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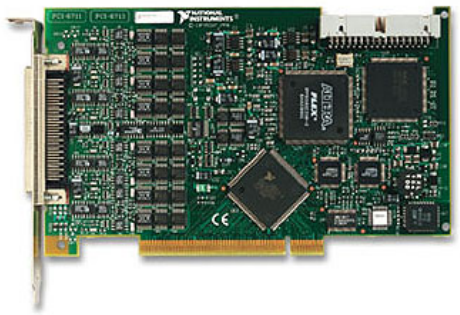
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High-Speed Voltage Output – Up to 1 MS/s/Channel, up to 16 Bits, up to 32 Channels





- Low-cost arbitrary waveform generation and high-channel density
- Integrated multidevice synchronization bus
- Digital triggering and external clocking
- Simultaneous updates
- 8 digital I/O lines (TTL/CMOS)
- Two 24-bit counter/timers
- Measurement services that simplify configuration and measurements

Overview

NI 67xx high-speed voltage output devices combine the latest in PC technologies to deliver simultaneous, multichannel updates for control and waveform output applications. Use these modules in a variety of applications, including stimulus-response, power supply control, high-speed, deterministic control, and sensor/signal simulation.

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Requirements and Compatibility

OS Information

- Windows 2000/XP
- Windows Vista x64/x86
- Linux®
- Mac OS X
- Windows NT

Driver Information

- NI-DAQmx

Software Compatibility

- Visual C++
- Visual Studio .NET

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Comparison Tables

Family	Bus	Analog Output	Update Rate per Channel (S/s)	Output Resolution	Output Range (V)	External Voltage Reference	Digital I/O	Counter/Timers	Triggering
NI 6711	PCI, PXI	4	1M	12	±10	yes	8	2, 24-bit	Digital
NI 6713	PCI, PXI	8	740 k to 1M	12	±10	yes	8	2, 24-bit	Digital
NI 6715	PCMCIA	8	100 k to 1M	12	±10	yes	8	2, 24-bit	Digital
NI 6722	PCI, PXI	8	182 to 800 k	13	±10	no	8	2, 24-bit	Digital
NI 6723	PCI, PXI	32	45 to 800 k	13	±10	no	8	2, 24-bit	Digital
NI 6731	PCI	4	1M	16	±10	yes	8	2, 24-bit	Digital
NI 6733	PCI, PXI	8	740 k to 1M	13	±10	yes	8	2, 24-bit	Digital

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Application and Technology

Features
The versatile NI high-speed voltage output devices commonly replace several kinds of instruments including stand-alone proportional integral derivative (PID) controllers, low-speed arbitrary waveform generators, and function generators.

Waveform Generation
These devices are capable of updating at rates up to 1 MS/s, giving you the ability to generate waveforms up to 500 kHz. When using these devices, you have complete control of each data point that is updated on the output for each channel. This feature is significant because you can define not only common waveforms such as square, sine, or sawtooth but also complex waveforms. For instance, you are able to create a sine wave that is overlaid with noise in which the amplitude and noise shape are user-defined. In practice, the waveform is defined in a software buffer, within PC memory, and is streamed to the voltage output device using direct memory access (DMA) data transfers. Using DMA transfers, the amount of memory located on board the voltage output device is minimized and swapped with inexpensive PC memory.

Real-Time Control
You can use NI high-speed voltage output devices with the NI LabVIEW Real-Time Module to deliver real-time, deterministic control loop execution. Because they are compatible with LabVIEW Real-Time, common control algorithms such as PID are simple to implement but, more importantly, you may prototype and implement complex, cutting-edge control algorithms as well. High-performance control, on the order of eight PID loops running in excess of 20 kHz each, is possible with this combination of hardware and software. Each high-speed voltage output device offers multichannel simultaneous updates and hardware-timed single-point updates.

