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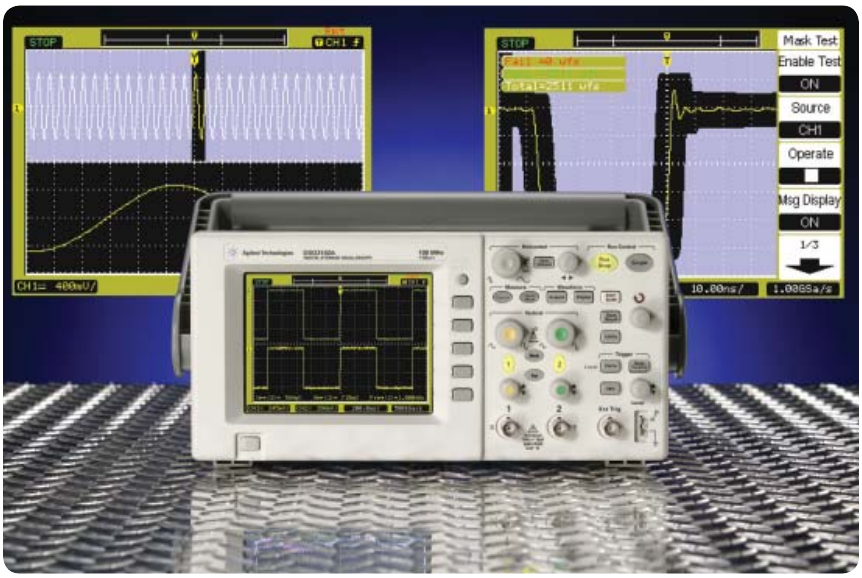
Agilent Technologies
3000 Series Oscilloscopes

Data Sheet

Full-featured oscilloscopes for the smallest budgets

Features:

- 60 to 200 MHz bandwidths
- 1 GSa/s maximum sample rate
- Large 15-cm (5.7-in) color display
- Advanced triggering including edge, pulse width, and line-selectable video
- 4 kpts of waveform memory
- USB host and device connectivity, standard
- 20 automatic measurements plus hardware counter and Measure All
- Four math functions, including FFTs standard
- Mask test standard
- GPIB and RS-232 connectivity and SCPI programming available with N2861A communications module
- Interface localized into 12-languages
- Sequence mode (segmented memory) standard



Get more for your money

Agilent's 3000 Series oscilloscopes give you an affordable way to see what's happening in your designs. Developed with the features you need to make your job easier – including a large LCD color display. Need flexibility? Choose from four models with bandwidths ranging from 60-MHz to 200-MHz. To give you the debugging power you need, each oscilloscope comes standard with advanced features including sophisticated triggering, automatic measurements, digital filtering, sequence mode acquisition, math functions (including FFTs), stored setups and waveforms, mask testing and much more.

Agilent Technologies

See your signals more clearly

All 3000 Series models have color displays to allow you to quickly identify your signals, and the large size – 15-cm (5.7-in) with 320 x 240 resolution – makes it easier for you to see more information.

The 3000 Series' delayed sweep also lets you see more details in your design. You can view a long record, then window in on the section of the signal of interest.

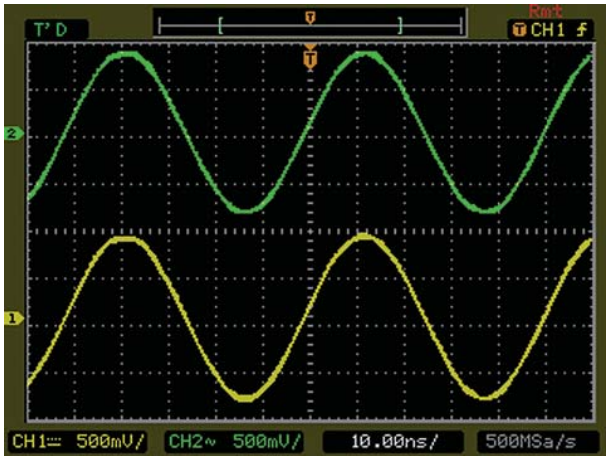


Figure 1. All 3000 Series oscilloscopes come standard with a color display and cost 20% less than competitive products. The color display allows you to quickly and easily identify your signals and view signal activity.

