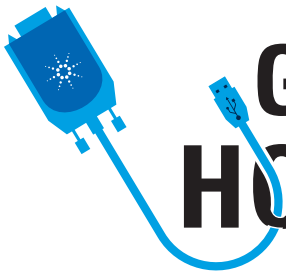
Agilent
Connectivity Hardware for PC-to-Instrument Connections

Data Sheet



GET HOOKED!

with Agilent GPIB and Instrument Control Products

Agilent Technologies

- **Choose the best way to connect your PC to GPIB, USB and RS-232 instruments**
- **Take advantage of standard PC interfaces (USB, LAN, PCI)**
- **Protect your investment with industry-standard connectivity software**

Easily Connect your PC to GPIB, USB and RS-232 instruments

Connecting your PC to test instruments has become easier than ever before. The Agilent connectivity hardware product family is designed to provide you a variety of interfaces and to simplify the connection.

The connectivity products featured in this data sheet will help you connect your current instruments with GPIB or RS-232 interfaces to your PC with ease.

With Agilent GPIB and Instrument Control Products, you can be assured of:

- Fast, easy and rock solid connections to a wide range of instrument interfaces – GPIB, USB, and RS-232
- Easy instrument connection to a variety of PC standard interfaces – USB, LAN, PCI and PCIe™
- Compatibility with instruments and software from different vendors with the industry standard VISA I/O libraries

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Agilent Connectivity Software

Agilent connectivity software helps you establish a connection in less than 15 minutes.

The Agilent IO Libraries Suite eliminates the many working hours it takes to connect and configure PC-controlled test systems. This connectivity software ships with each Agilent connectivity product and over 150 Agilent test and measurement instruments. Connecting your instruments to a PC is as easy as connecting a PC to a printer—even if you use multiple instrument vendors.

Now the enhanced version 15.0 or higher is with expanded compatibility with other vendors' connectivity software. ***You can now use any programming API with any standard T&M software development environment***. Simply install Agilent's IO Libraries Suite on your PC, then cable the interfaces and instruments to your PC. The IO Libraries Connection Expert utility will find the interfaces and instruments connected to your computer and configure them properly.

Agilent IO Libraries Suite 15.0 or higher

Summary of requirements

- Microsoft® Windows® 2000 SP4/XP SP2/Vista (note: only supported with version 15.0 or higher)/98(SE)/ME (note: only supported with version 14.0)/Windows 7 (supported with version 15.5 or higher)
- Microsoft Internet Explorer 7 or higher
- 800 MHz Intel Pentium® processor (1 GHz 32-bit recommended for Vista and Windows 7)
- 800 x 600 display with 256 colors and supports DirectX 9 graphics
- 256 MB RAM (1 GB or greater is recommended)
- 1.5 GB total hard disk space
- Supported APIs include Agilent or NI VISA, SICL, VISA-COM and NI-488.2

If you already own an Agilent connectivity product or instrument, you can download the latest version of Agilent IO Libraries Suite for free.

Agilent 82357B USB/GPIB Interface

Features

- Fast and easy connection to GPIB instruments
- Uses standard USB and IEEE-488 interfaces
- Maximum GPIB transfer rate of more than 1.15 MB/s
- Use industry standard software
- Parallel polling capability

Boosting performance with simplest connectivity

Best for

- Easiest GPIB connectivity
- Notebook computer GPIB connections

Connect GPIB instruments quickly and easily to your computer's USB port

The Agilent 82357B USB/GPIB interface provides a direct connection from the USB port on your desktop and laptop computers to GPIB instruments. Once the software is loaded, your computer automatically detects the 82357B when it is connected to the USB port of the computer.

The 82357B is a plug-and-play device. It is also hot-pluggable, making it easy to connect and disconnect without having to shut down the computer. No external power supplies are necessary.

The 82357B USB/GPIB interface implements USB 1.1 (12 Mbits/s) and is compatible with USB 2.0. The 82357B USB/GPIB interface uses a thin, flexible, high-quality USB cable that is USB 2.0-compliant. The USB cable is shielded, and the connector is specified to 1,500 insertions, ensuring a durable connection and reliable data transfer.

