

TEKTRONIX

DPO2024

The Tektronix DPO2024 is a 200 MHz, 4-channel digital phosphor oscilloscope from the DPO2000 Series, designed to deliver efficient troubleshooting and analysis. Featuring a 1 Mpoint record length on all channels, a 1 GS/s sample rate, and Wave Inspector® navigation controls, it provides robust performance for visualizing and searching signal details. The inclusion of the FilterVu™ variable low-pass filter, a bright 7-inch widescreen display, and optional serial triggering and decode options make the DPO2024 a versatile tool for embedded design and serial debug applications.

SPECIFICATIONS

General

Interfaces	USB 2.0 Host (front panel), USB 2.0 Device (rear panel), LAN (optional via DPO2CONN module), VGA (optional via DPO2CONN module), GPIB (optional via TEK-USB-488)
Display	7 in. (180 mm) widescreen TFT-LCD, 480 × 234 pixels
Real-Time Clock	Yes, user-settable

Physical

Power Supply	100 to 240 V $\pm 10\%$ (50/60 Hz), 115 V $\pm 10\%$ (400 Hz); 80 W maximum
Operating Temperature	0 to +50 °C °C
Dimensions (W×H×D)	377 mm × 180 mm × 134 mm mm
Weight	3.6 kg kg
Kensington Security Slot	Rear-panel security slot connects to standard Kensington-style lock
Cooling Clearance	50 mm (2 in.) on the left side and rear of the instrument

Vertical System - Analog Channels

Number of Channels	4
Analog Bandwidth (-3 dB)	200 MHz
Calculated Rise Time	2.1 ns
Input Coupling	AC, DC, GND
Input Impedance	1 M Ω $\pm$ 2% in parallel with 11.5 pF $\pm$ 2 pF
Input Sensitivity Range	2 mV/div to 5 V/div
Vertical Resolution	8 bits
Maximum Input Voltage	300 Vrms CAT II with peaks $\leq$ ± 450 V
DC Gain Accuracy	$\pm 3\%$ for 10 mV/div to 5 V/div, $\pm 4\%$ for 2 mV/div to 5 mV/div
Offset Range	2 mV/div to 200 mV/div: ± 1 V; >200 mV/div to 5 V/div: ± 25 V
Channel-to-Channel Isolation	$\geq 100:1$ at ≤ 100 MHz, $\geq 30:1$ at > 100 MHz to 200 MHz
Probe Interface	TekVPI® Probe Interface

Horizontal System - Analog Channels

Timebase Range	2.0 ns to 100 s per division
Timebase Delay Time Range	-10 divisions to 5000 s
Channel-to-Channel Deskew Range	± 100 ns
Timebase Accuracy	± 25 ppm
Maximum Duration at Highest Sample Rate	1 ms

Acquisition System

Maximum Real-Time Sample Rate	1.0 GS/s on all channels
Maximum Record Length	1 Mpoint on all channels
Waveform Capture Rate	5,000 wfm/s (maximum)
Sample Mode	Acquires sample values
Peak Detect Mode	Captures glitches down to 3.6 ns width at all sweep speeds
Averaging Mode	Averages 2 to 512 waveforms
Roll Mode	Scrolls waveforms right to left at sweep speeds slower than or equal to 40 ms/div

Trigger System

Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, HF Reject (attenuates >85 kHz), LF Reject (attenuates <65 kHz), Noise Reject (increases threshold)
Trigger Holdoff Range	20 ns to 8 s
Trigger Level Ranges	±8 divisions from screen center
Edge Triggering	Rising, falling, or either slope on any channel
Pulse Width Triggering	Trigger on width of positive or negative pulses that are >, <, =, or ≠ to a specified period of time (20 ns to 8 s)
Runt Triggering	Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again
Logic Triggering	Trigger when any logical pattern of channels goes false or stays true for specified period of time (20 ns to 8 s)
Setup and Hold Triggering	Trigger on violations of both setup time and hold time between clock and data present on any of the input channels
Rise/Fall Time Triggering	Trigger on pulse edge rates that are faster or slower than specified
Video Triggering	Trigger on all lines, specific line numbers, odd, even, or all fields on NTSC, PAL, and SECAM video signals
I2C/SPI Serial Triggering (Optional)	Trigger on packet content of I2C and SPI buses (requires DPO2EMBD module)
CAN/LIN Serial Triggering (Optional)	Trigger on packet content of CAN and LIN buses (requires DPO2AUTO module)
RS-232/422/485/UART Serial Triggering (Optional)	Trigger on packet content of RS-232/422/485/UART buses (requires DPO2COMP module)
Internal Trigger Sensitivity (DC Coupled)	0.4 div from DC to 50 MHz, 0.6 div from 50 MHz to 100 MHz, 0.8 div from 100 MHz to 200 MHz

