Agilent Technologies 54620-Series Oscilloscope Probes and Accessories

Product Overview



To get the most out of your scope, you need the right probes and accessories for your particular application. That's why Agilent Technologies offers a complete family of innovative probes and accessories for the 54620-Series scopes.

And because your time is valuable, we've made it easy for you to order the probes and accessories included in this data sheet. Just visit the Agilent Technologies web site at **www.agilent.com/find/megazoom** and follow the links for online ordering. Use your credit card to place your order, and you'll be done in just a few minutes-so you can get back to doing your real job. For more information call your local Agilent sales office.

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Agilent Technologies

Innovating the HP Way

Passive Probes

- **Designed for optimal performance with your Agilent 54620-Series scope**
- **1:1 and 10:1 attenuation**
- **20 to 150 MHz**

Rugged, high-quality probes at a reasonable price

Agilent 10070-family passive probes are a great choice if you're looking for high quality at a very reasonable price. These general-purpose probes are designed specifically to give you optimal performance with your 54620-Series oscilloscopes. Ruggedized for general-purpose measurements, they feature a durable cable and a solid stainless steel probe body encased with a hard, fracture-resistant plastic. They're designed and tested to ensure the probes operate in the toughest of conditions.

Probes come with the following accessories:

- General-purpose retractable hook tip hooks onto wires and test points for hands-free probing
- Ground bayonet provides short, flexible ground lead for high-frequency measurements
- General-purpose alligator clip ground lead for versatile grounding
- Color tags (2 orange, 2 white, 2 blue and 2 green) to place at both ends of probe cable to help you quickly identify probes

Accessories available for passive probes

5081-7705 Probe-tip-to-BNC (m) adapter

8710-2063 Dual-lead adapter provides easy connection from probe signal and ground to fine-pitch probing accessories.

10072A Fine-pitch probing kit includes 10 SMT clips and 2 dual-lead adapters.

10075A 0.5 mm IC probing kit. contains four 0.5 mm IC clips and 2 dual-lead adapters.

Ordering Information for Agilent Technologies Passive Probes

All 10070-family passive probes include one retractable hook tip, one ground bayonet, one IC probing tip, one alligator ground lead and a compensation screwdriver.

10070C

1:1 Passive probe

10074C

10:1 150 MHz Passive Probe

10072A

Fine-pitch probing kit

10075A

0.5 mm IC probing kit 5081-7705 Probe-tip-to-BNC (m)adapter

8710-2063 Dual-lead adapter



10074C Passive Probe



10072A Fine-pitch probing kit with 10073B Passive Probe

Specifications for Agilent Technologies 10070 Family Passive Probes

	10070C	10074C
Bandwidth	20 MHz	150 MHz
Risetime (Calculated)	< 17.5 ns	<2.33 ns
Attenuation Ratio	1:1	10:1
Input Resistance (when terminated into 1 Mohm)	1 MΩ	10 MΩ
Input Capacitance	Approx 70 pF	Approx 15 pF
Maximum Input (dc + peak ac)	500 V CAT I (mains isolated) 400 V CAT II (post receptacle mains)	
Compensation Range	None	9 – 17 pF
Probe Readout	Yes	Yes
Cable Length	1.5 m	1.5 m

High-Voltage Passive Probes

- **Ideal for measuring up to 30 kV**
- **Up to 250 MHz bandwidth**
- **100:1 or 1000:1 attenuation**

10076A makes high-voltage measurements with ease

The Agilent 10076A 4 kV 100:1 passive probe gives you the voltage and bandwidth you need for making high-voltage measurements. Its compact design makes it easier to probe today's small power electronics components and its rugged construction means it can withstand rough handling without breaking.

Specifications for Agilent Technologies 10076A High-Voltage Probe

Bandwidth	250 MHz (-3dB)
Risetime (Calculated)	< 1.4 ns
Attenuation Ratio	100:1
Input Resistance	66.7 MΩ (when terminated into 1 MΩ)
Input Capacitance	Approx 3 pF
Maximum Input	4000 Vpk
Compensation Range	7-20 pF
Probe Readout	Yes
Cable Length	1.8 m

N2771A High-voltage Probe

The N2771A is a 1000:1 divider probe for the measurement of fast high voltage signals. Up to 30 kV dc + peak ac, 10 kV rms.

