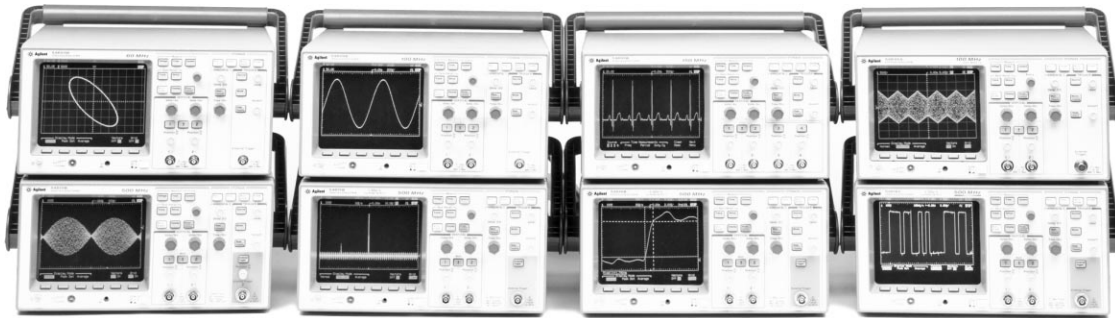




# Agilent 54600-Series Oscilloscopes

## Data Sheet

- 60/100/150/500 MHz bandwidth models with 2 or 4 channels
- Easy-to-use analog front panel
- Fast, responsive display
- Automatic measurements
- Pretrigger viewing, trace storage
- Optional remote control/hard copy



### Analog feel and digital power for precise, accurate troubleshooting at an affordable price

With many models to choose from, you will be able to pick the oscilloscope that best fits your measurement and troubleshooting needs while meeting your budget.

### Displays you can trust

Agilent Technologies 54600-series oscilloscopes feature real-time vector displays that give you a clear and accurate picture of your waveforms. Like analog oscilloscope displays, these enhanced displays give you waveform slew rate information at a glance, with brighter traces representing more slowly changing waveforms and dimmer traces representing more rapidly changing waveforms.

The multiprocessor architecture of Agilent 54600-series oscilloscopes permits a display update rate of up to 3.0 million points per second. This fast display update means the oscilloscope screen reflects changes in the waveform instantaneously, giving you the display responsiveness you need to make adjustments quickly and see complex waveforms accurately.

### Powerful digital features

The digital architecture of Agilent 54600-series oscilloscopes gives you a multitude of features that help you get your job done easier and faster:

- Pretrigger viewing capability lets you view events that you'd miss with an analog scope. This feature lets you see what happened before the trigger event, so you can troubleshoot more effectively.
- Autoscale frees you from resetting the scope every time you move the probe from test point to test point. You simply hit the autoscale button and it sets voltage, time and trigger parameters for you.
- With autostore, the waveform displays at full brightness while all previously acquired waveforms remain on the scope's screen at half brightness. You see a history of waveform activity while simultaneously viewing the live waveform.
- Automatic measurements of voltage, frequency and time, plus user-defined cursor measurements, make waveform characterization fast and easy.
- With peak detect, you won't have to worry about missing narrow glitches.



**Agilent Technologies**

Innovating the HP Way

The Agilent 54600 series includes eight models designed to meet your needs and your budget:

#### **54600B 100 MHz oscilloscope**

With 100 MHz bandwidth, two input channels, and sweep speeds from 2 ns/div to 5 ns/div, the 54600B is ideal for benchtop troubleshooting, production test, field service, and education—or anywhere else you need a dependable scope with solid performance.

#### **54645A MegaZoom oscilloscope**

The 54645A is a dual-channel 100 MHz oscilloscope with 200 MSa/s and a full 1 MB of memory behind each of its channels. Through the application of MegaZoom technology, accessing this deep-memory is as easy as turning a knob—pan and zoom through the deep captured waveform to search for other troubleshooting clues.

#### **54602B 4 (2 + 2)-channel oscilloscope**

When you need more than 100 MHz of bandwidth, take a closer look at the 54602B scope. You get the same capabilities as the 54600B but with the added advantage of a 150 MHz bandwidth, 4 (2+2) channels, and 1 mV/div sensitivity.

#### **54603B 60 MHz oscilloscope**

The 54603B was designed with the tight budgets of colleges and universities in mind. Students can use the 60 MHz, 2-channel 54603B to understand circuit operation and learn standard measurement techniques on the same type of equipment they are likely to use when they graduate.

