

# Tektronix Logic Analyzers

## TLA6400 Series Datasheet



Tektronix TLA6400 Series logic analyzers provide a significant price-performance breakthrough for digital debug.

### Features and benefits

- Performance and ease of use to debug, validate, and optimize digital systems
  - 40 ps resolution MagniVu™ Acquisition to accurately see signal relationships in your system
  - State Speed - Sample your fastest synchronous buses with clock rates up to 667 MHz and data rates up to 1333 Mb/s
  - 15 in. display, with optional touch screen to see more of your data and navigate efficiently through your data
  - 4 models with 34/68/102/136 channels and up to 64 Mb record length offer flexible solutions to fit any budget
  - Drag-and-Drop Triggering - Simply drag any one of eight different trigger types from a table to the waveform and the TLA will automatically set up the trigger conditions. Eliminates errors, improves repeatability, and saves time.
  - Drag-and-Drop measurements - Simply drag an icon from the measurement toolbar and drop it on your signal of interest and get a table of results. Saves time, removes complexity, and reduces measurement uncertainty.

- Comprehensive set of signal integrity tools that allow you to quickly isolate, identify, and debug complex signal integrity issues
  - Glitch Trigger and Storage - Allows you to trigger on and highlight potential signal integrity problems. Not only can the TLA6400 Series trigger on the problem, but by highlighting suspected problems in red, you will easily determine which signals you need to investigate further.
  - iCapture - Route the suspected signal to the analog output of the TLA6400 Series using the exclusive Tektronix iCapture feature. This eliminates the need to double-probe with an oscilloscope probe, reducing time to debug.
  - iView - Time-correlated view of both logic analyzer and oscilloscope data to trace the SI problem across the digital and analog domain.

### Applications

- Digital hardware validation and debug
- Monitoring, measurement, and optimization of digital hardware performance
- Embedded software integration, debug, and verification

### Efficiently debug and validate your digital system at a price you will like!

The affordable TLA6400 Series logic analyzers offer the performance needed to debug, validate, and optimize the functionality of your digital system. The TLA6400 Series provides a comprehensive set of signal integrity debug tools that allow you quickly isolate, identify, and characterize elusive and hard-to-find problems. Add a broad range of support for today's applications, and you have the ideal tool to help you meet all of the debug challenges of today's digital designs.

The TLA6400 Series allows you to effectively validate and debug the functionality of your digital designs:

- Use the patented 25 GHz MagniVu technology to accurately measure timing relationships. The single, integrated acquisition architecture of the TLA6400 Series eliminates the timing skew problems inherent in other logic analyzer architectures.
- Capture buses with clock rates up to 667 MHz and data rates up to 1333 Mb/s.
- Buy the capability you need now and upgrade as your measurement needs grow.
- Quickly isolate events through a simple and intuitive drag-and-drop trigger setup.
- Easily summarize your design's performance with sophisticated drag-and-drop measurements such as frequency, period, pulse width, duty cycle, and edge count.
- View data in a variety of time-correlated formats including waveform, listing, graph, disassembly, source code, or compare.

### Oscilloscope integration

The TLA6400 seamlessly integrates with Tektronix oscilloscopes to make it easy to find problems that cross between the digital and analog portions of a design.

### Probing

The TLA6400 with iCapture can be used as flexible and convenient probe system for your oscilloscope. It allows you to use one probe for both your logic analyzer and your oscilloscope eliminating the need to double-probe signals. With a single probe, you can view both the digital and analog characteristics of the signal.

You can route up to four analog signals through the TLA6400's 2 GHz analog mux to your oscilloscope and change the signals you are viewing with just a mouse click. This eliminates the need to physically move an oscilloscope probe to make a new measurement

### Display and triggering

In addition to integrated probing, iView allows time-correlated logic analyzer and oscilloscope waveforms to be integrated into a single TLA6400 waveform window simplifying viewing and analysis. You can also trigger the oscilloscope from the logic analyzer or have the oscilloscope trigger the logic analyzer.

