# Agilent I/O Connectivity

for easy PC-to-instrument connection

- **Choose the best way to connect your PC to GPIB, USB and RS-232 instruments**
- **Take advantage of PC-standard interfaces (USB, LAN, PCI, PCIe)**
- **Add precise time stamping and time triggering capabilities to your instruments**
- **Protect your investment with industry-standard I/O software**
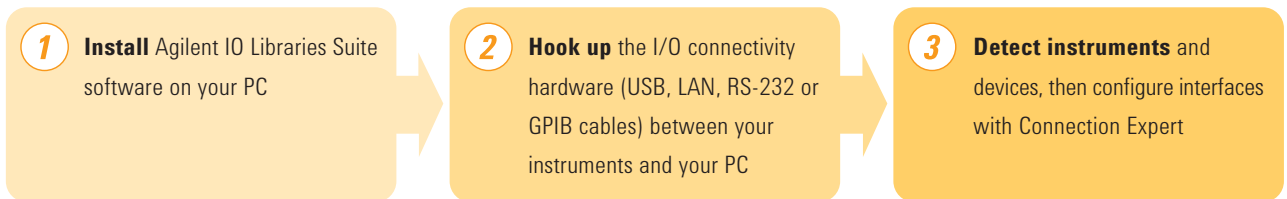
*Change your work, change your world*

**Agilent Technologies**

# Introducing Agilent I/O Hardware for PC-to-Instrument Connection

## Agilent I/O hardware family benefits

- *Easy connection to GPIB, USB and RS-232 instruments* — Agilent I/O hardware products offer simple "plug-and-go" set up and configuration.
- *Use PC-standard interfaces* — Connect via your computer PCI/PCIe™ slot or use the built-in USB or LAN ports on your PC to connect to your instruments.
- *Choice of interfaces (GPIB, RS-232, USB, LAN, PCI, PCIe™)* — Agilent offers you a selection of products to meet your I/O needs. We work where you do!
- *Precise IEEE1588 PTP synchronization over LAN for your instruments* — with the E5818A LXI Class B trigger box
- *Use industry-standard I/O libraries* — The included industry-standard VISA I/O libraries make it easy for you to use your existing software programs and let you mix and match test instruments and software from different vendors in a single system.

## Connecting is as easy as 1-2-3

| 1 **Install** Agilent IO Libraries Suite software on your PC | 2 **Hook up** the I/O connectivity hardware (USB, LAN, RS-232 or GPIB cables) between your instruments and your PC | 3 **Detect instruments** and devices, then configure interfaces with Connection Expert |

## Easily mix instruments from different vendors

Agilent IO Libraries Suite eliminates the headaches associated with trying to combine hardware and software from different vendors. The software is compatible with GPIB, USB, LAN and RS-232 test instruments that adhere to the supported interface standards, no matter who makes them.

When you install the IO Libraries Suite, the software checks for the presence of other I/O software on your computer. If it finds another vendor's VISA libraries (such as National Instruments), it automatically installs in a side-by-side mode that allows you to use your existing I/O software and the Agilent software together in multi-vendor systems without you being concerned with the behind-the-scenes details.

## Work in the environment comfortable to you

In addition, the IO Libraries are compatible with a variety of application development environments and programming APIs including Agilent or NI VISA, VISA COM, SICL, and Agilent 488 (compatible with NI-488.2), giving you even more flexibility to choose the software and hardware from any vendor to get your job done.

## Works with millions of existing instruments from hundreds of vendors

Use the most trusted and reliable technology for your connections. The IO Libraries Suite ships with more than 150 instruments from Agilent Technologies. It works with literally millions of existing instruments—helping you minimize the number of software packages you need. You won't have to switch between packages as you use a mix of existing and new instruments in the future.