#### **54610B 500 MHz oscilloscope**

This lowest-cost, 2-channel 500 MHz scope offers a viewable external trigger and horizontal accuracy of 0.001%. The 54610B capabilities are well-suited for production test applications as well as general purpose troubleshooting.

#### **54615B 1 GSa/s oscilloscope**

With the 54615B you can capture narrow glitches and subtle details of your signal. This 2-channel scope combines 500 MHz bandwidth, 1 GSa/s sample rate and 1 nanosecond peak detection on both channels. The 54615B peak detection allows the scope to maintain the 1 GSa/s sample rate at all sweep speeds. A horizontal accuracy of 0.005% means you can make critical timing measurements with confidence.

#### **54616B/C 2 GSa/s oscilloscope**

The top-of-the-line 54616B offers the same benefits as the 54615B but with twice the sample rate—2 GSa/s sampling rate, 500 MHz bandwidth, and 1 nanosecond peak detection. Plus, if you prefer a color display for waveform viewing, the 54616C color version is available.

#### **Expandable features to meet your changing needs**

The Agilent 54600-series oscilloscopes can be easily and inexpensively upgraded with add-on modules and software to provide advanced capabilities:

- Interface modules give you remote control and hard-copy output to RS-232, GPIB, and parallel printers and plotters.
- Measurement Storage modules offer interfacing and printing plus advanced features like FFT, mask testing, and additional memory.
- Agilent BenchLink XL 54600 free software captures screen images, gathers waveform data, and stores instrument setups, all from the familiar environment of MS Excel or Word. Ships free with each module.
- Optional Agilent BenchLink Scope is a stand-alone software package for bringing waveform images and points into your PC. Use it when you need Windows 3.1 compatibility, don't have Excel or Word, or need to access trace memory from your PC.

#### **Enhanced TV/video trigger**

With Option 005 you gain the ability to trigger and perform highly detailed measurements on the video components of your system. For more information see Agilent publication number 5968-2611. Not available on the 54600B, 54603B, or 54645D scopes.

