

TEKTRONIX

TDS2024

The Tektronix TDS2024 is a 4-channel, 200 MHz digital storage oscilloscope from the TDS2000 Series. It features a 2.0 GS/s real-time sample rate on all channels, a 1/4 VGA color LCD display, and multi-language support, combining excellent performance, portability, and ease of use.

SPECIFICATIONS

General

Interfaces	None standard; optional via TDS2CMA expansion module (GPIB, RS-232, Centronics parallel) or TDS2MEM module (USB device port, CompactFlash card slot)
Display	5.7-inch (145 mm) active-matrix color TFT LCD, 320 x 240 pixels

Physical

Operating Temperature	0 to +50 °C °C
Dimensions (W×H×D)	323.6 mm × 151.4 mm × 124.5 mm mm
Weight	2.0 kg kg
Security Slot	Kensington-style lock

Vertical System

Analog Bandwidth (-3 dB)	200 MHz
Calculated Rise Time (10% to 90%)	1.75 ns
Number of Input Channels	4
Input Impedance	1 MΩ ±2% in parallel with 20 pF ±3 pF
Input Coupling	AC, DC, GND
Vertical Resolution (ADC)	8 bits
DC Gain Accuracy	±3% for 10 mV/div to 5 V/div; ±4% for 2 mV/div to 5 mV/div
Maximum Input Voltage	300 V RMS CAT II, derated at 20 dB/decade above 100 kHz
Vertical Sensitivity Range	2 mV/div to 5 V/div with calibrated fine adjustment
Hardware Bandwidth Limits	20 MHz
Channel-to-Channel Isolation	>100:1 at 100 MHz

Horizontal System

Maximum Real-Time Sampling Rate	2.0 GS/s (on all channels simultaneously)
Maximum Record Length	2.5k points per channel
Time Base Range	2.5 ns/div to 50 s/div
Time Base Accuracy	±50 ppm

Trigger System

Trigger Sources	CH1, CH2, CH3, CH4, Ext, Ext/5, AC Line
Trigger Modes	Auto, Normal, Single Sequence
Trigger Coupling	AC, DC, HF Reject, LF Reject, Noise Reject
Edge Triggering	Rising or falling edge
Pulse Width Triggering	Trigger on pulse width <, >, or =; time limit selectable from 33 ns to 10 s
Video Triggering	NTSC, PAL, SECAM; triggers on field 1, field 2, or any line
External Trigger Input Impedance	1 M Ω $\pm$ 2% in parallel with 20 pF $\pm$ 3 pF
Trigger Holdoff Range	Adjustable (500 ns to 10 s)
Trigger Sensitivity (Internal, DC Coupled)	0.3 div (DC to 10 MHz), 1 div (10 MHz to 200 MHz)
External Trigger Sensitivity (DC Coupled)	100 mV (DC to 100 MHz), 150 mV (100 MHz to 200 MHz)
External Trigger Maximum Input Voltage	300 V RMS CAT II

Acquisition System

Acquisition Modes	Sample, Peak Detect, Average
Peak Detect Min Pulse Width	12 ns
Averaging Factor Range	4, 16, 64, 128

Waveform Measurements and Analysis

Automatic Measurements	11 measurements (Period, Frequency, +Width, -Width, Rise Time, Fall Time, Max, Min, Peak-to-Peak, Mean, Cycle RMS)
Waveform Math	Addition (+), Subtraction (-), FFT
FFT Window Types	Hanning, Flat Top, Rectangular
FFT Vertical Scale Options	Linear, dBV RMS

Display and User Interface

Multi-Language User Interface	English, French, German, Italian, Spanish, Portuguese, Japanese, Korean, Simplified Chinese, Traditional Chinese, Russian
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Processor and Storage

Internal Non-Volatile Storage	4 reference waveforms and 10 setups
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Environmental Specifications

Storage Temperature Range	-40 °C to +71 °C
Operating Humidity Range	Up to 90% RH at or below +30 °C; up to 60% RH up to +50 °C
Operating Altitude	Up to 3,000 m

Compliance and Standards

Safety Certifications	UL61010-1, CSA22.2 No. 1010.1, EN61010-1, IEC61010-1
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Trigger

Trigger Frequency Counter Resolution	6 digits
Trigger Frequency Counter Range	10 Hz to 200 MHz
Trigger Frequency Counter Accuracy	±51 ppm (including all reference errors and ±1 count)
Video Trigger Formats	NTSC, PAL, SECAM
Pulse Width Trigger Conditions	<, >, =, ≠
Pulse Width Range	33 ns to 10 s
Trigger Level Range	±8 divisions from screen center

Measurements

Cursor Measurements	Amplitude (Voltage), Time (Seconds, 1/Δt)
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Display

Display Format	YT and XY
Display Persistence	Off, 1 s, 2 s, 5 s, Infinite

Outputs

Probe Compensator Output Voltage	5 V (into ≥1 MΩ)
Probe Compensator Output Frequency	1 kHz

Safety

Overvoltage Category	CAT II 300 V
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Maintenance

Recommended Calibration Interval	1 year
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Power & Environmental

Cooling System	Convection cooled (no cooling fan)
Pollution Degree Rating	Pollution Degree 2

Connectivity & Options

Optional Extension Modules	TDS2CMA (adds GPIB, RS-232, and Centronics ports) or TDS2MEM (adds CompactFlash slot, RS-232, and Centronics ports)
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Acquisition & Setup

Autoset Function	Single-button automatic setup of all active channels with vertical, horizontal, and trigger systems, plus Undo Autoset feature
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TECHNOLOGY

Digital Storage Oscilloscope

APPLICATIONS

Electronic Design and Debugging, Power Supply Design, Education, Manufacturing Test

