PCI-3488

High-Performance IEEE488 GPIB Interface

Features

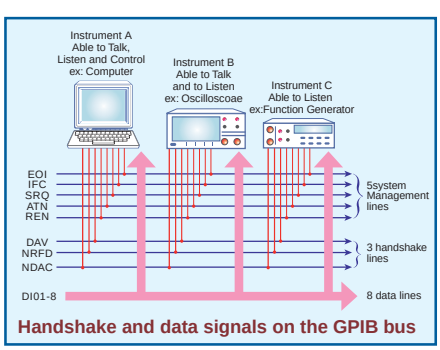
- Fully compatible with the IEEE 488 standard
- Supports a 32-bit 3.3V or 5V PCI bus
- Up to 1.5MB/s data transfer rates
- On-board 1KB FIFO for read/write operations
- Compatible with NI-488.2 command set
- Supports Agilent IO Library and NI VISA
- Interactive utility for testing and diagnostics

Operating Systems
- Windows 98/NT/2000/XP

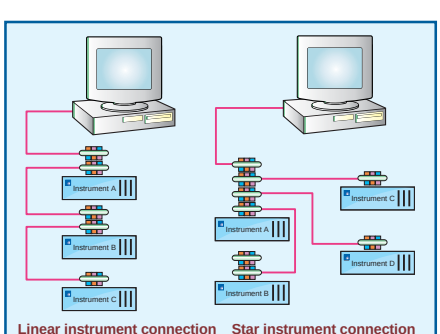
Recommended Software
- VB
- VC++
- Delphi
- LabVIEW
- LabWindow/CVI

Introduction

The IEEE488 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 IEEE488.1-1978 standard defines the convention for electrical and mechanical bus characteristics, as well as the state diagram for each bus function. In 1987, another standard derived from IEEE488.1-1978, known as IEEE488.2-1987, was introduced to define data formats, common commands, and control protocols for instruments. In general, IEEE488.1 defines the hardware specification, and IEEE488.2 defines the software specification. The IEEE488 standard has been widely accepted by instrument vendors for decades. Today, GPIB is the most popular interface between computer and instruments.



Handshake and data signals on the GPIB bus

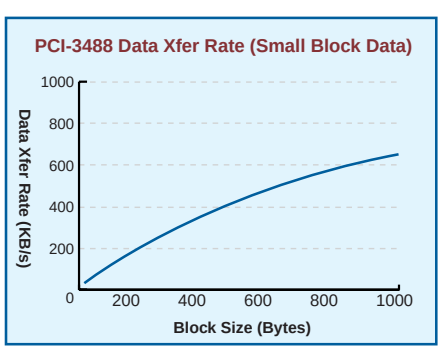


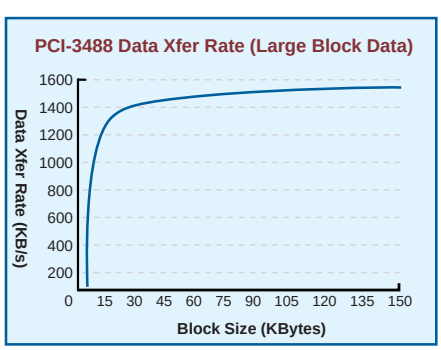
Linear instrument connection Star instrument connection

ADLINK's PCI-3488 GPIB controller interface card, fully compatible with the IEEE488 instrumentation control and communication standard, is capable of controlling up to 14 stand-alone instruments via IEEE488 cables. It is designed to meet the requirements for high performance and maximum programming portability with 1KB on-board FIFO and a block transfer mode provide up to 1.5MB/s GPIB transfer rate. With an NI-like driver API and VISA support, the PCI-3488 provides the greatest compatibility with your existing applications and instrument drivers.

Performance

ADLINK's expertise in PCI interface cards was leveraged when developing this newly designed GPIB controller. The PCI-3488 supports both 3.3V and 5V PCI buses and can be adapted to most industrial and desktop computers. A 1KB on-board FIFO is placed between the GPIB bus and PCI controller to buffer GPIB read and write operations. The FIFO eliminates the gap between the slow GPIB bus (~1.5MB/s) and the fast PCI bus (132MB/s), and dramatically increases overall system performance.





