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Tektronix



# Digital Storage Oscilloscopes

TDS210 • TDS220 • TDS224

## Characteristics

SIGNAL ACQUISITION SYSTEM

**Bandwidth -**

TDS210: 60 MHz

TDS220: 100 MHz

TDS240: 100 MHz

**Sample Rate -** 1 GS/s on each channel

**Channels -**

TDS210 and TDS220: 2 identical channels plus external trigger

TDS224: 4 identical channels

**Sensitivity (with calibrated fine adjustment) -** 2 mV to 5 V/div (bandwidth limited to 20 MHz at 2 mV/div and 5 mV/div, in all modes, and 20 MHz at 10 mV/div in Peak Detect mode)

**Vertical Zoom -** Vertically expand or compress a live or stopped waveform

CALIBRATED POSITION RANGE

| Volts/Div Setting | Offset Range |
|---|---|
| 2 mV to 200 mV/div | ±2 V |
| >200 mV to 5 V/div | ±50 V |

**DC Gain Accuracy -** ±3% (±4% at 2 mV/div and 5 mV/div)

**Vertical Resolution -** 8-bit (256 levels over 10.24 vertical divisions)

AUTOMATIC MEASUREMENTS

Period, frequency, cycle RMS, mean, peak-to-peak

ACQUISITION MODES

**Sample, Average, Peak Detect -** High frequency and random glitch capture; captures glitches as narrow as 10 ns using acquisition hardware at all time/div settings between 5 µs/div and 5 s/div

TIME BASE SYSTEM (MAIN AND WINDOW)

**Horizontal Zoom -** Horizontally expand or compress a live or stopped waveform

**Time/Division Range -** 5 ns to 5 s/div

**Record Length -** 2,500 sample points per channel

**Horizontal Accuracy -** ±0.01%

NONVOLATILE STORAGE

**Waveform Display -** Two 2,500 point reference waveforms

**Waveform Storage -**

TDS210 and TDS220: Two 2,500 point reference waveforms

TDS224: Four 2,500 point reference waveforms

**Setups -** 5 front panel setups

TRIGGERING SYSTEM (MAIN ONLY)

**Trigger Type -** Edge (rising or falling), video, set to 50%

**Video Trigger Type -** Triggers on fields or lines from composite video; triggers on broadcast standard NTSC, PAL or SECAM video

**Trigger Modes -** Auto, normal, single sweep

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**Trigger Source -**

TDS210 and TDS220: CH1, CH2, Ext, Ext/5 and AC Line

TDS224: CH1, CH2, CH3, CH4 and AC Line

**Trigger View -** Displays trigger signal while trigger view button depressed.

CURSORS
**Types -** Voltage, time

**Measurements -** Delta T, 1/Delta T, Delta V

WAVEFORM PROCESSING
**Arithmetic Operators -** Add, subtract

**Sources -** CH1±CH2, CH3±CH4 (TDS224)

**Autoset -** Single button automatic setup on selected input signal for vertical, horizontal and trigger systems.

DISPLAY SYSTEM
Robust, backlit LCD with adjustable multilevel contrast.

**Interpolation -** Sin(x)/x

**Display Modes -** Vectors, dots

**Persistence -** Off, 1 sec, 2 sec, 5 sec, infinite

**Format -** YT and XY

HARDCOPY CAPABILITY (REQUIRES MODULES)
**Printer/File Formats -** Thinkjet, Deskjet, Laserjet, Epson (9- or 24-Pin), BMP, PCX, IMG, EPS, DPU 411, DPU 412

**Hardcopy Layout -** Landscape or portrait

TDS2CM COMMUNICATIONS EXTENSION MODULE
**Centronics-type Parallel Port**

**RS-232 Programmability -** Full talk/listen modes. Control of all modes, settings and measurements. Baud rate up to 19,200. 9-Pin, DTE.

**GPIB Programmability -** Full talk/listen modes. Control of all modes, settings and measurements (IEEE Std 488-1987). Includes WaveStar™ Software for Oscilloscopes 30 day product demo.

TDS2MM MEASUREMENT EXTENSION MODULE
**FFT -**

Windows: Hanning, Flat Top, Rectangular

Sample points: 2,048

**Automatic Measurements -** Rise/fall time, positive/negative pulse width

**Interface -** Centronics, RS-232, GPIB

ENVIRONMENTAL AND SAFETY
**Temperature -**

Operating: 0°C to +50°C

Nonoperating: -20°C to +60°C

**Humidity -**

Up to 90% RH at or below +40°C;

Up to 60% RH from 41°C to 50°C (operating and nonoperating)

**Altitude -** Up to 3,000 m (operating)

**EMC -** Meets Directive 89/336/EEC, GOST

**Safety -** UL3111-1, CSA1010.1, IEC61010-1, EN61010-1

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PHYSICAL CHARACTERISTICS

Dimensions mm in.

Weight kg lb.

| | | |
|---|---|---|
| Width | 304.8 | 12.0 |
| Height | 151.4 | 5.96 |
| Depth | 120.7 | 4.75 |
| Oscilloscope only | 1.5 | 3.25 |
| w/accessories | 1.7 | 3.75 |

CE

ISO 9001 Product(s) are manufactured in ISO registered facilities.

GPIB IEEE-488 Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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