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# Low-Cost IEEE 1394 VXIbus Interface for PCI

## VXI-1394

- VXI*plug&play* compliant
- Complete VXI interface from any PCI computer
- VXI Slot 0 capability, including Resource Manager
- Word serial (message-based) communication
- Register-based communication
- Direct trigger and interrupt control
- Direct access to VXI memory space
- Bidirectional VXI transfers
- Compatible with VXI instruments with DMA
- High-performance DMA transfers using the MITE ASIC
- 7 Mbytes/s sustained throughput across 1394 bus

### Driver Software

- NI-VXI/NI-VISA
  - Windows 2000/NT/Me/98

### Application Software

- LabVIEW
- Measurement Studio



## Overview

The VXI-1394 interface kit links any PCI-based computer directly to the VXIbus using the IEEE 1394 or "FireWire" high-speed serial bus. The VXI-1394 interface kit makes your computer perform as if it were plugged directly into the VXI backplane, giving your external computer the capability of an embedded computer. The VXI*plug&play*-compliant VXI-1394 kit comes complete with the NI-VXI/NI-VISA software for Windows 2000/NT/Me/98 to ease your VXI system development. NI-VXI/NI-VISA software features intuitive tools for troubleshooting and debugging VXI systems and programming libraries compatible with hundreds of industry-standard instrument drivers.

You can use the VXI-1394 kit in any PCI-based computer running Windows 2000/NT/Me/98. Adding the high-performance IEEE 1394 interface to a low-cost, general-purpose desktop PC creates an attractive cost/performance solution compared to embedded VXI controllers.

Each VXI-1394 kit includes one PCI-1394 plug-in board, that plugs into your PC; one VXI-1394 Slot 0 module that plugs directly into your VXI mainframe; a flexible 1394 cable; and NI-VXI/NI-VISA VXIbus interface software. Because the VXI-1394 comes with NI-VXI/NI-VISA, all applications you write with NI-VXI and/or NI-VISA execute on the VXI-1394 without modifications. If your PC is equipped with an OHCI IEEE 1394 port, you can connect to your VXI system using the built-in port rather than the PCI 1394 board.

## Hardware

The VXI-1394 hardware interfaces your PCI-based desktop computer to the VXIbus using the IEEE 1394 high-speed serial bus, a new serial bus technology used to connect external peripheral devices to the PC. IEEE 1394 also features "hot plug-in" capability so that you can easily add and configure IEEE 1394 devices such as the VXI-1394 interface to your PC without needing to power down your system. The VXI-1394 interface combines the IEEE 1394 technology with the MITE and MANTIS custom ASICs, which feature high-speed DMA and direct interrupt and trigger control to provide a low-cost, easy-to-use, and powerful VXI control solution.

**INFO CODES**
For more information or to order products online, visit *ni.com/info* and enter:
vxi1394
***BUY ONLINE!***

The PCI-1394 board and the VXI-1394 slot-0 module are connected using a thin, very flexible IEEE 1394 cable for easy installation and configuration of rack-mount systems. The IEEE 1394 cable is a six-wire shielded cable with a maximum length of 4.5 m. You can connect up to 16 IEEE 1394 devices for a maximum length of 72 m.

## Performance

Using the latest IEEE 1394 technology, the VXI-1394 kit can achieve a speed of 400 Mb/s across the IEEE 1394 link. Because IEEE 1394 was designed for streaming devices such as digital cameras, the VXI-1394 interface achieves a faster block throughput rate than GPIB-to-VXI controllers, but less than MXI-2 or MXI-3 controller speeds. For typical instrument control applications, the VXI-1394 interface is also comparable to GPIB-to-VXI controllers, but is not as fast as MXI-2 or MXI-3. The VXI-1394 interface achieves a data transfer rate between the local computer memory and the VXIbus at rates up to 7 Mbytes/s sustained throughput rate.





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# Low-Cost IEEE 1394 VXIbus Interface for PCI

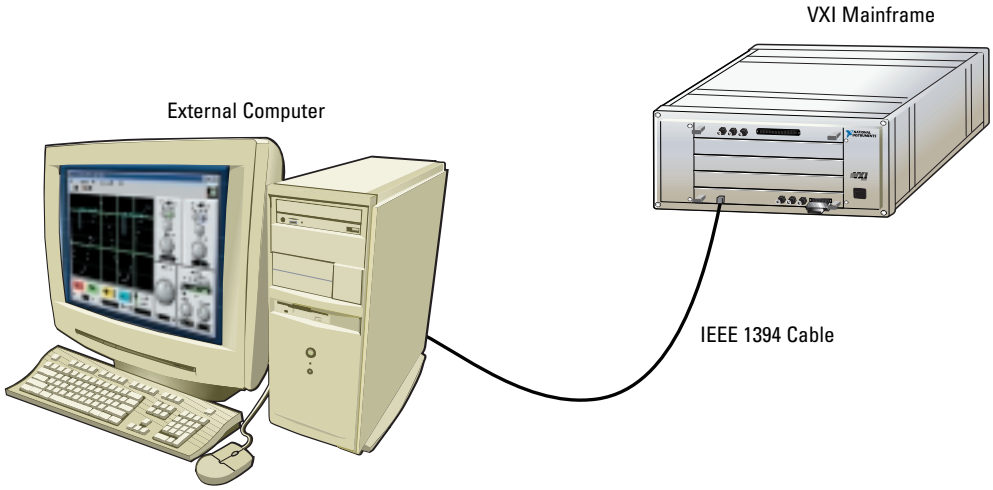



*Figure 1. VXI-1394 Configuration*

## VXI Slot 0 Functionality

The single-slot, C-size VXI-1394 module is installed in Slot 0 in your VXI mainframe. The VXI-1394 module provides all Slot 0 capabilities including slot identification, bus management responsibilities, and generation of essential VXI backplane signals such as CLK10. The VXI-1394 uses register-based Slot 0 functions, which the Resource Manager software in your PC uses to bring up the mainframe and begin normal operation.

## VXI Triggers and Interrupts

With the VXI-1394 interface kit, your computer can detect and service all of the VXIbus interrupt lines and VXI triggers in any or all of the VXI mainframes to which it is connected.

## Shared Memory

With the VXI-1394 interface kit installed, your computer can share system RAM over the VXIbus so other VXI devices can send data directly to your computer. Shared or dual-ported memory turns the system RAM in your computer into VXI memory and makes it appear as memory residing on a VXI device installed in the mainframe. The VXI-1394 interface kit was optimized so you can increase system performance by transferring data directly to your PC from VXI instruments with DMA.

## Ordering Information

### VXI-1394 Kit

Windows NT .....778117-01

Windows 2000/Me/98.....778118-01

Kits include one PCI-1394 board, one C-size VXI-1394 module, NI-VXI/NI-VISA software, documentation, and a 4.5 m IEEE 1394 cable.

### Hardware Only

VXI-1394.....183815-01

C-size VXI module





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