GPIB Hardware Guide

AT-GPIB/TNT
GPIB-PCII/IIA
PC/104-GPIB
NEC-GPIB/TNT
AT-GPIB/TNT (PnP) and AT-GPIB/TNT+
GPIB-1394
GPIB-USB Interfaces
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PMC-GPIB
PXI-GPIB, PXI-8212, and PXI-8232
GPIB-ENET/100
Specifications/Compliance
Technical Support Resources
Important Information

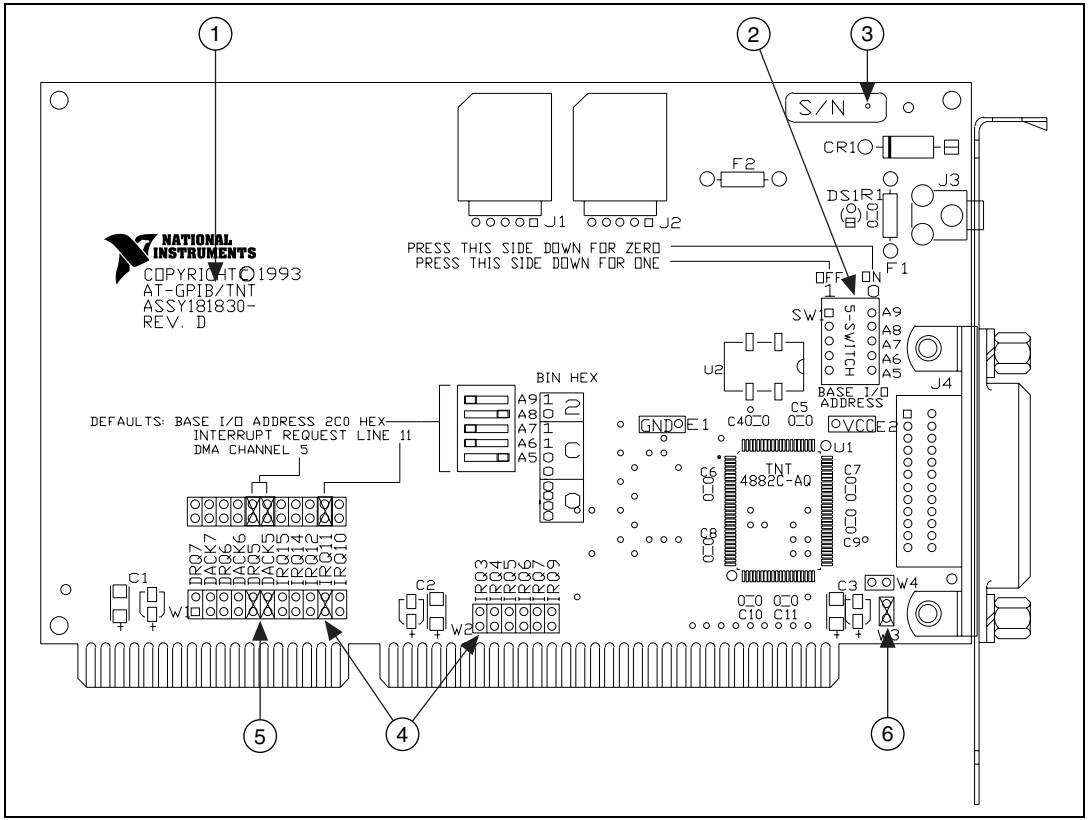
370426B-01, March 2003



AT-GPIB/TNT

1. Configure the AT-GPIB/TNT Base I/O Address
2. Configure the AT-GPIB/TNT Interrupt Line (IRQ).
3. Configure the AT-GPIB/TNT DMA Channel.

After you finish these steps, you are ready to Install the AT-GPIB/TNT.



