Instruction Manual

Tektronix

TLA7UP
Logic Analyzer Field Upgrade Kit

071-0865-06

Warning
These servicing instructions are for use by
qualified personnel only. To avoid personal injury,
do not perform any servicing unless you are
qualified to do so. Refer to all safety summaries
prior to performing service.

www.tektronix.com

Contacting Tektronix

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USA

For product information, sales, service, and technical support:
- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

Warranty 6

Tektronix warrants that the parts and modules ("parts") that it manufactures and sells will be free from defects in materials and workmanship for a period of three (3) months from the date of shipment. If any such part proves defective during this warranty period, Tektronix, at its option, either will repair the defective part without charge, or will provide a replacement in exchange for the defective part. Parts and modules used by Tektronix for warranty work may be new or reconditioned to like new performance. All replaced parts and modules become the property of Tektronix.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective part to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the part to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for parts returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the part; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a part that has been modified or integrated with other products or parts when the effect of such modification or integration increases the time or difficulty of servicing the part.

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Warranty 9(b)

Tektronix warrants that the media on which this software product is furnished and the encoding of the programs on the media will be free from defects in materials and workmanship for a period of three (3) months from the date of shipment. If any such medium or encoding proves defective during the warranty period, Tektronix will provide a replacement in exchange for the defective medium. Except as to the media on which this software product is furnished, this software product is provided "as is" without warranty of any kind, either express or implied. Tektronix does not warrant that the functions contained in this software product will meet Customer's requirements or that the operation of the programs will be uninterrupted or error-free.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period. If Tektronix is unable to provide a replacement that is free from defects in materials and workmanship within a reasonable time thereafter, Customer may terminate the license for this software product and return this software product and any associated materials for credit or refund.

THIS WARRANTY IS GIVEN BY TEKTRONIX WITH RESPECT TO THE PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. TEKTRONIX AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TEKTRONIX' RESPONSIBILITY TO REPLACE DEFECTIVE MEDIA OR REFUND CUSTOMER'S PAYMENT IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. TEKTRONIX AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER TEKTRONIX OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

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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 there is damage to this product, have it inspected by qualified service personnel.

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

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

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

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

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

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

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

Symbols and Terms on the Product   These terms may appear on the product:

■ DANGER indicates an injury hazard immediately accessible as you read the marking.

■ WARNING indicates an injury hazard not immediately accessible as you read the marking.

■ CAUTION indicates a hazard to property including the product.

The following symbols may appear on the product:

CAUTION Refer to Manual	WARNING High Voltage	Protective Ground (Earth) Terminal	Earth Terminal	Chassis Ground

Mains Disconnected OFF (Power)	Mains Connected ON (Power)	Standby
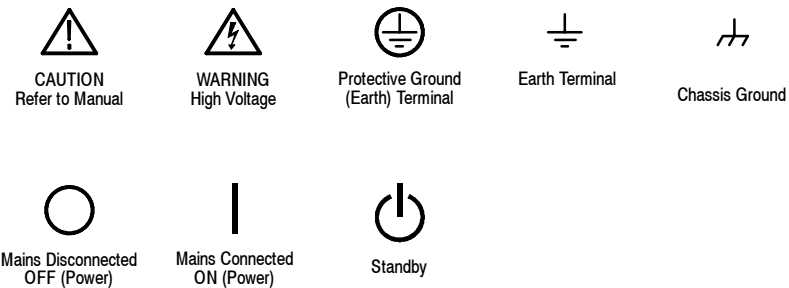
Service Safety Summary

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

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

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

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

To avoid electric shock, do not touch exposed connections.

Environmental Considerations

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

Product End-of-Life Handling

Observe the following guidelines when recycling an instrument or component:

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

The symbol shown to the left indicates that this product complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Mercury Notification. This product uses an LCD backlight lamp that contains mercury. Disposal may be regulated due to environmental considerations. Please contact your local authorities or, within the United States, the Electronics Industries Alliance (www.eiae.org) for disposal or recycling information.

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. This product is known to contain lead, cadmium, mercury, and hexavalent chromium.

Preface

This instruction manual contains specific information about the TLA7UP mainframe field upgrades. The mainframe field upgrades consist of software and hardware options for the TLA700 series logic analyzer.

Products Eligible for TLA7UP Upgrades

Table i lists all of the TLA700 series logic analyzers eligible for upgrades via the TLA7UP field upgrade kits. Review Table i to determine if your logic analyzer is eligible for an upgrade and then use Table ii on page xii to determine the upgrades available for your TLA715 or TLA721 logic analyzers.

Table i: TLA700 Series logic analyzers eligible for upgrades

Configuration	Operating system	TLA application software
TLA715 Standard or with Option 1S	Windows 2000 Professional	Version 4.1 and above
TLA721 Standard		

NOTE. TLA704, TLA714, TLA711, and TLA720 logic analyzers are not eligible for upgrades. However these instruments still qualify for Mainframe Trade-in *program. Contact your local Tektronix representative for details on the program.*

Logic analyzer modules installed in these mainframes, are eligible for upgrades.

The TLA7UP upgrade kits are designed for one TLA7UP upgrade kit per TLA mainframe. If you want to upgrade multiple mainframes, you must order one TLA7UP upgrade kit with the appropriate options for each mainframe.

The latest TLA Application Software has been tested and can be installed and will be supported by Tektronix only on the Tektronix-supplied version of Microsoft Windows XP Professional.

If you need to preserve your user files on your current mainframe hard disk, please order an additional hard disk drive using TLA7UP Option 12 and install it as a second internal hard disk drive in your mainframe. This procedure is included in this document. You can also save your user files to another media.

Version 1.8 of the Patgen Application Software is available either as part of the latest TLA Application Software or on the Web (This is primarily for the TLA704, TLA711, TLA714, and TLA721 users who have Microsoft Windows 98 and TLA Application Software V3.2). Note that the TLA Application Software on the Web does NOT have SnagIt, CheckIt, nor the NI USB-to-GPIB software due to licensing issues. You can order TLA7UP Option 41 or TLA7UP Option 42 to receive these software components.

Table ii: TLA7UP Mainframe field upgrade matrix for TLA715 or TLA721 logic analyzers

New capability desired	Current mainframe configuration and TLA application software	Please order
Add More DRAM and a Larger HDD Add up to 512 MB DRAM and/or: • Replace current hard disk drive with a larger (replaceable) bootable MAX hard disk drive configured as the master drive. • Reconfigure replaceable hard disk drive for data storage only and add a second (internal fixed) bootable hard disk drive configured as the master drive. • Add an additional (replaceable) MAX hard disk drive configured as the slave drive.	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	TLA7UP Option 12
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 12 TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)
Add New Software Features Add new functionality to existing TLA700 Series Logic Analyzers by upgrading to the latest TLA Application Software. TLA Application Software requires Windows XP Professional Operating System.	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	–
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)
Add iView External Oscilloscope Capability Add iView capability to view data from TDS oscilloscopes on the logic analyzer display. Requires latest TLA Application Software and Windows XP Professional Operating system. TLA700 mainframe memory requirements: 512 MByte minimum. (For a list of supported TDS oscilloscopes, please visit our website at www.tektronix.com/la)	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	TLA7UP Option 15
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 15 TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)

Table ii: TLA7UP Mainframe field upgrade matrix for TLA715 or TLA721 logic analyzers (Cont.)

New capability desired	Current mainframe configuration and TLA application software	Please order
Upgrade Logic Analyzer State Speed and Record Length: Enhance your current TLA700 series logic analyzer modules by increasing state speed or memory depth. Enhance your TLA7PG2 Pattern Generator Module with increased memory depth. Run the PowerFlex Utility to inform you what upgrades are available. Instructions to obtain an upgrade are provided.	Any TLA700 series logic analyzer with TLA SW V4.3 (or above)	Run the PowerFlex Utility software located on the instrument and then purchase the appropriate PowerFlex kit.
	Any TLA700 series logic analyzer with TLA SW V4.2 or earlier	TLA7UP Option PF or visit www.tektonix.com/LA for the Power-Flex Utility software
Add DVD-ROM/CD-RW Drive Add DVD-ROM/CD-RW Drive to back up or transfer user and data files.	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	TLA7UP Option 20
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 20 TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)
Add New Measurement Modules to Existing Mainframe: Add new TLA7Axx/NAx Logic Analyzer, TLA7Nx/Px/Qx Logic Analyzer, TLA7PG2 Pattern Generator, and/or TLA7Dx/Ex Digitizing Oscilloscope module(s) to your new or existing mainframe. Requires latest TLA Application Software and Windows XP Professional Operating system.	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	-
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)
Add Pattern Generator Probes for PECL/LVPECL, LVDS, LVCMOS, and Variable Data Strobe Support: Add P6472 (PECL/LVPECL), P6473 (LVDS), P6474 (LVCMOS), and P6475 (Variable Data Strobe). Requires Version 1.8 PatGen Application Software or greater, available as part of the latest TLA Application Software which requires Windows XP Professional Operating system.	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V5.1 and Microsoft Windows XP Professional	-
	TLA721 Std, TLA715 Std, or TLA715 Opt 1S with TLA Application SW V4.4 or earlier, and Microsoft Windows 2000 Professional	TLA7UP Option 41 (with restore media, recommended) TLA7UP Option 42 (without restore media)

Table ii: TLA7UP Mainframe field upgrade matrix for TLA715 or TLA721 logic analyzers (Cont.)

New capability desired	Current mainframe configuration and TLA application software	Please order
Convert a TLA720/721/7XM Benchtop Mainframe to at TLA7016 Benchtop Mainframe: Requires latest TLA Application Software and Windows XP Professional 32-bit Operating system. External PC or TLA7PC1 require latest TLA Application Software and operating system.	TLA720 Std with TLA SW V5.1 and Microsoft Windows XP Professional 32-bit TLA721 Std with TLA SW V5.1 and Microsoft Windows XP Professional 32-bit TLA7XM Std	TLA7KUP Option 19 TLA7KUP Option 42 (External PC with Microsoft Windows XP Professional 32-bit or TLA7PC1 required to load TLA SW)
	TLA720 Std with TLA SW V4.4 or earlier, and Microsoft Windows 2000 Professional TLA721 Std with TLA SW V4.4 or earlier, and Microsoft Windows 2000 Professional TLA7XM Std	
Add LAN Card: Add 10/100Mb LAN interface to your TLA700 mainframe.	Any TLA715 or TLA721 mainframe	119-6072-xx
Add Cart: Add your choice of either the K4000 or LACART instrument cart.	Any TLA715 or TLA721 mainframe	Choice of either K4000 or LACART
Add Rackmount Kit	Any TLA715	020-2664-xx
	Any TLA721	020-2369-xx
Add Wheeled Transport Case for TLA7000 Series Mainframes	Any TLA715	016-1522-xx
	Any TLA721 or TLA7XM	016-1651-xx

Service and Upgrade Notes

To prevent personal injury or damage to the instrument, consider the following requirements before attempting service:

■ Read the *General Safety Summary* and *Service Safety Summary* found at the beginning of this manual.

■ The procedures in this manual may only be performed by a qualified service person.

Be sure to follow all warnings, cautions and notes.

Adjustment and Certification Interval

Generally, you need to perform the adjustments and certification (calibration) described in the *Performance Verification* and *Adjustment Procedures* chapters of the product service manual once per year, or after repairs have been made that may affect adjustment or calibration.

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 equipped to service the mainframe. Services are provided at Tektronix Services Centers and on-site at your facility, depending on your location.

Warranty Repair Service

The warranty for this product is located behind the title page in this manual. Tektronix technicians provide warranty service at most Tektronix service locations worldwide. The Tektronix product catalog lists all service locations worldwide, or you can visit us on our *Customer Services World Center* web site at:

www.Tektronix.com/Measurement/Service

Calibration and Repair Service

In addition to warranty repair, Tektronix Service offers calibration and other services which provide solutions to your service needs and quality standards compliance requirements.

The following services can be tailored to fit your requirements for calibration and/or repair.

Service Options. Tektronix service options can be selected at the time you purchase your instrument. You select these options to provide the services that best meet your service needs.

Service Agreements. If service options are not added to the instrument purchase, then service agreements are available on an annual basis to provide calibration services or post-warranty repair coverage. Service agreements may be customized to meet special turn-around time and/or on-site requirements.

Service on Demand. Tektronix offers calibration and repair services on a "per-incident" basis that is available with standard prices.

Self Service. Tektronix supports repair to the replaceable-part level by providing for circuit board exchange.

Use this service to reduce down-time for repair by exchanging circuit boards for remanufactured ones. Tektronix ships updated and tested exchange boards. Each board comes with a 90-day service warranty.

For More Information. Contact your local Tektronix service center or sales engineer for more information on any of the Calibration and Repair Services just described.

TLA7UP Option 12

TLA7UP Option 12: TLA715 & TLA721 MAX HDD and MAX DRAM Installation

TLA7UP Option 12 supports the addition of a second (fixed) hard disk drive for your TLA715 or TLA721 mainframe. It also supports the upgrade to 512 MB of memory for the TLA715 Portable Mainframe (the TLA721 Benchtop Mainframe already has a maximum of 512 MB). The standard TLA715 Portable Mainframe has two SODIMM sockets in a MIN configuration with one 256 MB DRAM installed. This kit installs a second 256 MB SODIMM for a total or 512 MB.

Instruments

TLA715 Portable Mainframe	All Serial Numbers
TLA721 Benchtop Mainframe	All Serial Numbers

Parts List

Table 1‑1: TLA7UP Option 12 parts list

Quantity	Part number	Description
1 ea	156-4857-xx	256 MB SO DIMM (for TLA715 Controller)
1 ea	650-4272-xx	Replaceable hard disk cartridge with hard disk drive (No software is installed on hard disk drive.)
4 ea	211-0910-xx	Screw, machine, M3 x 0.5 x 4 mm, PNH, STL
1 ea	131-5829-xx	Hard disk drive jumper, 2 mm
1 ea	003-0008-xx	Spudger tool for removing trim ring on portable mainframe
1 ea	N/A	TLA7UP kit label

Minimum Tool and Equipment List

Table 1‑2: Tools required for installing upgrade

Item no.	Name	Description
1	Screwdriver handle	Accepts Torx®-driver bits
2	T-10 Torx tip	Torx®-driver bit for T-10 size screw heads
3	T-15 Torx tip	Torx®-driver bit for T-15 size screw heads

Table 1--2: Tools required for installing upgrade (Cont.)

Item no.	Name	Description
4	Flat blade screwdriver	Screwdriver for removing screws that attach the TLA721 parallel port on the front panel
5	#1 Phillips screwdriver	Screwdriver for removing small Phillips screws
6	#2 Phillips screwdriver with a 6-inch long narrow shaft (< 0.25 inch diameter)	Screwdriver for removing small Phillips screws on the TLA721 internal hard disk drive
7	$^3/_{16}$-inch nut driver	For removing standoffs-from the TLA721 Controller front panel
8	$^1/_4$-inch nut driver	For removing nuts on the back of the TLA721 Controller front panel

Installation Prerequisite

These instructions assume that you are familiar with servicing the instrument. If you need further details for disassembling or reassembling the instrument, refer to either the *TLA715 Portable Mainframe Service Manual* (071-0913-xx) or the *TLA721 Benchtop & TLA7XM Expansion Mainframe Service Manual* (071-0912-xx). You may also contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service Center for installation assistance.

When you install the hard disk drive, you can use the replaceable hard disk drive as a spare or you can discard the replaceable hard disk cartridge and install the hard disk as a second hard disk drive in the controller.

Be sure to observe the following precautions to avoid damaging the mainframe while preparing to service it.

⚠ *CAUTION. Many components within the mainframe are susceptible to static-discharge damage.*

Service only in a static-free environment. Observe standard handling precautions for static-sensitive devices.

Always wear a grounded wrist strap, grounded foot strap, and static-resistant apparel while installing this kit.

⚠ **WARNING.** *Dangerous voltages may be present. Before performing any procedure in this section, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury or death.*

■ Do not handle static-sensitive components on boards.

■ Transport and store static-sensitive boards in their original containers or on conductive foam. Label any package that contains static-sensitive assemblies.

■ Wear an anti static wrist strap while handling the boards to discharge the static voltage from your body.

■ Do not allow anything capable of holding or generating a static charge on the work surface.

■ Avoid handling boards in areas that have a floor or work surface cover that is capable of generating a static charge.

Mainframe-Specific Instructions

If you are updating your benchtop mainframe, refer to *MAX Hard Disk Drive Installation* on page 1-5, and *Benchtop Mainframe-Specific Update Instructions* on page 1-11 for update instructions. If you are updating your portable mainframe, refer to *MAX Hard Disk Drive Installation* on page 1-5, and *Portable Mainframe-Specific Update Instructions* on page 1-15 for update instructions.

TLA7UP Option 12: MAX Hard Disk Drive Installation

The following instructions direct you through the preliminary stages of installing a fixed (second) MAX hard disk drive on either a portable mainframe or on a benchtop mainframe. Because mainframe disassembly instructions differ substantially between the portable and benchtop mainframes, details are tailored to each instrument and are individually addressed in subsections to follow.

