VXIbus Interface Kits for PCI

VXI-PCI80xx

- VXI*plug&play* compliant
- Complete interface to VXI from any PCI-based computer or workstation
- 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
- High-performance DMA transfers using the MITE ASIC
- Maximum throughput across MXIbus
  - 33 Mbytes/s burst
  - 23 Mbytes/s sustained
- Optional dual-ported DRAM expansion
  - 64 MB maximum on VXI-MXI-2
  - 16 MB maximum on PCI-MXI-2
- Expandable to several VXI or VME mainframes using MXIbus
- C-size and B-size options

Driver Software

- NI-VXI/NI-VISA
  - Windows 2000/NT/Me/98
  - Solaris 2
  - HP-UX
  - Mac OS
  - Linux
- NI-VXI
  - Windows 3.1/DOS

Application Software

- LabVIEW
- Measurement Studio

Overview

The National Instruments VXI-PCI80xx links any PCI-based computer directly to the VXIbus using the high-speed MXI-2 bus. The VXI-PCI80xx 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-PCI80xx features VXI*plug&play* compliant, integrated software, including intuitive tools for troubleshooting and debugging VXI systems. With the comprehensive NI-VXI/NI-VISA software and programming libraries, you can program multiple mainframe configurations, yet maintain software compatibility across a variety of VXI controller platforms.

Hardware

Each VXI-PCI80xx kit includes one half-size PCI plug-in board, the PCI-MXI-2, which is installed in an available PCI slot in your computer; one C-size or B-size VXI-MXI-2 Slot 0 module that plugs directly into your VXI mainframe; a flexible MXI-2 cable; and NI-VXI/NI-VISA VXIbus interface software. Because the VXI-PCI80xx comes complete with NI-VXI/NI-VISA, you do not need to modify your applications written with NI-VXI and/or NI-VISA.

With the VXI-PCI80xx, you achieve superior performance by incorporating the MITE ASIC on the PCI-MXI-2 and the VXI-MXI-2 boards. National Instruments developed the MITE custom ASIC to streamline the connection between PCI computers and workstations to both the MXI and VXI buses. Using the MITE, you can transfer data between the local computer memory and VXI devices at a 33 Mbytes/s burst rate. You can consistently realize a 23 Mbytes/s sustained throughput rate for data transfers across the MXIbus.

The VXI-PCI8000 Series is a flexible, high-performance solution for stand-alone computer control of VXI systems. Any PCI-based computer running Windows 2000/NT/Me/98, Solaris 2, HP-UX, Mac OS, or Windows 3.1/DOS can use the VXI-PCI80xx kits, to give you the freedom to choose from the wide variety of general-purpose desktop computers. PCs equipped with a VXI-PCI80xx kit combine the high-performance MXI-2 interface with low-cost, general-purpose desktop computers to produce an attractive cost/performance solution compared to embedded VXI controllers. By using MXI as your control solution, you can upgrade your PC at any time to capitalize on the latest computer technology while using the same high-speed VXIbus interface.

INFO CODES
For more information or to order products online, visit *ni.com/info* and enter:
vxipci8000
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The VXI-MXI-2 module installed in your VXI mainframe has VXI Slot 0 capability. The Slot 0 functions include a MODID register and a CLK10 source. The VXI-MXI-2 uses register-based Slot 0 functions, which the Resource Manager software in your PC uses to bring up the mainframe and begin normal operation. The VXI-MXI-2 can also reside in Non-Slot 0, meaning that you can also insert the VXI-MXI-2 into any slot in the VXI chassis. The VXI-MXI-2 incorporates automatic Slot 0 detection so that you can move the VXI-MXI-2 from Slot 0 to Non-Slot 0 without configuring any jumpers or switches.

Multiple-Mainframe Systems

Because the MXIbus is a full 32-bit multimaster system bus that interconnects several devices at the hardware bus level, you can easily add more mainframes to a VXI-PCI80xx configuration in

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a software-transparent fashion using VXI-MXI-2 mainframe extenders. These additional mainframes are daisy-chained to your computer and first mainframe using MXIbus cables up to 20 m in length. If your system requires VME boards, you can even integrate one or more VME chassis into your system using the VME-MXI-2 chassis extender. This is often much more cost effective than using adapter brackets to install VME boards into valuable VXI slots. Your computer has full Slot 0 control of each mainframe; all devices in all mainframes can communicate with each other as if in a single mainframe, with no special programming requirements.