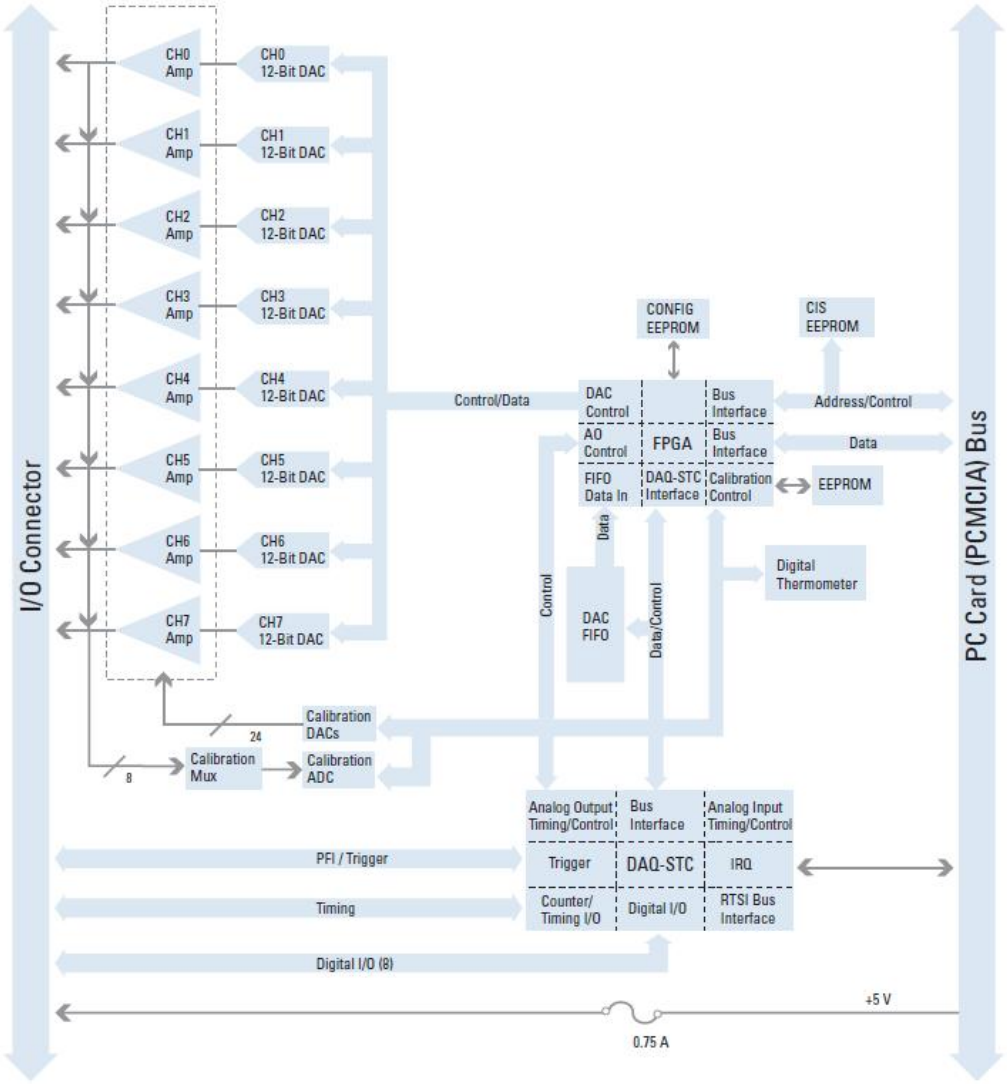
Multidevice Synchronization
Each high-speed voltage output device offers the ability to be master or slave of a multidevice timing and triggering system. Use integration technologies such as the RTSI bus, PXI trigger bus, and PFI pins to trigger and synchronize to a wide variety of I/O types. These I/O types range from analog input, image acquisition, motion control, and high-speed digitizers to multifunction data acquisition devices. With these integration infrastructures, you can create powerful, custom test and control systems with ease.

Measurement Services Software
National Instruments measurement services software, built around NI-DAQmx driver software, features intuitive application programming interfaces, configuration tools, I/O assistants, and other tools designed to reduce system setup, configuration, and development time. This software,
part of your data acquisition purchase, includes helpful features such as:

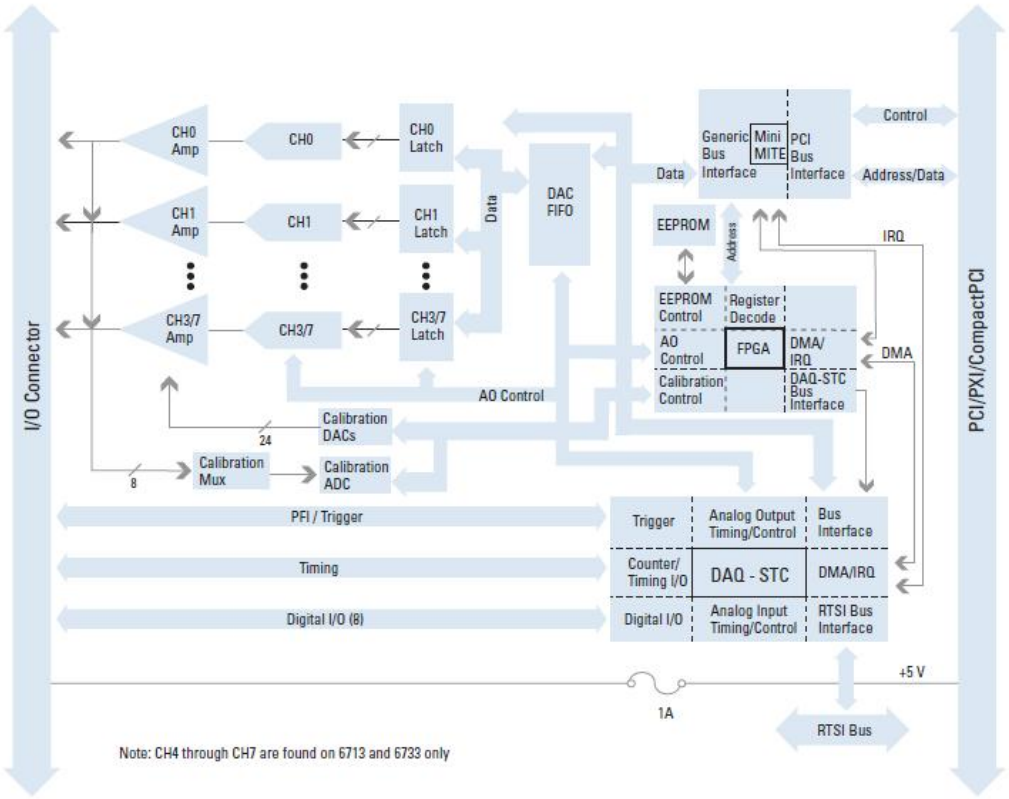
- **Automatic code generation** – The DAQ Assistant is an interactive guide that helps you navigate through configuring, testing, and programming analog output tasks and automatically generates the necessary code for NI LabVIEW, LabWindows/CVI, and Measurement Studio software.
- **Cleaner code development** – Basic and advanced software functions have been combined into one easy-to-use yet powerful set to help you build cleaner code and move from basic to advanced applications without replacing functions.
- **High-performance driver engine** – NI-DAQmx delivers maximum I/O system throughput with a multithreaded driver.
- **Test panels** – With the NI Measurement & Automation Explorer (MAX) configuration utility, you can test all of your module functionality before you begin development.
- **Scaled channels** – Easily scale your voltage data into the proper engineering units using the NI-DAQmx measurement-ready virtual channels by choosing from a list of common sensors and signals or creating your own custom scale .
- **LabVIEW integration** – All NI-DAQmx functions create the waveform data type, which carries acquired data and timing information directly into more than 400 LabVIEW built-in analysis routines for display of results in engineering units on a graph.

NI-DAQmx Base Driver
NI-DAQmx Base (available at ni.com/downloads) offers Mac OS X and Linux users a programming interface similar to NI-DAQmx. It features ready-to-use LabVIEW VIs and C function features similar to those included in NI-DAQmx driver software.

