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Find the *National Instruments PXI-8119* at our website: *Click HERE*

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

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2.3 GHz Quad-Core PXI Controller

NI PXI-8119



- Intel Core i7-3610QE quad-core processor (2.3 GHz (base), 3.3 GHz (single-core, Turbo Boost mode))
- 4 GB (1 x 4 GB DIMM) single-channel 1600 MHz DDR3 standard, 8 GB maximum
- High-performance 7200 rpm integrated hard drive with standard option
- Two 10/100/1000BASE-TX Ethernet ports
- Other peripherals (GPIB (IEEE 488) controller, RS232 serial port, and IEEE 1284 ECP/EPP parallel port)
- In-ROM memory and hard drive diagnostics
- Software: Already installed OS and drivers and hard-drive-based recovery image
- Complete PXI system configuration at ni.com/pxiadvisor

Overview

The NI PXI-8119 is a high-performance Intel Core i7-3610QE processor-based embedded controller for PXI systems. With the 2.3 GHz base frequency, 3.3 GHz (single-core Turbo Boost) quad-core processor, and 1600 MHz DDR3 memory, the PXI-8119 is ideal for processor-intensive, modular instrumentation, and DAQ applications.

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Application and Technology

NI PXI-8119 Features

CPU	Intel Core i7-3610QE, 2.3 GHz (base), 3.3 GHz (single-core Turbo Boost mode), 3.2 GHz (dual-core Turbo Boost mode), 3.1 GHz (quad-core Turbo Boost mode)[1]
L2 cache	6 MB
System bandwidth	132 MB/s
Slot bandwidth	132 MB/s
Single-channel 1600 MHz DDR3 RAM, standard	2 GB
Single-channel 1600 MHz DDR3 RAM, maximum	8 GB
Hard drive (standard option), minimum	250 GB SATA (7200 rpm)
Hard drive (extended temperature and 24/7 option), minimum	80 GB SSD
10/100/1000BASE-TX (Gigabit) Ethernet ports	2
Hi-Speed USB ports (2.0)	6
GPIB (IEEE 488) controller	
Serial port (RS232)	
Parallel port	
ExpressCard/34 slot	

Watchdog/trigger SMB	
Installed OS [1]	Windows 7 Professional and Windows XP Professional for Embedded Systems[2]

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

[2]Due to the Microsoft support life cycle for Windows XP, National Instruments will be unable to provide PXI embedded controllers with Windows XP preinstalled after 2015. View the Microsoft support life cycle for full details about Windows XP end of life for OEM partners.

Quad-Core Processor

The PXI-8119 includes the quad-core Intel Core i7-3610QE processor. Quad-core processors contain four cores, or computing engines, in one physical package. They can simultaneously execute four computing tasks, which is advantageous in multitasking environments such as Windows Vista or Windows XP, where multiple applications run simultaneously. Multithreaded system development environments, such as NI LabVIEW, can take full advantage of the available four processing cores on the PXI-8119 by automatically separating their tasks into independent threads. With its quad-core processor, this controller can simultaneously execute four of these threads. Figure 1 compares the SYSmark 2007 overall performance of the PXI-8119 controller with other PXI embedded controllers.

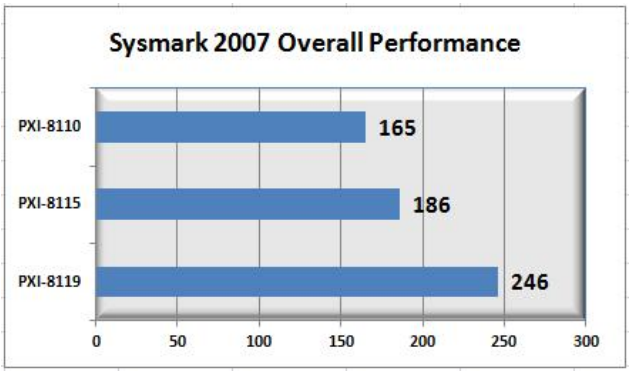


Figure 1. Embedded Controller Benchmarks

To fully exercise the four cores on the PXI-8119, applications must be architected to create four independent execution threads by implementing programming strategies such as task parallelism, data parallelism, and pipelining. As an example of its high performance, the PXI-8119 can process up to 389,000 1K fast Fourier transforms (FFTs) per second. Previously, you could achieve this type of performance only by using a bulky workstation. The PXI-8119 provides this same capability in a compact, 3U form factor. For in-depth multicore programming resources, visit ni.com/multicore.

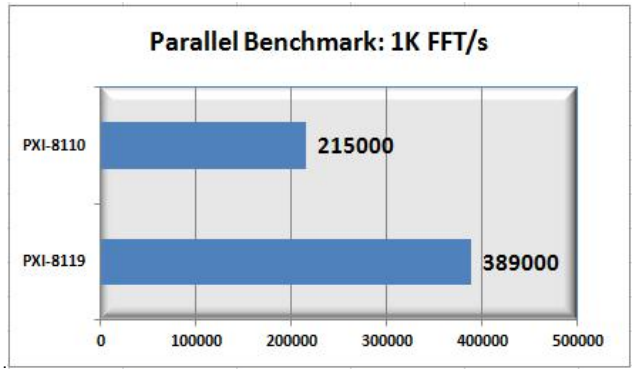


Figure 2. Parallel Benchmark: 1K FFT/s

Hardware

With state-of-the-art packaging, the PXI-8119 integrates the Intel i7-3610QE and all standard and extended PC I/O ports into a single unit. Because many of the I/O ports on the controller are integrated, 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 PXI-8119 block diagram is shown in Figure 3.

