

## USER GUIDE

# NI USB-622x/625x OEM

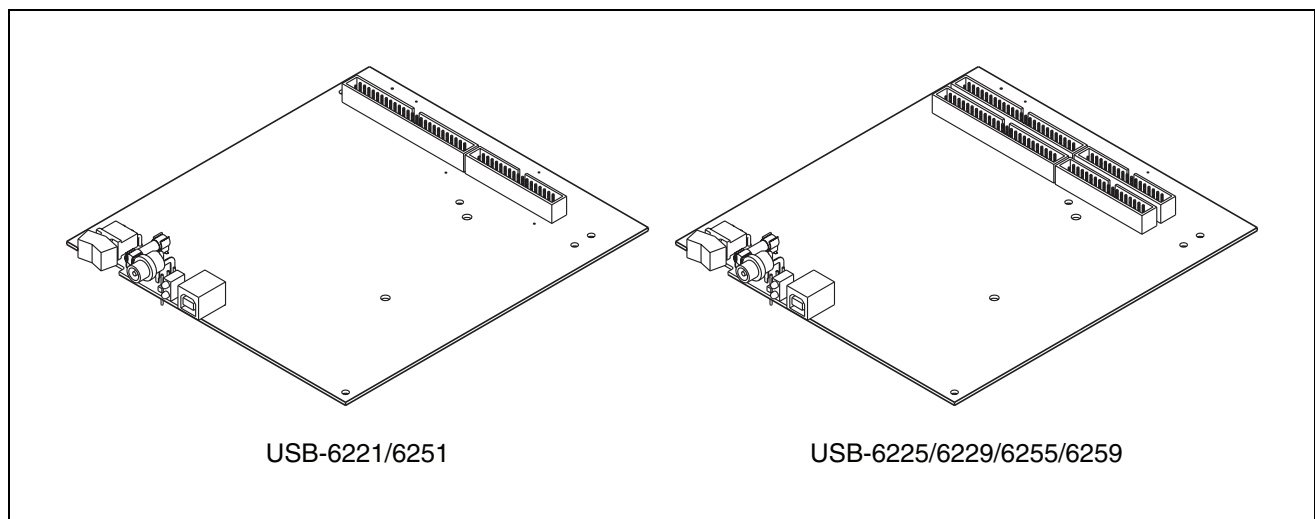
## M Series USB-6221/6225/6229/6251/6255/6259 OEM Devices

This document provides dimensions, pinouts, and information about the connectors, switch, LEDs, and chassis ground of the National Instruments USB-6221 OEM, USB-6225 OEM, USB-6229 OEM, USB-6251 OEM, USB-6255 OEM, and USB-6259 OEM devices. It also explains how to modify the USB device name in Microsoft Windows.



**Caution** There are no product safety, electromagnetic compatibility (EMC), or CE marking compliance claims made for the USB-622x/625x OEM devices. Conformity to any and all compliance requirements rests with the end product supplier.

Figure 1 shows the USB-6221/6251 OEM and USB-6225/6229/6255/6259 OEM devices.



**Figure 1.** USB-6221/6251 OEM and USB-6225/6229/6255/6259 OEM Devices

Refer to the *NI 622x Specifications* document for USB-6221/6225/6229 specifications and the *NI 625x Specifications* document for USB-6251/6255/6259 specifications. Refer to the *M Series User Manual* for more information about USB-622x/625x devices. You can find all documentation at [ni.com/manuals](http://ni.com/manuals).

# Dimensions

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Figure 2 shows the dimensions of the USB-6221/6251 OEM device.

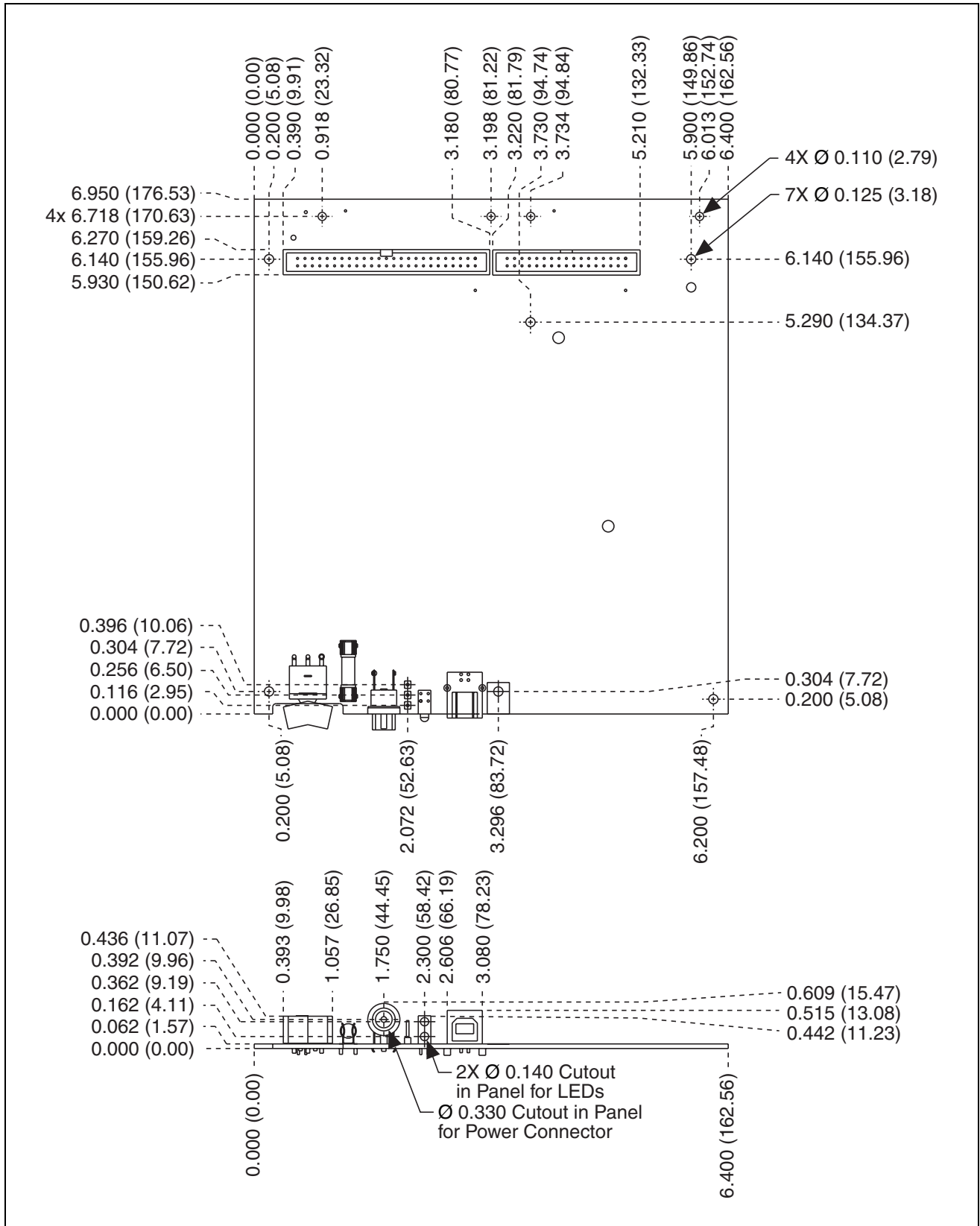


Figure 2. USB-6221/6251 OEM Dimensions in Inches (Millimeters)

Figure 3 shows the dimensions of the USB-6225/6229/6255/6259 OEM device.

