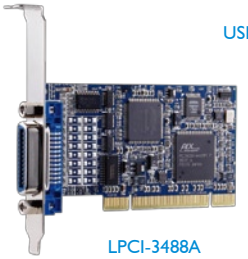
USB/LPCI-3488A

High-Performance IEEE-488 GPIB Interface for USB/PCI



USB-3488A



LPCI-3488A

Features

- **Fully compatible with the IEEE-488 standard**
- **Supports a 32-bit 3.3 V or 5 V PCI bus**
- **Up to 1.5 MB/s data transfer rates**
- **Built-in FIFO for read/write operations**
- **Provides APIs compatible with NI-488.2 driver software***
- **Supports industrial-standard VISA library**
- **Interactive utility for testing and diagnostics**
- **Easy GPIB connectively for laptop computer (USB-3488A)**
- **Plug and Play interface; No GPIB cable required for instrument connection (USB-3488A)**
- **2 M USB cable attached (USB-3488A)**
- **USB 2.0 compatible (USB-3488A)**
- **No external power required (USB-3488A)**

Operating Systems

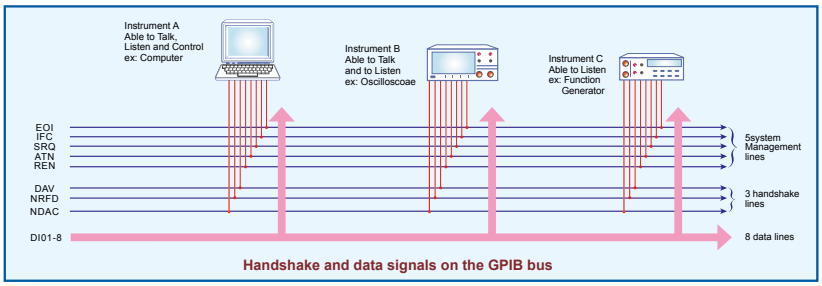
- Supports Windows 7/Vista/2000/XP/Server 2003

Recommended Software

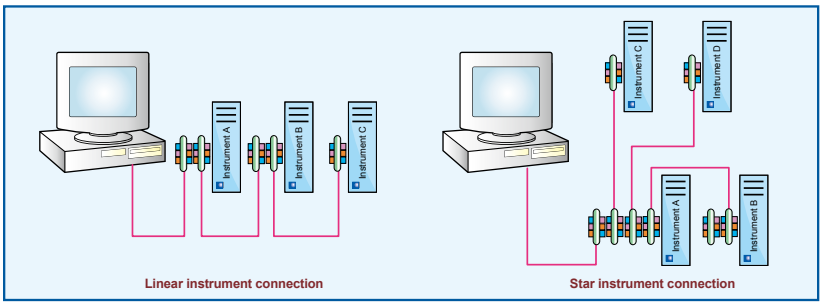
- VB/VC++/BCB
- LabVIEW*
- LabWindow/CVI*

Introduction

The IEEE-488 standard, also known as GPIB, is a bus interface that connects instruments with a computer to form an ATE system. GPIB was initially developed by Hewlett Packard and was recognized as an IEEE standard in 1978. The IEEE-488.1-1978 standard defines the convention for electrical and mechanical bus characteristics, as well as the state diagram for each bus function. In 1987, another standard was derived from the original IEEE-488.1-1978 and known as IEEE-488.2-1978. It was introduced to define data formats, common commands, and control protocols for instruments. In general, IEEE-488.1 defines hardware specifications, and IEEE-488.2 defines software specifications. The IEEE-488 standard has been widely accepted by instrument vendors over the past few decades. Today, GPIB is still the most popular interface between computer and instruments.



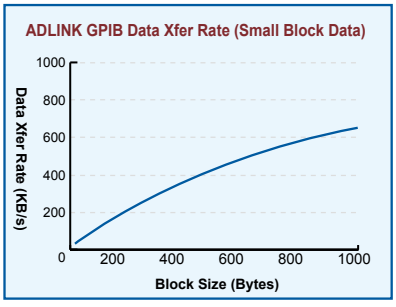
Handshake and data signals on the GPIB bus

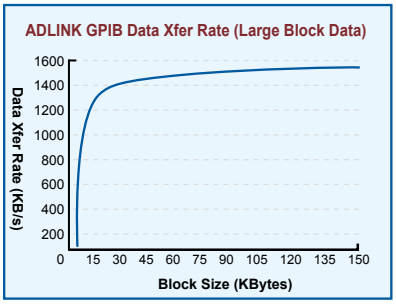


Linear instrument connection

Star instrument connection

ADLINK's USB-3488A and LPCI-3488A controller interface cards are fully compatible with the IEEE-488.2 instrumentation control and communication standard and are capable of controlling up to 14 stand-alone instruments via IEEE-488 cables. The USB-3488A and LPCI-3488A are designed to meet the requirements for high performance and maximum programming portability. The USB-3488A and LPCI-3488A is developed using ADLINK's intellectual property in FPGAs which incorporates a GPIB controller, provides capability, and supports a transfer rate up to 1.5 MB/s. With APIs that are compatible with NI-488.2* driver software and VISA support, the USB-3488A and LPCI-3488A offer the best compatibility with your existing applications and instrument drivers