82357B Technical Specifications

General Requirements	
Minimum system requirements	• Windows 2000/XP Professional/Vista/ Windows 7 • 450 MHz Pentium II (1 GHz 32-bit is recommended for Vista and Windows 7) • 256 MB RAM (1 GB or greater is recommended for Vista and Window 7) • 1.5 GB free disk space, 1 GB for Microsoft .NET Framework 2.0 and 65 MB for Agilent IO Libraries Suite is recommended • USB port (OS and Microsoft .NET Framework may require more resources)
Supported standards	• Supports USB 2.0 high speed and full speed • Standard USB endpoints supported • IEEE-488.1 and IEEE-488.2 compatible • SICL and VISA 2.2
Unsupported GPIB modes of operation	• Pass Control • Non-System Controller mode
General Characteristics	
Power	USB bus-powered device, +5 V, 500 mA (max), 200 mA (typ)
GPIB transfer rate	1.15 MB/s or better
Connectors	• Standard 24-pin IEEE-488 • Standard USB A
USB hubs	Self-powered hubs
Parallel polling	A single parallel poll can easily check up to eight individual devices at once, corresponding to the number of data lines on the GPIB
Cable	2.5 meters, shielded, connector rated for 1,500 insertions
LED indicators	READY, ACCESS, FAIL
Maximum connections	Maximum of 4 converters can be connected to the PC
Instrument connections	14 instruments—daisy chain via GPIB
Configuration	Plug-and-play
Warranty	1 year
EMC and safety *	• IEC 61010-1: 2001/EN 61010-1: 2001 • Canada: CSA C22.2 No. 61010-1: 2004
Dimensions	
Length, width, and height	105 mm (L) x 64 mm (W) x 30 mm (H) (including connectors)
Weight	215 grams
Environmental Specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

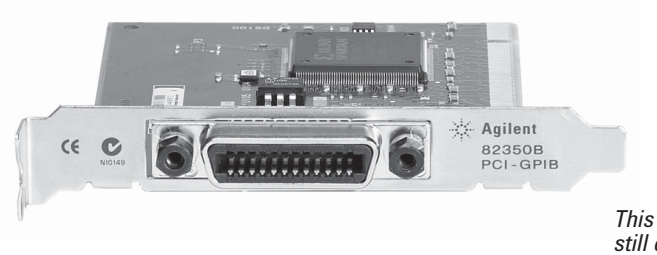
Agilent 82350B High-Performance PCI GPIB Interface for Windows

Features

- PCI IEEE-488 interface for PCs
- Transfer rates up to 900 KB/s
- Dual processor support on Windows 2000/XP

Best for

- Maximum GPIB throughput for all configurations



This traditional GPIB connection still offers the highest throughput

High performance for manufacturing test applications

The 82350B is Agilent's highest-performance GPIB interface. With a direct PCI computer connection, transaction overhead is minimized for the best overall performance.
The 82350B card de-couples GPIB transfers from PCI bus transfers. Buffering provides connectivity and system performance that is superior to direct memory access (DMA). The hardware is software-configurable and compatible with the plug-and-play standard for easy hardware installation. The GPIB interface card plugs into a 5 volt PCI slot in the backplane of your PC.

Regarding programming capability, you have access with the latest version of IO Libraries suite, version 15.0 or higher to program in all standard development environments. Agilent's IO Libraries Suite 15.0 or higher is easy to use and works with virtually any vendor's instrument or T&M programming software application and includes automatic configuration for Agilent or NI VISA, NI-488.2 or VISA COM connectivity. Even if you use NI connectivity software, Agilent will configure automatically so as a user you do not have to concern about the behind-the-scenes details.

82350B Technical Specifications

General Requirements	
Minimum system requirements	Windows 2000/XP/Vista/Windows 7
Software required	Agilent IO Libraries Suite (included); • 450 MHz Pentium II (1 GHz 32-bit recommended for Vista and Windows 7) • 256 MB RAM (1 GB or greater is recommended for Vista and Windows 7) • 1.5 GB free disk space, 1 GB for Microsoft .NET Framework 2.0 and 65 MB for Agilent IO Libraries Suite is recommended
PCI bus slot	5-V PCI slot, 32 bits
Supported standards	IEEE 488.1 and IEEE 488.2 compatible
General Characteristics	
Power	Backplane +5 V PCI
Connectors	Standard 24-pin GPIB (IEEE-488) +5 V PCI
Maximum data rate	More than 900 KB/s
Buffering	Built-in
Configuration	Plug-and-play
EMC and safety *	IEC 61326-1 Group 1, Class A IEC 61010-1
Warranty	1 year
Dimensions	
Length, width, and height	122 mm (L) x 122 mm (W) x 22 mm (H) (a full-height PCI card)
Weight	0.091 kg
Environmental Specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