## Technical Specifications

	54603B	54600B	54645A	54602B	54610B	54615B/16B/16C
<b>Bandwidth</b>						
CH 1 and 2 ac coupled	dc-60 MHz 10 Hz-60 MHz	dc-100 MHz 10 Hz-100 MHz	dc-100 MHz†† 1.5 Hz-100 MHz††	dc-150 MHz* 10 Hz-150 MHz*	dc-500 MHz 10 Hz-500 MHz	dc-500 MHz 10 Hz-500 MHz
CH 3 and 4	NA	NA	NA	dc-250 MHz	NA	NA
<b>Single shot bandwidth</b>	dc-2 MHz	dc-2 MHz	dc-50 MHz	dc-2 MHz	dc-2 MHz	54615B 250 MHz 54616B/C 500 MHz
<b>Number of channels</b>	2	2	2	4 (2+2)	2	2
<b>Sensitivity</b>						
CH 1 and 2	2 mV/div to 5 V/div	2 mV/div to 5 V/div	1 mV/div to 5 V/div	1 mV/div to 5 V/div	2 mV/div to 5 V/div	2 mV/div to 5 V/div
CH 3 and 4	NA	NA	NA	0.1 and 0.5 V/div	NA	NA
<b>dc gain accuracy</b>	± 2%	± 1.5%	± 1.5%	± 1.5%	± 2%	± 2%
<b>Rise time (calculated)</b>						
CH 1 and 2	<5.83 ns	<3.5 ns	<3.5 ns	<2.33 ns	<700 ps	<700 ps
CH 3 and 4	NA	NA	NA	<1.4 ns	NA	NA
<b>Input impedance</b>	1 MΩ, ~ 13 pF	1 MΩ, ~ 18 pF	1 MΩ, ~ 13 pF	1 MΩ, ~ 13 pF	1 MΩ, ~ 9 pF or 50 Ω selectable	1 MΩ, ~ 9 pF or 50 Ω selectable
<b>Input coupling</b>						
CH 1 and 2	dc, ac or ground	dc, ac or ground	dc, ac or ground	dc, ac or ground	dc, ac or ground	dc, ac or ground
CH 3 and 4	NA	NA	NA	dc or ground	NA	NA
<b>Maximum input (dc + peak ac)</b>	400 V	400 V	400 V	400 V	250 V or 5 Vrms in 50 Ω mode	250 V or 5 Vrms in 50 Ω mode
<b>Timebase range (main and delayed)</b>	5 s/div to 5 ns/div	5 s/div to 2 ns/div	5 s/div to 2 ns/div	5 s/div to 2 ns/div	5 s/div to 1 ns/div	5 s/div to 1 ns/div
<b>Trigger sources</b>	CH 1, 2, line, or ext.	CH 1, 2, line, or ext.	CH 1, 2, line, or ext.	CH 1, 2, 3, 4, line	CH 1, 2, line, or ext.	CH 1, 2, line, or ext.
<b>Horizontal accuracy</b>	± 0.01%	± 0.01%	± 0.01%	± 0.01%	± 0.01%	± 0.005%
<b>Horizontal resolution</b>	100 ps	100 ps	40 ps	100 ps	100 ps	20 ps
<b>Trigger sensitivity</b>						
dc to 25 MHz	0.35 div or 3.5 mV	0.35 div or 3.5 mV	0.35 div or 3.5 mV	0.35 div or 3.5 mV	0.35 div or 3.5 mV	0.5 div or 5.0 mV***
25 MHz to max. bandwidth	1 div or 10 mV	1 div or 10 mV	1 div or 10 mV	1 div or 2 mV**	1 div or 10 mV†	1 div or 10 mV†
<b>Maximum sample rate</b>						
single shot	20 MSa/s	20 MSa/s	200 MSa/s	20 MSa/s	20 MSa/s	54615 1 GSa/s 54616 2 GSa/s
repetitive	10 GSa/s	10 GSa/s	>10 GSa/s	10 GSa/s	10 GSa/s	>10 GSa/s
<b>Record length</b>	4,000 points 2,000 points	4,000 points 2,000 points	1M points 1M points	4,000 points 2,000 points	4,000 points 2,000 points	5,000 points 5,000 points
<b>Max. display update rate</b>	1,500,000 points/sec	1,500,000 points/sec	3,000,000 points/sec	1,500,000 points/sec	1,500,000 points/sec	500,000 points/sec
<b>Resolution</b>	8 bits					
<b>Power</b>	Voltage: 100-240 Vac, 45 to 440 Hz, 220 VA maximum					
<b>Net weight</b>	Approx. 6.2 kg (14 lbs)					
<b>Size (excl. handle)</b>	172 mm H x 322 mm W x 317 mm D (6.8 x 12.7 x 12.5 in)					
<b>Warranty</b>	3 years					

\* Maximum bandwidth on CH 1 and 2 is 100 MHz at 1, 2, and 5 mV/div.

\*\* 64602B, for ranges 1, 2, and 5 mV/div, sensitivity between 25 MHz and 100 MHz on CH 1 and 2 is 2 div or 4 mV.

\*\*\* Trigger sensitivity from dc to 100 MHz.

† Trigger sensitivity from 100 MHz to max. bandwidth.

†† Maximum bandwidth on CH 1 and 2 is 75 MHz at 1, 2 and 5 mV/div.

**Vertical System (Agilent 54600B, 54646B, 54602B, 54603B)**

Bandwidth Limit	~ 20 MHz
Inversion	CH 1 and CH 2
CMRR	~ 20 dB at 50 MHz
Dynamic Range	± 8 div from center screen
Input R and C	1 MΩ, ~ 13 pf
Maximum Input	400 V (dc + peak ac)

**Math Functions** CH 1 + or – CH 2

**Cursor Accuracy** <sup>[1][2]</sup>

Single Cursor	Vert. Acc. ± 1.2% of full scale, ± 0.5% of position value
Dual Cursor	Vert. Acc. ± 0.4% of full scale

**Vertical System (Agilent 54610B, 54615B, 54616B/C)**

Bandwidth Limit	~ 30 MHz
Inversion	CH 1 and CH 2
CMRR	~ 20dB at 50 MHz
Dynamic Range	± 12 div from center screen
Input R and C	1 MΩ, ~ 9 pf or 50Ω selectable
Maximum Input	250 V (dc + peak ac) or 5 Vrms in 50Ω mode
50Ω Protection	Protects 50Ω load from excessive voltage
Time Skew	Adjustable over a range of ±25ns to remove effects of cabling
Probe Sense	Automatic readout of 1X, 10X, 20X, 50X and 100X probes

