

# Tektronix Logic Analyzers

## ► TLA700 Series Mainframes



### Breakthrough Solutions for Real-time Digital Systems Analysis

The TLA715 and TLA721 mainframes are card modular mainframes that accept TLA7Ax and TLA7Lx/Mx/Nx/Px/Qx logic analyzer modules, as well as TLA7Dx/Ex digital storage oscilloscope modules and TLA7PG2 pattern generator modules. The TLA715 and TLA721 can be used in conjunction with a TLA7XM expansion mainframe to provide solutions for large numbers of buses and high channel count requirements.

The TLA715 and TLA721 mainframes are built on a Microsoft Windows 2000 Professional PC platform that offers a familiar work environment. TLA applications operate like any other PC application.

The TLA715 and TLA721 mainframes come standard with dual display capability for extended desktop viewing, in addition to an internal CD-RW, hard disk and PC card slots for expansion. A replaceable hard disk is standard on both mainframes, ideal for security or enabling individual team members to store personal setups and data. Trigger in/out connections provide an interface to other external instrumentation, such as TDS oscilloscopes, for correlating measurement results.

### ► Features & Benefits

Modular Mainframes Provide Flexibility and Expandability

Utilize Logic Analyzer, Digital Storage Oscilloscope or Pattern Generator Modules

Expansion Mainframe Supports Up to 8160 Logic Analyzer Channels, 60 Independent Buses

All Measurement Modules are Fully Interchangeable Between Portable and Benchtop Mainframes

Integrated View (iView™) Capability Provides up to 5 GHz, 20 GS/s, and 32 Mb Analog Acquisition with a Stand-alone Tektronix TDS Digital Storage Oscilloscope

Microsoft® Windows® 2000 Professional PC Platform Provides Familiar User Interface With Network Connectivity

View Data in Waveform, Listing, Source Code, Histogram (Performance Analysis) Displays to Perform Cross-domain Analysis

Remote Control Using Microsoft® COM/DCOM Technology Supports Advanced Data Analysis

Broad Processor and Bus Support

TLAVu and PatGenVu Off-line Analysis Capability for Viewing Data and Creating Setups on a Separate PC

### ► Applications

Hardware Debug and Verification

Processor/Bus Debug and Verification

Embedded Software Integration, Debug and Verification

COMPUTING

COMMUNICATIONS

VIDEO

# Tektronix Logic Analyzers

## ▶ TLA700 Series Mainframes

### ▶ Characteristics

General (TLA715, TLA721, TLA7XM)

#### Instrument Slots –

TLA715: Holds 4 single-wide or 2 double-wide modules.

TLA721: Holds 10 single-wide or 5 double-wide modules.

TLA7XM: Holds 12 single-wide or 6 double-wide modules.

**Quantity of TLA7XMs –** The TLA700 Series Mainframes can support multiple TLA7XM mainframes.

TLA715: Up to two TLA7XM mainframes can be used providing 13 dual/26 single instrument slots\*<sup>2</sup> \*<sup>3</sup>.

TLA721: Up to ten TLA7XM mainframes can be used providing 60 dual/120 single instrument slots\*<sup>2</sup> \*<sup>3</sup>.

Mainframe	LA* <sup>1</sup>	PG* <sup>1</sup>	DSO* <sup>1</sup>
Max channels per module	136 ch.	64 ch.	4 ch.
TLA715	1,768	832	52
TLA721	8,160	3,840	240

\*<sup>1</sup>All logic analyzer (LA), pattern generator (PG) and digitizing oscilloscope (DSO) modules are dual-wide or occupy two single-wide slots.

\*<sup>2</sup>TLA7XM Expansion Module occupies one single-wide slot in both the TLA715/TLA721 mainframes and the TLA7XM expansion mainframe.

\*<sup>3</sup>Using a TLA7XM expansion mainframe with an existing TLA714/TLA720 mainframe requires Version 4.0 or higher TLA application software. TLA720 benchtop mainframes, S/N: B019999 and lower, require TLA7UP Option 09 TLA720 Benchtop Mainframe Upgrade. Please refer to the TLA Upgrade Guide for further details.