The connection between the TLA6400 and the oscilloscope consists of two BNC cables for cross triggering and a data connection to transfer data between the instruments. The data connection can be GPIB, USB, or a LAN connection.

This seamless integration not only helps you troubleshoot functional issues in your design, but also helps you find signal integrity problems caused by crosstalk, termination mismatches, ground bounce, and other issues.

Use the TLA6400's glitch trigger to monitor selected signals in your design and trigger when a signal integrity problem is found on any one of these signals. Signals with suspected signal integrity problems can also be tagged allowing you to quickly identify the signals of interest.

The analog nature of the suspected signals can then be routed to an oscilloscope using the exclusive iCapture functionality and viewed in the TLA6400 using iView.

### DDR2/DDR3 and LPDDR2 memory validation

A complete DDR2/DDR3 and LPDDR2 protocol debug and validation solution is available for the TLA6400. This tool set consist of everything embedded engineers - even those who are not DDR experts - need to validate and debug the operation of memory sub-systems in their designs.

Support consists of a set of tools designed to provide visibility to all address, data, and control signals and consists of:

- Memory chip and PoP (Package-on-Package) interposers that provide a convenient way of probing embedded DDR memory systems and eliminates the need to design in probe access points. These interposers work with the unique iCapture Analog Mux feature of the TLA6400 to provide a single probing solution for both the logic analyzer and oscilloscope, saving time and minimizing setup complexity.
- Setup software to configure the TLA6400 to accurately sample the DDR signals.
- Protocol decode software that shows all of the DDR transactions as well as providing triggering on DDR events.
- Optional protocol violation software that finds and reports any violation of the JEDEC-defined DDR protocol.

The DDR protocol debug and validation solution supports:

- x4, x8, and x16 DDR2 devices up to speeds of DDR2-1333.
- x4, x8, and x16 DDR3 devices with speeds up to DDR3-1333.
- LPDDR2 PoP devices with speeds up to LPDDR2-1333.

## DDR2/DDR3 protocol debug and validation solutions

	<b>DDR2 memory</b> Up to DDR2-1333 (667 MHz clock) state measurements on Addr/Cmd/Data. <sup>1</sup>	<b>DDR3 memory</b> Up to DDR3-1333 (667 MHz clock) state measurements on Addr/Cmd/Data. <sup>1</sup>
x4/x8 Configurations	Requires 68 channel model or higher (Option 1T required for DDR2-800, DDR2-1067, and DDR2-1333)	Requires 68 channel model or higher (Option 1T required for DDR3-800, DDR3-1067, and DDR3-1333)
	Memory Chip Interposer <sup>2</sup> : NEX-DDR2MP60BLASK (socketed) or NEX-DDR2MP60BLA (non-socketed)	Memory Chip Interposer <sup>3</sup> : NEX-DDR3MP78BLASK (socketed) or NEX-DDR3MP78BLA (non-socketed)
	NEX-PRB1XL64 (requires 2) NEX-PRB1XL64 (requires 2)	NEX-PRB1XL64 (requires 2).
	(Optional) Protocol software: NEX-DDR-PROTOCOL	(Optional) Protocol software: NEX-MCATLA-DDR3-SWL
x16 Configurations	Requires 68 channel model or higher (Option 1T required for DDR2-800, DDR2-1067, and DDR2-1333)	Requires 68 channel model or higher (Option 1T required for DDR3-800, DDR3-1067, and DDR3-1333)
	Memory Chip Interposer <sup>2</sup> : NEX-DDR2MP84BLASK (socketed) or NEX-DDR2MP84BLA (non-socketed)	Memory Chip Interposer <sup>3</sup> : NEX-DDR3MP96BLASK (socketed) or NEX-DDR3MP96BLA (non-socketed)
	NEX-PRB1XL64 (requires 2)	NEX-PRB1XL64 (requires 2)
	(Optional) Protocol software: NEX-DDR-PROTOCOL (must be ordered directly from Nexus)	(Optional) Protocol software: NEX-MCATLA-DDR3-SWL