1	Product Name, Revision Letter, and Assembly Letter	3	Serial Number	5	DMA Channel
2	Base I/O Address	4	Interrupt Line (IRQ)	6	Shield Ground

Figure 1. AT-GPIB/TNT Parts Locator Diagram

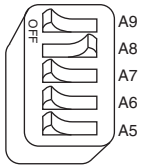
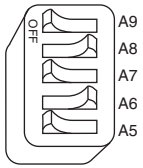
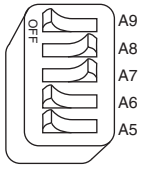
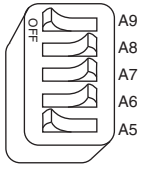
Configure the AT-GPIB/TNT Base I/O Address

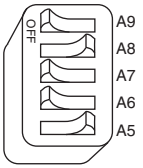
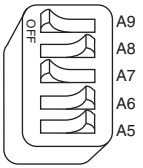
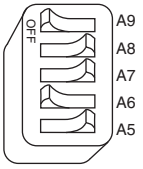
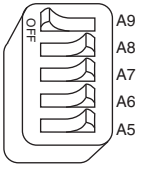
Click the base I/O address assigned to your AT-GPIB/TNT from the list below, and change the switch settings to match the base I/O address assigned to your board.

If you do not know what resources were assigned to your AT-GPIB/TNT, click here to Determine Assigned Resources.

100	200	300
120	220	320
140	240	340
160	260	360
180	280	380
1A0	2A0	3A0
1C0	2C0 (Default)	3C0
1E0	2E0	3E0

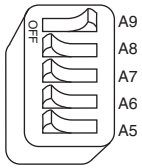
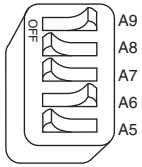
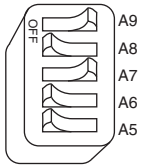
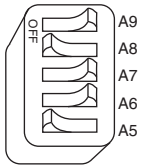
Table 1. Possible Base I/O Address Switch Settings for AT-GPIB/TNT

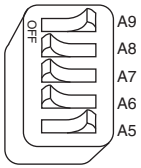
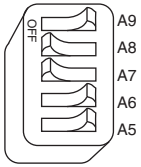
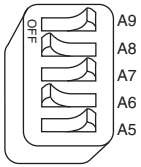
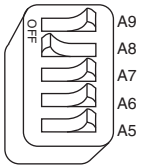
Base I/O Address (hex)	Switch Setting
100	
140	
180	
1C0	

Base I/O Address (hex)	Switch Setting
120	
160	
1A0	
1E0	

View Parts Locator Diagram

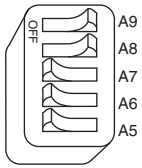
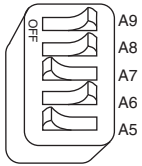
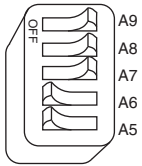
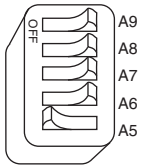
Table 1. Possible Base I/O Address Switch Settings for AT-GPIB/TNT (Continued)

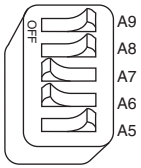
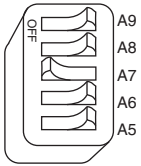
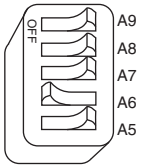
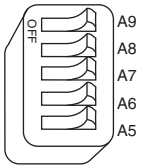
Base I/O Address (hex)	Switch Setting
200	
240	
280	
2C0 (Default)	

Base I/O Address (hex)	Switch Setting
220	
260	
2A0	
2E0	

View Parts Locator Diagram

Table 1. Possible Base I/O Address Switch Settings for AT-GPIB/TNT (Continued)

Base I/O Address (hex)	Switch Setting
300	
340	
380	
3C0	

Base I/O Address (hex)	Switch Setting
320	
360	
3A0	
3E0	

View Parts Locator Diagram

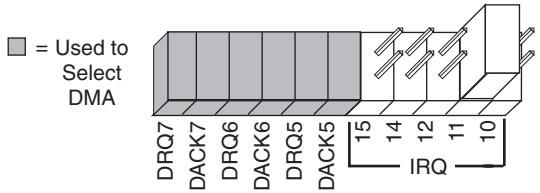
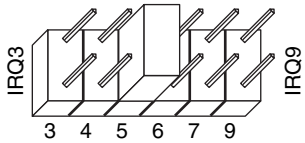
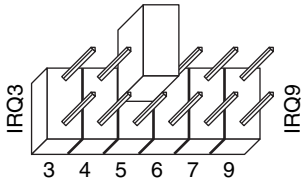
Configure the AT-GPIB/TNT Interrupt Line (IRQ)

Change the jumper settings to match the interrupt line (IRQ) assigned to your board. By default, the AT-GPIB/TNT is configured to use interrupt line (IRQ) 11.

