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Find the *National Instruments PXI-8330* at our website: *Click HERE*

Remote Controllers (MXI-3) Multisystem Extension Interfaces for PCI and PXI/CompactPCI

PXI-PCI8330 Series, PCI-8330 Series, PXI-8330 Series

- Direct PC control of PXI/CompactPCI systems
- Multichassis configurations for PXI/CompactPCI
- MXI-3 link performance
  132 Mbytes/s peak
  84 Mbytes/s sustained
- Fiber-optic or copper cabling
- 200 m maximum distance
- Completely hardware and software transparent
- Independent of operating system
- Seamless PXI/CompactPCI interrupt extension
- Complies with PCI-to-PCI Bridge Architecture Specification, version 1.0



Overview

The National Instruments PXI-PCI8330 Series interface kits give PCs direct control of PXI/CompactPCI systems via a transparent hardware and software link, using MXI-3 technology. You also can use PXI-8330 and PXI-8335 modules for linking multiple PXI/CompactPCI chassis. MXI-3 technology introduces the fastest, most flexible extension technology for controlling PXI/CompactPCI systems from a stand-alone computer using standard PCI-to-PCI bridging technology with a high-speed 1.5 Gb/s serial link. The MXI-3 technology couples two physically separate PCI or PXI/CompactPCI buses with either a copper or fiber-optic data link.

Hardware

Each PXI-PCI8330 Series kit includes one half-size PCI-833x plug-in board, which you install in your computer; one 3U-size PXI-833x module, which you install in your PXI/CompactPCI chassis; and a flexible MXI-3 cable. Use copper MXI-3 for a lower cost solution. Use fiber-optic MXI-3 for electrical isolation or long distances (up to 200 m). Use two PXI-8330 or PXI-8335 modules to link two PXI/CompactPCI systems.

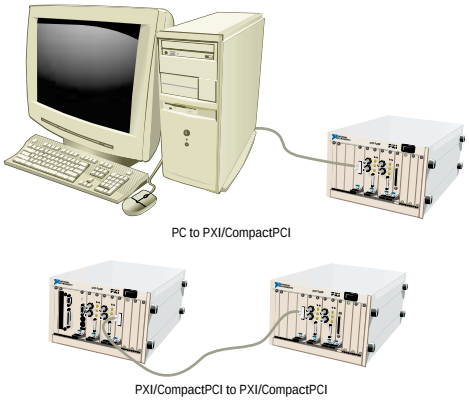


Figure 1. Basic MXI-3 Configurations

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

pxipci8330
pxipci8335

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MXI-3 Technology

MXI-3 operates as a PCI-to-PCI bridge to achieve software and hardware transparency and high performance. MXI-3 builds on the standard PCI-to-PCI bridge architecture by effectively splitting the bridge into two halves connected through a 1.5 Gb/s serial link. A complete MXI-3 link appears and operates exactly as a single, standard PCI-to-PCI bridge. Transfers between the two PCI buses occur according to the windowing rules provided in the PCI-to-PCI Bridge Architecture Specification version 1.0 and the PCI Specification Revision 2.1. MXI-3 benefits fully from all the features of PCI-to-PCI bridging because it complies with the detailed requirements defined in the bridging specification.

The MXI-3 ASIC

National Instruments developed the MXI-3 ASIC to provide a fast, efficient link between the PCI bus and a 1.5 Gb/s serial interface. The MXI-3 ASIC incorporates a complete PCI bus interface and operates at the full frequency of the 32-bit PCI bus at 33 MHz. The ASIC also includes the standardized PCI-to-PCI bridge register set to ensure complete software transparency for device drivers and application code. The MXI-3 ASIC decouples the primary PCI bus

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segment from the downstream, or secondary, PCI bus to facilitate transparent operation over a long distance and to achieve optimal performance. The full duplex interface and the deep FIFOs in the MXI-3 ASIC provide a high-speed connection between the two PCI bus segments without introducing additional delays resulting from collisions or arbitration.