Master/Slave Drive Decision

At this point you need to decide where you would like the master hard disk drive to be, and where you would like the slave hard disk drive to be. The following guidelines may help you in your decision:

Master Hard Disk Drive

The master hard disk drive:

- Must have the Windows operating system resident.

- Must be the boot drive.

- Must have the TLA application software resident.

- Must not have a slave jumper installed.

- Can be the fixed or replaceable hard disk drive.

Slave Hard Disk Drive

The slave hard disk drive:

- Must not have an operating system resident.

- Cannot be a bootable drive.

- May not have the TLA application software loaded on it.

- Must have a slave jumper installed.

- Can be the fixed or replaceable hard disk drive.

NOTE. *If the slave hard disk drive is the replaceable hard disk drive, it does not need to be installed to use the instrument.*

Back Up Your Software

Before installing the new hard disk, make sure that you back up any files, applications, and personal documents to an external storage device. You can do this in one of several different ways:

- Move the files to another PC via a network or via another backup medium such as a ZIP drive.

- Place the new hard disk drive in the removeable hard disk drive assembly (master configuration), and then place the original hard disk drive in the second hard disk location (slave configuration). This allows you to use a second hard disk drive so you can still access the user files.

  For TLA715 logic analyzers, the second fixed hard disk drive location is behind the front panel; For TLA721 logic analyzers, the hard disk drive plugs into a connector on an internal circuit board in the slot 0 controller.

You can find most TLA user files using the Windows Find utility. For example, open Windows Explorer and select the C:\My Documents folder. Right click the folder and select Find. Enter one of the suffixes from Table 1–3 to locate the TLA files in the current folder and all subfolders:

Table 1‑3: TLA user file suffixes

Suffix	Description
.tla	TLA setup files and stored data
.tsf	TLA symbol files
.tbf	Tektronix binary format
.tls	TLA script file
.tpg	Tektronix pattern generator files
.txt	Tektronix TLA data exchange format files
.stk	Stack files
.spz	Protocol files

Once you find the files, copy or drag them to the external storage device. Use this procedure to find any files or applications that you may want to save.

If you purchased any microprocessor support packages, you will need to reinstall them after you reinstall the hard disk image. 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.

Set Up The Slave Hard Disk Drive

Decide which hard disk drive you want to be the slave hard disk drive. If you want the replaceable hard disk drive to be the slave, you will need to add a slave jumper. If you want the fixed hard disk drive to be the slave, you will need to remove that hard disk drive from the replaceable cartridge and add a slave jumper.

To set up the hard disk drive as a slave drive, follow these instructions:

1. Determine which hard disk drive you want to be the slave drive.

2. Locate the shorting jumper that you received with this kit.

3. Remove the four #1 Phillips screws from the replaceable hard disk drive cartridge.

4. Lift the hard disk drive from the cartridge:

   a. If the slave hard disk drive is to be the replaceable hard disk drive, do not remove the cable.

   b. If the slave hard disk drive is to be the fixed hard disk drive, remove the cable and set the replaceable cartridge aside.

5. To designate the hard disk drive as a slave drive, you will need to install a shorting jumper. Refer to the label on the hard disk drive for the correct jumper position; if necessary, you may need to refer to the disk drive vendor's web site for the jumper information. Figure 1-1 shows the jumper position for the IBM (TravelStar) hard disk drive; your drive jumper location may differ depending on the model and vendor.
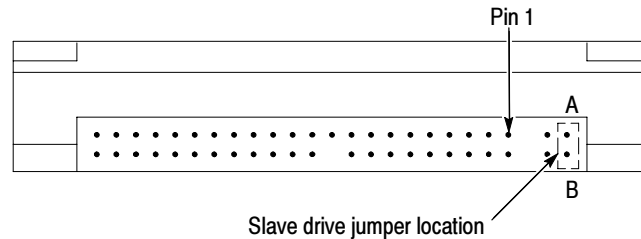
Figure 1-1: Slave drive jumper location

6. Place the hard disk drive back into the cartridge if it is to be the replaceable hard disk drive.

7. Replace the four screws into the cartridge to secure the hard disk drive (only if is to be the replaceable hard disk drive). Tighten the screws to 4 in-lbs.

8. Label this hard disk drive with a permanent marker as a slave drive.

Remove the Replaceable Hard Disk Drive

⚠ **CAUTION.** *Do not remove the hard disk drive while the instrument is powered on. Always power down the instrument before removing the hard disk drive.*

The hard disk drive can be permanently damaged if you remove it while the instrument is powered on.

Verify that the instrument is turned off.

Remove the replaceable hard disk drive cartridge by depressing it to release the latch as shown in Figure 1–2. Pull on the replaceable hard disk drive cartridge to remove it from the chassis.
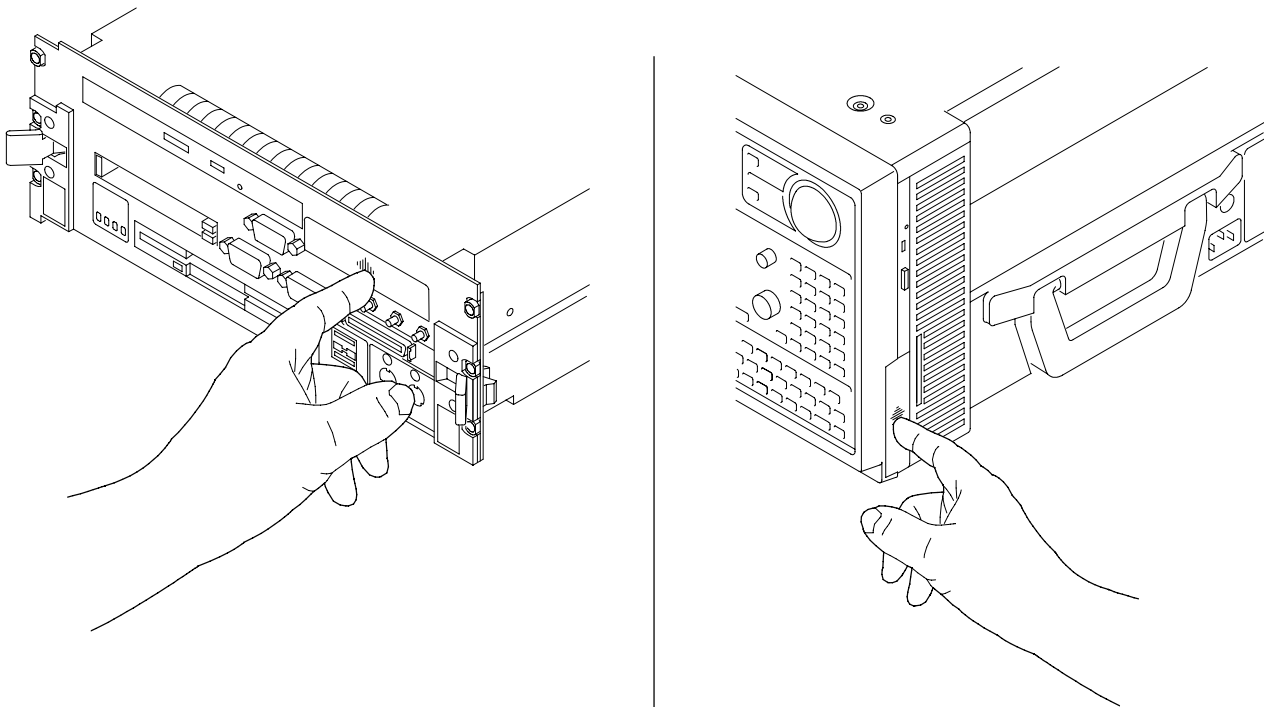
Figure 1–2: Depress the latch to release

Set Up The Master Hard Disk Drive

If you want the master hard disk drive to be the replaceable hard disk drive, you do not have to do anything to the drive. If you want the master hard disk drive to be the fixed hard disk drive, you will need to remove that hard disk drive from the replaceable cartridge.

Use the following steps and refer to Figure 1–3 to perform this procedure:

1. Remove the four #1 Phillips screws that fasten the hard disk drive to the cartridge.

2. Carefully remove the hard disk drive from the cartridge and remove the cable assembly from the connector on the hard disk drive.

3. With a permanent marker label this hard disk drive as the fixed hard disk drive for reference. This is the hard disk drive you will install as the fixed hard disk drive.

4. Set the disk drive aside. You will install this drive after the mainframe is disassembled. If the replaceable hard disk drive cartridge will not be used, you can keep the cartridge as a spare part.
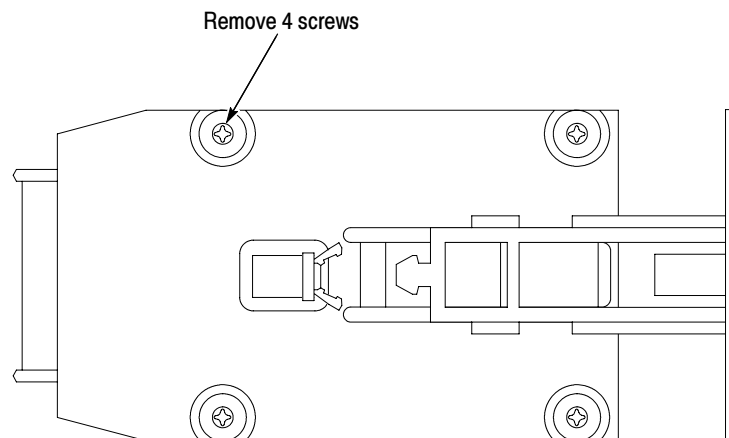
Figure 1–3: Remove the hard disk drive from the cartridge

TLA7UP Option 12: Benchtop Mainframe-Specific Update Instructions

The following instructions direct you through the process of disassembling your benchtop mainframe and installing a second, fixed MAX hard disk drive.

These instructions require that you be familiar with servicing the instrument, because of the complexity of the Controller subassembly. If you are not familiar with servicing the instrument, you are strongly recommended to contact your nearest Tektronix service center for installation information.

1. If you have not already done so, power down the mainframe and disconnect the power cord.

2. Remove the benchtop controller from the mainframe and place it on a clean, static free, work surface.

Remove the Benchtop Controller Covers

To install a second hard disk drive, you must remove the covers from the mainframe controller. If you have a, 6-inch long, narrow shaft, #2 Phillips screwdriver, there is no need to remove the front panel and the hard disk drive interface board. Otherwise, you will need to refer to the *TLA721 Benchtop Mainframe & TLA7XM Expansion Mainframe Service Manual* for detailed instructions for removing the front panel and hard disk drive interface board on the TLA721 Benchtop Controller.

Remove the ten flat-head T-10 Torx-drive screws shown in Figure 1--4 and then lift off the controller left and rear covers.
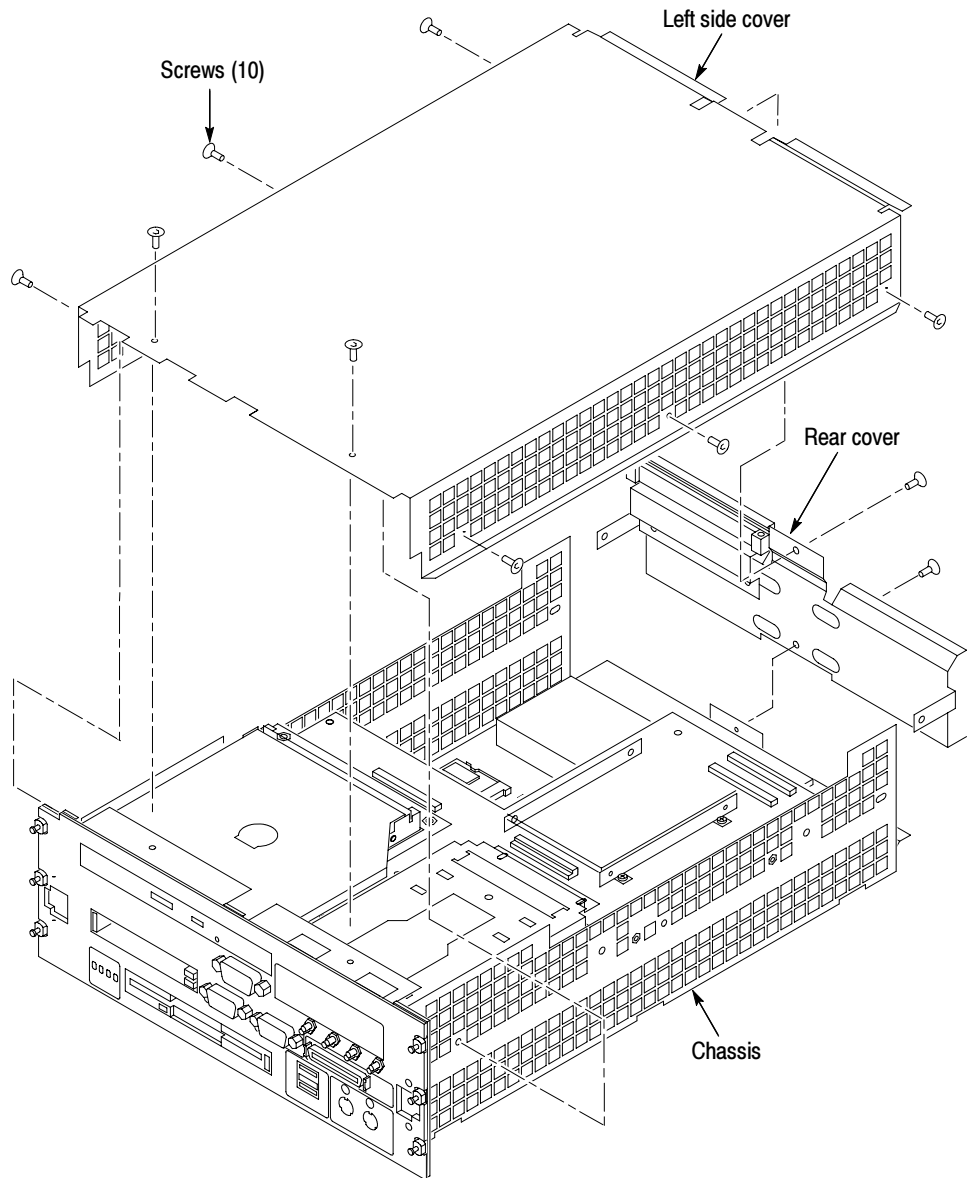
Figure 1--4: Removing the covers on the TLA721 Benchtop controller

Install the Fixed Hard Disk Drive

Use the following procedure to secure the fixed hard disk drive to the interface board.

1. Loosen the fixed hard disk drive bracket T-10 Torx-drive screws to easily insert the hard disk drive between the brackets (refer to Figure 1–5 as necessary).

2. Carefully align the connector pins on the back of the hard disk drive to the socket on the board. Gently slide the hard disk drive into the socket. Verify that all of the pins are fully engaged and that no pins are bent.

NOTE. You can access the hard disk drive brackets and the screws by reaching through the holes of the chassis with a 6-inch long, narrow shaft #2 Phillips screwdriver.

3. Using a 6-inch long, narrow shaft, #2 Phillips screwdriver, install the four pan head screws that came with this kit to secure the fixed hard disk drive to the brackets. Tighten the screws to 1 in-lbs.

4. Tighten the T-10 Torx-drive screws that secure the fixed hard disk drive brackets to the interface board to 3 in-lbs.
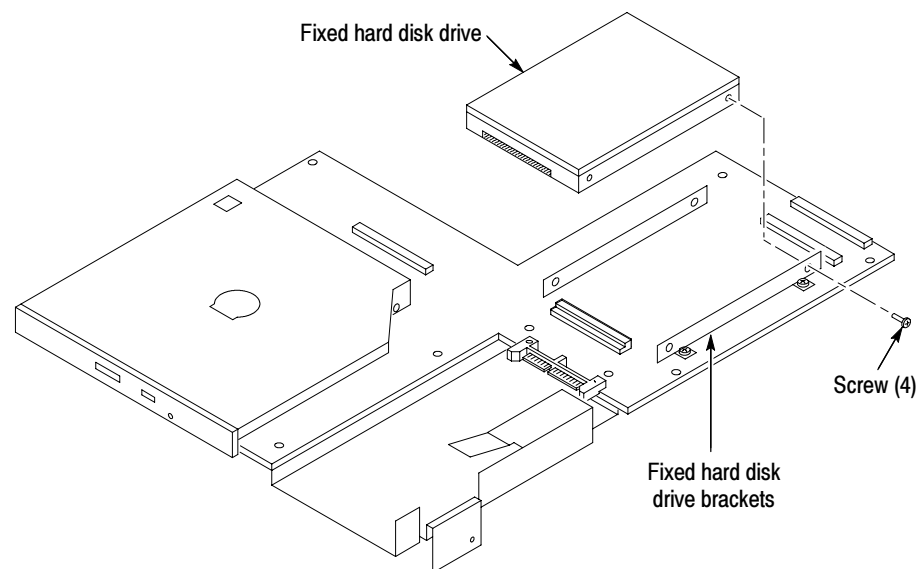
Figure 1–5: Install the fixed hard disk drive

5. Reinstall the left side cover and the rear cover; tighten the screws to 3 in-lbs.

6. Install the replaceable hard disk drive by reversing the procedure located on page 1--8.

7. Install the controller in the mainframe and tighten the controller hold-down screws.

Set Up the Two Hard Disk Drives

If the master hard disk drive already contains the Windows operating system and the TLA application software loaded, the system will boot up and function properly.

