

# 2.16 GHz Dual-Core Embedded Controller for VXI

## NI VXIpc-882 **NEW!**

- Intel Core 2 Duo processor T7400 (2.16 GHz dual core)
- 1 GB (1 x 1 GB DIMM) dual-channel 667 MHz DDR2 RAM standard, 4 GB (2 x 2 GB DIMMs) maximum
- Integrated I/O
  - 10/100/1000BASE-TX Ethernet
  - 4 Hi-Speed USB ports
  - ExpressCard/34 slot
  - DVI-I video connector
  - GPIB (IEEE 488) controller
  - RS232 serial port
  - IEEE 1284 ECP/EPP parallel port
  - Integrated hard drive
- 8 TTL backplane triggers and CLK10 available through front panel connectors
- VXIplug&play compliance
- Watchdog timer
- VXI Slot 0 resource manager

### NI-VXI/NI-VISA Software

- Windows XP



## Overview

The NI VXIpc-882 is a high-performance Intel Core 2 Duo processor T7400-based embedded controller for VXI systems. This two-slot embedded controller gives you direct control of VXI registers, memory, interrupts, and triggers while helping you maintain compatibility with numerous software packages and tools for general-market desktop computers.

CPU	Intel Core 2 Duo Processor T7400 (2.16 GHz dual core)
Front-side bus	667 MHz
L2 cache	4 MB
Dual-channel 667 MHz DDRs RAM, standard	1 GB (1 x 1 GB)
Dual-channel 667 MHz DDRs RAM, maximum	4 GB (2 x 2 GB)
Hard drive, minimum	80 GB SATA
10/100/1000BASE-TX (Gigabit) Ethernet	✓
GPIB (IEEE 488) controller	✓
Serial port (RS232)	✓
Parallel port	✓
Hi-Speed USB ports	4
ExpressCard/34 slot	✓
Watchdog/trigger SMB	✓
Installed OS	Windows Vista downgraded to Windows XP Professional

Table 1. NI VXIpc-882 Features

## Dual-Core Processor

The VXIpc-882 features the dual-core Intel Core 2 Duo processor T7400. Dual-core processors contain two cores, or computing engines, in one physical package. These processors can simultaneously execute two computing tasks, which is advantageous in multitasking environments, such as Windows XP, where multiple applications run simultaneously. Two applications, such as NI LabVIEW and Microsoft Excel, can each execute on a separate core at the same time, which improves overall system performance. Multithreaded applications such as LabVIEW take

full advantage of dual-core processors because they separate their tasks into independent threads. A dual-core processor can simultaneously execute two of these threads.

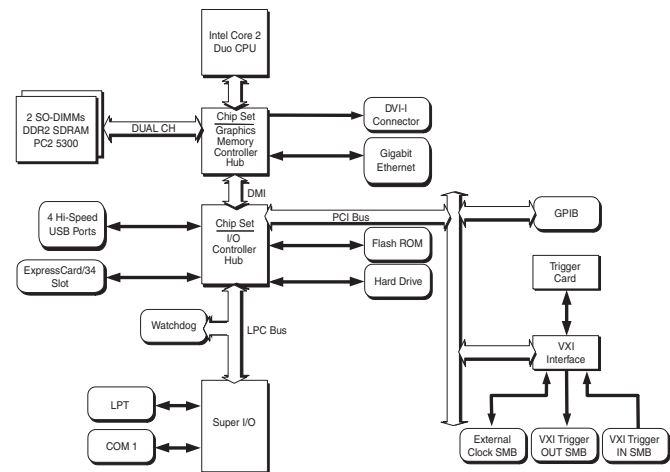


Figure 1. NI VXIpc-882 Block Diagram

## Hardware

With state-of-the-art packaging, the VXIpc-882 embedded controller integrates the Intel Core 2 Duo processor T7400 and all standard and extended PC I/O ports into a single unit. By integrating many I/O ports on the controller, all active slots in the chassis remain available for measurement and control modules. This rugged one-piece controller design minimizes integration issues and eliminates the need for complex cabling to daughter boards. The VXIpc-882 controller also uses the

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Mobile Intel 945GM Express chipset to deliver maximum performance, flexibility, and stability.

### Peripheral I/O

The VXIpc-882 embedded controller includes high-performance peripheral I/O such as 10/100/1000BASE-TX (gigabit) Ethernet and four Hi-Speed USB ports for connection to a keyboard, a mouse, a CD-ROM/DVD-ROM drive for software installation, or other standard PC peripherals such as speakers, printers, or memory sticks. Use the IEEE 1284 ECP/EPP parallel port to connect to a wide variety of devices, including tape backup drives, printers, and scanners. An RS232 port is available for connecting to serial devices. Additionally, the VXIpc-882 features an integrated GPIB (IEEE 488) controller, which controls external instrumentation, saving additional cost and a slot.

