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Tektronix Logic Analyzers

▶ TLA7Dx/Ex Digital Storage Oscilloscope Modules



▶ Features & Benefits

2/4 Channel Digitizing Oscilloscope Modules with 15 Kb Memory Depth

Up to 1 GHz Bandwidth Provides High-fidelity Signal Quality Measurements of Digital Signals

Up to 5 GS/s Sample Rate Provides High Resolution Analog Views of Digital Signals

Advanced Digital Oscilloscope Triggering Helps Find Elusive Analog Anomalies in Digital Signals

▶ Applications

Digital Hardware Verification and Debug

Monitor & Measure Digital Hardware Performance

Breakthrough Solutions for Real-time Digital Systems Analysis

The TLA700 Series offers a range of digitizing oscilloscope modules that provide the acquisition capabilities of the world's best digitizing oscilloscopes, tightly integrated with the TLA700 logic analyzers. The 2 and 4 channel digitizing oscilloscope modules available in the TLA700 Series offer sample rates of up to 5 GS/s and bandwidths of up to 1 GHz, with 15 Kb memory depth per channel at all times.

The digitizing oscilloscope modules offer precise time correlation and flexible cross-triggering with other installed modules. This enables you to see the quality of critical signals time-correlated with the digital signals represented by the logic analyzer modules.

These modules offer the triggering you expect from a Tektronix digital oscilloscope: Pulse Width, Runt, Glitch, Slew Rate, Logic Pattern, Setup-and-Hold Violation, Edge and Timeout.

Tektronix
Enabling Innovation

▶ Characteristics

General

Number of Channels per Module –
TLA7D2, TLA7E2: 4 channels.
TLA7D1, TLA7E1: 2 channels.

Sample Rate –
TLA7E1, TLA7E2: 5 GS/s on all channels.
TLA7D1, TLA7D2: 2.5 GS/s on all channels.

Bandwidth (at probe tips) –
TLA7E1, TLA7E2:
- 100 mV to 10 V range: 1 GHz.
- 50 mV to 99.8 mV range: 900 MHz.
- 20 mV to 49.8 mV range: 600 MHz.

All others:
- 500 MHz.
- TLA7D1, TLA7D2: 500 MHz on all channels in all ranges.

Memory Depth – 15,000 samples per channel in all modes.

Number of Mainframe Slots Required – 2.

Vertical System

Input Sensitivity Range – 10 mV to 100 V full scale.

Vertical Resolution – 8-Bit (256 levels).

DC Gain Accuracy – ±1.5% of full scale range.

Analog Bandwidth Selections – 20 MHz, 250 MHz, and Full.

Input Coupling – AC, DC or GND.

Input Impedance Selections – 1 MΩ in parallel with 10 pF, or 50 Ω.

AC Coupled Lower Frequency Limit – ≤10 Hz when AC 1 MΩ coupled, ≤200 kHz when AC 50 Ω coupled.

Maximum Input Voltage at Probe Connector – 300 V_{RMS}, but no greater than ±420 V_p (1 MΩ or ground input coupling).

Probe Input Characteristics

Probe Input Interface – TEKPROBE™ probe interface.

Input Loading – Less than 1 pF in parallel with 1 MΩ with either P6243 or P6245.

Usable Input Voltage Range at Probe Tip – P6243 Probe: ±8 V. P6245 Probe: ±18 V.

Acquisition System

Sample Rate Range – 200 ps to 200 ms in 1, 2.5, 5 sequence.

Timebase Accuracy – ±100 ppm over any interval ≥1 ms.

Record Length Range – 512 to 15,000 samples per channel in all modes.

Acquisition Modes – Single-shot, repetitive.

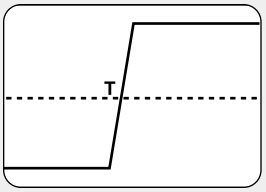
Trigger System

Trigger Modes – Normal, auto.