## LPDDR2 protocol debug and validation solutions

	<b>LPDDR2 Memory</b> Up to DDR2-1333 (667 MHz clock) state measurements on Addr/Cmd/Data. <sup>4</sup>
168 Ball Package on Package (x32 Data Width)	Requires 68 channel model or higher (Option 1T required for LPDDR2-800, LPDDR2-1067, and LPDDR2-1333)
	Memory Chip Interposer: NEX-LP2POP168BLASK <sup>5</sup> (Socketed)
	NEX-PRB1XL64 (requires 2)
	(Optional) Protocol software: NEX-MCATLA-LP2-SWL
216 Ball Package on Package (2x32 Data Width)	Requires 68 channel model or higher (Option 1T required for LPDDR2-800, LPDDR2-1067, and LPDDR2-1333)
	Memory Chip Interposer: NEX-LP2POP216BLASK <sup>5</sup> (Socketed)
	NEX-PRB1XL64 (requires 2)
	(Optional) Protocol software: NEX-MCATLA-LP2-SWL

<sup>1</sup> All configurations support simultaneous capture of Read and Write data.

<sup>2</sup> DDR2 Memory Chip Interposers include Sample Point Analyzer Tool (SPA), Logic Analyzer configuration files, and DDR Protocol Decoder and Triggering Support.

<sup>3</sup> DDR3 Memory Chip Interposers include Sample Point Analyzer Tool (SPA), ICIS Software, Logic Analyzer configuration files, and DDR Protocol Decoder and Triggering Support.

<sup>4</sup> All configurations support simultaneous capture of Read and Write data.

<sup>5</sup> DDR2 Memory Chip Interposers include Sample Point Analyzer Tool (SPA), Logic Analyzer configuration files, and DDR Protocol Decoder and Triggering Support.

# Specifications

All specifications apply to all models unless noted otherwise.

## TLA6400 selection guide

Characteristic	TLA6401	TLA6402	TLA6403	TLA6404
Channels	34	68	102	136
High-speed timing	25 GHz (40 ps) with 128 Kb record length			
Maximum timing sample rate (Half/ Full channel)	3.2 GHz / 1.6 GHz			
Maximum State clock rate	333 MHz (standard) 667 MHz (with Option 1T)			
Maximum State data rate	667 Mb/s (standard) 1333 Mb/s (with Option 1T)			
Maximum record length	2 Mb (standard) 4 Mb (Option 1S) 8 Mb (Option 2S) 16 Mb (Option 3S) 32 Mb (Option 4S) 64 Mb (Option 5S)			
Analog Mux	4 fixed channels (standard) Any signal (user selectable) may be routed to 4 output BNCs with Option AM			
Probing options (order separately)	P5910 - 17-channel General-purpose probe P5934 - 34-channel Mictor probe P5960 - 34-channel D-MAX probe			

## General characteristics

### Number of channels (all channels are acquired including clocks)

<b>TLA6401</b>	34 channels (2 are clock channels). Clock channels can also be used as qualifiers.
<b>TLA6402</b>	68 channels (4 are clock channels). Clock channels can also be used as qualifiers.
<b>TLA6403</b>	102 channels (4 are clock and 2 are qualifier channels). Clock channels can also be used as qualifiers.
<b>TLA6404</b>	136 channels (4 are clock and 4 are qualifier channels). Clock channels can also be used as qualifiers.
<b>Channel grouping</b>	No limit to number of groups or number of channels per group (all channels can be reused in multiple groups).

**Time stamp** 54 bits at 20 ps resolution (>4 days duration)

**Clocking/acquisition modes** Asynchronous/Synchronous; 25 GHz MagniVu high-speed timing is available simultaneous with all modes.

