Digital Phosphor Oscilloscopes

TDS 3012 * TDS 3014 * TDS 3032 * TDS 3034 * TDS 3052 * TDS 3054

Characteristics

TDS 3000 Series Electrical Characteristics

Bandwidth	100 MHz	300 MHz	500 MHz	100 MHz	300 MHz	500 MHz
Sample Rate on Each Channel	1.25 GS/s	2.5 GS/s	5 GS/s	1.25 GS/s	2.5 GS/s	5 GS/s
Vertical Resolution	9-bits on all models					
Vertical Accuracy	±2% on all models*					
Position Range	± 5 div on all models					
Input Coupling	AC, DC, GND on all models					
Time Base:						
Range (/div)	4 ns - 10 s/div	2 ns - 10 s/div	1 ns - 10 s/div	4 ns - 10 s/div	2 ns - 10 s/div	1 ns - 10 s/div
Accuracy	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm

Display Monitor	Color LCD

* Derated at 0.07%/°C for temperatures above +28°C and below +18°C.

Acquisition Modes

DPO - Captures and displays complex waveforms, random events, and subtle patterns in actual signal behavior. DPOs are able to provide 3 dimensions of signal information, in real-time; amplitude, time, and the distribution of amplitude over time.

Peak Detect - High frequency and random glitch capture. Captures glitches as narrow as 1 ns.

Sample - Sample data only.

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

Average - Waveform data from 2 to 572 (selectable) acquisitions is averaged.

Single Sequence - Use SINGLE SEQUENCE button to capture a single triggered acquisition sequence at a time.

Trigger System

Main Trigger Modes - Auto (supports Roll Mode for 40 ms/div and slower), Normal.

B Trigger - Trigger after time or events.

Trigger After Time Range - 13.2 ns to 50 s.

Trigger After Events Range - 1 to 9,999,999 events.

External Trigger Input (available on TDS 30X2 only) **-** >1 megaohm in parallel with 17 pF; Max input voltage is 150 V RMS.

Trigger Types

Edge - Conventional level-driven trigger. Positive or negative slope on any channel. Coupling selections: DC, noise reject, HF reject, LF reject.

Video - Trigger on all lines or individual line, odd/even or all

fields, or analog HDTV formats (1080i, 1080p, 720p, 480p). See optional TDS 3VID and TDS 3SDI application modules for extended video triggering and measurement features.

Logic - (Standard on TDS 30X4, must purchase TDS 3TRG for TDS 30X2)
PATTERN: Specifies AND, OR, NAND, NOR when true or false for a specific time.
STATE: Any logic state. Triggerable on rising or falling edge, of a clock.

Note: Logic triggers can only be used on combinations of 2 inputs.

Pulse - (Standard on TDS 30X4, must purchase TDS 3TRG for TDS 30X2)
WIDTH (or GLITCH): Trigger on pulse width less than, greater than, equal to, or not equal to a selectable time limit ranging from 39.6 ns to 50s.
RUNT: Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.
SLEW RATE: Trigger on pulse edge rates that are either faster or slower than a set rate. Edges can be rising, falling, or either.

Comm - (must purchase TDS 3TMT) - provides isolated pulse triggering required to perform DS1/DS3 telecommunications mask testing per ANSI T1.102 standard.

Measurement System

Automatic Waveform Measurements - Period, Frequency, +Width, -Width, Rise Time, Fall Time, +Duty Cycle, -Duty Cycle, +Overshoot, -Overshoot, High, Low, Max, Min, Pk-Pk, Amplitude, Mean, Cycle Mean, RMS, Cycle RMS, Burst Width.
Display any four measurements from any combination of waveforms.

Thresholds - Settable in percentage or voltage.

Gating - Measurements can be gated using the screen or vertical cursors.

Waveform Processing

Deskew - Channel to channel deskew ±10 ns may be manually entered for better timing measurements and more accurate math waveforms.

Arithmetic Operators - Add, Subtract, Multiply, Divide.

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

Display Characteristics

Waveform Style - Dots, vectors, and variable persistence.

Graticules - Full, grid, cross-hair, frame, NTSC, PAL, SECAM, vectorscope 100% and 75% color bars (with optional TDS 3VID and TDS 3SDI video application modules).

Format - YT, XY and Gated XYZ (XY with Z-axis blanking available on TDS 30X4 only).

I/O Interface

Hardcopy Port (standard) - Centronics-type parallel.

TDS 3GM Communications Module -
GPIB (IEEE -488.2) Programmability: Full talk/listen modes; Control of all modes, settings, and measurements.
RS-232-C Interface Programmability: Full talk/listen modes; Control of all modes, settings, and measurements. Baud Rate up to 38,400. DB-9 male connector.
Programmer Manual: (071-0381-00).

TDS 3VM Communications Module -
VGA: Monitor output for direct display on large VGA-equipped monitors. DB-15 female connector, 31.6 kHz sync rate, EIA RS-343A compliant.
RS-232-C Interface Programmability: same as TDS 3GM.
Programmer Manual: same as TDS 3GM.

TDS 3EM Communications Module -
Ethernet Port: 10Base-T with RJ-45 connector. Provides local area network printing and programming interface.
RS-232-C Interface programmability: same as TDS 3GM.
Programmer Manual: same as TDS 3GM.

Note: Only one Communication Module may be installed at a time.
All Communication Modules include WaveStar™ Software for oscilloscopes 30-day, full-functioning product demo.

Hard Copy Capability

Graphics File Formats - Interleaf (.img), TIF, PCX (PC Paintbrush), BMP (Microsoft Windows), and Encapsulated Postscript (EPS).

Printer Formats - Bubblejet, DPU-3445, Thinkjet, Deskjet, Laserjet, Epson (9 and 24-pin).

Environmental and Safety

Temperature - +5 to +50° C (operating), -20 to +60° C (nonoperating).

Humidity - 20% to 80% RH below 32° C, derate to 30% RH at 45° C (operating), 5% to 90% RH below 41° C, derate to 30% RH at 60° C (nonoperating).

Altitude - to 3,000 m (operating), 15,000 m (nonoperating).

Electromagnetic Compatibility - Meets or exceeds EN55011 Class A Radiated and Conducted Emissions; EN50082-1; FCC 47 CFR, Part 15, Subpart B, Class A; Australian EMC Framework; Russian GOST EMC regulations.

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

Physical Characteristics

Instrument		
Dimensions	**mm**	**in.**
Width	375.0	14.8
Height	176.0	6.9
Depth	149.0	5.9
Weight	**kg**	**lb.**
Instrument only	3.2	7.0
w/battery	5.2	11.5
Instrument Shipping Package		
Dimensions	**mm**	**in.**
Width	502.0	19.8
Height	375.0	14.8
Depth	369.0	14.5
Rackmount		
Dimensions	**mm**	**in.**
Width	484.0	19.0
Height	178.0	7.0
Depth	152.0	6.0