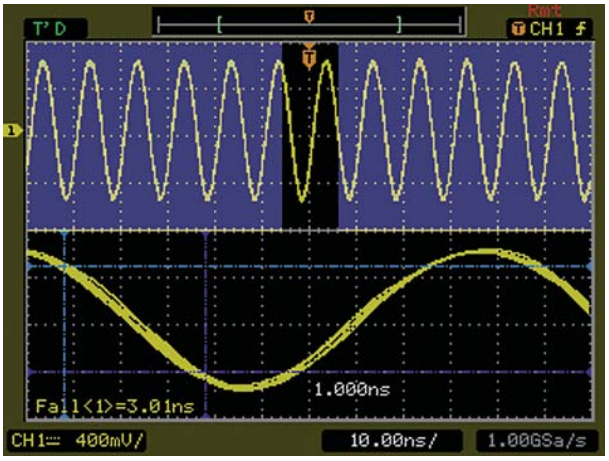


Figure 2. Want to see the big picture but still get all the details? Use the delayed sweep mode to zoom in on a particular area of interest on your signal while still viewing the entire captured waveform.

The features you need

All 3000 Series scopes include the standard features you need to get your job done easier and faster:

Autoscale – Autoscale lets you quickly display any active signals, automatically setting the vertical, horizontal and trigger controls for the best signal display.

Easy connectivity – The 3000 Series oscilloscopes come standard with an N2865A USB host module for saving setups, waveforms and displays to a memory stick. This port is also compatible with many USB printers.

This scope series also offers Scope Connect software, which provides PC connectivity for data gathering, pass/fail testing, and analysis via the 3000 Series' USB device port.
GPIB and RS-232 interfaces are also available with the N2861A connectivity module.

Advanced triggering – Includes edge, pulse width and line-selectable video, to help you isolate the signals you want to see.

20 automatic measurements – To save time, you can make 18 different measurements simultaneously.

Waveform math with FFTs – Analysis functions include addition, subtraction, multiplication, and Fast Fourier Transforms with four windows (Hanning, Hamming, Blackman-Harris and rectangular).

Auto calibration – Automatically calibrates the oscilloscope's vertical and horizontal systems.

Multi-language interface – Operate the oscilloscope in the language of your choice. Language support includes simplified and traditional Chinese, Japanese, Korean, French, German, Italian, Portuguese, Russian, Spanish and English.

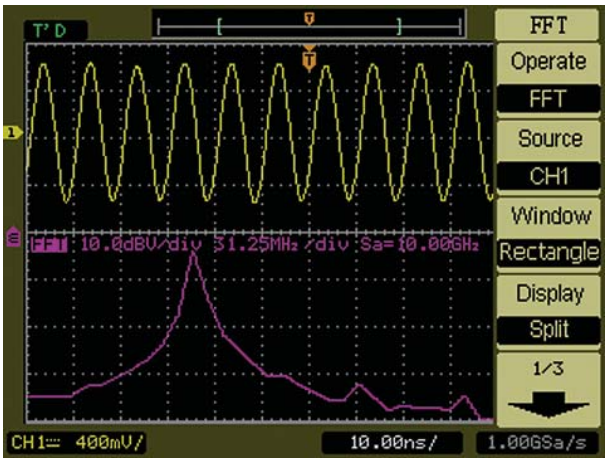


Figure 3. The 3000 Series comes equipped with a broad set of measurement and math features, including FFTs at no additional cost. You can choose between 4 FFT windows for your specific measurement needs: Hanning, Hamming, Blackman-Harris, and rectangular.



Figure 4. Standard USB host and device ports allow you to send your measurements directly to your PC or save them to Flash memory sticks.

The features you need (continued)

Digital filtering – Digital filtering selections include low pass, high pass, band pass, and band reject filters. Limits are selectable between 1-kHz and the bandwidth of your oscilloscope model.

Ten waveform and setup memories – Store waveforms or commonly used setups for future reference and use.

Mask testing – Automatically compares incoming signals with a pre-defined mask, clearly highlighting signal changes.

Sequence mode (segmented memory) – Frame an area of interest on your signal for acquisition and record up to 1,000 frames for playback.

Pulse triggering – Lets you trigger on pulse events.

3-year warranty – All 3000 Series scopes include a full 3-year warranty.

Easy to set up and use – Dedicated, color-coded knobs for vertical sensitivity, offset, and time base settings make it easy to set up and use. Front-panel keys for triggering functions are also grouped to make your job easier.