**PC characteristics**

<b>Operating system</b>	Microsoft® Windows® 7 Ultimate, 64-bit
<b>Processor</b>	Intel® Core i3-2120, 3.3 GHz, 3M Cache
<b>Chipset</b>	Intel® Q67 chipset
<b>Memory</b>	2 × 2 GB DIMM, 4 GB Total DDR3, 1066 MHz, PC3-8500
<b>Sound</b>	Line In, Line Out, and Mic In connectors  3.5 in., ≥500 GB Serial ATA, 7200 RPM
<b>Optical drive</b>	Internal 4.7 GB DVD±R/RW
<b>External display port type</b>	One (1) DVI connector and one (1) VGA connector
<b>External display resolution</b>	Up to 1920 × 1200 noninterlaced at 32-bit color, each for both primary and secondary displays
<b>Network port</b>	Two (2) 10/100/1000 LAN with RJ-45 connector
<b>USB port</b>	Five (5) USB 2.0 ports and two (2) USB 3.0 ports. USB ports can be disabled in BIOS.

**Integral controls**

<b>Front panel display</b>	Size: 15 in. (38.1 cm) diagonal Type: Active-matrix color TFT LCD with backlight Resolution: 1024 × 768
<b>Simultaneous display capability</b>	Both the front-panel and one external display can be used simultaneously at 1024 × 768 resolution
<b>Front panel</b>	General-purpose knob with dedicated hotkeys and knobs for horizontal and vertical scaling and scrolling
<b>Touch screen</b>	Available with Option 18. Can be enabled/disabled with a front-panel button.

**Integrated View (iView™) capability**

<b>TLA mainframe configuration requirements</b>	GPIB-iView™ (Opt. 1C) USB-iView™ (Opt. 2C)
<b>Number of Tektronix oscilloscopes that can be connected to a TLA system</b>	1
<b>External oscilloscopes supported</b>	More than 100. For a complete listing of current supported oscilloscopes, please visit our website <a href="http://www.tektronix.com/iview">http://www.tektronix.com/iview</a> .
<b>TLA connections</b>	USB, Trigger In, Trigger Out, Clock Out
<b>Oscilloscope connections</b>	
<b>GPIB-iView™ (Opt. 1C)</b>	GPIB, Trigger In, Trigger Out, Clock In (when available)
<b>USB-iView™ (Opt. 2C)</b>	USB Device Port, Trigger In, Trigger Out

## Integrated View (iView™) capability

<b>Setup</b>	iView™ external oscilloscope wizard automates setup.
<b>Data correlation</b>	After oscilloscope acquisition is complete, the data is automatically transferred to the TLA and time correlated with the TLA acquisition data.
<b>Deskew</b>	The oscilloscope and TLA data is automatically deskewed and time correlated when using the iView™ external oscilloscope cable.
<b>GPIB-iView™ (Opt. 1C) External oscilloscope cable length</b>	2 m (6.6 ft.)
<b>USB-iView™ (Opt. 2C) External oscilloscope cable length</b>	2 m (6 ft.)

## Symbolic support

<b>Number of symbols/ranges</b>	Unlimited (limited only by amount of virtual memory available on TLA)
<b>Object file formats supported</b>	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 online help). If a format is not listed, please contact your local Tektronix representative.

## External instrumentation interface

<b>System Trigger output</b>	Asserted whenever a system trigger occurs (TTL-compatible output, back-terminated into 50 Ω)
<b>System Trigger input</b>	Forces a system trigger when asserted (adjustable threshold between 0.5 V and 1.5 V, edge sensitive, falling-edge latched)
<b>External Signal output</b>	Can be used to drive external circuitry from a module's trigger mechanism (TTL-compatible output, back-terminated into 50 Ω)
<b>External Signal input</b>	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

<b>Voltage range/frequency</b>	90-264 VAC at 47-63 Hz
<b>Power consumption</b>	400 W maximum

## Environmental

<b>Temperature</b>	
<b>Operating</b>	+5 °C to +40 °C
<b>Nonoperating</b>	-20 °C to +60 °C
<b>Humidity</b>	
<b>Operating</b>	Max wet bulb temperature: +29 °C 20% to 80% relative humidity noncondensing
<b>Nonoperating</b>	8% to 80% relative humidity noncondensing
<b>Altitude</b>	
<b>Operating</b>	To 3,000 meters (10,000 ft.), derate maximum operating temperature by 1 °C per 300 meters above 1,500 meters altitude
<b>Nonoperating</b>	To 12,000 meters (40,000 ft.)
<b>Safety</b>	UL61010-1:2004, CAN/CSA-C22.2 No. 61010-1:2004, EN61010-1:2001, and IEC61010-1:2001

**Physical characteristics****Dimensions**

<b>Height</b>	297 mm (11.7 in.)
<b>Width</b>	437 mm (17.2 in.)
<b>Depth</b>	387 mm (15.2 in.)