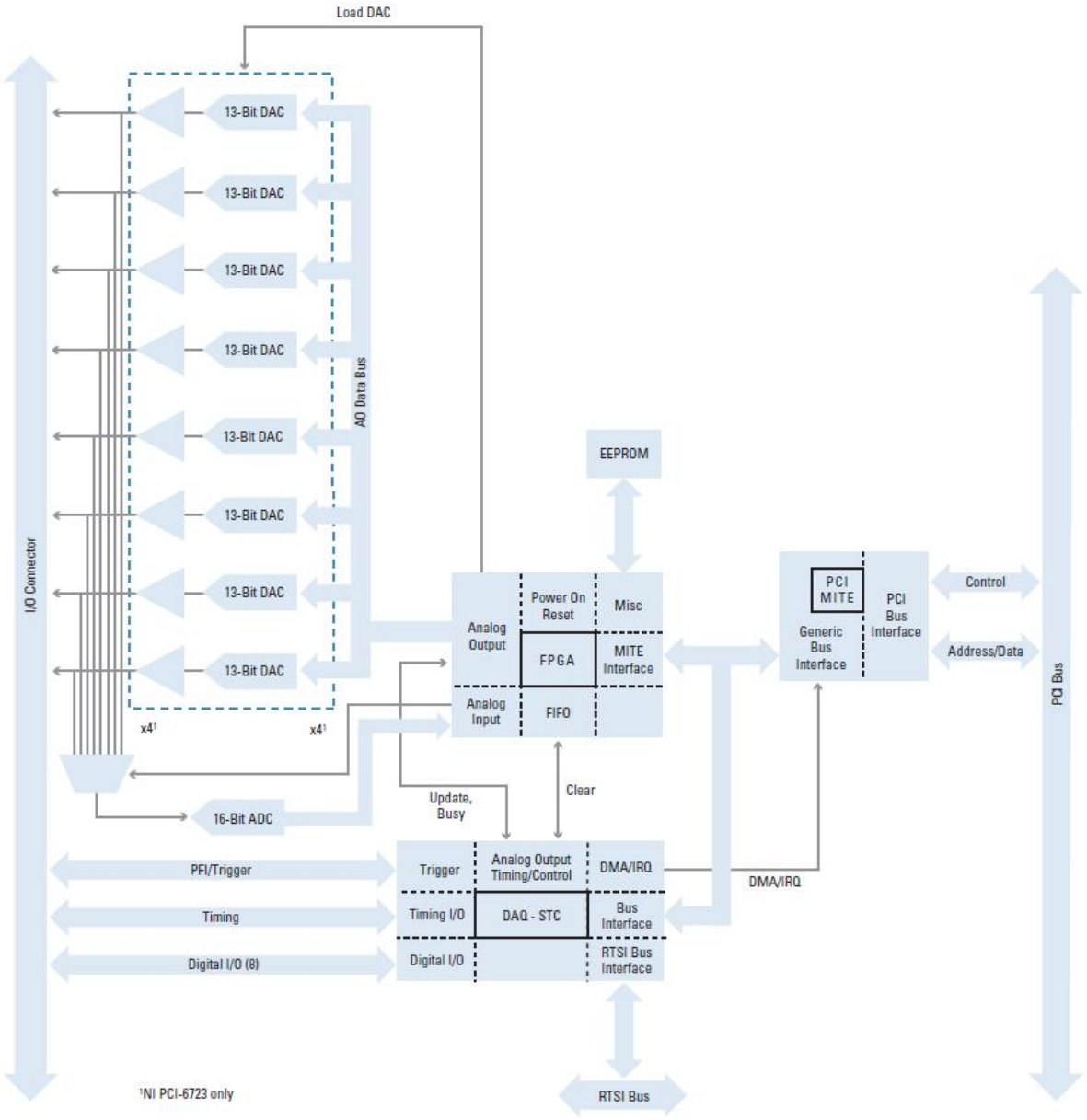
NI DAQCard-6715 Hardware Block Diagram



NI 671x and NI 673x Hardware Block Diagram



NI 672x Hardware Block Diagram



High-Speed Voltage Output Cables and Accessories

Recommended Configurations

- Shielded options for minimal noise interference
- Direct connectivity options such as BNC
- Low-cost options for OEM
- Front-mount terminal block for PXI
- Custom connectivity with the CA-1000

Model	Shielding	Connect to …	Cable	Accessory
NI 673x, NI 671x	Shielded	BNC	SH68-68-EP	BNC-2110
	Shielded	Screw terminals	SH68-68-EP	SCB-68 or TBX-68
	Shielded	Screw terminals	–	TB-2705 (PXI)
	Shielded	Custom	SH68-68-EP	CA-1000
	Unshielded	Screw terminals	R6868	CB-68LP or CB-68LPR
NI 6723	Shielded	BNC	2 SH68-C68-S	BNC-2110 and BNC-2115
	Shielded	Screw terminals	2 SH68-C68-S	2 SCB-68 or TBX-68
	Shielded	Custom	2 SH68-C68-S	2 CA-1000
NI 6722	Shielded	BNC	SH68-C68-S	BNC-2110
	Shielded	Screw terminals	SH68-C68-S	SCB-68
	Shielded	Custom	SH68-C68-S	CA-1000
	Unshielded	Screw terminals	RC68-68	CB-68LP or CB-68LPR
DAQCard-6715	Shielded	BNC	SHC68-68-EPM	BNC-2110
	Shielded	Screw terminals	SHC68-68-EPM	SCB-68
	Shielded	Custom	SHC68-68-EPM	CA-1000
	Unshielded	Screw terminals	RC68-68	CB-68LP or CB-68LPR

I/O Connector Blocks

BNC-2110 – Shielded I/O connector block with signal-labeled BNC connectors for easy connectivity of your analog output (AO), digital I/O (DIO), and counter/timer signals. Dimensions – 20.3 by 11.2 by 5.5 cm (8.0 by 4.4 by 2.2 in.)
BNC-2110.....777643-01

BNC-2115 – Shielded I/O connector block with signal-labeled BNC connectors for easy connectivity of your extended analog output on NI 6723 devices. Dimensions – 20.3 by 11.2 by 5.5 cm (8.0 by 4.4 by 2.2 in.)
BNC-2115.....777807-01

SCB-68 – Shielded I/O connector block that gives you rugged, very low-noise signal termination. The SCB-68 also houses silk-screened component locations for easy addition of simple signal conditioning circuitry for your AO channels. Dimensions – 19.5 by 15.2 by 4.5 cm (7.7 by 6.0 by 1.8 in.)
SCB-68 776844-01

CA-1000 – Configurable enclosure that gives you user-defined connectivity and flexibility through customized panelettes. Dimensions – 30.7 by 25.4 by 4.3 cm (12.1 by 10 by 1.7 in.)
CA-1000 777664-01

TBX-68 – 68 screw terminals for easy connection of field signals to 68-pin DAQ devices. It includes one 68-pin male connector for direct connection to 68-pin cables. The TBX-68 is mounted in a protective plastic base with hardware for mounting on a standard DIN rail. Dimensions – 12.50 by 10.74 cm (4.92 by 4.23 in.)
TBX-68 777141-01