▶ **Example of TLA721 with ten TLA7XM Mainframes.**

For configurations beyond ten TLA7XM expansion mainframes, please contact your local Tektronix account manager.

**TLA700 PC Characteristics (TLA715 and TLA721)**

**Operating System –** Microsoft Windows 2000 Professional.

**Processor –** Intel Pentium III.

**Chipset –** Intel 815E.

**DRAM –**

TLA715: 256 MB SDRAM (512 MB with Opt. 1S).

TLA721: 512 MB SDRAM.

**Display Memory –** 4 MB.

**Dual Monitor Support –** 1600x1200 Resolution.

**Sound –** Built-in PC speaker transducer; multimedia sound can be added via PC Card interface.

**Replaceable Hard Disk Drive –**

TLA715: 10 GB (30 GB with Opt. 1S).

TLA721: 30 GB.

**CD ROM –** Internal 8/4/32 CD-RW.

**Floppy Disk Drive –** Built-in 3.5 in. 1.44 MB drive.

**TLA700 Integral Controls (TLA715 only)**

**Front-Panel Display –**

Size: 10.4 in. diagonal.

Type: Active-matrix color TFT LCD with backlight.

Resolution: 800x600.

Colors: 16.8 M (true color).

**Simultaneous Display Capability –** Both the front-panel and one external display can be used simultaneously at 800x600 resolution.

**Front-panel Knobs –** Special function knobs for instrument control.

**Front-panel QWERTY Keypad –** Mini-QWERTY keypad and Hex keypad.

**Front-panel Pointing Device –** Trackball.

**TLA700 External Peripheral Interfaces (TLA715 and TLA721)**

**External Display Port Type –**

(2) Female DB15 connectors.

**External Display Resolution –** Up to 1600x1200 non-interlaced at 256 colors, for both primary and secondary displays.

**External Display Compatibility –** DDC2B (dynamic display configuration 2).

**External Keyboard Port Type –** PS2 mini-DIN.

**External Mouse Port Type –** PS2 mini-DIN.

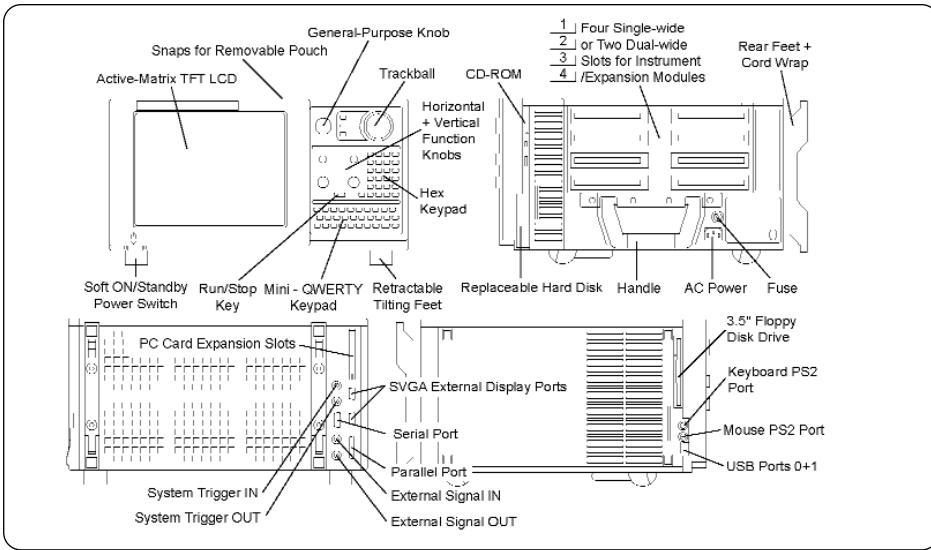
**Parallel Interface Port Type –** IEEE 1284-C connector (comes standard with adapter to female DB25 connector).