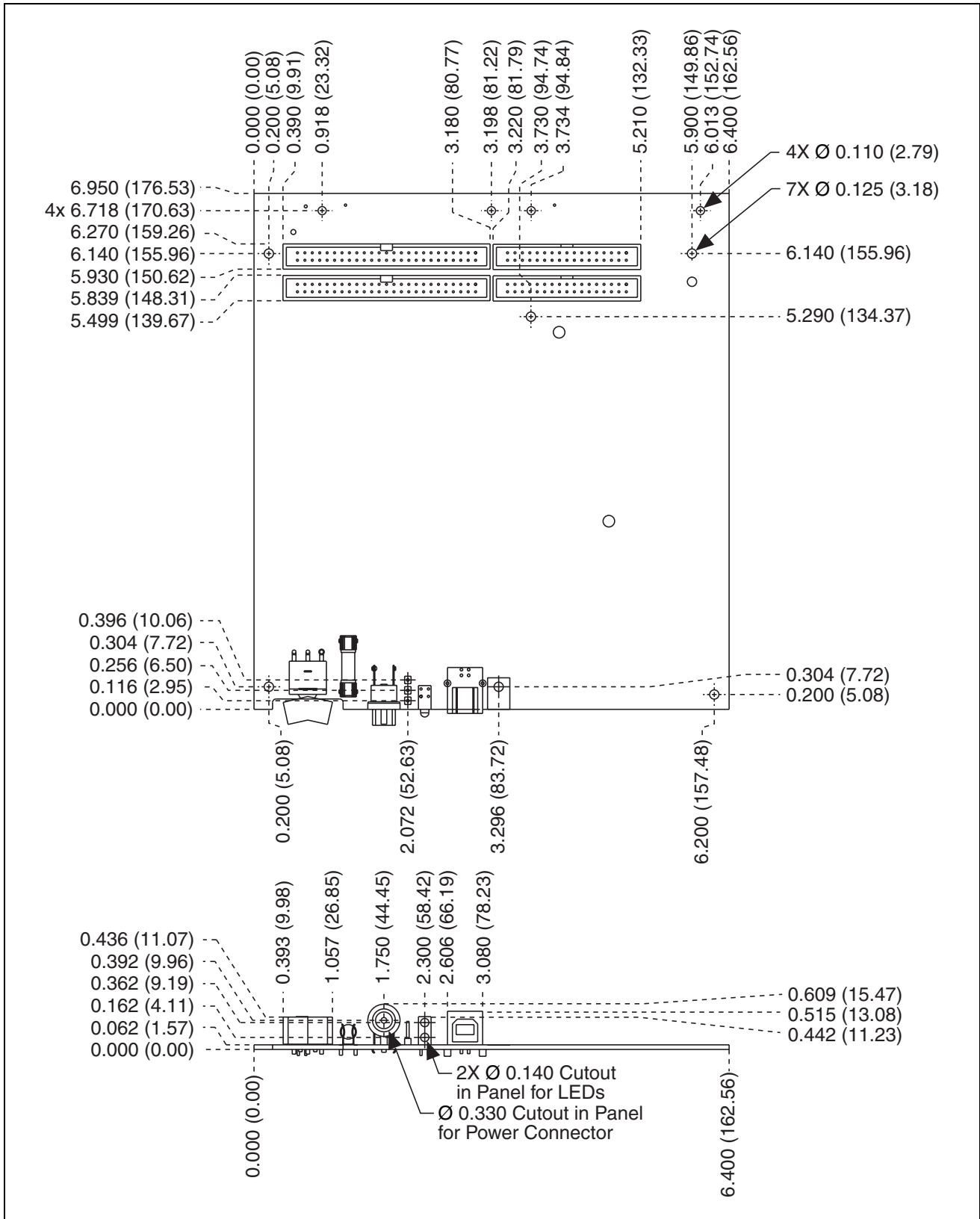


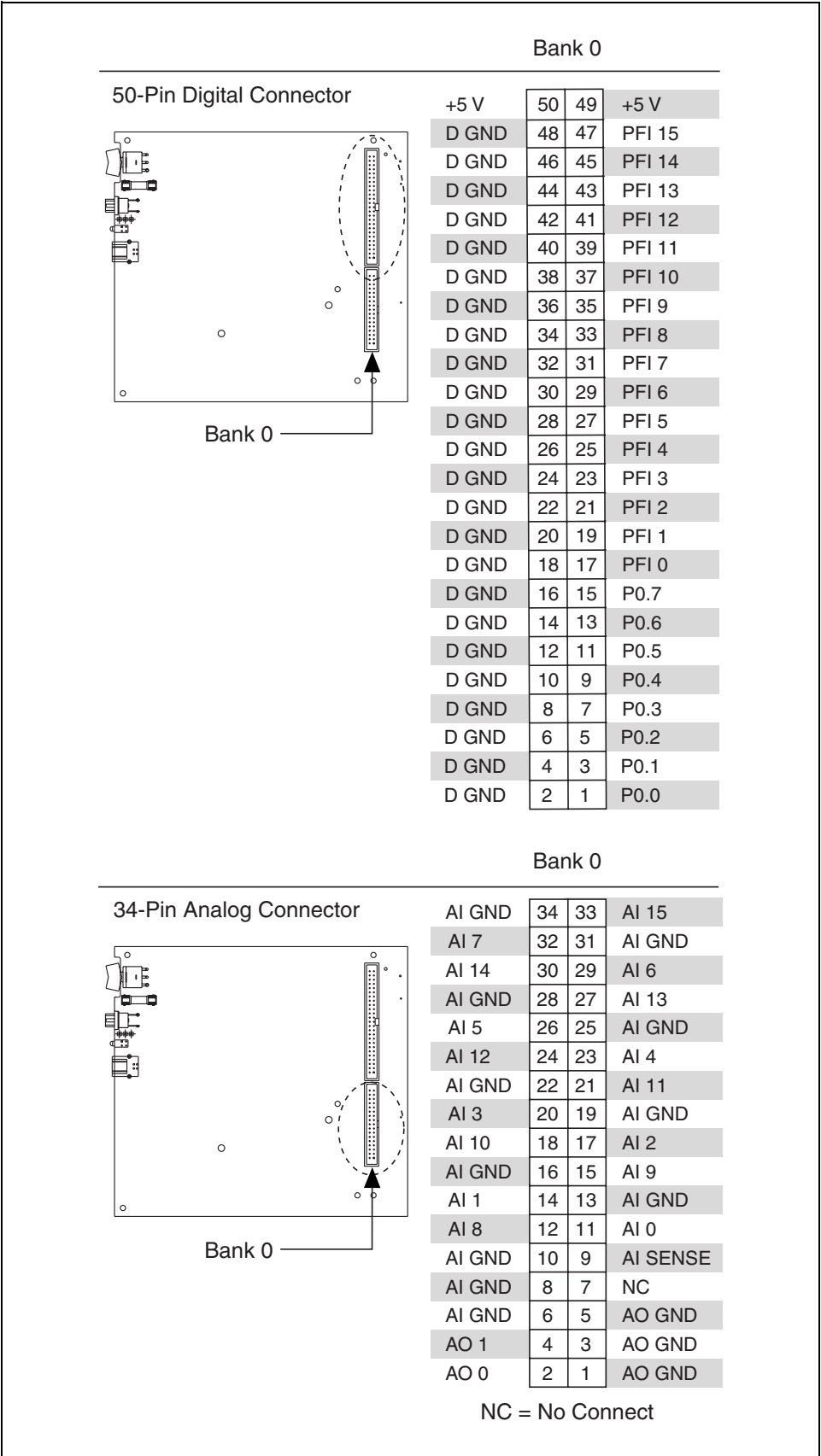
Figure 3. USB-6225/6229/6255/6259 OEM Dimensions in Inches (Millimeters)

# I/O Connector Pinouts

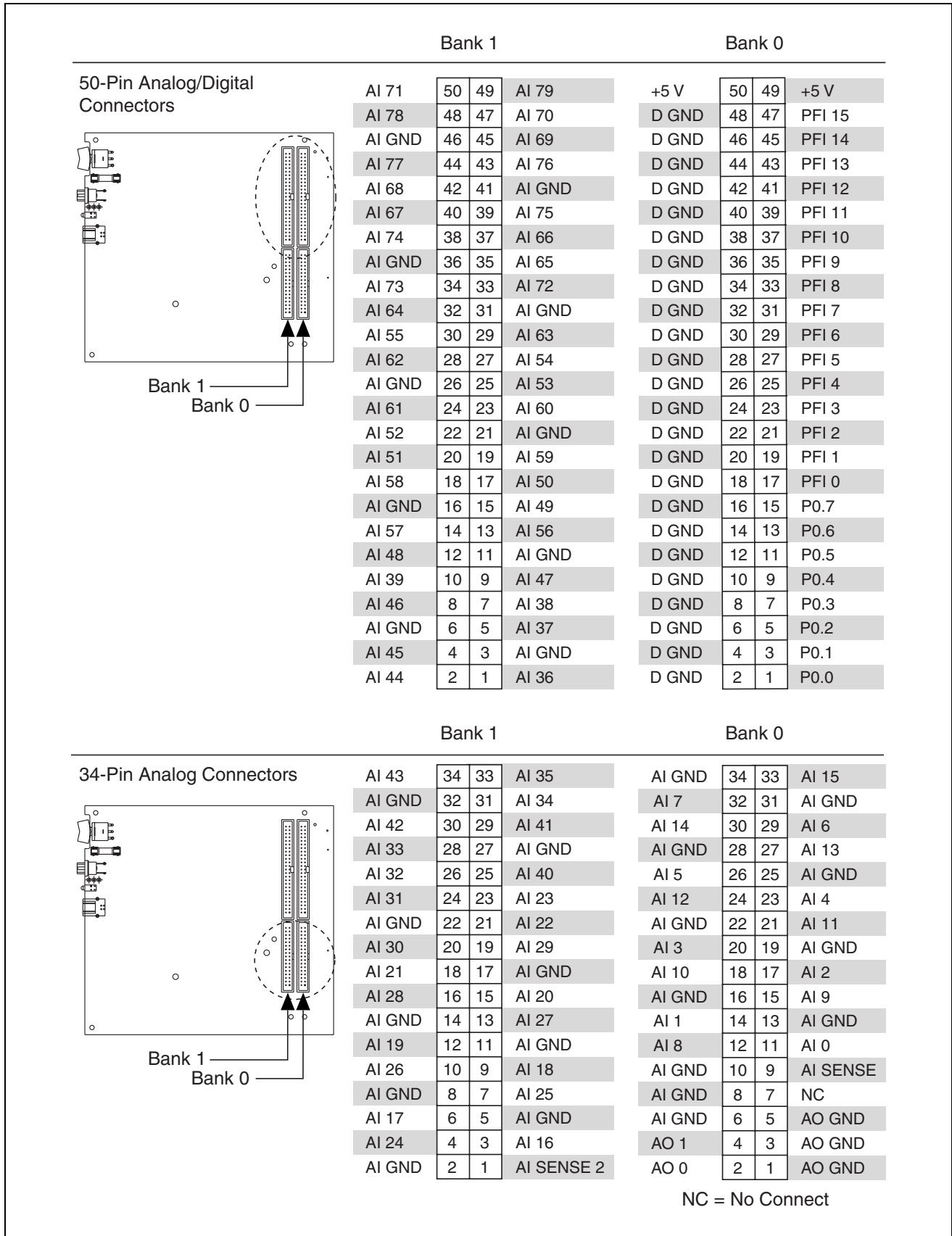
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Figures 4 through 9 show the connector pinouts for the USB-6221 OEM, USB-6225 OEM, USB-6229 OEM, USB-6251 OEM, USB-6255 OEM, and USB-6259 OEM devices.

