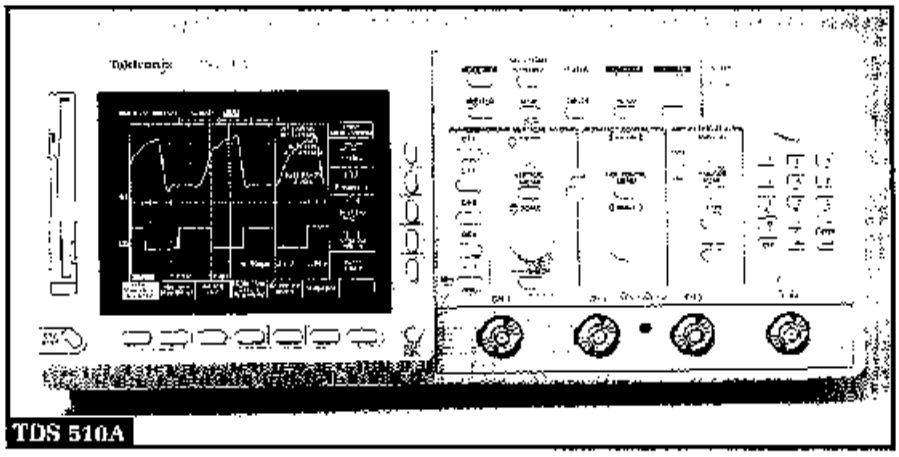
Digitizing Oscilloscope

TDS 510A

Features

TDS 510A

- 500 MHz Bandwidth
- Sample Rates to 500 MS/s
- 4 Channels
- Width, 2 ns Glitch, Runt, State, and Pattern Triggering
- 1 mV to 10 V/div Sensitivity
- Infinite and Variable Persistence
- 8-Bit Vertical Resolution Up to 12-Bit in Hi-Res Mode
- 1% Vertical Accuracy
- FFT, Integration, Differentiation (option 2F)
- 25 Automatic Measurements
- GPIB Programmable
- 3.5 in. Floppy Disk Drive
- CE Marking



TDS 510A Digital Oscilloscope

The TDS 510A Digital Oscilloscope is a full featured, cost effective, versatile oscilloscope which meets the measurement requirements for general purpose research and design. Its industry-preferred graphical user interface makes it easy to learn and efficient to use. The TDS 510A advanced trigger capability allows the user to trigger and view signals in a wide variety of simple as well as complex design and analysis settings. With four channels, 50 K-points per channel record length and powerful waveform acquisition modes, the TDS 510A can satisfy most complex design, debug, and analysis requirements.

A full complement of graphical and digital output formats provides report generation and documentation of measurement results. These output formats are compatible with popular word-processor applications. Output interfaces include an integral floppy disk drive, GPIB, RS232C, and Centronics.

The most complete selection of active and passive probes facilitates measuring virtually any voltage or current waveform. Probe types include active and passive voltage probes, differential voltage probes for high and low voltages, and current probes. When used with the TDS 510A, these probes automatically provide correct scaling and engineering-unit readout for voltage, current, and power waveforms. You can tailor the TDS 510A to your specific measurement environment by using the appropriate probes and accessories. This powerful combination makes the TDS 510A the ideal instrument choice for low power, medical electronics, bio-physical, automotive, and general-purpose electronic design and development.

Characteristics

VERTICAL SYSTEM

Bandwidth – 500 MHz.*1

Channels – Four.

Waveform Capture Rate – 150 waveforms/s

Max Sample Rate –
1 and 2 Channels: 500 MS/s.
4 Channels: 250 MS/s.

Sensitivity – 1 mV to 10 V/div.

Position Range – ±5 divisions.

Offset –
1 to 99.5 mV/div: ±1 V.
100 to 995 mV/div: ±10 V.
1 to 10 V/div: ±100 V.

DC Gain Accuracy – ±1%

Vertical Resolution – 8-Bits.

Analog Bandwidth Selections – 20 MHz, 100 MHz, and Full.

Input Coupling – AC, DC, or GND.

Input Impedance Selections –
1 MΩ in parallel with 10 pF, or 50 Ω (AC and DC coupling).

Maximum Input Voltage – 300 V CAT II; ±400 V (peak). Derate at 20 dB/decade above 1 MHz. 1 MΩ or GND coupled.

Channel Isolation – >100:1 at 100 MHz; >30:1 at 3W for any two channels with equal V/div settings.

*1 500 MHz is part of probe up to 250 MHz on A probe.

For more local Tektronix representation, see the list on the back of this manual, or contact the TDS call center, toll-free 1-800-426-2200.

See Tektronix on the World Wide Web http://www.tek.com

ISO 9001 *Tektronix manufacturing products are manufactured to ISO 9001 registered standards.*

Digitizing Oscilloscope

TDS 510A

AC Coupled LF Limit –
AC 1 MΩ coupled: ≤10 Hz.
AC 50 Ω coupled: ≤200 kHz.

TIME BASE SYSTEM

Time Bases – Main, Delayed.

Time/Div Range – 500 ps to 10 s/div.

Time Base Accuracy – ±25 ppm over any interval ≥1 ms.

Record Length – 50 K points.

Pre-Trigger Position – 0 to 100% of record.

