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Find the *National Instruments PCMCIA-GPIB* at our website: *Click HERE*

GPIB Interfaces for PCMCIA

NI PCMCIA-GPIB, NI PCMCIA-GPIB+

- Completely IEEE 488.2 compatible
- Low power consumption
- FIFOs for increased performance
- Maximum transfer rates
  - More than 1.3 Mbytes/s (IEEE 488.1)
  - More than 2.2 Mbytes/s (HS488)
- PCMCIA Type II Card
  - PC Card Standard 2.1 compliant
  - Low power draw for battery-powered applications
- Plug and Play compatible

PCMCIA-GPIB+

- GPIB controller and analyzer on a single card
- Premiere software and hardware solution for troubleshooting GPIB
- Analyzer hardware for monitoring and controlling all GPIB lines
- Analyzer software for selectively capturing, triggering, and saving data and events

Operating Systems

- Windows 2000/NT/XP/Me/9x/3.1
- Mac OS 9.x/8.x/7.x
- DOS

Recommended Software

- LabVIEW
- LabWindows/CVI
- Measurement Studio

Driver Software (included)

- NI-488.2
- GPIB Analyzer application (Windows 2000/NT/XP/Me/98 only)



Overview

The National Instruments PCMCIA-GPIB is a low-cost, high-performance IEEE 488 interface for computers with PC Card (PCMCIA) slots, such as laptop and notebook computers. You can use the NI PCMCIA-GPIB with Intel-based PCs and Macintosh PowerBooks. The PCMCIA-GPIB+ combines the circuitry of a PCMCIA-GPIB controller with a GPIB analyzer, making it ideal for troubleshooting GPIB applications.

The PCMCIA-GPIB, a Type II PCMCIA card, is compliant with PCMCIA PC Card Standard Version 2.1. The PCMCIA-GPIB is also compatible with the Plug and Play standard. The system automatically configures the PCMCIA-GPIB on startup or when you insert the card. A National Instruments TNT family ASIC makes the PCMCIA-GPIB a maximum-performance IEEE 488.2 interface. The TNT ASIC performs the basic IEEE 488 Talker, Listener, and Controller functions and those functions required by IEEE 488.2. The PCMCIA-GPIB is designed for low power consumption and portability, features especially important in battery-powered mobile applications. Typical power consumption is only 65 mA.

PC Card Compatibility

The PC Card (PCMCIA) standard includes cards of several thicknesses. The Type I card is 3.3 mm thick, the Type II card is 5 mm thick, and the Type III card is 10 mm thick. You can insert, remove, or even swap PC Cards instantly without powering down or rebooting the system – a capability called "hot insertion." The two layers of PCMCIA-defined system software are Socket Services and Card Services. The Socket Services layer, the lowest level of software, provides a universal software interface to the hardware that controls sockets for PC Cards. It masks the details of the hardware used to implement PCMCIA sockets, giving higher level software the ability to control and use PC Cards without information about the hardware interface. Above Socket Services is the Card Services layer, which provides management of PCMCIA card and system resources. Card and Socket Services are either provided by the computer manufacturer or embedded in the operating system. Under Windows 2000/XP/Me/9x, which are Plug and Play operating systems, the PCMCIA-GPIB card is "hot swappable." Resources are automatically assigned on insertion and deleted on removal of a PCMCIA-GPIB. Under Windows NT, the PCMCIA-GPIB card is not hot swappable and you must insert it before starting the system. You then use the NI-488.2 Configuration Utility to assign resources. Under Windows 3.1 and DOS, you must have card services installed to use the PCMCIA-GPIB, but the card is hot swappable.

Transfer Rates

The National Instruments PCMCIA-GPIB software and hardware provide maximum performance, even when the data block is small. Figure 1 illustrates the maximum data transfer performance of the NI PCMCIA-GPIB at transfers below 1 KB in size. Figure 2 extends the plot up to 35 KB data transfers. Actual obtainable data transfers depend on host computer, system configuration, and device capability.

Hardware

TNT ASIC Family

The PCMCIA-GPIB uses a TNT family ASIC. The TNT ASIC combines the circuitry of the NAT4882 IEEE 488.2 Controller ASIC and Turbo488 performance-enhancing ASIC from National Instruments, along with built-in IEEE 488.1-compliant transceivers.

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GPIB Interfaces for PCMCIA

The TNT ASIC also implements HS488 transfers for high-speed GPIB data transmission, Automatic Handshake Holdoff on the last byte of a GPIB read, and Automatic END Transmission on the last byte of a GPIB write. Because the PCMCIA-GPIB performs these functions in hardware, you save significant CPU time relative to performing the same functions in software.

FIFO

A 32-byte FIFO on the PCMCIA-GPIB buffers data sent to or received from the GPIB. By buffering the data, the PCMCIA bus and the GPIB can overlap their respective accesses to the FIFO, rather than one bus waiting for the other to complete a cycle. This process increases the data transfer rate. The FIFO also provides byte-to-word packing and unpacking. Byte packing requires only one bus cycle on the PCMCIA bus for every two bytes transferred on the GPIB, thus using less PCMCIA bus bandwidth.

GPIB Transceivers

Transceivers interface the PCMCIA-GPIB to the IEEE 488 bus, which provides power-up/power-down bus protection (glitch free). The transceivers are built into the TNT family ASIC.

