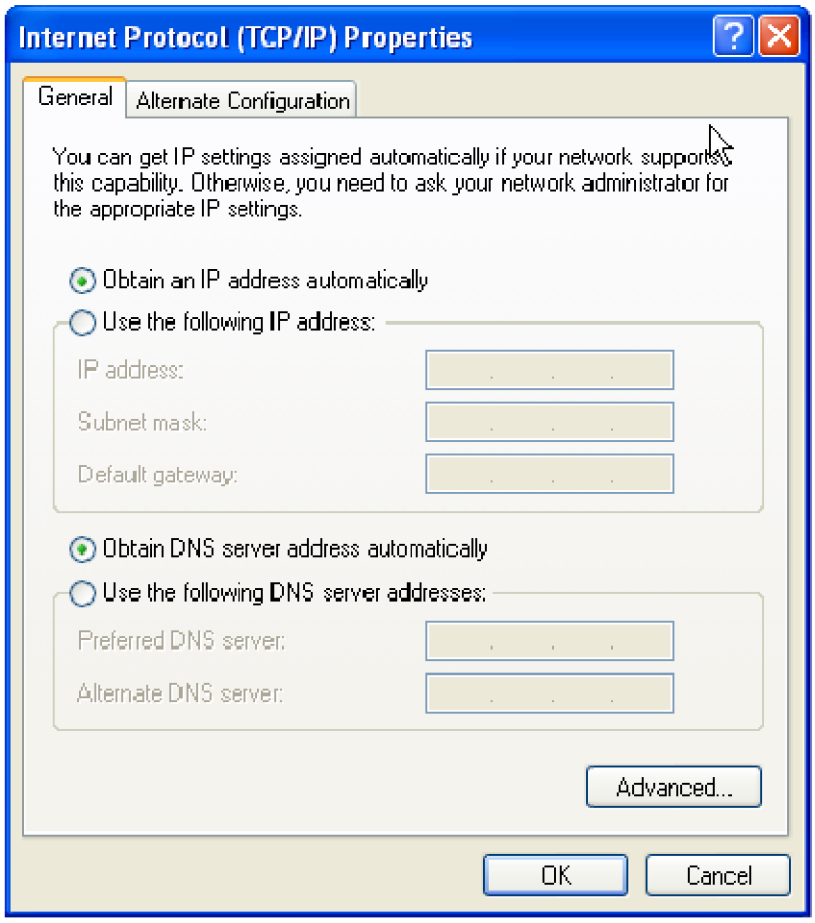


Figure 19: IP Properties dialog box

6. Select **Obtain an IP address automatically**.
7. Click **OK** and close the dialog boxes.
8. Start the TLA application by double-clicking the TLA Application icon on the controller. The TLA Connection dialog box appears. (See Figure 20.)

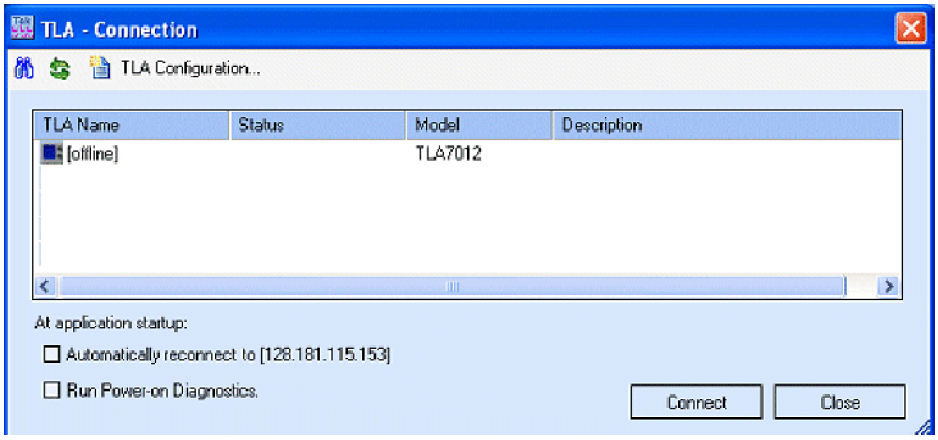


Figure 20: TLA Connection dialog box

9. Select the mainframe in the TLA Connection dialog box and then click the **Connect** button. The application opens on the controller display.

10. If the mainframe is not displayed in the Connection dialog box:

a. Click (Search icon) to open the TLA Network Search dialog box. (See Figure 21.)

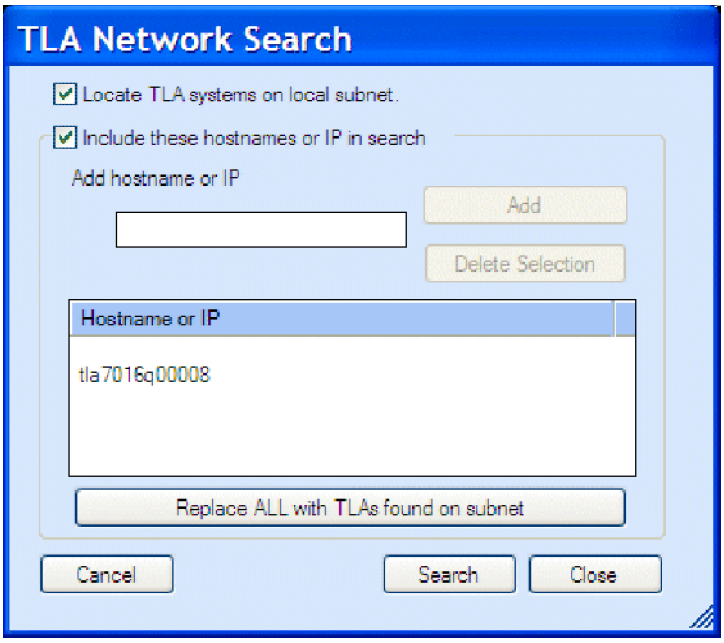


Figure 21: TLA Network Search dialog box

b. Verify that **Locate TLA systems on local subnet** is checked.

c. Verify that **Include these host names or IP in search** is checked.

d. If you know the host name or IP address of the TLA, add it to the list of hosts to search.

e. Click the **Search** button.

When the search is complete, the mainframe is listed in the display.

NOTE. *You may see a delay in the response time if you have more than three instruments on the LAN. To limit this delay, refer to Multi-mainframe Systems.* *(See page 39, Multi-mainframe Systems.)*

11. Select the mainframe and click the **Connect** button. The application opens the controller display.

12. Refer to the *TLA Quick Start User Manual* and to the online help for operating information.

Setting up Multiple Mainframe Configurations

You can configure your system to link up to eight mainframes together, for a total of up to 48 modules. The TLA7000 Series mainframes use the TekLink system to connect multiple-mainframe systems together. The TekLink system is described here in the two *Expanded System* sections.

The benchtop mainframes that are connected as expansion mainframes are automatically powered on in a delayed sequence when the first benchtop or portable mainframe is powered on. When everything is properly connected and operational, the expansion mainframe and the installed module icons appear in the System window.

NOTE. *You must have a module installed in the expansion mainframes before the expansion mainframes appear in the System window.*

Expanded System (Two Mainframes)

If you are going to expand your system to two mainframes, you must connect a TekLink cable between the TekLink connectors on the mainframes. (See Figure 22.)

TekLink is a real-time communication system that coordinates trigger signals, input/output signals, and time references between mainframes.

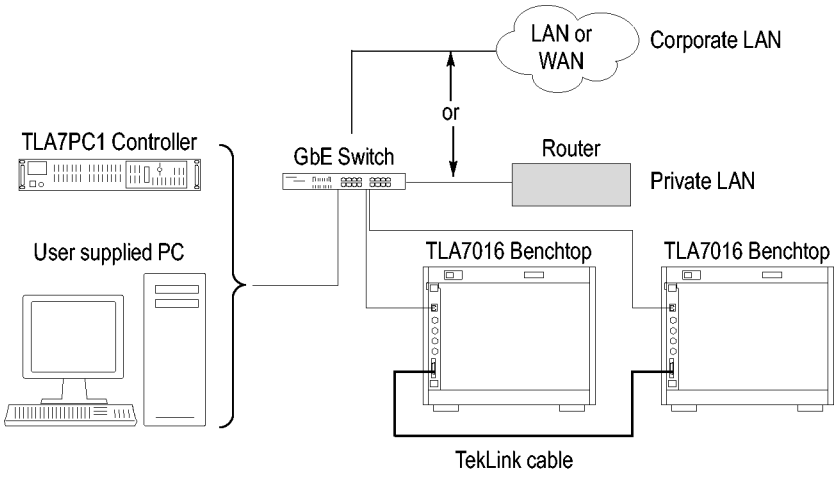


Figure 22: Expanded benchtop system with TekLink cable (up to 12 modules)

CAUTION. *TLA7000 Series components are not compatible with TLA7XM expansion mainframes. If you need to expand your TLA7000 system, use additional TLA7016 benchtop mainframes, or upgrade your TLA720/721/7XM expansion mainframe to a TLA7016 with TLA7KUP Option 19.*

Configure the Setup. Configure the two instruments as follows:

1. Connect the TekLink cable between the host mainframe and the expansion benchtop mainframe (up to six additional modules). You can also use the Teklink cable to expand a portable mainframe to either another portable mainframe or to a benchtop mainframe.
2. Power on the equipment.
3. Start the TLA application by double-clicking the TLA Application icon on the controller. The TLA Connection dialog box appears.
4. Select one instrument from the TLA Connection dialog box.
5. Click the **TLA Configuration** icon. The TLA Configuration dialog box opens. (See Figure 23.) Use this dialog box to assign one instrument as the master mainframe and the other as the expansion mainframe.

NOTE. *This dialog box is only available if you have two TLA7000 mainframes connected with a TekLink cable; it is not available if you are using the TL708EX TekLink 8-Port Hub.*

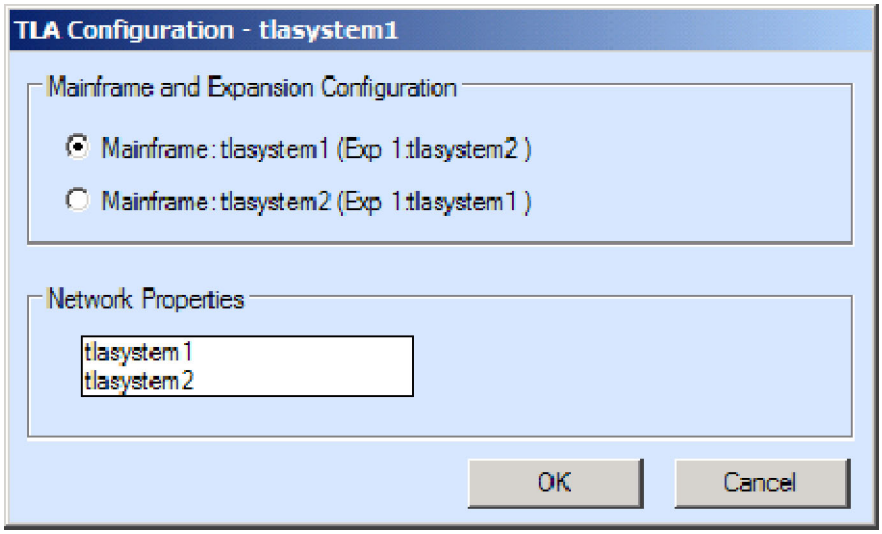


Figure 23: Two instrument configuration

6. Refer to your *TLA Quick Start User Manual* and to the online help for operating information.

Expanded System (Three to Eight Mainframes)

To expand your system to more than two mainframes, you must add the TL708EX TekLink 8-Port Hub and the TekLink cables. (See Figure 24.) The hub can accommodate up to eight mainframes (48 modules total).

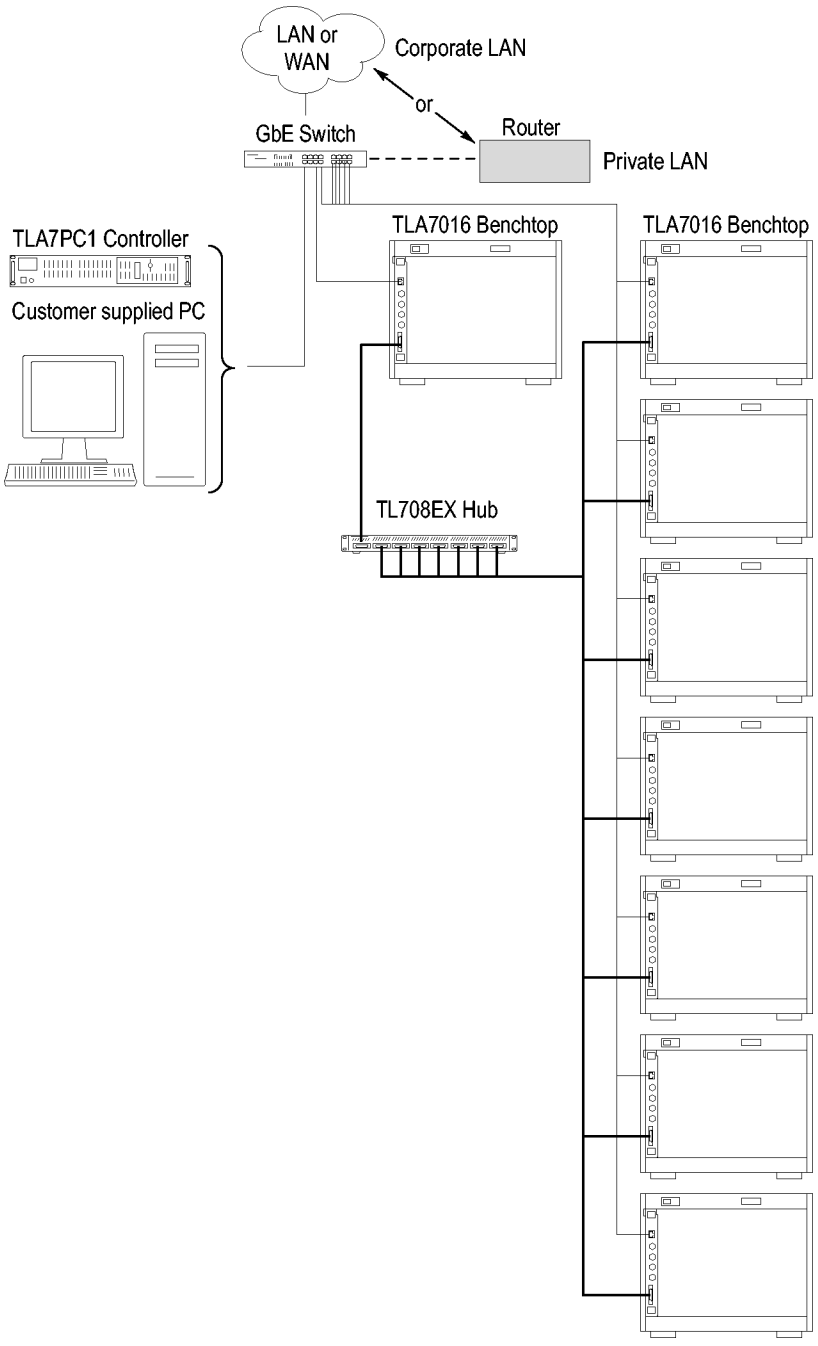


Figure 24: Expanded benchtop system with TL708EX Hub (up to 48 modules)

TL708EX TekLink 8-Port Hub. The TL708EX Hub is housed in a standard 19 inch rackmount frame. (See Figure 25.) The hub allows you to expand your system to accommodate up to seven additional TLA7000 Series mainframes, configured as expansion mainframes (48 modules total).

When you power on the TL708EX TekLink 8-Port Hub, the hub scans the eight TekLink connectors sequentially. The hub then assigns master mainframe status to the mainframe that is connected to the lowest number hub connector used (the #1 connector is used for the master mainframe). The next-highest numbered hub connector that you use is assigned as the first expansion mainframe. Any remaining expansion mainframes that are connected to the hub are assigned second, third, etc. using this hierarchy.

Configure the Setup. Set up your expanded system by following the steps below. This power-on sequence must be followed to ensure that the mainframes are acknowledged by the hub and controller.

1. Connect a TekLink cable from the first mainframe to a TekLink connector on the TL708EX Hub. (The #1 connector is recommended for the master mainframe).
2. Connect another TekLink cable from the next TekLink connector on the hub to the TekLink connector on your expansion mainframe. Repeat for all expansion mainframes in your system.
3. Connect the power cord to the back of the hub and to an appropriate AC power source.

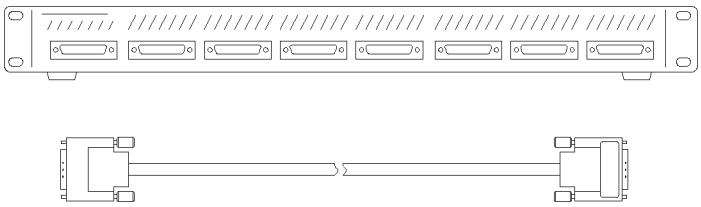


Figure 25: TL708EX Hub and TekLink cable

4. Install the modules that you intend to use in the mainframes.
5. Verify that all mainframes are connected to a proper AC source.
6. Connect the power cord to the router and power on the router.
7. Power on the hub.
8. Power on the master mainframe and verify that all of the expansion mainframes power on. This will take a moment because a sequential power-on delay is built into the hub.
9. Start the TLA application. The TLA Connection dialog box appears.

10. Click (Search icon) to open the TLA Network Search dialog box. The search for instruments returns with the name of the mainframes that are connected to the master mainframe. (See Figure 26.)

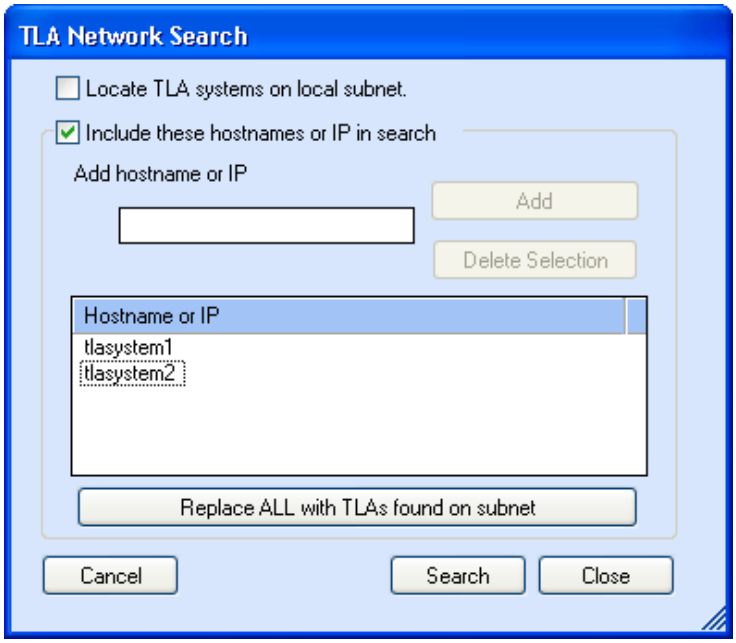


Figure 26: TLA Network Search dialog box

You can use the front-panel display on the benchtop mainframe to identify the IP address and whether it is a Mainframe or Expansion. Press the Next button on the mainframe front panel until the IP address is displayed. (For the TLA7012, this information is provided through the TLA Connection Dialog box).

