

TEKTRONIX

TDS5034B

The Tektronix TDS5034B is a 350 MHz, 4-channel Digital Phosphor Oscilloscope (DPO) from the TDS5000B Series. Featuring a real-time sample rate of up to 5 GS/s, a standard record length of up to 8 M, and a maximum waveform capture rate of 100,000 wfms/s via FastAcq, it combines powerful signal acquisition and analysis capabilities within an open Windows 2000 platform.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (10Base-T/100Base-TX), USB 2.0, RS-232, Centronics Parallel, External VGA, PS/2 Keyboard and Mouse
Display	10.4-inch (264 mm) liquid-crystal active-matrix color touch screen, 640 × 480 pixels

Physical

Power Supply	100 to 240 V RMS ±10%, 47 to 63 Hz, < 220 W
Operating Temperature	5 °C to 45 °C °C
Dimensions (W×H×D)	447 mm × 363 mm × 288 mm mm
Rackmount Height	8U

Vertical System

Input Channels	4
Analog Bandwidth (-3 dB)	350 MHz
Calculated Rise Time (10% to 90%)	1.15 ns
Input Coupling	AC, DC, GND
Input Impedance	1 M Ω $\pm$ 1% in parallel with 13 pF $\pm$ 2 pF, or 50 Ω $\pm$ 1%
Input Sensitivity, 1 M Ω	1 mV/div to 10 V/div
Input Sensitivity, 50 Ω	1 mV/div to 1 V/div
Vertical Resolution	8 bits (>11 bits with Hi-Res)
DC Gain Accuracy	$\pm$ 1.5% for 10 mV/div to 10 V/div; $\pm$ 2.5% for 1 mV/div to 9.95 mV/div
Maximum Input Voltage, 1 M Ω	150 V CAT I, derated at 20 dB/decade to 9 V RMS at $\geq$ 200 MHz
Maximum Input Voltage, 50 Ω	5 V RMS with peaks < $\pm$ 30 V
Hardware Bandwidth Limits	150 MHz or 20 MHz
Channel-to-Channel Isolation	$\geq$ 100:1 at $\leq$ 100 MHz, and $\geq$ 30:1 at >100 MHz to 350 MHz
Position Range	$\pm$ 5 divisions
Offset Range, 1 mV/div to 99.5 mV/div	$\pm$ 1 V
Offset Range, 100 mV/div to 995 mV/div	$\pm$ 10 V
Offset Range, 1 V/div to 10 V/div	$\pm$ 100 V
Probe Interface	TekProbe II BNC (supports TekProbe passive, active, and differential probes)
Hi-Res Mode Vertical Resolution	Up to 12 bits

Horizontal System

Maximum Real-Time Sample Rate (1 Ch)	5 GS/s
Maximum Real-Time Sample Rate (2 Ch)	2.5 GS/s
Maximum Real-Time Sample Rate (3 or 4 Ch)	1.25 GS/s
Equivalent Time Sample Rate (ET)	250 GS/s
Maximum Record Length (Standard)	8 M (1 Ch), 4 M (2 Ch), 2 M (4 Ch)
Maximum Record Length (Optional)	16 M (1 Ch), 8 M (2 Ch), 4 M (4 Ch) with Option 3M
Timebase Range	200 ps/div to 1000 s/div
Timebase Delay Time Range	-16 ns to 250 s
Channel-to-Channel Deskew Range	$\pm$ 75 ns
Timebase Accuracy	$\pm$ 15 ppm

Trigger System

Trigger Sources	CH1, CH2, CH3, CH4, Line, External
Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Rej, LF Rej, Noise Rej
Trigger Holdoff Range	250 ns to 12 s
Edge Trigger Sensitivity, Main Trigger	0.35 div from DC to 50 MHz, increasing to 1 div at 350 MHz
Trigger Level Range, Any Channel	± 8 divisions from center of screen
Pulse Width Triggering	Trigger on width of positive or negative pulses from 1 ns to 1 s
Runt Triggering	Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again
Window Triggering	Trigger on an event entering or exiting a window defined by two user-adjustable thresholds
Timeout Triggering	Trigger on an event which remains high, low, or either, for a specified time period (1 ns to 1 s)
Transition Triggering	Trigger on pulse edge rates (slew rate) faster or slower than a specified limit
Setup/Hold Triggering	Trigger on violations of both setup time and hold time between clock and data
Pattern Triggering	Trigger when pattern goes false or stays true for specified time (AND, OR, NAND, NOR)
State Triggering	Any pattern clocked by a rising or falling edge of another channel
Video Triggering	NTSC, PAL, SECAM; any line, individual lines, odd/even fields
Serial Pattern Triggering (Option ST)	Up to 1.25 Gb/s NRZ serial pattern trigger with built-in clock recovery
Comm Triggering (Option SM)	Support for AMI, HDB3, BnZS, CMI, MLT3, and NRZ standards up to 1.25 Gb/s