**Math Functions** CH 1 + or – CH 2

**Cursor Accuracy** <sup>[1][2]</sup>

Single Cursor	Vert. Acc. ± 1.2% of full scale, ± 0.5% of position value
Dual Cursor	Vert. Acc. ± 0.4% of full scale

**Horizontal System**

<b>Cursor Accuracy</b> ( $\Delta t$ and $1/\Delta t$ ) <sup>[3]</sup>	± 0.01% ± 0.2% of full scale ± 200 ps
<b>Delay Jitter</b>	10 ppm ppm (54615B, 54616B/C)
<b>Pretrigger Delay</b> (Negative time)	≥ 10 div
<b>Posttrigger Delay</b> (Trigger to start of sweep)	at least 2,560 div or 50 ms. Not to exceed 100 s.

**Delayed Sweep**

<b>Main Sweep</b>	<b>Delayed Sweep</b>
5 s/div to 10 ms/div	up to 200X main
5 ms/div and faster	up to 2 ns/div
54610B, 15B/16B/16C	up to 1ns/div

**Trigger System**

<b>Coupling</b>	ac, dc, LF reject, HF reject, and noise reject. LF and HF: -3db at ~ 50 kHz
<b>Modes</b> 54645A Glitch triggering	Auto, Autolevel, Normal, Single, and TV Minimum width 8 ns, Operators: <, >, or range
<b>TV Triggering</b>	TV line and field. 0.5 div of composite sync for stable display (Ch 1 and Ch 2)

**TV Functions**

Line Counting	Delay time calibrated in NTSC and PAL line numbers
All Field Trigger (both fields selected, 54602B and 54610B)	Oscilloscope triggers on the vertical sync pulse in both fields, allowing use with noninterlaced video.
<b>Holdoff</b>	Adjustable from 200 ns to ~ 13 s

**External Trigger (54600B, 54603B, 54645A)**

<b>Range Sensitivity</b>	±18V dc to 25 MHz: < 50mV 25 MHz to 100 MHz: < 100mV
<b>Coupling</b>	dc, HF reject and noise reject
<b>Input R and C</b>	1MΩ, ~ 13pf
<b>Maximum Input</b>	400 V (dc + peak ac)

**External Trigger (54610B, 54615B, 54616B/C)**

<b>Range Sensitivity</b>	±18V (54610B) ± 2 V (54615B, 54616B/C) dc to 100 MHz: < 75mV 100 MHz to 500 MHz: < 150mV
<b>Coupling</b>	dc and ground
<b>Input R and C</b>	1MΩ, ~ 12pf or 50Ω selectable
<b>Maximum Input</b>	250 V (dc + peak ac) or 5 Vrms in 50Ω mode
<b>Trigger View</b> (54610B only)	External trigger is viewable. Bandwidth is > 350MHz (not available on 54615B)

**X-Y Operation**

<b>Z-Blanking</b>	TTL high blanks trace (not available on 54615B, 54616B/C)
<b>Bandwidth</b>	X and Y same as vertical system
<b>Phase Difference</b>	± 3 degrees at 100 kHz ± 3 degrees at 10 MHz (54615B, 54616B/C)

[1] Temperature ± 10°C from calibration

[2] Use full scale at 80mV for 2mV/div and 5 mV/div ranges

[3] Use full scale of 50 ns for 2 ns/div

## Display System

<b>Display</b>	7-inch Raster CRT
<b>Resolution</b>	255 vertical by 500 horizontal points
<b>Controls</b>	Front-panel intensity control
<b>Graticule</b>	8 X 10 grid or frame
<b>Autostore</b>	Autostore saves previous sweeps in half bright display and the most recent sweep in full bright display.
<b>Display (54616C)</b>	5.8 inch Active Matrix Color LCD Display

## Acquisition System

<b>Simultaneous Channels</b>	
54600B/54610B, 54615B, 54616B	Channels 1 and 2
54602B	Channels 1 and 2 or 3 and 4
<b>Record Length</b>	4,000 points Vectors off 2,000 points Vectors on and/or single shot
54615B, 54616B/C 54645A	5,000 points 1 million points
<b>Max Update Rate</b>	Vectors off: 1,500,000 points/sec Vectors on: 60 full screens/sec, independent of number of waveforms being displayed
54615B, 54616B/C 54645A	500,000 points/sec 3,000,000 points/sec
<b>Usable Single-Shot Bandwidth</b>	2 MHz, single channel 1 MHz, dual channel
54615B 54616B/C 54645A	250 MHz 500 MHz 50 MHz
<b>Peak Detect</b>	50 ns glitch capture (100 ns dual channel) at sweep speeds of 50 $\mu$ s/div and greater
54615B, 54616B/C 54645A	1 ns glitch capture 5 ns
<b>Average</b>	Number of averages selectable at 8, 64, 256

