

TEKTRONIX

DPO3012

The Tektronix DPO3012 is a 100 MHz, 2-channel Digital Phosphor Oscilloscope (DPO) from the DPO3000 Series. Built to simplify the analysis and debugging of complex signals, it delivers a real-time sample rate of 2.5 GS/s on all channels, a generous standard record length of 5 Mpoints, and a 50,000 wfm/s waveform capture rate. Enhanced by Wave Inspector® controls and a 9-inch WVGA widescreen display, this oscilloscope offers comprehensive serial triggering, search capabilities, and robust e*Scope remote viewing.

SPECIFICATIONS

General

Interfaces	USB 2.0 Host (1 front, 1 rear), USB 2.0 Device (USBTMC compliant), LAN (10/100Base-T Ethernet, RJ-45), Video Out (DB-15 SVGA), Auxiliary Output (BNC)
Display	9 in. (229 mm) widescreen color TFT-LCD, 800 × 480 pixels (WVGA)

Physical

Power Supply	100 to 240 V AC ±10% (50/60 Hz), 115 V AC ±10% (400 Hz), < 120 W power consumption
Operating Temperature	0 °C to +50 °C °C
Dimensions (W×H×D)	375 mm × 203.2 mm × 137.2 mm mm
Cooling Clearance	50 mm (2 in.) on the left side and rear of the instrument

Vertical System

Analog Bandwidth	100 MHz
Input Channels	2
Calculated Rise Time (10% to 90%)	3.5 ns
Hardware Bandwidth Limits	20 MHz
Input Coupling	AC, DC
Input Impedance	1 M Ω $\pm$ 1% in parallel with 11.5 pF $\pm$ 2 pF, 50 Ω $\pm$ 1%
Vertical Resolution	8 bits (11 bits with High Resolution mode)
Input Sensitivity Range (1 M Ω)	1 mV/div to 10 V/div
Input Sensitivity Range (50 Ω)	1 mV/div to 1 V/div
Maximum Input Voltage (1 M Ω)	300 V RMS CAT II, with peaks $\leq$ $\pm$ 450 V
Maximum Input Voltage (50 Ω)	5 V RMS, with peaks $\leq$ $\pm$ 20 V
DC Vertical Gain Accuracy	$\pm$ 1.5% for 5 mV/div and above, $\pm$ 2.0% for 2 mV/div, $\pm$ 2.5% for 1 mV/div
Channel-to-Channel Isolation	$\geq$ 100:1 at 100 MHz
Offset Range (1 mV/div to 50 mV/div)	$\pm$ 1 V
Offset Range (50.5 mV/div to 99.5 mV/div)	$\pm$ 0.5 V
Offset Range (100 mV/div to 500 mV/div)	$\pm$ 10 V
Offset Range (1 V/div to 5 V/div)	$\pm$ 100 V
Offset Range (5.05 V/div to 10 V/div)	$\pm$ 50 V

Horizontal System

Timebase Range	2 ns/div to 1000 s/div
Timebase Accuracy	$\pm$ 10 ppm
Channel-to-Channel Deskew Range	$\pm$ 125 ns
Timebase Delay Time Range	-10 divisions to 5000 s

Acquisition System

Maximum Sample Rate (All Channels)	2.5 GS/s
Maximum Record Length	5 Mpoints
Acquisition Modes	Sample, Peak Detect, Average, Envelope, High Resolution, Roll
Peak Detect Mode	Captures high-frequency glitches as narrow as 1.4 ns
Average Mode	From 2 to 512 waveforms
Maximum Waveform Capture Rate	50,000 wfm/s