**Net weight**

<b>TLA6401</b>	13.5 kg (29 lb. 13 oz.)
<b>TLA6402</b>	13.9 kg (30 lb. 10 oz.)
<b>TLA6403</b>	14.3 kg (31 lb. 8 oz.)
<b>TLA6404</b>	14.7 kg ( 32 lb. 5 oz.)

**Shipping weight**

<b>TLA6401</b>	20.5 kg (45 lb. 2 oz.)
<b>TLA6402</b>	20.9 kg (46 lb. 1 oz.)
<b>TLA6403</b>	21.3 kg ( 47 lb.)
<b>TLA6404</b>	21.7 kg (47 lb. 8 oz.)

**Input characteristics**

<b>Threshold selection range</b>	From -2.0 V to +4.5 V in 5 mV increments  Threshold presets include TTL (1.5 V), CMOS (1.65 V), ECL (-1.3 V), PECL (3.7 V), LVPECL (2.0 V), LVCMOS 1.5 V (0.75 V), LVCMOS 1.8 V (0.9 V), LVCMOS 2.5 V (1.25 V), LVCMOS 3.3 V (1.65 V), LVDS (0 V), and user defined.
<b>Threshold selection channel granularity</b>	Separate selection for each channel
<b>Threshold accuracy</b>	
<b>23 °C ±5 °C</b>	±(50 mV + 1% of threshold voltage setting) of threshold voltage setting
<b>Full range</b>	±(80 mV + 2%)
<b>Input voltage range</b>	
<b>Operating</b>	-2.5 V to 5.0 V
<b>Nondestructive</b>	-4.5 V to +13 V
<b>Minimum input voltage swing</b>	300 mV (P5910 and P5960)

**State acquisition system**

<b>Maximum State clock rate</b>	333 MHz (standard) 667 MHz (optional)
<b>Maximum data rate</b>	667 Mb/s (standard) 1333 Mb/s (optional)
<b>State record length with time stamps</b>	2 Mb, 4 Mb, 8 Mb, 16 Mb, 32 Mb, 64 Mb
<b>Setup and hold selection range</b>	From 15 ns before, to 7.5 ns after clock edge in 20 ps increments

## State acquisition system

<b>Setup and hold window</b>	
<b>Single channel</b>	260 ps typical (P5910 and P5960)
<b>Minimum clock pulse width</b>	250 ps (P5910 and P5960)

## Timing acquisition system

<b>MagniVu™ timing</b>	40 ps, adjustments to 80 ps, 160 ps, 320 ps, and 640 ps
<b>MagniVu timing record length</b>	128 Kb per channel, with adjustable trigger position
<b>Deep timing resolution (half/full channel)</b>	312.5 ps / 625 ps to 50 ms
<b>Deep timing resolution with glitch storage enabled</b>	1.25 ns to 50 ms
<b>Deep timing record length (half/full channels with time stamps and with or without transitional storage)</b>	4/2 Mb, 8/4 Mb, 16/8 Mb, 32/16 Mb, 64/32 Mb, 128/64 Mb per channel
<b>Deep timing record length with glitch storage enabled</b>	Half of default main memory depth
<b>Channel-to-channel skew</b>	160 ps typical (P5910 and P5960)
<b>Minimum recognizable pulse/glitch width (single channel)</b>	250 ps (P5910 and P5960)
<b>Minimum detectable setup/hold violation</b>	80 ps
<b>Minimum recognizable multichannel Trigger event</b>	Sample period + channel-to-channel skew