## Select the right connectivity for your need

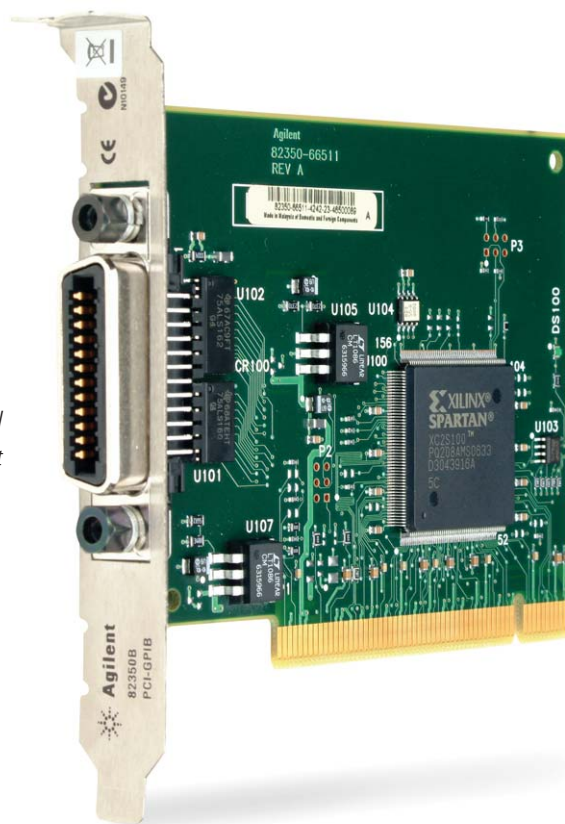| | Model | Description | Recommended Use | Page |
|---|---|---|---|---|
| **GPIB Boards** | 82350B | PCI High-Performance GPIB Interface Card | • Maximum GPIB throughput for all configurations<br>• Adding GPIB connection for PCI-based PCs or workstations | 3 |
| | 82351A | PCIe™-GPIB Interface Card | • Bandwidth-intense test applications<br>• Adding GPIB connection for PCIe™-based PCs or workstations | 5 |
| **USB Converters** | 82357B | USB/GPIB Interface | • Easiest GPIB connectivity to a PC via USB<br>• Notebook computer GPIB connections | 7 |
| | E5805A | USB/4-Port RS-232 Interface | • Addition of RS-232 ports to a PC via USB<br>• Notebook computer RS-232 connection | 9 |
| **LAN Converters** | E5810A | LAN/GPIB Gateway | • Connection to remote GPIB and RS-232 instrumentation via LAN<br>• Shared test systems | 11 |
| | E5813A | Networked 5-Port USB Hub | • Remote access to USB-based devices or instruments | 13 |
| **Triggering Device** | E5818A | LXI Class B Trigger Box | • Precise synchronization over LAN for LXI Class C and legacy GPIB instruments | 15 |
| **Cables and Adapter** | 10833x | GPIB Cables | • 10833A — 1 m  • 10833C — 4 m  • 10833F — 6 m<br>• 10833B — 2 m  • 10833D — 0.5 m  • 10833G — 8 m | 17 |
| | 10834A | GPIB-to-GPIB Adapter | • Extends the first cable 2.3 cm away from the rear panel to provide clearance for other connectors, switches, and cables. | 17 |

### ⓘ System Topology

Agilent I/O connectivity helps connect your instruments to PC easily, reliably and affordably. From legendary GPIB cables to the world's first LXI Class B triggering device, see how each provides seamless integration of your instruments no matter where they are placed in your system.



