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For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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USB Remote Controller for VXI

- VXIbus 3.0 features including A64 addressing and 2eVME protocol
- 32 MB/s sustained throughput across USB and VXI
- Word-serial accelerator
- USB 2.0-compatible, including "hot plug-in" capability
- Direct trigger and interrupt control
- External VXI CLK10 synchronization

- Slot 0 capability, including Resource Manager, slot identification, and bus management responsibilities
- VXIplug&play compliance
- Support for register-based communication
- Direct access to VXI memory space
- Bidirectional VXI transfers
- High-performance DMA transfers using the MITE ASIC

Overview

The NI VXI-USB interface kit links any desktop or notebook computer to the VXIbus using the universal serial bus (USB). With the single-slot, C-sized controller, your external computer performs as if it were plugged directly into the VXI backplane, giving it the capability of an embedded controller. Taking advantage of USB 2.0 technology, the VXI-USB achieves superior throughput for block transfers and word-serial (message-based) communication in comparison to IEEE 1394-to-VXI and GPIB-to-VXI interfaces. You can use the VXI-USB kit in any computer running Windows Vista/XP/2000. You gain flexibility, performance, and value by using a desktop or notebook computer for controlling your VXI system.

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Requirements and Compatibility

OS Information

- Windows 2000/XP
- Windows 7
- Windows 7 64-bit
- Windows Vista

Driver Information

- NI-VISA
- NI-VXI

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Application and Technology

Hardware

The USB 2.0-compatible VXI-USB capitalizes on higher data transfer rates and offers hot plug-in capability so that you can easily add USB devices to your PC and configure them without needing to power down your system. In addition, the VXI-USB features a word-serial accelerator to improve the speed of data transfers using word-serial protocol commands. For register-based communication, VXI-USB performance is comparable to the 1394-to-VXI and GPIB-to-VXI interfaces. Combining USB technology with a MITE ASIC, the VXI-USB interface features high-speed DMA and direct interrupt and trigger control to provide a low-cost, easy-to-use, and powerful VXI control solution.

The VXI-USB Slot 0 module connects to the computer using a thin, flexible USB cable for easy rack-mount system installation and configuration.

Software

The VXI-USB comes with NI-VXI/NI-VISA software, making it completely compliant with VXIplug&play Systems Alliance specifications. You can run the latest VXIplug&play software, including executable soft front panels, with which you can operate the instrument immediately, and standardized NI LabVIEW and LabWindows™/CVI instrument drivers to simplify your programming tasks.

NI-VXI/NI-VISA features a VXIbus interface library that works with several popular programming environments and compilers, including NI LabVIEW, NI Measurement Studio, Microsoft Visual C++, Borland C++, and Microsoft Visual Basic. Application software developed using the VXI-USB and NI-VXI/NI-VISA software is compatible with many other VXI controller platforms, including embedded controllers and computers equipped with IEEE 1394-to-VXI, GPIB-to-VXI, and MXI-2 interfaces. NI-VXI/NI-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.

Performance

Designed for high-speed streaming, USB 2.0 transfers data at rates up to 480 Mbits/s across the USB link. Using this technology, the VXI-USB is optimized for word-serial communication and achieves a faster block throughput rate than either the IEEE 1394-to-VXI or GPIB-to-VXI remote interfaces. The VXI-USB achieves a data transfer rate of up to 32 MB/s sustained throughput between the local computer memory and the VXIbus. It provides a high-throughput solution for remote control of VXI systems using large block transfers and word-serial protocol.

VXI Slot 0 Functionality

The single-slot, C-sized VXI-USB module must be installed in Slot 0 in your VXI mainframe. It provides all Slot 0 capabilities including slot identification and bus management responsibilities.

VXI Triggers and Interrupts

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

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Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
Products			
NI VXI-USB	779163-01	No accessories required.	
Accessories			
NI GPIB-USB-HS	778927-01	No accessories required.	

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Support and Services

Technical Support

Get answers to your technical questions using the following National Instruments resources.

