

# WHERE TO START WITH YOUR PCI-6023E/6024E/6025E

Thank you for buying a National Instruments PCI-6023E, PCI-6024E, or PCI-6025E board. The PCI-6025E features 16 channels (eight differential) of analog input, two channels of analog output, a 100-pin connector, and 32 lines of digital I/O. The PCI-6024E features 16 channels of analog input, two channels of analog output, a 68-pin connector and eight lines of digital I/O. The PCI-6023E is identical to the PCI-6024E, except that it does not have analog output channels. The PCI-6023E, PCI-6024E, and PCI-6025E kits include NI-DAQ driver software, which provides an extensive library of functions for digital I/O boards and other devices.

## Documentation

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### PCI-6023E/6024E/6025E

For detailed information about the PCI-6023E, PCI-6024E, or PCI-6025E, see the *PCI-6023E/6024E/6025E User Manual*. This manual is available in electronic format on your NI-DAQ software distribution CD. If you prefer a hard copy of this manual, you can print it from the Acrobat reader or you can order a printed, bound copy from National Instruments (part number 322072A-01).

The user manual provides signal connection information, a hardware overview, and product specifications. The manual also contains warranty information and important warnings explaining the correct use of the PCI-6023E, PCI-6024E, and PCI-6025E.

### NI-DAQ

If you are using NI-DAQ as your software interface to the PCI-6023E, PCI-6024E, or PCI-6025E, install the NI-DAQ software documentation from the NI-DAQ distribution CD in addition to installing the PCI-6023E/6024E/6025E hardware documentation.

If you are using software other than NI-DAQ, use the documentation included with that software.

# Installation

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## Software and Documentation

If you are using software other than NI-DAQ, consult your software documentation for software installation instructions.

Refer to the NI-DAQ release notes to install the NI-DAQ software and related documentation. When prompted during the software installation process to select components, select the option to install documentation. Choose the *PCI-6023E/6024E/6025E User Manual* and any other documents you want, such as the NI-DAQ software documents.

To install the hardware documentation without installing NI-DAQ software, deselect all components other than the documentation option.

## Hardware



**Note**

***Install your software before you install your board.***

After installing your software, you are ready to install your hardware. Your board will fit in any 5 V PCI expansion slot in your computer. However, to achieve best noise performance, leave as much room as possible between your board and other devices. The following are general installation instructions. Consult your computer user manual or technical reference manual for specific instructions and warnings.

1. Turn off and unplug your computer.
2. Remove the top cover of your computer.
3. Remove the expansion slot cover on the back panel of the computer.
4. Insert the board into a 5 V PCI slot. Gently rock the board to ease it into place. It may be a tight fit, but *do not force* the board into place.
5. Screw the mounting bracket of the board to the back panel rail of the computer.
6. Replace the top cover of your computer.
7. Plug in and turn on your computer.

The board is installed. You are now ready to configure your software. Refer to your software documentation for configuration instructions.

# I/O Connector

Figure 1 shows the pin assignments for the 68-pin I/O connector on the PCI-6023E and PCI-6024E. It is also the MIO-16 68-pin connector available when you use the SH 1006868 cable assembly with the PCI-6025E.

ACH8	34	68	ACH0
ACH1	33	67	AIGND
AIGND	32	66	ACH9
ACH10	31	65	ACH2
ACH3	30	64	AIGND
AIGND	29	63	ACH11
ACH4	28	62	AISENSE
AIGND	27	61	ACH12
ACH13	26	60	ACH5
ACH6	25	59	AIGND
AIGND	24	58	ACH14
ACH15	23	57	ACH7
DAC0OUT <sup>1</sup>	22	56	AIGND
DAC1OUT <sup>1</sup>	21	55	AOGND
RESERVED	20	54	AOGND
DIO4	19	53	DGND
DGND	18	52	DIO0
DIO1	17	51	DIO5
DIO6	16	50	DGND
DGND	15	49	DIO2
+5 V	14	48	DIO7
DGND	13	47	DIO3
DGND	12	46	SCANCLK
PFI0/TRIG1	11	45	EXTSTROBE*
PFI1/TRIG2	10	44	DGND
DGND	9	43	PFI2/CONVERT*
+5 V	8	42	PFI3/GPCTR1_SOURCE
DGND	7	41	PFI4/GPCTR1_GATE
PFI5/UPDATE*	6	40	GPCTR1_OUT
PFI6/WFTRIG	5	39	DGND
DGND	4	38	PFI7/STARTSCAN
PFI9/GPCTR0_GATE	3	37	PFI8/GPCTR0_SOURCE
GPCTR0_OUT	2	36	DGND
FREQ_OUT	1	35	DGND