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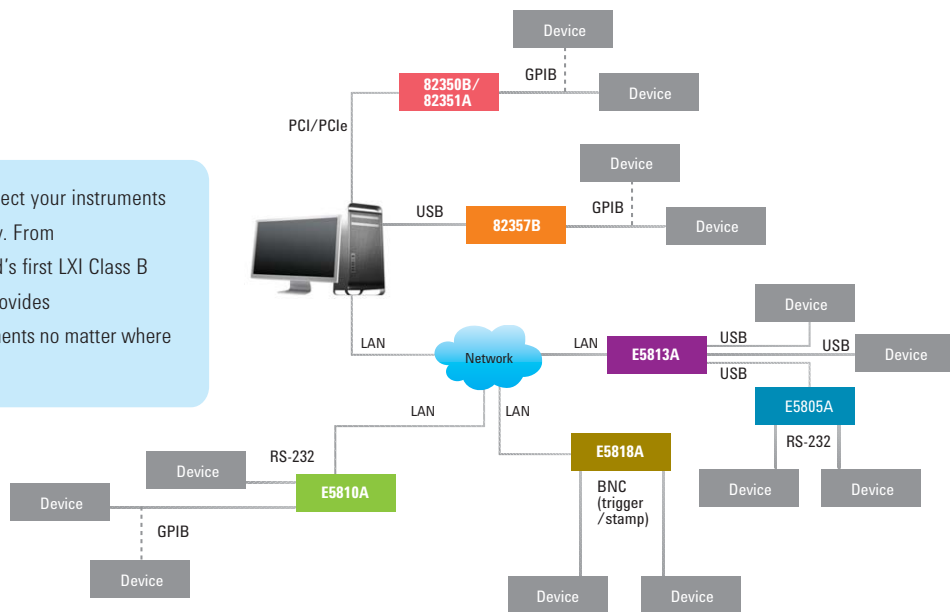
# Agilent 82350B PCI High-Performance GPIB Interface for Windows®

*This traditional GPIB connection still offers the highest throughput*

## Features

- PCI IEEE-488 interface for PCs
- Transfer rates up to 900 KB/s
- Dual-processor support on Windows 2000/XP/Vista
- Interface to 14 GPIB instruments (max)

## Recommended use

- Maximum GPIB throughput for all configurations

## 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 I/O 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.

For programming capability you have access with the latest version of IO Libraries suite, to program in all standard development environments. Agilent's IO Libraries Suite is easy to use and works with virtually any vendor's instrument or T&M programming software application. It is also able to automatically configure to work with NI-488.2 and Agilent's or NI's VISA, VISA COM and T&M Toolkit Direct IO. Even if you use NI's IO software, Agilent IO Libraries Suite will configure automatically so you don't have to be concerned with compatibility issues.

## 82350B technical specifications

| General requirements | |
|---|---|
| Minimum system requirements | Windows 2000/XP/Vista |
| Software requirements | Agilent IO Libraries Suite (included) |
| | Please see requirements on page 18 |
| PCI bus slot | 5-V PCI slot, 32 bits |
| Supported standards | PCI rev 2.2 |
| | 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 |
| Maximum instrument connection | 14 instruments—daisy chain via GPIB |
| 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 | −40 °C to +70 °C |
| Storage humidity | Up to 90% at 65 °C non-condensing |
| **Recommended accessories** | GPIB cables/adapter (refer to page 18) |

# Agilent 82351A PCI Express High-Performance GPIB Interface Card

*New standard for high-speed
internal devices*
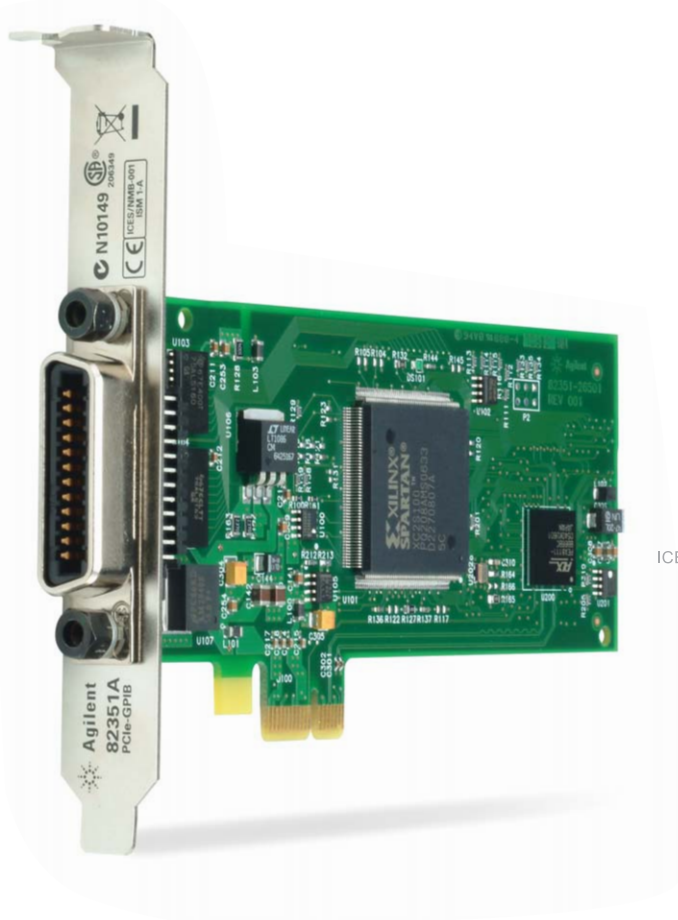
### Features