11. Click the Configuration icon and verify that the system is configured as you intended. Note that in systems with three or less benchtop mainframes, physically merged modules are not automatically established as a merged set until you merge them through software. (See Figure 27.)

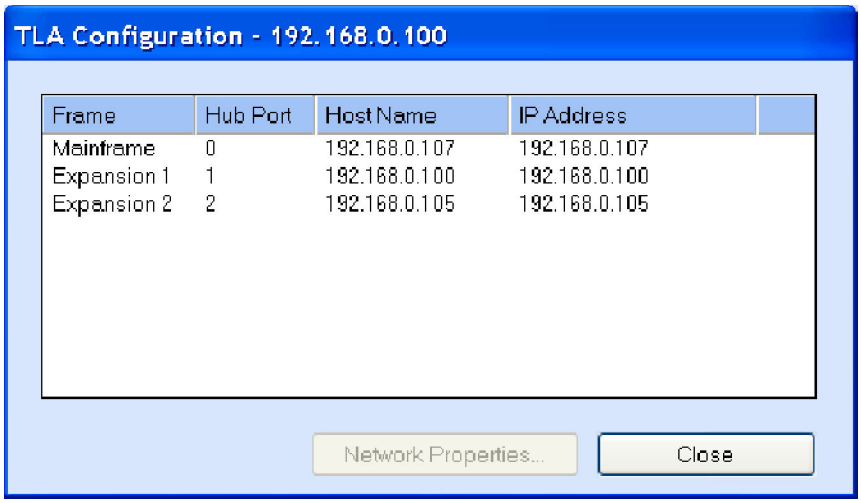


Figure 27: Instrument search results

Installing the TLA Application Software on a PC

The TLA application CD includes the application software that allows you to control the logic analyzer from a remote PC. Install the TLA application software on a PC for the following purposes:

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

Perform the following procedure to install the TLA application software on your PC for remote operation.

1. Insert the TLA Application Software CD in the CD drive.
2. Browse to the TLA Application SW folder on the CD and run the Setup.exe program. Follow the on-screen instructions.

   If you have an older version of the software on the hard disk, the installation program will detect it and ask if you want to remove it. Follow the on-screen instructions to remove the software, answering "Yes" to any prompts. Do not cancel the uninstall program, as this may cause undesirable effects. Restart the PC when prompted.

Load Third-Party Software. After installing the TLA application software on your PC, you can install the additional third-party software, such as SnagIt, (included on the TLA Application Software CD).

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. Browse to the NI-GPIB-USB folder on the CD and run the Setup.exe program.
2. Follow the on-screen instructions and note the items below:
   - When prompted, select the Typical installation option.
   - When the Add GPIB wizard appears, select **Cancel**.
   - 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 and install the software driver automatically.

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.

Controlling the Logic Analyzer Remotely

After you configure the network settings of your system, use this section to connect and control your logic analyzer from the controller or remote PC. There are four ways that you can communicate with the mainframe from the controller.

- TLA Application — online
- TLA Application — offline
- Windows Remote Desktop
- TPI.NET

Start the TLA Server on the Mainframe

The TLA server application must be running on the portable mainframe before it can be operated over the network from another PC. (The benchtop mainframe is factory-set to be controlled remotely, so this step is not required.) If you are setting up a benchtop mainframe, go to *Connect to the Mainframe*.

To start the TLA server on the portable mainframe, do the following:

1. Right-click (TLA server icon, on the right side of the task bar) and select **Start TLA Server**.

   The red circle on the icon disappears, indicating that the server is now running.

2. Configure your PC as described below.

NOTE. *You can configure the portable mainframe to start the TLA server when you turn on the instrument. (See page 42, TLA7012 Server Control.)*

Connect to the Mainframe

To connect to the logic analyzer mainframe from your PC:

1. Start the TLA application by double-clicking the TLA Application icon on the PC. The TLA Connection dialog box appears. (See Figure 28.)

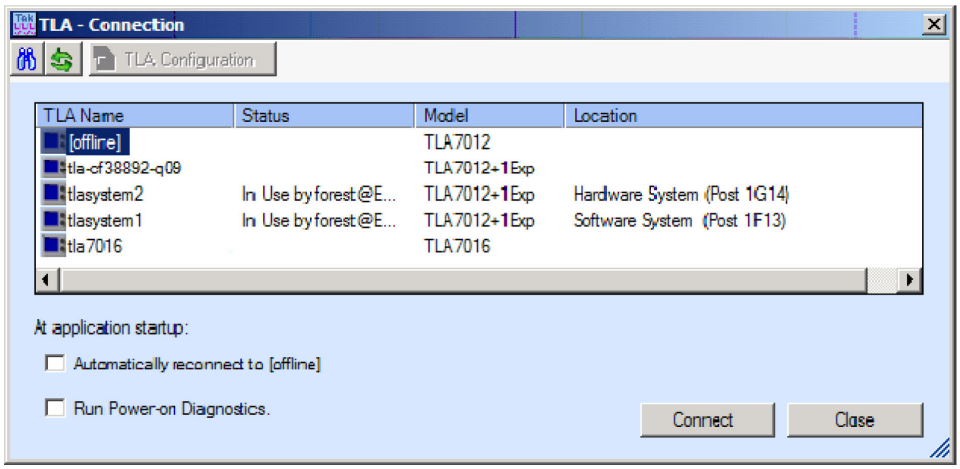


Figure 28: TLA Connection dialog box

2. Select an instrument in the TLA Connection dialog box and then click the **Connect** button. You can connect to any instrument on your local network that is not being used by another user. If no instruments are displayed in the Connection dialog box:

   a. Click (Search icon) to open the TLA Network Search dialog box. (See Figure 29.)

   b. Verify that **Locate TLA systems on local subnet** is checked.

   c. Verify that **Include these host names or IP in search** is checked.

   d. If you know the host name or IP address of the TLA, add it to the list of hosts to search.

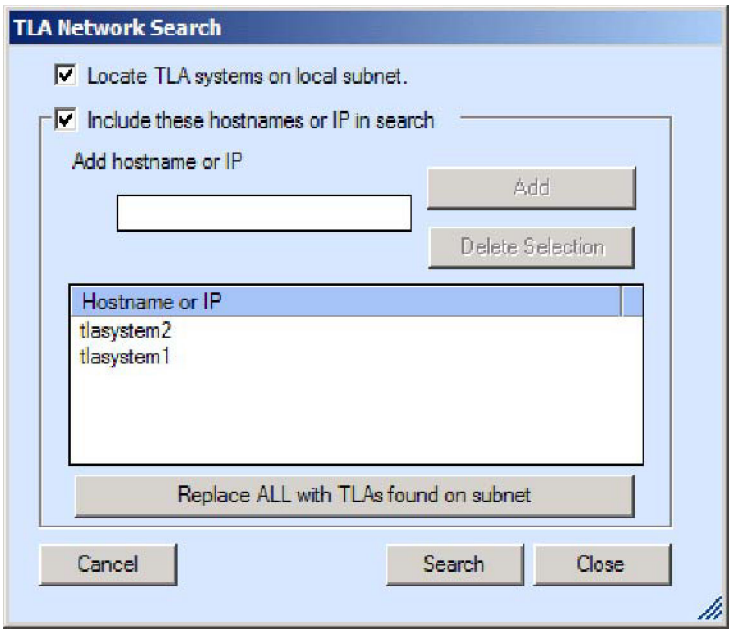


Figure 29: TLA Network Search dialog box

e. Click the **Search** button.

When the search is complete, a list of found TLA systems is displayed, along with the current status of the system: In Use, Server Down, Blank (available), etc.

3. Select the mainframe that you want to connect to and click the **Connect** button. The application opens on the remote instrument and displays on your PC. Note that the IP Address identification is shown in the title bar. This confirms that you have connected to the correct device.

Changing the TLA7016 Factory Network Settings

The TLA7016 is configured for operation on a network that has DHCP and DNS. If you want to change these settings, do the following:

1. Connect to the TLA7016 mainframe with TLA Application software.
2. Open TLA Connection dialog box.
3. Click the TLA Configuration icon. The TLA Configuration dialog box opens. (See Figure 30.)

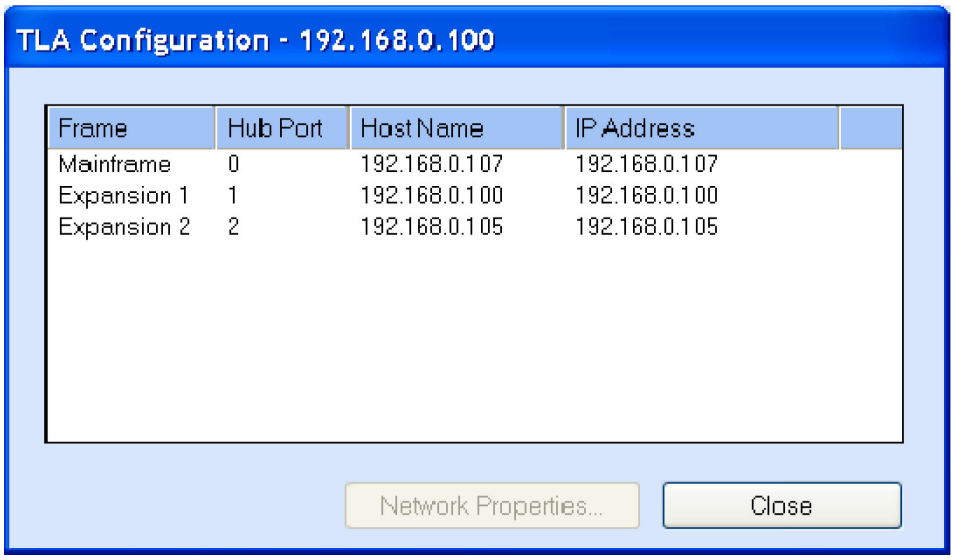


Figure 30: TLA Configuration dialog box

4. Select the mainframe that you want to change and click **Network Properties**. The Network Properties dialog box appears. (See Figure 31.)

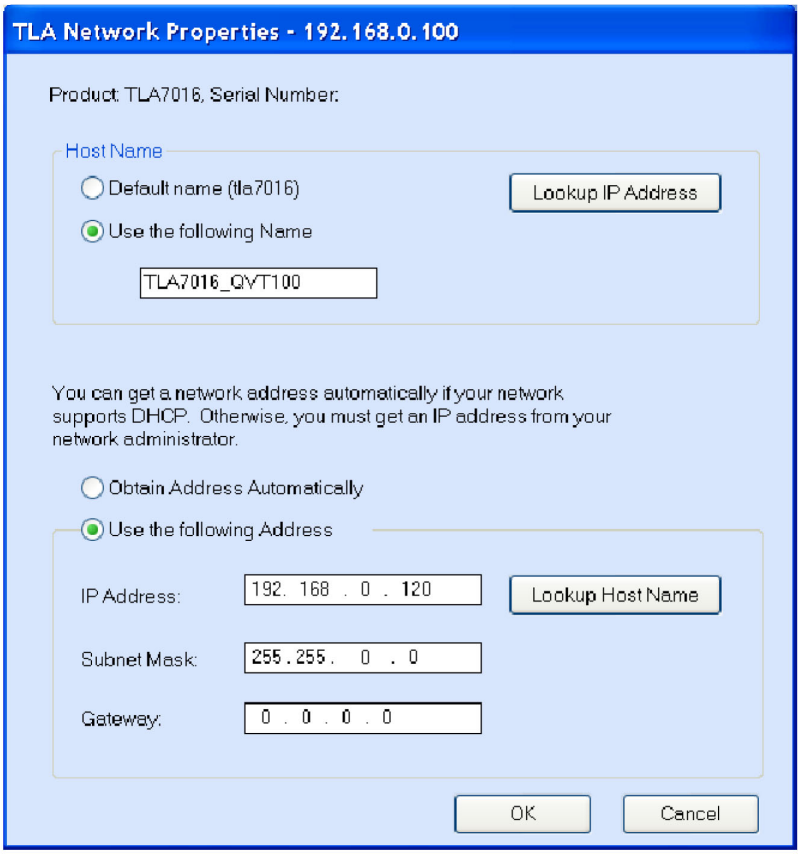


Figure 31: Make changes to the TLA network settings

5. Make the desired changes and click **OK**. For example, to change the mainframe to a static address, click the **Use the following Address** and enter the IP address information in the appropriate fields.

Networking Tips & Troubleshooting

The following tips may help you to make or improve your network connections, and to optimize your system performance.

Connecting to the Mainframe

If you cannot establish a communication link between the controller and the mainframe, do the following:

1. Open a Command Prompt window on the controller and enter **ipconfig**.
2. If the above address is not returned, enter **ipconfig release** and then **ipconfig renew**.
3. Press the **Next** button on the front panel of the TLA7016 until the IP address is displayed. Use this address to ping the mainframe from the controller.

