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# Digital Sampling Oscilloscopes

## TDS 820

This product is discontinued.

### Characteristics



TDS 820

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SIGNAL Acquisition System	TDS 820	TDS 820 Opt. 1D
Channels	2	2
Rise time	58.3 ps	43.8 ps
Bandwidth (0.35/rise time)	6 GHz	8 GHz
Max operating input voltage	2 V <sub>p-p</sub> ; ±3 V DC	1 V <sub>p-p</sub> ; ±1.5 V DC
Sensitivity	2 mV/div to 200 mV/div	1 mV/div to 100 mV/div
Random noise	1.2 mV max, 600 μV typical	600 μV max, 300 μV typical

**DC Gain Accuracy** - ±0.7% after user-initiated automatic vertical calibration.

**Vertical Resolution** - 14-Bits (Approx. 16,384 levels over 10.24 vertical divisions).

**Input Impedance** - 50 Ohm.

### Acquisition Modes

**Normal** - One sample acquired with each trigger event.

**Envelope** - Max/min values acquired over one or more acquisitions.

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

### Time Base System

**Time Bases** - Main, Delayed.

**Time/Division Range** - 20 ps/division to 5 ms/division in 1-2-5 steps or settable from the numeric keypad in 5 ps steps.

**Delta time measurement accuracy** -

Time interval	Accuracy
$T_i \geq 1$ ns	0.1% x interval +15ps
100 ps	5 ps
10 ps	2 ps

**Channel Deskew** - Up to 100 ns (each channel).

**Record Length** - 500, 1000, 2000, and 5000, and 15,000 samples per channel.

**Pre -Trigger View Time** - 1.5 ns.

**Triggering System**

**Trigger Sources** - External input, internal rate generator, CH 1, CH 2.

**External Trigger Sensitivity** - 40 mV<sub>p-p</sub> from DC to 200 MHz, increasing linearly to 200 mV<sub>p-p</sub> at 2 GHz.

**External Trigger Minimum Pulse Width** - 0.25 ns.

**Internal Trigger Sensitivity** - 80 mV<sub>p-p</sub> from DC to 200 MHz, increasing linearly to 400 mV<sub>p-p</sub> at 1 GHz.

**Trigger Delay Jitter** - 3 ps RMS + 30 ppm of time base delay.

**Holdoff Range** - 15  $\mu$ s to 2 s.

**Display**

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

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

**Graticules** - Full, grid, cross hair, frame.

**Format** - YT and XY.

**CRT Type** - 7 in. diagonal, magnetic deflection. Horizontal raster-scan. P4 White phosphor.

**CRT Resolution** - 640 horizontal by 480 vertical displayed pixels.

## **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
Phase	Cycle Area
+ Cross	- Cross
Area	

Continuous update of up to four measurements on any combination of waveforms. Snapshot mode shows all measurements on the selected waveforms.

**Thresholds** - Settable in percentage or voltage.

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

**Cursor Types** - Horizontal bars (volts); Vertical bars (time); Paired (volts and time).

## **Waveform Processing**

**Waveform Functions** - Interpolate-selectable  $\sin(x)/x$  or linear, Average, FFT, integrate, and differentiate.

**Arithmetic Operators** - Add, Subtract, Multiply, Invert.

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

## **Computer Interface**

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

**Hard Copy**

**Formats** - HP ThinkJet, Epson, Postscript, Interleaf, DeskJet, LaserJet, EPS Monochrome, EPS Color, TIFF, PCX, BMP, HPGL.

**Optional Hardcopy Interface** - Centronics and RS-232C.

**Storage**

**Waveforms** - Up to 15 K points.

**Setups** - 10 front-panel setups.

**Power Requirements**

**Line Voltage Range** - 90 to 250 V RMS.

**Line Frequency** - 47 to 63 Hz.

**Power Consumption** - 250 W max.

**Environment and Safety**

**Temperature** - Operating: 0 to +50°C. non-operating: -40 to +75°C.

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

**Altitude** - Operating: 15,000 ft. non-operating: 40,000 ft.

**Electromagnetic Compatibility** - Meets MIL-STD-461C, CE-03, Part 4, Curve # 1, RE-02, Part 7; meets VDE 0871, Category B, FCC rules and regulations, Part 15, Subpart B, Class A.

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

**Physical Characteristics**

<b>Dimensions</b>	<b>mm</b>	<b>in.</b>
Height	193	7.6
with acc. pouch	236	9.3
Width	445	17.5

Depth with front cover	432	17
<b>Weight</b>	<b>kg</b>	<b>lbs.</b>
Net	13.2	29.1
Shipping	23.6	52

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The TDS Series complies with IEEE Standard 488.2-1987, and with Tektronix Standard Codes and Formats.



Tektronix Measurement products are manufactured in ISO registered facilities.



49A-10733-3p88, 06/1997, 09/01/1999

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