- 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)

### Recommended use

- Bandwidth-intensive test applications
- Adding GPIB connection to PCIe-based PCs or workstations

### High transfer rate for demanding test applications

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 to ensure data is not lost or overwritten during transfers to memory.

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. PCIe's powerful bus architecture allows bi-directional data transmission, and the implementation of a new class of test applications.

## 82351A technical specifications

| General requirements | |
|---|---|
| Minimum system requirements | Windows 2000/XP/Vista |
| Software requirements | Agilent IO Libraries Suite (included) |
| | Please see requirements on page 17 |
| 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 |
| | IEC61326-1:1997+A1:1998/EN61326-1:1997+A1 |
| | Pollution Degree 2 |
| | This product is rated for indoor use only. |
| Warranty | 1 year |
| **Dimensions** | |
| Width, depth and height | 158.0 mm (W) x 120.8 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 |
| **Recommended accessories** | GPIB cables/adapter (refer to page 17) |

# Agilent 82357B USB/GPIB Interface

*Boosting performance with the simplest connectivity*

## 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

## Recommended use

- 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 computer USB port.

With the 82357B USB/GPIB interface and its convenient plug-and-play feature, you just plug and go. 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 2.0 (480 Mbits/s) and is backward compatible with USB 1.1. 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 |
| | 450 MHz Pentium II (800 MHz is recommended) |
| | 128 MB RAM (256 MB or greater is recommended) |
| | 400 MB free disk space |
| | USB port (OS and Microsoft$^{®}$.NET Framework may require more resources) |
| Software requirements | Agilent IO Libraries Suite (included) |
| | Please see requirements on page 18 |
| Supported standards | 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-meter, shielded connector rated for 1500 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 |
| | USA: UL 61010-1:2004 |
| **Dimensions** | |
| Length, width, and height | 105 mm (L) x 64 mm (W) x 30 mm (H) (includes connectors) |
| Weight | 215 grams |
| **Environmental specifications** | |
| Operating environment | 0 °C to 55 °C |
| Storage environment | −40 °C to +70 °C |
| Operating humidity | Up to 90% at 40 °C non-condensing |
| Storage humidity | Up to 90% at 65 °C non-condensing |

[1] If you're using Agilent IO Libraries Suite 15.0 or higher, you're not required to install the driver separately as it would come built into the Suite.

# Agilent E5805A USB/4-Port RS-232 Interface*

ICES/NMB-001



*Turn your USB port into four additional RS-232 ports*

### Features

- Easy connection for a 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
- No switches to set, no PC cards to install, no external power supplies

### Recommended use

- Addition of RS-232 connections to a PC

### Add four serial ports in 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 required. Simply install the driver and plug in the E5805A to your PC.

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

* Not available in some countries. For enquires, kindly contact your Agilent sales representative.