NOTE. *You may need to disable the firewall before performing the ping test.*

4. Enter **ping xxx.xxx.xxx.xxx** (the IP address of the mainframe). The mainframe should reply to the command. (See Figure 32.)

```
C:\>ping 128.181.60.83

Pinging 128.181.60.83 with 32 bytes of data:

Reply from 128.181.60.83: bytes=32 time<1ms TTL=63
Reply from 128.181.60.83: bytes=32 time<1ms TTL=63
Reply from 128.181.60.83: bytes=32 time<1ms TTL=63
Reply from 128.181.60.83: bytes=32 time<1ms TTL=63

Ping statistics for 128.181.60.83:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure 32: Example of the ping command

5. If you get a reply using the ping command, yet cannot see the mainframe in the configuration dialog box, check to see if a firewall is enabled.
6. Use the **tracert** command to display the path of the data packets from the controller PC to the mainframe. (See Figure 33.)



Figure 33: Example of the tracert command

Multi-mainframe Systems

If your system has three or more mainframes on a common network, you may see a delay in the response time. This happens when you open the TLA application or select  (Refresh icon) in the TLA Connection Dialog box. A delay of approximately two seconds occurs for each mainframe if the mainframes that were previously identified on the common network are powered off. To minimize this delay, you can delete the mainframes from the system by doing the following:

1. From the TLA Connection Dialog box, click (Search icon) to open the TLA Search dialog box. (See Figure 34.)

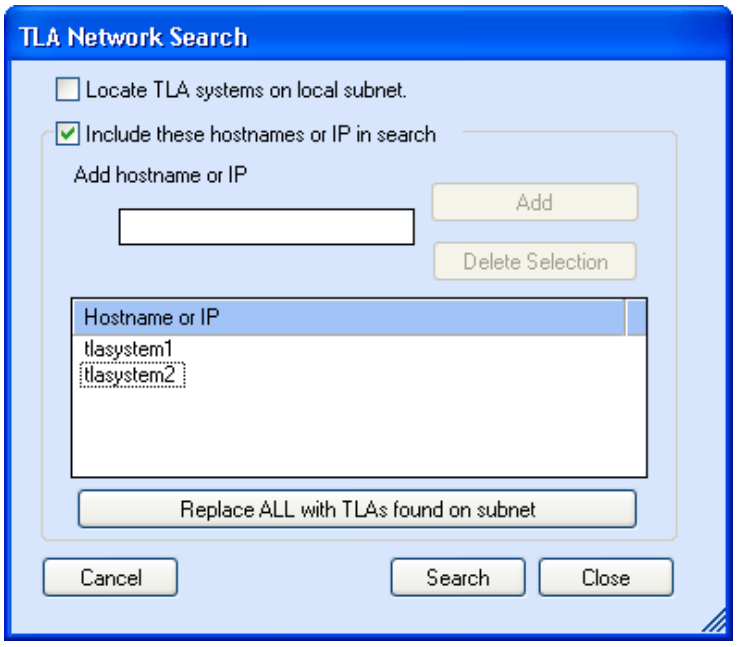


Figure 34: TLA Network Search dialog box

2. Clear the **Locate TLA systems on local subnet** selection.
3. If you know the IP address or the name of the system that you are looking for, do the following:
   a. Enter the host name or IP address of your instrument.
   b. Click **Search**.
4. If you don't know the IP address or the name of the system that you are looking for, do the following:
   a. Click **Replace ALL with TLAs found on subnet** to display a list of all instruments on the subnet.
   b. Scroll through the list and select the instruments that you are not interested in.
   c. Click **Delete Selection** to remove the instruments from the list.
   d. Repeat the above steps for all unneeded instruments until you locate your instrument.
   e. Click **Search** to search for the remaining instruments in the list.

When the search is complete, a list of found, powered-on TLA systems is displayed. (See Figure 35.) The list also shows the current status, model, and location of the instruments.

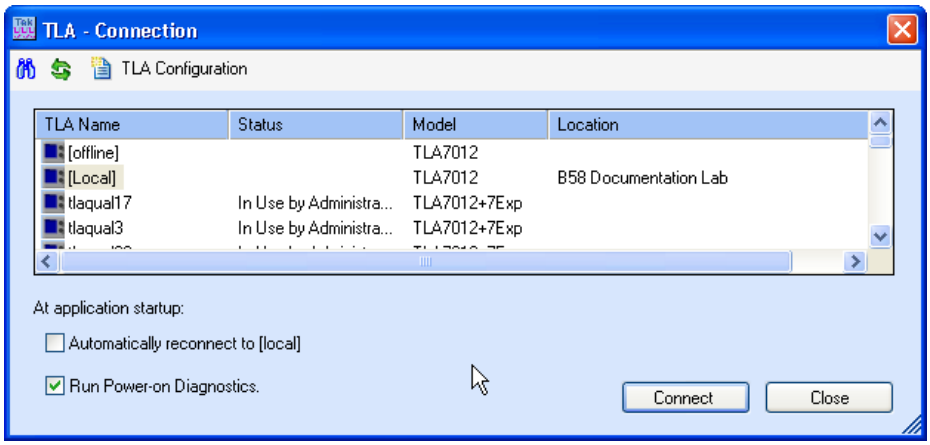


Figure 35: TLA Connection dialog box, search results

NOTE. *The list of instruments is a static list; it is not updated automatically. If you change the status of instruments on the network and experience delays, you may want to repeat the above steps to improve the system performance.*

Adding Location Information for the Connection Dialog Box

To help you identify the location of specific mainframes, you can add location details to each mainframe in the System Properties dialog box:

1. Connect to your logic analyzer.
2. From the System menu, select **System Properties**. The System Properties dialog box appears. (See Figure 36.)

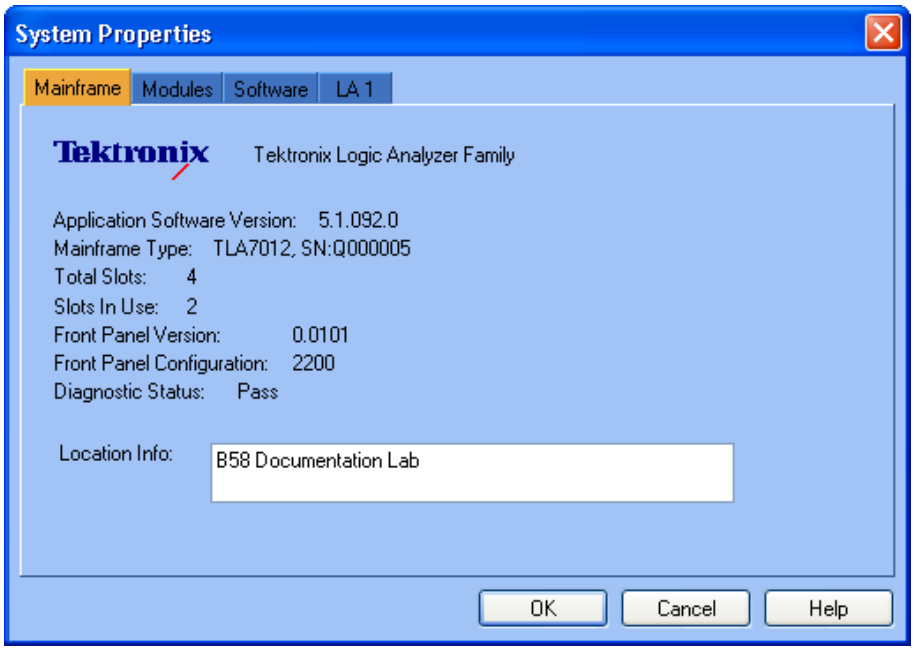


Figure 36: TLA System Properties dialog box

3. Add the location details in the Location Info text field.
4. Close the dialog box.

   The location details of the mainframe are displayed in the Connection dialog box.

TLA7012 Server Control

The portable mainframe has its own server that must be started if you want to see the instrument listed on the network. The server control is turned off by default. To change the server control so that the instrument starts the server when you turn on the instrument, complete the following steps:

1. Right-click the  (TLA Server) icon in the taskbar and select **Server Properties**.
2. Check **Launch TLA Server Control during login**. (See Figure 37.)

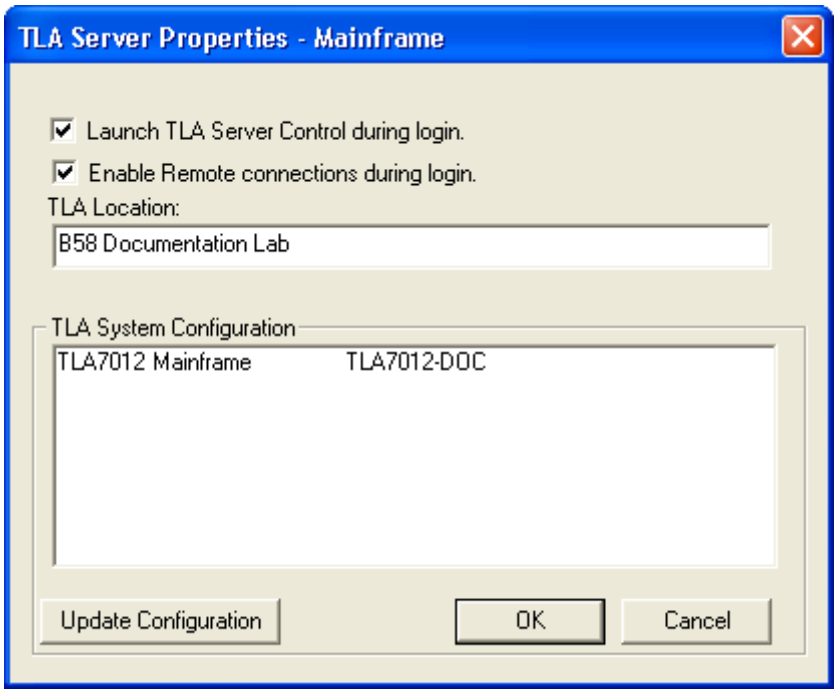


Figure 37: TLA Server Properties dialog box

3. Click **OK**.

If you experience other network connection problems, call the Technical Support group. See *Contacting Tektronix* in the front of this manual.

Installing Modules

TLA700 Modules are fully compatible with the TLA7000 Series mainframes. This section describes how to install TLA700 modules in your TLA7000 mainframe.



CAUTION. *To avoid damaging the instrument, do not install or remove any modules while the instrument is powered on. Always power down the instrument before installing or removing modules.*

Logical Address Switches

Every module in the instrument must have a unique logical address; no two modules can have the same address. Use the two rotary switches on the rear panel of the modules to select the logical address. (See Figure 38 on page 45.)

The factory default switch setting is FF (Dynamic Auto Configuration). With dynamic logical address auto configuration, the instrument automatically sets the address to an unused value.

Normally, you would not want to change the default settings. However, you can set the address to a fixed static logical address value. You can select any static addresses between 01 and FE hexadecimal (1 to 254 decimal). If you set the logical address switches to any other setting than FF, you must verify that no two modules (or devices) share the same address.

NOTE. *Do not set any module to logical address 00. Logical address 00 is reserved exclusively for the controller.*

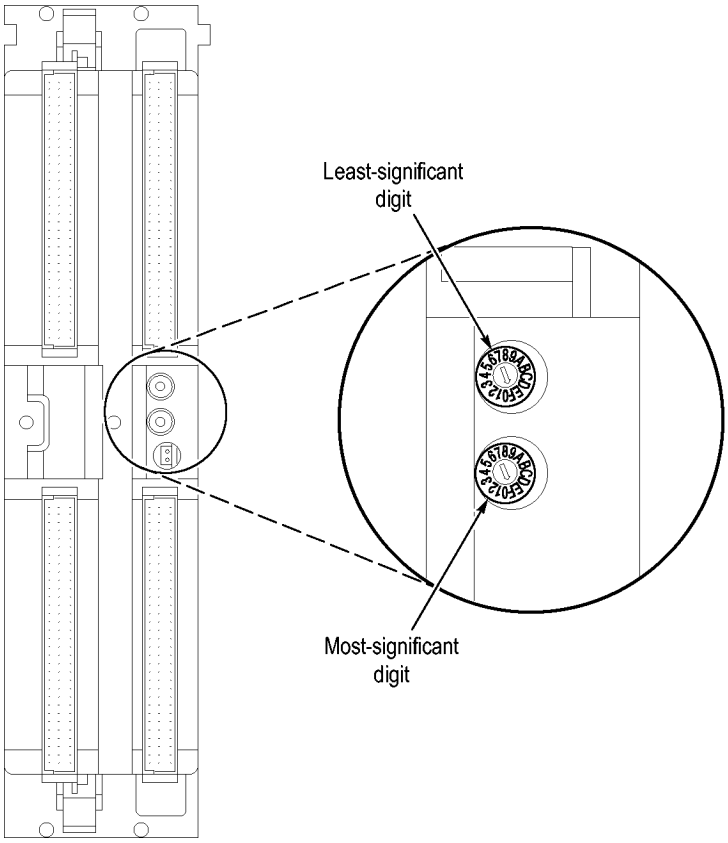


Figure 38: Logical address switches (set to address FF)

You can merge modules together to create wider modules. If your application requires you to merge modules, do so before installing the modules in the mainframe. (See page 57, *Merging Modules*.)

Installing Modules in the Portable Mainframe

You can install any of the modules in any slot of the portable mainframe. If you are not merging the modules, and for air flow considerations, follow these guidelines:

- Install a single module in slots 3-4. Place a double-width slot cover over slots 1-2.
- When installing two logic analyzer modules, install the module with the higher channel count in slots 1-2. Install the module with the lower channel count in slots 3-4.
- When installing two logic analyzer modules with different amounts of memory, install the module with the larger memory in slots 3-4. Install the module with the lower memory in slots 1-2.

- Install TLA7Lx/Mx/Nx/Px/Qx modules or TLA7Dx/Ex modules before you install TLA7Axx or TLA7Bxx modules.
- When installing a logic analyzer module with an oscilloscope module, install the oscilloscope module in slots 1-2, and the logic analyzer module in slots 3-4.

Use a screwdriver to tighten the retaining screws to 2.5 in-lbs after seating the modules in place. (See Figure 39 on page 47.)

Installing Modules in the Benchtop Mainframe

You can install any of the modules in any slot of the benchtop mainframe. If you intend to merge the modules, disregard the following suggestions and refer to the merging modules rules. (See page 57, *Merging Modules*.) If you are not merging the modules, and for airflow considerations, follow these guidelines:

- Install a single module in slots 1-2. Place a double-width slot cover over slots 3-4, 5-6, 7-8, 9-10, and 11-12.
- When installing two or more logic analyzer modules, install the module with the highest channel count in slots 1-2. Install the module with the lower channel count in slots 3-4. Place double-width slot covers over slots 5-6, 7-8, 9-10, and 11-12.
- When installing two or more logic analyzer modules with different amounts of memory, install the module with the largest memory in slots 1-2. Install the module with the lower memory in slots 3-4. Place double-width slot covers over slots 5-6, 7-8, 9-10, and 11-12.
- Install TLA7Lx/Mx/Nx/Px/Qx modules or TLA7Dx/Ex modules, before you install TLA7Axx or TLA7Bxx modules.
- When installing a logic analyzer module with an oscilloscope module, install the logic analyzer module in slots 1-2 and the oscilloscope module in slots 3-4. Place double-width slot covers over slots 5-6, 7-8, 9-10, and 11-12.
- In systems with three or less benchtop mainframes, physically merged modules are not automatically established as a merged set until you merge them through software.

Use a screwdriver to tighten the retaining screws to 2.5 in-lbs after seating the modules in place. (See Figure 39 on page 47.)

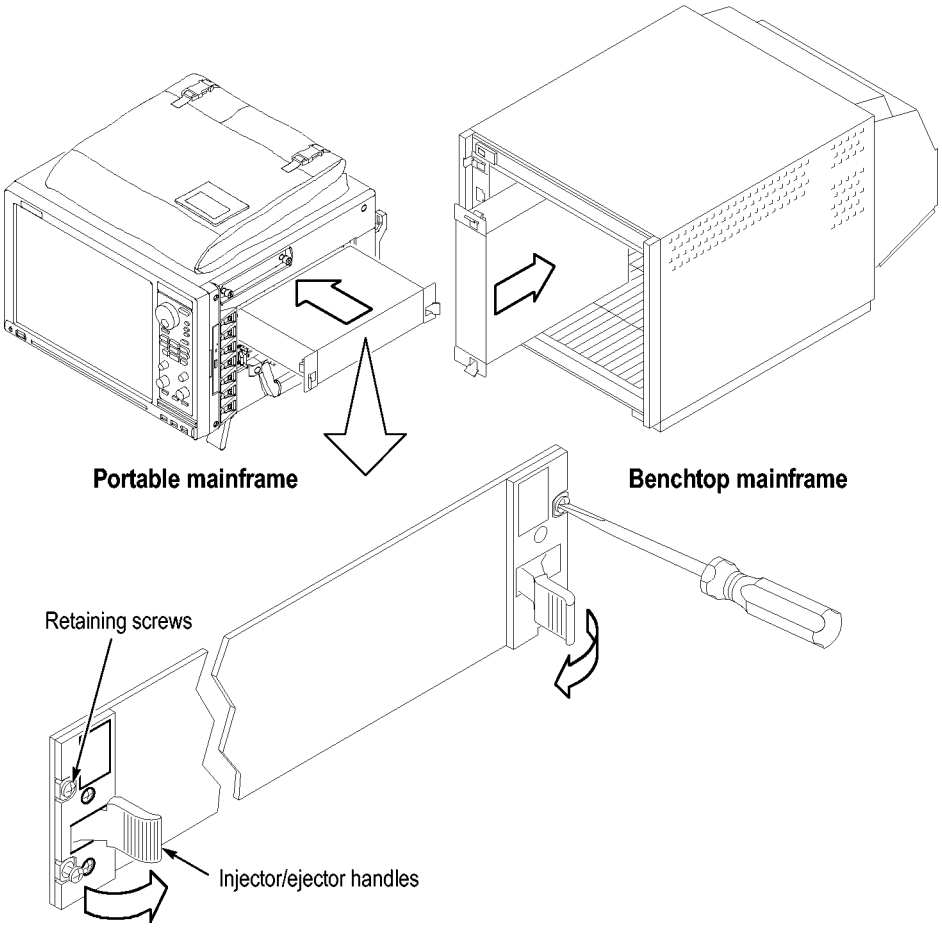


Figure 39: Installing modules

Covering Empty Slots

If you have any unused (empty) slots in your mainframe, install blank-slot panel covers to meet EMC and cooling specifications. Install a blank-slot panel cover for the empty slot in the Portable Mainframe. (See Figure 40.) Install the blank slot-panels on the benchtop mainframe. (See Figure 41.) Install the blank-slot panel covers before any modules. Use only Tektronix TLA covers; otherwise the mainframe may not meet EMC and cooling requirements.

Make sure that the EMI shielding is in contact with the adjacent panel or module cover, and that the airflow shutter activation arms protrude through the holes in the blank-slot panel.

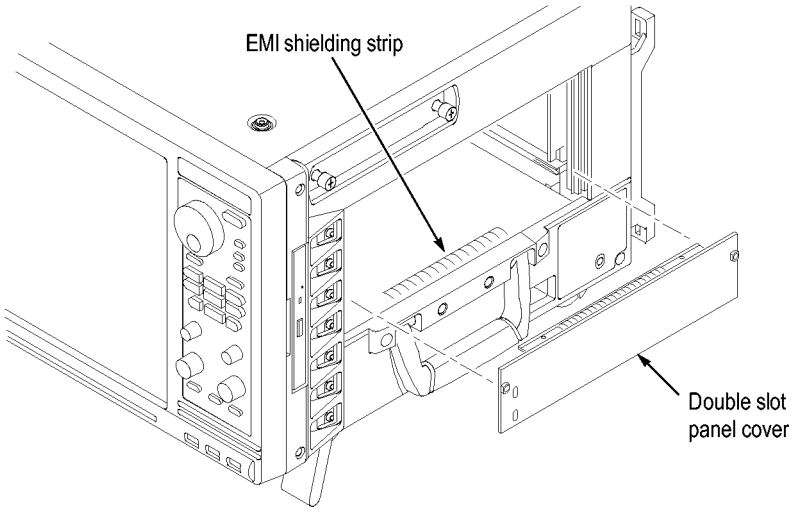


Figure 40: Installing panel covers on the portable mainframe

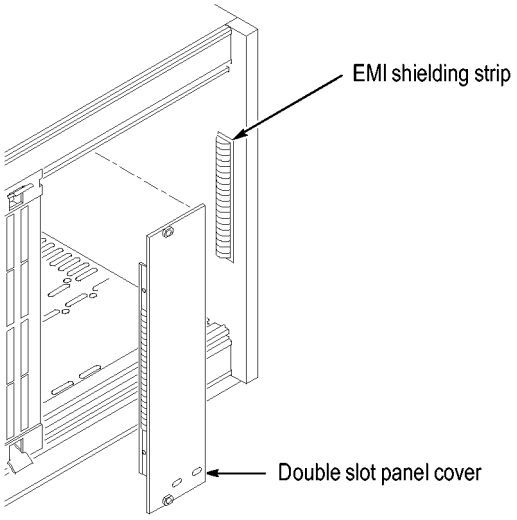


Figure 41: Installing panel covers on the benchtop mainframe

Connecting Accessories

After installing the mainframes and modules, you can connect the accessories such as external monitors, keyboard, and printer.