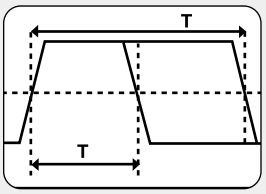
Trigger Position – Anywhere in the acquired record (pre-fill can be set anywhere from 0% to 100%).

Trigger Types – Edge, pulse width, timeout, glitch, runt, slew rate, logic pattern, setup-and-hold violation.

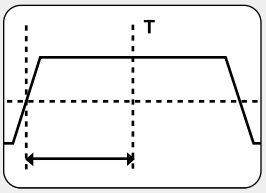
Setup-and-hold Trigger – Triggers on violations of both setup time and hold time between clock and data which are on separate input channels; setup time settable from –100 ns to +100 ns in 200 ps increments; hold time settable from –1 ns to +102 ns; minimum settable window of setup time + hold time is 2 ns.



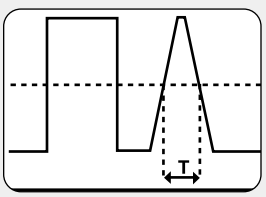
Trigger Actions – Trigger, trigger all, set signal, arm, immediate, wait for system trigger.



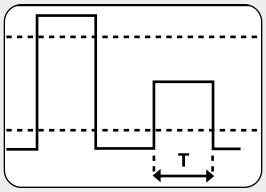
Edge Trigger – Conventional level driven trigger, positive or negative slope, on any channel or external trigger input. Coupling Selections: DC, AC, noise reject, HF reject, LF reject.



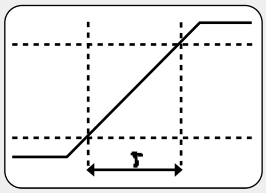
Pulse Width Trigger – Triggers on width of positive or negative pulse, either within or not within selectable time limits; settable from 2 ns to 1 s.



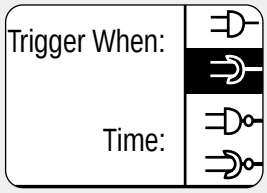
Timeout Trigger – Triggers when a pulse fails to complete when specified; settable from 2 ns to 1 s.



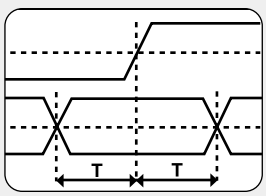
Glitch Trigger – Triggers on (or rejects) glitches of positive, negative, or either polarity; settable from 2 ns to 1 s. Minimum glitch width: 2.0 ns, with 200 ps resolution (2 ns to 10 ns settings).



Runt Pulse Trigger – Triggers on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again; settable from 2 ns to 1 s.



Slew Rate Trigger – Triggers on pulse edge rates that are either faster or slower than a set rate, edges can be rising, falling, or either; settable from 2 ns to 1 s.



Logic Pattern Trigger – Triggers when a logical combination (AND, OR) of all the input channels (Hi, Lo, Don't Care) stays true or false for a specified period of time; settable from 2 ns to 1 s.

Physical Characteristics

Dimensions	mm	in.
Height	262	10.3
Width	61	2.4
Depth	381	15
Weight	**kg**	**lb.**
Net	2.7	5.8
Shipping	5.8	12.8

P6243 Probe Cable Length – 1.3 m (51 in.).

P6245 Probe Cable Length – 1.3 m (51 in.).