If you do not know what resources were assigned to your AT-GPIB/TNT, click here to Determine Assigned Resources.

View Parts Locator Diagram

Table 2. AT-GPIB/TNT Interrupt Line Configurations

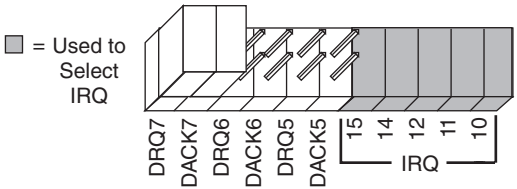
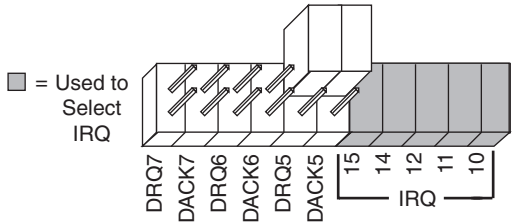
Interrupt Line (IRQ)	Interrupt Jumper Setting
10, 11, 12, 14, or 15 (IRQ 11 is shown)	
3, 4, 5, 6, 7, or 9 (IRQ 5 is shown)	
No Interrupt Line (IRQ)	

Configure the AT-GPIB/TNT DMA Channel

Change the jumper settings to match the DMA channel assigned to your board. You must set both the DMA Acknowledge and DMA Request lines. By default, the AT-GPIB/TNT is configured to use DMA channel 5.

If you do not know what resources were assigned to your AT-GPIB/TNT, click here to Determine Assigned Resources.

Table 3. AT-GPIB/TNT DMA Channel Settings

DMA Channel	DMA Jumpers
5, 6, or 7 (DMA 7 is shown)	
No DMA Channel	

View Parts Locator Diagram

Set the AT-GPIB/TNT Shield Ground Configuration

The AT-GPIB/TNT is set at the factory with the jumper in place to connect the logic ground of the AT-GPIB/TNT to its shield ground. This configuration minimizes EMI emissions.

Caution **The AT-GPIB/TNT was tested for compliance with FCC standards with the shield ground connected to logic ground. Removing the jumper might cause EMI emissions to exceed any or all of the applicable standards.**

Most users do not need to change the shield ground configuration. If you need to disconnect logic ground from shield ground, complete the following steps.

1. Locate the shield ground jumper W3 on the AT-GPIB/TNT. (View the AT-GPIB/TNT Parts Locator Diagram.)
2. Remove the jumper and place it across only one of the jumper pins, as shown in Figure 2.

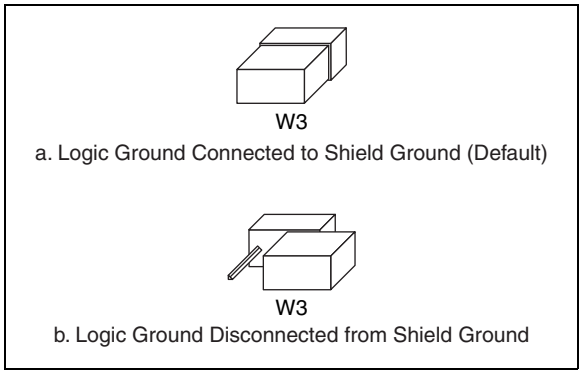


Figure 2. AT-GPIB/TNT Ground Configuration Jumper Settings

Install the AT-GPIB/TNT

PRINT THIS TOPIC!
Your computer needs to be off while you install your AT-GPIB/TNT. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **11–12**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

Complete the following steps to install your AT-GPIB/TNT.

1. Make sure that your board is configured to match the assigned resources. If you are not sure, view the instructions for configuring the AT-GPIB/TNT.
2. Shut down Windows and power off your computer. Keep the computer plugged in so that it remains grounded while you install the AT-GPIB/TNT.
3. Remove the top cover (or other access panels) to gain access to the computer expansion slots.
4. Find an unused expansion slot in your computer. The AT-GPIB/TNT requires a 16-bit ISA expansion slot.
5. Remove the corresponding slot cover on the back panel of the computer.

