

TEKTRONIX

TDS6804B

The Tektronix TDS6804B is an 8 GHz Digital Storage Oscilloscope in the TDS6000 Series. Designed for high-speed digital design and analysis, it delivers a 20 GS/s real-time sample rate on all four channels simultaneously, supported by a dual-processor architecture and a suite of advanced Pinpoint™ triggering capabilities. With user-selectable DSP, a rich set of automated measurements, and integration with the Windows XP operating system, the TDS6804B offers comprehensive signal integrity analysis up to 5 Gb/s.

SPECIFICATIONS

General

Interfaces	USB 2.0, LAN (10/100/1000Base-T), GPIB (IEEE 488.2), RS-232, Centronics (Parallel), VGA, DVI
Display	10.4-inch (264 mm) liquid crystal active-matrix color display, 1024 × 768 pixels (XGA)
Standard Accessories	Four TCA-BNC adapters, accessory pouch, front cover, USB keyboard, USB mouse, GPIB programmer manual, Tektronix OpenChoice software, calibration certificate
Supported Languages	English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Simplified Chinese, Spanish, Traditional Chinese
Software Compatibility	MATLAB, LabVIEW, LabWindows/CVI, Visual Basic, C/C++

Physical

Power Supply	100 to 240 V ±10%, 47 to 63 Hz (or 360 to 440 Hz), <500 W
Operating Temperature	5 °C to 40 °C °C
Dimensions (W×H×D)	457 mm × 282 mm × 533 mm mm
Weight	21 kg kg
Cooling Clearance	76 mm (3 in) minimum on left, right, and rear

Vertical System

Input Channels	4
Analog Bandwidth	8 GHz (user-selectable DSP enabled), 7 GHz (typical, DSP disabled)
Calculated Rise Time (20% to 80%)	35 ps (typical, DSP enabled)
Calculated Rise Time (10% to 90%)	55 ps (typical, DSP enabled)
Input Impedance	50 Ω $\pm$ 2%
Input Coupling	DC
Vertical Resolution	8 bits (>11 bits with averaging)
Input Sensitivity Range	10 mV/div to 1 V/div
Maximum Input Voltage	5 V _{rms} , with peaks $\leq$ $\pm$ 30 V
DC Gain Accuracy	$\pm$ 2%
Vertical Position Range	$\pm$ 5 divisions
Offset Range (10 mV to 99.5 mV/div)	$\pm$ 0.5 V
Offset Range (100 mV to 1 V/div)	$\pm$ 5.0 V
Channel-to-Channel Isolation	$\geq$ 80:1 at 3 GHz, $\geq$ 15:1 at 8 GHz

Horizontal System

Maximum Real-Time Sample Rate (1 Channel)	20 GS/s
Maximum Real-Time Sample Rate (2 Channels)	20 GS/s
Maximum Real-Time Sample Rate (4 Channels)	20 GS/s
Maximum Record Length (Standard)	2 MS per channel
Maximum Record Length (Option 3M)	16 MS per channel
Maximum Record Length (Option 4M)	32 MS per channel
Timebase Range	50 ps/div to 40 s/div
Timebase Delay Time Range	5 ns to 250 s
Timebase Accuracy	$\pm$ 15 ppm
Channel-to-Channel Deskew Range	$\pm$ 75 ns
Channel-to-Channel Deskew Resolution	1 ps
External Reference Input Frequency	10 MHz $\pm$ 10 kHz
Internal Reference Output Frequency	10 MHz

Trigger System

Trigger Jitter (Typical)	1.5 ps RMS (standard), <100 fs RMS (with Option TDS6BTE)
Trigger Modes	Auto, Normal, Single
Trigger Types	Edge, Glitch, Width, Runt, Timeout, Transition (Slew Rate), Pattern, State, Window, Setup/Hold
Trigger Coupling	DC, AC, Low Frequency Reject, High Frequency Reject, Noise Reject
Trigger Holdoff Range	250 ns to 12 s
Trigger Sensitivity (Internal)	0.5 div from DC to 50 MHz, increasing to 3.0 div at 8 GHz
Trigger Level Range (Internal)	±8 divisions from center of screen