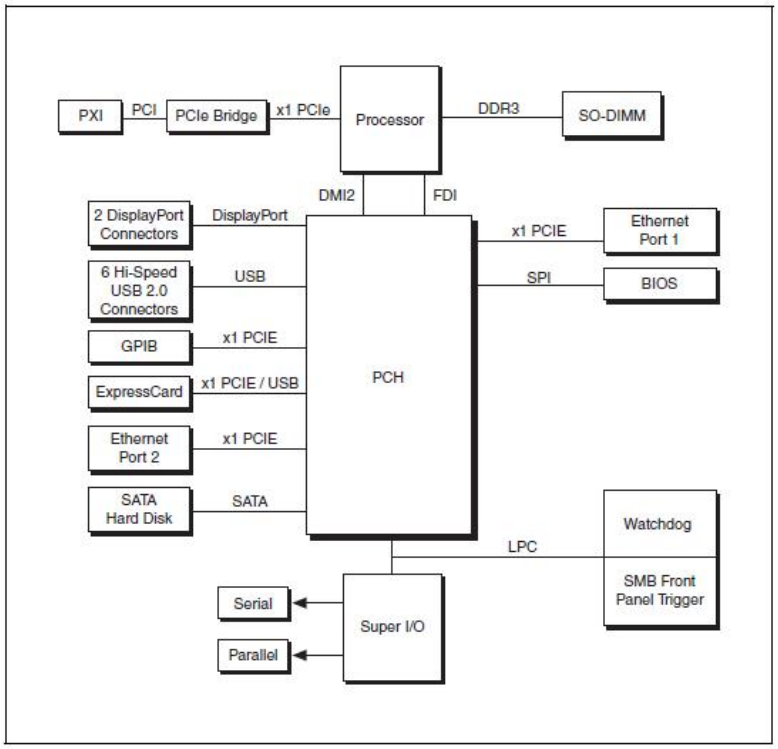


Figure 3. NI PXI-8119 Block Diagram

Peripheral I/O

The PXI-8119 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 PXI-8119 controller includes an integrated GPIB (IEEE 488) controller, which provides control of external instrumentation, saving additional cost and a slot.

ExpressCard

This embedded controller features an ExpressCard/34 slot. ExpressCard uses the PCI Express and Hi-Speed USB serial interfaces to provide up to 2.5 Gbit/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.

Memory

The PXI-8119 uses 1600 MHz DDR3 SDRAM, which makes the controller ideal for data-intensive applications requiring significant analysis. It features a single SO-DIMM socket for the DDR3 SDRAM and includes a standard 4 GB (1 x 4 GB DIMM) of RAM with upgrade options to 8 GB.

Memory Options	Configuration	Part Number
Standard - 4 GB	1 x 4 GB DIMM	782341-4096
Recommended - 8 GB	1 x 8 GB DIMM	782341-8192

Table 1. Memory Upgrade Options

Extended Temperature and 24/7 Operation Option

This embedded controller is available in two versions to address different environmental and usage conditions. The primary difference is that the version for extended temperature and 24/7 operation uses a different hard drive, designed for both reliability in low- and high-temperature extremes and 24/7 operation. The standard version of the controllers has an operating temperature of 5 °C to 50 °C and a storage temperature of -40 °C to 65 °C. The extended temperature and 24/7 operation version has an operating temperature of 0 °C to 55 °C and a storage temperature of -40 °C to 70 °C. You can also use the extended temperature and 24/7 operation version for applications that require continuous operation for up to 24 hours/day, seven days/week because the hard drive is rated for 24/7 operation. The hard drive in the standard version of the controllers is designed to be powered on for eight hours/day, five days/week.

Additionally, 24/7 operation applications may subject the hard drive to a high duty cycle (the percentage of the maximum sustained throughput of the hard drive). The hard drive in the standard version of the controllers is designed for a 20 percent duty cycle. The hard drive in the extended temperature and 24/7 operation version has a capacity of 80 GB (minimum). See specifications for further details.

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. Connect these drives to your embedded controller 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.

Additional Peripheral I/O

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

Hard-Drive-Based Recovery Image

The PXI-8119 embedded controller is shipped with a factory image of the software installation stored on a separate partition of the hard drive. In the case of software corruption, you can invoke a recovery tool during the controller's boot-up process that can use this backup image to restore the controller to its shipping software configuration. You also can use this recovery tool to create custom images that you can store on external mass storage devices such as a USB memory stick, USB hard drives, and USB CD/DVD drives. With this ability, you can create custom backup images that you can use to either recover a PXI-8119 controller or replicate the installation on other PXI-8119 controllers. For more information on this tool, refer to KnowledgeBase 2ZKC02OK.

Software

The PXI-8119 comes with the following minimum set of software already installed:

- Microsoft Windows OS (contact National Instruments or visit ni.com/pxiadvisor for a list of available Microsoft OSs and for localized versions)
- Hard-drive-based recovery image
- NI-VISA and NI-488.2 drivers
- Drivers for all built-in I/O ports

With the NI Standard System Assurance Program 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 DAQ modules, a digitizer, an arbitrary waveform generator, and a digital multimeter (DMM). With the standard program, NI not only assembles and tests 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.

To configure a complete PXI system with the NI Standard System Assurance Program, contact National Instruments or visit ni.com/pxiadvisor.

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Support and 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 to find a system assurance program to meet your needs.

Calibration

NI measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of your measurement hardware, NI offers basic or detailed recalibration service that provides ongoing ISO 9001 audit compliance and confidence in your measurements. To learn more about NI calibration services or to locate a qualified service center near you, contact your local sales office or visit ni.com/calibration.

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.

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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.

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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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