### ExpressCard

This embedded controller also includes an ExpressCard/34 slot. ExpressCard uses the PCI Express and Hi-Speed USB serial interfaces to provide up to 2.5 Gb/s of bidirectional throughput. Use the ExpressCard/34 slot to add a second gigabit Ethernet port to your system or additional peripheral I/O such as external hard drives, RAID arrays, 802.11 wireless LAN, IEEE 1394, Bluetooth, or various memory adapters.

### Video

The VXIpc-882 features the integrated Intel GMA 950 graphics media accelerator, which delivers intense, realistic 3D graphics with sharp images, fast rendering, smooth motion, and high detail, without the need for an additional video card or peripheral. This unique architecture offers balanced memory usage between graphics and the system for optimal performance. Additionally, this controller includes a DVI-I video connector, compatible with digital (DVI) and analog (VGA) monitors. A DVI-I to VGA adapter is included with the controller for use with VGA monitors.

### Memory

The VXIpc-882 uses dual-channel 667 MHz DDR2 SDRAM, which makes the controller ideal for data-intensive applications requiring significant analysis. It features two SO-DIMM sockets for the DDR2 SDRAM and offers 1 GB (1 x 1 GB DIMM) of RAM with upgrade options to 2 or 4 GB.

### Software

The VXIpc-882 comes with the following minimum set of software already installed:

- Windows Vista with downgrade rights to Windows XP Professional OS (contact National Instruments for localized versions of Windows XP)
- Hard-drive-based recovery image
- NI-VXI and NI-VISA drivers
- Drivers for all built-in I/O ports (Table 1)

### USB Peripherals

National Instruments offers a USB-to-dual-PS/2 keyboard/mouse adapter cable to connect a legacy PS/2 keyboard and mouse to a single USB port on your VXIpc-882. Additionally, NI provides external USB CD-ROM/DVD-ROM and USB floppy drives for use with your controller. Connect these drives to your VXIpc-882 for easy software installation and upgrades. Both are completely powered through the USB ports, so no external power connections are required. Additional USB peripherals, such as USB speakers to add audio or USB memory sticks to add easily removable memory, are widely available from PC peripheral manufacturers.

### VXIbus

**VXI Addressing** – The VXIpc-882 features custom ASICs for accessing the VXI backplane resources. To access VXI memory or VXI devices, it uses a multiple windowing scheme, so you can access all of the VXI address space. Independent VXI address windows are exported, providing you with three completely user-configurable windows. You can also set each window size and location. This multiple windowing scheme alleviates the performance penalty related to the context switching of one window that you must constantly move between the different address spaces.

**DMA Transfers to and from VXI** – Using the VXIpc-882, you can perform block-mode transfers with one of the two on-chip DMA controllers. Controlling external VXI devices often takes valuable CPU time because the microprocessor typically shoulders the burden of transferring data to and from devices. However, the custom ASIC on the VXIpc-882 frees up CPU processing time by moving the burden of block data transfers to one of the DMA controllers. Instead of the computer microprocessor transferring the data and/or commands, NI-VXI/NI-VISA software uses the custom ASIC to execute the block data transfers. While the custom ASIC transfers the data, the processor can perform application-specific tasks, such as data presentation and analysis.

**VXI Slot 0 Functionality** – The VXIpc-882 has full VXI Slot 0 capability, including a MODID register and a CLK10 source, as required by the VXIbus specification. You can also install a VXIpc-882 in another slot and use it in the non-Slot 0 mode. No matter your configuration needs, this controller can automatically detect whether it is inserted into Slot 0 and automatically enable or disable the Slot 0 onboard circuitry without switches and jumpers.

**External VXI CLK10 Synchronization** – The VXIpc-882 has an SMB connector on the front panel for an external clock. With onboard programmable logic, you can configure your controller to drive its 10 MHz VXI CLK10 signal to this connector as an output or to use this connector as an input for the 10 MHz VXI CLK10 signal. In this way, you can configure multiple mainframes to operate from a single 10 MHz system clock.

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**Advanced Trigger/Timing** – With this embedded controller, you have full software and hardware control of the VXI trigger lines. The VXIpc-882 has two SMB trigger I/O connectors on the front panel for routing any TTL trigger lines between the backplane and external devices. It can respond to all VXI-defined protocols on all P2 TTL and ECL trigger lines at the same time. The hardware also includes an internal counter, which provides sophisticated counting of events and interrupting on trigger edges and pulses, as well as the generation of pulse trains, variable length pulses, and pulse stretching.

**VXI Interrupts** – The VXIpc-882 can function as an interrupter and an interrupt handler for any or all of the VXIbus interrupt lines in a VXI mainframe. Using NI-VXI/NI-VISA software, your application can be notified when any interrupt is asserted, and can assert any interrupt level with a programmable status. You can use NI-VXI configuration software to assign which interrupt levels should be handled by each device in the system.