The probe's large size and rugged construction provides superior protection. The ground lead is fed through the body of the probe and protrudes behind the safety barrier, keeping the ground connection away from the high voltage. Typical applications include PMT's, motor drives, high voltage switches, magnatrons and modern projection systems.

Bandwidth	50 MHz (-3dB)
Risetime	<7 ns
Attenuation Ratio	1000:1
Input Resistance	100 MΩ (when terminated into 1 MΩ)
Input Capacitance	1 pF
Compensation Range	7-25 pF
Max. Voltage	15 kV dc, 10 kV rms, 30 kV dc + peak ac
Operating Temperature	0°C to +50°C, 80% RH
Storage Temperature	-20°C to +70°C, 90% RH
Dimensions	2 cm (max width of probe stem after handle) x 33 cm
	7.5 cm (max probe width at probe handle) x 33 cm

Ordering Information for Agilent Technologies High-voltage Probe

10076A

High-voltage probe
includes one retractable hook tip, one ground bayonet, one IC probing tip, one alligator ground lead and a compensation screwdriver

N2771A

High-voltage probe
includes alligator ground lead, 1 sharp probe tip, 1 hook probe tip

10077A.

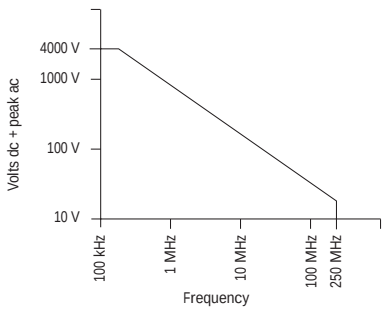
Accessory kit for 10076A
includes one retractable pincher tip, one ground lead, one insulation cap, two measuring pins and two colored tags.



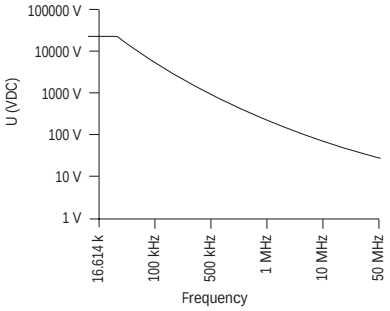
10076A Passive Probe



N2771A High-Voltage Probe



10076A Derating Curve



N2771A Derating Curve

Differential Probe

- **20 MHz bandwidth**
- **20:1 and 200:1 switchable attenuation**
- **Measure up to 600 V CAT III and 1000 V CAT II**

Versatile probing for your differential signals

Use the Agilent N2772A Differential Probe with any of the 54600-Series oscilloscopes to safely measure floating circuits with the oscilloscope grounded. With 20 MHz bandwidth and switchable attenuation of 20:1 and 200:1, it provides the versatility for a broad range of applications including high-voltage circuits, motor speed controls, power supply design, and electronic high-power converters.

Each probe comes with 2 sharp probe tips for use on small components and in tight places, 2 retractable probe hooks for connecting to smaller wires and through-hole components, and 2 alligator clips for use with larger cables.

This probe requires a 9 V battery or Agilent N2773A power supply.

Specifications for Agilent Technologies N2772A Differential Probe

Bandwidth	20 M
Risetime	17.5 ns
Attenuation ratios	20:1 and 200:1 Selectable via switch on probe.
High CMRR	80 dB @ 60Hz, 50 dB @ 1 MHz
Input impedance	Between inputs: 10 MΩ, 5 pF
Measure up to 600 V CAT III	

Agilent N2773A Power Supply

N2773A power supply provides power for the N2772A differential probe. It makes testing more convenient because you don't have to replace probe batteries. This power supply has selectable ac frequency settings for 115 V and 230 V ac at 50, 60 and 400 Hz. This power supply is designed specifically for use with the N2772A probe to ensure safe operation.