If the master hard disk drive is the blank hard disk drive you received with this kit, you need to ensure that the hard disk drive is detected correctly using the verification procedure on page 1--23. If the hard disk drive is detected, then format the hard disk drive, load Windows and load both the TLA application and associated software.

TLA7UP Option 12: Portable Mainframe-Specific Update Instructions

The following instructions direct you through the process of disassembling your portable mainframe and installing a second, MAX hard disk drive.

These instructions require that you be familiar with servicing the instrument, because of the complexity of the Controller subassembly. If you are not familiar with servicing the instrument, you are strongly recommended to contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service for installation.

Remove the Trim Ring

Use the following procedure and Figure 1-6 on page 1-16 to remove the trim ring:

1. Set the mainframe with the cord-wrap feet on the work surface and the bottom facing you.

2. Use the spudger tool (supplied with this kit) to gently pry under the trim ring to detach the three plastic snaps along the bottom edge. Then, swing the bottom of the ring upward and work the rest of the ring off the front panel.

When removing the trim ring, use
the spudger tool to gently pry
along the bottom edge. Then, flex
it toward you before pulling up.
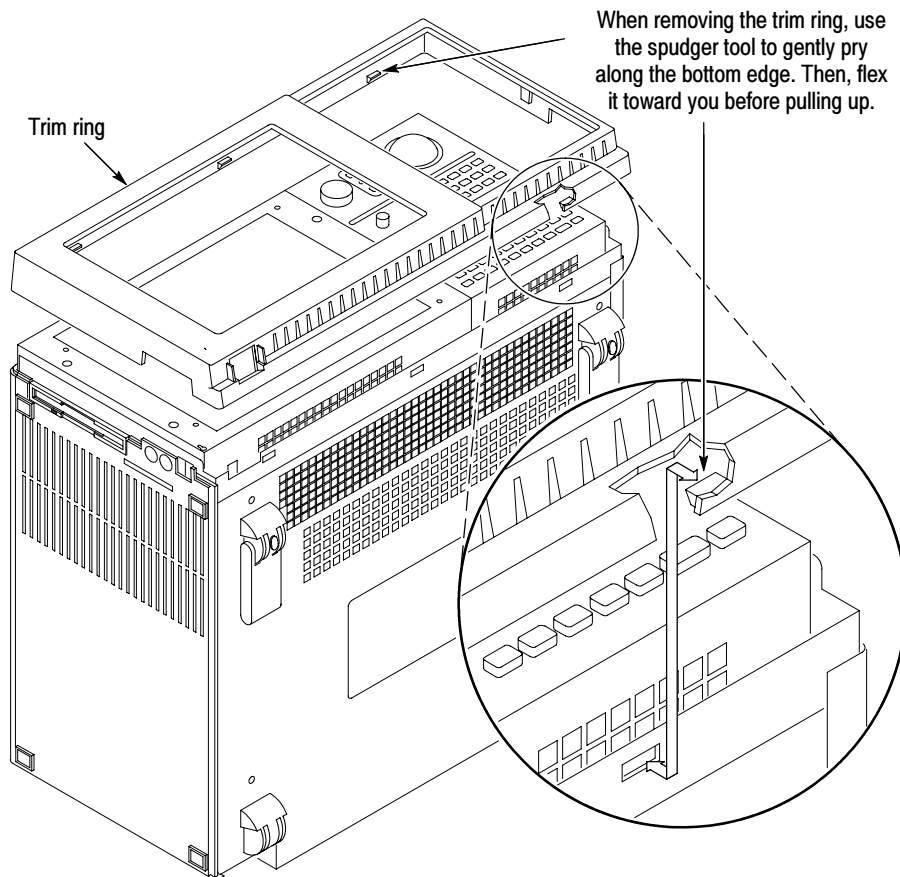
Trim ring

Figure 1‑6: Trim ring removal

Remove Flat Panel Display Assembly

Use the following procedure and Figure 1‑7 to remove the flat panel display
assembly:

1. Remove the five T-15 Torx-drive screws that attach the flat panel display
   assembly to the mainframe.

2. Lift the bottom edge of the flat panel display assembly and rotate it upward
   and off the front face of the mainframe.

*NOTE. Exercise care not to dislodged the light pipe, which is located in the
lower‑left corner of the front panel display assembly.*

3. Detach the cables that connect from the flat panel display assembly to both
   the front panel interface board and the high-voltage power supply.

Remove screws (5)

Flat panel display assembly

Disconnect the cable

Display backlight cable
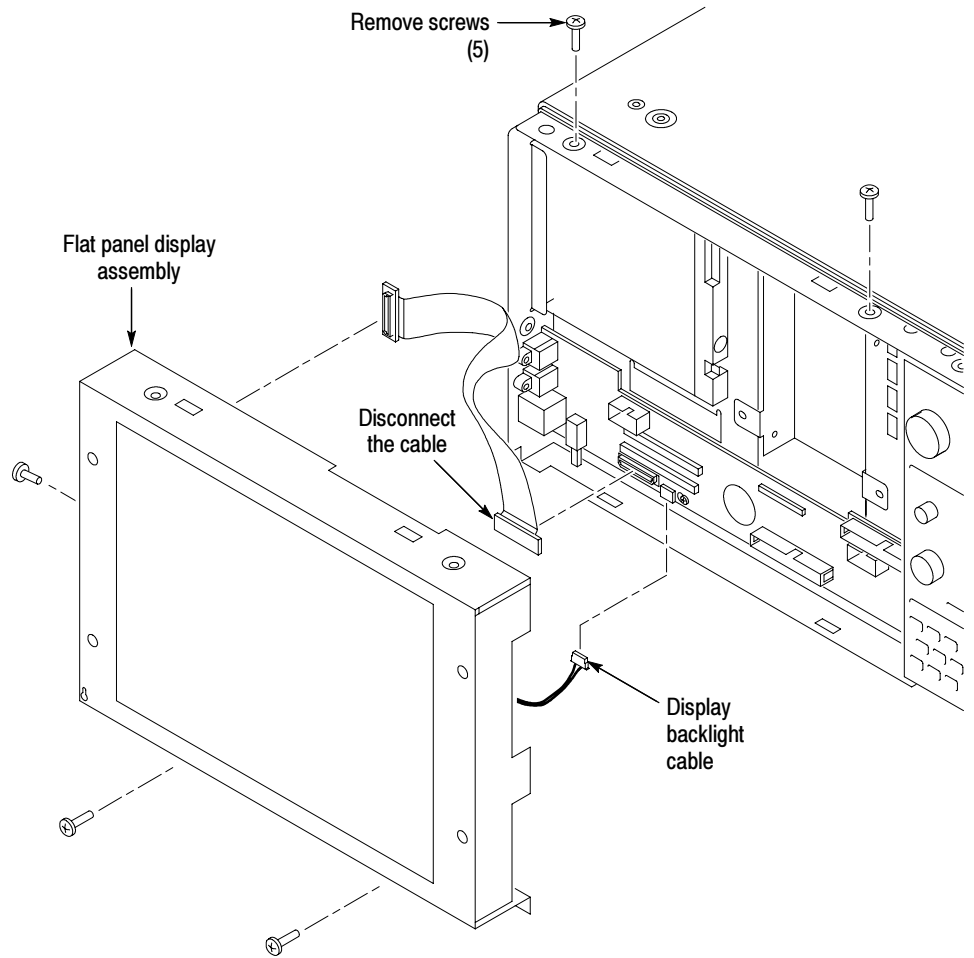
Figure 1‑7: Flat panel display assembly removal

Install Fixed Hard Disk Drive

Use the following procedure, and refer to Figure 1–8, to install the fixed hard disk drive:

1. Remove the four T-15 Torx-drive screws that secure the fixed hard disk drive bracket to the chassis.

2. Locate the hard disk drive that will become the fixed hard disk drive.
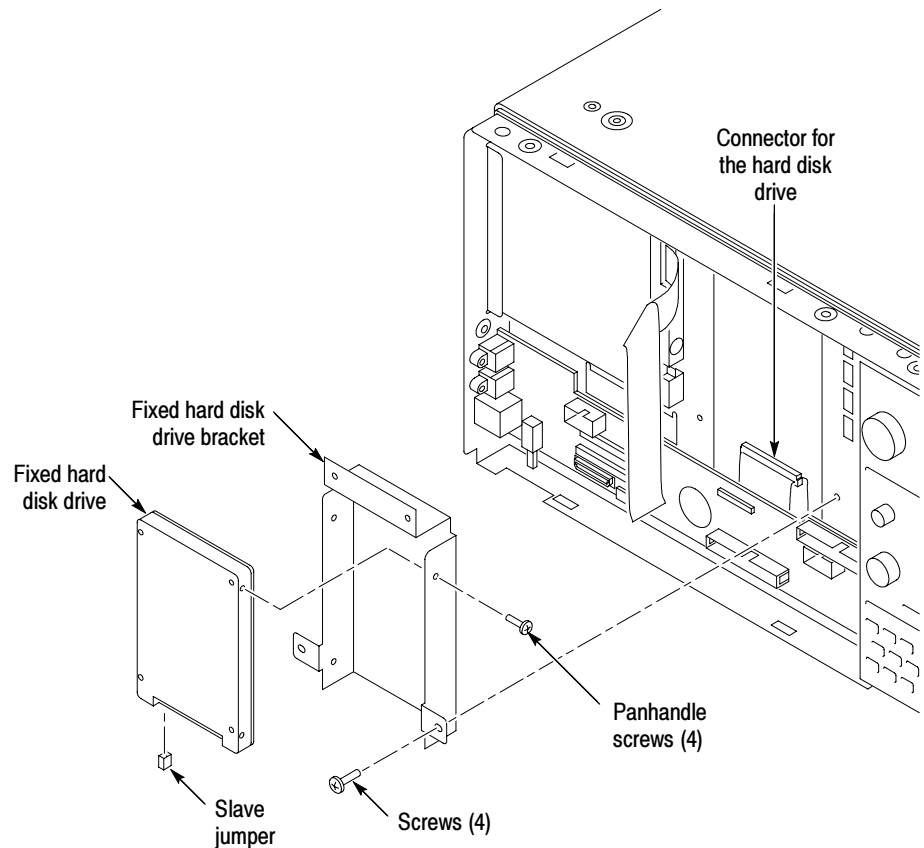
Figure 1–8: Installing the fixed hard disk drive

3. Mount the fixed hard disk drive to the fixed hard disk drive bracket with the four panhandle screws included in this kit (tighten the screws to 1 in-lbs). Ensure that the orientation matches the key on the data cable.

4. Attach the data cable to the fixed hard disk drive.

5. Attach the fixed hard disk drive bracket to the chassis with four T-15 Torx-drive screws; tighten the screws to 8 in-lbs.

Install Flat Panel Display Assembly

Use the following procedure, and refer to Figure 1–7 on page 1–17, to reinstall the flat panel display assembly:

1. Reattach the cable connecting the flat panel display assembly to the interface board.

2. Reattach the high-voltage power supply cable to the power supply.

3. Reinstall the flat panel display assembly by first inserting the top edge and then rotating the bottom edge downward into position. Ensure that the tabs are engaged at the top of the assembly. Insert the five T-15 Torx-drive screws that attach the flat panel display assembly to the mainframe: two screws at the bottom of the assembly on the front of the instrument, two screws on the top, and one screw on the left side. Tighten the screws to 8 in-lbs.

Portable Mainframe MAX DRAM Installation

The following instructions support the upgrade to 512 MB of DRAM memory on your portable mainframe.

Remove the Top Cover

Use the following procedure to remove the top cover:

1. Set the mainframe with the bottom on the work surface and the front facing you.

2. Unsnap the accessories pouch from the top cover.

NOTE. When removing the screws from the instruments, keep all of the screws that hold the blue plastic covers together. These screws are longer than those screws used to hold the aluminum chassis parts in place.

---

3. Remove the four T-15 Torx-drive screws that attach the top cover to the mainframe, as shown in Figure 1–9.

4. Lift the top cover off.

Screw (4)

Top cover
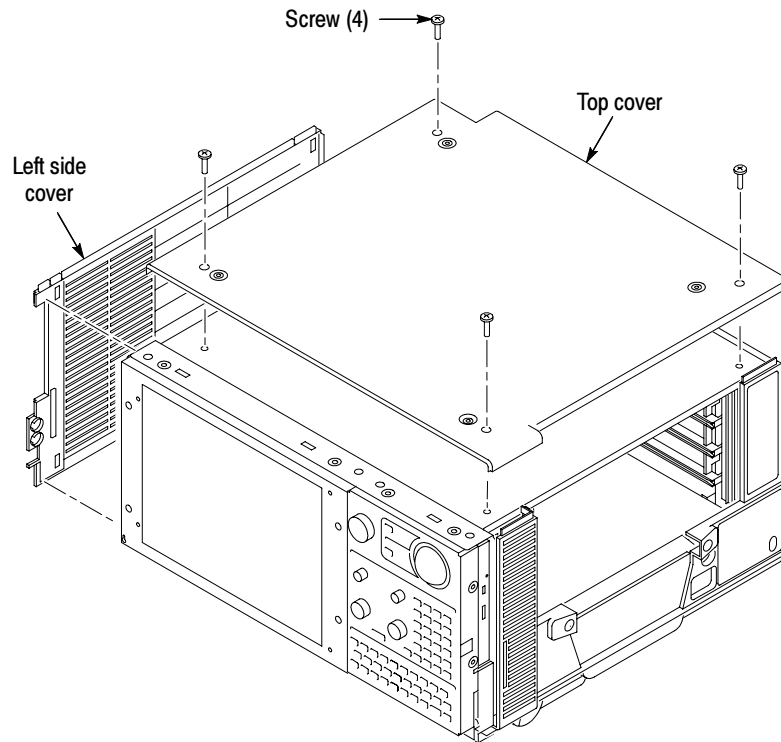
Left side cover

Figure 1‑9: Top and side cover removal

Remove the Left Side Cover and Controller Cover

No screws attach the left side cover to the mainframe. However, you must loosen the two T-15 Torx-drive screws closest to the left side of the bottom cover in order to remove the left side cover. Place the mainframe on cord-wrap feet, with the left-side of the mainframe facing you.

Use the following procedure to remove the left side cover:

1. Loosen the two T-15 Torx-drive screws on the bottom cover closest to the left side of the mainframe.

2. Remove the left side cover.

3. Remove the ten T-15 Torx-drive screws securing the controller cover to the chassis, as shown in Figure 1‑10, and then lift off the cover.

Smaller screw
goes here

Remove screws (3)

Rear panel

SODIMMs

Controller board

Remove screws (3)

Remove
screws (2)

Controller cover

Remove screws (2)
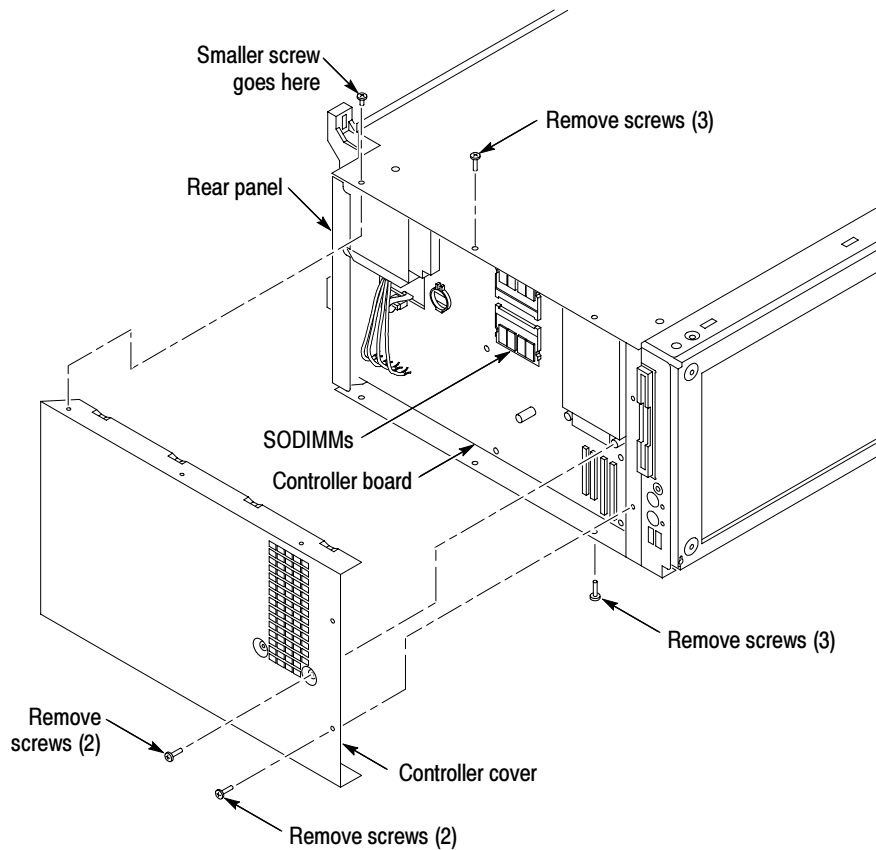
Figure 1-10: Removing the controller cover

Install the SODIMM

The SODIMM memory is located on the controller board.