6. Insert the AT-GPIB/TNT into the slot with the GPIB connector sticking out of the opening on the back panel, as shown in Figure 3. It might be a tight fit, but do not force the board into place.

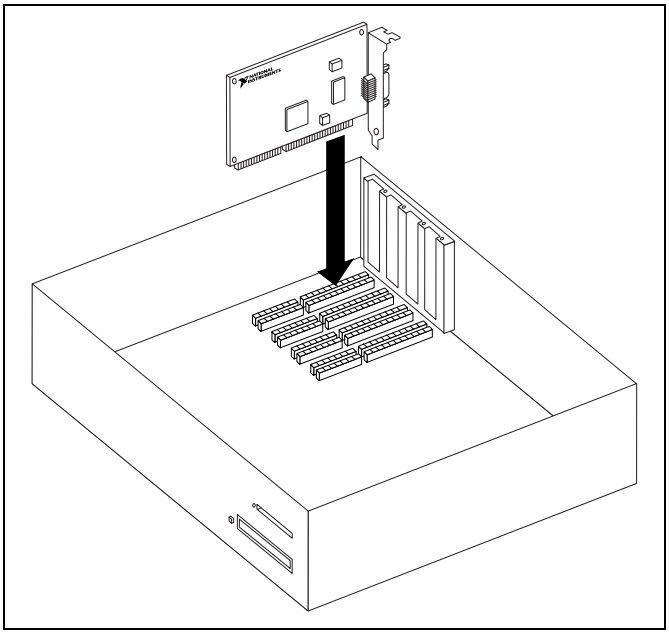


Figure 3. Installing the AT-GPIB/TNT

7. Screw the mounting bracket of the AT-GPIB/TNT to the back panel rail of the computer.
8. Replace the top cover (or the access panel to the expansion slot).
9. Power on your computer and start Windows.

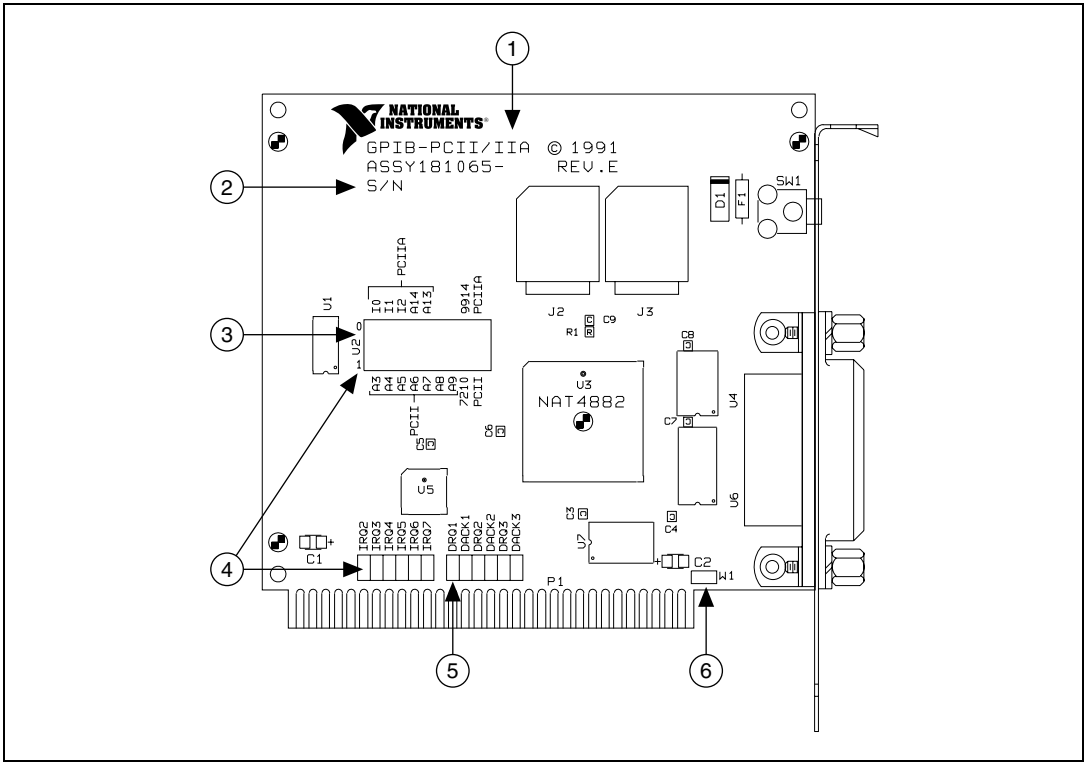
The AT-GPIB/TNT hardware installation is now complete.

