

MDO4000 Series Mixed Domain Oscilloscopes

The World's Only Oscilloscope with a Built-in Spectrum Analyzer

Product Fact Sheet



Designed to make your work easier



See the time and frequency domains in a single glance with the world's first and only mixed domain oscilloscope.

Featuring:

- 4 analog channels
 - 500 MHz and 1 GHz models
- 16 digital channels
 - Up to 60.6 ps timing resolution with MagniVu™
- 1 RF channel
 - 3 GHz or 6 GHz frequency range models
 - ≥ 1 GHz ultra-wide capture bandwidth
 - Normal, Average, Max Hold and Min Hold Traces
 - +Peak, -Peak, Average and Sample Detection
 - Spectrogram display
- 20 Mpoint standard record length on all channels
- Over 135 available trigger combinations
- Wave Inspector® to automatically search and easily navigate all waveforms
- 44 automated measurements and FFT analysis
- Front -panel USB host ports for data storage
- Serial bus triggering and analysis options
- Parallel bus triggering and analysis, including multi-channel set-up and hold triggering (included standard)
- 3-year warranty

Features

Benefits

Dedicated RF input	Accurately analyze your RF signals with -60 dBc (typical) dynamic range.
Time-correlated display	See what's happening in your design at any instant with the time-correlated display of your analog, digital and RF signals.
Spectrum Time	Investigate how your RF spectrum is changing over time or with device state by moving Spectrum Time through your acquisition.
Wide-capture bandwidth	See your whole spectrum of interest at any point in time with the ≥ 1 GHz ultra-wide capture bandwidth.
Advanced RF triggers	Quickly capture specific RF events with advanced RF power triggers - pulse width, runt, logic and more.
Automated and manual RF markers	Simply define threshold and excursion values to automatically mark all peaks that meet your criteria. Or mark your own points in the spectrum.
RF vs. time traces	Easily see amplitude, frequency or phase vs. time for your RF signal displayed in the time domain; easily measure RF/system latencies.
Serial and parallel bus triggering and analysis	Quickly debug your parallel bus and/or common serial buses with automated trigger, decode and search.
Built-on the MSO4000B platform	Debug your device fast with comprehensive tools from the award-winning platform – DPO Technology, Wave Inspector®, and more.

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Key specifications and ordering information

Product Fact Sheet

Models	Analog Ch.	Analog Bandwidth	Analog Sample Rate	Digital Ch.	Digital Sample Rate Main / MagniVu™	RF Ch.	RF Frequency Range
MDO4054-3	4	500 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	50 kHz – 3 GHz
MDO4054-6	4	500 MHz	2.5 GS/s	16	500 MS/s / 16.5 GS/s	1	50 kHz – 6 GHz
MDO4104-3	4	1 GHz	5 GS/s	16	500 MS/s / 16.5 GS/s	1	50 kHz – 3 GHz
MDO4104-6	4	1 GHz	5 GS/s	16	500 MS/s / 16.5 GS/s	1	50 kHz – 6 GHz

Standard Probes and Accessories

- Four TPP0500 (500 MHz models) or TPP1000 (1 GHz models) Passive Voltage Probes
- One P6616 16 Channel Logic Probe
- N-to-BNC Adapter (103-0045-00)
- OpenChoice® Desktop and NI LabVIEW SignalExpress™ TE (LE version) Software
- Calibration Certificate, Quick Reference Manual & Documentation on CD
- Front Panel Cover, Power Cord
- 3-year Warranty

Application Modules

Serial Bus Triggering and Protocol Analysis

DPO4AERO	Aerospace (MIL-STD 1553)
DPO4AUDIO	Audio (I ² S, LJ, RJ and TDM)
DPO4AUTO	Automotive (CAN, LIN)
DPO4AUTOMAX	Automotive (CAN, LIN, FlexRay)
DPO4COMP	Computer (RS-232/422/485)
DPO4EMBD	Embedded (I ² C, SPI)
DPO4ENET	Ethernet (10Base-T, 100Base-Tx)
DPO4USB	USB2.0 (LS, FS, HS)

Additional Analysis

MDO4TRIG	Adv. RF Power Level Triggering
DPO4PWR	Power Analysis
DPO4LMT	Limit and Mask Testing
DPO4VID	HDTV & Custom Video Triggering

Recommended Probes and Accessories

RF Accessories

119-4146-00	Near Field Probe Set, 100 kHz - 1 GHz
119-6609-00	Flexible Monopole Antenna
TPA-N-VPI	N-to-TekVPI Adapter

Passive Voltage Probes

TPP0500	500 MHz, 10X TekVPI Low C (3.9 pF)
TPP0502	500 MHz, 2X TekVPI Low C (3.9 pF)
TPP1000	1 GHz, 10X TekVPI Low C (3.9 pF)

Active Voltage Probes

TAP1500	1.5 GHz TekVPI Single-ended
TAP2500	2.5 GHz TekVPI Single-ended
TAP3500	3.5 GHz TekVPI Single-ended

Differential Voltage Probes

TDP0500	500 MHz, ±42V TekVPI
TDP1000	1 GHz, ±42V TekVPI

High Voltage Probes

TPP0850	800 MHz, 50X, 2.5 kV TekVPI
P5205A*1	100 MHz, 50X/500X, 1.3 kV Differential

Current Probes

TCP0030	120 MHz, 30A AC/DC TekVPI
TCP0150	20 MHz, 150A AC/DC TekVPI



Key Applications

System-level Troubleshooting of Wireless-enabled Designs (Zigbee, Bluetooth, WLAN)

Hunting Noise Sources

Spectral Analysis

Benefits

- See your time-correlated analog, digital and RF signals on a single display
- Analyze the time and frequency domains with one instrument.
- Monitor multiple points of your design at one time

Analyze your RF spectrum for noise with the built-in spectrum analyzer

- Identify sources of noise with the time-correlated display of analog, digital and RF signals

- Investigate your RF spectrum with the tools of a general-purpose spectrum analyzer
- See your entire spectrum at once with a ≥ 1 GHz capture bandwidth

*1 Requires TPA-BNC adapter.