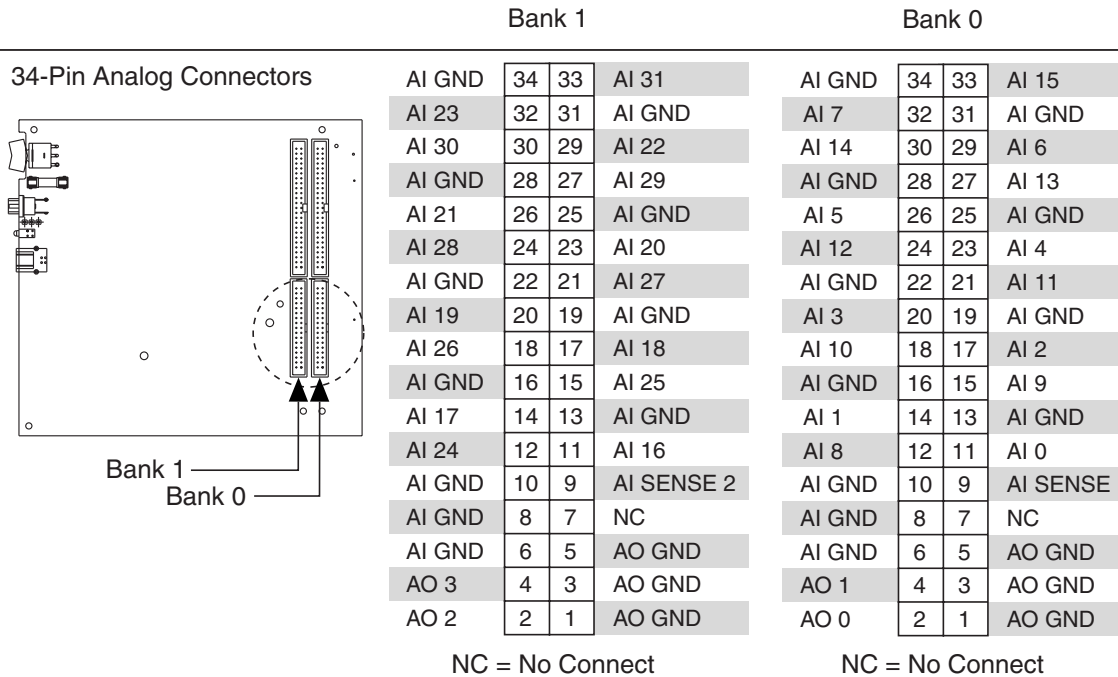
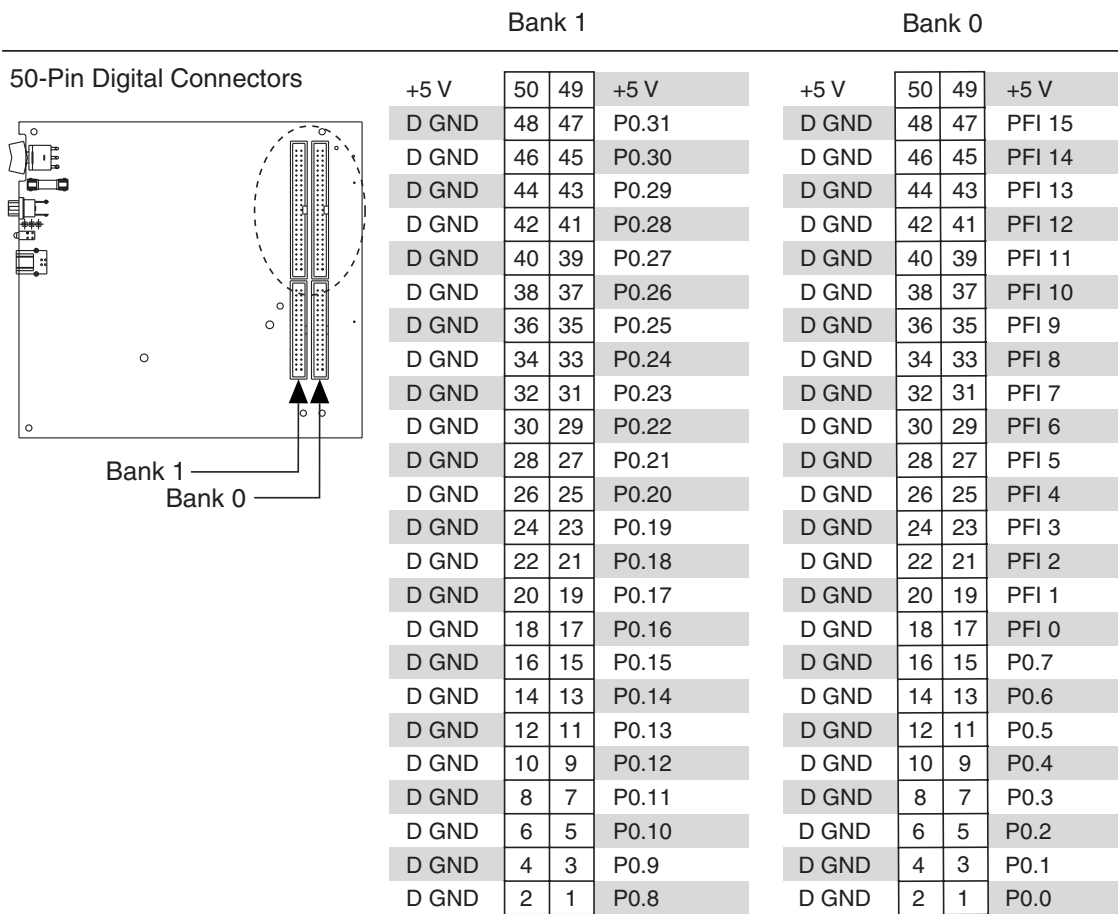
Refer to the *M Series User Manual* at [ni.com/manuals](http://ni.com/manuals) for more information about USB-622x/625x signals and how to connect them.



