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Find the *National Instruments PXI-8105* at our website: *Click HERE*

2.0 GHz Dual-Core Embedded Controller for PXI

NI PXI-8105

- Intel Core Duo Processor T2500 (2.0 GHz dual core)
- 512 MB (1 x 512 MB 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
- Internal PXI trigger bus routing
- Watchdog timer

Software

- OS and drivers already installed
- Hard drive-based recovery image

PXI System Configuration

- Complete PXI system configuration at **ni.com/pxiadvisor**



Overview

The National Instruments PXI-8105 is a high-performance Intel Core Duo T2500-based embedded controller for use in PXI and CompactPCI systems. With its 2.0 GHz dual-core processor and dual-channel 667 MHz DDR2 memory, the NI PXI-8105 is ideal for applications requiring intensive analysis or system development. A PXI-8105 embedded controller in a PXI chassis offers a compact, high-performance PC platform for modular instrumentation and data acquisition applications.

Dual-Core Processor

The PXI-8105 includes an Intel Core Duo T2500 dual-core processor. Dual-core processors have two cores, or computing engines, located in one physical package. With two cores, dual-core processors can simultaneously execute two computing tasks. This feature is advantageous in multitasking environments, such as Windows XP, where multiple applications can 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 performance. Applications that use multithreading can also take advantage of dual-core processors. Multithreaded applications separate their tasks into individual threads. A dual-core processor can simultaneously execute two of these threads. Benchmarks in LabVIEW 8.0 indicate a performance improvement of up to 25 percent between the PXI-8105 and the NI PXI-8196 (2.0 GHz Intel Pentium M 760) for single-threaded applications and up to 100 percent for multithreaded applications. The SYSmark Overall Performance benchmark for the PXI-8105 is 31 percent greater than that of the PXI-8196.

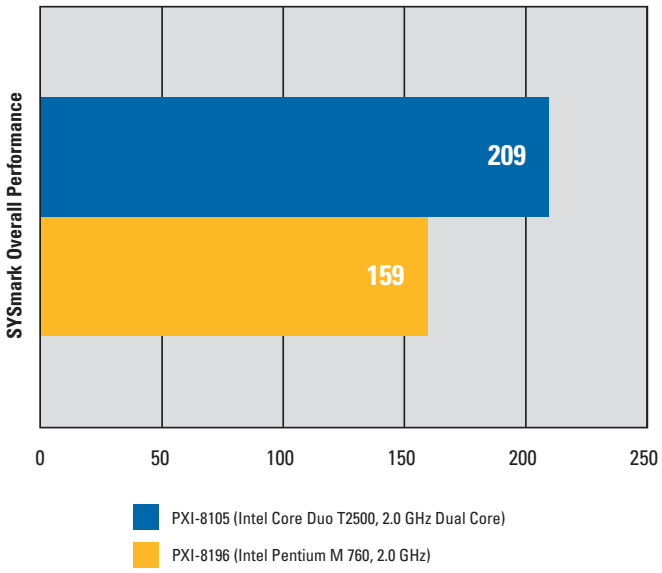


Figure 1. Embedded Controller Benchmarks

Hardware

With state-of-the-art packaging, the PXI-8105 embedded controller integrates the Intel Core Duo T2500 processor 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 PXI chassis remain available for measurement modules. This rugged one-piece controller design minimizes integration issues and eliminates the need for complex cabling to daughter boards. The PXI-8105 also uses the Mobile Intel

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945GM Express chipset to deliver maximum performance, flexibility, and stability. A block diagram of the PXI-8105 is shown in Figure 3.

CPU	Intel Core Duo Processor T2500 (2.0 GHz Dual Core)
Front-side bus	667 MHz
L2 cache	2048 KB
Dual-channel 667 MHz DDR2 RAM, standard	512 MB (1 x 512 MB)
Dual-channel 667 MHz DDR2 RAM, maximum	4 GB (2 x 2 GB)
Hard drive, minimum	60 GB SATA[1]
10/100/1000 BASE-TX Ethernet	✓
GPIB (IEEE 488) controller	✓
Serial port (RS232)	✓
Parallel port	✓
Hi-Speed USB ports	4
ExpressCard/34 slot	✓
PS/2 keyboard/mouse connector	–[2]
Watchdog/trigger SMB	✓
Installed OS	Windows XP Professional[3]

[1]30 GB PATA hard drive for extended temperature option

[2]For a legacy PS/2 keyboard and mouse, add the USB-to-dual-PS/2 adapter USP-to-dual-PS/2

[3]Contact National Instruments or visit **ni.com/pxiadvisor** for information on other available operating systems

Table 1. PXI-8105 Features

Peripheral I/O

The PXI-8105 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 USB 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 PXI-8105 includes an integrated GPIB (IEEE 488) controller, which provides control of external instrumentation, saving additional cost and a slot.