CB-68LP, CB-68LPR – 68 screw terminals for easy connection of field signals to AO devices. They include one 68-pin male connector for direct connection to 68-pin cables. The connector blocks include standoffs for use on a desktop or for mounting in a custom panel. The CB-68LP has a vertical mounted 68-pin connector. The CB-68LPR has a right-angle mounted connector and can also be used with the CA-1000. Dimensions – 14.35 by 10.74 cm (5.65 by 4.23 in.); 7.62 by 16.19 cm (3.00 by 6.36 in.)
CB-68LP 777145-01
CB-68LPR.....777145-02

TB-2705 – 68-pin screw-terminal block for NI PXI-671x and PXI-673x modules. Latches to the front of your PXI module with locking screws and provides strain relief as well as easy access to your analog, digital, trigger, and counter/timer signals through screw terminals. Does not work with NI 6703 or NI 6704 devices. Dimensions – 8.43 by 10.41 by 2.03 cm (3.32 by 4.1 by 0.8 in.)
TB-2705 778241-01

Synchronization Cables
RTSI Bus Cables – Used to connect timing and synchronization signals among measurement, vision, motion, and CAN boards for PCI. For systems with long and short boards, use the extended RTSI cable.

- 2 boards 776249-02
- 3 boards 776249-03
- 4 boards 776249-04
- 5 boards 776249-05
- Extended, 5 boards 777562-05

Shielded I/O Cables
SH68-68-EP – Shielded 68-conductor cable terminated with two 68-pin female 0.050 series D-type connectors, featuring individually shielded analog twisted pairs for reduced crosstalk with high-speed devices. This cable works with all NI 671x and NI 673x devices.

1 m 184749-01

SHC68-68-EP – Shielded cable for connecting and latching the NI DAQCard-6715, NI 6722, and NI 6723 to standard 68-pin accessories. Latching screws secure the shielded connector to the device itself for stability. Use this cable for a DAQCard located in the bottom PCMCIA slot of a laptop.
0.5 m 186838-0R5
1 m 186838-01

SHC68U-68-EP – Identical to the SHC68-68-EP except the DAQCard connector is inverted so you can use two latching DAQCard devices in adjacent slots. Use this cable with a DAQCard inserted in the upper PCMCIA slot of a laptop.

0.5 m 187406-0R5
1 m 187406-01

SH68-C68-S – Shielded cable for connecting and latching NI 672x devices to standard 68-pin accessories.
2 m 186381-02

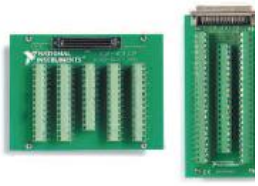
Ribbon I/O Cables
R6868 – 68-conductor flat ribbon cable terminated with two 68-pin connectors. Use this cable to connect the NI 670x, NI 671x, and NI 673x devices to low-cost 68-pin accessories.
1 m 182482-01

RC68-68 – 68-conductor flat ribbon cable terminated with one VHDCI 68-pin connector and one 68-pin SCSI II connector. Use this cable to connect the NI 6722 devices and DAQCard-6715 with standard 68-pin accessories.
1 m 187252-01


BNC-2110


SCB-68


CA-1000


CB-68LP I/O and CB-68LPR


RTSI Bus Cable


SH68-68-EP Shielded Cable


SHC68-68-EP


R6868 Ribbon Cable

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Ordering Information

For a complete list of accessories, visit the product page on ni.com.

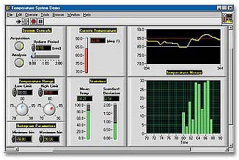
Products	Part Number	Recommended Accessories	Part Number
NI PCI-6722			
NI PCI-6722 Requires: 1 Cables , 1 Connector Blocks	778705-01	**Cables:** Shielded - SH68-C68-S Cable (2m)	186381-02
		Connector Blocks: Spring-Screw_Terminals - SCB-68 ***Also Available: BNC_Terminals*	776844-01
NI PXI-6722			
NI PXI-6722 Requires: 1 Cable , 1 Connector Block	778999-01	**Cable:** Shielded - SH68-C68-S Cable (2m)	186381-02
		Connector Block: Spring-Screw_Terminals - SCB-68 ***Also Available: BNC_Terminals*	776844-01
NI PCI-6723			
NI PCI-6723 Requires: 2 Cable , 2 Connector Block	778701-01	**Connector 0:**	
		Cable: Shielded - SH68-C68-S Cable (2m)	186381-02
		Connector Block: Spring-Screw_Terminals - SCB-68	776844-01