**Parallel Interface Modes –** Centronics mode, EPP (Extended Parallel Port), ECP (Microsoft high-speed mode).

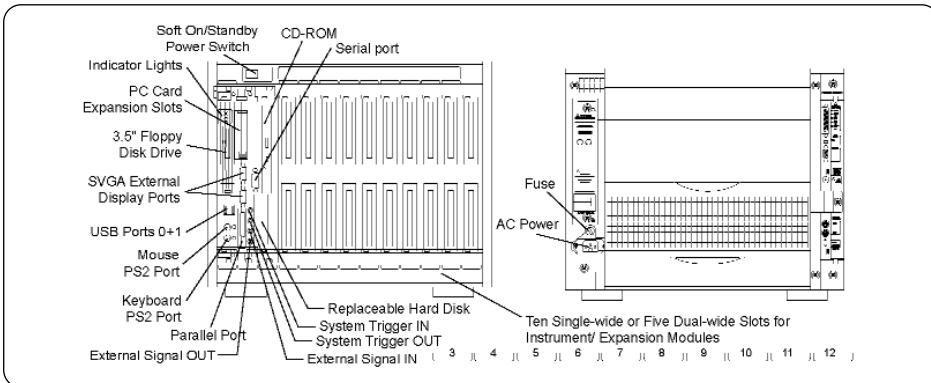
**Serial Interface Port Type –** Male DB9.

**PC Card (CardBus) Slot Types –** Two slots, two PC Card Type I/II or one PC Card Type III.

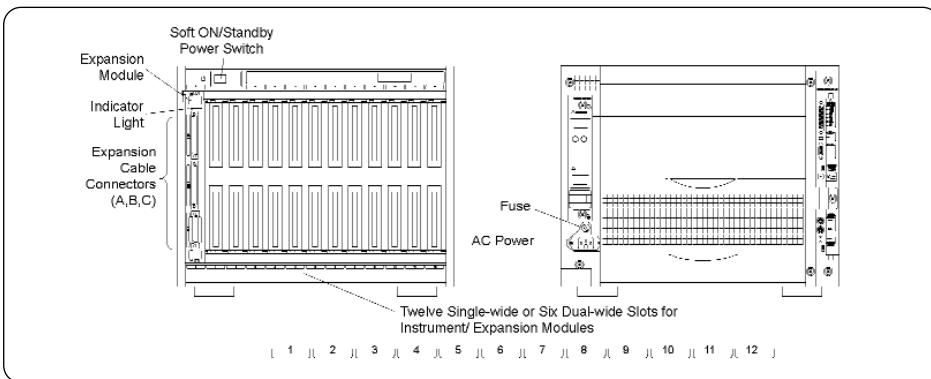
**USB Port –** Two (2).



► TLA715. Portable Mainframe.



► TLA721. Benchtop Mainframe.



► TLA7XM. Expansion Mainframe.

**Integrated View (iView) Capability**

**TLA mainframe configuration requirements –** TLA714/720/715/721 Series mainframes.

TLA App S/W V 4.1 or greater.

256 MB DRAM Minimum, 512 MB recommended.

**TDS configuration requirements –** TDS3GM GPIB/RS232 Interface Module required for iView capability on any TDS3000 series. TDS3GV GPIB/RS232/VGA Interface Module required for iView capability on any TDS3000B series. If using iView with TDS6604, order a TCA-BNC connector to be compatible with a BNC cable run from a TLA7Axx module analog output.

**Number of TDS oscilloscopes that can be connected to a TLA system –** 1.

**External Oscilloscopes Supported –** TDS3012, TDS3014, TDS3032, TDS3034, TDS3052, TDS3054.

TDS3012B, TDS3014B, TDS3032B, TDS3034B, TDS3052B, TDS3054B. TDS5052, TDS5054, TDS5104. TDS6604.

TDS7054, TDS7104, TDS7154, TDS7404.

TDS684C, TDS694C.

CSA7154, CSA7404.

