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# Tektronix Logic Analyzers

## ▸ TLA7000 Series Mainframes



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

Tektronix provides breakthrough digital systems analysis tools that enable digital hardware and software designers to capture and analyze the source of elusive problems that threaten product development schedules. The TLA7000 Series provides the speed you need to capture the source of those elusive problems, plus the visibility you want with large displays and fast system data throughput, while protecting your investment with compatibility with all TLA modules.

The TLA7012 Portable and TLA7016 Benchtop mainframes are modular mainframes that accept TLA logic analyzer and pattern generator modules. The TLA7012 and TLA7016 can be configured as either master or expansion mainframes to provide solutions for large numbers of buses and high channel count requirements.

The TLA7012 Portable Mainframe and TLA7016 Benchtop Mainframe with TLA7PC1 Benchtop Controller are built on a Microsoft Windows XP Professional PC platform that offers a familiar work environment for the TLA application software.

The TLA7012 Portable and TLA7016 Benchtop Mainframe with TLA7PC1 Benchtop Controller are available with multiple display capability for extended desktop viewing, in addition to an internal DVD-RW, hard drive and multiple USB2.0 ports for expansion. A replaceable hard drive 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.

## ▸ Characteristics

**General (TLA7012, TLA7016)**

**Instrument Slots –**
TLA7012: Holds 2 TLA modules.
TLA7016: Holds 6 TLA modules.

**Expansion Capability –**
The TLA7000 Series Mainframes can be used as either master or expansion mainframes (TL708EX 8-port Instrument Hub and Expander is required for 3 to 8 mainframes connected together using TekLink™ cable).
TLA7012: Up to eight TLA7012 mainframes can be used providing support for up to 16 TLA modules.
TLA7016: Up to eight TLA7016 mainframes can be used providing support for up to 48 TLA modules.

| Mainframe | LA | PG |
|---|---|---|
| Max channels per module | 136 ch. | 64 ch. |
| TLA7012 | 2,176 | 1,024 |
| TLA7016 | 6,528 | 3,072 |

For configurations beyond eight TLA7012/7016 mainframes, please contact your local Tektronix representative.

## ▸ Features & Benefits

Modular Mainframes Provide Flexibility and Expandability

Utilize TLA Logic Analyzer or Pattern Generator Modules

Supports Up to 6,528 Logic Analyzer Channels, 48 Independent Buses

All Measurement Modules are Fully Interchangeable Between Portable and Benchtop Mainframes

Integrated View (iView™) Capability Provides up to 15 GHz, 40 GS/s and 64 Mb Analog Acquisition with a Stand-alone Tektronix TDS Digital Storage Oscilloscope

Microsoft Windows XP 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

Remotely Control and Monitor the TLA Over the Network Using Either Hosted Mode or Via Built-in Windows XP Remote Desktop

Remote Control Using Microsoft .NET and COM/DCOM Technology Supports Advanced Data Analysis

Broad Processor and Bus Support

## ▸ Applications

Hardware Debug and Verification

Processor/Bus Debug and Verification

Embedded Software Integration, Debug and Verification

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### TLA7012 PC Characteristics

**Operating System –**
Microsoft Windows XP Professional and Multi-Lingual User Interface Pack.
**Processor –** 2 GHz Intel Pentium M-760.
**Chipset –** Intel 915GM.
**Memory –**
1 GB DDR PC 533 MHz (SODIMM), expandable to 2 GB DDR memory.
**Sound –** Line In and Mic Out connectors.
**Removable Hard Drive –**
3.5 in., 80 GB Serial ATA, 7200 RPM.
**Optical Drive –** Internal 4.7 GB DVD±R/RW.
**External Display Port Type –**
One (1) DVD-D (primary – digital only) and one (1) DVD-I (secondary – digital and analog) connectors (includes one DVI-I-to-analog DB-15 adapter).
**External Display Resolution –**
Up to 1600x1200 non-interlaced at 32-bit color, each for both primary and secondary displays.
**Network Port –**
One (1) 10/100/1000 LAN with RJ-45 connector.
**USB 2.0 Port –**
Seven (7); three (3) in front and four (4) in rear.

