

TEKTRONIX

TDS6604B

The Tektronix TDS6604B is a high-performance 6 GHz Digital Storage Oscilloscope (DSO) designed for advanced digital design, serial data compliance testing, and high-speed signal analysis. Featuring up to 20 GS/s real-time sampling rate on all four channels simultaneously, standard 35 ps rise times with DSP, and the versatile Pinpoint triggering system, this dual-processor instrument runs on a Windows XP platform powered by OpenChoice software.

SPECIFICATIONS

General

Interfaces	USB 2.0 (1 front, 3 rear), LAN (10/100Base-T), GPIB (IEEE-488.2), RS-232, Centronics (Parallel), VGA, PS/2 Keyboard/Mouse
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Physical

Operating Temperature	5 °C to 40 °C °C
Dimensions (W×H×D)	457 × 282 × 423 mm mm

Vertical System

Analog Bandwidth (-3 dB)	6 GHz (with DSP); 4.2 GHz (hardware only, typical)
Rise Time (10% to 90%)	65 ps (typical with DSP); 90 ps (hardware-only typical)
Number of Input Channels	4
Input Coupling	DC, 50 Ohm
Vertical Sensitivity Range	2 mV/div to 1 V/div
Vertical Resolution (A/D Converter)	8 bits (>11 bits with averaging)
Channel-to-Channel Isolation	>= 100:1 at 6 GHz (typical)
Offset Range	±1.2 V (2 mV to 100 mV/div); ±10 V (101 mV to 1 V/div)
Input Connector Style	TekConnect Interface
Vertical Position Range	±5 divisions

Horizontal System & Acquisition

Maximum Real-time Sample Rate (Single-Channel)	20 GS/s
Maximum Real-time Sample Rate (Multi-Channel)	10 GS/s simultaneously on 4 channels
Standard Record Length	4 MS on each channel
Maximum Record Length (Memory Depth)	Up to 32 MS on each channel (option dependent)
Time Base Range	50 ps/div to 40 s/div

Trigger System

Trigger Sources	Ch 1, Ch 2, Ch 3, Ch 4, Auxiliary Input, Line
Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Rej, LF Rej, Noise Rej
Standard Trigger Types	Edge, Glitch, Runt, Width, Transition, Timeout, Pattern, State, Setup/Hold, Window
Serial Pattern Triggering	Up to 3.125 Gb/s hardware pattern trigger

Acquisition Modes & Signal Processing

Acquisition Modes	Sample, Envelope, Average, Waveform Database
Waveform Update Rate	> 400,000 wfm/s on all channels
Waveform Math Operators	Add, Subtract, Multiply, Divide, Algebraic Expressions
Advanced Waveform Functions	FFT, Integration, Differentiation
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2

Measurements & Analysis

Automatic Measurements	39 automated measurements (voltage, time, frequency, and area)
Measurement Statistics	Mean, Minimum, Maximum, Standard Deviation, Population
Waveform Histogramming	Vertical and Horizontal histograms with 1-D/2-D statistical tracking
Limit and Mask Testing	Standard telecom and serial interface mask testing (optional)

Display & User Interface

Waveform Persistence Settings	Off, Infinite, Variable
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Environmental & Compliance

Storage Temperature Range	-22 °C to +60 °C
Operating Altitude	Up to 3,000 m (10,000 ft.)
Safety Certifications	UL 3111-1, CSA 1010.1, EN 61010-1
Electromagnetic Compatibility (EMC)	EN 61326-1, FCC Class A

Computer Platform

Operating System	Windows XP Professional
System Interface Software	Tektronix OpenChoice software

Timebase & Jitter Performance

Trigger Jitter	1.5 ps RMS (typical, 100 fs RMS with Enhanced Triggering)
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Rear Panel I/O

External Clock Reference Input	10 MHz (BNC, 50 Ω)
External Clock Reference Output	10 MHz (BNC, 50 Ω)
Auxiliary Trigger Output	BNC, 50 Ω
Video Output	VGA DB-15
Serial Port	RS-232-C (DB-9)
Parallel Port	Centronics (IEEE 1284)
PS/2 Ports	2x PS/2 (Keyboard, Mouse)

Front Panel I/O

Front USB Ports	1x USB 2.0
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Storage & Media

Internal Hard Disk Drive	≥ 40 GB
Floppy Drive	3.5 in, 1.44 MB
Optical Drive	CD-R/W

Physical & Environmental

Required Cooling Clearance	76 mm (3 in.) minimum on left, right, and rear
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Rear Panel Connectivity

Rear USB Ports	4 USB 2.0 ports
LAN Port Speed	10/100/1000Base-T Ethernet (RJ-45)
GPIO Interface Standard	IEEE-488.2 compatible
Audio Ports	Microphone input (3.5 mm), Line input (3.5 mm), Line output (3.5 mm)

Signal Outputs

Probe Compensator Output Voltage	1.0 V $\pm$ 10% into ≥ 10 k Ω
Probe Compensator Output Frequency	1 kHz $\pm$ 5%

Horizontal System

Timebase Aging	$< \pm 1$ ppm/year
External Reference Input Frequency	10 MHz ± 10 ppm
External Reference Input Signal Level	200 mV p-p to 8 V p-p

Triggering & Analysis

Clock Recovery Baud Rate (Option CR)	1.5 MBaud to 3.125 GBaud
Serial Pattern Trigger Length (Option ST)	64-bit

Environmental

Operating Shock	15 g (11 ms half-sine)
Non-operating Shock	50 g (11 ms half-sine)

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

High-speed digital design, serial compliance testing up to 5 Gb/s, jitter/noise analysis, and spectral measurement

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