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Requirements and Compatibility | Detailed Specifications
For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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High-Bandwidth, 2.3 GHz Dual-Core Embedded Controller for PXI Express

NI PXIe-8130



- AMD Turion 64 X2 processor (2.3 GHz dual core)
- Up to 4 GB/s system bandwidth, up to 1 GB/s slot bandwidth
- 1 GB (1 x 1 GB DIMM) dual-channel 667 MHz DDR2 RAM standard, 2 GB (2 x 1 GB DIMMs) maximum
- 10/100/1000BASE-TX Ethernet port and four Hi-Speed USB ports
- Other peripherals (ExpressCard/34 slot, DVI-I video connector, IEEE 1284 ECP/EPP parallel port, GPIB (IEEE 488) controller, and RS232 serial port)
- Software - OS and drivers already installed and hard-drive-based recovery image
- Complete PXI system configuration at ni.com/pxiadvisor

Overview

The NI PXIe-8130 is a high-performance AMD Turion 64 X2 processor-based embedded controller for use in PXI Express systems. With the 2.3 GHz dual-core processor and dual-channel 667 MHz DDR2 memory, the NI PXIe-8130 is ideal for modular instrumentation and data acquisition applications.

Back to Top

Requirements and Compatibility

OS Information

- Windows 7
- Windows Vista
- Windows XP

Back to Top

Application and Technology

NI PXIe-8130 Features

CPU	AMD Turion 64 X2 processor (2.3 GHz dual core)
L2 cache	512 KB x 2 (512 KB per core)
System bandwidth	Up to 4 GB/s
Slot bandwidth	Up to 1 GB/s
PXI Express 4-link configuration	Four x4 links
Dual-channel 667 MHz DDR2 RAM, standard	1 GB (1 x 1 GB)
Dual-channel 667 MHz DDR2 RAM, maximum	4 GB (2 x 2 GB)
Hard drive (standard option), minimum	60 GB SATA (5400 rpm)
Hard drive (extended temperature and 24/7 option), minimum	40 GB PATA (5400 rpm)

10/100/1000BASE-TX (Gigabit) Ethernet ports	1
Hi-Speed USB ports	4
GPIB (IEEE 488) controller	
Serial port (RS232)	
Parallel port	
ExpressCard/34 slot	
Watchdog/trigger SMB	
Installed OS [1]	Windows 7 Professional, Windows Vista Business, Windows Vista Business (downgraded to Windows XP Professional)

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

Table 1. NI PXIe-8130 Features

Dual-Core Processor

The NI PXIe-8130 includes the dual-core AMD Turion 64 X2 processor. Dual-core processors contain two cores, or computing engines, in one physical package. They can simultaneously execute two computing tasks, which is advantageous in multitasking environments, such as Windows XP, where multiple applications run at the same time. Two applications, such as NI LabVIEW and Microsoft Excel, can each execute on a separate core simultaneously, which improves overall system performance. Multithreaded applications, such as LabVIEW, take full advantage of dual-core processors because they automatically separate their tasks into independent threads. A dual-core processor can simultaneously execute two of these threads.

High Bandwidth

The NI PXIe-8130 features an NVIDIA MCP55 Pro chipset. This chipset provides four x4 (“by four”) PCI Express lanes that are forwarded to the PXI chassis backplane to create four x4 PXI Express slots. Each of these slots has up to 1 GB/s of dedicated bandwidth with the overall system bandwidth of up to 4 GB/s.



Figure 1. This NI PXIe-8130 controls an 8-slot PXI Express modular instrument and data acquisition system.

Hardware

With state-of-the-art packaging, the NI PXIe-8130 integrates the AMD Turion 64 X2 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 chassis remain available for measurement and control modules. This rugged modular design minimizes integration issues and eliminates the need for complex cabling to daughter boards. The NI PXIe-8130 block diagram is shown in Figure 2.

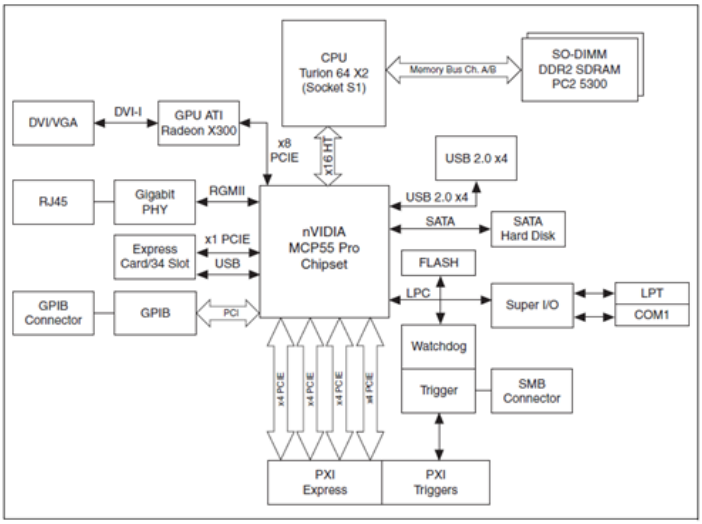


Figure 2. NI PXIe-8130 Block Diagram

Peripheral I/O
The NI PXIe-8130 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 NI PXIe-8130 controller includes an integrated GPIB (IEEE 488) controller, which provides control of external instrumentation, saving additional cost and a slot.

ExpressCard
The NI PXIe-8130 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.

