

NI PCI-6251

16-Bit, 1 MS/s (Multichannel), 1.25 MS/s (1-Channel), 16 Analog Inputs

- Two 16-bit analog outputs (2.8 MS/s); 24 digital I/O; 32-bit counters
- NIST-traceable calibration certificate and more than 70 signal conditioning options
- Correlated DIO (8 clocked lines, 10 MHz); analog and digital triggering
- NI-MCal calibration technology for increased measurement accuracy
- Get improved measurement accuracy, resolution, and sensitivity by choosing high-accuracy M Series.
- NI-DAQmx driver software and NI LabVIEW SignalExpress interactive data-logging software



Overview

The National Instruments PCI-6251 is a high-speed multifunction M Series data acquisition (DAQ) board optimized for superior accuracy at fast sampling rates. For increased measurement accuracy, consider the high-accuracy M Series devices with an 18-bit analog-to-digital converter providing a 4X resolution increase.

High-speed M Series devices incorporate advanced features such as the NI-STC 2 system controller, NI-PGIA 2 programmable amplifier, and NI-MCal calibration technology to increase performance and accuracy. High-speed M Series devices have an onboard NI-PGIA 2 amplifier designed for fast settling time at high scanning rates, ensuring 16-bit accuracy even when measuring all channels at maximum speeds. To learn more about M Series technologies, device specifications, and information on recommended cables and accessories, please refer to the data sheet and specifications.

Driver Software

M Series devices work with multiple operating systems using three driver software options including NI-DAQmx, NI-DAQmx Base, and the Measurement Hardware DDK. Browse the information in the Resources tab to learn more about driver software or download a driver. M Series devices are not compatible with the Traditional NI-DAQ (Legacy) driver.

Application Software

With NI LabVIEW, you can create custom data acquisition applications with the ease of graphical programming and power of more than 500 analysis functions and advanced programming tools. LabVIEW Full and Professional Development Systems include LabVIEW SignalExpress for interactive data logging. M Series data acquisition devices are compatible with the following versions (or later) of NI application software – LabVIEW 7.x, LabWindows™/CVI 7.x, or Measurement Studio 7.x; LabVIEW SignalExpress 1.x; or LabVIEW with the LabVIEW Real-Time Module 7.1. M Series data acquisition devices are also compatible with Visual Studio .NET, C/C++, and Visual Basic 6.

Specifications

Specifications Documents

- Detailed Specifications
- Data Sheet

Specifications Summary

General

Form Factor	PCI
OS Support	Windows, Real-Time, Linux, Mac OS
Measurement Type	Quadrature encoder
DAQ Product Family	M Series
LabVIEW RT Support	Yes

Analog Input

Number of Channels	16 SE/8 DI
Sample Rate	1.25 MS/s
Resolution	16 bits
Simultaneous Sampling	No
Maximum Voltage Range	-10..10 V
Range Accuracy	1920 μ V
Range Sensitivity	112 μ V
Minimum Voltage Range	-100..100 mV
Range Accuracy	52 μ V
Range Sensitivity	6 μ V
Number of Ranges	7
On-Board Memory	4095 samples

Analog Output

Number of Channels	2
Update Rate	2.86 MS/s
Resolution	16 bits
Maximum Voltage Range	-10..10 V
Range Accuracy	2080 μ V
Minimum Voltage Range	-5..5 V
Range Accuracy	1045 μ V
Current Drive (Channel/Total)	5 mA

Digital I/O

Number of Channels	24 DIO
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Timing	Hardware, Software
Maximum Clock Rate	10 MHz
Logic Levels	TTL
Maximum Input Range	0..5 V
Maximum Output Range	0..5 V
Input Current Flow	Sinking, Sourcing
Programmable Input Filters	Yes
Output Current Flow	Sinking, Sourcing
Current Drive (Channel/Total)	24 mA/448 mA
Watchdog Timer	No
Supports Programmable Power-Up States?	Yes
Supports Handshaking I/O?	No
Supports Pattern I/O?	Yes
Counter/Timers	
Number of Counter/Timers	2
Resolution	32 bits
Maximum Source Frequency	80 MHz
Minimum Input Pulse Width	12.5 ns
Logic Levels	TTL
Maximum Range	0..5 V
Timebase Stability	50 ppm
GPS Synchronization	No
Pulse Generation	Yes
Buffered Operations	Yes
Debouncing/Glitch Removal	Yes
Number of DMA Channels	2
Timing/Triggering/Synchronization	
Synchronization Bus (RTSI)	Yes
Triggering	Analog, Digital
Physical Specifications	
Length	15.5 cm

Width 9.7 cm

I/O Connector 68-pin VHDCI female

Pricing

Step 1: Verify Device and Quantity Selection

Part Number	Description	Est Ship Days	US Dollars*	Qty
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779070-01	NI PCI-6251	--	For price, select country	
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Each NI PCI-6251 requires: 1 Cable, 1 Connector Block



NI PCI-6251



Cable

Connector Block

Step 2: Select Cable

Part Number	Description	Est Ship Days	US Dollars*	Qty
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Shielded

192061-02	SHC68-68-EPM Cable (2m) NI Recommended	--	For price, select country	
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192061-01	SHC68-68-EPM Cable (1m)	--	For price, select country	
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192061-0R5	SHC68-68-EPM Cable (0.5m)	--	For price, select country	
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192061-10	SHC68-68-EPM Cable (10m)	--	For price, select country	
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191945-01	SHC68-68 Cable (1m)	--	For price, select country	
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191945-02	SHC68-68 Cable (2m)	--	For price, select country	
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192288-0R3	SHC68-68M-EPM Cable (0.3m)	--	For price, select country	
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Unshielded