Fully Compatible with Your Existing Applications

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

Specifications

GPIB Bus Specification
- Up to 14 instruments connected
- Maximal 1.5MB/s data transfer rate
- Cable length
  - 2 meters between each instrument (suggested)
  - 20 meters total cable length

Programming Interface
- VB
- VC++
- Delphi
- LabVIEW
- LabWindow/CVI

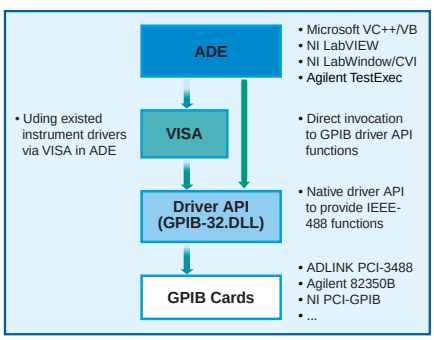
General Specification
- I/O connector : IEEE 488 standard 24-pin
- Operating temperature : 0 to 55˚C
- Storage temperature : -20 to 80˚C
- Relative humidity : 5 to 95%, noncondensing
- Dimension : 134mm x 107mm (not including connectors)

Ordering Information

- **PCI-3488**
  High-Performance IEEE488 GPIB Interface Card for PCI bus
- **ACL-IEEE488-1**
  IEEE 488 standard cable, 1 meters length
- **ACL-IEEE488-2**
  IEEE 488 standard cable, 2 meters length
- **ACL-IEEE488-4**
  IEEE 488 standard cable, 4 meters length
- **ACL-IEEE488-8**
  IEEE 488 standard cable, 8 meters length

How ADLINK PCI-3488 Works

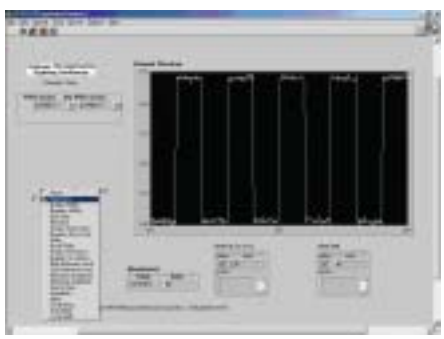
The objective of a test and measurement application is to test a specific UUT (Unit Under Test) automatically. A typical automatic testing system includes testing programs and various testing equipment connected to the host computer via a GPIB interface. To manage the connections with GPIB instruments, testing programs are usually developed according to the following model:



ADEs (Application Development Environments), the environment where applications are written, 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.

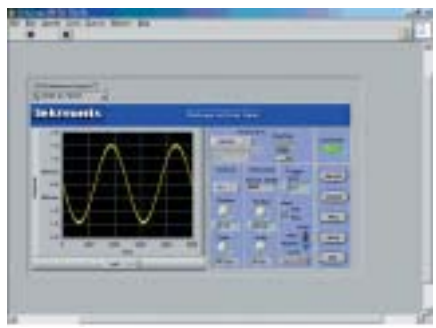
Using Stanford Research DS360 in LabVIEW with GPIB commands



Using Tektronix TDS 784D in LabVIEW with NI VISA

ADLINK's PCI-3488 works with your applications in both ways. Its NI-like GPIB-32.DLL provides binary compatibility with the world's most popular NI GPIB library. The PCI-3488 also provides 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, PCI-3488 is the most cost-effective GPIB solution compatible with all your applications.

Using Agilent 34401A in LabVIEW with Agilent IO Library



Using Tektronix TDS 6604B in LabVIEW with Tektronix VISA

Instrument Compatibility

The PCI-3488 has been tested with a wide range of instruments and application development environments for the validation of instrument compatibility. Below is a partial list of instruments that been tested with PCI-3488.

Agilent 33120A	Keithley 2400
Agilent 34401A	Keithley 6485
Agilent 34970A	Keithley 7001
Agilent 66319D	MOTECH PPS-1201
Agilent 66321B	R&S CMU200
Agilent 8644B	Stanford Research DS360
Agilent 8960	Tektronix TDS 540C
Agilent E3631A	Tektronix TDS 6604B
FLUKE 5720A	Tektronix TDS 784D

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