Video
The NI PXIe-8130 includes an integrated ATI Radeon X300 graphics processing unit, 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 NI PXIe-8130 features 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 NI PXIe-8130 uses dual-channel 667 MHz DDR2 SDRAM, which makes the controller ideal for data-intensive applications requiring significant analysis. The NI PXIe-8130 has two SO-DIMM sockets for the DDR2 SDRAM. 1 GB (1 x 1 GB DIMM) of RAM is standard with
upgrade options to 2 GB.

Memory Options	Configuration	Part Number	
		Included in Kit	Additional P/N Required
Standard - 1 GB	1 x 1 GB DIMM	1 x 1 GB DIMM	N/A
2 GB	2 x 1 GB DIMM	1 x 1 GB DIMM	Add 1 x 780031-1024
3 GB	1 x 1 GB DIMM and 1 x 2 GB DIMM	1 x 1 GB DIMM	Add 1 x780031-2048
Recommended - 4 GB	2 x 2 GB DIMM	N/A	Add 2 x 780031-2048

Table 2. Memory Upgrade Options

Extended Temperature and 24/7 Operation Option
The NI PXIe-8130 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 to 50 °C and a storage temperature of -40 to 65 °C. The extended temperature and 24/7 operation version has an operating temperature of 0 to 55 °C and a storage temperature of -40 to 71 °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 40 GB (minimum) versus the 60 GB (minimum) hard drive used in the standard version of the controllers. 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.

Software

The NI PXIe-8130 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 OSs)
- Hard-drive-based recovery image
- NI-VISA and NI-488.2 drivers
- Drivers for all built-in I/O ports

With an NI system assurance program (base or standard) added to your 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 NI LabVIEW and NI TestStand software, as well as data acquisition modules, a digitizer, an arbitrary waveform generator, and a digital multimeter (DMM). With an NI system assurance 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.

Additionally, your embedded controller is configured with a customized 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 an NI system assurance program, contact National Instruments or visit ni.com/pxiadvisor.

Back to Top

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.

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.

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.

Back to Top

Detailed Specifications

This topic lists the electrical, mechanical, and environmental specifications of the NI PXIe-8130 embedded controller.

Features

NI PXIe-8130	
CPU	AMD 2.3 GHz Turion 64 X2, (800 MHz HyperTransport Link)
On-die L2 cache	512 KB x2 (512 KB per core)
Dual-Channel DDR2 RAM, PC2 5300	1 GB Standard, 4 GB Maximum
Hard Drive	60 GB Serial ATA, minimum [1] [2]
Ethernet	10/100/1000 BaseTX
PXI Express 4 Link Configuration	x4, x4, x4, x4
PXI Express 2 Link Configuration	x8, x8
GPIB (IEEE 488 Controller)	Yes
Serial Ports (RS-232)	Yes (1)
Parallel Port	Yes (1)
Hi-Speed USB (2.0) Ports	Yes (4)
ExpressCard/34 Slot	Yes

NI PXIe-8130	
PS/2 Keyboard/Mouse Connector	No
PXI Trigger Bus Input/Output	Yes
Installed Operating System	Windows 7 Professional, Windows Vista Business, Windows Vista Business downgraded to Windows XP Professional

Electrical

Voltage (V)	Current (Amps)	
	Typical	Maximum
+3.3 V	1.80	3.90
+5 V	3.50	4.70
+12 V	2.75	4.00
–12 V	0.00	0.00
+5 V Aux	0.35	0.70

Physical

Board dimensions	Four-wide 3U PXI Express module
Slot requirements	One system slot plus three controller expansion slots
Compatibility	Fully compatible with *PXI Express Specification* 1.0
Weight	0.98 kg (2.15 lb) typical

Environment

Maximum altitude	2,000 m (800 mbar), (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

Caution Clean the NI PXIe-8130 with a soft nonmetallic brush. Make sure that the device is completely dry and free from contaminants before returning it to service.

Operating Environment

NI PXIe-8130	
Ambient temperature range	5 to 50 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2. Meets MIL-PRF-28800F Class 3 high temperature limit.)
NI PXIe-8130 Extended Temperature Option	
Ambient temperature range	0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 2 high temperature limit.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Caution The operating temperature must not be exceeded, even when used in a chassis with a higher temperature range.

Storage Environment

NI PXIe-8130	
Ambient temperature range	–40 to 65 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit.)
NI PXIe-8130 Extended Temperature Option	
Ambient temperature range	–40 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	5% to 95% noncondensing (Tested in accordance with IEC-60068-2-56.)

Shock and Vibration

Operating Shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)
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.)

Note Specifications are subject to change without notice.

Safety Standards

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, CSA 61010-1

Note For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326 (IEC 61326): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

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

CE Compliance CE

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

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

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

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste Electrical and Electronic Equipment, visit ni.com/environment/weee.htm.

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(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

Battery Replacement and Disposal

Battery Directive This device contains a long-life coin cell battery. If you need to replace it, use the Return Material Authorization (RMA) process or contact an authorized National Instruments service representative. For more information about compliance with the EU Battery Directive 2006/66/EC about Batteries and Accumulators and Waste Batteries and Accumulators, visit ni.com/environment/batterydirective.

[1] Extended-temperature 24/7 option provides 40 GB minimum PATA hard drive.

[2] Controllers configured for LabVIEW RT provide a 40 GB (minimum) PATA hard drive.

Back to Top

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