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Test & Measurement
Oscilloscopes
Real-Time Spectrum Analyzers
Logic Analyzers
Signal Generators
Accessories
Applications

Communications
Communications Home
Technologies Overview
Network Diagnostics Products
Network Management Products

Video Test
Video Test Home
Signal Analyzers, Generators & Monitors
MPEG Analyzers, Generators & Monitors
Content Verification
Industries
Applications



TDS460A 400MHz, four channel, personal lab scope.

This product is discontinued.
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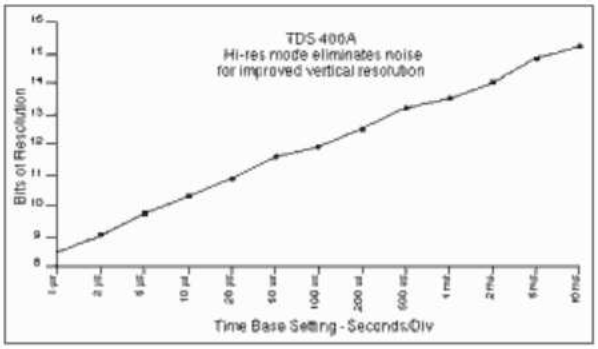
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Product Information
Introduction
› **Characteristics/Specs**

Digital Storage Oscilloscopes

TDS400 Series

CHARACTERISTICS



TDS400A Theoretically achievable resolution with TDS400A Hi-res mode.

Signal Acquisition System

Bandwidth - 200MHz (TDS420A), 400MHz (TDS430A, TDS460A).

Channels - 4 (2 on TDS430A).

Sample Rate - 100MS/s on all channels.

Sensitivity - 1mV to 10V/div (with calibrated fine adjust).

Position Range - ± 5 Divisions.

Offset Range - ± 1V from 1mV/div to 99.5mV/div; ± 10V from 100mV/div to 995mV/div; ± 100V from 1V/div to 10V/div.

DC Gain Accuracy - ± 1.5%.

Vertical Resolution - 8-Bit (256 levels over 10.24vertical divisions).

Analog Bandwidth Selections - 20MHz, 100MHz and full.

Input Coupling - AC, DC or GND.

Input Impedance Selections - 1M Ω in parallel with 15pF or 50 Ω (AC and DC coupling).

Maximum InputVoltage - 300V CATII ± 400V $_p$. Derate at 20dB/decade above 1MHz. 1megaohm or GND coupled.

Channel Isolation - > 100:1 at 100MHz for any two channels.

AC Coupled Low Frequency Limit - ≤10Hz when AC 1M Ω coupled. ≤200kHz when AC 50 Ω coupled.

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Acquisition Modes

Peak Detect - High frequency and random glitch capture. Captures glitches of 10ns using acquisition hardware at all real - time sampling rates.

Sample - Sample data only.

Envelope - Max/min values acquired over one or more acquisitions, selectable from 2 to 2000, infinite.

Average - Waveform averages selectable from 2 to 10,000.

Hi-res - Vertical resolution improvement and noise reduction on low-frequency signals, e.g. 12-Bit at 10ms/div and slower. Enhanced vertical resolution (>12-Bit) for noise reduction, on low frequency signals. Make precise low-level signal measurements (up to 5 µV) with differential amplifier (ADA400A).

Time Base System

Time Bases - Main, Delayed.

Time/Division Range - 1ns to 20s/div.

Time Base Accuracy - 0.015% over any interval ⩾1ms.

Record Length (Real Time and Equivalent Time) - Sample points per channel: 500 to 120,000 points (with Opt.XL).

Pre-trigger Position - Selectable from 0 to 100% of record.

Triggering System

Triggers - Main, Delayed.

Main Trigger Modes - Auto, Normal, Single Sequence.

Delayed Trigger - Delayed by time or events.

Time Delay Range - 0ns to 20s.

Events Delay Range - 2 to 10,000,000 events.

External Rear Input - > 1.5k Ω; max input voltage is ± 6V (DC+ACpeak).

Video Trigger Types - NTSC, PAL, SECAM and custom; TV field, field2 or both, any line within a field. Line rates -10kHz to 64kHz, interlaced, noninterlaced, composite.