### Ordering Information

NI VXIpc-882.....780531-01

#### Memory Upgrades

Standard

1 GB (1 x 1 GB DIMM)

Recommended upgraded memory configurations

2 GB (1 x 1 GB DIMMs must be purchased)

4 GB (2 x 2 GB DIMMs must be purchased)

1 GB DDR2 RAM.....779302-1024

2 GB DDR2 RAM.....780031-2048

#### Accessories

32 GB 2.5 in. SATA solid-state hard drive upgrade.....779175-08

USB-to-dual-PS/2 keyboard/mouse adapter cable .....778713-02

External USB CD-ROM/DVD-ROM drive .....778492-01

External USB floppy drive.....778492-02

USB English keyboard and optical mouse .....779660-01

Parallel port adapter cable (6 in.).....777169-01

Micro-GPIB to GPIB adapter cable (0.2 m) .....183285-0R2

Micro-GPIB to GPIB cable (1 m).....183285-01

Micro-GPIB to GPIB cable (2 m).....183285-02

ExpressCard strain-relief accessory

for embedded controllers.....192524-01

NI MKD-1117 (rack-mount 1U LCD monitor,

keyboard, mouse drawer).....779872-01

Flat panel monitor with VGA input .....779559-01

NI FPT-1015 flat panel touch screen

with VGA interface and USB .....779560-01

### BUY NOW!

For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S.) or go to [ni.com/vxi](http://ni.com/vxi).

## 2.16 GHz Dual-Core Embedded Controller for VXI

### Specifications

Specifications subject to change without notice.

#### Features

Processor .....	Intel Core 2 Duo processor T7400 (2.16 GHz dual core)
Chipset .....	Mobile Intel 945GM Express chipset
Ethernet .....	10/100/1000BASE-TX, RJ45 connector
Video .....	Intel GMA 950 graphics media accelerator, DVI-I connector
Serial .....	1 (RS232)
Parallel Port .....	IEEE 1284 Type C miniature connector (adapter cable not included)
GPIO .....	PCI-GPIO/TNT, micro D25 connector IEEE 488 and HS488 transfers (adapter cable not included)
Hi-Speed USB .....	4
RAM .....	2 SO-DIMM sockets, DDR2 SDRAM, PC2 5400, dual channel 1 GB (1 x 1 GB DIMM) standard 4 GB (2 x 2 GB DIMMs) maximum
Hard Drive .....	80 GB minimum, internal 2.5 in., 9.5 mm Serial ATA 1.0 interface

#### Power Requirements

Power Rail Voltage (V)	Current (A)	
	Peak	Dynamic
+24	3.10	±1.26
+12	0.225	0
+5	10.6	±1.21
-2	0.251	±0.044
-5.2	0.318	±0.058
-12	0.265	0

#### Physical

Size .....	2-slot VXI C-size module
Dimensions .....	233.35 by 340 by 60.96 mm (9.187 by 13.386 by 2.4 in.)
Weight .....	2.58 kg (5.69 lb)
Number of VXI slots .....	2

#### Environment

Maximum altitude .....	2,000 m (800 mbar) at 25 °C ambient temperature
Pollution degree .....	2
For indoor or enclosed area use only.	

#### Operating Environment

Ambient temperature .....	5 to 50 °C (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)
Relative humidity .....	10 to 90% noncondensing (tested in accordance with IEC-60068-2-56)

#### Storage Environment

Ambient temperature .....	-20 to 70 °C (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)
Relative humidity .....	5 to 95% noncondensing (tested in accordance with IEC-60068-2-56)

#### 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)
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#### Random vibration

Operating .....	5 to 500 Hz, 0.3 g <sub>rms</sub> (with solid-state hard drive)
Nonoperating .....	5 to 500 Hz, 2.4 g <sub>rms</sub> (tested in accordance with IEC-60068-2-64; nonoperating test profile exceeds the requirements of MIL-PRF-28800F)

#### Safety Compliance

EN 61010-1, IEC 61010-1, UL 61010-01, CSA 61010-1

#### Electromagnetic Compatibility

Refer to the Declaration of Conformity (DoC) for regulatory compliance information.

To obtain the DoC for this product, click Declaration of Conformity at [ni.com/certification](http://ni.com/certification).

# NI Services and Support



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NI training is the fastest, most certain route to productivity with our products. NI training can shorten your learning curve, save development time, and reduce maintenance costs over the application life cycle. We schedule instructor-led courses in cities worldwide, or we can hold a course at your facility. We also offer a professional certification program that identifies individuals who have high levels of skill and knowledge on using NI products. Visit [ni.com/training](http://ni.com/training).

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range from start-up assistance to turnkey system integration. Visit [ni.com/alliance](http://ni.com/alliance).

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## Hardware Services

### System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at [ni.com/advisor](http://ni.com/advisor) to find a system assurance program to meet your needs.

### Calibration Services

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. We provide manual calibration procedures, services to recalibrate your products, and automated calibration software specifically designed for use by metrology laboratories. Visit [ni.com/calibration](http://ni.com/calibration).

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