Connecting Accessories to the TLA7000 Series

Connect the accessories to the Portable Mainframe. (See Figure 42.) If you have a benchtop mainframe, connect the accessories to external PC; connect other cables and connectors to the benchtop mainframe. (See Figure 43 on page 50.)

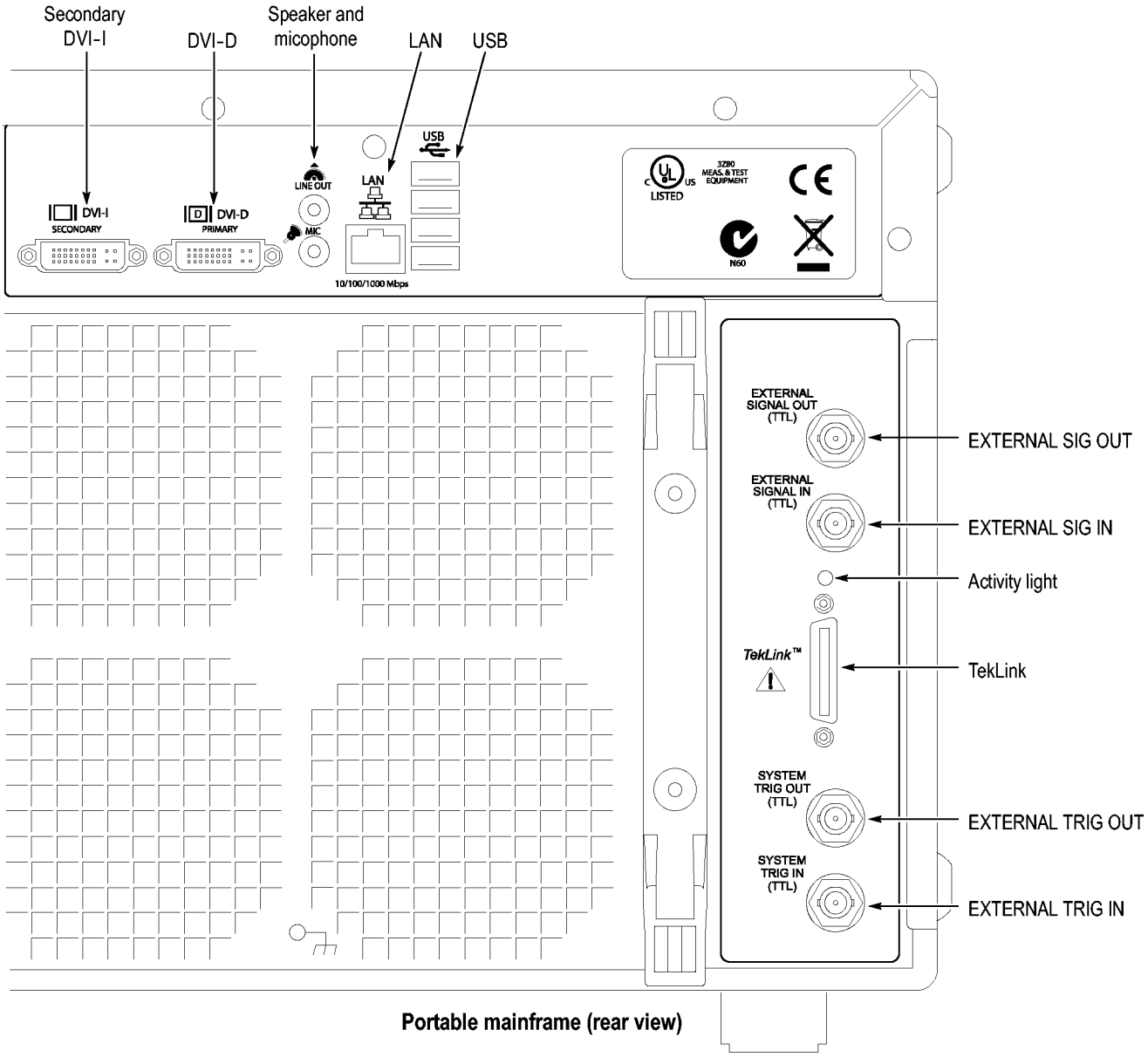


Figure 42: TLA7012 accessories connections

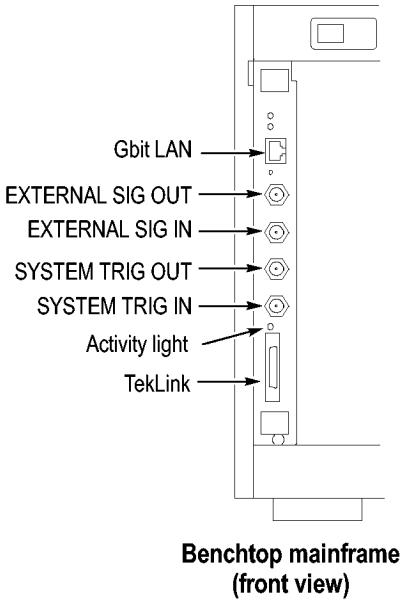


Figure 43: TLA7016 accessories connections

Additional Accessory Connection Information

Connect additional accessories as needed. (See Table 8.)

Table 8: Additional accessory connection information

Item	Description
Monitor	There are two display ports on the TLA7012: Primary (DVI-D, digital output only), and Secondary (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. To change the display settings, right-click the mouse on the desktop, select Properties, and go to the Settings tab. Select the settings for your monitor. Note that some of the display settings may not function until you connect an external monitor. Use the VGA-to-DVI display adapter to connect a VGA monitor to the Secondary DVI-D output. Part numbers for accessories and options are listed at the end of this manual. (See page 99, *Accessories and Options*.) If you use a nonstandard monitor, you may need to change the Windows display settings to achieve the proper resolution.
LAN	Connect the mainframes to your network through the Gbit LAN connectors. You can remotely control the mainframes through a LAN switch using your PC (loaded with the TLA application software), or the dedicated PC controller (TLA7PC1).
Printer	The instruments send printer information to the USB ports. Use any of the four USB ports for your printer.

Connecting Probes

After you have connected all the accessories, you can connect the probes to the instrument. Refer to the appropriate section for your instrument.

For additional information on the individual probes, refer to the instructions that accompanied your probes.

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.*

Connecting Probes to the Logic Analyzer Module

Connect the logic analyzer probes to the logic analyzer modules.

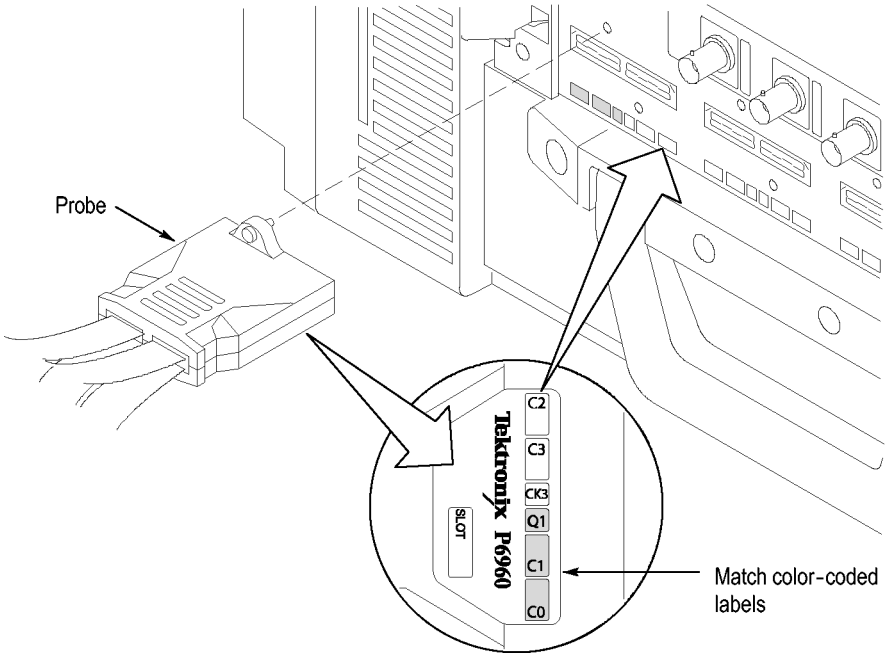


Figure 44: Connecting the P69xx logic analyzer probes to the TLA7Axx or TLA7Bxx or logic analyzer module

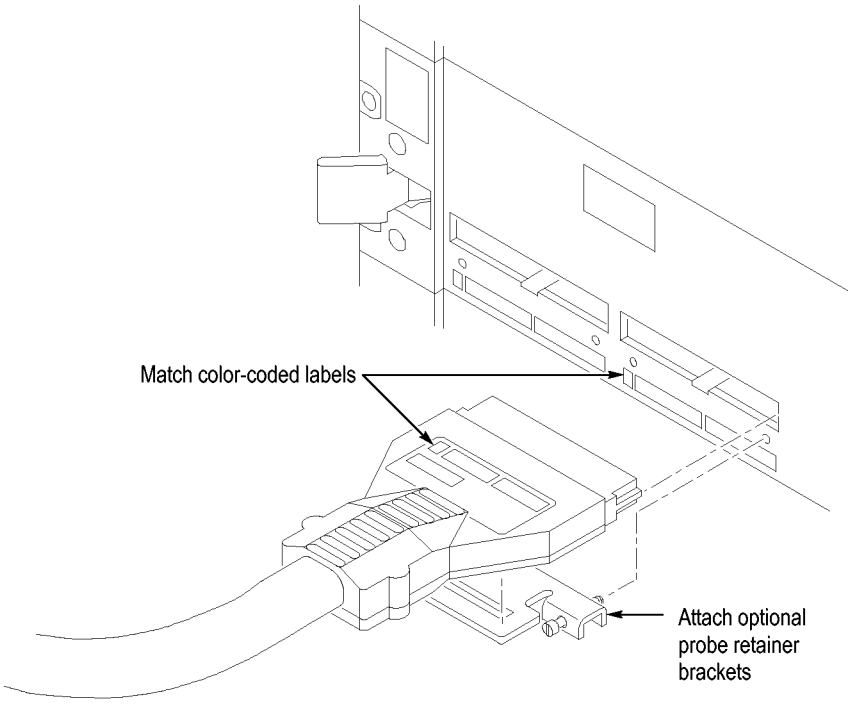


Figure 45: Connecting the P64xx logic analyzer probes to the TLA7Lx/Mx/Nx/Px/Qx logic analyzer modules

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 your instrument.
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 mainframe. (See Figure 46.)
4. Wait for the mainframe to complete the power-on self tests.

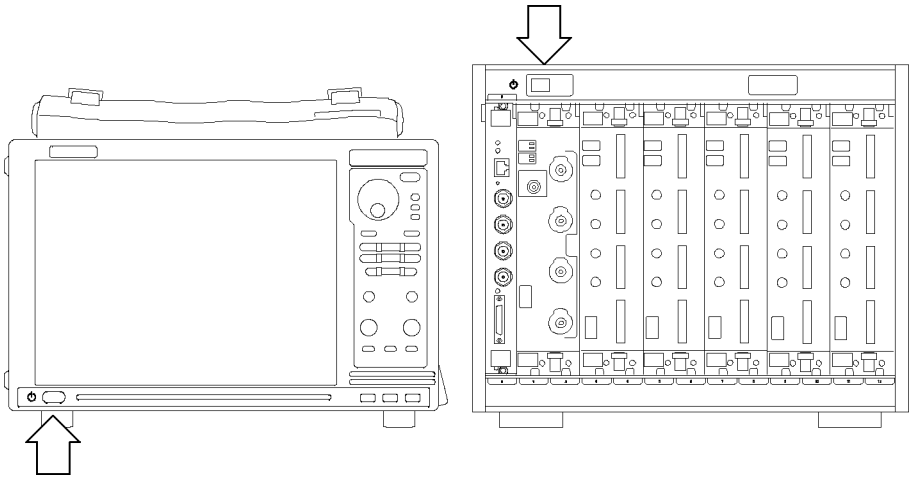


Figure 46: TLA7000 On/Standby switch locations

Turning on Expansion Mainframes

The benchtop mainframes that are connected as expansion mainframes are automatically powered on when the first benchtop or portable mainframe is powered on. If everything is properly connected and operational, you will see the expansion mainframe and the installed modules in the System window.

NOTE. *You must have a module installed in an expansion mainframe before the expansion mainframe appears in the System window.*

Turning off the Mainframes

To power off the mainframes, press the On/Standby switch on the mainframe. Both the portable and benchtop mainframes have a built-in soft power-off function that safely powers off the mainframe when you press the On/Standby switch. The expansion mainframes automatically power off when you turn off the benchtop or portable mainframe.

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.

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 85, 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 7 Essentials > Data > 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 mainframe and modules 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 modules.
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 modules depends on the number of acquisition channels. Modules 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.

Checking the TLA7000 Mainframe (Optional)

To check the mainframe diagnostics not covered by the TLA Application software, run the TLA7000 Mainframe Diagnostics located under the Windows Start menu (Start/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 back up 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. Open the access door (TLA7PC1 only).
3. Pull out the lever (TLA7PC1), or unscrew the locking thumbscrews (TLA7012). (See Figure 47.)
4. Pull on the replaceable hard disk drive cartridge to remove it from the chassis.

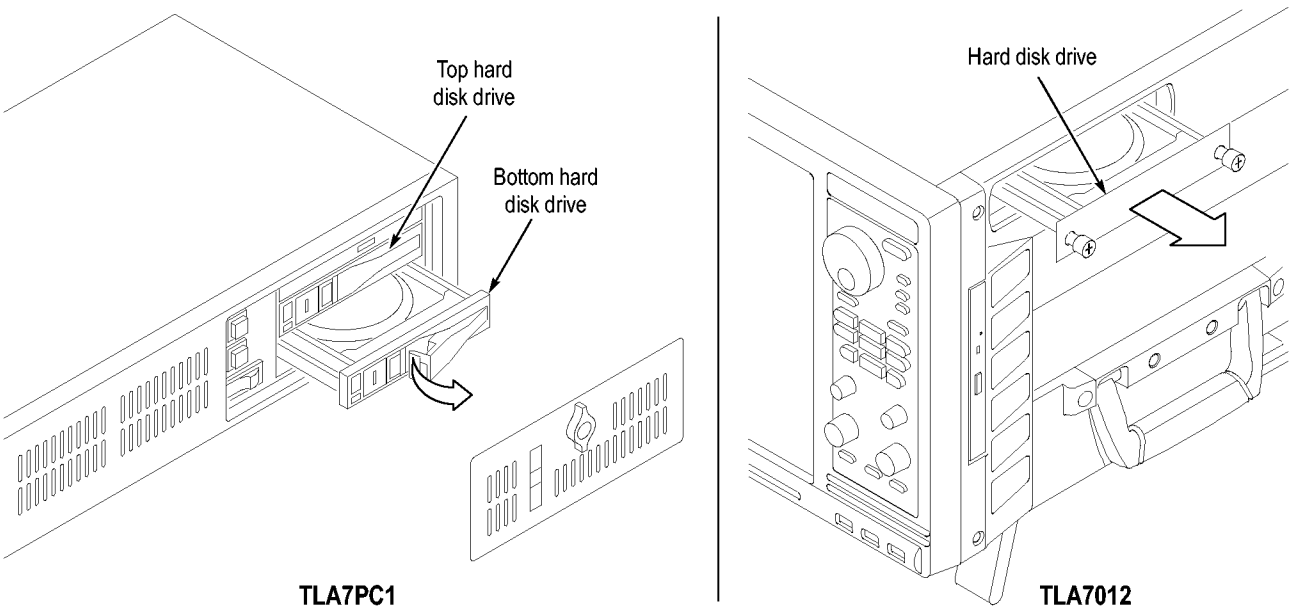


Figure 47: Accessing the replaceable hard disk drives

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.

Merging Modules

A merged logic analyzer module set consists of a master logic analyzer module and up to four slave logic analyzer modules that are physically connected together by a merge cable and are merged in software. Review the guidelines under *Logic Analyzer Module Merging Rules*, and then follow the steps to physically connect the modules together before installing the modules in the mainframe.

Logic Analyzer Merging Rules

The following logic analyzer module merging rules must be followed:

- The TLA7BB2 Logic Analyzer Module is the only 68-channel module that can be merged. For other modules, 102 or 136 channel modules can be merged.
- Logic analyzer modules must be in adjacent slots and physically connected.
- Logic analyzer modules cannot be merged across mainframes (between the benchtop mainframe and one or more expansion mainframes).
- Merging logic analyzer modules with unequal memory depths will result in the merged modules assuming the depth of the shallowest module.
- When merging logic analyzer modules of unequal channel widths, use the logic analyzer module with the highest number of channels as the master module. If there is a second slave module, the first slave must have at least as many channels as the second slave module. Slave 3 cannot have more channels than the master, slave 1 or slave 2. Slave 4 cannot have more channels than the master, slave 1, slave 2, or slave 3.
- The logic analyzer modules must have the same firmware version.
- The maximum merged combinations are two TLA7Lx and TLA7Mx modules; three TLA7Nx, TLA7Px, or TLA7Qx modules; five TLA7Axx modules, five TLA7Bxx modules, or five TLA7NAx modules.
- TLA7Nx, TLA7Px, and TLA7Qx modules cannot be merged with TLA7Lx or TLA7Mx modules.
- TLA7Bxx modules cannot be merged with TLA7Nx, TLA7Px, TLA7Qx, TLA7Lx, TLA7Mx, or TLA7Axx modules.
- TLA7Axx modules cannot be merged with TLA7Nx, TLA7Px, TLA7Qx, TLA7Lx, TLA7Mx, or TLA7Bxx modules.
- To merge a logic analyzer module to an established merged set, the established merged set must first be unmerged through software. Unmerged modules are the only potential candidates to add to a merged configuration.
- In systems with three or fewer benchtop mainframes, physically merged modules are not automatically established as a merged set until you merge them through software.

Merge Procedure

Complete the following steps to create a merged module from two or more individual modules. You must complete these steps prior to installing the modules in a mainframe.

CAUTION. *To avoid damaging the mainframe or any modules, always power off the mainframe before removing or installing modules.*

1. Determine which modules will reside in the highest-numbered slots in a single mainframe.
2. Place the merge connector of these modules in the extended position. The module in the lowest-numbered slot must have the merge connector in the recessed position.

The following figure shows an example for determining the location of the master module with the merged module set. (See Figure 48.) Even though the figure shows a five module set, you can still use it to position the master module with respect to the slave module. If you have a two module set, the master module is located in the lower-numbered slot, and the slave module is in the higher-numbered slot.

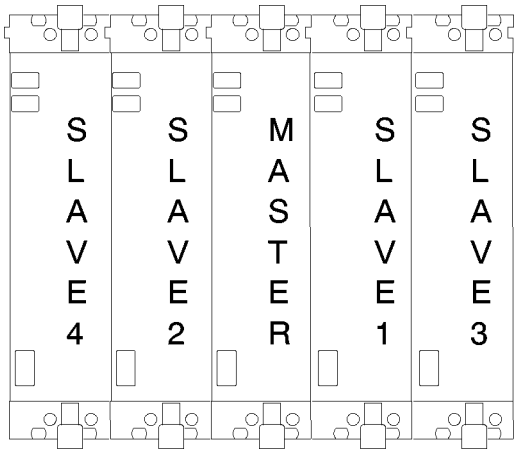


Figure 48: Location of modules in a merged system

Merging TLA7Axx, TLA7Bxx, or TLA7NAx Modules

Complete the following steps to create a merged module from two to five individual TLA7Axx or TLA7NAx modules.

1. Place the module on the right side.
2. Using a Torx T-10 screwdriver, remove the two screws holding the merge connector to the module. (See Figure 49.)

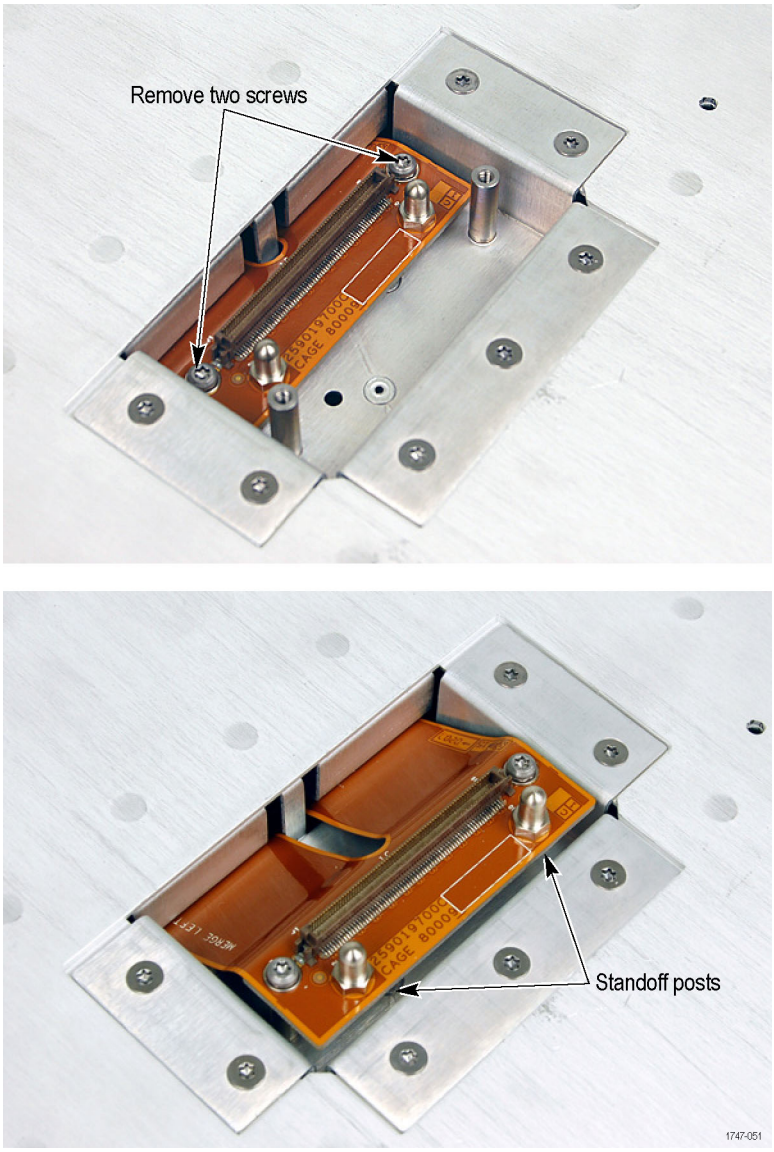


Figure 49: Removing the merger connector assembly from the module

3. Gently lift the merge connector out of the slot and place it in the extended position such that the screw holes line up over the two standoff posts.

4. Install the two screws into the standoff posts. Tighten the screws to 4-in. lbs.
5. Repeat steps 1 through 4 for the remaining modules.

NOTE. *When installing the merged modules into a mainframe, you may need the help of another person.*

6. Place the first pair of modules to be merged side-by-side such that the merge connector assemblies line up between the two modules. (See Figure 50.)
7. Push the two modules together until the connectors are seated in place.
8. Add any additional modules to the set.



Figure 50: Connecting modules in a merged set

CAUTION. *Ensure that the mainframe is powered-off before installing or removing the modules. Failure to do so can damage the mainframe or the modules.*

9. Place the merged module set into the mainframe.