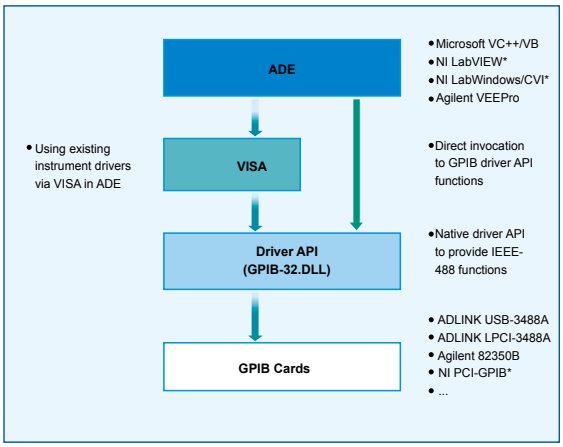
Performance

ADLINK's expertise in PCI and PXI interface cards was leveraged when developing these newly designed GPIB interface cards. The LPCI-3488A, which is the low-profile PCI form factor, supports both 3.3 V and 5V PCI buses and can be adapted to most industrial and desktop computers. A built-in FIFO is placed between the GPIB bus and PCI controller to buffer GPIB read/write operations. This FIFO eliminates the gap between the slow GPIB bus (~1.5 MB/s) and the fast PCI bus (132 MB/s), the maximum GPIB transfer rates of LPCI-3488A is 1.5 MB/s, and dramatically increases overall system performance.

Fully Compatible with Your Existing Applications

ADLINK GPIB interface cards are delivered with complete software support, including a driver API that is fully binary compatible with NI-488.2* driver software. All programs written based on GPIB-32.DLL can be executed with USB-3488A and LPCI-3488A without any modification. VISA library is also supported to ensure compatibility with applications utilizing VISA. The ADLINK USB-3488A and LPCI-3488A thus provides the "Plug and Play" compatibility with all your existing applications.

How do ADLINK's GPIB Interface Cards Work?



The objective of a test and measurement application is to test a specific UUT (Unit Under Test) automatically. A typical automatic testing system includes testing programs and various testing equipment connected to the host computer via a GPIB interface. To manage the connections with GPIB instruments, testing programs are usually developed according to the following model: ADEs (Application Development Environments), the environment where applications are written. Some ADEs are popular because users can implement any function needed using textual programming (ex. VC++/VB, TestExec) or graphical programming (ex. LabVIEW™*) techniques. A vital part of a test and measurement application is to control and communicate with GPIB instruments. Two techniques are generally used to control the GPIB interface: invoke the native driver API or use the existing instrument drivers via VISA. A native driver API is provided by most GPIB interface vendors and is usually in the form of ANSI C functions. For users who need more detailed control over GPIB instruments, using a driver API with SCPI string commands is a good choice. For others who want to keep away from complicated instrument commands, instrument drivers developed for specific ADEs (ex. LabVIEW™*/TestExec) can significantly simplify the complexity of instrument control. Most of the instrument drivers use a VISA library to control the GPIB interface and communicate with instruments. VISA support is essential in this case. ADLINK GPIB interface cards work with your applications in both ways. Its GPIB-32.DLL provides binary compatibility with the popular NI-488.2* driver software. The USB-3488A and LPCI-3488A also provide VISA library support that can be used with most common instrument drivers written by instrument vendors. Regardless if you are using VC++, VB, Delphi, LabVIEW™*, or any other T&M ADE, ADLINK GPIB interface cards are the most cost-effective GPIB solutions compatible with all your applications.

Specifications

GPIB Bus Specifications	• Up to 14 instruments connected
	• Maximum 1.5 MB/s data transfer rate
	• Cable length -2 meters between each instrument (suggested) -20 meters total cable length
	• Data transfer mode: 8 bits parallel
	• Handshake: 3 wire handshake, reception of each data byte is acknowledged
Certifications	• EMC/EMI: CE, FCC Class A
Programming Interface	• VB/VC++/BCB
	• LabVIEW™*
	• LabVIEW™/CVI*
External Indicators (USB-3488A)	• Ready: Green for active device
	• Active blinking amber for transferring data
General Specifications	• I/O connector : IEEE-488 standard 24-pin
	• Operating temperature : 0°C to 55°C
	• Storage temperature : -20°C to 80°C
	• Relative humidity : 5% to 95%, non-condensing
	• Power requirements • LPCI-3488A: +5 V, 250 mA (typical), 300 mA (maximum) • USB-3488A: +5 V, 190 mA (typical), 500 mA (maximum)
Dimensions (not including connectors) :	• LPCI-3488A: 120 mm x 64 mm
	• USB-3488A: 81.7 mm (L) x 66.1 mm (W) x 27.8 mm (H)
I/O Connectors	• GPIB: IEEE-488 standard 24 pin
	• USB: USB standard series A plug (USB-3488A)
Driver Compatibility	• All operations can be executed with the ADL-GPIB driver package

Ordering Information

- **USB-3488A**
  High-Performance IEEE-488 GPIB interface for USB
- **LPCI-3488A**
  High-Performance IEEE-488 GPIB interface card for low-profile PCI bus, shipped with an additional low-profile bracket.
- **ACL-IEEE488-1**
  IEEE-488 standard cable, 1 meter length
- **ACL-IEEE488-2**
  IEEE-488 standard cable, 2 meter length
- **ACL-IEEE488-4**
  IEEE-488 standard cable, 4 meter length
- **ACL-IEEE488-8**
  IEEE-488 standard cable, 8 meter length

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