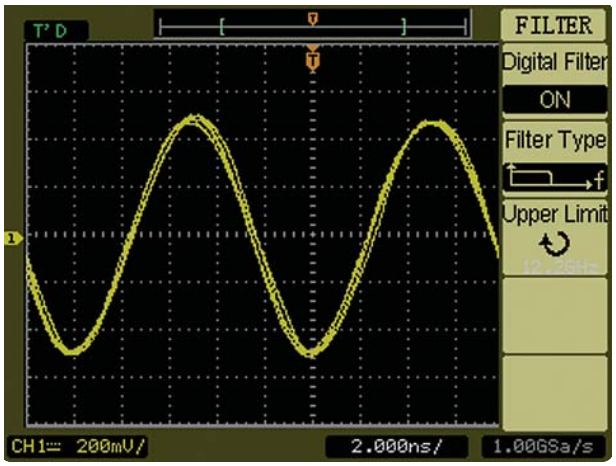


Figure 5. The digital filter capability enhances your ability to examine important signal components by filtering out undesired spectral components such as various types of noise.

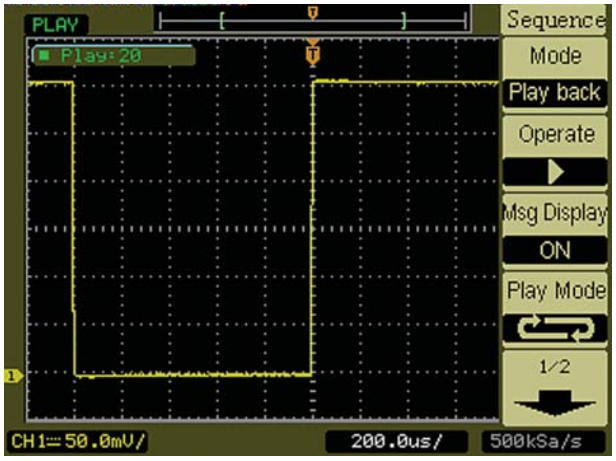


Figure 6. Use the sequence mode to frame an area of interest on your signal for acquisition; then, use the playback feature to quickly play through the sequence and easily spot glitches or other signal anomalies.

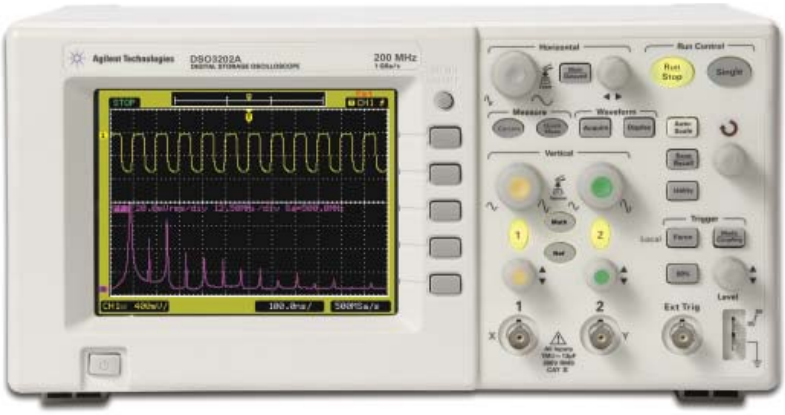


Figure 7. With dedicated, color-coded knobs and front-panel keys grouped by function, it is easy to find and use all of the features of the scope – from the most basic to the more advanced functions.

Performance characteristics

Performance characteristics

Bandwidth*	DSO3062A: 60 MHz DSO3102A: 100 MHz DSO3152A: 150 MHz DSO3202A: 200 MHz
Real time sample rate	
2 channels interleaved	1 GSa/s
Each channel	500 MSa/s
Equivalent time sample rate	50 GSa/s
Channels	2
Display	Color, 320 x 240 1/4 VGA LCD; H: 88 mm, W: 116 mm
Memory	4 kpts per channel; 1.200 pts in roll mode
Vertical resolution	8 bits
Vertical sensitivity	2 mV/div to 5 V/div (5ns/div to 50 s/div in DSO3062A)
DC gain accuracy	± 3% for 10 mV/div to 5 V/div; ± 4% for 2 mV/div to 5 mV/div
Vertical zoom	Vertical expand
Maximum input voltage	300 Vrms CAT II; derated at 20 dB/decade above 100 kHz to 13 V p-p AC at 3 MHz and above
Time base range	2 ns/div to 50 s/div (5 ns/div to 50 s/div in DSO3062A)
BW limit	~ 20 MHz
Input coupling	DC, AC, Ground
Input impedance	1 MΩ: ≈ 13 pF
Time base accuracy	100 ppm

* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and ±10 °C from firmware calibration temperature.