### TLA7012 Integral Controls

**Front-Panel Display –**
Size: 15 in. (38.1 cm) diagonal.
Type: Active-matrix color TFT LCD with backlight.
Resolution: 1024x768.
**Simultaneous Display Capability –**
Both the front-panel and one external display can be used simultaneously at 1024x768 resolution.
**Front-panel –**
General-purpose knob with dedicated hot-keys and knobs for horizontal and vertical scaling and scrolling.
**Touchscreen –** Available with Option 18.

### TLA7PC1 Benchtop Controller Characteristics

**Operating System –**
Microsoft Windows XP Professional and Multi-Lingual User Interface Pack.
**Processor –** 3 GHz Intel Pentium 4.
**Chipset –** Intel 865G.
**Memory –**
1 GB dual channel DDR, PC 800 MHz (DIMM), expandable to 4 GB DDR memory.
**Sound –** Line In and Mic Out connectors.
**Removable Hard Drive –**
3.5 in., 80 GB Serial ATA, 7200 RPM. Supports second Serial ATA Removable Hard Drive (includes second removable hard drive assembly only – user supplies second hard drive).
**Optical Drive –** Internal 4.7 GB DVD±R/RW.
**External Display Port Type –**
One (1) analog DB-15 connector.
**External Display Resolution –**
Up to 1600x1200 non-interlaced at 65,536 colors.
**Network Port –**
One (1) 10/100/1000 LAN with RJ-45 connector.
**USB 2.0 Port –**
Six (6); two (2) in front and four (4) in rear.
**PS/2 Ports –**
Three (3); one (1) in front and two (2) in rear.
**Enhanced Parallel Port –**
Standard DB25 female connector; supports EPP/SPP/ECP.
**Serial Port –** Standard DB9 male connector.
**PCI Bus –**
Three full-size PCI slots, 32-bit, 33 MHz. Can be used to add up to three additional optional PCI Video Display cards, available from third-parties, for a total of four displays.

### Integrated View (iView™) Capability

**TLA Mainframe Configuration Requirements –**
TLA7012/7016 Series mainframes, TLA714/720/715/721 Series mainframes, TLA520x instruments, and TLA6XX instruments.
TLA App S/W V 4.1 or greater.
256 MB DRAM Minimum, 512 MB recommended.
**TDS Configuration Requirements –**
The iView cable does not fully connect to the TDS1000/2000 Series oscilloscopes without a GPIB extender. Tektronix recommends a standard GPIB cable as an extender, or order a cable extender (National Instruments part number 181638-1). TDS2CMAX Communications Extension Module is required for iView capability on any TDS1000/2000 Series. 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 TLA7Axx iConnect with a TDS oscilloscope with TCA input connectors, four TCA-BNC connectors are required to be compatible with BNC cables from the TLA7Axx module.
**Number of TDS oscilloscopes that can be connected to a TLA system –** 1.
**External Oscilloscopes Supported –**
For a complete list of currently supported TDS oscilloscopes, please visit our website http://www.tektronix.com/iview.
**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.

### Symbolic Support

**Number of Symbols/Ranges –**
Unlimited (limited only by amount of virtual memory available on TLA).
**Object File Formats Supported –**
IEEE 695, 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 Ω).
**System Trigger Input –**
Forces a system trigger (triggers all modules) when asserted (adjustable threshold between 0.5 V and 1.5 V, 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 Ω).
**External Signal Input –**
Can be used to provide an external signal to arm or trigger any or all modules (adjustable threshold between 0.5 V and 1.5 V, level-sensitive).

### Power

**TLA7012 –**
Voltage range/frequency: 90 to 250 VAC at 45 to 66 Hz. 100 to 132 VAC at 360 to 440 Hz.
Input current: 7 A maximum at 90 VAC (70 A surge).
Power consumption: 750 W maximum.
**TLA7016 –**
Voltage range/frequency: 90 to 250 VAC at 45 to 66 Hz, 100 to 132 VAC at 360 to 440 Hz.
Input current: 16.5 A maximum at 90 VAC (70 A surge).
Power consumption: 1,450 W maximum.
**TLA7PC1 –**
Voltage range/frequency: 100 to 240 VAC at 50 to 60 Hz.
Input current: 3 A maximum at 100 VAC.
Power consumption: 300 W maximum.
**TL708EX –**
Voltage range/frequency: 100 to 240 VAC at 50 to 60 Hz.
Input current: 2 A maximum at 100 VAC.
Power consumption: 200 W maximum.