ACQUISITION SYSTEM

Acquisition Modes – Sample, Single Sequence, Average, Envelope, Hi-Res, Peak Detect.

TRIGGER SYSTEM

Trigger Types – Edge (Main and Delayed), Pulse (Width, Glitch, and Runt), Logic (Pattern and State), Video – Opt. 05 (NTSC, PAL, HDTV, FlexFormat™).

Main Trigger Modes – Auto, Normal, Single.

Delay Trigger Modes – Delay by time, events, or events and time.

STORAGE

Waveforms – Four full 50 K point records.

AUTOMATIC MEASUREMENTS

Period	Frequency
High	Low
+Width	–Width
Maximum Rise	Minimum Fall
Peak to Peak	Amplitude
+Duty Cycle	–Duty Cycle
+Overshoot	–Overshoot
Propagation Delay	Burst Width
Mean	Cycle Mean
RMS	Cycle RMS
Area	Cycle Area
Phase	

Setups – 10 front-panel setups.

DISPLAY SYSTEM

Monitor – 7 in., 640 x 480, monochrome.

Waveform Style – Dots or vectors, infinite and variable persistence.

Display Formats – YT, XY Zoom, Fit to Screen.

Advanced Waveform Functions – FFT, Differentiation, Integration (Option 2F), Limit Testing.

Cursor Measurements – Absolute, Delta; volts, time, frequency, NTSC IRE units and line number with video trigger (Option 05).

Waveform Functions – Interpolation (sin(x)/x or linear), Average, Envelope, Autosetup.

OUTPUTS

VGA Out – Monochrome.

RS-232 and Centronics – Opt. 13.

Hardcopy Formats – Epson, Thinkjet, Deskjet, Laserjet, PostScript, TIFF, PCX, BMP, DPU411/412, HPGL, Interleaf.

Power – 90 to 250 V RMS, 45 to 440 Hz, 300 W maximum.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in.
Height	193	7.6
Width	445	17.5
Depth	432	17
Weight	**kg**	**lbs.**
Net	14.1	31

SAFETY CERTIFICATION

UL and CSA-certified.

ORDERING INFORMATION

For price information: Outside the U.S. contact your local Tektronix representative, inside the U.S. see the price list in the back of this catalog.

TDS 510A
Digitizing Oscilloscope
Includes: P6139A probes (4 each), User Manual (070-9701-00), Reference Card (020-9758-00), Technical Reference (070-9706-00), Programmer's Disk*[2] (063-2619-00), Front Cover (200-3696-00), U.S. Power Cord (161-0203-01).

**2 Programmer's Disk works as a Microsoft Help file under Windows. The disk allows for printing sections or the complete manual.*

OPTIONS

Opt. 1K – Add K420 Cart.
Opt. 1R – Rackmount.
Opt. 2F – Extended Waveform Math (FFT, Integration, Differentiation).
Opt. 05 – Video Trigger.
Opt. 13 – RS-232 and Centronics Interfaces.
Opt. B2 – Hardcopy Programmer's Manual.
Opt. L1 – French User Manual.
Opt. L3 – German User Manual.
Opt. L5 – Japanese User Manual

MEASUREMENT SERVICE OPTIONS

Opt. C3 – Three years of Calibration Services.
Opt. C5 – Five years of Calibration Services.
Opt. D3 – Test Data (requires Opt. C3).
Opt. D5 – Test Data (requires Opt. C5).
Opt. R5 – Repair warranty extended to cover five years.

RECOMMENDED ACCESSORIES – See page 500.

ADA400A – Differential Preamplifier.
AM503S – DC/AC Current Measurement System.
AFTDS – Electrical communication differential signal adapter.
AMT75 – 1 GHz electrical communication 75 Ω adapter.
P5100 – 2.5 kV High-voltage probe.
P5205 – 1.3 kV High-voltage 100 MHz differential probe.
P5210 – 5.6 kV High-voltage differential probe.
P6139A – 500 MHz passive 10X voltage probe.
P6205 – 750 MHz active voltage probe.
P6243 – 1 GHz active voltage probe.
P6245 – 1.5 GHz active voltage probe.
P6217 – 4 GHz active voltage probe.
P6158 – 3 GHz low capacitance voltage probe.
P6246 – 400 MHz differential probe.
P6247 – 1 GHz differential probe.
P6563A – SMD passive voltage probes.
TCP202 – DC to 50 MHz current probe.
Rackmount Kit – 016-1236-00.
Programmer's Manual – 070-9702-00.

SOFTWARE SUPPORT

WSTR0 – WaveStar™ software for oscilloscopes. Windows 95/NT application for waveform capture, analysis, documentation and control from your PC.

WSTR0U – Upgrade from WSTR31 to WSTR0.
WSTR31 – WaveStar software for Windows 3.1.
WSTR31U – Upgrade from DocuWave® software to WSTR31.
LVWIN95 – LabVIEW® for Windows 95.
LWCVI95 – LabWindows/CVI for Windows 95.
WARRANTY Three years. Covers all labor and parts, including CRT. One-year warranty on probes.

For your local Tektronix representative see the list in the back of this catalog or outside the U.S. call: 1-503-627-1933, inside the U.S. call: 1-800-426-2200.

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ISO 9001 *Tektronix measurement products are manufactured in ISO registered facilities.*