TDS754C, TDS784C, TDS724D, TDS754D,

TDS784D, TDS794D.

**TLA Connections –** USB, Trigger In, Trigger Out, Clock Out.

**TDS Connections –** GPIB, Trigger In, Trigger Out, Clock In (when available).

**Setup –** iView external oscilloscope wizard automates setup.

**Data Correlation –** After TDS oscilloscope acquisition is complete, the data is automatically transferred to the TLA and time correlated with the TLA acquisition data.

**Deskew –** TDS and TLA data is automatically deskewed and time correlated when using the iView external oscilloscope cable.

**iView External Oscilloscope Cable Length –** 2 m.

# Tektronix Logic Analyzers

## ▶ TLA700 Series Mainframes



▶ TLA715 Series with TDS7000 Series oscilloscope.

### Symbolic Support

**Number of Symbols/Ranges** – Unlimited (limited only by amount of virtual memory available on TLA).

### Object File Formats Supported –

- ▶ IEEE695
- ▶ OMF 51, OMF 86, OMF 166, OMF 286, OMF 386
- ▶ COFF
- ▶ Elf/Dwarf 1 and 2
- ▶ Elf/Stabs
- ▶ TSF (if your software development tools do not generate output in one of the above formats, TSF or the Tektronix symbol file, a generic ASCII file format is supported. The generic ASCII file format is documented in the TLA User Manual). If a format is not listed, please contact your local Tektronix representative.

### External Instrumentation Interfaces

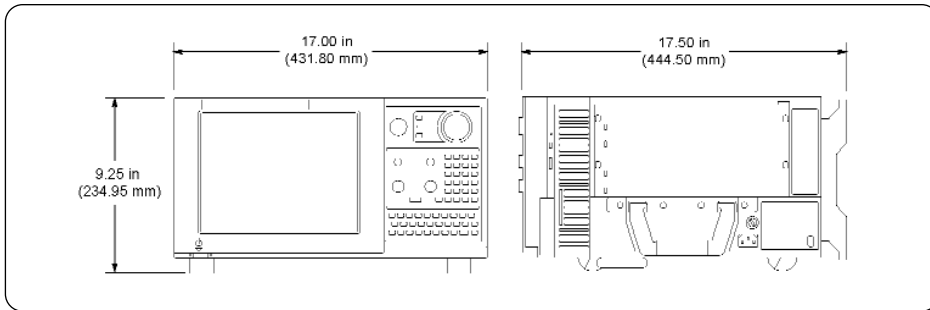
**System Trigger Output** – Asserted whenever a system trigger occurs (TTL-compatible output, back-terminated into 50  $\Omega$ ).

**System Trigger Input** – Forces a system trigger (triggers all modules) when asserted (TTL-compatible, edge-sensitive, falling-edge latched).

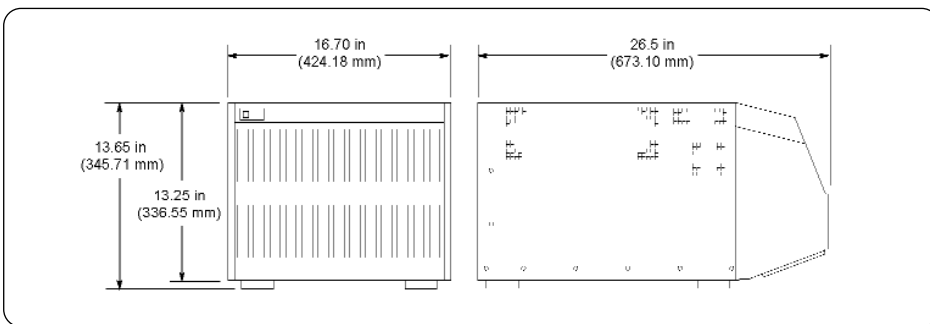
**External Signal Output** – Can be used to drive external circuitry from a module's trigger mechanism (TTL-compatible output, back-terminated into 50  $\Omega$ ).