Agilent 82351A PCIe™-GPIB Interface Card

Features

- Compact half-height size (68.9 mm)
- High transfer rate of 1.4 MB/s
- High flexibility via up-plugging (to x4 or x8 PCIe™ slots)
- 3.3 V signal level for lower power consumption
- Compatibility with industry standard PCIe™ rev 1.0a and IEEE- 488
- Interface to 14 GPIB instruments (max)

Best for

- Bandwidth-intensive PC applications
- Adding GPIB connection for PCIe™ based PCs or workstations

High transfer rate for demanding test applications

The Agilent 82351A PCIe™-GPIB interface card is designed for integration into next generation PCs or workstations. It offers fast data transmission for various demanding test applications that require data to be transferred to memory fast enough without any loss or overwriting. PCIe™ (PCI Express®) is an evolutionary version of PCI that offers a higher transfer rate across a low number of wires. It is also backward-compatible with PCI software, so you don't need to perform any code re-configuration. The powerful bus architecture of PCIe™ allows bi-directional data transmission, and the implementation of a new class of test applications.

New standard for high-speed internal devices

82351A Technical Specifications

General Requirements	
Minimum system requirements	Windows 2000/XP/Vista/Windows 7
Software required	Agilent IO Libraries Suite (included); • 450 MHz Pentium II (1 GHz 32-bit recommended for Vista and Windows 7) • 256 MB RAM (1 GB or greater is recommended for Vista and Windows 7) • 1.5 GB free disk space, 1 GB for Microsoft .NET Framework 2.0 and 65 MB for Agilent IO Libraries Suite is recommended
PCI bus slot	3.3 V PCIe™ slot, 32 bits
Supported standards	PCIe™ rev. 1.0a IEEE 488.1 and IEEE 488.2 compatible
General Characteristics	
Power	Backplane +3.3 V PCIe™
Connectors	Standard 24-pin (IEEE-488) +1.5 V PCIe™
Maximum data rate	1.4 MB/s or better
Maximum instrument connection	14 instruments—daisy chain via GPIB
Buffering	Built-in
Configuration	Plug-and-play
EMC and safety *	IEC 61010-1: 2001/EN61010-1: 2001 Canada: CSA C22.2 No. 61010-1: 2004 IEC 61326: 2002/EN61326: 1997+A1: 1998+A2: 2001+A3: 2003 Pollution Degree 2 This product is rated for indoor use only
Warranty	1 year
Dimensions	
Width, depth, and height	120.8 mm (W) x 158.0 mm (D) x 21.6 mm (H)
Weight	0.082 kg
Environmental Specifications	
Operating environment	–5 °C to 60 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to 70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

Agilent E5810A LAN/GPIB Gateway

Features

- Remote access and control of GPIB instruments via the LAN
- Easy setup and use via digital display and web browser

Best for

- Connection to remote GPIB and RS-232 instrumentation
- Shared test systems

Remote access and collaboration with GPIB instruments via your LAN

The E5810A can use DHCP, if available, to automatically configure necessary network parameters, including its IP address. The gateway can be controlled from multiple locations and by multiple users via your LAN, so it is easy to share control of instruments from locations worldwide.

For easy remote access, enter the IP address from the digital display as the URL in your web browser and gain access to connected GPIB and RS-232 instruments. Then use your browser to send instrument commands interactively, and quickly see your measurement results. Use the digital display and LEDs to check the IP address and troubleshoot locally.

With IO Libraries Suite 15.0 or higher, you are able to program the instruments in all standard development environments.

System use

For system environments, the E5810A gateway can be mounted on a rack. The rack mount kit (Option 100) allows two devices to be placed side-by-side in one rack width. With its built-in power supply, there are no additional power modules to mount.