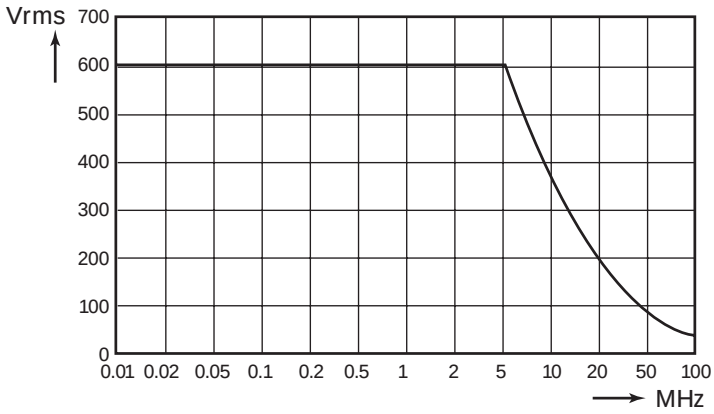
Ordering Information for Agilent Technologies Differential Probe and Power Supply

N2772A

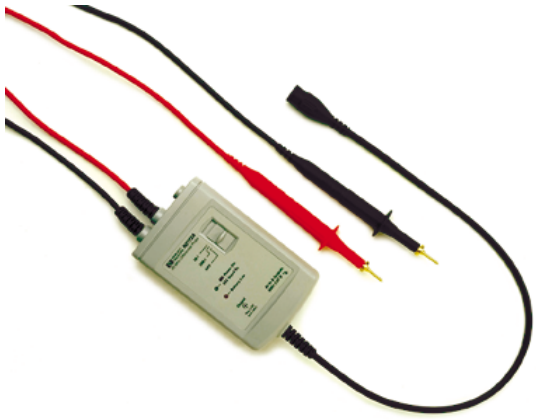
20 MHz differential probe, supplied with a retractable hook, sharp probe tips and alligator clips

N2773A

Power supply



Derating of each input for the N2772A



N2772 Differential Probe

Mixed Signal Oscilloscope Logic Probes

- **Same cables used for high-performance logic analyzers**
- **Flying leads offer flexibility and convenience**

MSO probes offer great value and performance

These probes for the 54621D and 54622D Mixed Signal Oscilloscopes (MSOs) are the same ones used with Agilent industry-leading high-performance logic analyzers. This means we can offer the best performance, great value and access to the industry's broadest range of logic probing accessories.

The 10089A 2 x 8-signal logic probe with flying leads makes it possible to connect at several different places on your device under test. The probe cable is divided into two sets of eight channels so you can probe pins that are far apart and work conveniently with only one set if that's all you require. For optimal signal fidelity, it is possible to connect ground at each logic probe, in addition to taking a common ground to all eight signals via a separate ground connector on the probe pod. This probe is included with 54621D and 54622D MSOs.

Specifications for Agilent Technologies 10089A Logic Probe

Input impedance	100 kΩ
Input capacitance	8 pF



10089A Logic Probe

The 10085A 16-channel logic probe and termination adapter is designed to make it easy to connect to industry-standard, 20-pin board connectors. For use with the 54621D and 54622D Mixed Signal Oscilloscopes, this probe consists of a 2 m logic analyzer probe cable and a 01650-63203 termination adapter that provides the proper RC networks in a very convenient package. Three 20-pin, low-profile, straight board connectors are included. Additional board connectors can be ordered from Agilent Technologies or 3M.

Specifications for Agilent Technologies 10085A Logic Probe and Termination Adapter

Input impedance	100 kΩ
Input capacitance	12 pF



10085A Logic Probe

Ordering Information for Agilent Technologies Logic Probes

10089A

Logic probe with.
2 x 8 flying leads. Includes
20 IC clips and 5 ground leads.

10085A

Logic probe &
termination adapter

Board Connectors:

1251-8106
(3M part #2520-6002)
20-Pin, low profile (straight)

1251-8473
(3M part #2520-5002)
20-Pin, low profile (right angle)



Termination adapter included in the 10085A

Current Probe

- **Hall-effect technology to measure ac and dc**
- **Up to 100 kHz and mA sensitivity**

Accurate current measurements without breaking the circuit

The Agilent 1146A ac/dc current probe provides accurate display and measurement of currents from 100 mA to 100 A_{rms}, dc to 100 kHz, without needing to make an electrical connection to the circuit. The 1146A uses hall-effect technology to measure ac and dc signals. It connects directly to the scope through a 2m coaxial cable with an insulated BNC.