Insert the additional memory into the empty socket on the controller board by pressing down gently until the clips that hold the memory board to the controller board snap into place.

Install the Left Side Cover

Complete the following procedure to install the left side cover.

1. Replace the controller cover by first inserting the left edge beneath the chassis lip and then press the shield into place.

2. Fasten the ten medium length T-15 Torx-drive screws that secure the controller cover to the chassis; tighten the screws to 8 in-lbs.

3. Reposition the left side cover, then tighten the two T-15 Torx-drive bottom cover screws that attach the bottom cover to the chassis. These screws are located nearest the left side of the instrument. Tighten the screws to 8 in-lbs.

Install the Top Cover

Use the following procedure to reinstall the top cover:

1. Reposition the top cover on the portable mainframe.

2. Insert the four long T-15 Torx-drive screws that attach the top cover to the mainframe. Tighten the screws to 8 in-lbs. See Figure 1--9 on page 1--20.

3. Reattach the accessories pouch to the top cover. (It snaps on.)

Install the Trim Ring

Replace the trim ring on the front panel. Start at the top edge and work around to the bottom until the three plastic snaps engage. Press the trim ring down all around the edges until it is completely seated.

Set Up the Two Hard Disk Drives

If the master hard disk drive already contains the Windows operating system and the TLA application software loaded, the system will boot up and function properly.

If the master hard disk drive is the blank hard disk drive you received with this kit, you will have to set up the BIOS, format the hard disk drive, load Windows and load the TLA application software and the associated software.

TLA7UP Option 12: Verify Operation

After installing the hardware upgrades, use the following procedures to verify that the hard disk drive and DRAM are recognized and are operating correctly.

Verify MAX Hard Disk Drive Operation

Follow the steps below to ensure proper operation of the instrument after completing the fixed hard disk drive upgrade instructions:

1. Run the hardware setup routine to ensure that the fixed hard disk drive is detected and that the disk drive size is correctly recognized:

    a. Power on the logic analyzer and press function key F2 before the Windows operating system boots.

    b. From the Main menu, select IDE Adapter O Master and press Enter.

    c. Select Autotype Fixed Disk and press Enter to automatically detect the size of your hard disk drive.

2. If you defined the MAX hard disk drive as your master, reboot your instrument to confirm that the hard disk drive is operating properly. To complete the upgrade process, refer to *Reinstall Software* on page 1-24.

3. If you defined the MAX hard disk drive as your slave, access the hard disk drive using Microsoft Windows Explorer and transfer one or more files to confirm that the hard disk drive is operating properly.

Verify MAX DRAM Operation

Follow the steps below to ensure that you instrument recognizes the newly installed DRAM after completing the upgrade:

1. Click Start → Programs → Accessories → System Tools.

2. Click System Information. The system responds by displaying the Microsoft System Information dialog.

3. Verify that the Microsoft System Information dialog indicates that 512 MB of RAM is installed.

CheckIt Utilities

If you already have TLA Application Software Version 4.1 (or higher) installed on your logic analyzer, you can also use the CheckIt Utilities to verify the hard disk and the available memory. To use the CheckIt Utilities, select Start → Program → CheckIt Utilities.

Attach the Upgrade Kit Label to the Instrument

After completing all the previous steps, you need to install the upgrade kit label on the instrument to indicate that the kit is installed.

Locate the large label on the bottom of the instrument and then attach the TLA7UP kit label as shown in Figure 1-11.

Figure 1-11: Kit label locations

Reinstall Software

Follow the instructions in either *TLA7UP Option 41: TLA Application Software and Windows Operating System Upgrade* (beginning on page 4-1)or *TLA7UP Option 42: TLA Application Software Upgrade* (beginning on page 5-1) to upgrade your instrument to the latest software.

TLA7UP Option 15

TLA7UP Option 15: iView External Oscilloscope Cable Installation

TLA7UP option 15 allows you to connect your logic analyzer to an external oscilloscope and to view the oscilloscope waveforms on the logic analyzer.

Instruments

TLA715 Series Logic Analyzers   All Serial Numbers
TLA721 Series Logic Analyzers   All Serial Numbers

Minimum Tool and Equipment List

No special tools or equipment required

Parts List

Table 2‑1: TLA7UP Option 15 parts list

Quantity	Part number	Description
1 ea	012-1614-xx	iView external oscilloscope cable kit (includes USB-to-GPIB & BNC, BNC-to-SMB adapter, and instruction card)
1 ea	N/A	TLA7UP kit label

Installation Prerequisite

Requires Version 5.0 TLA Application Software or higher, Microsoft Windows XP Professional or Microsoft Windows 2000 Professional operating system, and 512 MB minimum mainframe memory. Also requires the latest version of the NI-488.2 software available on the TLA Application software CD; refer to the release notes on the CD for software version history.

Installation Instructions

Online installation instructions are provided within the TLA application through a wizard. After powering on the instrument, select Add iView External Scope from the System menu and follow the online instructions.

Attach the Upgrade Kit Label to the Instrument

After completing all the previous steps, you need to install the upgrade kit label on the instrument to indicate that the kit is installed.

Locate the big label on the bottom of the instrument if you have a portable mainframe or on the side of the benchtop controller. Attach the TLA7UP kit label as shown in Figure 2–1.

NOTE. *If there already is an upgrade kit label installed, install the new label just above the old one.*

Figure 2–1: Kit label locations

TLA7UP Option 20

TLA7UP Option 20: CD-RW/DVD-ROM Drive for TLA700 Series Logic Analyzers

TLA7UP option 20 provides parts and instructions to upgrade the CD drive to a CD-RW/DVD-ROM drive. This option can be installed on any TLA715 or TLA721 logic analyzer mainframe. Please order TLA7UP Option 41, or 42 to get the latest software to support your new CD-RW/DVD-ROM drive.

NOTE. To play DVD media with your new drive, you must upgrade your software, with TLA7UP Option 41. TLA7UP Option 41 includes the Microsoft Windows XP Professional Operating System and Media Player V10. You can also add a third-party DVD decoder.

Instruments

TLA715 Portable Mainframe	All serial numbers
TLA721 Benchtop Mainframe	All serial numbers

Parts List

Table 3‑1: TLA7UP Option 20 parts list

Quantity	Part number	Description
1 ea	119-7196-xx	CD-RW/DVD-ROM disk drive
1 ea	407-4570-xx	TLA715 CD mounting bracket
1 ea	407-4913-xx	TLA721 CD mounting bracket
1 ea	003-0008-xx	Spudger tool for removing TLA715 Trim Ring
1 ea	N/A	TLA7UP Kit Label

Minimum Tool and Equipment List

Table 3-2: Tools required for installing upgrade

Item no.	Name	Description
1	Screwdriver handle	Accepts Torx®-driver bits
2	T-10 Torx tip	Used for removing most of the T-10 size screw heads on the TLA721 controller
3	T-15 Torx tip	Used for removing most or the TLA715 instrument's screws. Torx®-driver bit for T-15 size screw heads
4	#1 Phillips screwdriver	Screwdriver for removing small Phillips screws
5	#0 Phillips screwdriver with 6-inch shaft	Screwdriver for removing small Phillips screws on the CD-ROM drive
6	Nut driver	A $3/16$-inch nut driver used for removing controller front panel hardware
7	Nut driver	A $1/4$-inch nut driver used for removing nuts on the back side of the controller front panel
8	Flat blade screwdriver	Small flat blade screwdriver for removing controller front panel hardware

Installation Prerequisites

These instructions assume that you are familiar with servicing the instrument. If you need further details for disassembling or reassembling the instrument, refer to one of the following service manuals:

- *TLA715 Portable Mainframe Service Manual* (Tektronix part number 071-0913-xx)

- *TLA721 Benchtop & TLA7XM Expansion Mainframe Service Manual* (Tektronix part number 071-0912-xx)

These manuals can be downloaded from the Tektronix Web Site. You may also contact your nearest Tektronix service center for installation assistance.

Preventing ESD

When performing any service which requires internal access to the instrument, adhere to the following precautions to avoid damaging internal circuit boards and their components due to electrostatic discharge (ESD).

CAUTION. Many components within the instrument are susceptible to static-discharge damage. Service the instrument only in a static-free environment.

Observe standard handling precautions for static-sensitive devices while servicing the instrument.

Always wear a grounded wrist strap, or equivalent, while servicing the instrument.

1. Minimize handling of static-sensitive circuit boards.

2. Transport and store static-sensitive circuit boards in their static protected containers or on a metal rail. Label any package that contains static-sensitive boards.

3. Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while handling these circuit boards. Service static-sensitive circuit boards only at a static-free work station.

4. Do not allow anything capable of generating or holding a static charge on the work station surface.

5. Handle circuit boards by the edges when possible.

6. Do not slide the circuit boards over any surface.

7. Avoid handling circuit boards in areas that have a floor or work-surface covering capable of generating a static charge.

WARNING. To avoid electric shock, always power off the chassis and disconnect the power cord before cleaning or servicing the chassis.

Mainframe Specific Instructions

NOTE. In the mainframe-specific instructions, the CD-ROM or CD-RW drive is referred to as the "old CD drive."

If you are installing the CD-RW/DVD-ROM drive in a TLA715 portable logic analyzer mainframe, follow the instructions under *TLA715 CD-RW/DVD-ROM Drive Upgrade Instructions* beginning on page 3-5.

If you are installing the CD-RW/DVD-ROM drive in a TLA721 Benchtop Controller follow the instructions under *TLA721 CD-RW/DVD-ROM Drive Upgrade Instructions* beginning on page 3-13.

TLA7UP Option 20: TLA715 CD-RW/DVD-ROM Drive Upgrade Instructions

This section contains procedures for removing the old CD drive from the TLA715 portable mainframe and installing the CD-RW/DVD-ROM drive.

These instructions require that you be familiar with servicing the instrument. If you are not familiar with servicing the instrument, you are strongly recommended to contact your nearest Tektronix service representative.

Remove the Replaceable Hard Disk Drive

Complete the following steps to remove the replaceable hard disk drive from the mainframe. Always remove the hard disk drive before accessing any of the replaceable components in the instrument.

⚠ *CAUTION. Do not remove the replaceable hard disk drive while the instrument is powered on. You can permanently damage the replaceable hard disk drive if you remove it while the instrument is powered on. Always power down the mainframe before removing the replaceable hard disk drive.*

1. Power down the instrument and disconnect the power cord.

2. Press the latch on the side of the instrument to unlatch the hard disk drive.

3. Remove the hard disk drive from the instrument by pulling on the handle.

Remove the Accessories Pouch

The accessories pouch is held in place on the top cover by snaps. Gently lift up on each corner of the pouch until the pouch snaps free from the top cover.

Remove the Trim Ring

1. Set the mainframe with the cord-wrap feet on the work surface and the bottom facing you.

2. Use the spudger tool to detach the three plastic snaps from the bottom cover (see Figure 3–1). Then, swing the bottom of the ring upward and work the rest of the ring off the front panel.
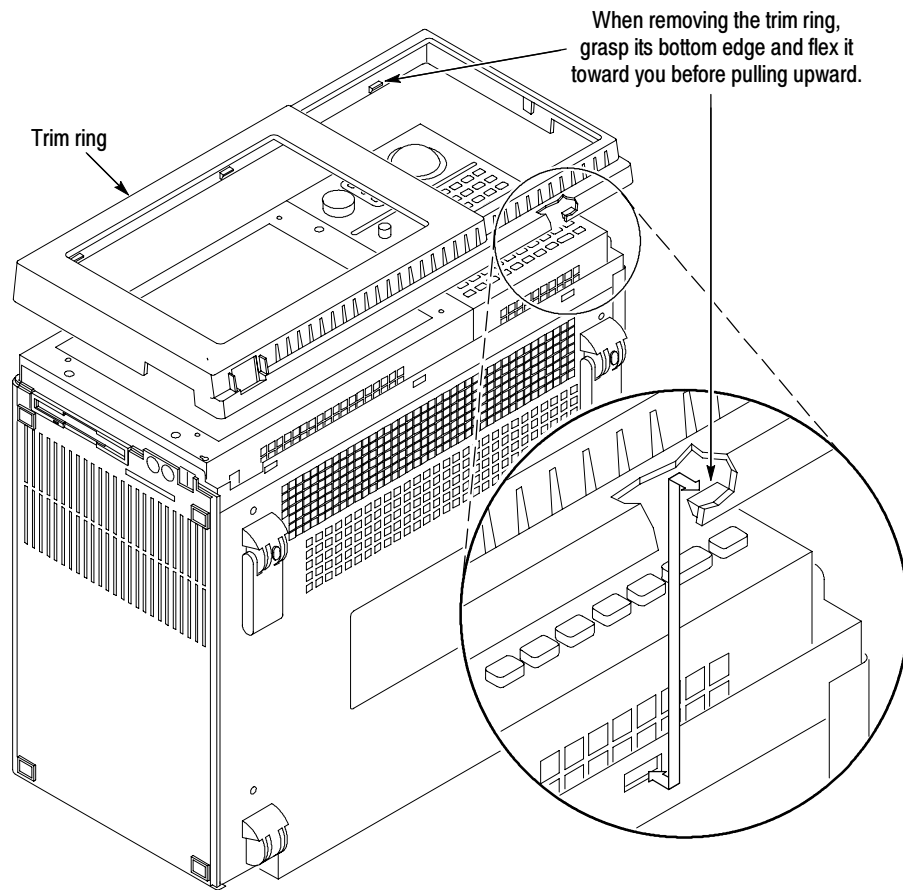
Figure 3-1: Trim ring removal

Remove the Flat Panel Display Assembly

1. Remove the five screws that attach the flat panel display assembly to the mainframe (See Figure 3-2).

2. Lift the bottom edge of the flat panel display assembly and rotate it upward and off the front face of the instrument.

3. Detach the ribbon cable connecting the flat panel display assembly to the front panel interface board.

4. Detach the five-pin display backlight power connector and then set the assembly aside.

Remove screws (5)

Flat panel display
assembly

Disconnect
the cable

Display
backlight
cable
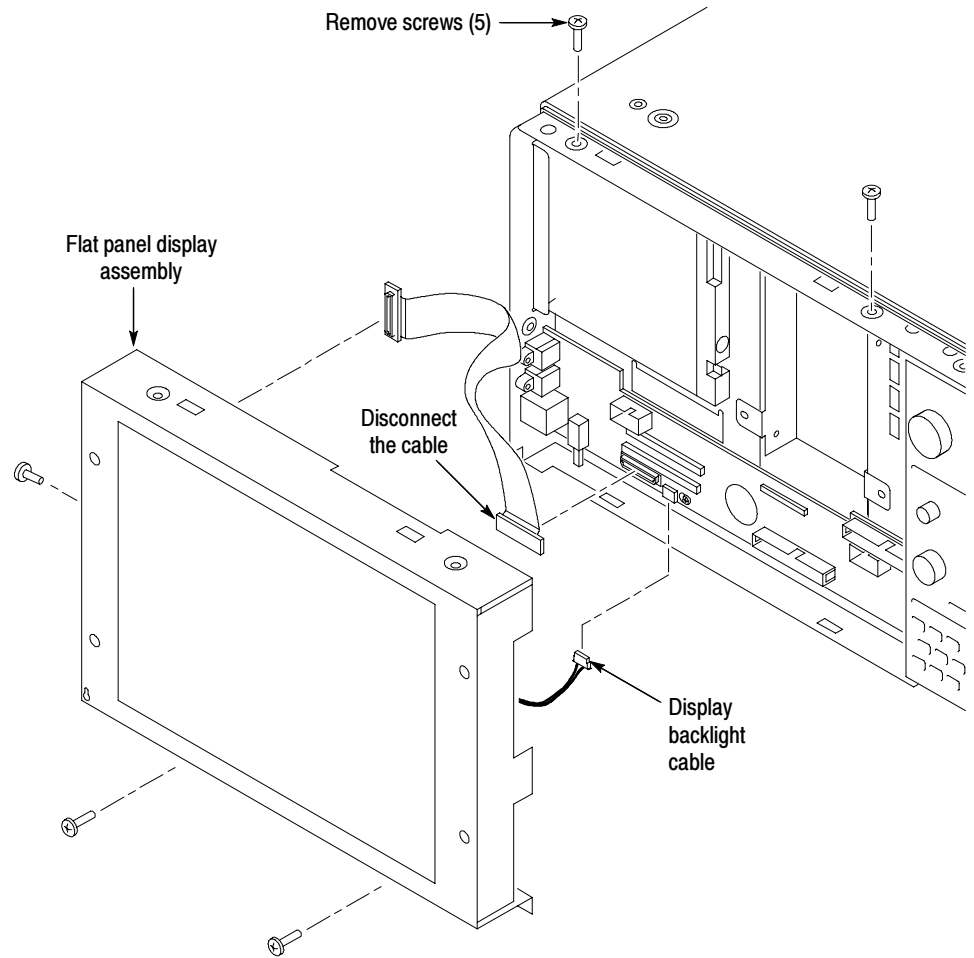
Figure 3‑2: Flat panel display assembly removal