**Figure 4.** USB-6221 OEM Connector Pinout

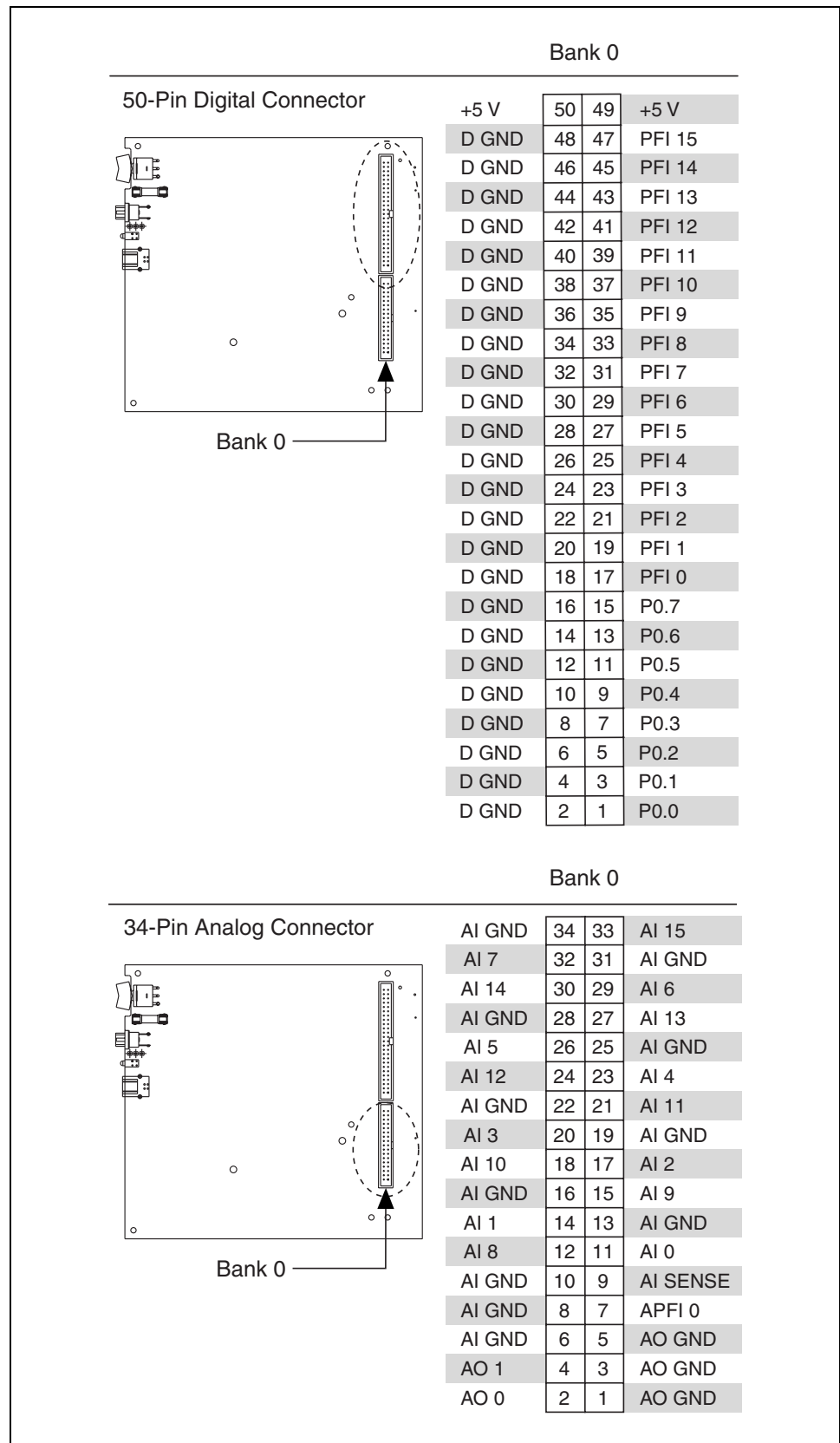


**Figure 5.** USB-6225 OEM Connector Pinout



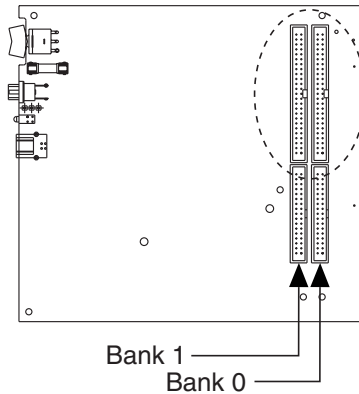
**Figure 6.** USB-6229 OEM Connector Pinout





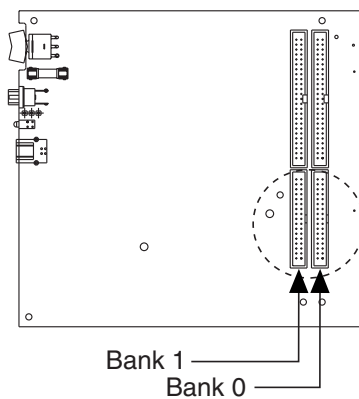
**Figure 7.** USB-6251 OEM Connector Pinout

50-Pin Analog/Digital Connectors



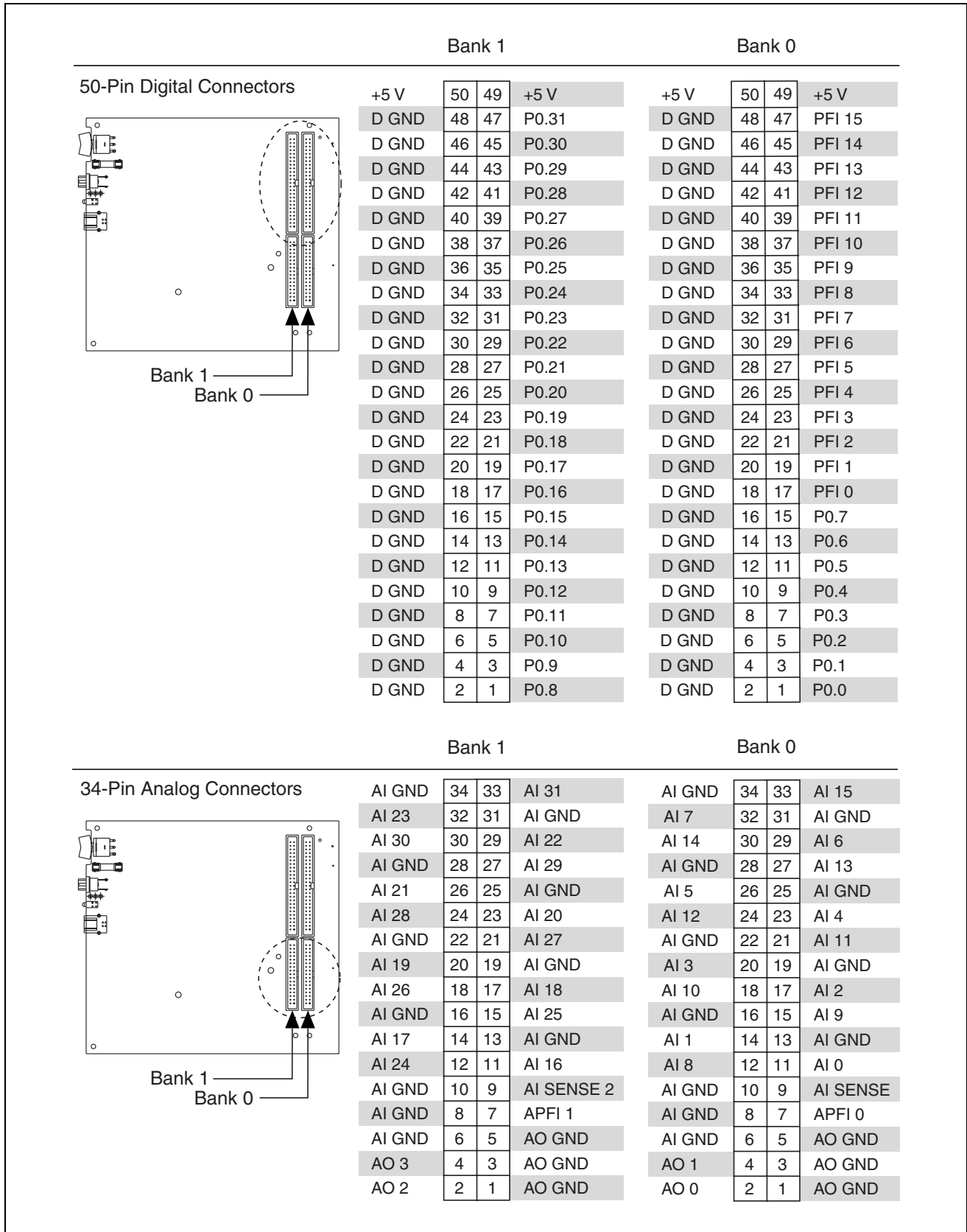
Bank 1			Bank 0				
AI 71	50	49	AI 79	+5 V	50	49	+5 V
AI 78	48	47	AI 70	D GND	48	47	PFI 15
AI GND	46	45	AI 69	D GND	46	45	PFI 14
AI 77	44	43	AI 76	D GND	44	43	PFI 13
AI 68	42	41	AI GND	D GND	42	41	PFI 12
AI 67	40	39	AI 75	D GND	40	39	PFI 11
AI 74	38	37	AI 66	D GND	38	37	PFI 10
AI GND	36	35	AI 65	D GND	36	35	PFI 9
AI 73	34	33	AI 72	D GND	34	33	PFI 8
AI 64	32	31	AI GND	D GND	32	31	PFI 7
AI 55	30	29	AI 63	D GND	30	29	PFI 6
AI 62	28	27	AI 54	D GND	28	27	PFI 5
AI GND	26	25	AI 53	D GND	26	25	PFI 4
AI 61	24	23	AI 60	D GND	24	23	PFI 3
AI 52	22	21	AI GND	D GND	22	21	PFI 2
AI 51	20	19	AI 59	D GND	20	19	PFI 1
AI 58	18	17	AI 50	D GND	18	17	PFI 0
AI GND	16	15	AI 49	D GND	16	15	P0.7
AI 57	14	13	AI 56	D GND	14	13	P0.6
AI 48	12	11	AI GND	D GND	12	11	P0.5
AI 39	10	9	AI 47	D GND	10	9	P0.4
AI 46	8	7	AI 38	D GND	8	7	P0.3
AI GND	6	5	AI 37	D GND	6	5	P0.2
AI 45	4	3	AI GND	D GND	4	3	P0.1
AI 44	2	1	AI 36	D GND	2	1	P0.0