187252-01	RC68-68 Cable (1m)	--	For price, select country	
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187252-0R5	RC68-68 Cable (0.5m)	--	For price, select country	
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187252-0R25	RC68-68 Cable (0.25m)	--	For price, select country
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Step 3: Select Connector Block

Part Number	Description	Est Ship Days	US Dollars*	Qty
Screw Terminals				
779475-01	SCC-68 - Unshielded NI Recommended	--	For price, select country	
BNC Termination				
777643-01	BNC-2110 - Shielded	--	For price, select country	
777960-01	BNC-2120 - Shielded	--	For price, select country	
779556-01	BNC-2090A - Shielded, Rack Mountable	--	For price, select country	
779347-01	BNC-2111 - Shielded	--	For price, select country	
Screw Terminals				
776844-01	SCB-68 - Shielded	--	For price, select country	
777141-01	TBX-68 Unshielded, I/O Connector Block with DIN-Rail Mounting - Unshielded	--	For price, select country	
777145-01	CB-68LP - Unshielded	--	For price, select country	
777145-02	CB-68LPR - Unshielded	--	For price, select country	

* You have selected Hungary as the country where you will use the product(s). Pricing may have changed since you printed this document on 09/26/2008. Please visit ni.com to see current pricing.

Step 4: Place Order or Obtain Quote

Order Online or by Fax

- 1 . Navigate to ni.com/products and select "Order by Part Number" found under the "Business Center" section.
- 2 . Once you have added your items to your cart, see the "Your Cart Options" section to place your order, obtain a quote, or print a fax form.

Order by Phone

Call 06 80 204 704 to place your order or obtain a quote.

Software

Application Need

Data acquisition, analysis, and user interface customization	Data logging
Automated test and test sequencing	Simulation and control design

Industrial monitoring and control

Graphical Programming

Select any of the following software products

Part Number	Description	Est Ship Days	US Dollars*	Qty
LabVIEW Software				
776670-09	NI LabVIEW Full Development System for Windows (English) NI Recommended	--	For price, select country	
777756-09	NI LabVIEW Full Development System for Linux	--	For price, select country	
776675-01	LabVIEW Application Builder for Windows (English) NI Recommended	--	For price, select country	
777755-03	NI LabVIEW Application Builder for Linux	--	For price, select country	
778406-03	NI LabVIEW Report Generation Toolkit for Microsoft Office	--	For price, select country	
Specialty Software				
778807-09	DIAdem Advanced Edition (English)	--	For price, select country	

Text-Based Programming


Select any of the following software products

Part Number	Description	Est Ship Days	US Dollars*	Qty
Application Software				
776800-09	LabWindows/CVI Full Development System for Windows	--	For price, select country	
778801-09	NI Measurement Studio Professional Edition for Microsoft Visual Studio	--	For price, select country	
779384-03	NI LabWindows/CVI Run-Time Module for Linux	--	For price, select country	

777875-03	NI LabWindows/CVI Enterprise Connectivity Toolkit for Windows	--	For price, select country
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Specialty Software

778807-09	DIAdem Advanced Edition (English)	--	For price, select country
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 Other compatible software: ANSI C/C++, C#, Visual Basic .NET, Visual Basic 6.0

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Driver Software

- View Drivers and Updates
- Search All Drivers

Place Order or Obtain Quote

Order Online or by Fax

1. Navigate to ni.com/products and select "Order by Part Number" found under the "Business Center" section.
2. Once you have added your items to your cart, see the "Your Cart Options" section to place your order, obtain a quote, or print a fax form.

Order by Phone

Call 06 80 204 704 to place your order or obtain a quote.

Services

Extended Warranties

National Instruments designs and manufactures all products to minimize failures, but we know unexpected failures can still occur. Extended warranties provide a fixed economical price at the time of system purchase covering any repair costs for up to three years.

- Significant cost savings compared to individual repair incidents
- Fault location, diagnostics, and repair by NI any time the system product fails
- All parts and labor costs covered as well as any adjustments needed to bring the hardware back to manufacturing specifications

Calibration

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 to calibrate many of our measurement products.

Training

NI training is the fastest, most certain route to productivity with NI tools and successful application development.

- Learn more about NI training benefits and guarantees [http://www.ni.com/training/why_train.htm]
- View course information and schedules [<http://www.ni.com/training/>]
- Register now [<http://sine.ni.com/apps/we/nisv.custed>]

Repair Services

- You can return your registered product under warranty at no additional labor and parts cost. NI offers fault location, diagnostics, and repair any time the system fails as well as any adjustments needed to bring the hardware back to manufacturing specifications.
- Contact us [http://sine.ni.com/apps/utf8/nicc.call_me] to obtain a Return Material Authorization (RMA) form and shipping instructions
- View your RMA support request status [<http://www.ni.com/support/servicereq/>] online
- Register your product [<http://www.ni.com/register>]

Technical Support

www.ni.com/support [<http://www.ni.com/support/>]

Resources

Additional Product Information

- [Manuals \(5\)](#)
- [Dimensional Drawings \(1\)](#)
- [Product Certifications \(2\)](#)
- [Product Kits \(1\)](#)

Related Information

- [Obtain superior accuracy in your measurements with 18-bit, high-accuracy M Series](#)
- [Upgrade to S Series with simultaneous sampling](#)
- [Learn about LabVIEW Graphical Programming](#)
- [Learn about Data Acquisition Driver Software](#)
- [Learn about academic pricing and product kits](#)
- [Obtain OEM pricing information](#)
- [Download NI drivers](#)
- [Read more about NI hardware services](#)
- [View an introductory video on getting started with NI data acquisition](#)