## Analog acquisition system

<b>Bandwidth</b>	2 GHz typical (P5910 and P5960)
<b>Attenuation</b>	10X or 5X
<b>Offset and Gain (accuracy)</b>	±80 mV, ±2% of signal amplitude
<b>Run/Stop requirements</b>	None, analog outputs are always active
<b>iCapture™ Analog outputs</b>	Compatible with any supported Tektronix oscilloscope
<b>iCapture Analog output BNC cable</b>	4; Low loss, 10X, 36 in. Basic Analog Multiplexer functionality is offered standard on all TLA6400 models. This routes 4 fixed channels to the iCapture Analog Output BNCs. The outputs cannot be switched to other logic analyzer channels. Option AM enables full analog multiplexer control and allows the routing of any 4 logic analyzer channels to the iCapture Analog Output BNCs.



**Trigger system**

<b>Independent Trigger states</b>	16
<b>Maximum independent If/Then clauses per state</b>	16
<b>Maximum number of events per If/Then clause</b>	8
<b>Maximum number of actions per If/Then clause</b>	8
<b>Maximum number of Trigger events</b>	26 (2 counters/timers plus any 24 other resources)
<b>Number of word recognizers</b>	24
<b>Number of transition recognizers</b>	24
<b>Number of range recognizers</b>	8
<b>Number of counters/timers</b>	
<b>Trigger event types</b>	Word, Group, Channel, Transition, Range, Anything, Counter Value, Timer Value, Signal, Glitch, Setup-and-Hold Violation, Snapshot
<b>Trigger action types</b>	Trigger Module, Trigger All Modules, Trigger Main, Trigger MagniVu, Store, Don't Store, Store Sample, Increment Counter, Decrement Counter, Reset Counter, Start Timer, Stop Timer, Reset Timer, Snapshot Current Sample, Goto State, Set/Clear Signal, Do Nothing
<b>Maximum triggerable data rate</b>	1333 Mb/s
<b>Trigger machine sequence rate</b>	DC to 800 MHz (1.25 ns)
<b>Counter/timer range</b>	48 bits each (~4 days at 1.25 ns)
<b>Counter rate</b>	DC to 800 MHz (1.25 ns)
<b>Timer clock rate</b>	800 MHz (1.25 ns)
<b>Counter/timer test latency</b>	0 ns
<b>Range recognizers</b>	Double bounded (136 channel max). Can be as wide as any group, must be grouped according to specified order of significance.
<b>Setup-and-hold violation recognizer setup time range</b>	From 7.5 ns before, to 7.5 ns after clock edge in 20 ps increments. This range may be shifted toward the positive region by 0 ns, 2.5 ns, 5 ns, or 7.5 ns.
<b>Setup-and-hold violation recognizer hold time range</b>	From 7.5 ns before, to 7.5 ns after clock edge in 20 ps increments. This range may be shifted toward the positive region by 0 ns, 2.5 ns, 5 ns, or 7.5 ns.
<b>Trigger position</b>	Any data sample
<b>MagniVu trigger position</b>	MagniVu position can be set from 0% to 60% centered around the MagniVu trigger
<b>Storage control (data qualification)</b>	Global (conditional), by state (start/stop), block, by trigger action, or transitional. Also force main prefill selection available.

**P5900 series probes**

**General**

Characteristic	P5910	P5934	P5960
Probe type	Single-ended data Single-ended clock (General Purpose)	Single-ended data Single-ended clock (Mictor 34-channel)	Single-ended data Single-ended clock (D-Max® Probing technology)
Number of channels	17	34	34
Recommended usage	Most general-purpose applications	Applications requiring many channels to be connected quickly in a small footprint	High-performance applications requiring many channels to be connected quickly in a small footprint
Attachment to target system	Fits both 0.100 in. and 2 mm square pin configuration	Amp Mictor 34-channel connector	D-Max probing technology
Probe load AC/DC	1.3 pF/20 kΩ to 0 V	2 pF/20 kΩ to 0 V	0.8 pF/20 kΩ to 0 V
Input range	-2.5 V to +5 V		
Maximum voltage (nondestruct)	-4.5 V to +13 V		
Cable length	1.5 m (5 ft.)	1.2 m (4 ft.)	1.5 m (5 ft.)