The narrow, elongated clamping mechanism lets you easily probe in crowded cable bundles and circuit boards. The low phase shift makes this probe ideal for power quality measurements, while the high sensitivity makes it a great tool for measuring low-voltage signals. For true RMS measurements, the 1146A lets you measure the dc and ac output signals proportional to the total current. A battery level indicator and overload indicator help ensure proper readings.

Specifications for the Agilent Technologies 1146A Current Probe

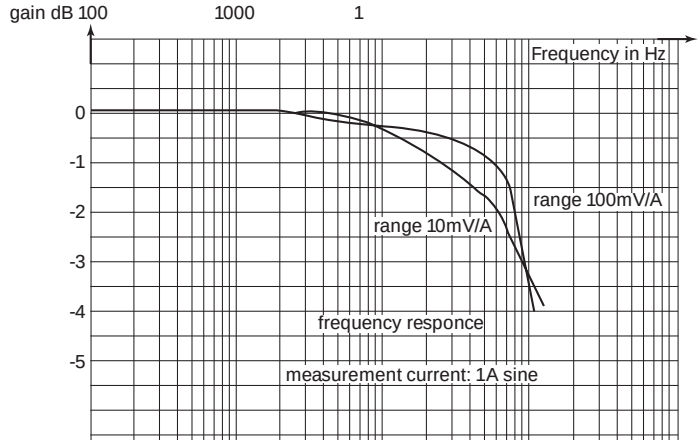
Electrical Characteristics:	
Current Range*	
	100 mV/A:100 mA to 10 A peak
	10 mV/A:1 to 100 A peak
Output Signal	
	1000 mV peak max
AC Current Accuracy*	
Range:	100 mV/A (50 mA to 10 A peak)
Accuracy:	3% of reading ±50 mA
Range:	10 mV/A (500 mA to 40 A peak)
Accuracy:	4% of reading ±50 mA
Range:	10 mV/A (40 A to 100 A peak)
Accuracy:	15% max at 100 A
Phase Shift	
	< 1° from dc to 65 Hz on 10 mV/A
	< 1.5° from dc to 65 Hz on 100 mV/A
Frequency Range*	
	dc to 100 kHz (-3dB with current derating)
Noise	
Range 10 mV/A:	480 µV
Range 100 mV/A:	3 mV
Slew Rate	
Range 10 mV/A:	20 mV/µs
Range 100 mV/A:	0.3 V/µs
Insertion Impedance (50/60 Hz)	
	0.01 Ω
Rise or Fall Time	
Range 100 mV/A:	3 µs
Range 10 mV/A:	4 µs
Maximum Working Voltage	
	600 Vrms max.
Maximum Common Mode Voltage	
	600 Vrms max.
Influence of Adjacent Conductor	
	<0.2 mA/A AC
Influence of Conductor Position	
	0.5% of reading at 1 kHz in jaw
Battery	
	9 V alkaline (NEDA 1604A, IEC 6LR61)
Low battery	
	green LED when >6.5 V
Overload Indication	
	Red LED indicates input greater than the selected range
Battery Life	
	55 hours typical

Notes:

1. Characteristics marked with asterisks are specified performance. Others are typical characteristics.

2. Reference conditions 23°C ± 5°C, 20 to 75% relative humidity, dc to 1kHz, probe zeroed, 1-minute warmup, batteries at 9 V + 0.1 V, external magnetic field <40 A/m, no dc component, no external current carrying conductor, 1 MΩ/ 100 pF load, conductor centered in jaw.





Typical Frequency Response Curve

Safety Characteristics

Double insulation or reinforced insulation between primary or secondary and outer case of the handles, per IEC 1010.