34-Pin Analog Connectors



Bank 1			Bank 0				
AI 43	34	33	AI 35	AI GND	34	33	AI 15
AI GND	32	31	AI 34	AI 7	32	31	AI GND
AI 42	30	29	AI 41	AI 14	30	29	AI 6
AI 33	28	27	AI GND	AI GND	28	27	AI 13
AI 32	26	25	AI 40	AI 5	26	25	AI GND
AI 31	24	23	AI 23	AI 12	24	23	AI 4
AI GND	22	21	AI 22	AI GND	22	21	AI 11
AI 30	20	19	AI 29	AI 3	20	19	AI GND
AI 21	18	17	AI GND	AI 10	18	17	AI 2
AI 28	16	15	AI 20	AI GND	16	15	AI 9
AI GND	14	13	AI 27	AI 1	14	13	AI GND
AI 19	12	11	AI GND	AI 8	12	11	AI 0
AI 26	10	9	AI 18	AI GND	10	9	AI SENSE
AI GND	8	7	AI 25	AI GND	8	7	APFI 0
AI 17	6	5	AI GND	AI GND	6	5	AO GND
AI 24	4	3	AI 16	AO 1	4	3	AO GND
AI GND	2	1	AI SENSE 2	AO 0	2	1	AO GND

Figure 8. USB-6255 OEM Connector Pinout

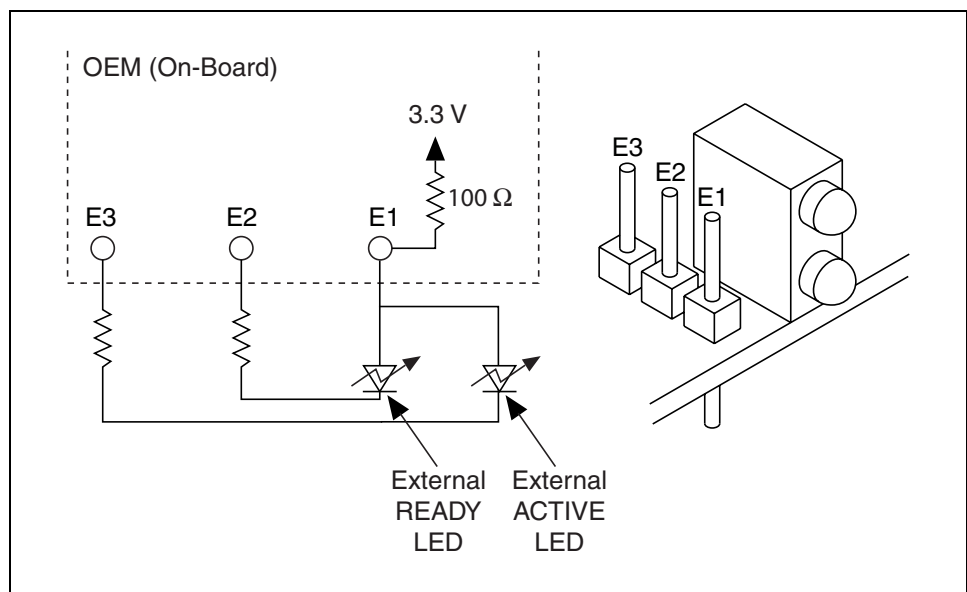


**Figure 9.** USB-6259 OEM Connector Pinout

# Attaching External LEDs

USB-622x/625x OEM devices have two LEDs that reflect the device state. The green READY LED indicates when the device is powered on and configured as a USB device. The yellow ACTIVE LED indicates USB bus activity.

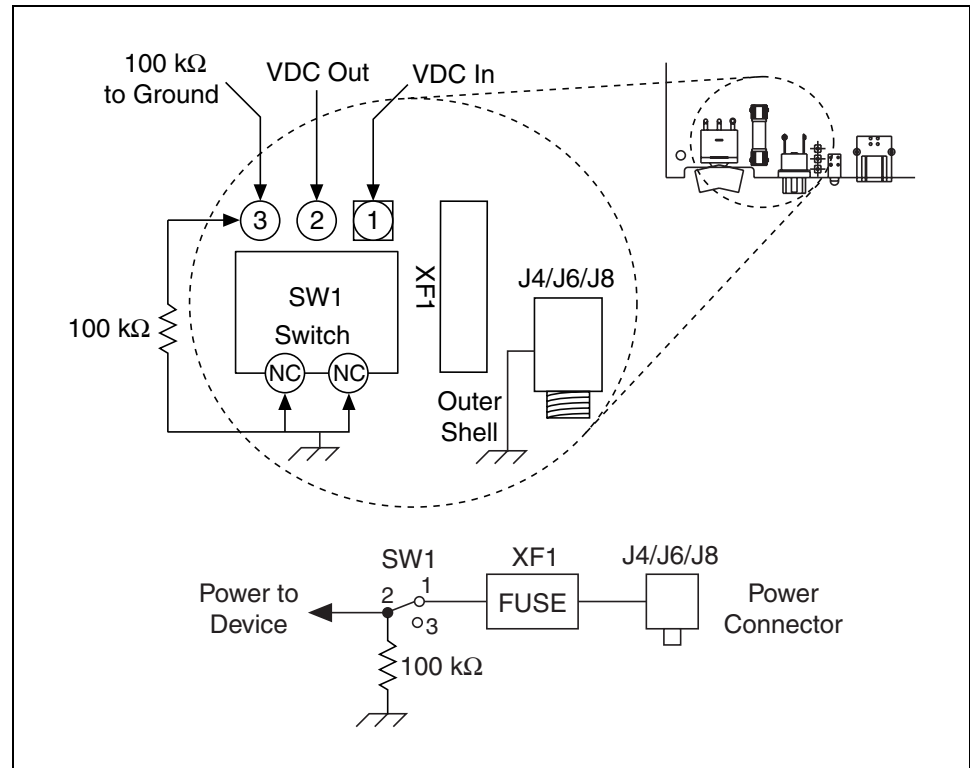
Three connectors on the device allow you to connect an external LED circuit to the device, as shown in Figure 10. To connect an external READY LED, use E1 as the positive connection (+3.3 V) and E2 as the negative connection. To connect an external ACTIVE LED, use E1 as the positive connection and E3 as the negative connection. E1 is current limited with a 100  $\Omega$  resistor to the 3.3 V internal supply. This configuration limits the current to approximately 16 mA into a single external LED or approximately 8 mA each when both LEDs are lit. You also can limit this current further by using external resistors, also shown in Figure 10.



**Figure 10.** Schematic for External LED Circuits

# Power Switch

The power switch on the USB-622x/625x OEM device powers the device on and off. Figure 11 shows the pins on the power switch and circuitry.



**Figure 11.** Schematic for the Power Switch

Pin 1, VDC In, is connected to VDC through the fuse (reference designator XF1). The VDC is the voltage provided by the power supply through the power connector (reference designator J4/J6/J8<sup>1</sup>) and must be 11–30 VDC, 20 W.

Pin 2, VDC Out, provides power to the circuitry on the device. When the switch is in the On position, the VDC power supply from pin 1 is routed to pin 2.

Pin 3, 100 kΩ to Ground, connects pin 2 to ground through a 100 kΩ resistor when the switch is in the Off position.