10. Align the tops and bottoms of the modules with the slots in the mainframe. (See Figure 51 on page 61.) You may need the help of another person if your merged module set contains more than two modules.

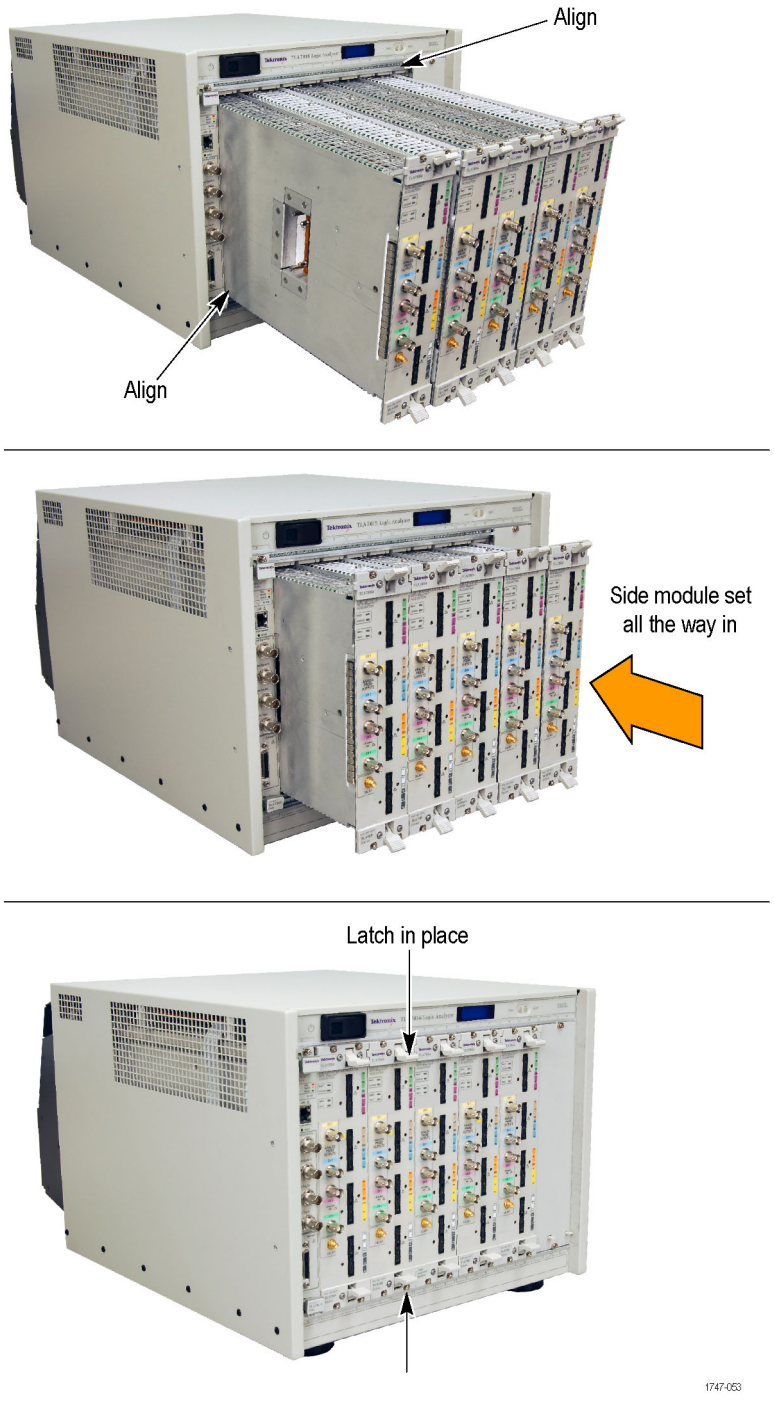


Figure 51: Installing the merged module set in the mainframe

11. Slide the modules all the way into the mainframe until they rest against the rear panel connectors.
12. Use the injector handles to firmly seat the modules in place one at a time. The merge cable assembly should allow enough movement between two side-by-side modules to allow you to seat or unseat them individually.
13. Tighten the four retaining screws on each module to 2.5-in. lbs.
14. After installing all of the modules, power on the mainframe and complete the merge process listed under the Merged Modules tab in the System Configuration dialog box.

Unmerging TLA7Axx, TLA7Axx, or TLA7NAx Modules

Although you can unmerge modules from a merged set from within the TLA application without physically separating modules, there will be times when you have to physically unmerge the modules. The following procedures provide the steps for unmerging the modules.



CAUTION. *Ensure that the mainframe is powered-off before installing or removing the modules. Failure to do so can damage the mainframe or the modules.*

1. Power off the mainframe before removing the modules from the mainframe.
2. Loosen the four retaining screws on each module.
3. Use the ejector handles to disengage each module in the merged module set from the mainframe.
4. With the assistance of another person, slide all of the merged modules out of the mainframe and place them on a static-free working surface.
5. Gently separate the modules one at a time from the merged module set.
6. Lay the modules on their right sides.
7. Remove the two Torx T-10 screws that hold the merge cable assembly to the module.
8. Place the merge cable assembly into the recessed position.
9. Install the two Torx T-10 screws onto the assembly and tighten the screws to 4 in-lbs.
10. Repeat steps 7 through 9 for the other modules.

You can now reinstall the modules in the mainframe as needed.

Merging TLA7Lx/Mx/Nx/Px/Qx Modules

Use the following procedures to physically merge the logic analyzer modules together.



CAUTION. *Ensure that the mainframe is powered-off before installing or removing the modules. Failure to do so can damage the mainframe or the modules.*

Two-Way Logic Analyzer Merge Procedure

Use the following procedure to merge two logic analyzer modules. You can also merge three modules. (See page 67, *Three-Way Merge Procedure*.)



CAUTION. *Static discharge can damage any semiconductor component in the logic analyzer module.*

Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while performing the merge procedure.

Perform the following steps to merge two modules:

1. If you have not already done so, power off the mainframe and remove the modules that you want to merge together.
2. Determine which module will be designated as the slave module and which module will be the master module.
3. Lay the slave module on the right side (as viewed from the front panel).
4. Remove the screws from the module cover with a screwdriver with a T-10 Torx tip. (See Figure 52.)
5. Remove the screws near the front of the module.
6. Remove the screws holding the merge cable bracket to the cover.
7. Remove the top part of the cable bracket and set it aside.
8. Remove the module cover and locate the merge cable.

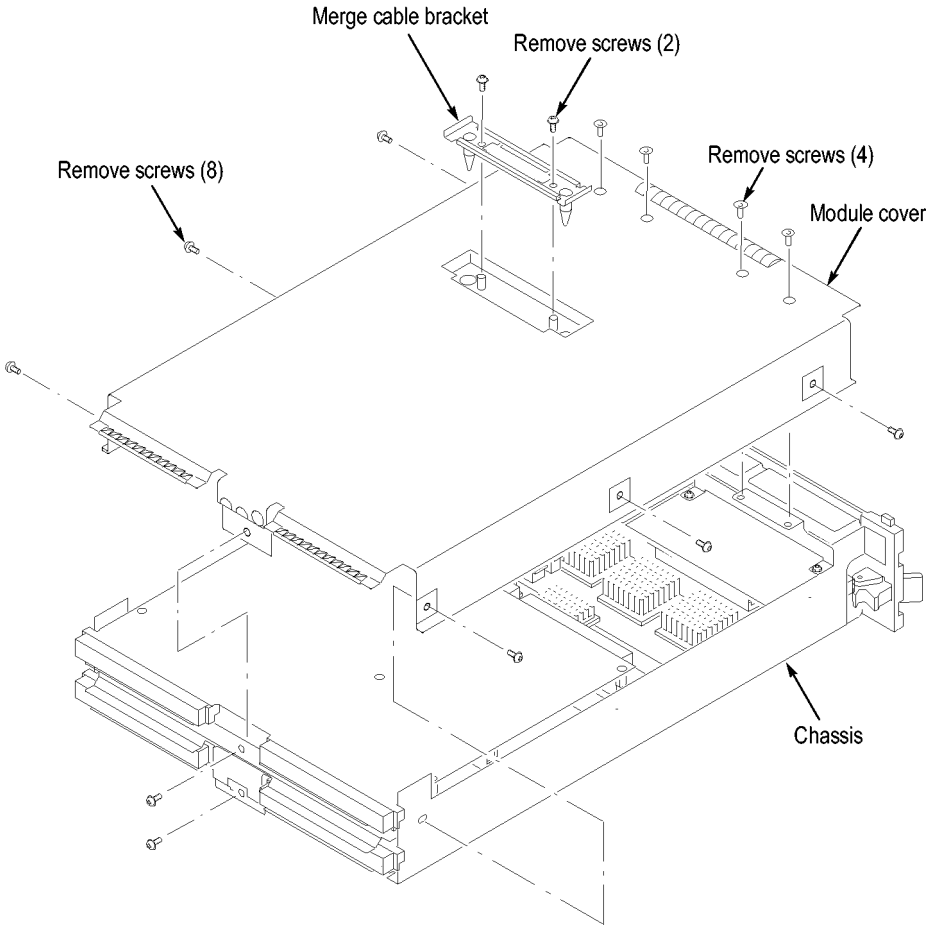


Figure 52: Removing the cover

9. Replace the cover while feeding the merge cable through the hole in the cover. (See Figure 53.)

NOTE. *Do not twist the cable while feeding it through the hole. If the cable is twisted, the modules will not merge correctly.*

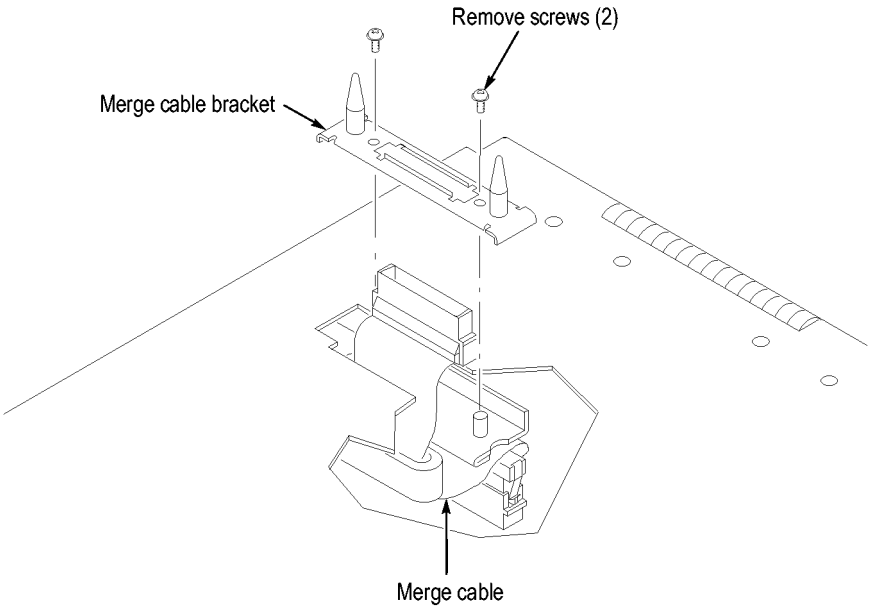


Figure 53: Feeding the merge cable through the cover

10. Turn the merge cable bracket over so that the guide pins point up.

11. Place the bracket over the merge cable connector.

12. Install the two screws that hold the merge cable bracket in place.

CAUTION. *To prevent damage to the module during the installation process, reinstall the cover exactly as described in steps 14 through 19.*

If the cover is not properly seated, the module can be damaged when you install it in the mainframe and it may not meet EMC requirements.

13. Replace the logic analyzer module cover.

14. Push forward on the cover so the tab on the front edge of the cover inserts into the rear of the front subpanel. Make sure that the cover is fully seated (no gaps) against the front and rear chassis flanges.

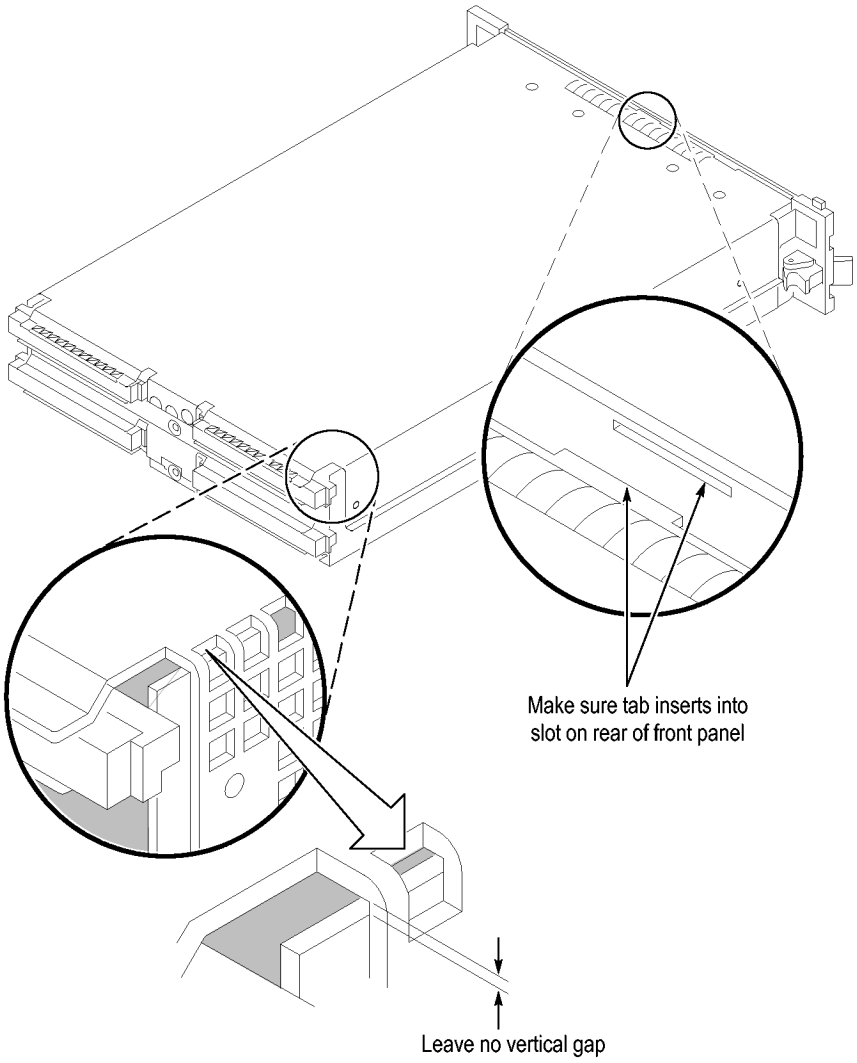


Figure 54: Seating the cover on the chassis

15. While holding the cover in place, install the screws at the front of the module (two on the top and two on the bottom) to secure the cover to the chassis.

16. Install the screws near the front of the module.

17. Slide the rear panel on the chassis and install the rear panel screws.

18. Install the top and bottom rear screws.

19. Check and tighten all screws.

20. Place the master module adjacent to the slave module so that the two guide pins from the slave module line up with the guide pin holes in the master module.

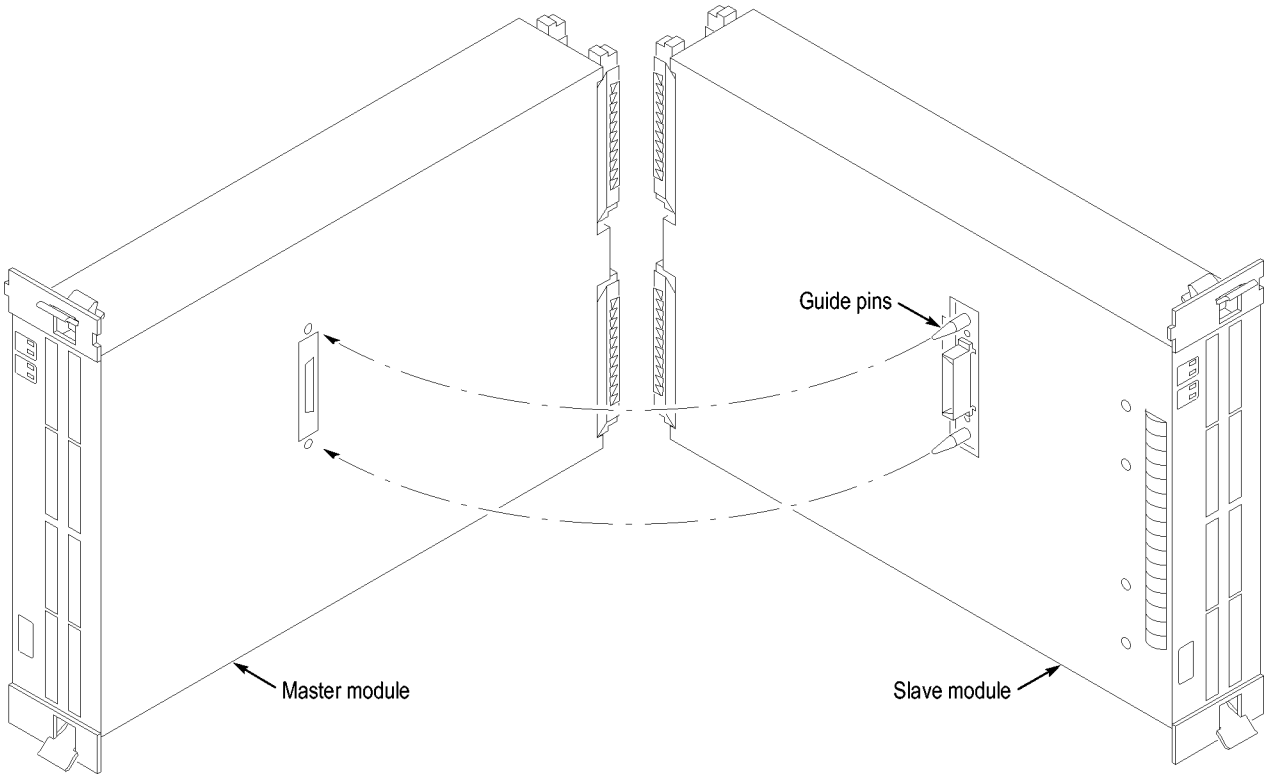


Figure 55: Lining up the two modules

21. Gently push the two modules together so that the merge connector of the slave module merges with the connector on the master module.
22. Slide the modules all the way into the mainframe until they rest against the rear panel connectors.
23. Use the injector handles to firmly seat the modules in place one at a time.
24. Tighten the four retaining screws on each module to 2.5-in. lbs.

Three-Way Merge Procedure

The following procedure is used for merging three logic analyzer modules together to form a merged set with a higher logic analyzer channel count.

In a three-way merge (TLA7Nx, TLA7Px, and TLA7Qx logic analyzer modules only), the master module is in the center. Slave module 1 is to the right of the master module; slave module 2 is to the left of the master module.

CAUTION. *Static discharge can damage any semiconductor component in the logic analyzer module.*

Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while performing the merge procedure.

Merge the first Slave module to the Master module. (See page 63, *Two-Way Logic Analyzer Merge Procedure*.)

Perform the following steps to merge the second slave module:

1. Lay the two merged module set on its right side (as viewed from the front panel).
2. Repeat the procedure to merge the second slave module.

Storing the Merge Cable

Perform the following steps to store the logic analyzer merge cable inside the logic analyzer module:

1. Use the screwdriver with the T-10 Torx tip to remove the screws that hold the merge cable bracket in place.
2. Remove the merge cable bracket.
3. Remove the screws from the side cover and rear cover.
4. Push the merge cable through the side cover and remove the cover.
5. Position the merge cable. (See Figure 56.)

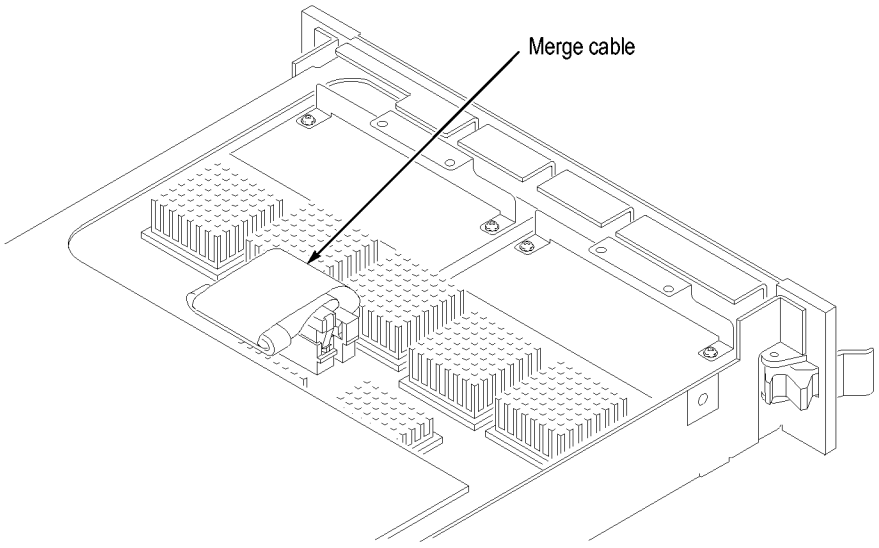


Figure 56: Positioning the merge cable before installing the cover

6. Push forward on the cover so that you insert the tab on the front edge of the cover into the rear of the front subpanel. Make sure that the cover is fully seated and there are no gaps between the front and rear chassis flanges. (See Figure 54 on page 66.)
7. While holding the cover in place, install the screws nearest the front of the module to secure the cover to the chassis.
8. Install the screws near the front of the module.

9. Slide the rear panel on the chassis and install the rear panel screws.
10. Install the top and bottom rear screws.
11. Install the merge cable bracket so that the guide pins point into the module.
12. Install and tighten the screws on the merge cable bracket.
13. Verify that you have installed and tightened all screws on the module.

TLA7Bxx Deskew Procedures

Tektronix recommends that you perform the deskew procedures to provide enhanced performance for high-speed applications using the TLA7Bxx Logic Analyzer modules and probes. The procedures use the TLACAL software with a deskew fixture to adjust the timing of probes to the logic analyzer module.

NOTE. *The deskew fixtures are available as optional accessories. Make sure that you use the correct deskew fixture to match your logic analyzer probes.* *(See page 99, Accessories and Options.)*

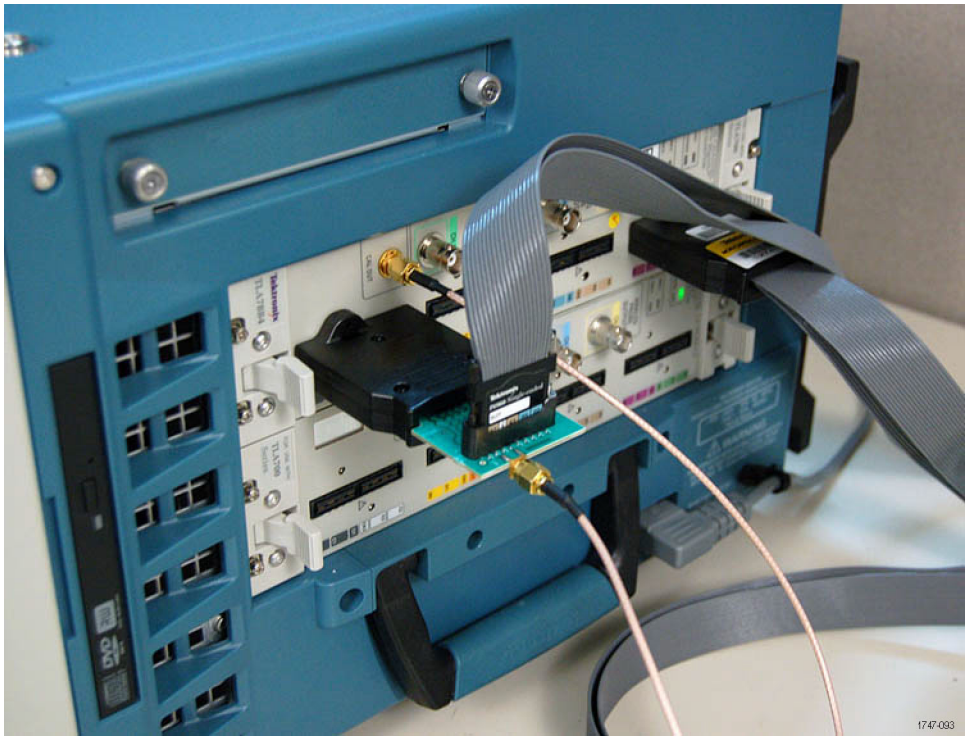


Figure 57: TLA7012 with TLA7Bxx module and deskew fixture

There are no manual adjustments. The TLACAL software adjusts the instrument hardware using the deskew fixture in response to prompts on the screen. Upon successful completion of each test, the software automatically loads the new calibration data.

Prerequisites

Perform these procedures after meeting the following requirements:

- The logic analyzer requires a 30-minute warm-up time in a +20 C to +30 C environment before performing these procedures.
- The TLACAL software must be installed on the instrument.
- The logic analyzer application must not be running.
- The logic analyzer probes must be securely connected (screwed down) to the specific probe connector on the logic analyzer module as required by your application. All adjustments are made with the logic analyzer probes connected to specific probe connectors.



CAUTION. *Moving the probes to a different slot connector after performing the deskew procedures invalidates the adjustments. If you have to disconnect a probe after performing the deskew procedure, make sure that you reconnect the probe to the same probe connector.*