**External Signal Input** – Can be used to provide an external signal to arm or trigger any or all modules (TTL-compatible, level-sensitive).

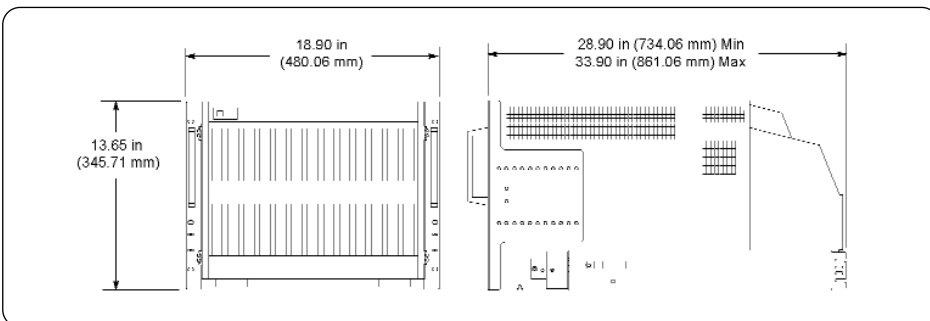
**P6041 External Signal Cable Length** – (SMB to BNC adapter cable, two each TLA721 only) 1.1 m (42 in.).



▶ **TLA715 Portable Mainframe.**



▶ **TLA721 and TLA7XM Benchtop and Expansion Mainframes.**



▶ **TLA721 and TLA7XM Benchtop and Expansion Mainframes with TLA721/TLA7XM Rackmount Kit.**

### Power

#### TLA715 –

Voltage range/frequency: 90-250 VAC at 45-66 Hz.  
100-132 VAC at 360-440 Hz.  
Input current: 6 A maximum at 90 VAC (70 A surge).  
Power consumption: 600 W maximum.

#### TLA721 and TLA7XM –

Voltage range/frequency: 90-250 VAC at 45-66 Hz,  
100-132 VAC at 360-440 Hz.  
Input current: 16.5 A maximum at 90 VAC (70 A surge).  
Power consumption: 1,450 W maximum.

### Physical Characteristics

#### TLA715 Portable

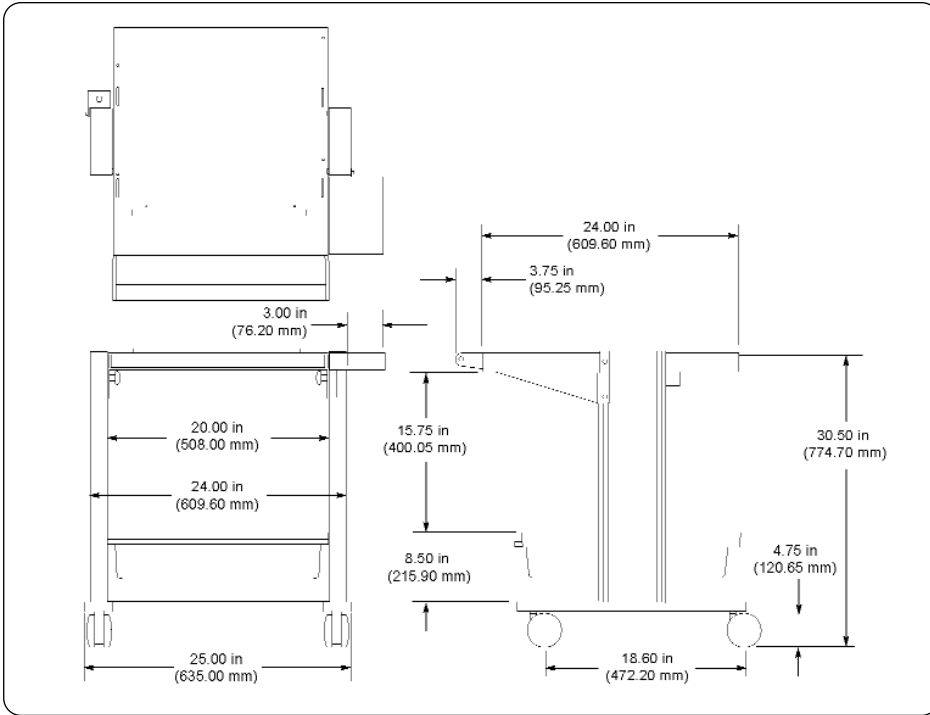
Dimensions	mm	in.
Height	235	9.25
Width	432	17
Depth	455	17.5
Weight	kg	lb.
Net (w/o modules)	11.4	25
Shipping (typical)	25.5	56