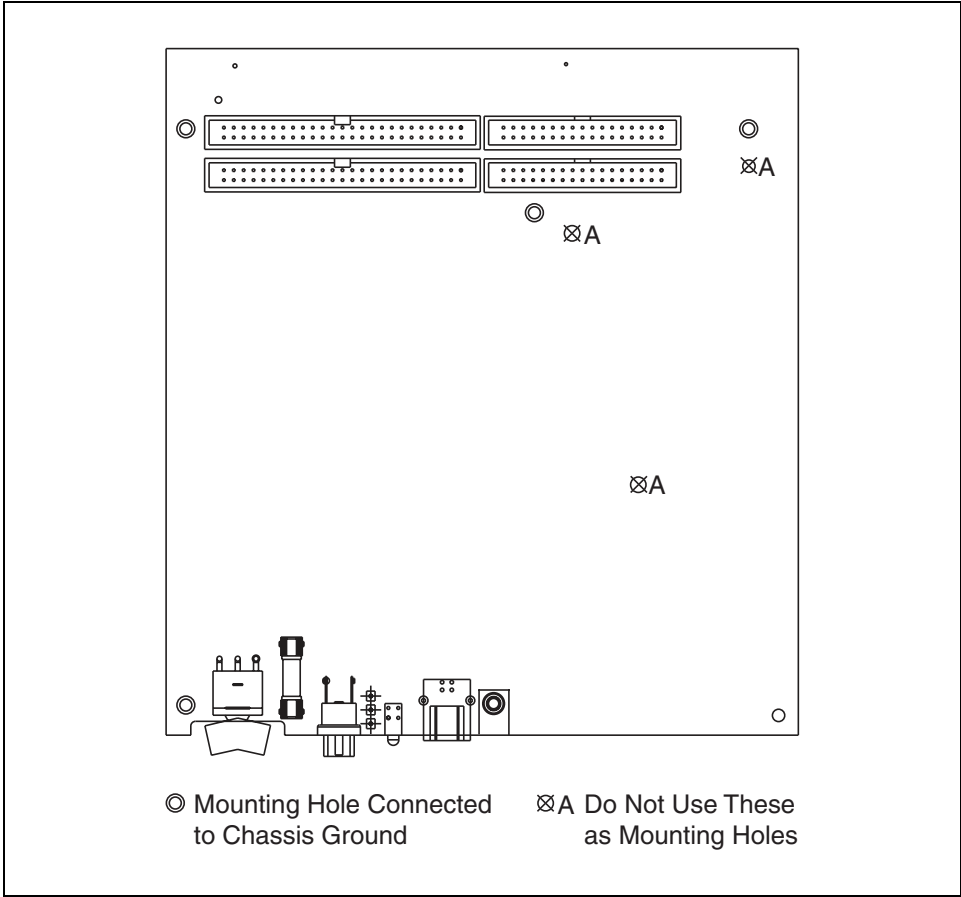
<sup>1</sup> The power connector is designated as J4 on USB-6225/6255 OEM devices, J6 on USB-6221/6229 OEM devices, and J8 on USB-6251/6259 OEM devices.

# Connecting the USB-622x/625x OEM Device to Your Chassis

The USB-622x/625x OEM device includes several plated mounting holes that are designed for customer grounded connections, as shown in Figure 12.



**Caution** Do not use the holes labeled A in Figure 12 as mounting holes.



**Figure 12.** Customer Mounting Holes (USB-6225/6229/6255/6259 OEM Shown)

# Device Components

Table 1 contains information about the components used for interfacing and interacting with the USB-622x/625x OEM device.

**Table 1.** USB-622x/625x OEM Components

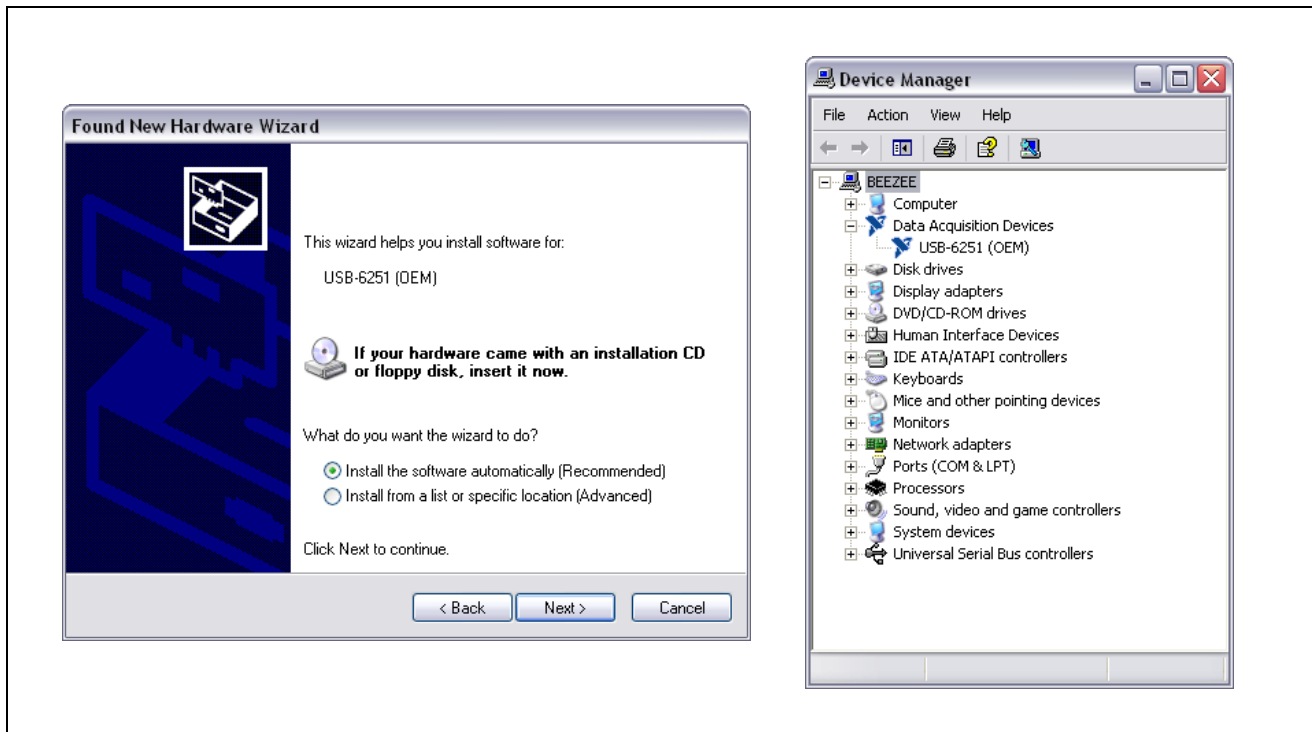
Component	Reference Designator(s) on PCB	Manufacturer	Manufacturer Part Number
LEDs	DS1	Dialight	553-0332
34-pin connectors	(USB-6221/6251 OEM) J1	3M	N2534-6002RB
	(USB-6225/6229/6255/6259 OEM) J1, J2		
50-pin connectors	(USB-6221/6251 OEM) P1	3M	N2550-6002UB
	(USB-6225/6229/6255/6259 OEM) P1, P2		
USB connector	J3	AMP	787780-1
Power connector	(USB-6221/6229 OEM) J6	Switchcraft	722RA
	(USB-6225/6255 OEM) J4		
	(USB-6251/6259 OEM) J8		
Power switch	SW1	ITT Industries, Cannon	E101J1A3QE2
F 2A L 250V fuse	XF1	Littelfuse	217.002
68-pin connectors*	(USB-6221 OEM) J8	Honda	PCS-E68RLMD1+
	(USB-6225/6229/6255 OEM) J7, J8		
	(USB-6251 OEM) J7		
	(USB-6259 OEM) J6, J7		
* Optional mass termination connectors. These are not populated by default.			

## Modifying the USB Device Name in Microsoft Windows

You can change how the USB-622x/625x OEM device name appears when users install the device in both the Found New Hardware Wizard that appears when the device is initially installed and in the Windows Device Manager.

## Windows Vista/XP Users

Figure 13 depicts how a USB-6251 (OEM) device name appears in the Found New Hardware Wizard and Windows Device Manager.



**Figure 13.** USB-6251 OEM Device in the Found New Hardware Wizard and Device Manager (Windows Vista/XP)

To modify the device name in the Found New Hardware Wizard and Windows Device Manager in Microsoft Windows Vista/XP, complete the following steps.



**Note** You *must* have NI-DAQmx 8.6 or later installed on your PC.

1. Locate the `OEMx.inf` file in the `y:\WINDOWS\inf\` directory, where `x` is the random number assigned to the INF file by Windows, and `y:\` is the root directory where Windows is installed.