Remove the Front Panel Control Assembly

1. Disconnect the cable at J102 on the front panel interface board.

2. Remove the four screws that attach the front panel control assembly to the mainframe (See Figure 3-3).

3. Lift the bottom edge of the front control panel assembly and rotate it up and off the front face of the mainframe.

4. Detach the ribbon cable connecting the CD-RW drive to the interface board.
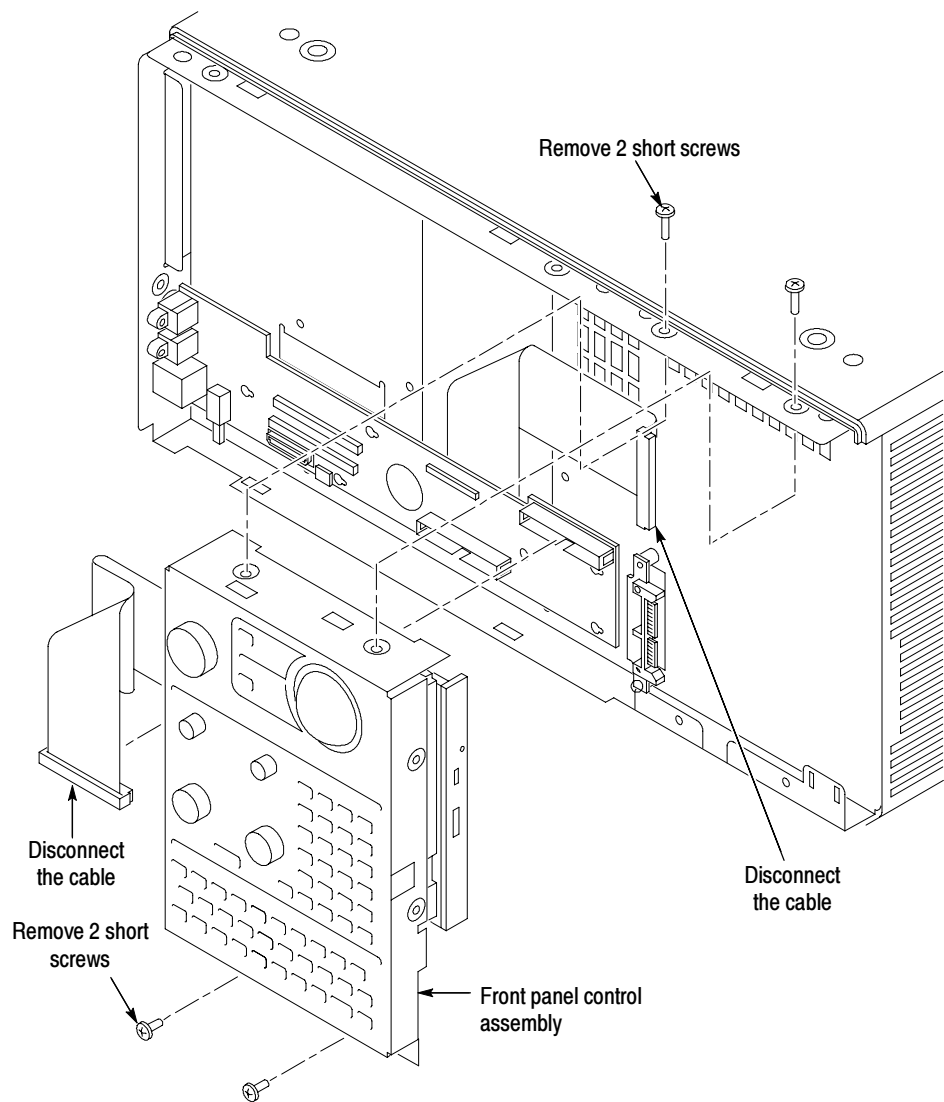
Figure 3-3: Front-panel control assembly removal

Remove the Old CD Drive

The CD drive is attached to the underside of the front panel control assembly.

1. Remove the four screws that attach the CD drive to the front panel control assembly and then separate the CD drive from the front panel assembly.

2. Remove the small Phillips screws that hold the CD drive to the bracket and then slide the CD drive out of the bracket (you will use the existing bracket to install the CD-RW/DVD-ROM drive).

3. Disconnect the interface board from the CD drive.

Install the New CD-RW/DVD-ROM Drive

To install the new CD-RW/DVD-ROM drive, complete the following steps:

1. Install the interface board that you removed from the old CD drive.

2. Install the CD-RW/DVD-ROM drive in the bracket.

3. Install the small Phillips screws that hold the CD-RW/DVD-ROM drive to the bracket and tighten the screws to 4 in-lbs.

4. Install the drive assembly on the back of the front panel control assembly.

5. Install the four screws and tighten the screws to 8 in-lbs.

Install the Front Panel Control Assembly

1. Reattach the cable connecting the CD-RW/DVD-ROM drive to the interface board.

2. Reattach the cable from the front panel control assembly to J102 on the interface board.

3. Reinstall the front panel control assembly by first inserting the top edge and then rotating it downward into position. (Be sure the tabs are engaged at the top of the assembly.)

4. Insert the four short screws that attach the front panel control assembly to the mainframe (See Figure 3–3 on page 3–8). Tighten the screws to 8 in-lbs.

NOTE. Make sure that you only use the short screws on the front panel control assembly. You will be unable to install the removable hard disk if you use longer screws.

Install the Flat Panel Display Assembly

1. Reattach the cable connecting the flat panel display assembly to the interface board.

2. Reattach the display backlight power cable.

3. Reinstall the flat panel display assembly by first inserting the top edge and then rotating it downward into position. (Be sure the tabs are engaged at the top of the assembly. Insert the five screws that attach the flat panel display assembly to the mainframe: two screws at the bottom of the assembly on the front of the instrument, two screws on the top, and one screw on the left side. (See Figure 3–2). Tighten the screws to 8 in-lbs.

Install the Trim Ring

Place the trim ring on the front panel. Start at the top edge and work around to the bottom until the three plastic snaps engage. Press the trim ring down around each edge until it is completely seated.

Install the Accessories Pouch

To reinstall the pouch, align the pouch over each snap and push down on the corners of the cover (it may be easier to open the pouch and press down on the corners from inside the pouch).

Reinstall the Replaceable Hard Disk

Slide the hard disk assembly into the side of the instrument. Push on the handle until it latches in place.

Attach the Upgrade Kit Label to the Instrument

After completing all the previous steps, you need to install the upgrade kit label on the bottom of instrument to indicate that the kit is installed.

Attach the TLA7UP kit label on the large label as shown in Figure 3--4. If the instrument already has an upgrade label, install the new label directly above or below the old upgrade kit label.

Figure 3- 4: Kit label locations

Verify Operation

After installing the removeable hard disk drive, reconnect the power cord and power on the instrument; verify that the power-on diagnostics pass.

NOTE. *If your instrument has the CheckIt Utilities software (available with TLA7UP Option 41 or 42), run the appropriate CD ROM tests.*

TLA7UP Option 20: TLA721 CD-RW/DVD-ROM Drive Upgrade Instructions

This section contains procedures for removing the old CD drive from the TLA721 Benchtop controller and installing the new CD-RW/DVD-ROM drive.

These instructions require that you be familiar with servicing the instrument, because of the complexity of the Controller subassembly. If you are not familiar with servicing the instrument, you are strongly recommended to contact your nearest Tektronix service representative for installation information.

Remove the Replaceable Hard Disk Drive

CAUTION. Do not remove the replaceable hard disk drive while the mainframe is powered on. You can permanently damage the replaceable hard disk drive if you remove it while the mainframe is powered on.

1. Power down the instrument and disconnect the power cord.

2. Press the latch on the side of the instrument to unlatch the hard disk drive.

3. Remove the hard disk drive from the instrument by pulling on the handle.

Remove the Benchtop Controller from the Mainframe

CAUTION. Do not remove or install the benchtop controller while the mainframe is powered on. You can damage the controller or the mainframe if you attempt to remove or install the controller while the mainframe is powered on.

1. If you have not already done so, power down the mainframe and disconnect the power cord.

2. Disengage the benchtop controller from the mainframe using the ejector handles.

3. Remove the controller from the mainframe and place it on a static-free work surface.

Remove the Ejector Handles

You must remove the ejector handles to provide access to the front panel. The front panel contains hardware that holds the hard disk drive interface board in place.

Place the controller on the right side as shown in Figure 3--5. Remove the T-10 Torx screws that secure the handle to the chassis and then remove the handles.

Remove screws (4)
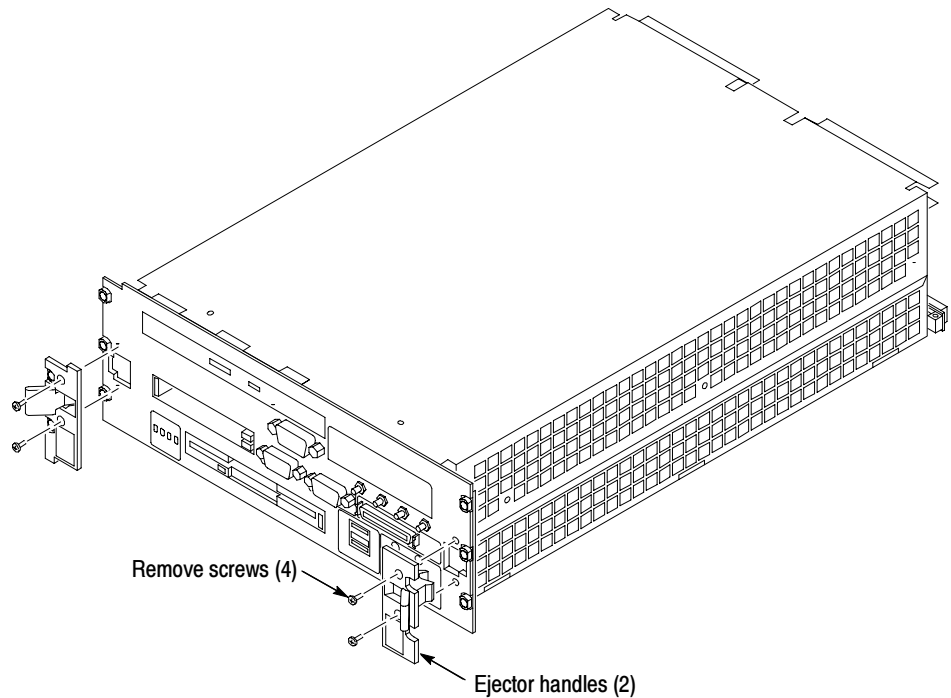
Ejector handles (2)

Figure 3- 5: Removing the ejector handles

Remove the Benchtop Controller Covers

Remove the ten flat-head T-10 Torx-drive screws, shown in Figure 3–6, and lift off the controller left and rear covers.
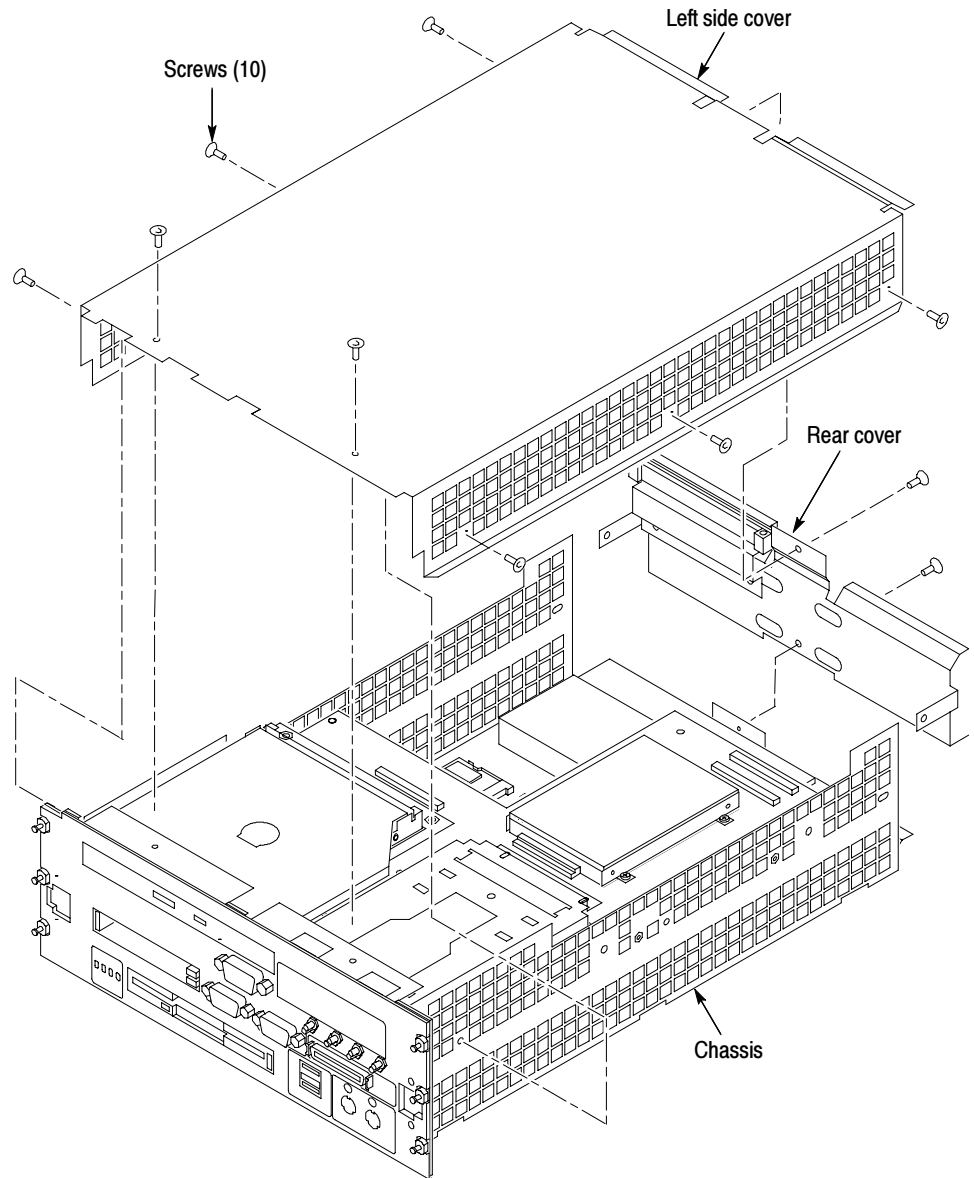
Figure 3- 6: Removing and installing the left and rear covers

Remove the Front Panel and Hard Disk Drive Interface Board

You must remove the front panel and then the hard disk drive interface board before you can access the CD-RW drive in the benchtop controller. You will need a screwdriver with a T-10 Torx tip, a $^1/_4$-inch nut driver, a $^3/_{16}$-nut driver, and a small flat-blade screwdriver to complete the procedures.

1. Remove the five $^1/_4$-inch nuts on the back of the front panel.

2. Using a small, flat-blade screw driver, remove the two screws from the printer port connector on the front panel (see Figure 3–7).

3. Using the $^3/_{16}$-nut driver, remove the four jack screws from the two video port connectors (do not remove the jack screws at the COM A connector).

4. Pull the front panel off so that you can access the flat-head T-10 screws underneath the front panel (be careful so that you do not damage the cable from the COM A connector).
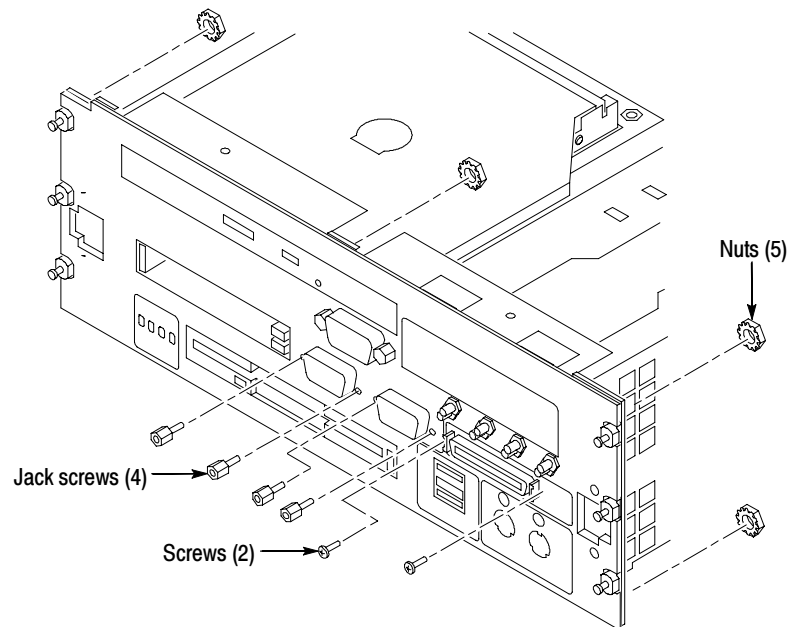
Figure 3‑7: Removing and installing the front panel hardware

5. Refer to Figure 3–8 and remove the four T-10 screws from the front of the controller.

6. Remove the four flat-head T-10 screws on the bottom cover that hold the hard drive interface board in place. See Figure 3–8.