## Advanced Functions

<b>Automatic Measurements</b>	Measurements are continuously updated
Voltage	Vavg, Vrms, Vpp, Vtop, Vbase, Vmin, and Vmax
Time	Frequency, Period, + Width, - Width, Duty Cycle, Rise Time, and Fall Time
Cursors	Manually or automatically placed
<b>Setup Functions</b>	
Autoscale	Sets the vertical and horizontal deflection and the trigger level
Save/Recall	10 front-panel setups
Trace Memory	Two volatile pixel memories

## General

### Power Line Requirements

Line Voltage Range	100 Vac to 240 Vac
Line Voltage Selection	Automatic
Line Frequency	45 Hz to 440 Hz
Max Power	220 VA
Consumption	300 VA (54615B, 54616B/C)
<b>Environmental Characteristics</b>	The instrument meets the requirements of MIL-T-28800D for Type III, Class 3, Style D equipment as described below.

### Ambient Temperature

Operating	-10°C to +55°C
Nonoperating	-51°C to + 71°C

### Humidity <sup>(1)</sup>

Operating	95% RH at 40°C for 24 Hrs
Nonoperating	90% RH at 65°C for 24 Hrs

### Altitude

Operating	to 4,500 m (15,000 ft)
Nonoperating	to 15,000 m (50,000 ft)

### EMI (Commercial)

### EMI (MIL-T-28800D)

CE01, CE03	Full limits
CS01, CS02, CS06	Full limits
RE01	15 dB relaxation to 20 kHz; exceptioned from 20 kHz to 50 kHz
RE02 (With Opt 002) (Without Opt 002)	Full limits of class A1c and A1f 10 dB relaxation from 14 kHz to 100 kHz
RS02	Exceptioned
RS03 (With Opt 001)	Slight trace shift from 80 MHz to 200 MHz

### Vibration

Operating: 15 minutes along each of the 3 major axes; 0.025 inch p-p displacement, 10 Hz to 55 Hz in one-minute cycles. Held for 10 minutes at 55 Hz (4 g at 55 Hz).

### Shock

Operating: 30 g,  $\frac{1}{2}$  sine, 11 ms duration, 3 shocks per axis along major axis. Total of 18 shocks

### Size (excluding handle)

Height: 172 mm (6.8 in)  
Width: 322 mm (12.7 in)  
Depth: 317 mm (12.5 in)

### Weight

6.2 kg (14 lbs)

### Safety

CSA Certification,  
IEC 348  
UL 1244 listed

### Warranty

3 years

[1] Tested to Agilent Environmental Specification Section 758 for Class B-1 products

## Optional Add-on Modules

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### Agilent 54650A GPIB Interface Module

Description	Full GPIB remote control Direct printing to GPIB printers and plotters Converts scope's 2 trace memories to non-volatile memory IEEE-488.2 compatible
Printer Support	HP ThinkJet, HP QuietJet, HP PaintJet, HP LaserJet; HP-GL compatible plotters

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### Agilent 54652B RS-232 Parallel Interface Module

Description	Full RS-232 remote control Direct printing to RS-232 and parallel printers Converts scope's 2 trace memories to non-volatile memory
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#### RS-232 Specifications

Connector Type	9 pin (m) DTE Port
Cable	34398A (provided)
Protocols	X0n/Xoff, hardwire
Data Bits	8
Parity	None
Baud Rates	1200, 2400, 9600, 19200
Printer Support	HP ThinkJet, HP QuietJet, HP PaintJet, HP LaserJet; HP-GL compatible plotters

#### Parallel Specifications

Connector Type	25 pin (f)
Cable	C2950A
Printer Support	Epson FX-80 or HP PCL compatible printers

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### Agilent 54657A (GPIB) and 54659B (RS-232)

#### Measurement Storage Modules

These modules incorporate the relevant GPIB or RS-232 control and printing capabilities specified above, as well as the following features.