Shared Memory

With the VXI-PCI80xx, VXI devices also have access to the computer's internal memory. In other words, your computer memory is dual-ported to the VXIbus. VXI bus masters, can move data directly to or from the computer memory. You can effectively manage this operation by using the NI-VXI/NI-VISA software driver provided with the VXI-PCI80xx kits. By using shared memory, the computer acts as a VXI slave device. The computer memory, which you can dual port to the VXIbus, resides in either the VXI A24 or A32 space. This means that VXI devices that have VXI bus master capability can move data directly to and from the local memory of your computer.

Software

The VXI-PCI80xx comes complete with NI-VXI/NI-VISA software, making it completely compliant with VXI*plug&play* Systems Alliance specifications. You can run all the latest VXI*plug&play* software, including executable soft front panels, with which you can operate the instrument immediately, and standardized LabVIEW and Measurement Studio instrument drivers to ease your programming tasks. NI-VXI/NI-VISA comes with a VXIbus interface library that works with a number of popular programming environments and compilers, including Microsoft Visual C++, Borland C++, Microsoft Visual Basic, Measurement Studio, and LabVIEW. Application software developed using the VXI-PCI80xx and the NI-VXI/NI-VISA bus interface software is compatible with many other VXI controller platforms, including embedded controllers and computers equipped with MXI interfaces. NI-VXI and VISA I/O software compatibility across platforms protects your software investment in the future. You can easily port VXI software to other platforms as your controller requirements change or expand in the future.

Ordering Information

VXI-PCI8015 (Windows 2000/NT)	777119-02
VXI-PCI8012 (Windows Me/98)	777119-03
VXI-PCI8010 (Windows 3.1/DOS)	777119-01
VXI-PCI8040 (Mac OS)	777119-04
VXI-PCI8022 (Solaris 2)	777119-05
VXI-PCI8024 (HP-UX)	777119-06
VXI-PCI8026 (Linux)	777119-084

Kits include one PCI-MXI-2 board, one C-size VXI MXI-2 module, NI-VXI/NI-VISA software, and a MXI-2 cable.

Contact National Instruments for additional kit configurations.

See page 696 for MXI-2 cables.

Specifications

VXI-PCI8000

Address Access	A32, A24, A16
Transfer width (master)	D64, D32, D16, D08 (EO)
Transfer width (slave)	D32, D16, D08 (EO)
Maximum MXI throughput (peak)	33 Mbytes/s
Maximum MXI throughput (sustained)	23 Mbytes/s
Read, Modify, Write Cycles	Yes
VME Block Cycles	Yes

VXI-MXI-2

Physical

DRAM Options	4, 8, 16, 32, 64 MB
MXIbus Automatic Termination	Yes
Automatic Slot-0 Detection	Yes
Software Configurable	Yes
Dimensions	23.3 by 34.0 cm (9.2 by 13.4 in.)
Weight	1.0 kg (2.2 lb)
Size	C-size, C-1

Operating Environment

Temperature	0 to 55 °C
Humidity	10% to 90% noncondensing

Storage Environment

Temperature	-40 to 85 °C
Humidity	0% to 95% noncondensing

Power Requirements

VDC	Typical	Maximum
+5	2.50 A	3.5 A
-2	80 mA	100 mA
-5.2	180 mA	255 mA

Cooling

Average Power	19 W
Airflow	1.5 liters/s
Back Pressure	0.08 mm H^2O

PCI-MXI-2

PCI Interrupts	1 (INTA)
Software Configurable	Yes
Dimensions	10.7 by 17.5 cm (4.2 by 6.9 in.)
Weight	181.8 g (0.4 lb)
Power Requirement	
+5 VDC	2.2 A, typical, 3.5 A, maximum
DRAM Options	4, 16 MB