▶ Ordering Information

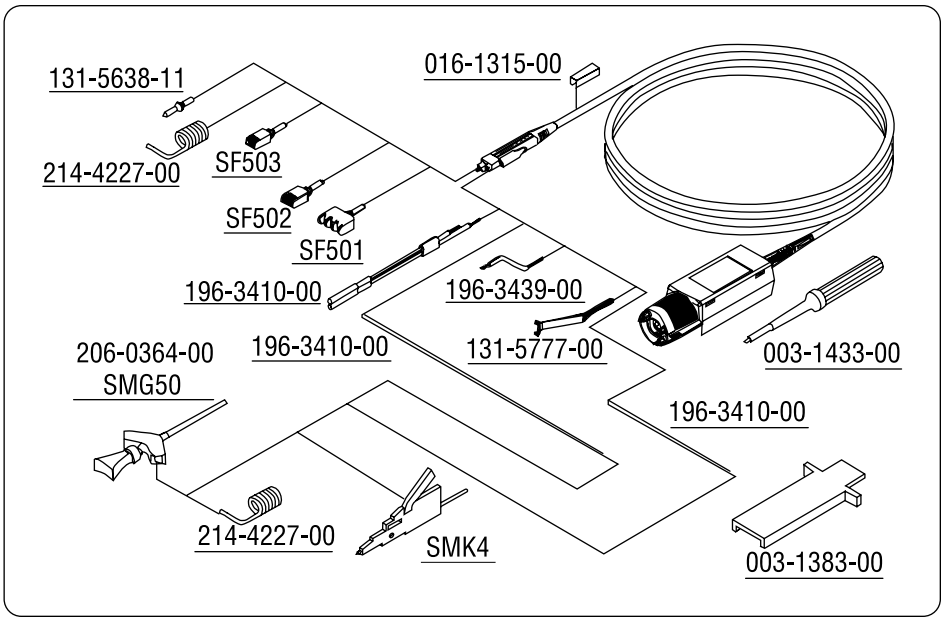
Digitizing Oscilloscope Modules

Includes: Probes, user manual, certificate of calibration, and one-year warranty (return to Tektronix).

TLA7D1 – 2-Channel DSO module, 500 MHz bandwidth, 2.5 GS/s sample rate, 15 K depth (includes two P6243 1.0 GHz active FET probes, probe calibration adapter and manual).

TLA7D2 – 4-Channel DSO module, 500 MHz bandwidth, 2.5 GS/s sample rate, 15 K depth (includes four P6243 1.0 GHz active FET probes, probe calibration adapter and manual).

TLA7E1 – 2-Channel DSO module, 1 GHz bandwidth, 5 GS/s sample rate, 15 K depth (includes two P6245 1.5 GHz active FET probes, probe calibration adapter and manual).



▶ *DSO Module Accessories.*

TLA7E2 – 4-Channel DSO module, 1 GHz bandwidth, 5 GS/s sample rate, 15 K depth (includes four P6245 1.5 GHz active FET probes, probe calibration adapter and manual).

P6243 – 1.0 GHz Active FET Probe and accessories, length 1.5 m.

P6245 – 1.5 GHz Active FET Probe and accessories, length 1.5 m.

▶ 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).

Add calibration test data report.

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).

TLA700 Series DSO Module Upgrades

You can install a TLA7Dx/Ex digitizing oscilloscope module into an existing TLA714/715/720/721/7XM mainframe. Please refer to the TLA Family Upgrade Guide for further details.

▶ TLA700 Series DSO Module Upgrades

Part Number	Description
003-1383-00	Compensation box and cover removal tool
003-1433-00	Adjustment tool
016-1315-00	2 each – 5 colors of cable markers
131-5638-10	10 each – solderable probe tips
131-5777-00	100 mil square pin ground adapter
196-3410-00 N/A N/A	Ground lead set includes: 2 each – 1 in., 3 in., 6 in. ground leads w/ square pin receptacle; 2 each – Y lead adapters
196-3439-00	1 in. ground lead
206-0364-00	SMT KlipChip™, 1 each
214-4227-00	Right angle square pin adapter
SF501	SureFoot® probe tip adapter, pkg. of 12, yellow, 50 mil pitch
SF502	SureFoot probe tip adapter, pkg. of 12, blue, 25 mil/0.65 mm pitch
SF503	SureFoot probe tip adapter, pkg. of 12, red, 0.5 mm pitch
SMG50	SMT KlipChip grabber tip, 20 each
SMK4	Micro KlipChip adapter, 4 each
070-9408-00	P6243 Instruction Manual
070-8995-01	P6245 Instruction Manual

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