ExpressCard

The PXI-8105 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 SATA hard drives, 802.11 wireless LAN, IEEE 1394, Bluetooth, or various memory adapters.



Figure 2. This PXI-8105 controls an 8-slot PXI modular instrumentation system.

Trigger Input/Output and Watchdog

The PXI-8105 includes an external SMB connection for use as a trigger input, output, or watchdog timer. Use the external SMB to pass trigger and timing signals into and out of the PXI trigger bus in your system.

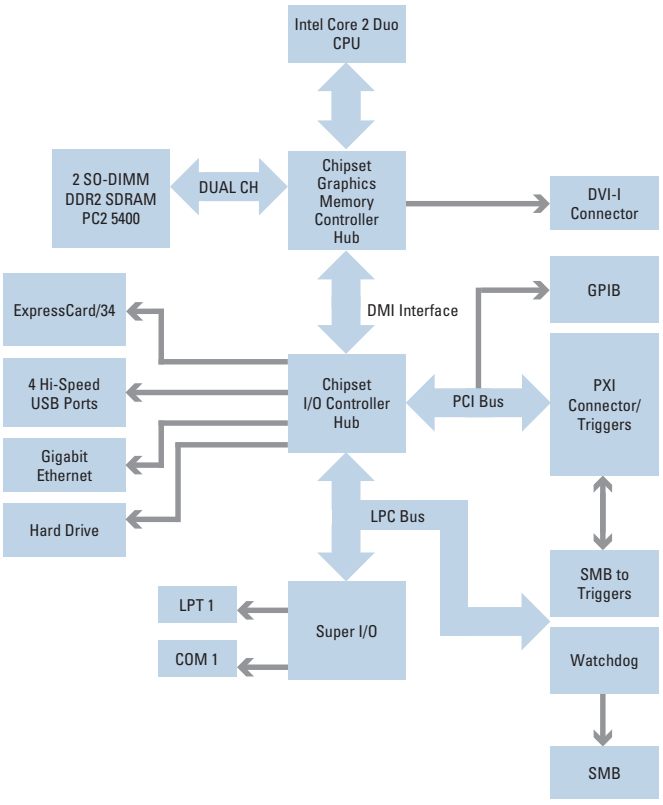


Figure 3. PXI-8105 Block Diagram

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Video

The PXI-8105 features the integrated Intel Graphics Media Accelerator 950, 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 provides balanced memory usage between graphics and the system for optimal performance. Additionally, the PXI-8105 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 PXI-8105 uses dual-channel 667 MHz DDR2 SDRAM. This feature makes the controllers ideal for data-intensive applications requiring significant analysis. The PXI-8105 has two SO-DIMM sockets for the DDR2 SDRAM. 512 MB (1 x 512 MB DIMM) of RAM is standard with the PXI-8105, with upgrade options to either 1, 2, 3, or 4 GB.

Extended Temperature Option

The PXI-8105 is available in two versions to address different environmental conditions. The basic version has an operating temperature of 5 to 50 °C and a storage temperature of -40 to 65 °C. The extended-temperature version has an operating temperature of 0 to 55 °C and a storage temperature of -40 to 85 °C. The primary difference is that the extended-temperature option uses a hard drive designed for reliability in low- and high-temperature extremes. This extended-temperature hard drive has a capacity of 30 GB (minimum) versus 60 GB (minimum) on the standard controller. Please see specifications for further details.

Software

The PXI-8105 comes with the following minimum set of software already installed:

- Microsoft Windows XP Professional OS (contact National Instruments or visit **ni.com/pxiadvisor** for localized versions of Windows XP and for other available operating systems)
- Hard drive-based recovery image
- NI-VISA and NI-488.2 drivers
- Drivers for all built-in I/O ports (Table 1)

With NI Factory Installation Services (FIS) added to a PXI system order, your embedded controller is shipped already configured with all software and drivers applicable for your system. For example, assume you order a PXI system that includes LabVIEW and NI TestStand software, as well as data acquisition modules, a digitizer, an arbitrary waveform generator, and a DMM. With FIS, NI not only assembles and ships your system but also fully configures the embedded controller with the appropriate NI-DAQmx, NI-SCOPE, NI-FGEN, and NI-DMM drivers, as well as LabVIEW and NI TestStand. Additionally, your embedded controller is configured with a hard drive-based recovery image, so you can restore your controller to the as-shipped configuration at any time. This combination of software configuration and recovery tools provides both a productive and reliable development experience with your PXI system out of the box. To configure a complete PXI system with FIS, contact National Instruments or visit **ni.com/pxiadvisor**.

