

# GPIB Interfaces for PCMCIA

## NI PCMCIA-GPIB

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

### Operating Systems

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

### Recommended Software

- LabVIEW
- LabWindows™/CVI
- Measurement Studio

### Driver Software (included)

- NI-488.2



## Overview

The NI 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 PCMCIA-GPIB with Intel-based PCs and Macintosh PowerBooks.

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. An NI 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 swappable.” 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 helps you manage PCMCIA card and system resources. Card and Socket Services are either provided by the computer manufacturer or embedded in the operating system. Under Windows XP/2000/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

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 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.

## GPIB Interfaces for PCMCIA

### 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.

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.

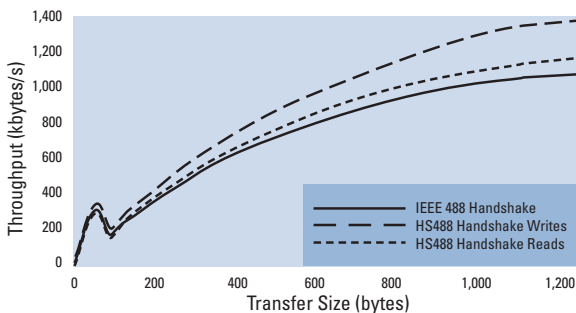


Figure 1. PCMCIA-GPIB Data Transfer Benchmarks (Small Data Blocks)

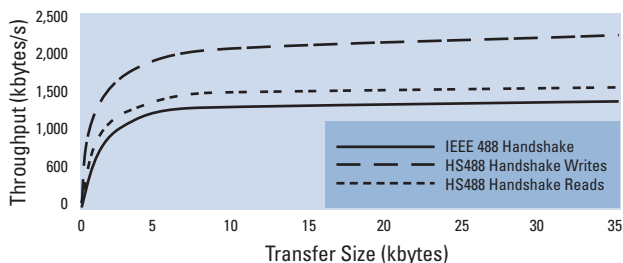


Figure 2. PCMCIA-GPIB Data Transfer Benchmarks



Figure 3. PCMCIA Cable Strain Relief Kit

### Robust Cabling

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

### Ordering Information

PCMCIA-GPIB, NI-488.2, and cable for

Windows XP/2000/Me/98 (with 2 m GPIB cable).....	778034-02
Windows XP/2000/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

### Accessories

PCMCIA-GPIB cable

(25-pin PCMCIA to shielded GPIB cable)

1 m .....	186557-01
2 m .....	186557-02
4 m .....	186557-04

NI 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.

### BUY NOW!

For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S.) or go to [ni.com/gpib](http://ni.com/gpib).

## GPIB Interfaces for PCMCIA

### Specifications

#### IEEE 488 Compatibility

IEEE 488.1 and IEEE 488.2 compatible

#### Maximum IEEE 488 Bus Transfer Rates

IEEE 488 interlocked handshake..... 1.3 MB/s

IEEE 488 noninterlocked

(HS488) handshake..... 2.2 MB/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

#### 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

### Safety and Compliance

#### Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 60950-1, EN 60950-1
- UL 60950-1, CSA 60950-1

**Note:** For UL and other safety certifications, refer to the product label or visit [ni.com/certification](http://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.

#### Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326 (IEC 61326): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

#### CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

**Note:** Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit [ni.com/certification](http://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.

#### Waste Electrical and Electronic Equipment (WEEE)

**EU Customers:** At the end of their life cycle, all products must be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit [ni.com/environment/weee.htm](http://ni.com/environment/weee.htm).

# NI Services and Support



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## Training and Certification

NI training is the fastest, most certain route to productivity with our products. NI training can shorten your learning curve, save development time, and reduce maintenance costs over the application life cycle. We schedule instructor-led courses in cities worldwide, or we can hold a course at your facility. We also offer a professional certification program that identifies individuals who have high levels of skill and knowledge on using NI products. Visit [ni.com/training](http://ni.com/training).

## Professional Services

Our NI Professional Services team is composed of NI applications and systems engineers and a worldwide National Instruments Alliance Partner program of more than 600 independent consultants and integrators. Services



range from start-up assistance to turnkey system integration. Visit [ni.com/alliance](http://ni.com/alliance).

## OEM Support

We offer design-in consulting and product integration assistance if you want to use our products for OEM applications. For information about special pricing and services for OEM customers, visit [ni.com/oem](http://ni.com/oem).

## Local Sales and Technical Support

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We also offer service programs that provide automatic upgrades to your application development environment and higher levels of technical support. Visit [ni.com/ssp](http://ni.com/ssp).

## Hardware Services

### System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at [ni.com/advisor](http://ni.com/advisor) to find a system assurance program to meet your needs.

### Calibration Services

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. We provide manual calibration procedures, services to recalibrate your products, and automated calibration software specifically designed for use by metrology laboratories. Visit [ni.com/calibration](http://ni.com/calibration).

### Repair and Extended Warranty

NI provides complete repair services for our products. Express repair and advance replacement services are also available. We offer extended warranties to help you meet project life-cycle requirements. Visit [ni.com/services](http://ni.com/services).



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