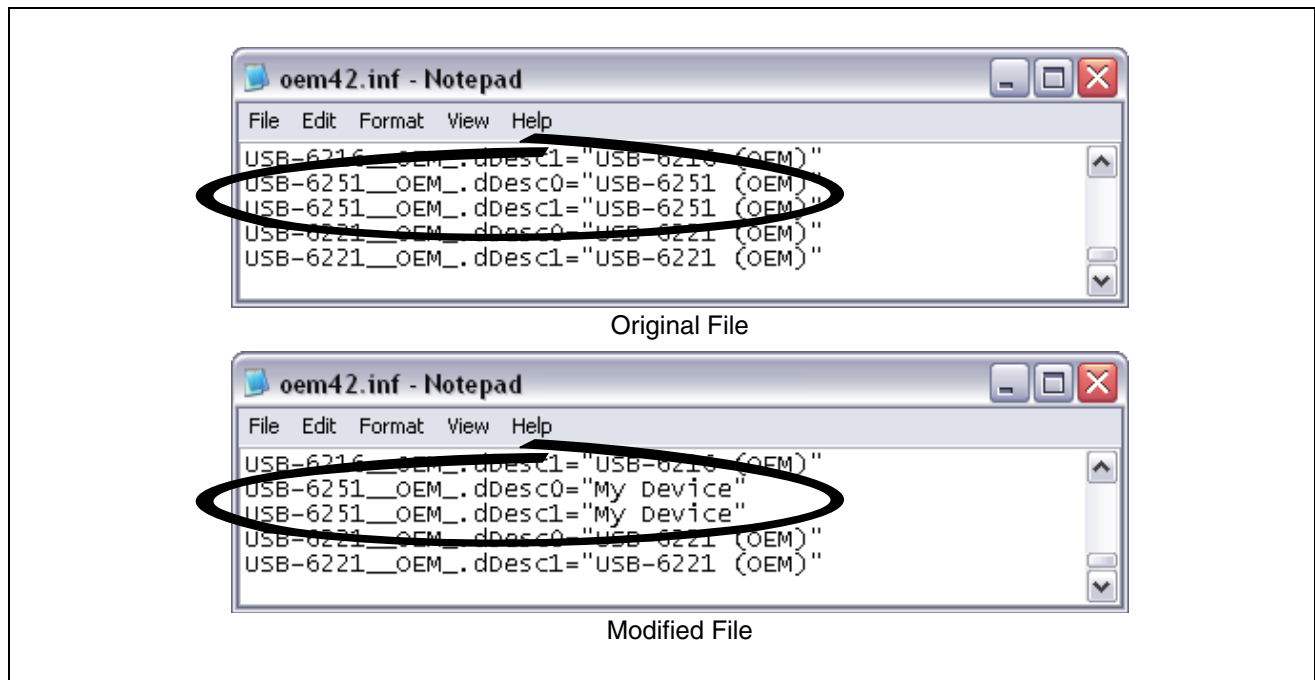
**Note** New security updates to Microsoft Vista and NI-DAQ 8.6 create random INF files for NI hardware. Windows assigns random file numbers to all INF files, which causes the user to search through several INF files until the correct file is located.

If you want to revert back, save a copy of this file as `OEMx_original.inf` in a different location.



2. Edit the device INF file by opening `OEMx.inf` with a text editor.

At the bottom of this file are the descriptors where Windows looks to identify the device. Locate the two lines of text that contain in quotes the descriptors for the device name you are modifying. Change the descriptor on *both* lines to the new device name, as shown in Figure 14.



**Figure 14.** INF File Descriptors Changed to “My Device” (Windows Vista/XP)

3. Save and close the INF file.
4. Go to the Windows Device Manager.

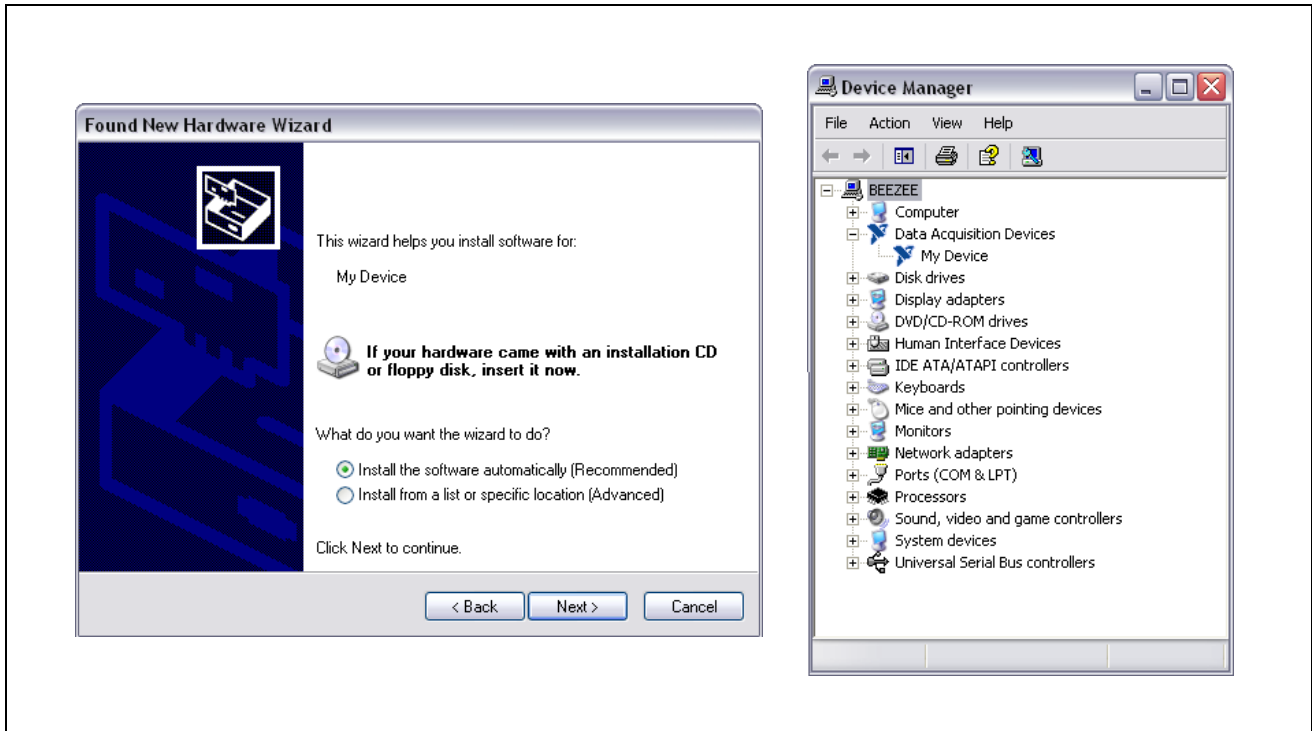
**(Windows Vista)** In the Device Manager, notice that the OEM device now appears as `My Device`, as shown in Figure 15.

**(Windows XP)** In the Device Manager, right-click the OEM device under Data Acquisition Devices, and select **Uninstall**. Power down the OEM device and disconnect the USB cable from your PC.

When you reconnect and power on the device, it appears as `My Device` in the Found New Hardware Wizard and Windows Device Manager, as shown in Figure 15.



**Note** When the device is initially installed, the Windows alert message may display the following: **Found New Hardware: M Series USB 62xx (OEM)**. This message appears for a few seconds until the custom name appears and the Found New Hardware Wizard is launched. This alert message device name cannot be changed.



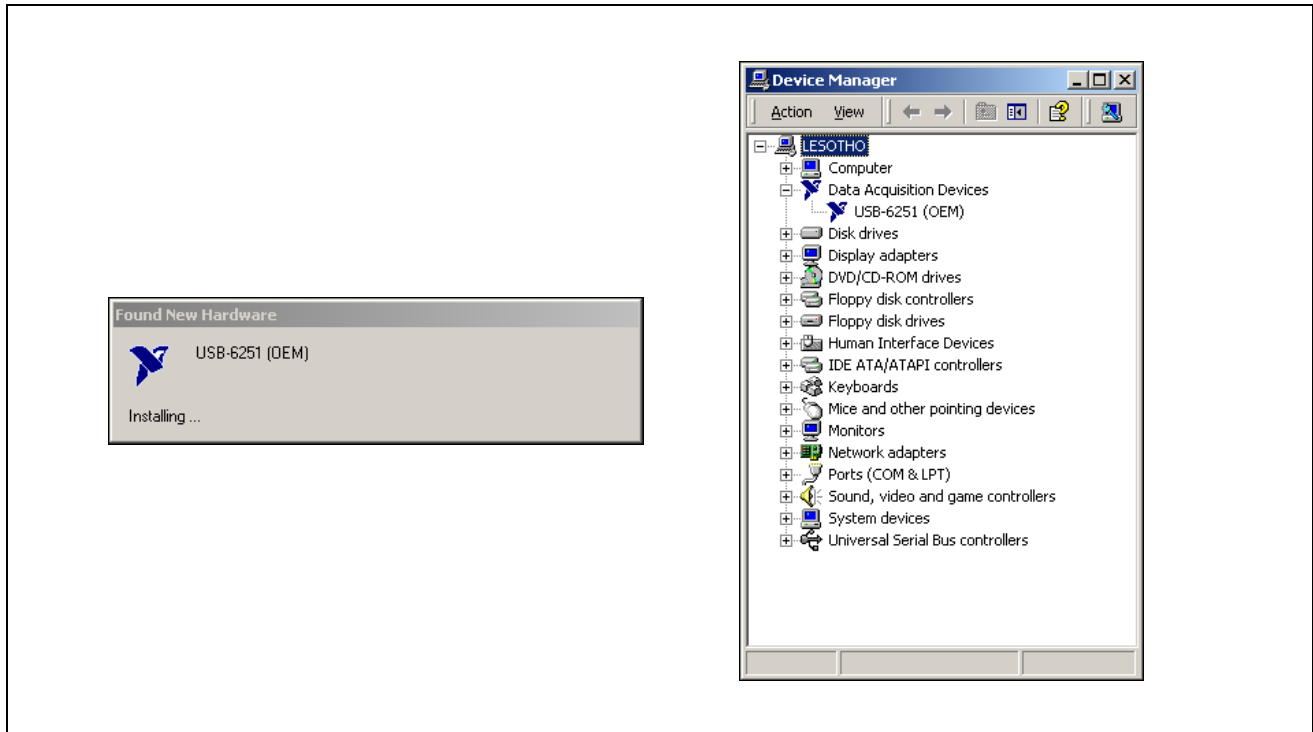
**Figure 15.** “My Device” in the Found New Hardware Wizard and Device Manager (Windows Vista/XP)



**Note** Modifying the INF file will *not* change the USB-622x/625x OEM device name in Measurement & Automation Explorer (MAX).