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 embedded controller. Additionally, NI offers external USB CD-ROM/DVD-ROM and USB floppy drives for use with your embedded controller. Using the USB interfaces, connect these drives to your embedded controller for easy software installation and upgrades. Both are completely powered through the USB port, 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.

Additional Peripheral Ports

National Instruments offers numerous plug-in modules to add more peripherals and ports to your PXI system. With the wide variety of peripheral devices available, you can choose modules that add communication with serial, IEEE 1394, and SCSI, in addition to numerous others. Modules are also available for controlling other PXI or VXI/VME systems. Visit **ni.com/pxiadvisor** to configure a system with additional peripheral modules.

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Ordering Information

For online configuration of a complete PXI system, including Factory Installation Services, visit **ni.com/pxiadvisor**.

Step 1. Controller Model – select one of the following.

NI PXI-8105

- Base 779917-xx
- Extended Temperature 779918-xx

Step 2. Replace "xx" to select installed OS.

01 ..... Windows XP Professional (English)

00 ..... Localized Windows XP or Other OS[1]

[1]Contact National Instruments or visit **ni.com/pxiadvisor** for the latest operating systems.

Step 3. Memory upgrades – select the amount of upgrade memory.

Standard:

- 512 MB (1 x 512 MB DIMM)

Recommended upgraded memory configurations:

- 1 GB (1 x 512 MB DIMM must be purchased)
- 2 GB (2 x 1 GB DIMMs must be purchased)
- 4 GB (2 x 2 GB DIMMs must be purchased)

512 MB DDR2 RAM 779302-512

1 GB DDR2 RAM 779302-1024

2 GB DDR2 RAM 780031-2048

Step 4. Accessories[2]

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

Spare DVI-I to VGA adapter 778713-03

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 FPT-1015 15 in. flat panel touch screen with VGA Interface and USB 779560-01

[2]For additional peripheral modules, including serial, IEEE 1394, and SCSI modules, visit **ni.com/pxiadvisor**.

BUY NOW!

For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S.) or go to **ni.com/pxi**.

Specifications

Specifications subject to change without notice.

Features

Processor	Intel Core Duo Processor T2500 (2.0 GHz Dual Core)
Chipset	Mobile Intel 945GM Express chipset
Ethernet	10/100/1000BASE-TX, RJ45 connector
Video	Intel Graphics Media Accelerator 950
Serial	1 (RS232)
Parallel port	IEEE 1284 Type C connector (miniature) (adapter cable not included)
GPIB	PCI-GPIB/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 512 MB (1 x 512 DIMM) standard, 4 GB (2 x 2 GB DIMMs) maximum
Hard drive	
Base	60 GB minimum, internal 2.5 in., 9.5 mm Serial ATA 1.0 interface
Extended temperature option	30 GB minimum, internal 2.5 in., 9.5 mm Fast Ultra ATA100 interface
V (I/O) keying	Chassis V (I/O) = +5 VDC (blue key)

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Power Requirements

Voltage (V)	Current (A)	
	Typical	Maximum
+3.3	2.8	3.5
+5	5	7.6
+12	0.002	0.01
-12	0	0

Physical

Board dimensions ..... PXI 3U-size module, 8.1 by 13 by 21.6 cm (3.2 by 5.1 by 8.5 in.)
Slot requirements ..... 1 system slot, 3 controller expansion slots
Compatibility ..... Fully compatible with PXI Specification 2.0
Weight ..... 0.94 kg (2.1 lb) typical

Environment

Maximum altitude ..... 2,000 m (at 25 °C ambient temperature)
Pollution degree 2
Indoor use only.

Operating Environment

Ambient temperature[1]
- Base ..... 5 to 50 °C[2] (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)
- Extended temperature ..... 0 to 55 °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)

[1]For chassis that are not available in the online catalog at ni.com, contact National Instruments for supported operating temperatures.

[2]5 to 40 °C for the PXI-1000B DC.

Storage Environment

Ambient temperature
- Base ..... -40 to 65 °C (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)
- Extended temperature ..... -40 to 85 °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)

Random vibration
- Operating ..... 5 to 500 Hz, 0.3 g_{rms} (with solid-state hard drive)
- 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)

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.**

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We also offer service programs that provide automatic upgrades to your application development environment and higher levels of technical support. Visit **ni.com/ssp**.

Hardware Services

NI Factory Installation Services

NI Factory Installation Services (FIS) is the fastest and easiest way to use your PXI or PXI/SCXI combination systems right out of the box. Trained NI technicians install the software and hardware and configure the system to your specifications. NI extends the standard warranty by one year on hardware components (controllers, chassis, modules) purchased with FIS. To use FIS, simply configure your system online with **ni.com/pxiadvisor**.

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**.

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