7. Disconnect the two ribbon cables located on the rear of the hard disk interface board.

8. Slide the hard drive interface board out of the chassis.

Hard disk drive interface board

Disconnect cables

Remove screws (4)

Disconnect cable
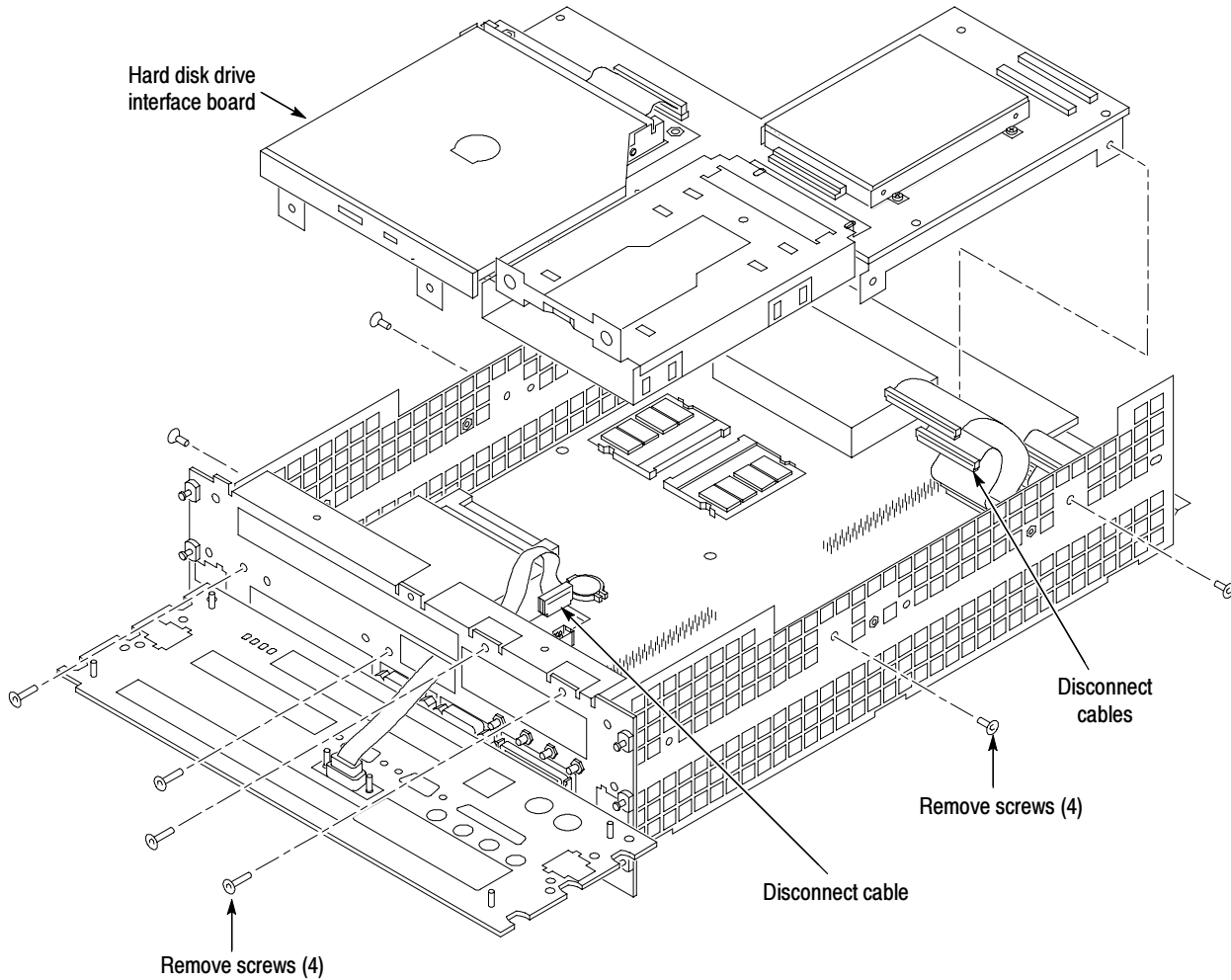
Remove screws (4)

Figure 3-8: Removing screws from the front and sides of the controller

Remove the Old CD Drive

The CD drive is located on the hard drive interface board.

1. Using a #0 Phillips head screwdriver, remove the four screws on the sides of the CD bracket (see Figure 3-9).

2. Remove the CD drive assembly from the bracket.

3. Disconnect the interface board and ribbon cable from the CD drive; leave the other end of the ribbon cable connected to the hard disk drive interface board.

CD ROM

CD bracket

Screws (4)

Ribbon cable
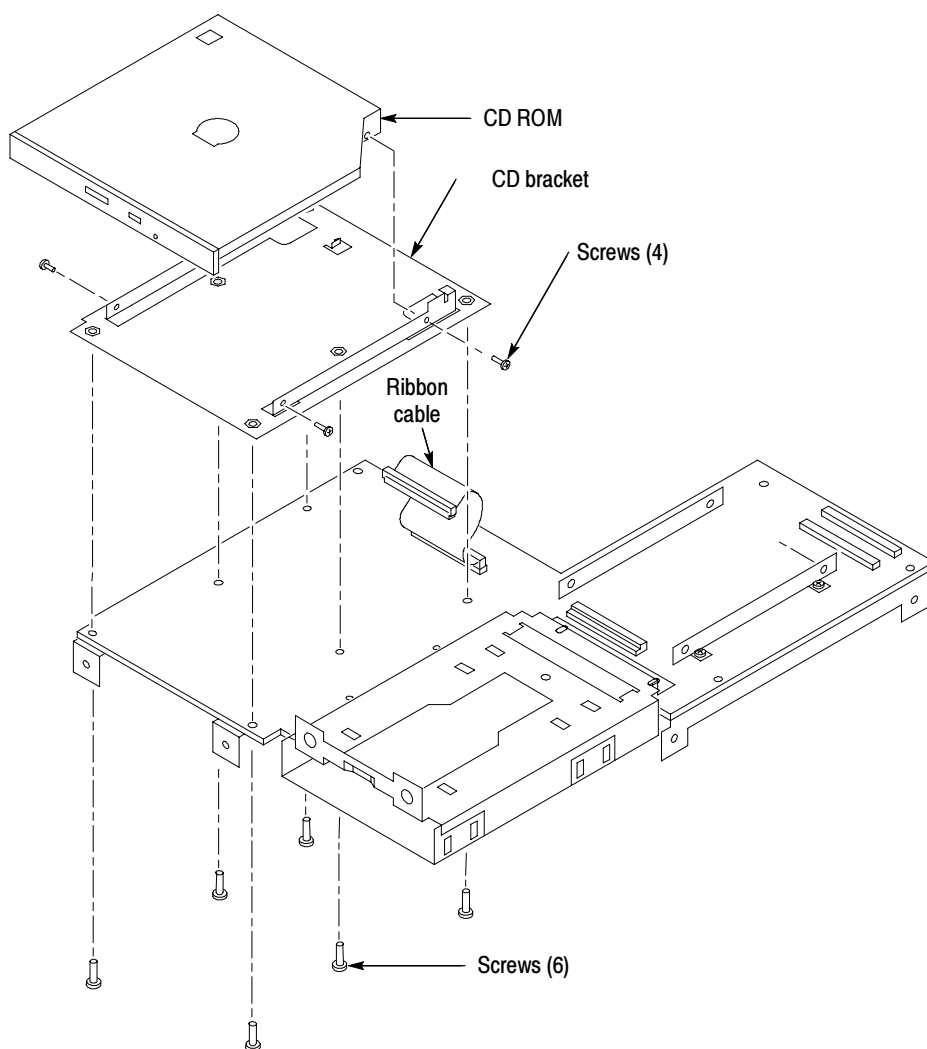
Screws (6)

Figure 3-9: Removing the CD drive

4. Remove the six T-10 screws on the bottom of the hard disk drive interface board that secure the CD drive bracket (see Figure 3-9).

5. Remove the CD drive bracket from the hard disk drive interface board.

Install the New CD-RW/DVD-ROM Drive and Bracket

NOTE. *You must install the new bracket with the inside-threaded standoffs. Otherwise, the screw holes from the CD-RW/DVD-ROM drive will not line up.*

1. Locate the single-piece mounting bracket with the inside-threaded standoffs (Tektronix part number 407-4913-00).

2. Install the drive bracket to the hard disk drive interface board by attaching the six T-10 screws on the bottom of the board; tighten the screws to 3 in-lbs.

3. Connect the small interface board with the drive ribbon cable to the CD-RW/DVD-ROM drive. Verify that pin-1 of the cable is connected to pin-1 of the connector.

4. Slide the CD-RW/DVD-ROM drive into the new bracket.

5. Attach the CD-RW/DVD-ROM drive to the bracket using the the four screws from the removal process. Tighten the screws to 1 in-lbs.

Install the Hard Disk Drive Interface Board and the Front Panel

1. Install the hard disk drive interface board in the chassis making sure that the CD-RW/DVD-ROM drive fits into the opening at the front of the chassis.

2. Install the four flat-head T-10 screws on the top and bottom of the chassis; tighten the screws to 4 in-lbs.

3. Connect the two ribbon cables from the processor board to the hard disk drive interface board.

4. Install the four flat-head T-10 screws on the front of the chassis; tighten the screws to 4 in-lbs.

5. Secure the front panel in place by lining up the five studs on the front panel with the holes on the front of the chassis. Install and tighten the five $^1/_4$-inch nuts on the back of the front panel to 4 in-lbs.

6. Using the $^3/_{16}$-nut driver, install the four jack screws to the two video port connectors. Tighten the jack screws to 3 in-lbs.

7. Install the two screws on the printer port connector using a small, flat-blade screw driver.

Reinstall the Controller Covers and the Ejector Handles

1. Place the left side cover on the chassis.

2. Secure the rear cover to the module.

3. Make sure that all the holes line up and then install the T-10 Torx-drive screws; tighten the screws to 4 in-lbs.

4. Install the ejectors handle through the front panel cutouts onto the mounting post, and install the screws to secure the handle to the chassis.

NOTE. The top and bottom injector/ejector handles are not interchangeable.

Reinstall the Replaceable Hard Disk

Slide the hard disk assembly into the front panel. Push on the handle until it latches in place.

Attach the Upgrade Kit Label to the Benchtop Controller

After completing all the previous steps, you need to install the upgrade kit label on the side of controller to indicate that the kit is installed.

Attach the TLA7UP kit label on the large label as shown in Figure 3--10. If the instrument already has an upgrade label, install the new label directly above or below the old upgrade kit label.

Figure 3--10: Kit label locations

Install the Controller in the Mainframe

After installing the upgrade kit label, slide the controller into the mainframe and latch it in place. Tighten the controller hold-down screws.

Verify Operation

After installing the controller, reconnect the power cord to the mainframe and then power on the instrument. Verify that all diagnostics pass.

NOTE. If your instrument has the CheckIt Utilities software (available with TLA7UP Option 41 or 42), run the appropriate CD ROM tests.

TLA7UP Option 41

TLA7UP Option 41: TLA Application Software and Windows Operating System Upgrade

TLA7UP option 41 supports the upgrade to TLA Application Software, Version 5.1 and Microsoft Windows XP Professional operating system for TLA700 series logic analyzers.

Use this kit to upgrade TLA700 series logic analyzers with TLA application software V4.4, or lower, using restore media. This process overwrites the entire contents of your hard disk drive.

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.

Instruments

TLA715 Portable Mainframe	All serial numbers
TLA721 Benchtop Mainframe	All serial numbers

Minimum Tool and Equipment List

No special tools or equipment are required to install this option.

System Requirements

- Minimum 10 GB hard drive

- 256 MB RAM minimum, 512 MB recommended

Parts List

Table 4–1: TLA7UP Option 41 parts list

Quantity	Part number	Description
1 ea	N/A	Tektronix Logic Analyzer Family Application Software V5.1
1 ea	N/A	Tektronix Logic Analyzer Family TLA715 & TLA721 Restore Media V5.1
1 ea	N/A	Mainframe BIOS floppy disk
1 ea	N/A	EasyRestore license
1 ea	N/A	Microsoft Windows XP Professional Certificate of Authenticity sticker
1 ea	N/A	Nero OEM Suite 3 CD
5 ea	131-4356-xx	Jumper with pull–tab
1 ea	016-1524-xx	TLA mouse pad
1 sheet	N/A	Software revision labels
1 ea	N/A	TLA7UP kit label

TLA7UP Option 41: Application Software and Windows Operating System Instructions

These instructions guide you through the process of upgrading your TLA700 series logic analyzer software and firmware.

⚠️ **CAUTION.** *The software installation procedure overwrites the entire contents of your hard disk. To save any files or software applications on the hard disk, back them up to another media before continuing with this procedure.*

Install Software

This kit includes media that contains the Microsoft Windows XP Professional operating system and the latest application software. All software required to run the logic analyzer comes with the media, with the exception of any microprocessor support packages or non-logic analyzer application software.

Set the Default Controller BIOS Settings

To configure the Controller BIOS, complete the following steps:

1. Power on the logic analyzer and press function key F2 before the logic analyzer boots the Windows operating system.

2. Press function key F9, then select Yes and press Enter. This sets defaults and verifies that both the hard disk was auto-recognized and that the correct size of the hard disk is displayed in the Primary Master setting.

3. Press function key F10 to exit and save the BIOS setup.

Backing Up Files

Before loading the restore media, back up any files, applications, and personal files. Use the Windows Search utility to locate the files to back up. Table 4–2 lists examples of file suffixes that you may want to back up.

Table 4‑2: TLA user file suffixes

Suffix	Description
.tla	TLA setup files and stored data
.tsf	TLA symbol files
.tbf	Tektronix binary format
.tls	TLA script file
.tpg	Tektronix pattern generator files
.txt	Tektronix TLA data exchange format files
.stk	Stack files
.spz	Protocol files

Install Windows XP Professional and the TLA Application Software

This procedure automatically reformats the hard disk, installs the Windows XP Professional Operating system software, and installs the the Tektronix Logic Analyzer application software. This process may take several minutes.

Change the BIOS Boot Settings and Load the Restore Media. Before installing the restore media, you may need to change the BIOS settings to enable booting from the CD/DVD drive.

1. Restart the logic analyzer and then press function key F2 to enter the BIOS setup.

2. In the BIOS setup, go to the Boot menu.

3. Select Boot Device Priority.

4. Set the Boot devices to boot from the CD/DVD drive first.

5. Insert the first CD/DVD in the CD-ROM drive.

6. Save the settings by pressing function key F10 and confirm that you want to save the new settings. The instrument will reboot and begin the installation procedure.

7. Review the license agreement. If you agree to the terms of the license agreement, proceed with the next step.

8. Follow the on-screen instructions to complete the installation procedure.

   If EasyRestore detects errors and prompts you to allow the program to fix them, click Yes to continue the upgrade process.

9. Reinstall any user files that you backed up previously. Reinstall any software (such as the microprocessor support packages) that you want to use on the logic analyzer.

10. Locate the Microsoft Windows XP Professional Certificate of Authenticity and attach it to the instrument over the old Microsoft Windows 2000 Professional Certificate of Authenticity.

Update TLA Module Firmware

You can easily tell if the firmware needs updating when a startup message appears telling you that you need to upgrade. You can update multiple modules and module types during a single firmware update session.

Use the following procedure to upgrade the firmware.

1. Note the modules that require new firmware.

    a. For TLA7Axx/TLA7NAx series logic analyzer modules skip steps 2–8 and go directly to step 9.

    b. For all other module types continue with step 2.

2. Turn off the instrument.

3. Remove the modules from the instrument.

4. Refer to Figure 4‑1 and locate the flash programming pins on the rear of the module.

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 instrument.