Installing the TLACAL Software

The TLACAL software must be installed on the instrument before you can use it. You must close the TLA application before starting the TLACAL software; you cannot run both applications at the same time.

NOTE. *If your instrument already has the TLACAL software installed, verify that the software version is the same as the version that came with the TLA application. If necessary, refer to the TLA Release Notes for software version information. If the software versions do not match, you must remove the old TLACAL software and install the correct version.*

Click the About TLACAL button in the TLACAL startup window for firmware version information.

Complete the following steps to install the TLACAL software:

1. Close all open applications.
2. Insert Disc 1 of the Tektronix Logic Analyzer Family application software CD in the disc drive.
3. On the desktop select Start → Run....
4. In the Run dialog box, enter the following path or use the Browse button to navigate to the path:

   `D:\TLACAL\Setup.exe`

5. Click OK to begin the installation program and then follow the on-screen instructions.
6. Remove the disc when the installation is complete.

After you install the software a TLACAL icon appears on your desktop.

To remove the TLACAL software from the instrument, use the Add/Remove Program utility from the Windows Control Panel.

Deskew Procedure

Perform the Deskew procedures using the specific set of probes attached in the same configuration that will be used with your application to keep the skew to a minimum. The deskew measurements are only valid for specific probe and module configurations. The following deskew procedures are available:

- Deskew. This procedures measures relative delays from a module and probe combination. It compensates for variances due to differences between cable lengths and other factors that cause delay differences between channels across the module.
- Merged Deskew. This procedure measures the relative delay between modules in a merged configuration to align data from all modules within the merged set. The modules must be physically merged together.
- Restore Factory Defaults. This option removes the results from previous Deskew and Merge Deskew adjustment settings and restores the default factory deskew settings. This prevents you from reusing calibration data that was intended for other specific module and probe configurations.

Complete the following steps to start the TLACAL software and to complete the adjustments:

1. Close the TLA application (if it is running).
2. Double-click the TLACAL icon on the desktop to start the software.
3. When the TLA Connection dialog box appears, connect to your instrument.

The TLACAL window appears on your desktop. (See Figure 58.)

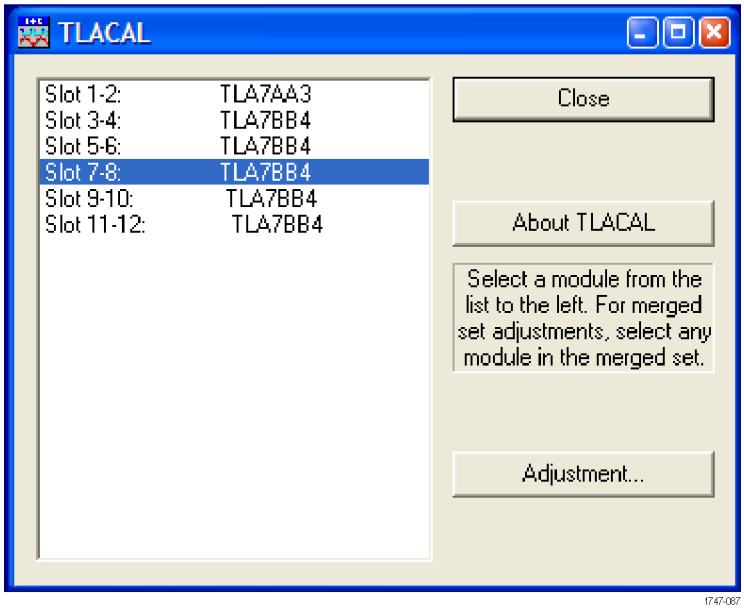


Figure 58: TLACAL startup window

4. In the dialog box, select the module that you want to deskew.
5. Click the Adjustment button to start the software. The Adjustment procedure dialog box appears. (See Figure 59.)

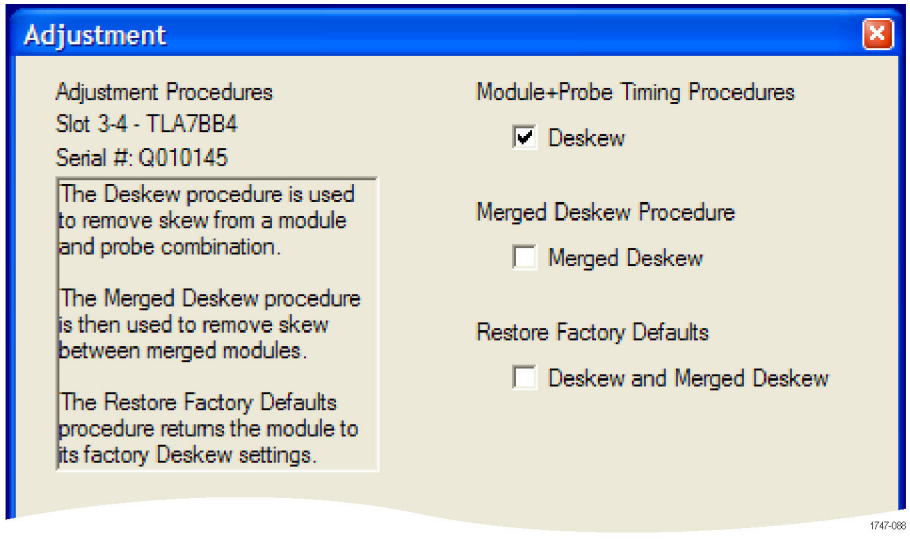


Figure 59: Adjustment procedure dialog box with Deskew selected

6. Verify that Deskew is selected at the top of the dialog box.

7. Click the Next button at the bottom of the dialog box to display the probe connection instructions.
8. Follow the on-screen instructions to connect the probes, clock cable, and the deskew fixture.
9. Click the Next button to begin the procedures and follow the on-screen instructions. The software will begin the adjustment procedures and display the results in the dialog box. (See Figure 60.)

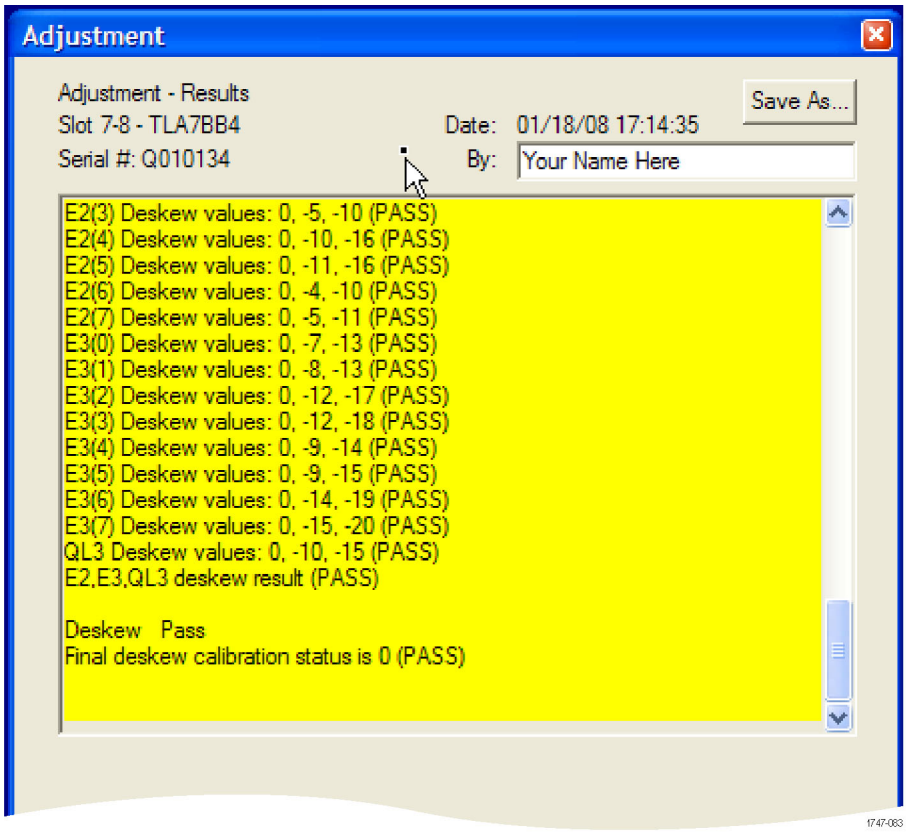


Figure 60: Example of adjustment results

NOTE. *If any failures occur, check your probe or deskew fixture connections and reseat them, if necessary. Then click the Back button to restart the test.*

10. After the tests have completed, click the Next button to save the deskew adjustment values.

NOTE. *The procedure has you connect and disconnect probes and the deskew fixture. After you complete the procedures, make sure that the correct probes are connected for your configuration. These procedures are only valid for the probes connected to the specific probe connectors. If you change the probe connections, you must redo the procedures.*

11. Repeat the Deskew procedure for every module in the merge configuration.
12. Click the Finish button to finish the procedure and return to the startup window.

NOTE. *To perform the deskew procedure on a specific probe section, you can bypass probe sections by clicking the Next button until you see the probe section that you want. Any probe sections that you skip will display a FAIL status. The FAIL status on other probe sections will not affect the current probe section.*

Merged Deskew Procedure

The Merged Deskew procedure depends on successful completion of the Deskew operation on each module in a merge configuration. Make sure that you complete the Deskew procedure for the individual modules before performing the Merged Deskew procedure.

1. Click the Adjustment button to start the procedure.
2. Clear the Deskew check box.
3. Select Merged Deskew in the dialog box. (See Figure 61.)
4. Click the Next button and follow the on-screen instructions to complete the Merge Deskew procedure.

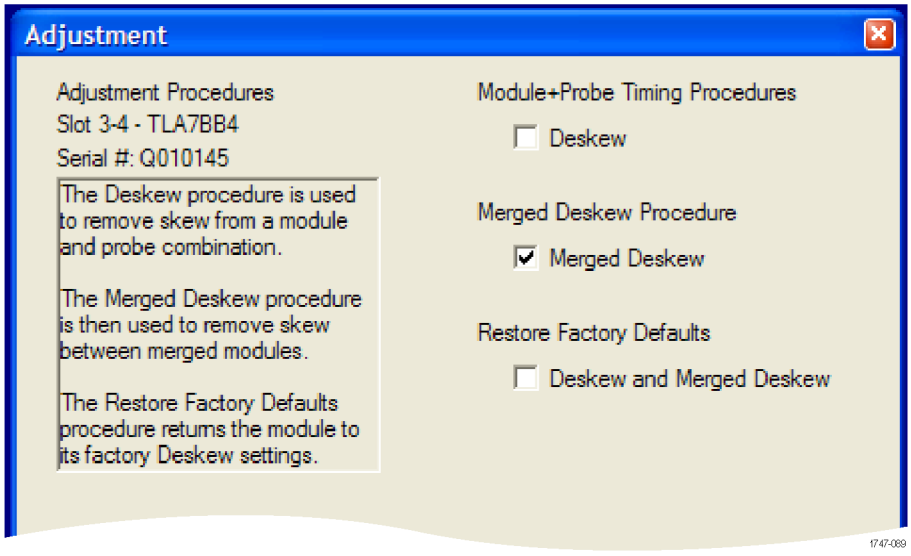


Figure 61: Adjustment procedure dialog box with Merged Deskew selected

Restore Factory Defaults Procedure

Use the following procedure to remove calibration data from a previous Deskew or Merged Deskew procedure and to return the module to the factory default deskew settings.

1. In the Adjustment procedure dialog box, select Deskew and Merged Deskew. (See Figure 62.)

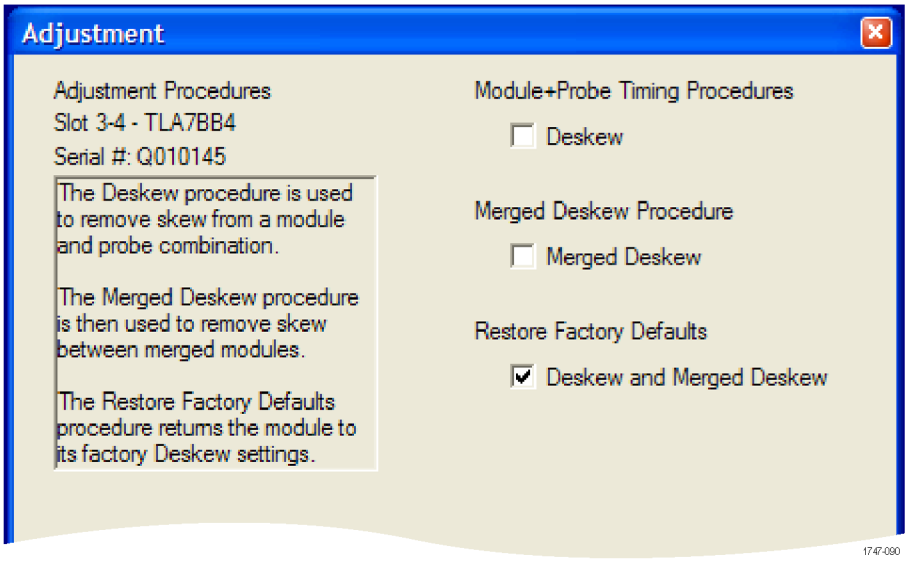


Figure 62: Adjustment procedure dialog box with Deskew and Merged Deskew selected

2. Click the Next button and note the instructions in the dialog box. (See Figure 63.)

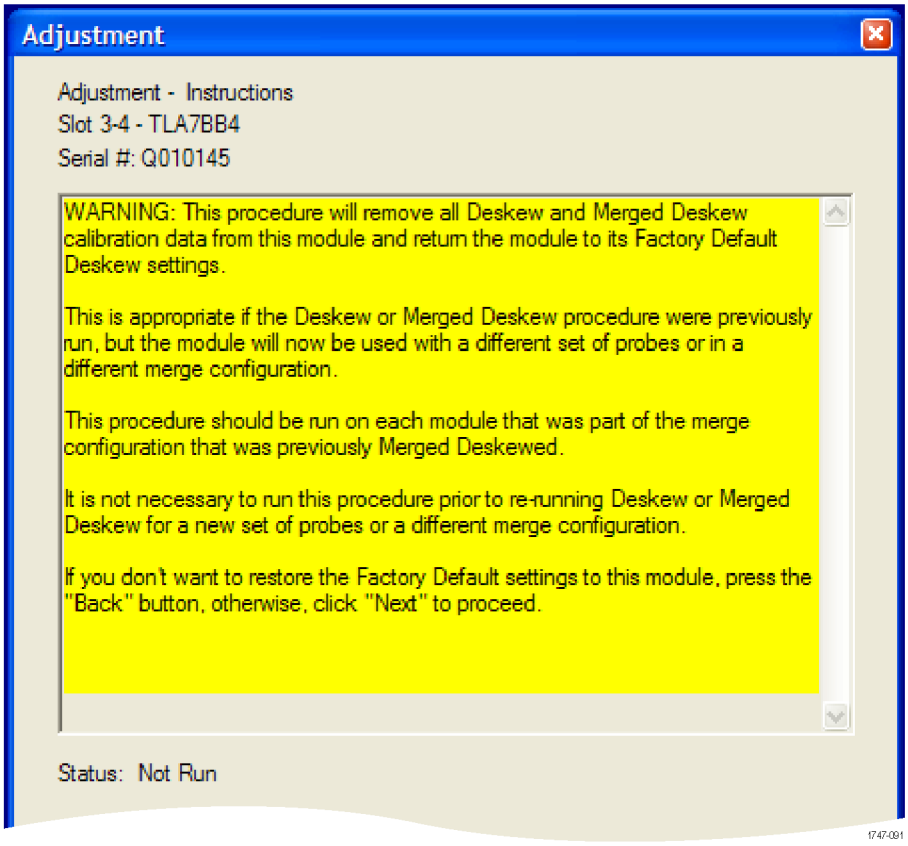


Figure 63: Deskew procedure: Restore Factory Default instructions

3. If you are sure that you want to run the procedure, click the Next button.

   The results of the procedure are displayed. (See Figure 64.)

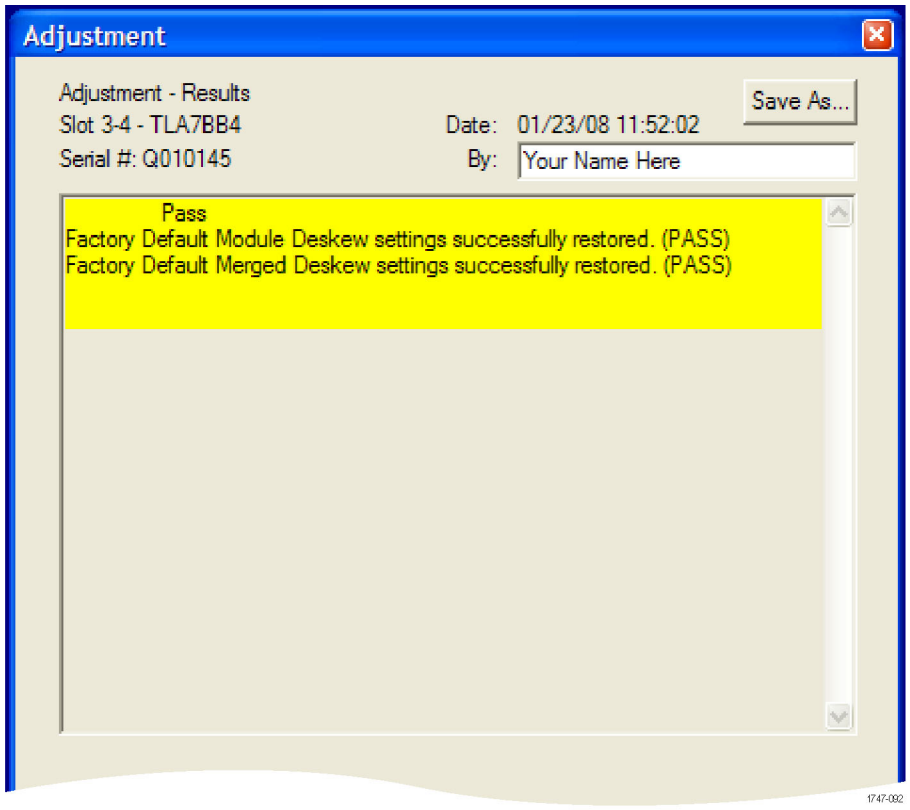


Figure 64: Restore Factory Default settings results

4. Click the Finish button to finish the procedure and return to the startup window.

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

You can use the front-panel controls to operate most of the portable mainframes. (See Figure 65.) You can also attach an external keyboard, monitor, and mouse to operate the logic analyzers. The benchtop mainframes do not have front-panel controls and require an external controller—the TLA7PC1 benchtop PC with a keyboard, monitor, and mouse, or a user-supplied PC loaded with the TLA application software.

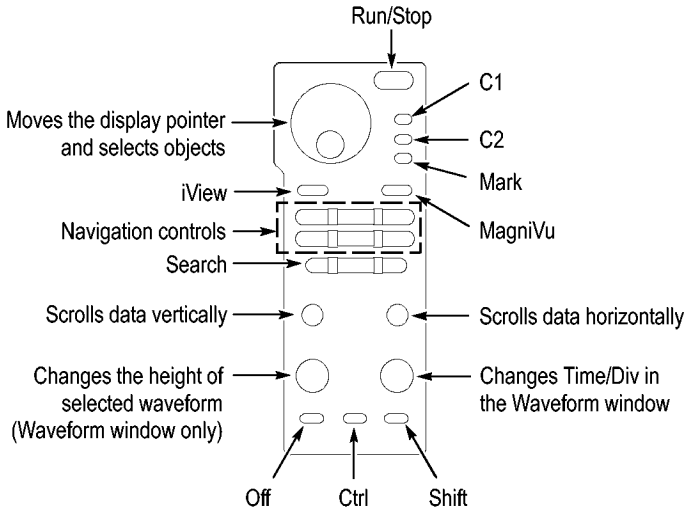


Figure 65: Portable mainframe front panel

TLA7000 Series External Connectors

The following mainframe external connections are available. (See Figure 66.)

- 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

Connecting an External Display

There are two display ports on the TLA7012: Primary (DVI-D, digital output only), and Secondary (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.

To enable Simulscan mode, or to enable/disable external monitors or make other display changes, right click on your desktop and select Properties > Graphics > Intel Graphics Technology.

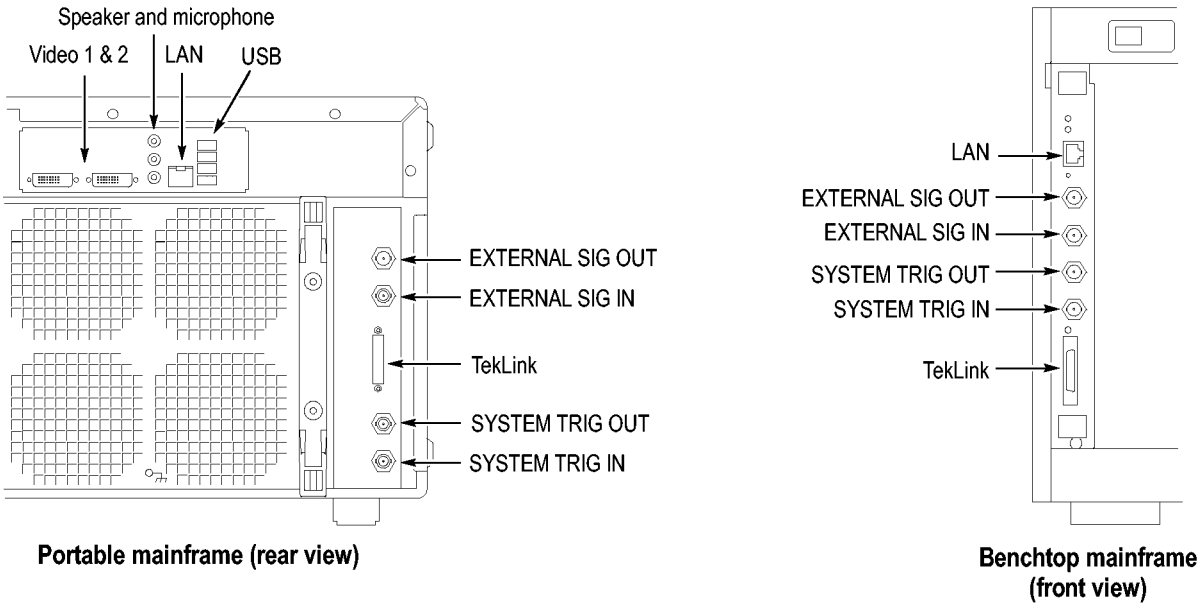


Figure 66: TLA7000 Series external connectors

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. If you want 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 53, *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 will be lost. If possible, 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 85, 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. When prompted, read and accept the end-user license agreement (EULA).
7. Click Next and then configure your regional settings, as needed.
8. Click Next.

   The instrument will apply the settings and then restart.
9. After the instrument restarts, reinstall the TLA Application software. (See page 85, *Reinstalling the TLA Application Software*.)

Change the BIOS Settings

Before reinstalling the operating system, you may need to change the BIOS settings to enable starting the logic analyzer from the DVD drive.

1. For TLA7012 Portable Mainframes and for TLA7PC1 Benchtop Mainframes (serial numbers B010000 to B019999), restart the logic analyzer and then press function key F2 repeatedly to enter the BIOS setup.
2. For TLA7PC1 Benchtop Mainframes (serial numbers B020000 or higher) restart the logic analyzer and then press the Delete key repeatedly to enter the BIOS setup.
3. In the BIOS setup, go to the Boot menu.
4. Set the Boot devices for your instrument. (See Table 9.) Follow the on-screen instructions to change the settings.

Table 9: BIOS settings for reinstalling software from the CD-ROM

Instrument	Setting
TLA7012 or TLA7PC1 Controller	USB FDC:
	IDE 2: (DVD Drive ID)
	IDE 0: (Hard Drive ID)

5. 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 83, *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 if you want to remove it. Follow the on-screen instructions to remove the software, answering "Yes" to any prompts.

5. After the software has been successfully installed, restart the instrument.
6. If you have installed the TLA application software on a PC for remote operation, start the software by double-clicking on the TLA Application icon. The TLA Startup dialog box displays.