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#### Waveform Math Functions

Function 1	Addition, subtraction, and multiplication
Function 2	Differentiation, integration, and FFT
<b>FFT</b>	
Windows	Exponential, flat top, Hanning and rectangular
Samples	1024 points

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#### Trace Memory

Memories 1 – 3  
Memories 4 – 100

up to 100 nonvolatile memories  
High speed storage without compression.  
Storage with compression. Storage time is approximately 7 seconds. Number of traces that can be stored is a function of complexity, with the minimum being 4 highly complex traces and the maximum being 96.

#### Memory Labeling

An onscreen text editor is provided for creating labels up to 20 characters. Each label contains the date and time it was saved.

#### Real Time Clock

24-hour format with battery back-up. Can be set from front panel.

#### Unattended Waveform Monitoring

Testing Method Comparison to waveform mask.

Number of Masks 2

Mask Generation and Operation

Automask, controlled from the front panel, generates mask from displayed waveform with selectable tolerance. Mask editor function allows pixel-by-pixel editing and line drawing. Smoothing function performs a running average of 3 pixels.

#### Action on Failure

Save failed trace to memory with date and time of the failure

Print failed trace with date and time of the failure

Count the failure and maintain pass/fail statistics while continuing the test

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## Specifications for Agilent 54600-series Scope Probes

Probe Model Number	Bandwidth	Division Ratio	Approx. length	Input R	Approx. Input C	Rise-time	Max input dc + peak ac	Scope Compatibility
10070B	20 MHz	1:1	1.5m	1 M $\Omega$	70 pF	<17.5 ns	400 V	54600 series
10071B	150 MHz	10:1	1.5m	10 M $\Omega$	15 pF	<2.33 ns	500 V	54600/02/03/45B
10073B	500 MHz	1:1	1.5m	2.2 M $\Omega$	12 pF	<0.7 ns	500 V	54610/15/16B
10074B	150 MHz	10:1	1.5m	10 M $\Omega$	12 pF	<2.33 ns	500 V	54645A
10442B	1 GHz	10:1	2.0m	500 $\Omega$	1.2 pF	<0.35 ns	10 V	scopes with 50 $\Omega$ inputs

### Probe Accessories

10072A	<b>SMT Probe tips for 1007X probes</b> This accessory kit contains 2 dual-lead adapters and 8 IC clips, so connecting to ICs and standard board headers is easy.
5081-7705	<b>BNC Adapter for 1007X probes</b> This accessory clips on the end of the probe and allows the probe to mate with BNC (f) connectors.
5081-7690	<b>Replacement Accessory Kit for 1007X probes</b> This kit contains replacement Hook Tip, IC Tip, Ground Bayonet, Ground Lead, Adjustment Tool, and Probe Identification Tags.

### Additional Measurement Accessories

10100C	50 $\Omega$ $\pm$ 1% Feedthrough Termination BNC (f) to BNC (m), Frequency range dc-300 MHz, Max. VSWR 1.1:1
11094B	75 $\Omega$ $\pm$ 0.2% Feedthrough Termination BNC (f) to BNC (m), maximum power 1 Watt
E9637A	Dual Banana(m) to BNC (f) Adapter
10110B	Dual Banana(m) to BNC (m) Adapter

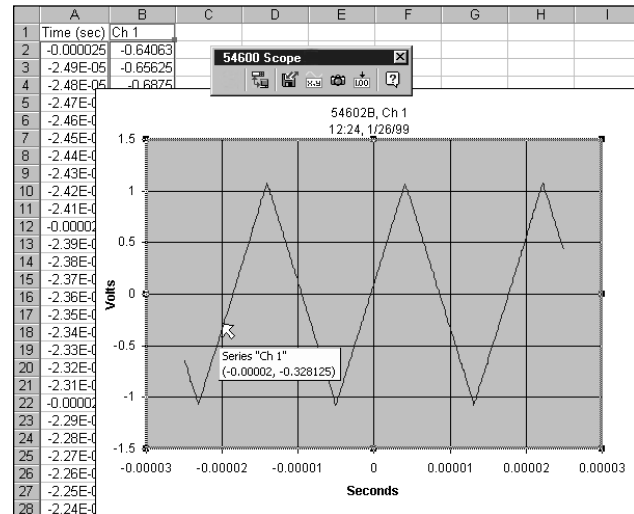
### Additional Accessories

10098A	<b>Front Panel Cover and Pouch Kit</b> This kit will add the Option 101 front panel cover and pouch to any 54600-series oscilloscope
1183A	<b>Testmobile Scope</b> Cart for 54600-series scopes



## Agilent BenchLink XL 54600 Software PC Connectivity Made Easy

Receive Agilent BenchLink XL 54600 software FREE with the purchase of any module listed above. Use it to retrieve waveform images, waveform data—even automatic measurements—directly into Microsoft Excel and Word without programming. Additionally, an ActiveX control simplifies programming in Visual Basic, VBA, Visual C++, Agilent VEE, and National Instruments LabVIEW.