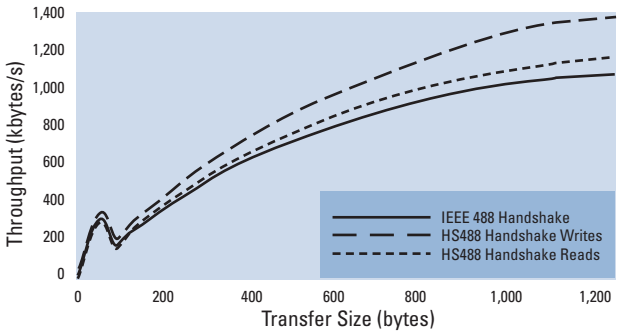


Figure 1. PCMCIA-GPIB Data Transfer Benchmarks (Small Data Blocks)

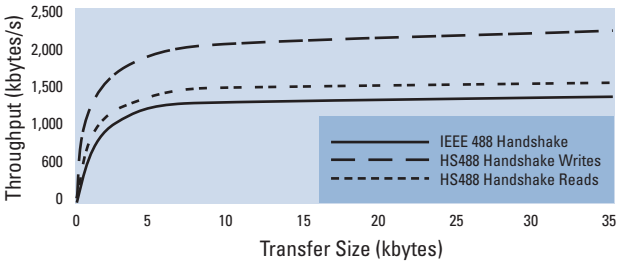


Figure 2. PCMCIA-GPIB Data Transfer Benchmarks



Figure 3. PCMCIA Cable Strain Relief Kit

Robust Cabling

The PCMCIA-GPIB controllers and cables have latching connectors that provide a robust mechanical setup. We also offer a PCMCIA Cable Strain Relief Kit (see Figure 3) for those applications that require an even more robust setup.

Analyzer Option

The National Instruments PCMCIA-GPIB+ combines the functionality of the PCMCIA-GPIB and a complete GPIB analyzer into a single Type II PC Card (PCMCIA). The PCMCIA-GPIB+ is a low-cost, high-speed alternative to separate GPIB controller and analyzer products. With the PCMCIA-GPIB+, a general-purpose notebook PC can serve as both a GPIB analyzer and an instrument controller.

The GPIB analyzer portion of the PCMCIA-GPIB+ can also capture and monitor HS488 activity up to 2.2 Mbytes/s rate. You can use the built-in GPIB analyzer for troubleshooting a variety of IEEE 488 software and hardware problems. It can alleviate many difficulties associated with GPIB communication, such as addressing inconsistencies, protocol violations, and simple bus timeout conditions.

The PCMCIA-GPIB+, in addition to including industry-standard NI-488.2 software, comes with an easy-to-use graphical analyzer application. You can use the PCMCIA-GPIB+ to monitor, capture, and participate in bus activity on the GPIB at high speeds. You can capture GPIB activity according to user-specified GPIB criteria. Furthermore, user-specified GPIB events can trigger the capture. You can view captured GPIB information in multiple windows in the analyzer software or save it for later viewing. The GPIB analyzer software displays the GPIB real-time status, including the 16 GPIB control and data lines.

See page 691 for more information about the GPIB analyzer software.

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GPIB Interfaces for PCMCIA

Ordering Information

PCMCIA-GPIB, NI-488.2, and cable for
- Windows 2000/XP/Me/98 (with 2 m GPIB cable)....778034-02
- Windows 2000/XP/Me/98 (with 4 m GPIB cable)....778034-04
- Windows NT (with 2 m GPIB cable) 777332-02
- Windows NT (with 4 m GPIB cable) 777332-04
- Windows 95 (with 2 m GPIB cable)....777156-02
- Windows 95 (with 4 m GPIB cable)....777156-04
- Windows 3.1/DOS (with 2 m GPIB cable)....776857-01
- Windows 3.1/DOS (with 4 m GPIB cable)....776857-04
- Mac OS 9.x (with 2 m GPIB cable) 776960-02

PCMCIA-GPIB+, NI-488.2, GPIB Analyzer software and cable for
- Windows 2000/XP/Me/98 (with 2 m GPIB cable) 778035-02
- Windows 95 (with 2 m GPIB cable)....777157-02
- Windows 3.1 (with 2 m GPIB cable) 776945-02

Accessories

PCMCIA-GPIB cable (25-pin PCMCIA to shielded GPIB cable)
- 1 m 186557-01
- 2 m 186557-02
- 4 m 186557-04

PCMCIA cable strain relief kit 777550-01

The PCMCIA Cable Strain Relief Kit attaches to the bottom of your notebook computer and provides adjustable strain relief for one or two PCMCIA cables. The strain relief kit works with most PCMCIA cards. See page 707 for more information on the strain relief kit.

BUY ONLINE!

*Visit **ni.com/info** and enter pcmciagpib and/or gpibplus.*

Specifications

IEEE 488 Compatibility

IEEE 488.1 and IEEE 488.2 compatible

Maximum IEEE 488 Bus Transfer Rates

IEEE 488 interlocked handshake	1.3 Mbytes/s
IEEE 488 non-interlocked (HS488) handshake	2.2 Mbytes/s

(Actual rates depend on system configuration and instrument capabilities.)

GPIB Analyzer Performance

Sampling rate	20 MHz
Timestamp resolution	50 ns

Power Requirement from PCMCIA Slot

+5 VDC

PCMCIA-GPIB	65 mA typical
	85 mA maximum
PCMCIA-GPIB+	150 mA typical

Physical

Dimensions	Type II PC Card
I/O connector	Cable with IEEE 488 standard 24 pin

Operating Environment

Component temperature	0 to 55 °C
Relative humidity	10 to 90%, noncondensing

Storage Environment

Ambient temperature	-20 to 70 °C
Relative humidity	5 to 95%, noncondensing

Electrostatic Discharge Protection (GPIB I/O Pins)

By Mil 883C Section 3015C	1,500 V

Compliance

Online at ***ni.com /hardref.nsf***

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