## E5805A technical specifications

| General requirements | |
|---|---|
| Minimum system requirements | Windows 2000/XP |
| | B USB port |
| Software requirements | E5805A driver (included) |
| Software recommendation | Agilent IO Libraries Suite (included); |
| | Please see requirements on page 18 |
| 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 IO 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 |

# Agilent E5810A LAN/GPIB Gateway
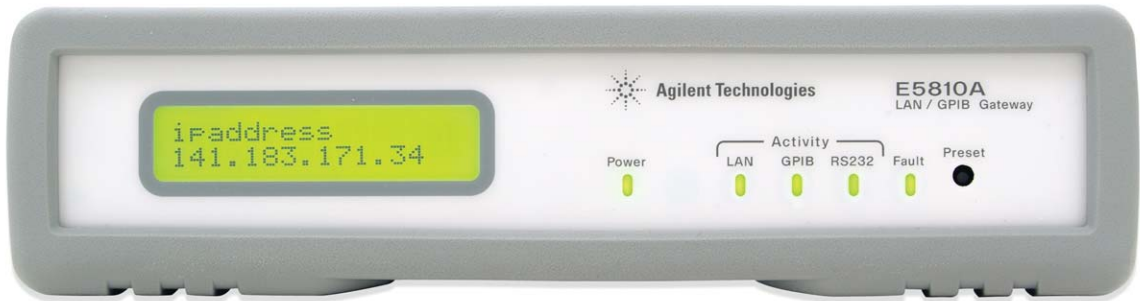


*Take advantage of LAN technology for your GPIB instruments and test systems*

## Features
- Remote access and control of GPIB and RS-232 instruments via LAN
- Easy set up and use via digital display and Web browser

## Recommended use
- Connection to remote GPIB and RS-232 instrumentation
- LAN distributed system

## Remote access and collaboration with GPIB instruments via your LAN
The Agilent E5810A LAN/GPIB gateway provides a high-performance solution for remote access of GPIB and RS-232 test instruments over your standard LAN.

The Agilent 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 the control of instruments from locations worldwide.

Remote access of GPIB and RS-232 instruments with the E5810A is easy. First, enter its IP address (as displayed on the instrument) into any Web browser to gain access to the connected instruments. Then, use your Web browser to send instrument commands interactively and you are able to view your measurement results right away. You can use the digital display and LEDs to check the IP address and troubleshoot locally.

You can access programming capability in all standard development environments with the latest version of IO Libraries Suite.

## System use
For system environments, the E5810A gateway can be rack-mounted. The rack mount kit (Option 100) allows two devices to be placed side-by-side in one rack width. For guidelines to select the appropriate I/O hardware for a remote connection, see page 2.

**E5810A technical specifications**

| General requirements | |
|---|---|
| Minimum system requirements | Available 10BASE-T/100BASE-TX LAN port (client computers) Windows 2000/XP/Vista |
| Supported Web browsers | Internet Explorer 4.0 or higher Netscape Navigator 4.7 or higher |
| Software requirements | Web browser Agilent IO Libraries Suite (included) Please see requirements on page 18 |
| 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 I/O connections |
| Indicators | LEDs for Power, Activity and 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** | |
| Length, width, 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 |
| **Recommended accessories** | GPIB cables/adapter (refer to page 18) Rack mount kit (Option 100) |

Agilent E5810A LAN/GPIB Gateway

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# Agilent E5813A Networked 5-Port USB Hub*



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

## Features

- Maximum connected instruments: 5
- Maximum data transfer rate: 12 Mbps per port
- Fully compatible with USB 1.1, USB 2.0 and 10BASE-T/100BASE-TX standards
- Extend USB devices beyond five meters

## Recommended use

- Remote access to USB-based devices or instruments
  GPIB and RS-232 devices can be connected to the E5813A through the 82357B and E5805A converters respectively.
- Sharing of instruments in a distributed system

## Connect 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 network. With access to remote devices, you can conveniently collect data, perform measurements, or monitor the progress of your tests. Using the included 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 also connect an E5805A USB/4-port RS-232 interface for access to RS-232 devices (see figure on page 3).

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.

For information on choosing between the E5810A and E5813A see page 3.

* Not available in some countries. For enquires, kindly contact your Agilent sales representative.