Take advantage of LAN technology for your GPIB instruments and test systems

E5810A Technical Specifications

General Requirements	
Minimum system requirements (client computers)	Available 10BASE-T/100BASE-TX LAN port
Operating system	Windows 2000/XP/Vista
Supported web browser	Microsoft Internet Explorer 5.01 or higher (Microsoft Internet Explorer 7 or higher for Vista)
Software required	Web browser or for programmatic control—Agilent IO Libraries Suite (included); see requirements on page 2
Supported standards	IEEE 488.1 and IEEE 488.2 compatible 10BASE-T/100BASE-TX networks VXI-11 protocol EIA-232
General Characteristics	
Power supply	100-240 V ± 10%
Power consumption	(7 watts) 25 VA peak
Power line frequency	47 to 63 Hz
Connectors	Std 24-pin GPIB (IEEE-488), RS-232 (9-pin), LAN RJ-45
Maximum data rates	More than 900 KB/s—GPIB port 115 Kb/s—RS-232 port
RS-232 baud rate	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 b/s
RS-232 flow control	None, RTS/CTS, XON/XOFF, DTR/DSR
RS-232 parity	None, Odd, Even, Space, Mark
RS-232 bits	5, 6, 7, 8
RS-232 stop bits	1, 2
RS-232 SRQ interrupts	on RI, DSR, DCD, CTS
Max. instrument connections	14 instruments—daisy chain via GPIB 1 RS-232 device Up to 16 simultaneous connectivity connections
Indicators	LEDs for Power, Activity, Fault
EMC and safety *	IEC 61326-1 Group 1, Class A IEC 61010-1
Warranty	1 year
Network protocols	See the E5810A User's Manual for supported network protocols and functions
Dimensions	
Width, depth and height	211 mm (W) x 230 mm (D) x 41 mm (H) (1U height, 1/2 rack)
Weight	1.6 kg
Environmental Specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

Agilent E5805A USB/4-Port RS232 Interface

Features

- Easy connection from standard USB port on your PC to up to four RS-232 instruments or devices
- Fully compatible with Windows COM driver and industry-standard VISA I/O software

Best for

- Easy connection to RS-232 devices
- RS-232 connection to a notebook computer

Add four serial ports within minutes

The Agilent E5805A USB/4-port RS-232 interface provides a direct connection from the USB port on your notebook or desktop PC to up to four RS-232 instruments or devices. There are no switches to set, no PC cards to install, and no external power supplies are required. Simply install the driver and plug in the E5805A USB 4-port RS-232 interface to add four RS-232 ports to your computer.

The E5805A is a standard plug-and-play device. Your computer automatically detects and configures it when it is connected to the USB port of the computer. You can interface up to four devices, with baud rates of up to 230 Kb/s per serial port. The E5805A provides four DB9 serial connectors and ships with a 1.8-meter USB cable.

Turn your USB port into 4 additional RS-232 ports

E5805A Technical Specifications

General Requirements	
Minimum system requirements	• Windows 98(SE)/Me (note 98 runs with version 14.0 only)/2000/XP A USB port
Software required	E5805A driver (included)
Software recommended	Agilent connectivity Libraries Suite (included); see system requirements on page 2
Supported standards	USB 1.1 (fully compatible with USB 2.0) EIA-232
General Characteristics	
Power	USB bus-powered device, +5 V, 500 mA (max), 200 mA (typ)
Support for USB hubs	Self-powered hubs
Connectors	Standard USB A, RS-232 (9-pin) on each port
Cable	1.8 meter USB, USB A (host side) to USB B (device side)
Maximum data rates	230 Kb/s per port
RS-232 baud rates	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400 b/s
RS-232 flow control	None, RTS/CTS, XON/XOFF, DTR/DSR
RS-232 parity	None, Odd, Even, Space, Mark
RS-232 bits	5, 6, 7, 8
RS-232 stop bits	1, 2
RS-232 SRQ interrupts	on RI, DSR, DCD, CTS (using connectivity libraries)
Maximum instrument connections	4 RS-232 instruments/devices
Configuration	Plug-and-play
Indicators	Tri-state LED displays device status and COM port activity
EMC and safety *	CISPR 22 Class B CISPR 24 IEC 60950
Warranty	1 year
Dimensions	
Length, width, and height	111 mm (L) x 183 mm (W) x 26 mm (H)
Weight	0.311 kg
Environmental Specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

Agilent E5813A Networked 5-Port USB Hub

Features

- Interface a variety of GPIB, RS-232, and USB devices to complete your test system
- Extend USB devices beyond five meters
- USB ports appear to be locally attached and are locked to one computer

Best for

- Remote access to USB port devices or instruments

Connecting remote USB, GPIB or RS-232 instruments or devices via a standard LAN

The Agilent E5813A networked 5-port USB hub uses LAN technology to overcome the 5-meter distance limitation for USB cabling, so you can place USB devices anywhere on a LAN. With access to remote devices, you can collect data, perform measurements, or monitor the progress of your tests. Using the bundled IO Libraries Suite, you can connect an Agilent 82357B USB/GPIB interface to one of the USB ports for access to GPIB devices. You can additionally connect an E5805A USB/4-port RS-232 interface for access to RS-232 devices (see figure on page 9).