600 V CAT III	100 000
300 V CAT IV	

Ordering Information for Agilent Technologies 1146A Current Probe

1146A Current probe
and user guide

Agilent Wedge Probe Adapter

- **Easy connection to surface mount ICs**
- **Safe, with no chance of shorting**
- **Mechanically non-invasive contact**
- **3-, 8- and 16-signal versions**
- **Supports 0.5 mm and 0.65 mm TQFP and PQFP packages**

Easily connect to fine-pitch ICs

Make the inaccessible accessible with this non-invasive, problem-free probing solution

The Agilent Wedge Probe Adapter eliminates many of the frustrations associated with probing surface mount components. If you've ever accidentally shorted IC pins together, experienced electrical and/or mechanical problems with soldering small wires onto leads, or gotten frustrated juggling multiple probes while you're trying to operate your scope, the Wedge was designed with you in mind.

Problem-free probing

When you use the Wedge, you don't have to worry about shorting IC pins together on a delicate component -- or worse yet, on an irreplaceable prototype. The Wedge is easy to insert and it stays put. There's no need to solder small wires onto leads. The Wedge is mechanically non-invasive, so you won't damage the legs of the IC. Instead, you'll have easy access to hard-to-reach components.

Electrical reliability

The Wedge makes two contact points with each leg of the IC. This redundant physical connection increases the electrical reliability of the connection. And the Wedge's low capacitance and inductance provides superior performance to many other alternatives.

IC Clip Kits

An inexpensive solution for probing fine-pitch ICs, the 10072A SMT Kit includes ten IC clips and two dual-lead adapters that connect the clips directly to 10070-family probes.

The 10075A 0.5-mm IC Clip Kit contains the smallest clips in the industry to date. They're ideal for connecting to IC's as fine as 0.5 mm. The clip body allows many clips to be mounted side-by-side. The kit includes four 0.5-mm IC clips and two dual-lead adapters that connect the IC clips directly to 10070-family probes.

Agilent Wedge Electrical Characteristics

Operating Voltage	<40 V dc + peak ac
Operating Current	0.5 A maximum
Capacitance Between Contacts	2 pF typical (all except HP E2643A/44A)
	4.33 pF typical at 1 MHz (HP E2643A/44A)
Self-Inductance	15 nH typical (all except HP E2643A/44A) 37 nH typical at 1 MHz (HP E2642A/44A)
Cross Coupling	-31 dB typical at 100 MHz (HP E2643A/44A)
Contact Resistance	<0.1 Ω

Ordering Information

E2613B
0.5 mm Wedge probe adapter, 3-signal, qty 2

E2614A
0.5 mm Wedge probe adapter, 8-signal, qty 1

E2643A
0.5 mm, Wedge probe adapter 16-signal, qty 1

E2615B
0.65 mm, Wedge probe adapter, 3-signal, qty 2

E2616A,
0.65 mm, Wedge probe adapter, 8-signal, qty 1

E2644A,
0.65 mm, Wedge probe adapter, 16-signal, qty 1

10072A
SMT kit for 10070 probe family

10075A
0.5 mm IC clip kit



Printer Kit

- **Easily print screens and setups**
- **No separate power supply required**

Everything you need for easy and portable documentation

The Agilent N2727A printer kit comes complete with everything you need for easy documentation directly from your 54600-Series scope. It lets you easily print screen displays and key setup parameters so you can include them in reports and share them with colleagues.

You don't need a separate power supply with this thermal printer because it's powered directly from your oscilloscope. And it includes a specially designed short, flat, parallel cable to make it easy to connect it to your scope.

Store the printer in the special pouch that fits on top of your scope -- it includes a separate compartment where you can conveniently store your probes and accessories, too. It comes with three rolls of printer paper -- enough for you to print 200 screen captures with setup information.