   a. 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 currently being used by another user.
   b. 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

If you have a TLA7012 Portable Logic Analyzer, you might need to perform the following steps to calibrate the touchscreen:

1. Go to the Windows desktop and the double-click the Touch screen cofigurator (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 to ensure the best accuracy.

You can also customize some of the functions of your touchscreen in the Touch Screen Properties window. Right-click on 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 or on individual modules if the firmware version is not compatible with the TLA application software version. This will be indicated by one or more messages (one per module) 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.

Although the firmware update procedures are similar, there are some key differences between the Tektronix Logic Analyzer products and are therefore listed as separate procedures. If you have mixed modules within your TLA7000 mainframe, review the procedures for each of the modules before beginning the upgrade.

Upgrading Firmware on TLA7Axx, TLA7Bxx, TLA7Sxx, TLA7SAxx, or TLA7NAx Modules

Use the following procedure to upgrade the firmware for the TLA7Axx, TLA7Bxx, TLA7Sxx, TLA7SAxx, or TLA7NAx modules.

1. Note which modules require new firmware.

   If any modules are missing from the System window, you can verify the status of the modules by doing the following steps:

   a. Select System Properties from the System menu.

   b. Click the Modules tab.

   c. Note the information under the Messages column for any installed modules. If any modules indicate invalid messages, you must update the firmware for those modules.

2. Exit the logic analyzer application.

3. Click Start → All Programs → Tektronix Logic Analyzer → TLA Firmware Loader.

4. Select the instrument from the TLA Connection dialog box.

   You are given a choice of loading either Mainframe or Instrument Module Firmware. Click the Load button in the Instrument Module Firmware section (bottom part of the dialog box).

5. You may be prompted about cycling the power on the mainframe after completing the upgrade operation. Click Yes to continue.

   The logic analyzer will scan the mainframe to determine which modules are installed and which modules can have their firmware upgraded. If you have any older modules, you may see them listed in the bottom half of the window. These modules cannot be updated until you install the flash jumper on the rear of the modules.

6. Select the modules that you want to update from the list of modules displayed in the Supported list box near the top of the window. If you are updating more than one module at a time, note the slot location of the module in the selection box.

7. Select Load Firmware from the Execute menu.

8. Select the proper firmware file (TLA7Axx.lod, TLA7Bxx.lod, TLA7Sxx.lod, TLA7SAxx.lod, or TLA7NAx.lod) for your module.

NOTE. *Be sure to select the proper file for each module. Note the slot number in the title bar so that you select the correct module.*

9. Click OK. You will be prompted to confirm your action; click Yes.

NOTE. *The program will not allow you to load firmware to an incompatible module. For example, the program will not load oscilloscope firmware to a logic analyzer module.*

   The program will load the firmware for each module one at a time. The process may take several minutes per module.

10. When the firmware has been loaded for each module, exit the firmware loader program and power down the logic analyzer. You must power down the logic analyzer to allow the TLA application to start up properly.

11. Remove the module from the mainframe.

12. Locate the big label on the side of the module.

13. Record the firmware version that is printed on the label. You will need this information to see that the firmware version matches the label.

14. Reinstall the module in the mainframe and power on the mainframe.

15. After the logic analyzer completes the power-on diagnostics, select System Properties from the System menu.

16. Click the module tab (for example, LA1).

17. Verify that the firmware version for the selected module matches the version on the label that you recorded in step 13.
18. If the firmware versions do not match, power down the mainframe, remove the module from the mainframe and update the label.

Upgrading Firmware on TLA7Lx/Mx/Nx/Px/Qx/Dx/7Ex Modules

Complete the following steps to upgrade the module firmware on the TLA7Lx, TLA7Mx, TLA7Nx, TLA7Px, or TLA7Qx logic analyzer modules and the TLA7Dx or TLA7Ex oscilloscope modules. These modules require you to install a jumper on the rear of the module before you can upgrade the firmware.

1. Note which of the modules may require new firmware.

   If any modules are missing from the System window, you can verify the status of the modules by doing the following steps:

   a. Select System Properties in the System menu.

   b. Click the Modules tab.

   c. Note the information under the Messages column for any installed modules. If any modules indicate invalid or similar messages, you must update the firmware for those modules.

2. Turn off the logic analyzer and disconnect the power cord.
3. Remove the modules from the logic analyzer.
4. Locate the flash programming pins on the rear of each module. (See Figure 67 on page 90.)
5. Install a jumper on the flash programming pins (use one of the spare jumpers that came with your logic analyzer).
6. Reinstall the module(s) in the logic analyzer.
7. Reconnect the power cord and then power on the logic analyzer.
8. Wait for the TLA application to start.

NOTE. *Any modules with the flash programming jumper installed will not display in the System window.*

9. Exit the TLA application.

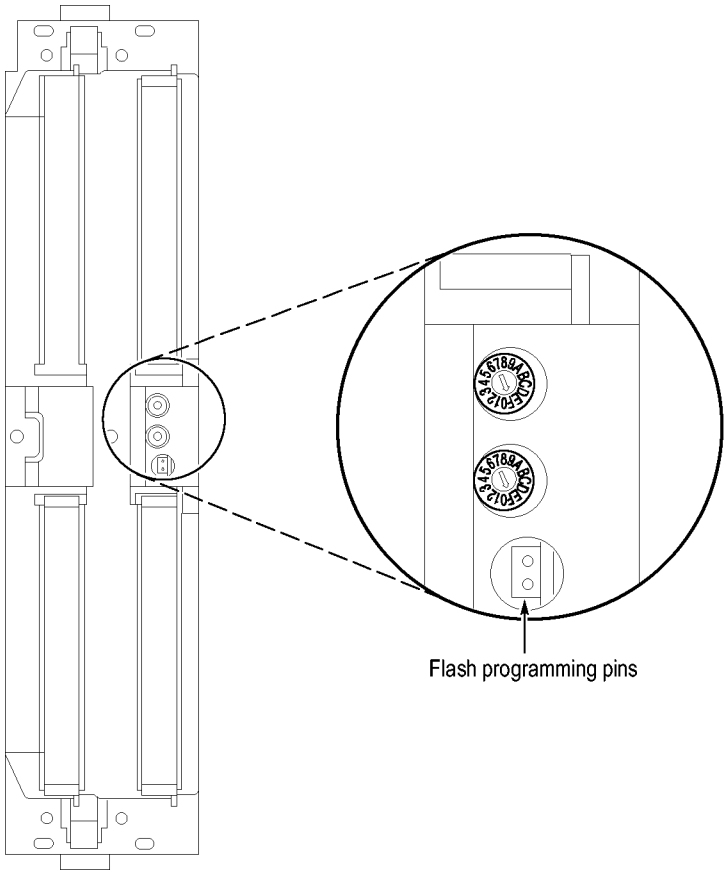


Figure 67: Flash programming pins

10. Click Start > All Programs > Tektronix Logic Analyzer > TLA Firmware Loader.

11. Select the instrument from the TLA Connection dialog box.

You are given a choice of loading either Mainframe or Instrument Module Firmware. Click the Load button in the Instrument Module Firmware section (bottom part of the dialog box).

12. Select the modules that you want to update from the list of modules displayed in the Supported list box near the top of the window. This selects the modules for the upgrade.

13. If you are upgrading more than one module at a time, note the slot location of the module in the selection box.

14. Select Load Firmware from the Execute menu.

15. Click the proper load file for the selected module. (See Table 10.) The files are located in the C:\Program Files\TLA 700\Firmware directory.

NOTE. *Be sure to select the proper load file for each module. Note the slot number in the title bar so that you select the correct module for the load file.*

Table 10: TLA firmware files

Module type	Load file
TLA7Nx, TLA7Px, TLA7Qx logic analyzer modules	TLA7NPQ.lod
TLA7Lx and TLA7Mx logic analyzer modules	TLA7LM.lod
TLA7Dx and TLA7Ex oscilloscope modules	FirmwareDSO.lod

16. Click OK. When asked to confirm your action, click Yes.

NOTE. *The program will not allow you to load firmware to an incompatible module. For example, the program will not load oscilloscope firmware to a logic analyzer module.*

The program loads the firmware for each module one at a time. The process may take several minutes per module.

17. When the upgrade is complete, exit the program.

18. Turn off the logic analyzer and disconnect the power cord.

19. Remove the module from the instrument and remove the jumper from the Flash programming pins on the rear of the module. Keep the jumper for future updates.

20. Locate the big label on the side of the module.

21. Record the firmware version that is printed on the label. You will need this information to see that the firmware version matches the label.

22. Reinstall the module in the mainframe and power on the mainframe.

23. After the logic analyzer completes the power-on diagnostics, select System Properties from the System menu.

24. Click the module tab (for example, LA1).

25. Verify that the firmware version for the selected module matches the version on the label that you recorded in step 21.
26. If the firmware versions do not match, power down the mainframe, remove the module from the mainframe and update the label.

Upgrading Firmware on the Interface Module and the TL708EX TekLink 8-Port Hub

Use the following procedure to upgrade the firmware on the benchtop mainframe interface module and the hub.

1. Start the Firmware Loader.
2. A list of installed mainframes displays. Select the mainframe you want to upgrade and click Connect.
3. The Firmware Loader dialog box appears. You have the choice of loading either Mainframe or Instrument Module firmware. Click the Load button corresponding to Mainframe and TekLink firmware.
4. 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 you want to load.
5. Click the Update Firmware button. A file dialog box displays a list of available firmware images.
6. Select the appropriate file. Click Open to open the selected firmware image. You must do this for each firmware image selected.
7. 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.
8. As the flash operation runs, it identifies what steps are being performed. When complete, it will inform you to reboot the system you just flashed.
9. Turn off and restart the TLA system after the flash operation is complete.