**E5813A technical specifications**

| General requirements | |
|---|---|
| Minimum system requirements | Windows 2000/XP |
| | Available USB 1.1 or 2.0 port |
| Software requirements | E5813A driver (included) |
| Software recommendation | Agilent IO Libraries Suite (included) |
| | Please see requirements on page 18 |
| 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, 0.7amps |
| Power line frequency | 50 to 60 Hz |
| Output | 5 volts DC, 3 amps max |
| USB device power available | 500 mA per device |
| Connectors | LAN RJ-45 |
| | Standard USB A on each of 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 |
| **I/O Connectivity Options** | Agilent 82357B USB/GPIB interface (refer to page 8) |

# E5818A LXI Class B Trigger Box

*Add to your instruments precise synchronization over LAN in the nanosecond range*

## Features

- Nanosecond synchronization with IEEE 1588 PTP
- Easier troubleshooting with event time stamping
- Peer-to-peer & multicast communication capabilities
- Easy upgrade and configuration remotely with a Web browser

## Recommended use

- Precise synchronization over LAN for LXI Class C and GPIB instruments

## Accurate synchronization, easy data correlation

Accurate synchronization is crucial, especially in automated test systems that involve multiple distributed devices. When an LXI Class C or GPIB instrument is connected to the Agilent E5818A LXI trigger box, it gains the timing capabilities of an LXI Class B instrument.

Leveraging the IEEE 1588 precision time protocol (PTP) synchronization, the trigger box enables nanosecond (up to 13 ns standard deviation over direct connection) time triggering and time stamping of events (up to 5000) for the attached instruments. With reliable event-log data, users can trace and troubleshoot faults easily.

Peer-to-peer and multicast communication capabilities improve test time, especially when heavy data exchanges occur between devices. Further reducing test time, the trigger box can be easily configured and upgraded through a standard Web browser.

Every trigger box provides BNC connectivity to two instruments. It is also SCPI-compatible and includes a bundled IVI driver.

## E5818A technical specifications

| General requirements | |
| --- | --- |
| Minimum system requirements | Available 10BASE-T/100BASE-TX LAN port (client computers)<br>Windows 2000/XP/Vista<br>450 MHz Pentium II (1 Ghz 32-bit (x86) is recommended for Vista)<br>128 MB RAM (512 MB is recommended for Vista). OS and Microsoft .NET Framework may require additional resources)<br>400 MB free disk space |
| Supported Web browsers | For the E5818 Web access: Internet Explorer 6.0 or higher, or Firefox 2.0 or higher |
| Software requirements | Agilent IO Libraries Suite (included)<br>Please see requirements on page 18 |
| Supported standards | VXI-11 Protocol<br>IEEE-488.2 Compatible<br>10BASE-T/100BASE-TX Networks<br>EIA-232<br>LXI Standard Revision 1.1<br>IEEE 1588-2002 |
| Programming language | SCPI command<br>IVI-COM<br>Web Controller |
| **General characteristics** | |
| Time stamp input | Input has TTL compatible logic levels |
| Time trigger output | Output provides TTL compatible logic levels |
| Periodic trigger of 1 pulse per second (1 PPS) | For synchronization diagnostic use only. Issuing 1 Hz signal at 1 TTL output level (rising edge). |
| AC input | Input voltage range: 100–240 V±10% at 47 to 63 Hz<br>Power: 25 VA peak (7.5 Watt typical) |
| Dimensions | With bumper: 227.3 mm (W) x 237.4 mm (L) x 59.3 mm (H)<br>Without bumper: 212.3 mm (W) x 230.4 mm (L) x 43.25 mm (H) |
| Weight | 3.085 kg |
| Rack mount kit dimensions | Full rack: 242.8 mm (W) x 238.05 mm (L) x 43.25 mm (H)<br>Half rack: 27.5 mm (W) x 226.2 mm (L) x 43.25 mm (H) |
| Indicators | PWR, LAN, 1588 |
| **General system specifications** | |
| Internal timer resolution | 20 ns |
| **TCXO characteristic** | |
| Frequency | 50 MHz |
| Initial accuracy | ±2.0 ppm |
| Aging per year | ±1.0 ppm |
| Temperature stability (0 to 55 °C) | ±2.5 ppm (−30 to 75 °C) |
| **1588 synchronization accuracy** | |
| 1.5 m Ethernet Direct Connection | +/- 2 ns mean, 10 ns standard deviation |
| Through IEEE 1588 boundary clock[1] | +/- 3 ns mean, 17 ns standard deviation |
| Via switch | +/- 12 ns mean, 11 ns standard deviation |
| **Time stamp system specifications (EXT1, EXT2)** | |
| Time stamp latency | 62 ns |
| Time stamp resolution | Min: 100 s<br>Max: N/A |
| Time stamp polarity | Rising or falling edge |
| Minimum pulse width | 20 ns |
| **Time trigger system specifications (TTL1, TTL2)** | |
| Time trigger latency | 67 ns |
| **External triggering system specifications** | |
| LXI LAN packets | Based on LAN0 to LAN7, or custom event ID with the same domain |
| **LAN messaging system specifications** | |
| External trigger | Based on Time Stamp 0 or Time Stamp 1 |
| **Recommended accessories** | Rack mount kit (Option 100)<br>Rack mount kit with BNC (Option 200)<br>Coaxial BNC cable, 1.2 m (Option 300) |