	***Also Available: BNC_Terminals*	
	Connector 1:	
	Cable: Shielded - SH68-C68-S Cable (2m)	186381-02
	Connector Block: Spring-Screw_Terminals - SCB-68 ***Also Available: BNC_Terminals*	776844-01
NI PXI-6723		
NI PXI-6723 Requires: 2 Cable , 2 Connector Block	778998-01	
	Connector 0:	
	Cable: Shielded - SH68-C68-S Cable (2m)	186381-02
	Connector Block: Spring-Screw_Terminals - SCB-68 ***Also Available: BNC_Terminals*	776844-01
	Connector 1:	
	Cable: Shielded - SH68-C68-S Cable (2m)	186381-02
	Connector Block: Spring-Screw_Terminals - SCB-68 ***Also Available: BNC_Terminals*	776844-01

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Software Recommendations

LabVIEW Professional Development System for Windows



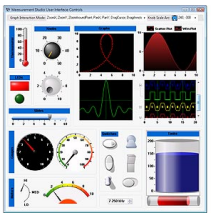
- Advanced software tools for large project development
- Automatic code generation using DAQ Assistant and Instrument I/O Assistant
- Tight integration with a wide range of hardware
- Advanced measurement analysis and digital signal processing
- Open connectivity with DLLs, ActiveX, and .NET objects
- Capability to build DLLs, executables, and MSI installers

NI LabWindows™/CVI for Windows



- Real-time advanced 2D graphs and charts
- Complete hardware compatibility with IVI, VISA, DAQ, GPIB, and serial
- Analysis tools for array manipulation, signal processing statistics, and curve fitting
- Simplified cross-platform communication with network variables
- Measurement Studio .NET tools (included in LabWindows/CVI Full only)
- The mark LabWindows is used under a license from Microsoft Corporation.

NI Measurement Studio Professional Edition



- Support for Microsoft Visual Studio .NET 2010/2008/2005
- Customizable Windows Forms and Web Forms controls for test and measurement user interface design
- Hardware integration support with data acquisition and instrument control libraries
- Automatic code generation with data acquisition, instrument control, and parameter assistants
- Cross-platform communication with network variables
- Analysis libraries for array operations, signal generation, windowing, filters, signal processing

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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. NI offers a number of calibration services to help maintain the ongoing accuracy of your measurement hardware. These services allow you to be completely confident in your measurements, and help you maintain compliance to standards like ISO 9001, ANSI/NCSL Z540-1 and ISO/IEC 17025. 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.

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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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- **On-site training at your facility** - an excellent option to train multiple employees at the same time.
- **Online instructor-led training** - lower-cost, remote training if classroom or on-site courses are not possible.
- **Course kits** - lowest-cost, self-paced training that you can use as reference guides.
- **Training memberships** and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

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 600 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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Detailed Specifications

このドキュメントの日本語版については、ni.com/manuals を参照してください。
(For a Japanese language version, go to ni.com/manuals.)

This document lists the specifications for the NI 6722/6723 analog output devices. The following specifications are typical at 25 °C unless otherwise noted.

Note With NI-DAQmx, National Instruments has revised its terminal names so they are easier to understand and more consistent among NI hardware and software products. The revised terminal names used in this document are usually similar to the names they replace. For a complete list of Traditional NI-DAQ terminal names and their NI-DAQmx equivalents, refer to the Terminal Name Equivalents section of Chapter 2, *I/O Connector*, of the *Analog Output Series User Manual*.

Analog Output

Output Characteristics

Number of channels	
NI 6722	8 voltage outputs
NI 6723	32 voltage outputs
Resolution	13 bits, 1 in 8,192

Max update rate		
Number of Channels	Max Update Rate	
	Using Local FIFO (kS/s) [1]	Using Host PC Memory (kS/s) [2]
1	800	800
2	714	714
8	476	182
16	333	90.9

Max update rate		
Number of Channels	Max Update Rate	
	Using Local FIFO (kS/s) [1]	Using Host PC Memory (kS/s) [2]
24	253	60
32	204	45

Type of DAC	Double-buffered, voltage
FIFO buffer size	2,047 samples
DMA channels	3
Data transfers	DMA, interrupts, programmed I/O
DMA modes	Scatter-gather
Accuracy Information	

Nominal Range at Full Scale (V)	Absolute Accuracy					
	% of Reading			Offset (mV)	Temp Drift (%/°C)	Absolute Accuracy at Full Scale (mV)
	24 Hours	90 Days	1 Year			
±10	0.0335%	0.0355%	0.0377%	±7.010	0.0005%	10.78
Absolute accuracy = (% of Reading × Voltage) + Offset + (Temp Drift × Voltage) Note: Temp drift applies only if ambient is greater than ±10 °C of previous external calibration.						