To prevent access conflicts, only one computer at a time can access the E5813A. The included software lets you lock the E5813A to your computer. Once you unlock the connection, another user can then connect from a different computer.

To choose between a E5810A or a E5813A for your applications, please refer to page 9.

Utilize the LAN to access remote USB, GPIB or RS-232 instruments or devices

E5813A Technical Specifications

General Requirements	
Minimum system requirements	• Windows 2000/XP Available USB 1.1 or 2.0 port
Software required	E5813A driver (included)
Software recommended	Agilent connectivity Libraries Suite (included); see system requirements on page 2
Supported standards	10BASE-T/100BASE-TX networks USB 1.1 (fully compatible with USB 2.0)
General Characteristics	
Power supply	External switching AC adapter
Input power consumption	120/230 volts AC, 0.7 AMPS
Power line frequency	50 to 60 Hz
Output	5 V DC, 3 AMPS max
USB device power available	500 mA per device
Connectors	LAN RJ-45 Standard USB A on each of the 5 ports
Maximum data rates	12 Mbps from each port
Maximum instrument connections	5 USB instruments or devices
Configuration	Remote LAN configuration utility
Indicators	LEDs for system and device status
EMC and safety *	CISPR 22 Class B CISPR 24 IEC 60950 ITE equipment intended only for use with ISM equipment
Warranty	1 year
Network and Device Recommendations	
IP addresses	One IP address per unit
E5813A device sharing	Locked to one computer at a time. One computer must release the E5813A before another computer can use it
Network utilization	Maximum network utilization below 50%
Compatibility	Compatible with bulk or interrupt-type USB devices; isochronous devices are not supported
Dimensions	
Length, width, and height	Device: 112 mm (L) x 182 mm (W) x 26 mm (H) Power adapter: 110 mm (L) x 60 mm (W) x 35 mm (H)
Weight	Device: 0.284 kg Power adapter: 0.25 kg
Environmental Specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

* Additional detail and information in the Declaration of Conformity

Cables

Agilent also offers a variety of cables that provide easy and reliable connections. Agilent cables are engineered for exceptional reliability and durability, even under the harshest conditions.

Cable	Length
10833D GPIB cable	0.5 meter
10833A GPIB cable	1 meter
10833B GPIB cable	2 m
10833C GPIB cable	4 m
10833F GPIB cable	6 m
10833G GPIB cable	8 m

Adapters

10834A GPIB-to-GPIB adapter

The 10834A GPIB-to-GPIB adapter can help when limited rear-panel space and other design considerations make cabling difficult. The 10834A adapter extends the first cable by 2.3 cm away from the rear panel to provide clearance for other connectors, switches, and cables.

Choosing a remote connection: E5810A or E5813?

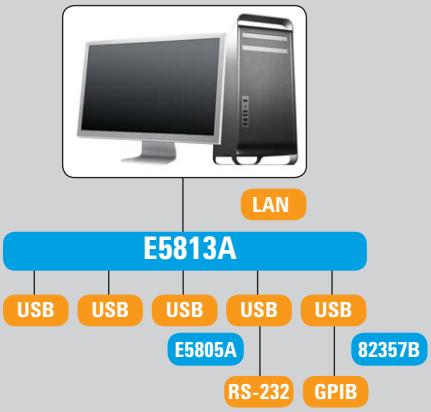
If you are :