<sup>1</sup> Not available on the PCI-6023E

**Figure 1.** I/O Connector Pin Assignment for the PCI-6023E and PCI-6024E

Figure 2 shows the pin assignments for the 100-pin I/O connector on the PCI-6025E.

AIGND	1	51	PC7
AIGND	2	52	GND
ACH0	3	53	PC6
ACH8	4	54	GND
ACH1	5	55	PC5
ACH9	6	56	GND
ACH2	7	57	PC4
ACH10	8	58	GND
ACH3	9	59	PC3
ACH11	10	60	GND
ACH4	11	61	PC2
ACH12	12	62	GND
ACH5	13	63	PC1
ACH13	14	64	GND
ACH6	15	65	PC0
ACH14	16	66	GND
ACH7	17	67	PB7
ACH15	18	68	GND
AISENSE	19	69	PB6
DAC0OUT	20	70	GND
DAC1OUT	21	71	PB5
RESERVED	22	72	GND
AOGND	23	73	PB4
DGND	24	74	GND
DIO0	25	75	PB3
DIO4	26	76	GND
DIO1	27	77	PB2
DIO5	28	78	GND
DIO2	29	79	PB1
DIO6	30	80	GND
DIO3	31	81	PB0
DIO7	32	82	GND
DGND	33	83	PA7
+5 V	34	84	GND
+5 V	35	85	PA6
SCANCLK	36	86	GND
EXTSTROBE*	37	87	PA5
PFI0/TRIG1	38	88	GND
PFI1/TRIG2	39	89	PA4
PF12/CONVERT*	40	90	GND
PFI3/GPCTR1_SOURCE	41	91	PA3
PFI4/GPCTR1_GATE	42	92	GND
GPCTR1_OUT	43	93	PA2
PF15/UPDATE*	44	94	GND
PF16/WFTRIG	45	95	PA1
PF17/STARTSCAN	46	96	GND
PFI8/GPCTR0_SOURCE	47	97	PA0
PFI9/GPCTR0_GATE	48	98	GND
GPCTR0_OUT	49	99	+5 V
FREQ_OUT	50	100	GND

**Figure 2.** I/O Connector Pin Assignment for the PCI-6025E

Figure 3 shows the pin assignments for the 68-pin extended digital connector. This is the other 68-pin connector available when you use the SH1006868 cable assembly with the PCI-6025E.

GND	34	68	PC7
PC6	33	67	GND
PC5	32	66	GND
GND	31	65	PC4
PC3	30	64	GND
PC2	29	63	GND
GND	28	62	PC1
PC0	27	61	GND
PB7	26	60	GND
GND	25	59	PB6
PB5	24	58	GND
PB4	23	57	GND
GND	22	56	PB3
GND	21	55	PB2
PB1	20	54	GND
PB0	19	53	GND
GND	18	52	PA7
PA6	17	51	GND
PA5	16	50	GND
GND	15	49	PA4
PA3	14	48	GND
PA2	13	47	GND
GND	12	46	PA1
PA0	11	45	GND
+5 V	10	44	GND
N/C	9	43	N/C
N/C	8	42	N/C
N/C	7	41	N/C
N/C	6	40	N/C
N/C	5	39	N/C
N/C	4	38	N/C
N/C	3	37	N/C
N/C	2	36	N/C
N/C	1	35	N/C

**Figure 3.** 68-Pin Extended Digital Connector Pin Assignments

# Support

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## **Internet Support**

E-mail: [support@natinst.com](mailto:support@natinst.com)

FTP Site: <ftp.natinst.com>

Web Address: <http://www.natinst.com>

## **Bulletin Board Support**

BBS United States: 512 794 5422

BBS United Kingdom: 01635 551422

BBS France: 01 48 65 15 59

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512 418 1111

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