#### TLA721 Benchtop & TLA7XM Expansion

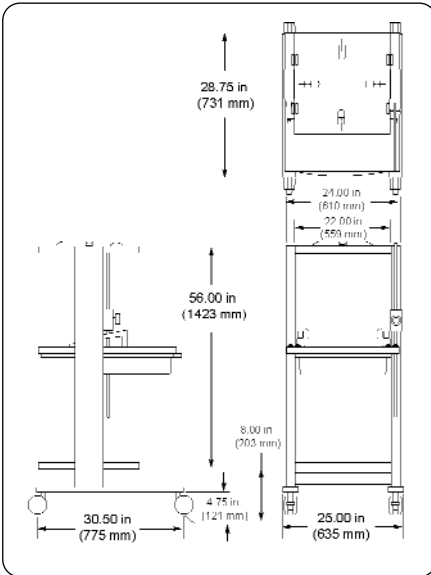
Dimensions	mm	in.
Height	346	13.65
Width	425	16.7
Depth	673	26.5
Weight	kg	lb.
Net (w/o modules)	22.7	50
Shipping (typical)	51.8	114

# Tektronix Logic Analyzers

## ► TLA700 Series Mainframes



► **LACART Instrument Cart** (adjustable probe skyhook not shown).



► **K4000 Instrument Cart**.

### Environmental

**Temperature –**  
 Operating: +5°C to +50°C.  
 Nonoperating: -20°C to +60°C.

**Humidity –**  
 20% to 80%.  
 Operating: ≤30°C; 80% relative humidity  
 (29°C maximum wet bulb temperature).  
 Nonoperating: 8% to 80% (29°C maximum wet  
 bulb temperature).

**Altitude –**  
 Operating: -1,000 ft. to 10,000 ft. (-305 meters  
 to 3,050 meters).

**Safety –** UL3111-1, CSA1010.1, EN61010-1,  
 IEC61010-1. B

## ► Ordering Information

### TLA715

#### Dual Monitor Portable Mainframe.

**Includes:** Wheel mouse, keyboard, LAN PC Card, front-panel cover, accessory pouch, two dual-wide panel fillers for empty slots, printer adapter, power cord (North American 120 VAC, 60 Hz), software, user manual, certificate of calibration and one-year warranty (return to Tektronix).

### TLA721

#### Dual Monitor Benchtop Mainframe.

**Includes:** Wheel mouse, keyboard, LAN PC Card, five dual-wide panel fillers for empty slots, printer adapter, two P6041 SMB to BNC adapter cables; power cord (North American 120 VAC, 60 Hz), software, user manual, certificate of calibration and one-year warranty (return to Tektronix). Display is not included – order Opt. 3M or Opt. 4M or use any SVGA monitor.

### TLA7XM

#### Expansion Mainframe.

**Includes:** Two expansion modules, three expansion cables, six dual-wide panel fillers for empty slots, one single-wide panel filler for empty slot, manual, power cord (North American 120 VAC, 60 Hz), statement of compliance and one-year warranty (return to Tektronix).

If installing a TLA7XM expansion mainframe into a TLA700 Series mainframe, please consult the TLA Family Upgrade Guide for upgrade information.