Acquisition Modes

Sample Mode	Acquire sampled values
Peak Detect Mode	Capture high-frequency glitches (down to 1 ns) at all real-time sampling rates
Average Mode	Average from 2 to 10,000 waveforms
Envelope Mode	Min/max values acquired over one or more acquisitions (from 1 to 2000, or infinite)
Waveform Database Mode	Accumulate waveform database providing three-dimensional representation of amplitude, time, and density
FastAcq Waveform Capture Rate	Up to 100,000 wfms/s

Waveform Measurements & Analysis

Automatic Waveform Measurements	53 automatic measurements
Measurement Statistics	Mean, minimum, maximum, standard deviation, and population
Measurement Gating	Isolate a specific occurrence within an acquisition using gate cursors
Waveform Math Operations	Add, subtract, multiply, and divide waveforms
Advanced Math & Equations	Define algebraic expressions, filters, and integrals using a custom equation editor
FFT Windowing Functions	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop

Display & User Interface

Display Type	Liquid-crystal active-matrix color LCD
Display Size	10.4 in (264 mm) diagonal
Display Resolution	640 × 480 pixels
Touch Screen	Built-in touch screen (resistive)
Waveform Styles	Vectors, Dots, Infinite Persistence, Variable Persistence

Computer System & Storage

Operating System	Windows 2000 Professional
Processor	Intel Celeron 2.0 GHz
System Memory (RAM)	512 MB standard (up to 1 GB)
Internal Storage	≥40 GB removable hard disk drive
Removable Storage Media	CD-RW, 3.5-inch 1.44 MB floppy drive

Connectivity & I/O Ports

GPIO Interface	IEEE-488.2 interface
LAN Port	RJ-45 (10Base-T/100Base-TX)
USB Ports	3 USB 2.0 ports (rear), 1 USB 2.0 port (front)
RS-232 Port	9-pin DB-9 male serial port
Parallel Port	DB-25 female Centronics parallel port
External Video Output	DB-15 female VGA connector
External Reference Input	BNC connector, accepts 1 MHz, 5 MHz, 10 MHz, or 10.24 MHz
Probe Compensator Output	Front-panel pins, 1 kHz, 1 V

Power Specifications

Line Voltage Range	100 V to 240 V RMS ±10%
Power Consumption	< 220 W

Physical Characteristics

Height	363 mm
Width	447 mm
Depth	288 mm
Net Weight	10.5 kg
Cooling Clearance	Minimum 3 in. (76 mm) on left side and rear of instrument

Environmental & Compliance

Non-Operating Temperature	-20 °C to 60 °C
Operating Altitude	Up to 3,000 m (10,000 ft.)
Non-Operating Altitude	Up to 12,192 m (40,000 ft.)

Standard Accessories

Standard Probes Included	Four P5050 500 MHz, 10x passive probes
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Interfaces

Keyboard Port	PS/2 style connector
Mouse Port	PS/2 style connector
Audio Ports	Microphone-in, Line-in, and Line-out (3.5 mm jacks)

Removable Storage

Floppy Disk Drive	3.5 in. 1.44 MB floppy drive
CD-RW Drive	Standard CD-R/W drive

Acquisition System

FastFrame™ Segmented Memory	Acquisition rate >111,000 frames/s; maximum frames up to 16,000 (record length dependent)
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General Specs

Warm-up Time	20 minutes
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Compliance

Safety Standards	UL 61010B-1, CAN/CSA-C22.2 No. 1010.1, EN 61010-1
Electromagnetic Compatibility (EMC)	EC Council Directive 89/336/EEC, FCC Title 47 CFR Part 15 Subpart B Class A, AS/NZS 2064

TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

Electronic design, debugging, troubleshooting, manufacturing test, and research

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