Transfer Characteristics	
Relative accuracy (INL)	±2.0 LSB max
DNL	±0.9 LSB max
Monotonicity	13 bits
Voltage Output	
Range	±10 V
Output coupling	DC
Output impedance	0.1 Ω max
Current drive	±5 mA max
Output stability	Any passive load
Protection	Short-circuit to ground
Power-on state	0 V (±200 mV)
External Reference Input	
Range	±11 V
Overvoltage protection	±27 V powered on, ±12 V powered off
Input impedance	10 kΩ
Dynamic Characteristics	
Slew rate	0.7 V/µs
Noise	1.0 mV_{rms}, DC to 1 MHz
Channel crosstalk	– 65 dB with SH68-C68-S cable (generating a 10 V, 100 point sinusoidal at 100 kHz on the reference channel)
Settling time	45 µs typ, 55 µs max to ±0.5 LSB
Glitch energy (at mid-scale transition)	
Magnitude	400 mV
Duration	2 µs
Channel-to-channel update glitch	
Magnitude	100 mV
Duration	1.2 µs

Note Channel-to-channel update glitch is the energy glitch that occurs on all channels as the result of a channel update. For example, if you update the value of Channel

7, all other channels will experience this glitch regardless of whether their output voltages change.

Stability	
Calibration	
Recommended warm-up time	15 min
Calibration interval	1 yr
Onboard calibration reference	
Level	5.000 V (±2.5 mV) (actual value stored in EEPROM)
Temperature coefficient	±5.0 ppm/°C max
Long-term stability	±15 ppm/√1,000 h
Digital I/O	
Number of channels	8 input/output
Compatibility	TTL/CMOS

Digital logic levels		
Level	**Min**	**Max**
Input low voltage	0 V	0.8 V
Input high voltage	2.0 V	5.0 V
Input low current (V_{in} = 0 V)	—	–320 µA
Input high current (V_{in} = 5 V)	—	10 µA
Output low voltage (I_{OL} = 24 mA)	—	0.4 V
Output high voltage (I_{OH} = –13 mA)	4.35 V	—

Power-on state	Input (high-impedance)
Data transfers	Programmed I/O
Timing I/O	
Number of channels	2 up/down counter/timers, 1 frequency scaler
Resolution	
Counter/timers	24 bits
Frequency scaler	4 bits
Compatibility	5 V TTL/CMOS
Base clocks available	
Counter/timers	20 MHz, 100 kHz
Frequency scaler	10 MHz, 100 kHz
Base clock accuracy	±0.01%
Max external source frequency	
Frequency scaler	20 MHz
External source selections	PFI <0..9>, RTSI <0..6>
External gate selections	PFI <0..9>, RTSI <0..6>
Min source pulse duration	10 ns, edge-detect mode
Min gate pulse duration	10 ns, edge-detect mode
Data transfers	
Up/down counter/timers	DMA (scatter-gather), interrupts, programmed I/O
Frequency scaler	Programmed I/O
DMA	

Channels	1 (scatter-gather)
Data source/destination	Analog output, counter/timer 0, counter/timer 1
Triggers	
Digital Trigger	
Purpose	
Analog output	Start trigger, gate, clock
Counter/timers	Source, gate
Source	PFI <0..9>
Compatibility	5 V TTL
Response	Rising or falling edge
Pulse width	10 ns min
RTSI Bus (PCI Only)	
Trigger lines <0..6>	7
RTSI clock	1
PXI Trigger Bus (PXI Only)	
Trigger lines <0..5>	6
Star trigger	1
Clock	1
Bus Interface	
NI PCI-6722/6723	3.3 V or 5 V PCI master, slave
NI PXI-6722/6723	PXI/CompactPCI master, slave
Power Requirement	
+3.3 VDC (±5%)	300 mA
+5 VDC (±5%)	1.5 A typ, 3 A max (not including power sourced from +5 V pin on I/O connector)
Power available at I/O connector	+4.65 to +5.25 VDC at 1 A
Physical	
Dimensions (not including connectors)	
NI PCI-6722/6723	17.4 × 9.8 cm (6.85 × 3.85 in.)
NI PXI-6722/6723	16 × 10 cm (6.3 × 3.9 in.)
I/O connector	
NI 6722	1 68-pin VHDCI
NI 6723	2 68-pin VHDCI
Maximum Working Voltage	
Maximum working voltage refers to the signal voltage plus the common-mode voltage.	
Channel-to-earth	±11 V, Installation Category I
Channel-to-channel	±22 V, Installation Category I
Environmental	
The NI 6722/6723 is intended for indoor use only.	
Operating temperature	0 to 50 °C
Storage temperature	–20 to 70 °C
Humidity	5 to 90% RH, noncondensing
Maximum altitude	2,000 meters
Pollution Degree	2

Note Clean the device with a soft, non-metallic brush. Make sure that the device is completely dry and free from contaminants before returning it to service.

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Safety

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 is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance

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

- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)

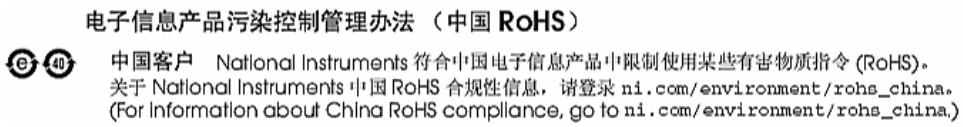
Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

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.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit ni.com/environment/weee.htm.