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### Physical Characteristics

**TLA7012 Portable**

| Dimensions | mm | in. |
|---|---|---|
| Height | 295 | 11.6 |
| Width | 451 | 17.75 |
| Depth | 460 | 18.1 |
| **Weight** | **kg** | **lb.** |
| Net (without modules) | 14 | 30 |
| Shipping (typical) | 27 | 59 |

**TLA7016 Benchtop**

| Dimensions | mm | in. |
|---|---|---|
| Height | 350 | 13.7 |
| Width | 425 | 16.7 |
| Depth | 673 | 26.5 |
| **Weight** | **kg** | **lb.** |
| Net (without modules) | 25 | 55 |
| Shipping (typical) | 51.8 | 115 |

**TLA7PC1 Benchtop Controller**

| Dimensions | mm | in. |
|---|---|---|
| Height | 89 | 3.5 |
| Width | 432 | 17 |
| Depth | 483 | 19 |
| **Weight** | **kg** | **lb.** |
| Net | 9 | 19 |
| Shipping | 15 | 33 |

**TL708EX 8-Port Instrument Hub and Expander**

| Dimensions | mm | in. |
|---|---|---|
| Height | 51 | 2 |
| Width | 445 | 17.5 |
| Depth | 305 | 12 |
| **Weight** | **kg** | **lb.** |
| Net | 3 | 6 |
| Shipping | 5 | 11 |

### Environmental

**Temperature –**
Operating: +5 ºC to +45 ºC.
Nonoperating: –20 ºC to +60 ºC.

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

## ▸ Ordering Information

### TLA7012

Portable Logic Analyzer Mainframe, holds two TLA modules.

**Includes:** Mini Keyboard, USB (118-7083-xx), Optical Wheel Mouse, USB (119-7054-xx), TekLink cable (174-5019-xx), LAN cable, straighthrough, RJ-45 (174-5225-xx), front-panel cover (200-4939-xx), accessory pouch (016-1441-xx), DVI-to-Analog Video Adapter (013-0346-xx), two dual-wide panel fillers for empty slots (333-4206-xx), Mouse Pad (016-1524-xx), TLA7000 Series Product Software CD (063-3881-xx), TLA7012 Series Recovery Media (063-3876-xx), TLA Documentation CD (063-3671-xx), TLA Quick Start User Manual (071-1575-xx), TLA7000 Installation Manual (071-1747-xx) and Certificate of Traceable Calibration. Please specify power cord, language and service options when ordering.

**Opt. 18 –** Add touchscreen (TLA7012 only).

**Opt. 1C –** Add iView™ external oscilloscope interface kit (012-1614-xx).

**Opt. 1K –** Add LACART logic analyzer cart.

### TLA7016

Benchtop Logic Analyzer Mainframe, holds six TLA modules.

**Includes:** Six (6) dual-wide panel fillers for empty slots (333-4206-xx), TekLink cable (174-5019-xx), LAN cable, straighthrough, RJ-45 (174-5225-xx), Benchtop System Mounting Brackets (left-hand (407-5127-xx) and right-hand (407-5132-xx)), TLA7000 Series Product Software CD (063-3881-xx), TLA Documentation CD (063-3671-xx), TLA Quick Start User Manual (071-1575-xx), TLA7000 Installation Manual (071-1747-xx) and Certificate of Traceable Calibration. Please specify power cord, language and service options when ordering.

**Opt. 1C –** Add iView external oscilloscope interface kit (012-1614-xx).

**Opt. 1K –** Add LACART logic analyzer cart.

### TLA7PC1

Controller for TLA7016 Benchtop Logic Analyzer Mainframe.

**Includes:** Mini Keyboard, USB (118-7083-xx), Optical Wheel Mouse, USB (119-7054-xx), LAN cable, straighthrough, RJ-45 (174-5225-xx), Mouse Pad (016-1524-xx), TLA7000 Series Product Software CD (063-3881-xx), TLA7PC1 Series Recovery Media (063-3888-xx), TLA Documentation CD (063-3671-xx), TLA Quick Start User Manual (071-1575-xx), TLA7000 Installation Manual (071-1747-xx), and Statement of Compliance. Please specify power cord, language and service options when ordering.

### TL708EX

TekLink 8-port Instrument Hub and Expander (used for connecting 3-to-8 TLA7012 or TLA7016 mainframes).