GPIB-PCII/IIA

1. Configure the GPIB-PCII/IIA Base I/O Address (GPIB-PCII Mode).
2. Configure the GPIB-PCII/IIA Interrupt Line (IRQ) (GPIB-PCII Mode).
3. Configure the GPIB-PCII/IIA DMA Channel.

After you finish these steps, you are ready to Install the GPIB-PCII/IIA.

National Instruments recommends that you configure the board in PCII mode, using the above steps. If you want to use your GPIB-PCII/IIA in PCIIA mode, click here to Configure the GPIB-PCII/IIA in GPIB-PCIIA Mode.



1	Product Name	3	Base I/O Address	5	DMA Channel
2	Assembly Number, Serial Number, and Revision Number	4	Interrupt Line (IRQ)	6	Shield Ground

Figure 4. GPIB-PCII/IIA Parts Locator Diagram

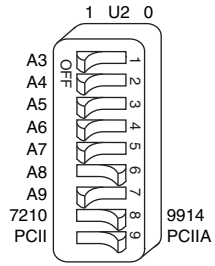
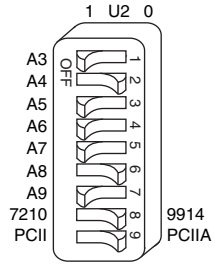
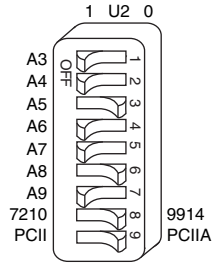
Configure the GPIB-PCII/IIA Base I/O Address (GPIB-PCII Mode)

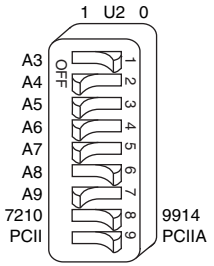
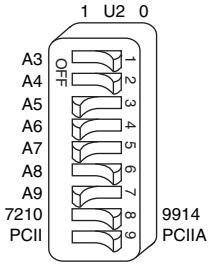
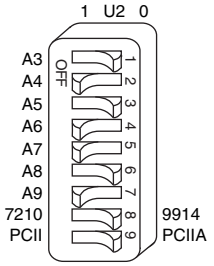
Click the base I/O address assigned to your GPIB-PCII/IIA from the list below, and change the switch settings to match the base I/O address assigned to your board.

If you do not know what resources were assigned to your GPIB-PCII/IIA, click here to Determine Assigned Resources.

100	180	200	280	300	380
108	188	208	288	308	388
110	190	210	290	310	390
118	198	218	298	318	398
120	1A0	220	2A0	320	3A0
128	1A8	228	2A8	328	3A8
130	1B0	230	2B0	330	3B0
138	1B8	238	2B8 (Default)	338	3B8
140	1C0	240	2C0	340	3C0
148	1C8	248	2C8	348	3C8
150	1D0	250	2D0	350	3D0
158	1D8	258	2D8	358	3D8
160	1E0	260	2E0	360	3E0
168	1E8	268	2E8	368	3E8
170	1F0	270	2F0	370	3F0
178	1F8	278	2F8	378	3F8