Video Trigger Sensitivity - 0.6divisions of composite SYNC will achieve a stable display.

Display

Waveform Style - Dots or vectors. Infinite and variable persistence from 250ms to 10s.

Gray Scaling - With variable persistence selected, waveform points gradually decay through 16levels of intensity, providing "z-axis" information about rapidly changing waveforms.

Update Rate - 200ea. 500point wfms/s with infinite persistence mode selected.

Graticules - Full, grid, cross hair, frame.

Format - YT and XY.

VGA Out - Drives VGA display monitors.

Zoom

The zoom feature allows waveforms to be expanded, compressed and positioned in both vertical and horizontal axes. Allows precise comparison and study of fine waveform detail without affecting ongoing acquisitions. When used with Hi-res or Average acquisition modes, Zoom provides an effective vertical dynamic range of 1000divisions or 100screens.

Measurement System

Automatic waveform measurements	
Period	Frequency
High	Low
+ Width	- Width
Maximum	Minimum
Rise	Fall
Peak to Peak	Amplitude
+ Duty cycle	- Duty cycle
+ Overshoot	- Overshoot
Propagation delay	Burst width
Mean	Cycle mean
RMS	Cycle RMS
Area	Cycle area
Phase	-

Continuous update of up to four measurements on any combination of waveforms.

Thresholds - Settable in percentage or voltage.

Gated - Any region of the record may be isolated for measurement using vertical bars.

Snapshot - Performs all measurements on any one waveform showing results from one instant in time.

Cursor Measurements - Absolute, Delta,Volts, Time, Frequency.

Cursor Types - Horizontal bars (volts);vertical bars (time); paired; operated independently or in tracking mode.

Waveform Processing

Waveform Functions - Interpolate-selectable sin(x)/x or linear, Average, Envelope.

Advanced Waveform Functions - FFT, Integration, Differentiation (Opt.XL).

Arithmetic Operators - Add, Subtract, Multiply, Invert.

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

Waveform Limit Testing - Compares incoming waveform to a reference waveform's upper and lower limits.

Computer Interface

GPIB (IEEE 488.2) Programmability - Full talk/listen modes. Control of all modes, settings and measurements.

Hardcopy/Desktop Publishing

Printer - HP ThinkJet, Epson, PostScript, Interleaf, DeskJet, LaserJet, TIFF, PCX, BMP (Microsoft Windows).

Plotter - HPGL.

Interface - GPIB standard.

Hardcopy Interface - Centronics Type and RS-232 (Opt.XL).

Storage

Waveforms - 120,000 waveform points of nonvolatile storage (with Opt.XL).

Floppy Drive - 3.5in. 1.44MB or 720KB MSDOS compatible (store waveforms, screen data, and setups)*[1].

Setups - 10 front-panel setups.

CRT

Type - 7in. diagonal, magnetic deflection. Horizontal raster - scan. P31green phosphor.

Resolution - 640 horizontal by 480 vertical displayed pixels.

Power Requirements

LineVoltage Range - 90 to 250V_{RMS}.

Line Frequency - 48 to 440Hz.

Power Consumption - 240W max.

Environmental and Safety

Temperature - Operating: 0 °C to +50 °C. Nonoperating: -40 °C to +75 °C.

Humidity - Operating and nonoperating: Up to 95% relative humidity at or below +40 °C; to 75% relative humidity from +41 °C to +50 °C.

Altitude - Operating: 15,000ft., nonoperating: 40,000ft.

Electromagnetic Compatibility - 89/336/EEC.

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

Physical Characteristics

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Dimensions	mm	in.
Height	165	6.4
w/acc. pouch	191	7.5
Width	362	14.25
Depth w/front cover installed	490	19.28
Depth w/handle extended	569	22.4
Weight	**kg**	**lbs.**
Net approximately	10.2	22.5
Shipping approximately	14.5	32

*[1] Waveforms can be stored to file in MathCAD and Spreadsheet (Excel® , Lotus1 -2-3®) formats for analysis.

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

▲ back to top

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

Introduction
› **Characteristics/Specs**

CE

3GW-10375-4B,13 -NOV-2006

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