7. Power on the instrument.

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

---

8. Log on as Administrator and then wait for the TLA application to start.

9. Exit the logic analyzer application.

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

11. Select your instrument from the Firmware Loader – Connection dialog box and click **Connect**.

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

13. Select **Load Firmware** from the Execute menu.

Flash programming pins
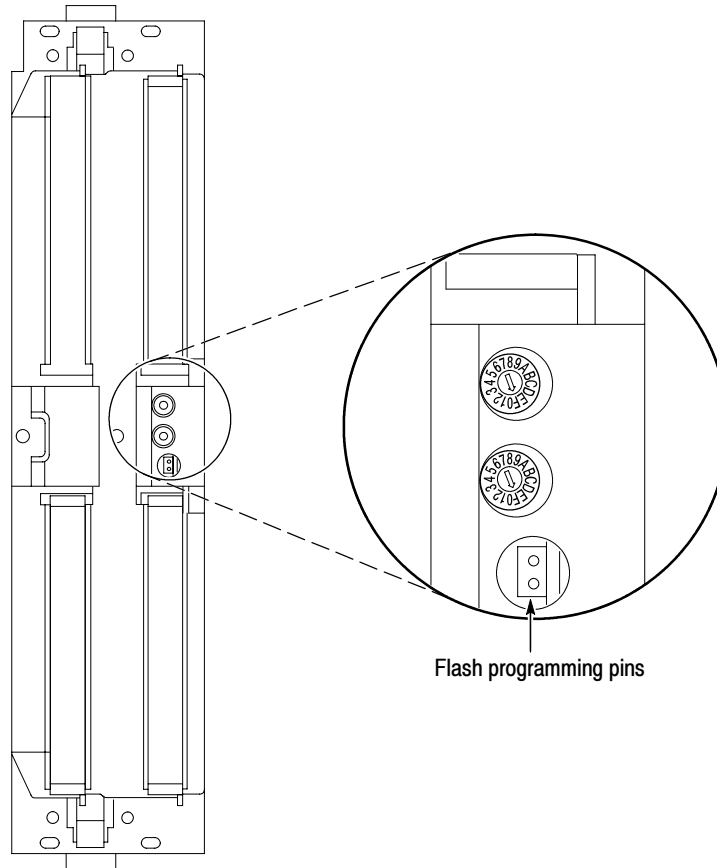
Figure 4‑1: Flash programming pins

14. Click the proper .lod file for the selected module; refer to Table 4‑3 on page 4‑7, if necessary.

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

Table 4‑3: TLA firmware files

Module type	.lod file
TLA7NAx logic analyzer modules	TLA7NAX.lod
TLA7Axx logic analyzer modules	TLA7AXX.lod
TLA7Nx, TLA7Px, TLA7Qx logic analyzer modules	TLA7NPQ.lod
TLA7Lx and TLA7Mx logic analyzer modules	TLA7LM.lod
TLA7Dx and TLA7Ex DSO modules	FirmwareDSO.lod
TLA7PG2 Pattern Generator modules[1]	tla7pg2.lod

[1] **The .lod files for the pattern generator modules are located in the C:\Program Files\Tektronix Pattern Generator\Firmware folder. All other files are located in the C:\Program files\TLA 700\Firmware folder.**

15. Click **Open**. When 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 DSO 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.

16. When the upgrade is complete, exit the firmware loader program.

17. Turn off the instrument and disconnect the power cord.

18. Remove the module from the instrument.

19. For all modules except the TLA7Axx or TLA7NAx modules, 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. Attach a new revision label and kit label on the big label for each module as shown in Figure 4‑2 on page 4‑8.

22. Locate the big label on the either the portable mainframe or on the side of the Benchtop controller (depending on your instrument) and attach the revision label and the TLA7UP kit label as shown in Figure 4‑2 on page 4‑8.

NOTE. *If there already is an upgrade kit label installed, install the new label just above or below the old one. However, ensure that you install the software revision label over the old revision label to indicate the current version of software on your instrument.*

Place revision label here.
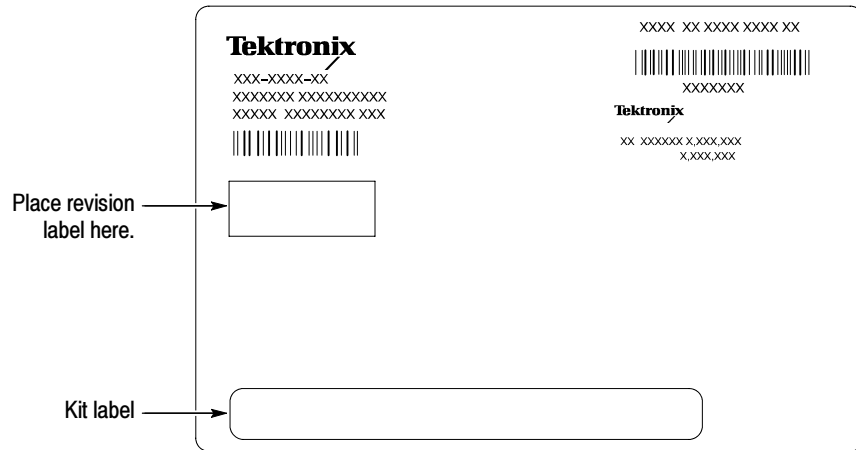
Kit label

Figure 4--2: Revision and kit label locations

23. Reinstall the module in the instrument, tighten the hold-down screws, and then reconnect the probes.

24. Reconnect the power cord and power on the instrument.

25. Verify that the power-on diagnostics pass.

Upgrade the Mainframe BIOS

Use the following steps to determine if you need to upgrade the BIOS on the logic analyzer mainframe:

1. Restart the logic analyzer and then press function key F2 to enter the BIOS setup.

2. Check that the BIOS version is 1.00.02.

3. If you have the correct version, go to the Exit menu, select "Exit Discarding Changes" and press Enter. Skip the remaining steps in this procedure.

4. If you need to update the BIOS, install the BIOS floppy disk in the floppy disk drive.

5. Go to the Exit menu, select "Exit & Update BIOS", and then press the Enter key twice.

    The logic analyzer will update the BIOS from the floppy disk. During the update processes you will hear several beeps. The update process takes about one minute; then you will hear a long beep.

6. After you hear the long beep, the logic analyzer will restart. Remove the floppy disk so that the logic analyzer can boot from the hard drive.

Calibrate the Instrument

After upgrading the firmware on the logic analyzer and DSO modules you should calibrate those modules.

1. Allow the instrument to warm up for at least 30 minutes before continuing.

2. In the System window, select Calibration and Diagnostics from the System menu.

3. Click the Self Calibration tab.

4. Select all of the modules in the dialog box and Click **Run**.

NOTE. *The calibration process may take several minutes for each module.*

---

5. Verify that the Status column for each module changes to Calibrated.

6. After all of the modules have been calibrated close the dialog box and power down the instrument.

Installing the TLA Application Software on a PC

You can install the TLA application software on a PC for the following purposes:

■ Run the TLA application software in the Offline mode (similar to TLAVu in earlier software versions).

■ Control a logic analyzer with TLA Application Software 5.0, or higher, over a network. Refer to the TLA online help for information on connecting the logic analyzer to a network.

Install Third-Party Software

To use all of the features of the TLA application software on your PC, you must install additional third-party software. The following third-party software is available on the TLA Application Software CD V5.0, or higher:

■ The NI-GPIB software allows you to use the iView software with your PC.

■ The SnagIt software is useful for copying screen shots of logic analyzer data for use with other applications.

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

Install the NI-GPIB Software. Complete the following steps to install the third-party software on your PC:

1. Install the first TLA Application Software CD in the CD drive.

2. Browse to the NI-GPIB-USB folder on the CD and run the Setup.exe program.

3. Follow the on-screen instructions and note the items below:

   a. When prompted, select the Typical installation option.

   b. When the Add GPIB wizard appears, select **GPIB-USB-B**.

   c. After restarting the instrument, the NI-488.2 Getting Started wizard displays. This is not needed; select **Do not show at Windows startup**.

   d. When you first connect the iView cable, the instrument will detect the new hardware. Select **Install the software automatically (Recommended)**.

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

1. Browse to the SnagIt folder on the CD and run the Setup.exe program.

2. Follow the on-screen instructions.

Install the TLA Application Software

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

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

Start the TLA Application

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 Connection dialog box displays.

1. Select an instrument in the TLA Connection dialog box and then click **Connect**. If your instrument is connected to a network, you can connect to any unused instrument on your local network.

2. Click **Offline** to start an offline version of the TLA application software. The TLA Offline software allows you to run the TLA application without connecting to an instrument. You can analyze previously acquired data from a logic analyzer, create or modify reference memories, or perform system tests without being connected to an instrument.

Attach the Upgrade Kit Label to the Instrument

After completing the previous steps, you need to install the upgrade kit label on the instrument to indicate that the kit is installed.

Locate the big label on the rear of the instrument and then attach the software revision label and the TLA7UP kit label as shown in Figure 4–3.
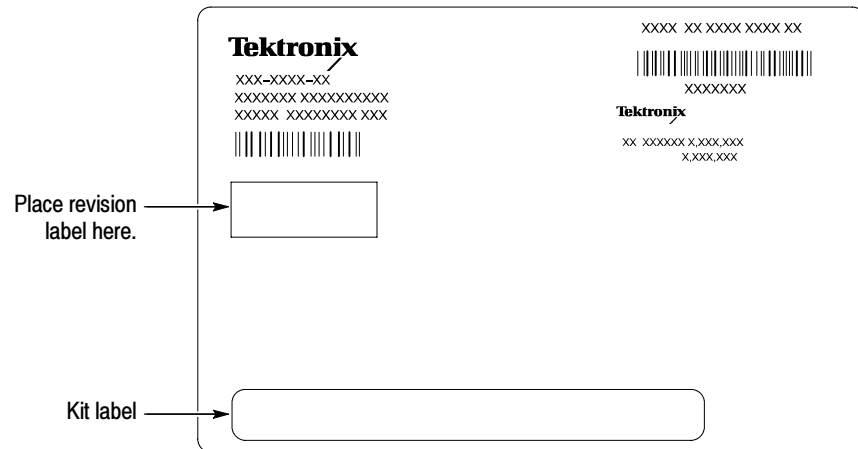
Figure 4–3: Revision and kit label locations

TLA7UP Option 42

TLA7UP Option 42: TLA Application Software Upgrade

TLA7UP Option 42 supports the upgrade to TLA application software version 5.1 and TLA7PG2 pattern generator application software version 1.8.

This kit provides instructions to upgrade the TLA application software and firmware for a TLA700 Series logic analyzer with TLA application software version 5.0 or lower. This software will run on TLA instruments with Microsoft Windows XP Professional Operating System or Microsoft Windows 2000 Professional Operating System purchased from Tektronix. The software will also run on a PC with Windows XP Professional or Windows 2000 Professional operating systems.

NOTE. To upgrade your instrument to Windows XP Professional operating system, please order TLA7UP Option 41.

Instruments

TLA715 Portable Mainframe	All serial numbers
TLA721 Benchtop Mainframe	All serial numbers

Installation Prerequisites

- Minimum 10 GB hard drive

- 256 MB RAM minimum, 512 MB recommended

Minimum Tool and Equipment List

No special tools are required to install this option.

Parts List

Table 5–1: TLA7UP Option 42 parts list

Quantity	Part number	Description
1 ea	N/A	Tektronix Logic Analyzer Family Application Software Version 5.1 (includes TLA7PG2 Pattern Generation application software V1.8)
1 ea	N/A	Mainframe BIOS floppy disk
1 ea	N/A	Nero OEM Suite 3 CD
5 ea	131-4356-xx	Jumper with pull–tab
1 ea	016-1524-xx	TLA mouse pad
1 sheet	N/A	Software revision labels
1 ea	N/A	TLA7UP kit label

TLA7UP Option 42: Application Software Instructions

The following instructions direct you through the process of upgrading the TLA application software on your TLA700 series logic analyzer.

NOTE. *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.*

Upgrade Instruction Overview

The basic upgrade procedure is to manually remove the older software, update the drivers, and reinstall the new software. The upgrade steps are listed in this document.

While performing the upgrade procedures, keep the following items in mind:

- Throughout this procedure you will see the term "log on as Administrator." The instrument is set up to automatically log on as Administrator (with no password) so you may not see the log in 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.

- After logging on as administrator, quit any applications.

- If your instrument does not display the file extensions, you need to change your folder options to display the file extensions. (From the Control Panel, double-click Folder Options, select the View tab, and then deselect the "Hide file extensions for known file types" selection.)

- Use the Windows Add or Remove Programs Control Panel utility to remove existing software.

- You may be asked to restart Windows after you install each software package. If you do not restart Windows when prompted your software may not install properly and can cause unpredictable behavior.

- If Windows does not restart normally, press and hold the On/Standby button for five or six seconds to force a shutdown.

Remove the Old Software

Complete the following steps to remove the old software packages from your logic analyzer. Skip any steps that mention software that isn't installed on your logic analyzer.

NOTE. *Refer to the release notes for a list of software version numbers to determine which software you may need to upgrade. The release notes are included on the TLA application software CD.*

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1. If you have not already done so, power on the logic analyzer and log on as Administrator.

2. Exit the TLA application.

3. Open the Control Panel.

4. Double-click the Add or Remove Programs icon.

5. For each of the following software packages, select the software package (the exact names may very depending on the software version), click the Change/Remove button, and follow the on-screen instructions to remove the software:

   - Adobe Acrobat Reader

   - CheckIt Utilities (V6.5.5)

   - Logitech Mouseware (V9.41.2 or earlier)

   - Click'N Burn Pro

   - NI-488.2

   - NI-Max

   - QA+Win32

   - SnagIt

   - Stomp RecordNow MAX

   - Tektronix Pattern Generator

   - Tektronix TLA Application

6. Windows will uninstall the selected application. If any messages appear asking you for permission to remove unused shared files or any read-only files, select Yes to All.

7. After the software has been successfully removed, restart Windows.

Uninstall the Power Button Service (TLA715 Only)

Complete the following steps to uninstall the old Power Button Service. Skip this section if you have a TLA721.

1. Log on as Administrator.

2. Open a Command Prompt window. (In Windows 2000, click: Start > Programs > Accessories > Command Prompt).

3. Enter the following command to go the correct folder.

   `cd c\Program Files\TLA 700\System`

4. Enter the following command to remove the Power Button Service:

   `Pbsrvc -r`

5. Exit the Command Prompt window and restart Windows.

Update the TLA Drivers

Complete the following steps to remove the old PCI-VXI Bridge driver and to install the new one required by the TLA.

1. After rebooting the instrument, insert the second CD of the TLA Application software set.

2. Open the Windows Control Panel.

3. Open the Device Manager in the Hardware page of the System Properties dialog box.

4. Select **PCI-VXI Bridge** from the PciVxi listing.

5. Right-click to uninstall the device and then confirm that you want to delete the device.

6. Restart the instrument.

   After restarting, the instrument detects a new device and displays a dialog box.

7. Click **Cancel** to exit the dialog box.

8. Open the Device Manager in the Hardware page of the System Properties dialog box.

9. Under the PciVxi listing, Right-click **Other PCI Bridge Device** and select **Properties**.

10. Select the Driver page and click **Update Driver**.

    The Upgrade Device Driver Wizard displays.

11. Click **Next**.

12. In the Install Hardware Device Drivers page, select **Search for a suitable driver for my device (recommended)** and then click **Next**.

13. In the Locate Drive Files page, select **Specify a location** and click **Next**.

14. Click Browse and go to the directory that contains the new pci2tla.inf driver file. **(D:\Drivers\your instrument\PCI-VXI Bridge\pci2tla.inf).**

15. Select the pci2tla.inf driver and then click **Open**.

16. Click **OK** to install the driver.

17. In the Driver Files Search Results page, make sure that **Install one of the drivers** checkbox is selected and then click **Next**.

18. Select the **PCI to TLA Bridge** driver and then click **Next**.

19. Click **Finish** to complete the installation.

20. Verify that the correct driver is installed by opening the Device Manager in the System Properties dialog box.

Install the TLA Software

The TLA software uses a wizard to install the following software applications (if they are not already installed) for your instrument:

- TLA Application

- Pattern Generator Application

- Microsoft's .NET Framework

- OpenChoice TekVisa

- TPI Client

- PPI Client

1. Log on as Administrator.

2. Install TLA V5.1 Application Software CD 1 in the CD drive.

3. Browse to the TLA Application folder on the CD and double-click **Setup.exe**.

4. Follow any on-screen instructions. If you are asked for permission to overwrite any read-only files, select **Yes to All.**

5. After the software has been successfully installed, restart Windows.

Install the Power Button Service (TLA715 Only)

Complete the following steps to install the new Power Button Service. Skip this section if you have a TLA721.

1. Log on as Administrator.

2. Open a Command Prompt window. (In Windows 2000, click: Start > Programs > Accessories > Command Prompt).

3. Enter the following command to go the correct folder.

    `cd c\Program Files\TLA 700\System`

4. Enter the following command to install the Power Button Service:

    `Pbsrvc -i`

5. Exit the Command Prompt window and restart Windows.

Install Adobe Acrobat Reader

1. Log on as Administrator.

2. Browse to the Documentation folder on the CD and double click **AdbeRdr70_enu_full.exe**.

3. Follow the on-screen instructions.

4. After the software has been successfully installed, restart Windows.

Install SnagIt

1. Log on as Administrator.

2. Browse to the SnagIt folder on the CD and double-click **Setup.exe**.

3. Follow the on-screen instructions and clear the check box for starting SnagIt automatically. Use the remaining default choices provided by the installer.