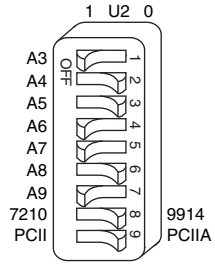
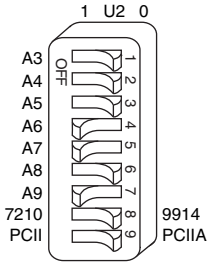
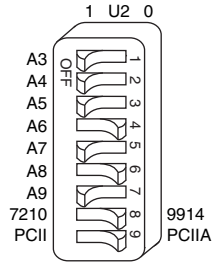
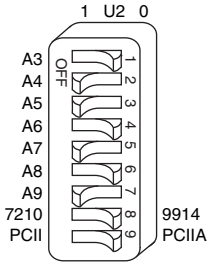
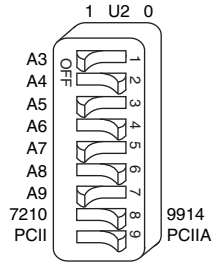
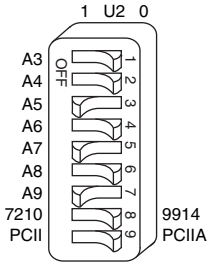
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode)

Base I/O Address (hex)	Switch Setting
100	
110	
120	

Base I/O Address (hex)	Switch Setting
108	
118	
128	

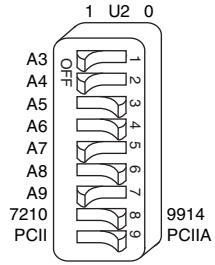
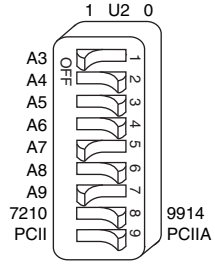
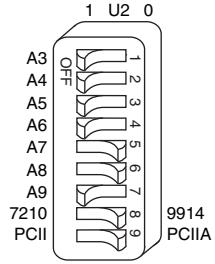
View Parts Locator Diagram

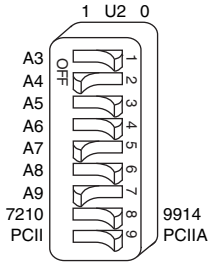
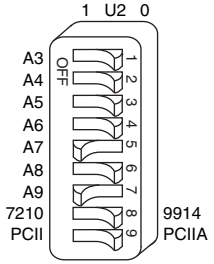
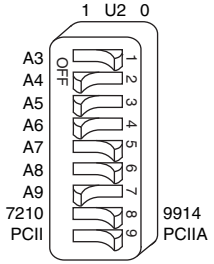
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
130		138	
140		148	
150		158	

View Parts Locator Diagram

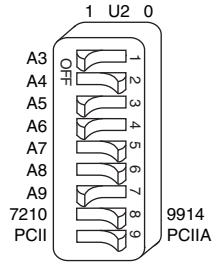
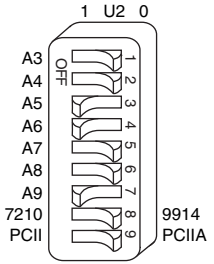
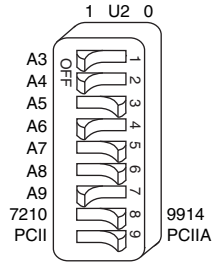
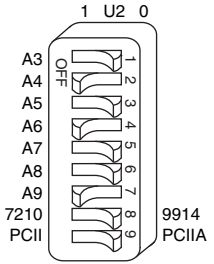
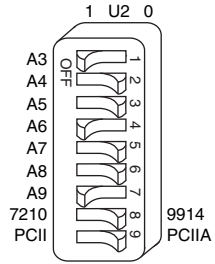
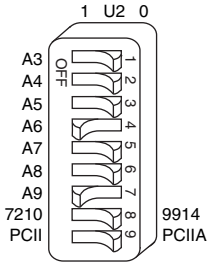
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting
160	
170	
180	

Base I/O Address (hex)	Switch Setting
168	
178	
188	

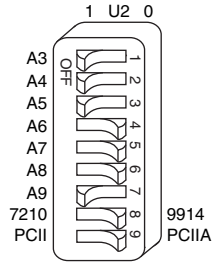
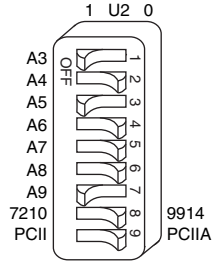
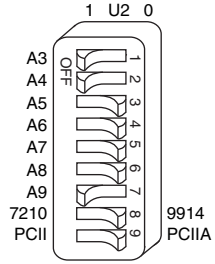
View Parts Locator Diagram