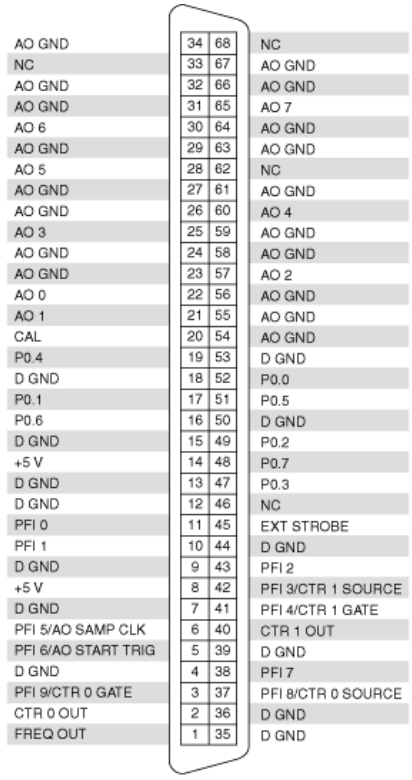


[1] These numbers apply to continuous waveform generation, which allows for the fastest waveform generation because it does not use the PCI bus. The max update rate in FIFO mode does not change regardless of the number of devices in the system. The NI 6722/6723 does not take any time to reset the FIFO to the beginning when cycling through it.

[2] These results were measured using a PCI-6722/6723 device with a 550 MHz Pentium III machine. These numbers may change when using more devices or when other CPU or bus activity occurs.

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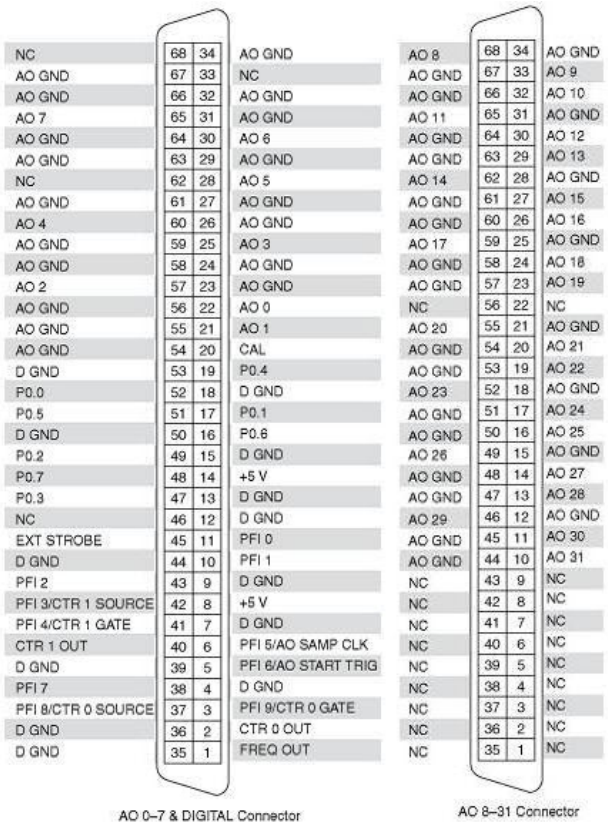
Pinouts/Front Panel Connections



AO GND	34	68	NC
NC	33	67	AO GND
AO GND	32	66	AO GND
AO GND	31	65	AO 7
AO 6	30	64	AO GND
AO GND	29	63	AO GND
AO 5	28	62	NC
AO GND	27	61	AO GND
AO GND	26	60	AO 4
AO 3	25	59	AO GND
AO GND	24	58	AO GND
AO GND	23	57	AO 2
AO 0	22	56	AO GND
AO 1	21	55	AO GND
CAL	20	54	AO GND
P0.4	19	53	D GND
D GND	18	52	P0.0
P0.1	17	51	P0.5
P0.6	16	50	D GND
D GND	15	49	P0.2
+5 V	14	48	P0.7
D GND	13	47	P0.3
D GND	12	46	NC
PFI 0	11	45	EXT STROBE
PFI 1	10	44	D GND
D GND	9	43	PFI 2
+5 V	8	42	PFI 3/CTR 1 SOURCE
D GND	7	41	PFI 4/CTR 1 GATE
PFI 5/AO SAMP CLK	6	40	CTR 1 OUT
PFI 6/AO START TRIG	5	39	D GND
D GND	4	38	PFI 7
PFI 9/CTR 0 GATE	3	37	PFI 8/CTR 0 SOURCE
CTR 0 OUT	2	36	D GND
FREQ OUT	1	35	D GND

NC = No Connect

NI 6722 68-Pin AO I/O Connector Pin Assignments



NI 6723 68-68-Pin Extended AO I/O Connector Pin Assignments

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