**TLA715/721 Options**

- Opt. 1C** – Add iView external oscilloscope interface kit (012-1614-00).
- Opt. 1K** – Add LACART logic analyzer cart.
- Opt. 1S** – 512 MB DRAM / 30 GB replaceable hard disk (TLA715 only).
- Opt. 3M** – Add 18 in. 1280x1024 flat-panel display (119-6568-00).
- Opt. 4M** – Add 21 in. 1600x1200 flat-panel display (119-6569-00).

**TLA715/TLA721/TLA7XM International Power Plugs**

- Opt. A1** – Universal Euro 220 VAC; 50 Hz.
- Opt. A2** – UK 240 VAC; 50 Hz.
- Opt. A3** – Australian 240 VAC; 50 Hz.
- Opt. A4** – North American 240 VAC; 60 Hz.
- Opt. A5** – Switzerland 220 VAC; 50 Hz.
- Opt. A99** – No power cord.

**TLA715/TLA721/TLA7XM Factory Configuration**

- Opt. 88** – Install modules in mainframe at factory (excludes merging of Logic Analyzer modules).

**TLA704/714/715  
TLA711/720/721  
TLA7XM Optional Accessories**

- Logic Analyzer Cart** – LACART, K4000.
- TLA711 Rackmount Kit** – Order 020-2197-00.
- TLA720/TLA721/TLA7XM Rackmount Kit** – Order 020-2369-00.
- TLA704/714/715 Wheeled Transport Case** – Order 016-1522-00.
- TLA711/720/721/TLA7XM Wheeled Transport Case** – Order 016-1651-00.
- 18 in. 1280x1024 Flat-panel Display with U.S. Standard, 120 V; 60 Hz Power Plug** – Order 119-6568-00.
- 21 in. 1600x1200 Flat-panel Display with U.S. Standard, 120 V; 60 Hz Power Plug** – Order 119-6569-00.
- Power Cord, IEC320 C5 Universal Euro, Straight** – Order 161-0311-00.
- Power Cord, IEC320 C5 UK, Straight** – Order 161-0312-00.
- Power Cord, IEC320 C5 Australian, Straight** – Order 161-0313-00.
- Power Cord, IEC320 C5 Switzerland, Straight** – Order 161-0314-00.

**Wheeled Transport Case for 18 in. 1280x1024 Flat-panel Display** – Order 016-1895-00.

**Wheeled Transport Case for 21 in. 1600x1200 Flat-panel Display** – Order 016-1896-00.

**83 Key Notebook Keyboard, PS2-Compatible** – Order 118-9402-00.

**TLA7QS** – TLA Family training package. (TLA700 configuration required: 102-Channel logic analyzer module (required) plus 2-Channel digitizing oscilloscope module (optional) plus 64-Channel pattern generator module (optional)).

- Opt. A1** – Universal Euro.
- Opt. A2** – United Kingdom.
- Opt. A6** – Japan.

**TLA7QS Technical Reference Support Kit** – Order 020-2211-02.

**TLA700 Series Manuals**

- TLA Family User Manual** – Order 071-0863-02 (for Version 4.2 TLA application software).
- TLA7QS Quickstart™ Training Manual** – Order 070-9717-05.

▶ **TLA Family Service Options**

	TLA6XX	TLA715/721	TLA7XM	TLA7Axx	TLA7NX/PX/QX	TLA7PG2	TLA7DX/EX
Opt. IN		X	X	X	X	X	X
Opt. R3	X	X	X	X	X	X	X
Opt. R5	X	X	X	X	X	X	X
Opt. S1		X	X				
Opt. S3		X	X				
Opt. C3	X	X		X	X	X	X
Opt. C5	X	X		X	X	X	X
Opt. D1	X	X		X	X	X	X
Opt. D3	X	X		X	X	X	X
Opt. D5	X	X		X	X	X	X

**TLA Family Service Options**

- Opt. IN** – Product installation service (on-site configuration and user familiarization; excluding network integration).
- Opt. R3** – Extends depot repair warranty service period to three years.
- Opt. R5** – Extends depot repair warranty service period to five years.