## Ordering information

### TLA6400 series

<b>TLA6401</b>	34-channel Logic Analyzer module, 25 GHz timing, 333 MHz state, 2 Mb record length. Options for up to 64 Mb record length and/or up to 667 MHz state.
<b>TLA6402</b>	68-channel Logic Analyzer module, 25 GHz timing, 333 MHz state, 2 Mb record length. Options for up to 64 Mb record length and/or up to 667 MHz state.
<b>TLA6403</b>	102-channel Logic Analyzer module, 25 GHz timing, 333 MHz state, 2 Mb record length. Options for up to 64 Mb record length and/or up to 667 MHz state.
<b>TLA6404</b>	136-channel Logic Analyzer module, 25 GHz timing, 333 MHz state, 2 Mb record length. Options for up to 64 Mb record length and/or up to 667 MHz state.
<b>All include:</b>	Mini Keyboard (119-7275-xx), Optical Wheel Mouse (119-7054-xx), Front-panel cover (200-4939-xx), TLA Application Software CD (063-3881-xx), Certificate of Traceable Calibration.
<b>Note:</b>	Please specify probe, power, language, and service options when ordering.

### Instrument options

Option	Description
1S	Increase to 4 Mb record length
2S	Increase to 8 Mb record length
3S	Increase to 16 Mb record length
4S	Increase to 32 Mb record length
5S	Increase to 64 Mb record length
1T	Increase state speed to 667 MHz
AM	Add full analog mux control
18	Add touch screen
1C	Add GPIB-iView™ external oscilloscope cable kit
2C	Add USB-iView™ external oscilloscope cable kit
PO	Add accessory pouch

### Power cord options

<b>Opt. A0</b>	North America power plug (115 V, 60 Hz)
<b>Opt. A1</b>	Universal Euro power plug (220 V, 50 Hz)
<b>Opt. A2</b>	United Kingdom power plug (240 V, 50 Hz)
<b>Opt. A3</b>	Australia power plug (240 V, 50 Hz)
<b>Opt. A4</b>	North America power plug (240 V, 50 Hz)
<b>Opt. A5</b>	Switzerland power plug (220 V, 50 Hz)
<b>Opt. A6</b>	Japan power plug (100 V, 110/120 V, 60 Hz)
<b>Opt. A10</b>	China power plug (50 Hz)
<b>Opt. A11</b>	India power plug (50 Hz)
<b>Opt. A12</b>	Brazil power plug (60 Hz)
<b>Opt. A99</b>	No power cord

## Language options

Opt. L0	English manual
Opt. L5	Japanese manual
Opt. L10	Russian manual
Opt. L99	No manual

## 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 (including warranty)
Opt. R3DW	Repair Service Coverage 3 Years (includes product warranty period). 3-year period starts at time of instrument purchase
Opt. R5	Repair Service 5 Years (including warranty)
Opt. R5DW	Repair Service Coverage 5 Years (includes product warranty period). 5-year period starts at time of instrument purchase

## Upgrade options

The TLA6400 can easily be upgraded after the initial purchase. To increase the state speed, memory depth, or add full analog multiplexer capability to an existing TLA6400, order the appropriate upgrade kit and an option listed below. Example: TLA64F03 Option 01. Please refer to the TLA Family Upgrade Guide for further details.

## Upgrade kits

TLA64F01	PowerFlex Field Kit for TLA6401
TLA64F02	PowerFlex Field Kit for TLA6402
TLA64F03	PowerFlex Field Kit for TLA6403
TLA64F04	PowerFlex Field Kit for TLA6404