# Windows 2000 Users

Figure 16 depicts how a USB-6251 (OEM) device name appears in the Found New Hardware Wizard and Windows Device Manager.



**Figure 16.** USB-6251 OEM Device in the Found New Hardware Wizard and Device Manager (Windows 2000)

To modify the device name in the Found New Hardware Wizard and Windows Device Manager in Windows 2000, complete the following steps.



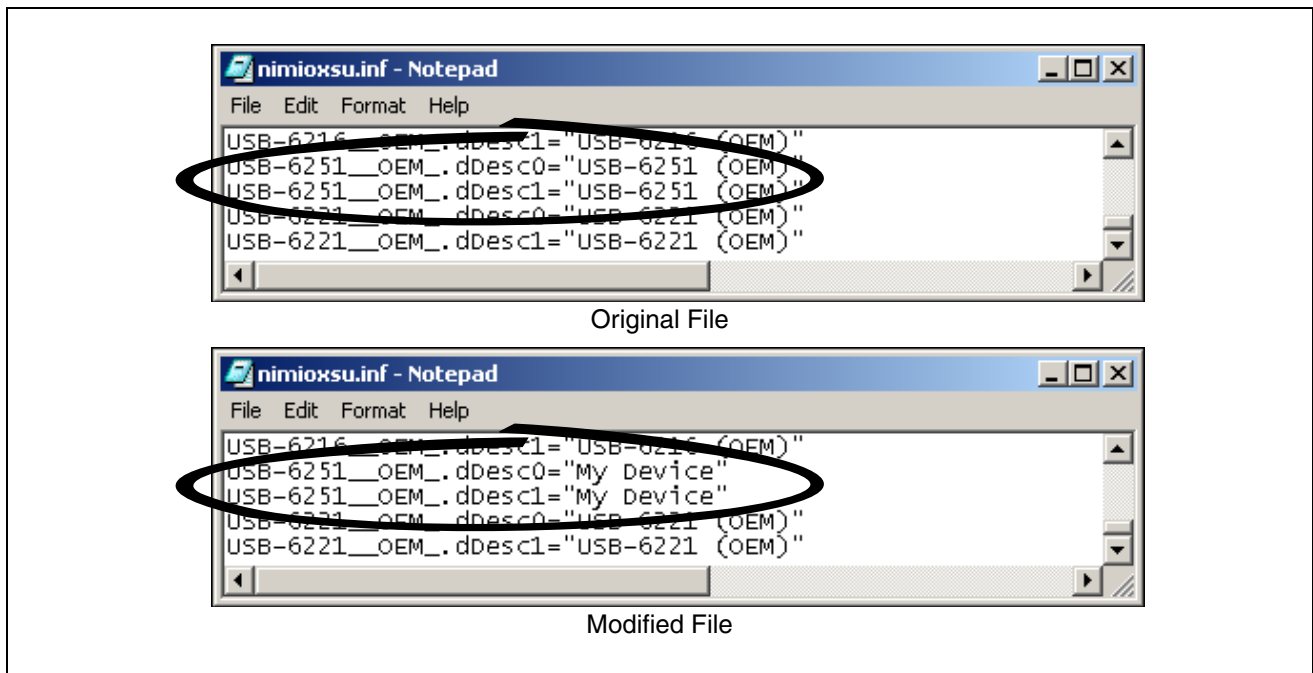
**Note** You *must* have NI-DAQmx 8.6 or later installed on your PC.

1. Locate the `nimioxsu.inf` file in the `x:\WINNT\inf\` directory, where `x:\` is the root directory where Windows is installed.

If you want to revert back, save a copy of this file as `nimioxsu_original.inf` in a different location.

2. Edit the device INF file by opening `nimioxsu.inf` with a text editor.

At the bottom of this file are the descriptors where Windows looks to identify the device. Locate the two lines of text that contain in quotes the descriptors for the device name you are modifying. Change the descriptor on *both* lines to the new device name, as shown in Figure 17.



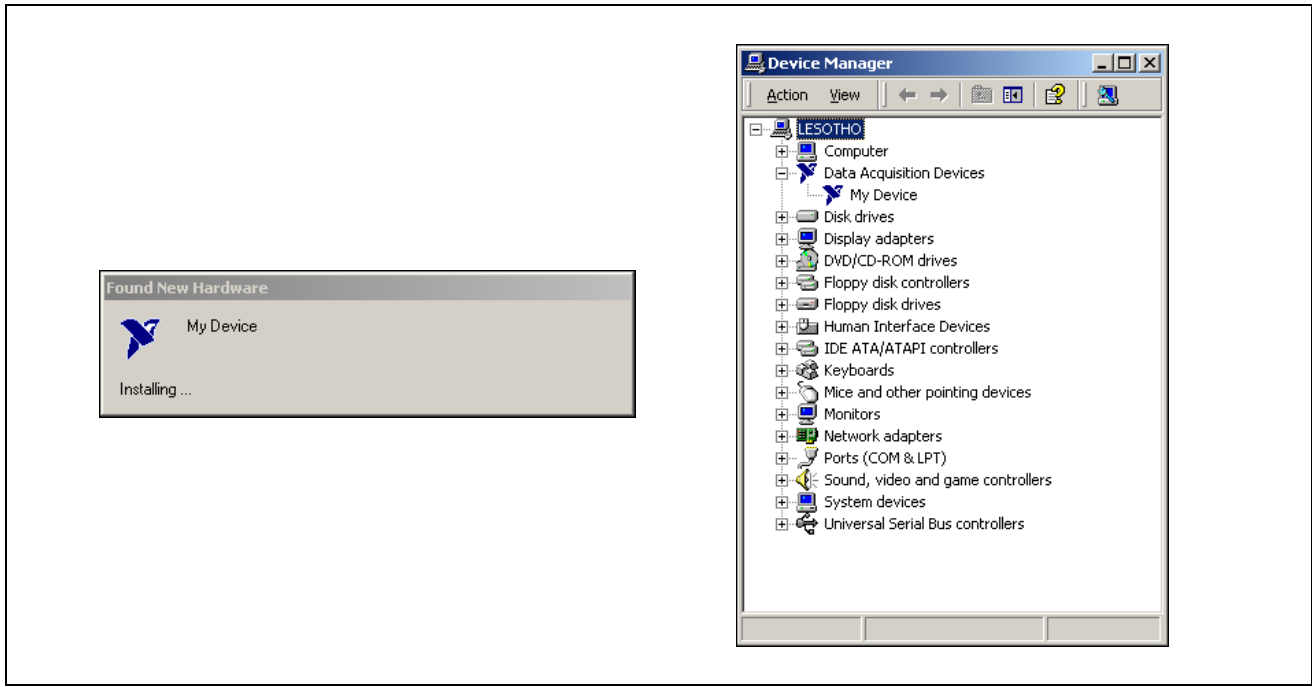
**Figure 17.** INF File Descriptors Changed to “My Device” (Windows 2000)

3. Save and close the INF file.
4. Go to the Windows Device Manager, right-click the OEM device under Data Acquisition Devices, and select **Uninstall**.
5. Power down the OEM device and disconnect the USB cable from your PC.

When you reconnect and power on the device, it appears as *My Device* in the Found New Hardware Wizard and Windows Device Manager, as shown in Figure 17.



**Note** When the device is initially installed, the Windows alert message may display the following: **Found New Hardware: M Series USB 62xx (OEM)**. This message appears for a few seconds until the custom name appears and the Found New Hardware Wizard is launched. This alert message device name cannot be changed.



**Figure 18.** “My Device” in the Found New Hardware Wizard and Device Manager (Windows 2000)



**Note** Modifying the INF file will *not* change the USB-622x/625x OEM device name in Measurement & Automation Explorer (MAX).

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