Waveform Measurements and Math

Cursors	Waveform and Screen cursors
Automatic Measurements	29 automatic measurements
Measurement Statistics	Mean, Min, Max, Standard Deviation
Reference Levels	User-definable in percent or units (10%, 50%, 90% default)
Gating	Isolate measurements using screen, cursors, or full record
Waveform Math Operators	Addition, subtraction, multiplication, FFT
Fast Fourier Transform (FFT)	Spectral magnitude. Windows: Rectangular, Hamming, Hanning, Blackman-Harris

Display Characteristics

Display Type	TFT-LCD Color Display
Display Resolution	480 × 234 pixels (WQVGA)
Display Size	7 in. (180 mm) diagonal
Waveform Styles	Vectors, Dots, Variable Persistence, Infinite Persistence
Format	YT and XY
Graticules	Full, Grid, Crosshair, Frame

Input / Output Ports

USB 2.0 High-Speed Host Port	1x front panel port supporting USB flash drives
USB 2.0 High-Speed Device Port	1x rear panel port supporting USBTMC or direct printing to PictBridge compatible printers
LAN Port (Ethernet)	Optional (via DPO2CONN connectivity module; RJ-45 10/100Base-T)
Video Out Port	Optional (via DPO2CONN connectivity module; DB-15 female connector for external monitors)
GPIO Interface (Optional)	Available via TEK-USB-488 adapter
Probe Compensator Output	Front-panel pins; Amplitude ~5 V into ≥ 1 MΩ load, Frequency 1 kHz

Power Source

Power Source Voltage	100 to 240 V ±10%
Power Source Frequency	45 to 66 Hz (90 to 264 V), 360 to 440 Hz (100 to 132 V)
Power Consumption	80 W maximum

Physical Characteristics

Dimensions (Height)	180 mm (7.1 in.)
Dimensions (Width)	377 mm (14.9 in.)
Dimensions (Depth)	134 mm (5.3 in.)
Weight (Net)	3.6 kg (7.9 lbs.)
Weight (Shipping)	6.2 kg (13.7 lbs.)
Rackmount Configuration Options	RM2000 Rackmount Kit

Environmental and Compliance

Non-operating Temperature	-40 °C to +71 °C (-40 °F to +160 °F)
Operating Humidity	High temperature: 0% to 60% RH at +40 °C to +50 °C; Low temperature: 0% to 90% RH at 0 °C to +40 °C
Operating Altitude	3,000 m (9,843 ft.)
Non-operating Altitude	12,000 m (39,370 ft.)
Electromagnetic Compatibility (EMC) Directive	2004/108/EC, EN61326-1:2006, EN61326-2-1:2006
Safety Certifications	UL61010-1:2004, CAN/CSA-C22.2 No. 61010.1:2004, EN61010-1:2001, IEC61010-1:2001

Vertical System

Hardware Bandwidth Limits	20 MHz
Input Capacitance	11.5 pF ± 2 pF
Vertical Position Range	±5 divisions

Search & Navigation

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

Vibration (Operating)	0.31 gRMS, 5 Hz to 500 Hz, 10 min per axis, 3 axes
Vibration (Non-Operating)	2.46 gRMS, 5 Hz to 500 Hz, 10 min per axis, 3 axes

Display / Interface

User Interface Languages	English, French, German, Italian, Spanish, Portuguese, Simplified Chinese, Traditional Chinese, Korean, Japanese, Russian
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Software

Included Software	OpenChoice® Desktop, NI LabVIEW SignalExpress™ Tektronix Edition LE
Driver Support	IVI-COM, IVI-C, LabVIEW

Storage

Waveform Storage Formats	CSV, TXT, PNG, BMP, TIFF, ISF, SET
Internal Waveform Storage	2 reference waveforms
Internal Setup Storage	10 setups

Performance

FFT Windows	Hanning, Rectangular, Hamming, Blackman-Harris
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Triggering

Trigger Sources	Channel 1, Channel 2, Channel 3, Channel 4, AC Line
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TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

Embedded design, serial debugging, power measurement, automotive electronics, education, and general electronic design

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