Trigger System

Trigger Sources	CH1, CH2, Line, External
Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Reject, LF Reject, Noise Reject
Trigger Holdoff Range	20 ns to 8 s
Edge Triggering	Conventional level-driven trigger on any channel (rising or falling slope)
Pulse Width Triggering	Trigger on pulse width > < = or != specified duration (4 ns to 8 s)
Runt Triggering	Trigger on a pulse that crosses one threshold but fails to cross a second threshold
Logic/Pattern Triggering	Trigger when logic pattern of channels goes False or stays True for specified time
Setup and Hold Triggering	Trigger on setup and hold violations between clock and data on analog channels
Rise/Fall Time Triggering	Trigger on pulse edge rates faster or slower than specified (4 ns to 8 s)
Video Triggering	Trigger on all lines, odd, even, or all fields on NTSC, PAL, and SECAM signals
Serial Protocol Triggering Options	I2C, SPI, CAN, LIN, RS-232/422/485/UART (with optional application modules)
Trigger Sensitivity (Internal, DC Coupled)	0.4 div from DC to 50 MHz, increasing to 1 div at rated bandwidth
Trigger Level Range (Internal)	±8 divisions from center of screen
Trigger Level Range (Auxiliary Input)	±8 V
Trigger Frequency Counter Resolution	6 digits
Trigger Frequency Counter Range	15 Hz to 100 MHz

Waveform Measurements and Analysis

Automatic Voltage Measurements	Amplitude, High, Low, Max, Min, Peak-to-Peak, Mean, Cycle Mean, RMS, Cycle RMS, Positive Overshoot, Negative Overshoot
Automatic Time Measurements	Period, Frequency, Rise Time, Fall Time, Positive Width, Negative Width, Duty Cycle, Delay, Phase, Burst Width
Waveform Math Operations	Add, Subtract, Multiply, FFT
FFT Window Types	Hanning, Rectangular, Hamming, Blackman-Harris
Waveform Histograms	Not supported

Display & User Interface

Waveform Display Graticules	8 × 10 divisions
Display Update Persistence Modes	Off, Infinite, Variable (250 ms to 10 s)

Connectivity & Interfaces

External Video Display Output	DB-15 female connector, 1024 × 768
Probe Compensation Output	0 to 2.5 V amplitude, frequency 1 kHz ±10%

Environmental Specifications

Storage Temperature Range	-20 °C to +60 °C
Operating Humidity	High: 40 °C to 50 °C, 10% to 60% RH / Low: 0 °C to 40 °C, 10% to 90% RH
Operating Altitude	Up to 3,000 m (9,843 ft)
Storage Altitude	Up to 12,192 m (40,000 ft)

Physical Characteristics

Form Factor	Benchtop
Security Lock Slot	Kensington-style security slot on rear panel

Standards & Compliance

Safety Standards Certifications	UL61010-1:2004, CAN/CSA-C22.2 No. 61010.1:2004, EN61010-1:2001
Electromagnetic Compatibility (EMC) Directive	2004/108/EC, EN61326-1:2006, EN61326-2-1:2006

Accessories & Configuration Options

Standard Included Probes	P3010 (10X passive probe, one per channel)
Probe Interface	TekVPI® Probe Interface (supports active, differential, and current probes with auto-scaling)

Auxiliary Trigger Input

Auxiliary Input Impedance	1 MΩ ± 1% in parallel with 13 pF ± 2 pF
Auxiliary Max Input Voltage	300 VRMS (CAT II, peaks ≤ ±425 V)

Search and Mark

Search Criteria	Edge, Pulse Width, Runt, Logic, Setup & Hold, Rise/Fall Time, Packet Content
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Wave Inspector

Wave Inspector Controls	Dedicated front-panel controls for Zoom, Pan, Play/Pause, Set/Clear Mark, and Prev/Next Mark
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Measurement System

Measurement Statistics	Mean, Minimum, Maximum, Standard Deviation
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Acquisition Modes

Roll Mode	Active at sweep speeds of 40 ms/div and slower
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Memory & Storage

Nonvolatile Setup Storage	10 internal setups
Reference Waveform Storage	4 internal waveforms

Software

Included Software	OpenChoice Desktop, NI LabVIEW SignalExpress Tektronix Edition LE
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TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

Electronic Design, Debug, Embedded Systems Analysis, Serial Debugging, and Education

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