## Memory upgrades

Opt. 01	Increase from 2 Mb Record Length to 4 Mb Record Length
Opt. 02	Increase from 2 Mb Record Length to 8 Mb Record Length
Opt. 03	Increase from 2 Mb Record Length to 16 Mb Record Length
Opt. 04	Increase from 2 Mb Record Length to 32 Mb Record Length
Opt. 05	Increase from 2 Mb Record Length to 64 Mb Record Length
Opt. 06	Increase from 4 Mb Record Length to 8 Mb Record Length
Opt. 07	Increase from 4 Mb Record Length to 16 Mb Record Length
Opt. 08	Increase from 4 Mb Record Length to 32 Mb Record Length
Opt. 09	Increase from 4 Mb Record Length to 64 Mb Record Length
Opt. 10	Increase from 8 Mb Record Length to 16 Mb Record Length
Opt. 11	Increase from 8 Mb Record Length to 32 Mb Record Length

Opt. 12	Increase from 8 Mb Record Length to 64 Mb Record Length
Opt. 13	Increase from 16 Mb Record Length to 32 Mb Record Length
Opt. 14	Increase from 16 Mb Record Length to 64 Mb Record Length
Opt. 15	Increase from 32 Mb Record Length to 64 Mb Record Length

### State speed upgrade

Opt. 1T	Increase from 333 MHz State Clock to 667 MHz State Clock
---------	----------------------------------------------------------

### Analog Mux upgrade

Opt. AM	Enable full control of Analog Mux
---------	-----------------------------------

## Recommended accessories

Accessory	Description
Logic analyzer cart	
	LACART 2-shelf Cart
	K4000 3-shelf Cart
016-1522-xx	Wheeled transport case
020-2664-xx	Rackmount kit
650-4815-xx	Additional removable hard disk drive assembly; no software

## P5900 probes

Model	Description
P5910	17-channel general-purpose probe with single-ended Data/Clock, separable podlets, and accessories
	Includes: podlet holders, IC grabbers, ground leads, ground tips, extension ground tips, probe labels
P5934	34-channel high-density Mictor probe with single-ended Data/Clock and accessories
	Includes: latch housing assembly (edge-mount), latch housing assembly (vertical), probe labels
P5960	34-channel high-density D-Max <sup>®</sup> probing technology probe with single-ended Data/Clock and accessories
	Includes: probe head protective cover, probe retention kit for D-Max <sup>®</sup> probing technology, probe labels



Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.



Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

**ASEAN / Australasia** (65) 6356 3900  
**Belgium** 00800 2255 4835\*  
**Central East Europe and the Baltics** +41 52 675 3777  
**Finland** +41 52 675 3777  
**Hong Kong** 400 820 5835  
**Japan** 81 (3) 6714 3010  
**Middle East, Asia, and North Africa** +41 52 675 3777  
**People's Republic of China** 400 820 5835  
**Republic of Korea** 001 800 8255 2835  
**Spain** 00800 2255 4835\*  
**Taiwan** 886 (2) 2722 9622

**Austria** 00800 2255 4835\*  
**Brazil** +55 (11) 3759 7627  
**Central Europe & Greece** +41 52 675 3777  
**France** 00800 2255 4835\*  
**India** 000 800 650 1835  
**Luxembourg** +41 52 675 3777  
**The Netherlands** 00800 2255 4835\*  
**Poland** +41 52 675 3777  
**Russia & CIS** +7 (495) 6647564  
**Sweden** 00800 2255 4835\*  
**United Kingdom & Ireland** 00800 2255 4835\*

**Balkans, Israel, South Africa and other ISE Countries** +41 52 675 3777  
**Canada** 1 800 833 9200  
**Denmark** +45 80 88 1401  
**Germany** 00800 2255 4835\*  
**Italy** 00800 2255 4835\*  
**Mexico, Central/South America & Caribbean** 52 (55) 56 04 50 90  
**Norway** 800 16098  
**Portugal** 80 08 12370  
**South Africa** +41 52 675 3777  
**Switzerland** 00800 2255 4835\*  
**USA** 1 800 833 9200

\* European toll-free number. If not accessible, call: +41 52 675 3777

Updated 10 April 2013

**For Further Information.** Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit [www.tektronix.com](http://www.tektronix.com).

Copyright © 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.



13 Jan 2014

52W-28075-3

[www.tektronix.com](http://www.tektronix.com)

**Tektronix**<sup>®</sup>