## Ordering Information

### Agilent 54600-Series Oscilloscopes

**54600B** Two-channel, 100 MHz Oscilloscope

**54602B** Four-channel, 150 MHz Oscilloscope

**54603B** Two-channel, 60 MHz Oscilloscope

Each of the above oscilloscopes comes with two 1.5 meter 10X probes (10071A), a user and service guide, and power cord.

**54610B** Two-channel, 500 MHz, 20 MSa/s Oscilloscope

**54615B** Two-channel, 500 MHz, 1 GSa/s Oscilloscope

**54616B** Two-channel, 500 MHz, 2 GSa/s Oscilloscope

**54616C** Color two-channel, 500 MHz, 2 GSa/s, Oscilloscope

**54645A** Two-channel, 100 MHz, 200 MSa/s Oscilloscope

**54645D** Two-channel and 16 timing channel

100 MHz MSO Oscilloscope

Each of the above oscilloscopes comes with two 1.5 meter 10X probes, a user and service guide, and power cord.

### Options

**Opt. 001** RS-03 Magnetic interface shielding added to CR

**Opt. 002** RE-02 Display shield added to CRT to reduce radiated interface

**Opt. 005** Enhanced TV/video triggering (not 54600/03B/645D)

**Opt. 090** Delete probes (for 54600/02/03B)

**Opt. 090** Delete probes (for 54610B, 54615B, and 54616B/C)

**Opt. 090** Delete probe (for 54645A)

**Opt. 101** Accessory pouch and front panel cover (10098A)

**Opt. 102** Two additional 10071B probes (54602B only)

**Opt. 103** Operator training kit

(includes training signal board and lab workbook)

**Opt. 104** Carrying case

(protects scope for shipping or baggage checking)

**Opt. 106** HP BenchLink Scope software for Windows (HP 34810B)

**Opt. 1CM** Rack Mount Kit (P/N 5062-7345)

**Opt. W50** Additional 2-year warranty (5-year total), starting at

### Manual options (please specify one)

ABA US English      ABF French      ABJ Japanese

ABD German      ABZ Italian      AB1 Korean

ABE Spanish      ABO Taiwan Chinese

### Agilent 54650-series enhancement modules

(each includes HP BenchLink XL 54600 Software)

**54650A** GPIB interface module

**54652B** RS-232 and parallel interface module

(includes RS-232 cable)

**54657A** GPIB measurement/storage module

**54659B** RS-232 and parallel measurement/storage module

(includes RS-232 cable)

\***E2657A** GPIB Connectivity Kit

\***E2658A** RS-232 Connectivity Kit

\* Kit includes Measurement Storage Module,

HP 34810B BenchLink Scope Software and cable

### Additional oscilloscope accessories, probes and terminations

**10070B** 1:1 probe

**10071B** 10:1 probe

**10072B** SMT probing kit

**10073B** 10:1 500 MHz probe with readout

**10074B** 10:1 150 MHz probe with readout

**10442B** 10:1 Resistive divider probe for 50  $\Omega$  inputs.

**10100C** 50  $\Omega$  feedthrough termination

**11094B** 75  $\Omega$   $\pm 2\%$  Feedthrough Termination

BNC(f) to BNC (m)

**5081-7690** 1007X probe accessory kit

**5081-7705** 1007X probe-to-BNC (m) adapter

**34397A** Inverter, 12 Volt dc to 115 V ac

### HP 34810-Series BenchLink Software

**HP 34810B** BenchLink Scope Software

Includes software on 3.5" disk, user's guide (all languages).

GPIB or RS-232 module needed for connection to scope.

### Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

#### Our Promise

"Our Promise" means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

#### Your Advantage

"Your Advantage" means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

Get assistance with all your test and measurement needs at:

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