

TEKTRONIX

TDS540

The Tektronix TDS540 is a high-performance 4-channel digital digitizing oscilloscope with a 500 MHz analog bandwidth and a maximum real-time sample rate of 1 GS/s on a single channel. Featuring a 7-inch monochrome CRT display, 15,000 points of standard record length per channel, and standard GPIB connectivity, the TDS540 provides comprehensive triggering, acquisition, and analysis tools for electrical engineering and laboratory testing.

SPECIFICATIONS

General

Interfaces	GPIB (standard), RS-232 (optional via Option 13), Centronics parallel (optional via Option 13)
Display	7-inch (17.78 cm) monochrome CRT, 640 x 480 pixels
Warm-up Time	20 minutes

Physical

Power Supply	90 to 250 VAC, 45 to 440 Hz, < 300 W power consumption
Operating Temperature	0 to +50 °C (without floppy drive), +4 to +50 °C (with floppy drive) °C
Dimensions (W×H×D)	445 mm × 193 mm × 437 mm mm
Weight	12.3 kg kg

Vertical System

Number of Channels	4
Analog Bandwidth	500 MHz
Rise Time	700 ps (calculated)
Vertical Resolution	8 bits (up to 12 bits in Hi-Res mode)
Input Sensitivity Range	1 mV/div to 10 V/div
Input Impedance	1 MΩ (in parallel with 10 pF) or 50 Ω
Input Coupling	AC, DC, GND
Maximum Input Voltage (1 MΩ)	400 V (DC + peak AC)
Maximum Input Voltage (50 Ω)	5 Vrms
DC Gain Accuracy	±1.5%
Channel-to-Channel Isolation	>= 100:1 at 100 MHz
Vertical Position Range	±5 divisions
Input Capacitance (1 MΩ)	10 pF
Probe Interface	TekProbe BNC (Level 1)

Horizontal System

Maximum Real-Time Sample Rate (1 Channel)	1 GS/s
Maximum Real-Time Sample Rate (2 Channels)	500 MS/s
Maximum Real-Time Sample Rate (3 or 4 Channels)	250 MS/s
Equivalent-Time Sample Rate	Up to 100 GS/s
Maximum Record Length (Standard)	15,000 pt/channel
Maximum Record Length (with Option 1M)	50,000 pt/channel
Timebase Range	500 ps/div to 10 s/div
Timebase Accuracy	±0.01% (100 ppm)
Delay Time Range (Pre-trigger)	Up to 100% of record length

Trigger System

Trigger Sources	CH1, CH2, CH3, CH4, Line
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, HF Reject, LF Reject, Noise Reject
Minimum Glitch Trigger	2 ns
Edge Triggering	Yes (positive or negative slope)
Pulse Triggering	Width, Glitch, Runt
Logic Triggering	Pattern, State
Trigger Holdoff Range	Variable (250 ns to 12 s)
Trigger Level Range (Internal)	±12 divisions from center of screen
Trigger Sensitivity (Internal, DC Coupled)	0.35 div from DC to 50 MHz, increasing to 1 div at 500 MHz

Acquisition System

Acquisition Modes	Sample, Envelope, Average, Hi-Res
Hi-Res Mode Resolution	Up to 12 bits

Waveform Measurements and Analysis

Automatic Measurements	25 parameters (including Period, Frequency, Rise Time, Fall Time, Width, Duty Cycle, Peak-to-Peak, Amplitude, RMS, Mean)
Waveform Math Operations	Addition, Subtraction, Multiplication, Division
Advanced Waveform Math	FFT, Integration, Differentiation (requires Option 2F)
FFT Window Types	Rectangular, Hanning, Hamming, Blackman-Harris (requires Option 2F)
Cursor Measurements	Absolute, Delta (Volts, Time, Frequency)
Limit Testing	Yes

Display and User Interface

Display Size	7-inch (17.78 cm) diagonal
Display Modes	Dot, Vector
Display Persistence	Infinite, Variable, None
Graticule Options	Full, Grid, Crosshair, Frame

Input and Output Ports

Analog Input Channels	4 BNC inputs
External Trigger Input Connector	BNC (rear panel)
VGA Video Output	Yes (DB-15 connector on rear panel)
Probe Compensator Output	Front-panel terminals (approx. 1 kHz, 0.5 V)
Auxiliary Output	Rear-panel BNC (Main Trigger, Delayed Trigger, or CH 3 out)

Storage and File System

Internal Waveform Storage	Up to 4 waveforms
Internal Setup Storage	Up to 10 setups
Removable Media Storage	3.5-inch 1.44 MB floppy disk drive (optional via Option 1F)

Power Specifications

Line Voltage Range	90 to 250 VAC
Line Frequency Range	45 to 440 Hz
Power Consumption	300 W maximum

Environmental and Physical

Storage Temperature	-40 °C to +75 °C
Operating Humidity	Up to 95% RH at +40 °C
Operating Altitude	Up to 4,570 meters (15,000 feet)
Cooling Method	Forced air (fan)

Options and Accessories

Standard Probes Included	P6139A 10X Passive Probes (one per channel)
Option 1M	50,000 point record length per channel
Option 1F	3.5-inch floppy disk drive
Option 13	RS-232 and Centronics interfaces
Option 2F	Advanced DSP Math (FFT, Integration, Differentiation)

Environmental

Non-Operating Shock	50 g (11 ms, half-sine)
Non-Operating Vibration	2.25 g RMS (5 Hz to 500 Hz)
Operating Vibration	0.26 g RMS (5 Hz to 500 Hz)
Non-Operating Altitude	Up to 12,190 m (40,000 ft)

Options

Option 05	Video Trigger (NTSC, PAL, SECAM, and custom formats)
Option 1R	Rackmount kit (converts instrument to 19-inch rackmount, 7 inches high)
Option 1P	HC100 4-pen plotter included
Option 1K	K218 instrument cart included

Display

CRT Type	7-inch monochrome raster-scan CRT
CRT Resolution	640 x 480 pixels
Graticule Size	8 x 10 divisions (1 division = 1 cm)

Performance

Autosetup	Single-button automatic setup of vertical, horizontal, and trigger controls
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Triggering

Trigger Jitter (Typical)	15 ps RMS
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TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic Design and Debugging, Laboratory Testing

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