- Opt. S1** – Uplifts standard one-year warranty service of mainframe and installed modules to on-site service.
- Opt. S3** – Uplifts Opt. C3 and/or R3 of mainframe and installed modules to on-site service (must be ordered with Opt. C3 and/or R3).
- Opt. C3** – Three years of calibration service (includes initial calibration and two annual calibrations).
- Opt. C5** – Five years of calibration service (includes initial calibration and four annual calibrations).

- Opt. D1** – Add calibration test data report.
- Opt. D3** – Provides test data for each calibration (must be ordered with Opt. C3).
- Opt. D5** – Provides test data for each calibration (must be ordered with Opt. C5).

# Tektronix Logic Analyzers

## ▶ TLA700 Series Mainframes

### TLA700 Series Service Manuals and Test Fixtures

**TLA715 Service Manual (includes performance verification and adjustment procedures)** – Order 071-0913-01.

**TLA721/7XM Service Manual (includes performance verification and adjustment procedures)** – Order 071-0912-01.

**TLA Logic Analyzer Performance Verification and Adjustment Fixture for TLA6xx and TLA7Lx/Mx/Nx/Px/Qx (includes AC adapter; requires local power cord)** – Order 671-3599-00.

**TLA Logic Analyzer Performance Verification and Adjustment Fixture for TLA7Axx (refer to TLA7Axx Logic Analyzer Module Service Manual for the list of required equipment, including P6860 and P6880 probes)** – Order TLACAL2.

**TLA7Nx/7Px/7Qx Logic Analyzer Modules Service Manual (includes performance verification and adjustment procedures)** – Order 071-0864-01.

**TLA7Axx Logic Analyzer Modules Service Manual (includes performance verification and adjustment procedures)** – Order 071-1043-00.

**TLA7PG2 Pattern Generator Module Service Manual (includes performance verification and adjustment procedures)** – Order 071-0714-01.

**TLA7Dx/7Ex DSO Modules Service Manual (includes performance verification and adjustment procedures)** – Order 070-9780-03.

### TLA700 Series Mainframe Upgrades

You can upgrade the operating system, TLA application software, increase DRAM and hard disk, capabilities to your existing TLA714/715/720/721 mainframe.

Please refer to TLA Family Upgrade Guide for further details.

### Contact Tektronix:

**ASEAN Countries & Pakistan** (65) 6356 3900

**Australia & New Zealand** (65) 6356 3900

**Austria** +43 2236 8092 262

**Belgium** +32 (2) 715 89 70

**Brazil & South America** 55 (11) 3741-8360

**Canada** 1 (800) 661-5625

**Central Europe & Greece** +43 2236 8092 301

**Denmark** +45 44 850 700

**Finland** +358 (9) 4783 400

**France & North Africa** +33 (0) 1 69 86 80 34

**Germany** +49 (221) 94 77 400

**Hong Kong** (852) 2585-6688

**India** (91) 80-2275577

**Italy** +39 (02) 25086 1

**Japan** (Sony/Tektronix Corporation) 81 (3) 3448-3111

**Mexico, Central America & Caribbean** 52 (5) 666-6333

**The Netherlands** +31 (0) 23 569 5555

**Norway** +47 22 07 07 00

**People's Republic of China** 86 (10) 6235 1230

**Poland** +48 (0) 22 521 53 40

**Republic of Korea** 82 (2) 528-5299

**Russia, CIS & The Baltics** +358 (9) 4783 400

**South Africa** +27 11 254 8360

**Spain** +34 (91) 372 6055

**Sweden** +46 8 477 6503/4

**Taiwan** 886 (2) 2722-9622

**United Kingdom & Eire** +44 (0) 1344 392400

**USA** 1 (800) 426-2200

For other areas contact Tektronix, Inc. at: 1 (503) 627-7111

Updated 23 January 2002



For the most up-to-date product information visit our web site at [www.tektronix.com](http://www.tektronix.com)

Copyright © 2002, Tektronix, Inc. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks or registered trademarks of their respective companies.

02/02 HB/XBS

52W-15053-0