**Includes:** Instruction sheet (071-1765-xx, English only). Please specify power cord and service options when ordering.

### Power Cord Options

**Opt. A0 –** North America power. (TLA7012/TLA7PC1/TL708EX: 161-0104-00; TLA7016: 161-0213-00 [15A], 161-0218-00 [20A].)

**Opt. A1 –** Universal EURO power. (TLA7012/TLA7PC1/TL708EX: 161-0104-06; TLA7016: 161-0209-00.)

**Opt. A2 –** United Kingdom power. (TLA7012/TLA7PC1/TL708EX: 161-0104-07; TLA7016: 161-0210-00.)

**Opt. A3 –** Australia power. (TLA7012/TLA7PC1/TL708EX: 161-0104-14; TLA7016: 161-0211-00.)

**Opt. A4 –** 240 V, North America power. (TLA7012/TLA7PC1/TL708EX: 161-0104-08; TLA7016: 161-0208-00.)

**Opt. A5 –** Switzerland power. (TLA7012/TLA7PC1/TL708EX: 161-0167-00; TLA7016: 161-0212-00.)

**Opt. A6 –** Japan power. (TLA7012/TLA7PC1/TL708EX: 161-A005-00; TLA7016: 161-0218-00.)

**Opt. A10 –** China power. (TLA7012/TLA7PC1/TL708EX: 161-0306-00; TLA7016: 161-0320-00.)

**Opt. A99 –** No power cord or AC adapter.



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### Language Options

**Opt. L0 –** English Manuals.

**Opt. L5 –** Japanese Manuals.

**Opt. L10 –** Russian Manuals.

**Opt. L99 –** No Manuals.

### Service Options

**Opt. C3 –** Calibration Service 3 Years.

**Opt. C5 –** Calibration Service 5 Years.

**Opt. D1 –** Calibration Data Report.

**Opt. D3 –** Calibration Data Report 3 Years (with Opt. C3).

**Opt. D5 –** Calibration Data Report 5 Years (with Opt. C5).

**Opt. R3 –** Repair Service 3 Years.

**Opt. R5 –** Repair Service 5 Years.

**Opt. IN –** Product Installation Service.

**Opt. S1 –** On-site Service 1 Year.

**Opt. S3 –** On-site Service 3 Years (with R or C Option).

### TLA7012/TLA7016 Factory Configuration

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

### TLA7012/7016 Optional Accessories

**TLA Logic Analyzer Cart –** LACART, K4000.

**TLA7012 Additional Removable Hard Drive Assembly (no SW) –** Order 650-4815-xx.

**TLA7PC1 Additional Removable Hard Drive Assembly (no SW) –** Order 650-4834-xx.

**TLA7012 Rackmount Kit –** Order 020-2664-xx.

**TLA7012 Wheeled Transport Case –** Order 016-1522-xx.

**TLA7016 Rackmount Kit –** Order 020-2369-xx.

**TLA7016 Wheeled Transport Case –** Order 016-1651-xx.

### Gigabit LAN (GbE) Switch

**16-port Gigabit LAN (GbE) Switch with U.S. Standard (120 V, 60 Hz) Power Cord –** Order 020-2666-xx.

### Flat-panel Display

**21 in. 1600x1200 Flat-panel Display with U.S. Standard (120 V, 60 Hz) Power Cord –** Order 020-2665-xx.

### Power Cords for Gigabit LAN (GbE) Switch and Flat-panel Display

**Power Cord, IEC320 C13, North American, Straight –** Order 161-0066-00.

**Power Cord, IEC320 C13 Universal Euro, Straight –** Order 161-0066-09.

**Power Cord, IEC320 C13, Universal Euro, Straight –** Order 161-0066-10.

**Power Cord, IEC320 C13 Australian, Straight –** Order 161-0066-11.

**Power Cord, IEC320 C13, North American, S Straight –** Order 161-0066-12.

**Power Cord, IEC320 C13 Switzerland, Straight –** Order 161-0154-00.

**Power Cord, IEC320 C13, Japan, Straight –** Order 161-0298-00.

**Power Cord, IEC320 C13, China, Straight –** Order 161-0304-00.

### TLA700 Series Mainframe Upgrades

You can add new capabilities to your existing TLA7012/7016 mainframe.

Please refer to the TLA Family Upgrade Guide for further details.

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