4. After the software has been successfully installed, restart Windows.

Install NI-GPIB

1. Log on as Administrator.

2. Browse to the NI-GPIB-USB folder on the CD and run the Setup.exe program.

3. Follow the on–screen instructions and note the items below:

    a. When prompted, select the Typical installation option.

    b. When the Add GPIB wizard appears, select **GPIB-USB-B**.

    c. After restarting the instrument, the NI-488.2 Getting Started wizard displays. This is not needed; select **Do not show at Windows startup**.

    d. When you first connect the iView cable, the instrument will detect the new hardware. Select **Install the software automatically (Recommended)**.

Install CheckIt Utilities

1. Log on as Administrator.

2. Exit the TLA application.

3. Install TLA V5.1 Application Software CD 2 in the CD drive.

4. Browse to the CheckIt folder on the CD and double-click **Start.exe**.

5. Click Next to start the installation.

6. Read and accept the license agreement.

7. When prompted for the CheckIt serial number, use U7-999999.

8. Follow any on-screen instructions and use all of the default choices provided by the installer.

9. Before clicking Finish, clear any check boxes that ask you to start the application or to view the Readme file.

10. After the software has been successfully installed, restart Windows.

Install Flash Player

1. Log on as Administrator.

2. Exit the TLA application

3. Browse to the Macromedia folder on the CD and double-click **flashplayer6_winax.exe**.

4. Follow the on-screen instructions.

5. After the software has been successfully installed, restart Windows.

Install Logitech Mouseware

1. Log on as Administrator.

2. Exit the TLA application.

3. Browse to the Mouseware folder on the CD and double-click **Setup.exe**.

4. Follow the on-screen instructions.

5. After the software has been successfully installed, restart Windows.

6. Follow the on-screen instructions in the Device Setup Wizard to set the mouse to the factory recommended settings.

Install the Nero Suite 3 Software

The Nero OEM Suite software is available on a separate CD.

1. Log on as Administrator.

2. Exit the TLA application.

3. Insert the Nero CD into the CD drive.

4. Follow the on-screen instructions to install the software.

5. Enter the serial number when prompted (provided on the CD envelope).

6. Click Exit when done and then remove the CD.

7. Restart Windows.

Optional Software

Tektronix offers the following service-related software for running the performance verification software.

- TLA Logic Analyzer PV

- Pattern Generator PV

- TLACAL

You should only need to install this software if you are running performance verification procedures with the appropriate test fixtures.

1. Log on as Administrator.

2. Exit the TLA application.

3. Browse to the appropriate folder on the CD and double-click **Setup.exe**.

4. Follow the on-screen instructions.

5. After the software has been successfully installed, restart Windows.

Upgrade the Module Firmware

You will need to upgrade the firmware on the logic analyzer modules. You can easily tell if the firmware needs updating when a startup message appears telling you that you need to upgrade.

1. Note the modules that require new firmware.

   a. For TLA7Axx/TLA7NAx series logic analyzer modules skip steps 2–8 and go directly to step 9 on page 5-11.

   b. For all other module types continue with step 2.

2. Turn off the instrument and disconnect the power cord.

3. Remove the module requiring the upgrade from the instrument.

4. Refer to Figure 5-1 and locate the flash programming pins on the rear of the module.

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.

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

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8. Log on as Administrator and then wait for the TLA application to start.

9. Exit the logic analyzer application.

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

11. Select your instrument from the Firmware Loader – Connection dialog box and click **Connect**.

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

Flash programming pins
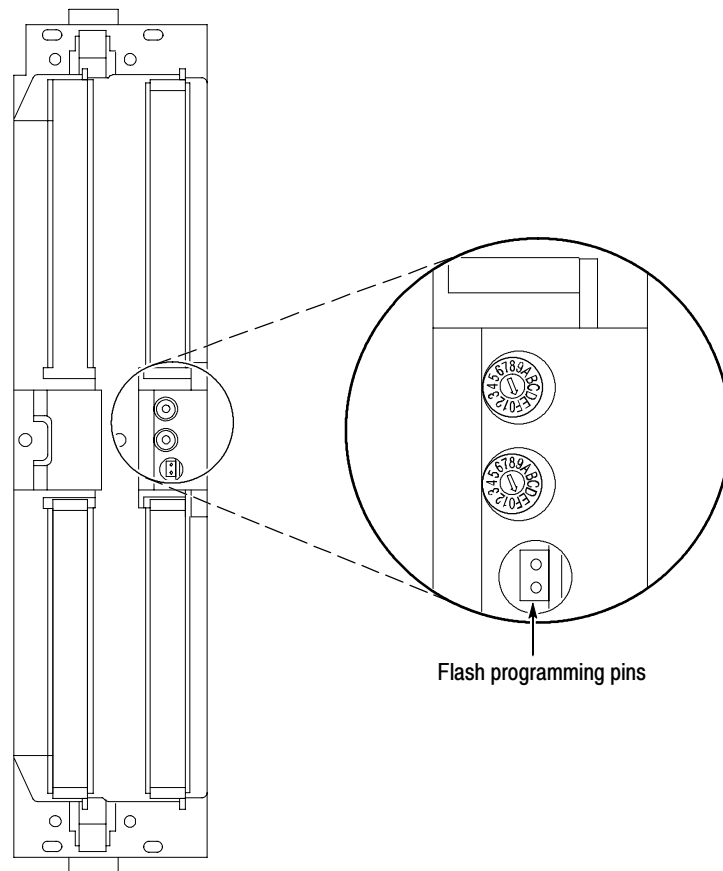
Figure 5‑1: Flash programming pins

13. Select **Load Firmware** from the Execute menu.

14. Click the proper .lod file for the selected module; refer to Table 5-2 on page 5-12 if necessary.

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

Table 5-2: TLA firmware files

Module type	.lod file
TLA7NAx logic analyzer modules	TLA7NAX.lod
TLA7Axx logic analyzer modules	TLA7AXX.lod
TLA7Nx, TLA7Px, TLA7Qx logic analyzer modules	TLA7NPQ.lod
TLA7Lx and TLA7Mx logic analyzer modules	TLA7LM.lod
TLA7Dx and TLA7Ex DSO modules	FirmwareDSO.lod
TLA7PG2 Pattern Generator modules[1]	tla7pg2.lod

[1] **The .lod files for the pattern generator modules are located in the C:\Program Files\Tektronix Pattern Generator\Firmware folder. All other files are located in the C:\Program files\TLA 700\Firmware folder.**

15. Click **Open**. When 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 DSO 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.

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

17. Turn off the instrument and disconnect the power cord.

18. Remove the module from the instrument.

19. For all modules except the TLA7Axx or TLA7NAx modules, 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.

NOTE. If there already is an upgrade kit label installed, install the new label just above or below the old one. However, ensure that you install the software revision label over the old revision label to indicate the current version of software on your instrument.

21. Attach a new revision label and kit label on the big label for each module as shown in Figure 5–2 on page 5–13.
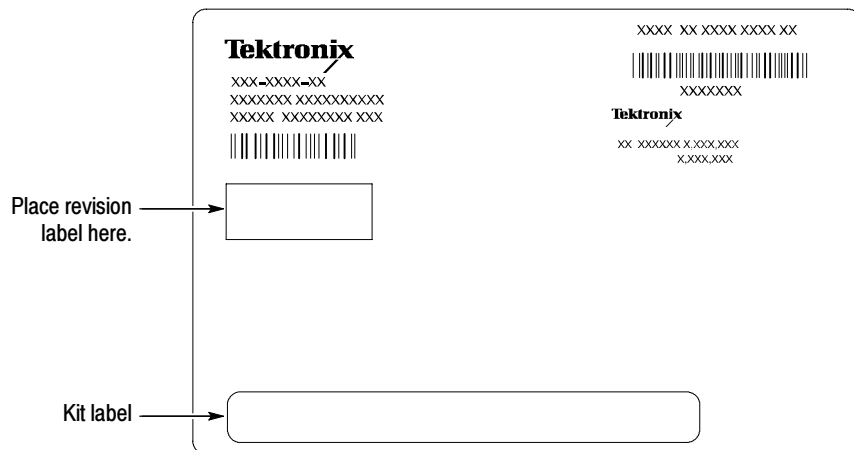
Figure 5‑2: Revision and kit label locations

22. Reinstall the module in the logic analyzer, latch it in place, and tighten the hold-down screws.

23. Reconnect the power cord and power on the instrument.

24. Verify that the power-on diagnostics pass.

Upgrade the Mainframe BIOS

Use the following steps to determine if you need to upgrade the BIOS on the logic analyzer mainframe:

1. Restart the logic analyzer and then press function key F2 to enter the BIOS setup.

2. Check that the BIOS version is 1.00.02.

3. If you have the correct version, go to the Exit menu, select "Exit Discarding Changes" and press Enter. Skip the remaining steps in this procedure.

4. If you need to update the BIOS, install the BIOS floppy disk in the floppy disk drive.

5. Go to the Exit menu, select "Exit & Update BIOS", and then press the Enter key twice.

   The logic analyzer will update the BIOS from the floppy disk. During the update processes you will hear several beeps. The update process takes about one minute; then you will hear a long beep.

6. After you hear the long beep, the logic analyzer will restart. Remove the floppy disk so that the logic analyzer can boot from the hard drive.

Verify Proper Operation

After you have installed all of the latest software, upgraded the module firmware, and upgraded the mainframe BIOS, you are ready to verify proper operation.

1. Power on the logic analyzer and log on as Administrator.

2. Verify that the Power-on diagnostics pass (if any Power-on diagnostics fail, the Power-on Diagnostics dialog box automatically displays in the System window).

3. In the System window and verify that all installed modules appear in the window.

4. 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. Repeat the steps under *Upgrade the Logic Analyzer Module Firmware.*

   d. If any of the modules indicate that the jumper is installed, power down the logic analyzer, remove the module, and then remove the jumper from the rear of the module. Reinstall the module in the instrument and try again.

Calibrate the Logic Analyzer and DSO Modules

After verifying proper operation it is recommended that you calibrate the logic analyzer and DSO modules (pattern generator modules do not require calibration).

1. Allow the instrument to warm up for at least 30 minutes before continuing.

2. In the System window, select Calibration and Diagnostics from the System menu.

3. Click the Self Calibration tab.

4. Select all of the modules in the dialog box and Click **Run**.

NOTE. *The calibration process may take several minutes for each module.*

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5. Verify that the Status column for each module changes to Calibrated.

6. After all of the modules have been calibrated close the dialog box and power down the instrument.

Installing the TLA Application Software on a PC

You can install the TLA application software on a PC for the following purposes:

■ To run the TLA application software in the Offline mode (similar to TLAVu or PatGenVu in earlier software versions).

■ To control a logic analyzer with the same TLA application software version over a network.

Install Third-Party Software

To use all of the features of the TLA application software on your PC, you must install additional third-party software. The following third-party software is available on the TLA Application Software CD V5.1:

■ The NI-GPIB software allows you to use the iView software with your PC.

■ The SnagIt software is useful for copying screen shots of logic analyzer data for use with other applications.

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

Install the NI-GPIB Software. Complete the following steps to install the third–party software on your PC:

1. Install the TLA Application Software CD in the CD drive.

2. Browse to the NI-GPIB-USB folder on the CD and run the Setup.exe program.

3. Follow the on-screen instructions and note the items below:

    a. When prompted, select the Typical installation option.

    b. When the Add GPIB wizard appears, select **GPIB–USB–B**.

    c. After restarting the instrument, the NI–488.2 Getting Started wizard displays. This is not needed; select **Do not show at Windows startup**.

    d. When you first connect the iView cable, the instrument will detect the new hardware. Select **Install the software automatically (Recommended)**.

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

1. Browse to the SnagIt folder on the CD and run the Setup.exe program.

2. Follow the on-screen instructions.

Install the TLA Application Software

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

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

Start the TLA Application

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 Connection dialog box displays.

1. Select an instrument in the TLA Connection dialog box and then click **Connect**. If your instrument is connected to a network, you can connect to any unused instrument on your local network.

2. Click **Offline** to start an offline version of the TLA application software. The TLA Offline software allows you to run the TLA application without connecting to an instrument. You can analyze previously acquired data from a logic analyzer, create or modify reference memories, or perform system tests without being connected to an instrument.

Attach the Upgrade Kit Label to the Instrument

After completing all the previous steps, you need to install the upgrade kit label on the instrument to indicate that the kit is installed.

NOTE. If there already is an upgrade kit label installed, install the new label just above or below the old one. However, ensure that you install the software revision label over the old revision label to indicate the current version of software on your instrument.

CAUTION. To avoid damaging the mainframe or the controller, always power down the mainframe before removing the controller.

Locate the big label on the either the portable mainframe or on the side of the Benchtop controller (you will need to remove the benchtop controller from the mainframe) and attach the software revision label and the TLA7UP kit label as shown in Figure 5-3.
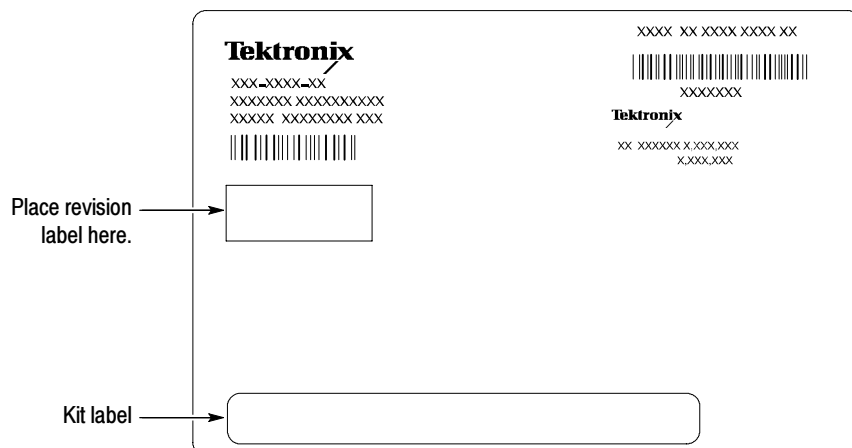
Figure 5‑3: Revision and kit label locations

After you reinstall the controller in the benchtop mainframe, tighten the hold-down screws.

You have now successfully upgraded the software on your Tektronix logic analyzer.

TLA7UP Option PF

TLA7UP Option PF: PowerFlex Utility Upgrade

TLA7UP Option PF installs the TLA PowerFlex Utility on your TLA700 series logic analyzer mainframe. You can use the PowerFlex Utility to determine possible upgrades for your logic analyzer module to increase the state speed or memory depth. You can also use the utility to determine possible memory depth upgrades for your TLA7PG2 Pattern Generator modules. The PowerFlex Utility comes with online help that describes the upgrade processes.

Instruments

TLA7NAx Logic Analyzer Modules	All Serial Numbers
TLA7Lx/Mx/Nx/Px/Qx Logic Analyzer Modules	All Serial Numbers
TLA7AAx/7ABx Logic Analyzer Modules	All Serial Numbers
TLA7PG2 Pattern Generator Modules	All Serial Numbers

Minimum Tool and Equipment List

No special tools or equipment are required.

Parts List

Table 6-1: TLA7UP Option PF parts list

Quantity	Part number	Description
1 ea.	N/A	PowerFlex Utility software for TLA series logic analyzers

Installation Prerequisites

- Any TLA700 series logic analyzer mainframe with TLA Application Software Version 4.2, 4.1, 4.0 or 3.2. (Logic analyzers with version 4.3 and above already have this software installed.)

- TLA mainframe with a CD/DVD drive

Installation Instructions

Complete the following steps to install the PowerFlex Utility on your TLA700 series logic analyzer:

1. Install the PowerFlex CD in the CD drive of your logic analyzer.

2. If required, log on to the instrument as Administrator.

3. Click Run in the Windows Start menu to display the Run dialog box.

4. Enter D:\PowerFlex\Disk 1\Setup.exe in the Run dialog box.

5. Follow the on-screen instructions. If any messages appear asking you for permission to overwrite any read-only files, select Yes to All.

Start the PowerFlex Utility

Complete the following steps to start and use the PowerFlex Utility:

NOTE. You must exit the TLA application and pattern generator application before you start the PowerFlex Utility. You cannot run the PowerFlex Utility and the TLA application or the pattern generator application at the same time.

1. Exit the TLA application.

2. Start the PowerFlex Utility using the Windows Start menu. Select Start →
Program Files → Tektronix Logic Analyzer → TLA PowerFlex Utility.

3. The PowerFlex window appears. Refer to the PowerFlex Utility online help for information on using the utility to order and install the upgrade.

TLA7UP Option IF

TLA7UP Option IF: Upgrade Installation Service

TLA7UP option IF provides installation of product upgrades performed at a Tektronix service location.

NOTE. Availability of installation and on-site services depend on the type of product and may vary by geography.

Instruments

TLA715	All Serial Numbers
TLA721	All Serial Numbers

TLA7UP Option IN

TLA7UP Option IN: On-Site Installation Service

TLA7UP option IN provides initial product installation/configuration and start up training session including front panel and product familiarization at your site (excludes network integration).

NOTE. *Availability of installation and on-site services depend on the type of product and may vary by geography.*

Instruments

TLA715   All Serial Numbers
TLA721   All Serial Numbers