Acquisition Modes

Sample Mode	Acquires and retains sample values
Envelope Mode	Finds and displays minimum and maximum values over multiple acquisitions
Average Mode	Averages multiple waveforms, selectable from 2 to 10,000
Waveform Database Mode	Accumulates waveform data to build a three-dimensional database of amplitude, time, and hits
FastAcq Mode	Optimizes instrument for analysis of dynamic signals and transient events
Maximum FastAcq Waveform Capture Rate	>250,000 wfm/s

Waveform Measurements and Analysis

Automatic Measurements	38 automatic measurements covering amplitude, timing, and area parameters
Measurement Statistics	Mean, Minimum, Maximum, Standard Deviation, Population
Reference Levels	User-definable reference levels in percent or volts
Waveform Gating	Isolates measurement within a specific area of the waveform
Limit Testing	Compares active waveforms against user-defined templates
Arithmetic Operators	Add, Subtract, Multiply, Divide
Algebraic Expressions	Allows arbitrary mathematical expressions of waveforms including scalars and math functions
FFT Functions	Magnitude, Phase
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2

Display Characteristics

Display Type	Liquid crystal active-matrix color display
Display Size	10.4 in (264 mm) diagonal
Display Resolution	1024 × 768 pixels (XGA)
Waveform Styles	Vectors, Dots, Variable Persistence, Infinite Persistence
Graticules	Full, Grid, Crosshair, Frame
Color Palettes	Normal, Green, Gray, Temp, Spectral, Real-time

Connectivity and Ports

Probe Interface Type	TekConnect® interface
GPIO Interface	IEEE 488.2
LAN Port	RJ-45 connector, 10Base-T and 100Base-T
USB Ports	5 USB 2.0 ports (1 on front, 4 on rear panel)
Video Output Ports	VGA (D-Sub 15-pin) and DVI-I connectors

Computer and Storage System

Operating System	Windows XP Professional
System Memory	1 GB
Internal HDD Capacity	≥40 GB
Removable Media Storage	CD-RW drive (standard), 3.5-inch 1.44 MB floppy drive

Power Specifications

Power Source Voltage	100 to 240 VRMS ±10%
Power Source Frequency	47 to 63 Hz, or 360 to 440 Hz
Power Consumption	<600 W (typically 480 W)

Environmental and Compliance

Non-Operating Temperature	-22 °C to +60 °C
Operating Humidity	20% to 80% RH, non-condensing
Non-Operating Humidity	5% to 90% RH, non-condensing
Operating Altitude	Up to 3,000 m (10,000 ft.)
Non-Operating Altitude	Up to 12,190 m (40,000 ft.)
Electromagnetic Compatibility	89/336/EEC, EN61326-1, FCC 47 CFR Part 15 Class A
Safety Certifications	UL 3111-1, CSA 1010.1, EN61010-1

Physical Characteristics

Height	282 mm
Width	457 mm
Depth	523 mm
Net Weight	19.1 kg
Shipping Weight	36.3 kg

Storage

CD-RW Drive	Built-in CD-R/W drive on side panel
Floppy Drive	Built-in 3.5-inch 1.44 MB floppy drive on side panel

Acquisition

Segmented Memory	FastFrame Segmented Memory (up to 290,000 frames)
Waveform Zoom	MultiView Zoom (dual zoom zones with independent controls)

Inputs & Outputs

Parallel Port	1x Centronics DB-25 parallel port
Serial Port	1x RS-232-C DB-9 serial port
PS/2 Ports	2x PS/2 ports (one keyboard, one mouse)

Environmental

Operating Vibration	0.22 g RMS (5 Hz to 500 Hz)
Non-Operating Vibration	2.28 g RMS (5 Hz to 500 Hz)
Operating Shock	15 g, 11 ms, half-sine

Options & Upgrades

Serial Triggering Option	Option ST (Serial Pattern Triggering up to 1.25 Gb/s)
Jitter and Timing Analysis Options	Option J2 (TDSJIT3 v2.0 Software) / Option JA3 (Advanced Jitter and Timing Analysis) / Option JE3 (Essential Jitter and Timing Analysis)
Optional Accessories	Option 1R (Rackmount Kit), Option 1K (K4000 Instrument Cart)

Software & Control

Programmatic Control	GPIB (IEEE-488.2), TekVISA, VXI-11, ActiveX
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TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

High-Speed Serial Bus Verification, Signal Integrity Analysis, Jitter and Timing Analysis

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