Performance characteristics (continued)

Performance characteristics (continued)

Acquisition modes	
Normal	Displays sampled data directly to the screen in real time
Averaging	Selectable from 2, 4, 8, 16, 32, 64, 128 or 256
Peak detect	Captures high-frequency glitches as narrow as 10 ns when viewing signals at slower sweep speeds (slower than 5 µs/div)
Sweep modes	Auto, Normal, Single
Trigger coupling	AC, DC, LF reject, HF reject
Trigger modes	
Force	Triggers immediately when front-panel button is pushed
Edge	Triggers on the positive or negative slope on any channel
Video	Triggers on one of three standard television waveforms: NTSC, PAL, SECAM
Pulse triggering	Triggers on a pulse width greater than, equal to, or less than a specified time limit, with time limits ranging from 20 ns to 10 s
Trigger source	Ch 1, 2, Ext, Ext/5, Line (edge mode only)
Cursors	
Modes	Manual, auto, track
Type	Time and voltage
Measurements	ΔT, ΔV, frequency
Automatic measurements	20 plus 5-digit hardware counter
Voltage	Peak-to-peak, maximum, minimum, average, amplitude, top, base, Vrms, overshoot, preshoot
Time	Frequency, period, +width, –width, +duty cycle, –duty cycle, rise time, fall time, delay.
Math functions	Add, subtract, multiply, FFT
FFT	
Window modes	Hanning, Hamming, Blackman-Harris, rectangular
Sample size	1024 points
Autoscale	Single button automatic setup of all channels
Display	1/4 VGA (320 x 240), passive color LCD with adjustable brightness
Interpolation	Sin(x)/x
Display types	Dots and vectors
Persistence	Off, infinite
Format	YT and XY

Performance characteristics (continued)

I/O

Standard ports	USB device port (Requires Scope Connect software for use) N2865A DSO3000 Series USB host module
Optional ports	GPIB, RS-232 w/N2861A Communication Module
Maximum data transfer rates	GPIB: 500 kbytes/sec
Tested Printers	
HP Deskjets	6940, 6988
HP LaserJets	3050, 3055
HP OfficeJet All In One	5610, J5780
HO OfficeJet Pro	K5400

General characteristics

Physical size	30 cm wide x 15 cm high x 29 cm deep (without handle) 34.6 cm wide x 18.2 cm high x 29 cm deep (with handle)
Weight	Net: 4.8 kgs (10.5 lbs) Shipping: 7 kgs (15 lbs)

Power requirements

Line voltage range	100-240 VAC, CAT II, automatic selection
Line frequency	47 Hz to 440 Hz
Power usage	50 VA

Environmental characteristics

Ambient temperature	Operating 0 °C to +55 °C; non-operating –40 °C to +70 °C
Humidity	Operating 95% RH at 40 °C for 24 hr; non-operating 90% RH at 65 °C for 24 hr
Altitude	Operating to 4,570 m (15,000 ft); non-operating to 15,244 m (50,000 ft)
Vibration	Agilent class B1
Shock	Agilent class B1
Pollution degree2	Normally only dry non-conductive pollution occurs. Occasionally a temporary conductivity caused by condensation must be expected.

Ordering information

Model number	Description
DSO3062A	60 MHz 2-ch DSO
DSO3102A	100 MHz 2-ch DSO
DSO3152A	150 MHz 2-ch DSO
DSO3202A	200 MHz 2-ch DSO

Accessories included

Quick Start manual, CD-ROM with User's Guide (French, German, Japanese, Korean, Russian, Simplified Chinese, and English) and Programmer's Manual, power cord, accessory pouch, two passive probes, Scope Connect software

Optional accessories

	Description
N2861A (communication module)	Provides GPIB and RS-232 connectivity and pass/fail output for automatic testing.
N2862A	150 MHz passive probe (standard with the DSO3062A, DSO3102A, and DSO3152A oscilloscopes.)
N2863A	300 MHz passive probe (standare with the DSO3201A oscilloscope.)
N2864A	Rack mount kit for the DSO3000 series oscilloscope.)

Warranty options

All models include a standard 3-year warranty. Contact your local sales office for prices of extended options:

Ordering information (continued)

Passive probes

Product number	Description
N2862A	10:1, 150 MHz passive probe (shipped with DSO3062A, DSO3102A, DSO3152A)
N2863A	10:1, 300 MHz passive probe (shipped with DSO3202A)
10070C	1:1, 20MHz passive probe

Current probes

Product number	Description
N2774A	50 MHz current probe, AC/DC
N2775A	Power supply for N2774A
1146A	100 kHz current probe, AC/DC

High-voltage probes

Product number	Description
10076A	100:1, 4 kV, 250 MHz high-voltage probe
N2771A	1000:1, 15 kV, 50 MHz high-voltage probe

Differential probes

Product number	Description
1141A	200 MHz differential probe. Requires 1142A power supply
N2772A	600 V CAT III, 20 MHz differential probe.

Cables

Product number	Description
10833A	GPIB cable, 1 m long

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