

TEKTRONIX

TDS5104

The Tektronix TDS5104 is a 1 GHz, 4-channel Digital Phosphor Oscilloscope (DPO) designed to deliver real-time analysis of complex signals with exceptional fidelity. Featuring Tektronix's DPX acquisition technology, a bright 10.4-inch display, a suite of advanced triggers, and an open Windows 2000 operating platform, it provides design engineers with deep insight into signal behavior, enabling rapid troubleshooting and debugging.

SPECIFICATIONS

Vertical System

Analog Channels	4
Analog Bandwidth (-3 dB)	1 GHz
Input Coupling	AC, DC, GND
Input Sensitivity Range (1 M Ω)	1 mV/div to 10 V/div
Input Sensitivity Range (50 Ω)	1 mV/div to 1 V/div
Maximum Input Voltage (50 Ω)	5 V RMS
Position Range	± 5 divisions
Offset Range	± 1 V (1 mV to 100 mV/div), ± 10 V (101 mV to 1 V/div), ± 100 V (1.01 V to 10 V/div)

Horizontal System and Acquisition

Maximum Real-Time Sample Rate (Single Channel)	5 GS/s
Maximum Real-Time Sample Rate (Two Channels)	5 GS/s
Maximum Real-Time Sample Rate (Three/Four Channels)	2.5 GS/s

Trigger System

Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Rej, LF Rej, Noise Rej
Pattern/State Logic Triggering	Trigger when pattern goes false or stays true for specified time
Transition (Slew Rate) Triggering	Trigger on pulse edge rates that are faster or slower than specified
Window Triggering	Trigger on an event entering or exiting a window defined by two thresholds
Video Triggering Formats	NTSC, PAL, SECAM, HDTV, non-standard formats

Acquisition Modes

Sample Mode	Acquire sampled values
Envelope Mode	Max/min values accumulated over multiple acquisitions
Average Mode	Waveform average selectable from 2 to 10,000
FastAcq Waveform Capture Rate	100,000 wfms/s (maximum)
Waveform Database Mode	Accumulate multidimensional database (color-graded)

Display Characteristics

Display Type	Color TFT LCD (Active Matrix)
Display Size	10.4 in (264 mm) diagonal
Display Resolution	640 × 480 pixels
Waveform Style Options	Vectors, Dots, Intensified, Infinite Persistence, Variable Persistence
Display Colors	Normal, Color-graded, temperature, spectral

Waveform Measurements and Analysis

Automatic Measurements (Time)	Rise Time, Fall Time, Positive Width, Negative Width, Positive Duty Cycle, Negative Duty Cycle, Period, Frequency, Delay
Automatic Measurements (Amplitude)	Amplitude, High, Low, Maximum, Minimum, Peak to Peak, Mean, Cycle Mean, RMS, Cycle RMS, Positive Overshoot, Negative Overshoot
Automatic Measurements (Area/Energy)	Area, Cycle Area, Phase, Burst Width
Measurement Statistics	Mean, Minimum, Maximum, Standard Deviation
Measurement Gating	Track or select gate with cursors or drag-box
Waveform Histograms	Vertical or horizontal, with statistics
Math Functions (Arithmetic)	Add, subtract, multiply, divide
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, Tek Exponential
FFT Vertical/Horizontal Scales	Linear, dB, dBm / Frequency

Computer System and Storage

Internal Operating System	Windows 2000
Processor Type	Intel Celeron
System Memory	256 MB (standard)
Internal Storage Capacity	>= 20 GB Hard Disk Drive
Removable Storage Media	3.5 in 1.44 MB floppy drive (standard), CD-RW drive (optional)

Connectivity and I/O Interfaces

GPIO Interface	IEEE 488.2 fully programmable
LAN Port (Ethernet)	RJ-45, 10/100 Base-T
Serial Port (RS-232)	DB-9 COM1 port
Parallel Printer Port	Centronics-style 25-pin
Analog VGA Output	DB-15 female connector
External Trigger Input	BNC (Aux Trigger input)

Power and Environmental Specifications

Power Source Voltage Range	100 to 240 V AC RMS
Power Line Frequency	47 to 63 Hz (115 V AC 360 to 440 Hz)
Power Consumption	< 220 W
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.)
Vibration Resistance	Operating: 0.22 g RMS (5 to 500 Hz); Non-operating: 2.28 g RMS

Physical Characteristics and Compliance

Cabinet Width	437 mm
Cabinet Depth	218 mm

Performance

Channel-to-Channel Isolation	$\geq 100:1$ at 100 MHz, $\geq 30:1$ at 1 GHz
Selectable Bandwidth Limits	20 MHz, 250 MHz, and 500 MHz
Trigger Jitter (Typical)	≤ 8 ps RMS
Waveform Interpolation	Sin(x)/x, Linear

Interfaces

PS/2 Ports	Two PS/2 ports for keyboard and mouse
Audio Ports	Stereo microphone input, stereo line input, and stereo line output (mini-phone jacks)

Compliance

Safety Compliance	UL3111-1, CAN/CSA-C22.2 No. 1010.1, EN61010-1
EMC Compliance	EN61326 Class A, FCC Part 15 Class A

Triggering

Trigger on Delay Range (Events)	1 to 10,000,000 events
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Timebase System

Internal Reference Output Frequency	10 MHz
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Auxiliary Inputs & Outputs

Trigger Out High Level	>2.5 V into 1 M Ω , >1.0 V into 50 Ω
Trigger Out Low Level	<0.5 V into 1 M Ω , <0.25 V into 50 Ω

TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

Electronic Design, Debugging, and Troubleshooting

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