Specifications for Agilent Technologies N2727A Printer Kit

Dimensions (printer)	166 mm x 166 mm x 66 mm
Typical Print Speed	2:33 minutes
Typical Scope Spool Time	9 seconds

Ordering information

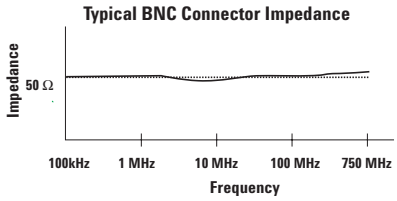
N2727A Printer kit
(includes Seiko DPU-414 thermal printer, printer pouch, power cable, special parallel cable, 3 rolls of printer paper

N2728A 10 rolls of printer paper.
(Can also be purchased directly from a Seiko distributor.)
Dimension of paper roll
4-3/8" width x 1-13/16"diameter

50-Ohm BNC Adapters, Feed-through Terminations and Coaxial Cables

Adapters and connectors for demanding engineers

Not all BNC adapters and feedthrough terminations are the same, and making a bad choice can have a big impact on your measurement. That's why Agilent adapters and connectors are the choice for engineers the world over who demand excellence in their measurement setup.



Accuracy:

1 MHz to 100 MHz	**± 1%**
100 MHz to 300 MHz	**± 3%**
300 MHz to 500 MHz	**± 5%**

Ordering Information

50 Ω BNC adapters

E9620A - BNC (m) to BNC (f). right angle

E9622A - BNC (f) to BNC (f).

E9624A - BNC (m) to BNC (m).

E9625A - Tee BNC (m) (f) (f).

E9627A - BNC (m) to . . single banana (f)

E9637A - BNC (f) to dual banana (m)

10110B - BNC (m) to dual banana (f)

50 Ω BNC to N Adapters

E9635A - BNC (f) to N (m)

E9621A - BNC (m) to N (f)

E9623A - BNC (m) to N (m)

Feedthrough terminations and blocking capacitor

11048C - BNC (m) to BNC (f) 50 Ω feedthrough

E9623A - BNC (m) to BNC (m) 50 Ω feedthrough

11094B - BNC (m) to BNC (f) 75 Ω feedthrough

10240B - blocking capacitor for ac coupling BNC

10100C 50 Ω high-performance feedthrough

Coaxial Cable

These high-quality coaxial cables have BNC (m) terminations on both ends. These double-shielded cables feature 50 Ω impedance, a durable PVC jacket and strain relief.

8120-1838
30 cm Coaxial cable

8120-1839
60 cm Coaxial cable

8120-1840
120 cm Coaxial cable

E9620A



E9622A



E9625A



E9627A



E9637A



10110B



E9635A



11094B



10100C



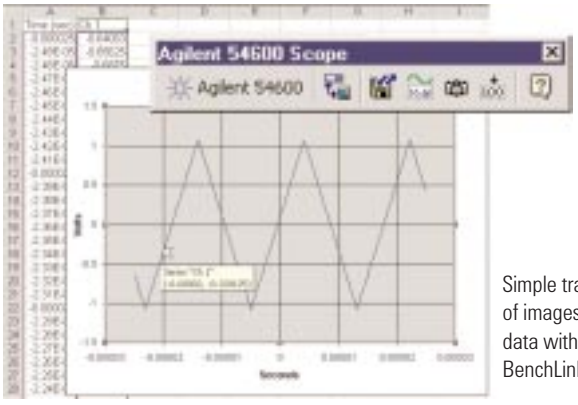
PC Connectivity

Get scope data into your PC without programming with Agilent BenchLink XL

To simplify the task of transferring images and waveform data to your PC, Agilent BenchLink XL 54600 software is included free with 100-MHz 54600-Series scopes. BenchLink XL lets you focus more time on design issues rather than on programming. With the click of a button on BenchLink XL's toolbar, you can insert a snapshot of an oscilloscope screen directly into your Microsoft® Excel spreadsheets or Word documents, or save the image as a bitmap file. Once the data is in an Excel spreadsheet, you can leverage Excel's extensive analysis functions to create custom graphs and views.

In addition to working with Microsoft Excel 97 and Word 97 (and future editions of Excel and Word as they become available), BenchLink XL supports GPIB and RS-232 communications.

If you choose one of the 60-MHz 54600-Series scopes, you can download Agilent BenchLink XL software free from the web at **www.agilent.com/find/megazoom**



Simple transfer of images and data with BenchLink XL

Specifications for Agilent Technologies BenchLink XL

Minimum System	Windows 95/98: 486DX/66, Requirements for PC:16 MB RAM, 20 MB free disk space
Windows NT 4.0 SP3	Pentium-90, 32 MB RAM, 20 MB free disk space

GPIB for fast data transfers

If you need fast data transfers, equip your 54620-Series scope with GPIB communication. Agilent offers a GPIB card for your PC, as well as a cable, and a GPIB I/O communication module that provides a GPIB port for your scope.