- **Support** - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
- **Discussion Forums** - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
- **Online Community** - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

- **Classroom training in cities worldwide** - the most comprehensive hands-on training taught by engineers.
- **On-site training at your facility** - an excellent option to train multiple employees at the same time.
- **Online instructor-led training** - lower-cost, remote training if classroom or on-site courses are not possible.
- **Course kits** - lowest-cost, self-paced training that you can use as reference guides.
- **Training memberships** and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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Detailed Specifications

Requirements	
VXIbus configuration space	64 B
Default	None

Environmental	
Maximum altitude	2,000 m
Pollution Degree	2
Indoor use only.	

Operating Environment	
Ambient temperature range	0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
Relative humidity range	10% to 90% (Tested in accordance with IEC-60068-2-56.)

Storage Environment	
Ambient temperature range	–20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
Relative humidity range	5% to 95% (Tested in accordance with IEC-60068-2-56.)
EMI	FCC Class A verified, EC verified

Shock and Vibration	
Operational shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)
Random vibration	
Operating	5 to 500 Hz, 0.3 g_{rms}
Nonoperating	5 to 500 Hz, 2.4 g_{rms} (Tested in accordance with IEC-60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Power Requirement	
+5 V (excluding downstream USB devices)	
Typical	2 A
Maximum	4 A
–5.2 V	
Typical	200 mA
Maximum	500 mA
–2 V	
Typical	100 mA
Maximum	250 mA

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Physical

Size	C size, C-1
Dimensions	23.3 × 34.0 cm (9.2 × 13.4 in.)
Weight	1.14 kg (2.5 lb)
I/O connectors	
USB device (Series A)	2
USB host (Series B)	1
SMB	3
Slot requirements	Single VXI C-size slot
Compatibility	Fully compatible with VXI specification
VXI keying class	Class 1 TTL
MTBF	Contact factory

USB Capability Description

USB 2.0, backward compatible with USB 1.1 host and devices.

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the product label or visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

Emissions	EN 55011 Class A at 10 m FCC Part 15A above 1 GHz
Immunity	EN 61326:1997 + A2:2001, Table 1

CE, C-Tick, and FCC Part 15 (Class A) Compliant

Note For EMC compliance, operate this device with shielded cabling.

CE Compliance C E

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

Low-Voltage Directive (safety)	73/23/EEC
Electromagnetic Compatibility Directive (EMC)	89/336/EEC

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Cleaning

If you need to clean the module, use a soft, nonmetallic brush. Make sure that the module is completely dry and free from contaminants before returning it to service.

VMEbus Capability Codes

A64, A32, A24, A16 (master)	VMEbus master A64, A32, A24, and A16 addressing
A16 (slave)	VMEbus slave A16 addressing
D64, D32, D16, D08(EO) (master)	VMEbus master D64, D32, D16, and D08 data sizes
D16, D08(EO) (slave)	VMEbus slave D16 and D08 data sizes

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BLT, MBLT (master)	VMEbus master block and D64 transfers
RMW (master)	VMEbus master read/modify/write transfers
RMW (slave)	VMEbus slave read/modify/write transfers
RETRY (master)	VMEbus master retry support
RETRY (slave)	VMEbus slave retry support
FSD	First slot detector
SCON	VMEbus System Controller (Automatic Detection)
PRI, RRS	Prioritized or Round Robin Select arbiter
ROR, FAIR	Release on Request and FAIR bus requester
IH(7-1)	Interrupt handler for levels 7–1
I(7-1)	Interrupt requester for levels 7–1
D32, D16, D08(O) (Interrupt Handler)	VMEbus D32, D16, D08(O) interrupt handler
D32, D16, D08(O) (Interrupter)	VMEbus D32, D16, D08(O) interrupter
ROAK, RORA	Release on Acknowledge or Register Access interrupter
BTO(x)	VMEbus bus timer (programmable limit)
LOCK	Can lock the VMEbus for indivisible transfers

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