1. Connecting to GPIB or RS-232 based instruments
2. Sharing your instruments with more than one user at a time

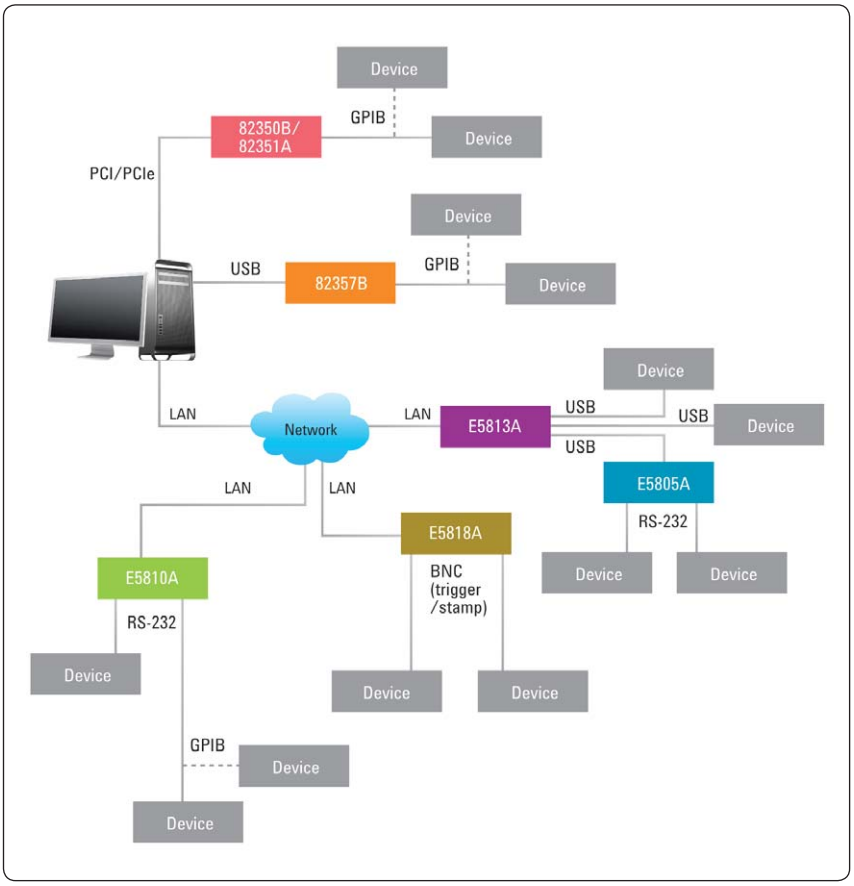
Then select E5810A

1. Connecting to a mix of instruments
2. Allowing one user to access an instrument at a time to avoid access conflict

Then select E5813A



You will obtain the best performance when you do the fewest format conversions. For example, using the E5810A (LAN to GPIB), data transfer will generally be faster than 82357B and an E5813A (LAN to USB to GPIB).



Ordering Information

Product Number	Product Description
82357B	USB/GPIB interface, includes Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
82350B	High-performance PCI GPIB interface, includes Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
82351A	High-performance PCIe™-GPIB Interface Card, includes Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
	Additional manual set (Option 0B1);Japanese User's Guide (Option ABJ)
E5810A	LAN/GPIB gateway, includes Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
	Rack mount kit for 1 or 2 E5810A(s) Option 100
E5818A	LXI Class-B Trigger Box, includes Agilent IO Libraries Suite and SCPI programming manuals on CD-ROM
E5805A	USB/4-port RS232 interface, includes USB cable, Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
E5813A	Networked 5-port USB hub, includes power adapter, Agilent IO Libraries Suite and VISA/SICL programming manuals on CD-ROM
10833D	0.5-meter GPIB cable
10833A	1-meter GPIB cable
10833B	2-meter GPIB cable
10833C	4-meter GPIB cable
10833F	6-meter GPIB cable
10833G	8 meter GPIB cable
10834A	GPIB-to-GPIB adapter

Related Agilent literature

- Modern Connectivity–Using USB and LAN connectivity Converters, Application note 1475-1
  pub no. 5989-0123EN
- Simplified PC Connections for GPIB Instruments, Application note 1409-1, pub no. 5988-5897EN
- Using LAN in Test Systems: The Basics, Application note 1465-9, pub no. 5989-1412EN
- Using LAN in Test Systems: Network Configuration, Application note 1465-10, pub no. 5989-1413EN
- Using USB in the Test and Measurement Environment, Application note 1465-12, pub no. 5989-1417EN
- Computer connectivity Considerations, Application note 1465-2, pub no. 5988-9818EN

Product specifications and descriptions in this document subject to change without notice.

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