[1] Hirschmann MM3-4TX1-RT with PTP precision between two modules <80 ns

# GPIB Cables and Adapter

### Cables

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

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

### 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 to 2.3 cm away from the rear panel to provide clearance for other connectors, switches, and cables.

## Agilent connectivity software

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

Agilent IO Libraries Suite eliminates the hours of effort it takes to connect and configure PC-controlled test systems. This connectivity software ships with each Agilent I/O 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 instruments from different vendors.

Now the enhanced version 15.0 or higher is with expanded compatibility with other vendors' IO 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.

**System Requirements; Agilent IO Libraries version 15.0**

**PC software**
**Operating system**
- Windows Vista (32-bit Business, Ultimate or Enterprise Editions)
- Windows XP Pro or Home edition service pack 2 or later
- Windows 2000 Pro service pack 4 or later

**Note:** *For use with Windows ME or Windows 98 (SE) use Agilent IO Libraries version 14.0*

**PC hardware**
- Processor: 450 MHz Intel Pentium® class (800 MHz or greater recommended)
- RAM: 128 megabytes (MB) (512 MB or greater recommended)
- Hard disk space required: 280 MB
- Display: 800 x 600, 256 colors
- Input device: Microsoft mouse or compatible pointing device
- Device for installation: CD-ROM
- Web connection for upgrades and drivers

If you already own an Agilent I/O product or instrument, you can download the latest version of Agilent IO Libraries Suite at no cost.

See the following URL for more information.
Go to **www.agilent.com/find/iosuite**

# Related Agilent Literature

| Literature | Literature number |
|---|---|
| Agilent E2094N IO Libraries Suite data sheet | 5989-1439EN |
| Modern Connectivity—Using USB and LAN I/O Converters, application note 1475-1 | 5989-0123EN |
| Simplified PC Connections for GPIB Instruments, application note 1409-1 | 5988-5897EN |
| Using LAN in Test Systems: The Basics, application note 1465-9 | 5989-1412EN |
| Using LAN in Test Systems: Network Configuration, application note 1465-10 | 5989-1413EN |
| Using USB in the Test and Measurement Environment, application note 1465-12 | 5989-1417EN |
| Computer I/O Considerations, application note 1465-2 | 5988-9818EN |
| Create flexible test systems that easily incorporate USB, LAN, GPIB and RS-232C (Tips and Tricks for Using USB, LAN and GPIB) | 5989-3312EN |

(for other application-related topics and publications, visit **www.agilent.com/find/appcentral**)

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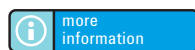(fax) 800 820 2816

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