TEKTRONIX

DSA71604B

The Tektronix DSA71604B is a high-performance 16 GHz Digital Signal Analyzer (oscilloscope) designed for advanced serial data analysis, jitter characterization, and high-speed signal integrity measurements. It offers a real-time sample rate of 50 GS/s on all 4 channels, deep memory, and comprehensive analytical software tools standard.

SPECIFICATIONS

General

Interfaces	USB 2.0 (Host & Device), LAN (10/100/1000 Base-T, LXI Class C), GPIB, DVI-I, VGA, RS-232
Display	12.1-inch active-matrix color TFT-LCD touchscreen, 1024 × 768 pixels (XGA)

Physical

Power Supply	100 to 240 V AC ±10% (50/60 Hz), 115 V AC ±10% (400 Hz), power consumption <1200 VA
Operating Temperature	5 to 45 °C °C
Dimensions (W×H×D)	451 × 298 × 489 mm mm
Cooling Clearance	≥76 mm (3 in.) on left, right, and rear sides

Vertical System - Analog Channels

Analog Bandwidth (-3 dB)	16 GHz
Calculated Rise Time (10% to 90%)	28 ps (typical)
Calculated Rise Time (20% to 80%)	19 ps (typical)
Number of Input Channels	4
Input Coupling	DC, GND
Input Impedance	50 Ω
Input Sensitivity Range	10 mV/div to 1 V/div
Vertical Resolution	8 bits (up to 11 bits with Hi-Res)
Maximum Input Voltage	1.5 V rms for <100 mV/div, 5.5 V rms for ≥100 mV/div
DC Gain Accuracy	±2%
Offset Range	±500 mV (10 to 99.5 mV/div), ±4 V (100 mV/div to 1 V/div)
Channel-to-Channel Isolation	≥80:1 at ≤10 GHz, ≥50:1 at 10 to 16 GHz

Horizontal System

Timebase Range	20 ps/div to 1000 s/div
Timebase Accuracy	±1.5 ppm
Channel-to-Channel Deskew Range	±75 ns
Delta Time Measurement Accuracy	100 fs RMS (typical)

Acquisition System

Maximum Real-Time Sample Rate	50 GS/s (on all 4 channels simultaneously)
Maximum Record Length	50M points (standard), up to 250M points (option-dependent)
Segmented Memory	FastFrame segmented memory up to 1,000,000 segments
Waveform Capture Rate	>300,000 wfm/s (using FastAcq mode)
Acquisition Modes	Sample, Average, Envelope, Hi-Res, Waveform Database, FastAcq
Standard Record Length	50 Mpoints per channel

Trigger System

Trigger Sources	Ch 1, Ch 2, Ch 3, Ch 4, Aux In
Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Rej, LF Rej, Noise Rej
Trigger Holdoff Range	250 ns to 12 s
Standard Trigger Types	Edge, Glitch, Width, Runt, Timeout, Transition, Setup/Hold, Window, Pattern, State
Advanced/Protocol Trigger Types	Comm, Serial Pattern (standard up to 6.25 Gb/s with hardware clock recovery)
Trigger Jitter	<1.5 ps RMS (typical)
Serial Pattern Triggering Maximum Rate	6.25 Gbps

Waveform Measurements and Analysis

Automatic Measurements	53 automatic measurements with measurement statistics
Waveform Math Operators	Basic arithmetic, algebraic, calculus, FFT, user-defined equations
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop
Limit / Mask Testing	Standard ITU-T, ANSI T1.102, USB, PCIe, Ethernet, Serial ATA, Fibre Channel masks
Jitter and Eye Diagram Analysis	DPOJET standard (provides comprehensive jitter, eye diagram, and noise analysis)

Display and User Interface

Display Type	Liquid-crystal active-matrix color display with resistive touch interface
Waveform Display Formats	YT, XY, XYZ

Connectivity and Interfaces

USB Host Ports	5x USB 2.0 (1x front, 4x rear)
External Trigger Input	Auxiliary Input (BNC connector on front panel)
Reference Clock Input	10 MHz (BNC on rear panel)
Auxiliary Output	Trigger Out, Recovery Clock Out, Fast Edge Out (front panel)

Environmental and Compliance

Operating Humidity	8% to 80% RH at up to 32 °C (non-condensing)
Operating Altitude	3,000 m (9,843 ft.)
EMC Certifications	EN61326-1, FCC 47 CFR Part 15 Class A
Safety Certifications	UL61010-1, CSA61010-1, EN61010-1

Computer System

Operating System	Windows XP Professional
Processor	Intel Core 2 Duo
Removable Hard Drive	160 GB or larger, 2.5-inch SATA
LXI Compliance	LXI Class C

Timebase

Internal Reference Aging	±1.0 ppm/year
Internal Reference Initial Accuracy	±1.5 ppm

Rear Panel Connections

LAN Port	1× RJ-45, 10/100/1000BASE-T
GPIB Interface	IEEE-488.2 connector
Audio Ports	Line Out, Line In, Microphone In (3.5 mm jacks)
External Video Outputs	1× DVI, 1× VGA
Reference Clock Output	BNC connector, 10 MHz

Front Panel Connections

TekLink Port	Rear Panel Connections — TekLink Port = Proprietary high-speed interface
Probe Calibration Output	BNC connector (Cal Out)

Environmental

Mechanical Compliance	MIL-PRF-28800F Class 3

Inputs & Outputs

Input Connector Type	TekConnect

Software & Analysis

Standard Software Packages	DPOJET (Option DJA), Serial Pattern Trigger (Option ST6G), Limit Test (Option LT), Mask Testing (Option MTH)

TECHNOLOGY

Digital Signal Analyzer

APPLICATIONS

High-Speed Serial Bus Characterization, Jitter & Eye Diagram Analysis, Spectral Analysis