In conjunction with the FIFOs, the MXI-3 ASIC implements posting and prefetching techniques to further boost performance. When transferring data from local computer RAM to a board installed in a PXI/CompactPCI chassis, several write accesses can be posted to the FIFO and streamed to one or more modules for optimal performance. For read transfers, data from a PXI/CompactPCI module is fetched and streamed back towards the initiator of the transaction. The MXI-3 ASIC can execute write posting and read prefetching simultaneously in both directions.

Interrupts

The PC with a MXI-3 kit installed can detect and service PXI/CompactPCI interrupt lines in all the chassis to which it connects. Additionally, PXI/CompactPCI interrupt lines are transparently extended across all chassis.

Operating System Independent

Because MXI-3 is a transparent architecture, it functions independently of the operating system. Therefore it works under operating systems such as Microsoft Windows, Apple Mac OS, and Sun Solaris.

Multiple-Chassis Expansion

You can expand one PXI/CompactPCI chassis to two by plugging a PXI-833x module into any peripheral slot of one PXI/CompactPCI chassis, and another PXI-833x module into slot 1 of another PXI/CompactPCI chassis, and connecting them. Each PXI-833x module detects the slot in which it resides and automatically configures itself as primary or secondary. In accordance with the PCI specification, up to 254 chassis can potentially link to a single, desktop PC. MXI-3 links extend only the PCI bus and do not extend the PXI timing and trigger signals.

Ordering Information

MXI-3 Kits for PXI/CompactPCI

PXI-PCI8330 (with 2 m copper cable) 777942-01
PXI-PCI8335 (with 5 m fiber optic cable).....778132-01
PXI-PCI8335 (with 30 m fiber-optic cable).....777943-01
Kits include one PCI MXI-3 board (PCI-833x), one PXI MXI-3 (PXI-833x) module, and one cable.

PCI MXI-3 Interface Boards

PCI-8330 (copper) 777944-01
PCI-8335 (fiber-optic) 777946-01

PXI MXI-3 Interface Modules

PXI-8330 (copper) 777945-01
PXI-8335 (fiber-optic) 777947-01

MXI-3 Cables

Copper
- 2 m 763431-02
- 5 m 763431-05
- 10 m 763431-10

Fiber-optic
- 5 m 763427-05
- 30 m 763427-30

Specifications*

Complies with PCI-to-PCI Bridge Architecture Specification version 1.0
Maximum number of links..... 254 (depends on BIOS)
Maximum distance ..... 10 m (copper cable)
200 m (fiber-optic cable)
Peak performance†..... 132 Mbytes/s
Sustained performance†..... 84 Mbytes/s
†Performance varies depending on host processor, I/O modules, and type/size of data.

Power Requirement

+5 VDC ..... 1.5 A

Physical

Dimensions
PCI ..... 10.7 by 17.5 cm (4.2 by 6.9 in.)
PXI ..... 10.0 by 16.0 cm (3.9 by 6.3 in.), 3U
Weight
PCI ..... 150 g (5 oz)
PXI ..... 230 g (8 oz)

Mean Time Between Failures (MTBF)

PXI-8330 ..... 1,080,000 hours
PCI-8330 ..... 1,130,000 hours
PXI-8335 ..... 850,000 hours
PCI-8335 ..... 1,120,000 hours
(Prediction performed in accordance with Belcore methods)

Operating Environment

Ambient temperature ..... 0 to 50°C
Relative humidity ..... 10 to 90%, noncondensing

Storage Environment

Storage temperature..... -20 to 70 °C
Relative humidity ..... 5 to 95% noncondensing

Safety and EMC/EMI Compliance

Safety..... EN 61010-1:1993
EMC/EMI ..... CE, C-Tick, and FCC Part 15
Electrical Emissions..... EN 55011 Class A at 10 m, and FCC Part 15 Class A above 1 GHz
Electrical Immunity ..... EN 61326:1998

***Specifications subject to change without notice**

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