Appendix A: Mainframe Power Information



CAUTION. *By placing too many modules in a TLA7016 Benchtop Mainframe, you can overload the power distribution system and damage the mainframe or modules. To avoid this, ensure that your module configuration in a single mainframe does not exceed 1000 W at line voltages less than 120 V nominal at 50 Hz or 60 Hz or at line voltages of 115 V at 400 Hz. Use the following table and illustration to calculate the total power for your mainframe.*

The power consumption depends on the number and type of modules installed in the mainframes. To determine the total power consumption, perform the following steps:

1. Use the following table to determine the power consumption for each module.
2. Add the power for each module to determine the total power consumption (include 170 W for each benchtop mainframe).
3. Ensure that the total power consumption is less than the limits shown in the table. (See Figure 68 on page 94.)

Table 11: Power for instrument modules

Module type	Power (Watts)
One benchtop mainframe [1]	170
TLA7AA1	45
TLA7AA2, TLA7AB2 TLA7AC2	65
TLA7AA3, TLA7AC3	85
TLA7AA4, TLA7AB4, TLA7AC4	105
TLA7BB2	81
TLA7BB3	119
TLA7BB4, TLA7BC4	158
TLA7NA1	45
TLA7NA2	58
TLA7NA3	71
TLA7NA4	82
TLA7Q2	51
TLA7Q4	75
TLA7P2	50
TLA7P4	74
TLA7N1	45
TLA7N2	58
TLA7N3	71
TLA7N4	82

Table 11: Power for instrument modules (cont.)

Module type	Power (Watts)
TLA7L1	55
TLA7L2	73
TLA7L3	94
TLA7L4	109
TLA7M1	57
TLA7M2	76
TLA7M3	99
TLA7M4	116
TLA7D1	80
TLA7D2	111
TLA7E1	90
TLA7E2	121
TLA7PG2	110
TLA7S08	65
TLA7S16	105
TLA7SA08	90
TLA7SA16	120

1 Power for mainframe and controller module with fans operating at maximum speed.

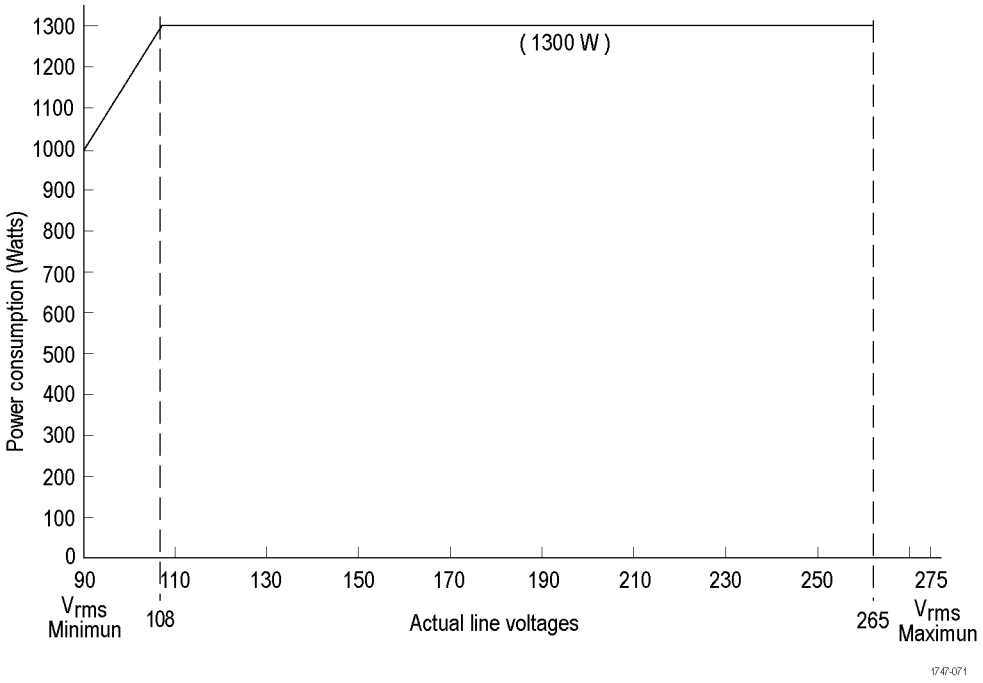


Figure 68: Maximum power allowed to modules at various line voltages for TLA7016 mainframes serial number B020000 and higher

Appendix B: User Service Procedures

This appendix describes high-level service information and procedures for the Tektronix logic analyzers. Mainframe and module service troubleshooting procedures are located in the service manuals.

Service Offerings

Tektronix provides service to cover repair under warranty as well as 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. Detailed troubleshooting procedures are available in the service manuals for your logic analyzer product. For additional help, contact your local Tektronix Service Representative.

Diagnostics

The logic analyzer runs power-on diagnostics every time you power on the instrument. You can view the results of the diagnostics by selecting Calibration and Diagnostics from the System menu. You can 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 can be 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 83, *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.

Repacking for Shipment

If a mainframe or module 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 module and 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 C: Accessories and Options

Accessories

This section lists the standard and optional accessories available for the portable and benchtop instruments. Options to the compatible logic analyzer modules are also listed.

Table 12: Standard accessories, portable mainframe

Quantity	Accessory	Part number
1 ea	Power cord clip	343-1213-00
1 ea	USB optical wheeled mouse	119-7054-00
1 ea	Mouse pad	016-1524-05
1 ea	Module filler panel	333-4206-00
1 ea	Front panel cover	200-4939-00
2 ea	Jumper (used for flashing module FW)	131-4356-00
	Product CD, TLA application software V5.7	
	Nero CD and license	
	NIST, Z540-1, and ISO9000 Calibration Certificate	
	Literature package	

Table 13: Standard accessories, benchtop mainframe

Quantity	Accessory	Part number
1 ea	TLA7016 Interface module, 1-slot	650-4733-00
1 ea	LAN cable, 8 meters	174-5225-xx
5 ea	Module filler panel	333-4206-00
5 ea	Jumper (used for flashing module FW)	131-4356-00
	Product CD, TLA application software V5.7	
	Nero CD and license	
	NIST, Z540-1, and ISO9000 Calibration Certificate	
	Literature package	

Table 14: Optional accessories, portable mainframe

Quantity	Accessory	Part number
1 ea	Removable HDD assembly, 80 GB, w/o SW	650-4815-xx
1 ea	GBE switch	020-2666-00
1 ea	Wheeled transit case	161-1522-00
1 ea	Rackmount kit	020-2664-00

Table 15: Optional accessories, benchtop mainframe

Quantity	Accessory	Part number
1 ea	GBE switch	020-2666-00
1 ea	Wheeled transit case	161-1651-00
1 ea	Rackmount kit	020-2369-xx

Table 16: Optional accessories, Deskew fixture

Quantity	Accessory	Part number
1 ea	P6800 Deskew fixture; uses any of the P6800 style acquisition probes; includes coaxial cable with SMA connectors	020-2942-00
1 ea	P6960 Deskew fixture; uses any of the P6960 style acquisition probes	020-2940-00

Options

The following options can be ordered for the instruments.

Table 17: Instrument options

Option	Description	TLA7012 Portable	TLA7016 Benchtop
18	Add touchscreen	✓	
1C	Add iView External Oscilloscope Cable Kit	✓	✓
2C	Add USB-iView External Oscilloscope Cable kit	✓	✓
1K	Add LACART Instrument Cart (TLA7012)	✓	
1K	Add K4000 Instrument Cart (TLA7016)		✓
1N	On-site product installation service	✓	✓
88	Module installation by factory	✓	✓
LG1	TLA Documentation CD-ROM	✓	✓
Field upgrades			
TLA7KUP	Many are available. Contact Tektronix (see the beginning of the manual for contact information) for a complete list of available TLA7KUP options	✓	✓
Service offerings			
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	✓	✓
S1	On-site service 1 year	✓	✓
S3	On-site service 3 years	✓	✓
S5	On-site service 5 years	✓	✓

Table 18: Power cords

Option	Description	Part number
TLA7012 Portable Mainframe		
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	
TLA7016 Benchtop Mainframe		
A0	North America, IEC320 C19	161-0328-00
A1	Universal European, IEC320 C19	161-0333-00
A2	United Kingdom, IEC320 C19	161-0329-00
A3	Australia, IEC320 C19	161-0330-00
A4	240 V North America, IEC320 C19	161-0332-00
A5	Switzerland, IEC320 C19	161-0331-00
A6	Japan, IEC320 C19 (US 120 V)	161-0328-00
A6	Japan, IEC320 C19 (US240 V)	161-0332-00
A10	China, IEC320 C19	161-0337-00
A11	India/South Africa, IEC320 C19	161-0338-00
A99	No power cord	
GBe Switch, TL708EX		
A0	North America, IEC320 C13	161-0066-00
A1	Universal European, IEC320 C13	161-0066-09
A2	United Kingdom, IEC320 C13	161-0066-10
A3	Australia, IEC320 C13	161-0066-13
A4	240 V North American, IEC320 C13	161-0066-12
A5	Switzerland, IEC320 C13	161-0154-00
A6	Japan, IEC320 C13	161-0298-00
A10	China, IEC320 C13	161-0304-00
A11	India/South Africa, IEC320 C13	161-0400-00
A99	No power cord	

Table 19: Options for TLA7AC4 modules

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
4S	Increase to 2 Mb record length @450 MHz state speed
5S	Increase to 8 Mb record length @450 MHz state speed
6S	Increase to 32 Mb record length @450 MHz state speed
7S	Increase to 128 Mb record length @450 MHz state speed
88	Factory configuration
R3	Repair warranty extended to cover 3 years
R5	Repair warranty extended to cover 5 years
C3	Initial certification plus two additional calibrations
C5	Initial certification plus four additional calibrations
D1	Add test data report
D3	Add test data report (must order Option C3)
D5	Add test data report (must order Option C5)
IN	On-site installation service

Table 20: Options for TLA7Bxx modules

1S	Increase to 4 Mb record length @750 MHz state speed
2S	Increase to 8 Mb record length @750 MHz state speed
3S	Increase to 16 Mb record length @750 MHz state speed
4S	Increase to 32 Mb record length @750 MHz state speed
5S	Increase to 64 Mb record length @750 MHz state speed
6S	Increase to 2 Mb record length @1.4 GHz state speed
7S	Increase to 4 Mb record length @1.4 GHz state speed
8S	Increase to 8 Mb record length @1.4 GHz state speed
9S	Increase to 16 Mb record length @1.4 GHz state speed
AS	Increase to 32 Mb record length @1.4 GHz state speed
BS	Increase to 64 Mb record length @1.4 GHz state speed
88	Factory configuration
R3	Repair warranty extended to cover 3 years
R5	Repair warranty extended to cover 5 years
CA1	Single calibration event or designated calibration interval
C3	Initial certification plus two additional calibrations

Table 20: Options for TLA7Bxx modules (cont.)

C5	Initial certification plus four additional calibrations
D1	Add test data report
D3	Add test data report (must order Option C3)
D5	Add test data report (must order Option C5)

Table 21: Options for TLA7BC4 modules

1S	Increase to 128 Mb record length @1.4 GHz state speed
88	Factory configuration
R3	Repair warranty extended to cover 3 years
R5	Repair warranty extended to cover 5 years
CA1	Single calibration event or designated calibration interval
C3	Initial certification plus two additional calibrations
C5	Initial certification plus four additional calibrations
D1	Add test data report
D3	Add test data report (must order Option C3)
D5	Add test data report (must order Option C5)

Field Kit Options

The TLA7NAx Series modules offer PowerFlex, the ability to upgrade state speed and record length specifications at any time after the initial purchase of the corresponding logic analyzer (up to the end of long-term product support).

To access the field-kit options that can be ordered for your modules, run the PowerFlex utility on the modules you want to upgrade. The utility will provide the correct ordering information.

Appendix D: TLA7000 Network Installation Site Survey

Photocopy this sheet and use it for your system installation.

Customer:

Installer:

Date:

TLA7000 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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