RS-232 cable

If you need an RS-232 cable for your 60-MHz 54620-Series scope, order the Agilent 34398A RS-232 cable. It comes standard with 100-MHz models.

- **Ideal for documentation and archiving**
- **Works in familiar Microsoft® Excel and Word environments**
- **Leverage the power of Excel for data analysis and advanced graphing**
- **ActiveX controls provided for more flexible scope programming**
- **It's included standard!**

Ordering Information

BenchLink XL download free from

www.agilent.com/find/megazoom

GPIB

N2757A GPIB oscilloscope interface module

82341C GPIB PC card

82341D GPIB PC card

82350A GPIB PC card

10834A GPIB adapter
Provides addition clearance between GPIB socket and PC chassis

10833A GPIB cable, 1 m long

10833B GPIB cable, 2 m long

10833D GPIB cable, 0.5 m long

RS-232 cables

34398A RS-232 cable,
9 pin (f) to 9 pin (f) plus
9 pin (m) to 25 pin (f) adapter

34399A RS-232 adapter kit,
includes 9 pin (m) to 25 pin (m) for use with PC or printer
9 pin (m) to 25 pin (f) for use with PC or printer
9 pin (m) to 25 pin (m) for use with modem
9 pin (m) to 9 pin (m) for use with modem

Model	Agilent 82341C	Agilent 82341D	Agilent 82350A
Descriptive	High-performance GPIB interface for PC	plug&play, high-performance GPIB interface for PC	High-performance GPIB interface for PCI bus computers
Operating System	Windows® 3.1, 95, 98, NT®	Windows® 95, 98	Windows® 95, 98, NT®
I/O Library	SICL/VISA	SICL/VISA	SICL/VISA
Backplane	ISA/EISA	ISA/EISA	PCI
Max. Speed	750 KB/s	750 KB/s	750 KB/s
Buffering	Built-in	Built-in	Built-in
Languages Supported	C/C++, HP BASIC for Windows, Visual Basic, HP VEE	C/C++, HP BASIC for Windows, Visual Basic, HP VEE	C/C++, HP BASIC for Windows, Visual Basic, HP VEE

Miscellaneous Accessories

Testmobile

The sturdy Agilent 1183A Testmobile makes sharing your scope easy. Its large wheels make it easy to roll from place to place, and an adjustable-tilt tray lets you change the angle of your scope for easy viewing.

Specifications for the Agilent Technologies 1183A Testmobile

Dimensions	49.0 cm wide x 54.0 cm deep x 81.5 cm high
Upper tray	49.0 cm x 38.0 cm

Carrying Case

The Agilent 1185A Carrying Case makes transporting and shipping your 54620-family oscilloscope safe and simple. A scope, optional module and other accessories fit neatly inside the padded shell of hard plastic and the case is lockable for shipment.

Specifications for the Agilent Technologies 1185A Carrying Case

Dimensions	45 cm x 44 cm x 28 cm
Material	Tough ABS Plastic

Rackmount Kit

The Agilent 1186A Rackmount Kit positions your 54620-Series scope in the center of the rack. Each kit includes a custom shelf with rails, 6 BNC pass-throughs and all necessary screws.

Ordering Information

1183A Testmobile

1185A Carrying case

1186A Rackmount kit





www,agilent.com
1-800-452-4844

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 engineering 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.

For more assistance with your test & measurement needs go to

www.agilent.com/find/assist

Or contact the test and measurement experts at Agilent Technologies (During normal business hours)

United States:
(tel) 1 800 452 4844

Canada:
(tel) 1 877 894 4414
(fax) (905) 206 4120

Europe:
(tel) (31 20) 547 2323
(fax) (31 20) 547 2390

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
(tel) (305) 269 7500
(fax) (305) 269 7599

Australia:
(tel) 1 800 629 485
(fax) (61 3) 9272 0749

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