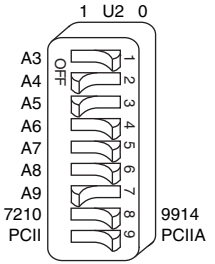
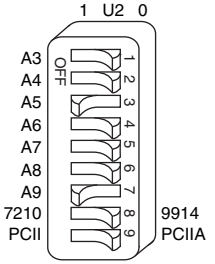
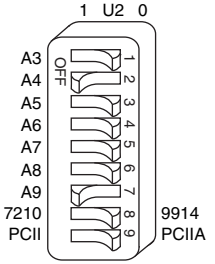
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
190		198	
1A0		1A8	
1B0		1B8	

View Parts Locator Diagram

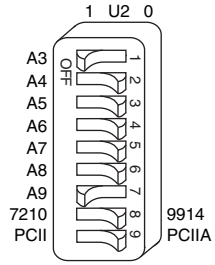
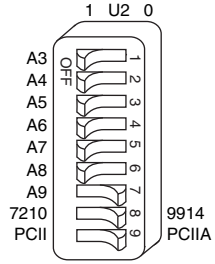
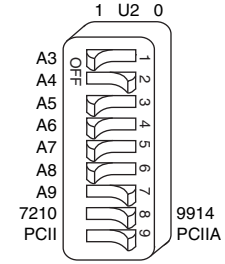
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

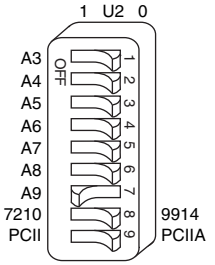
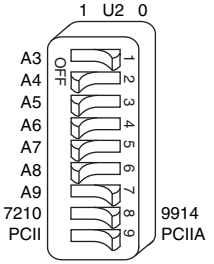
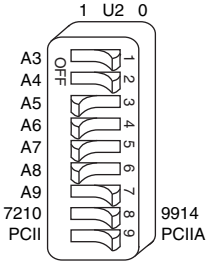
Base I/O Address (hex)	Switch Setting
1C0	
1D0	
1E0	

Base I/O Address (hex)	Switch Setting
1C8	
1D8	
1E8	

View Parts Locator Diagram

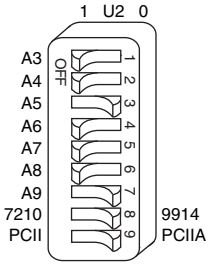
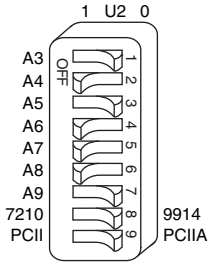
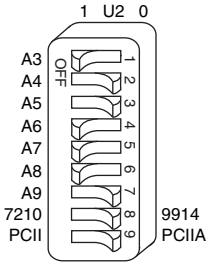
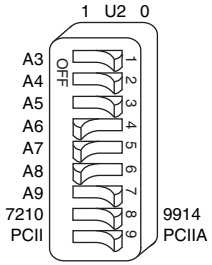
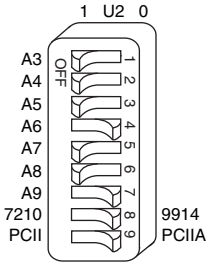
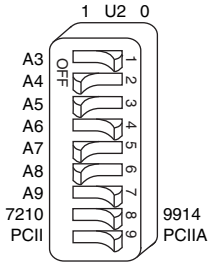
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting
1F0	
200	
210	

Base I/O Address (hex)	Switch Setting
1F8	
208	
218	

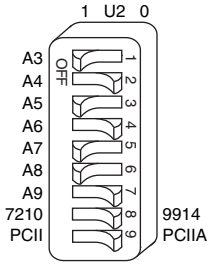
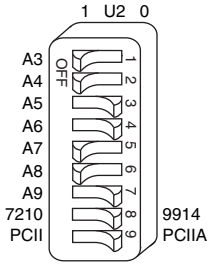
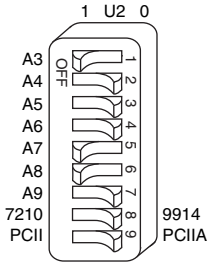
View Parts Locator Diagram

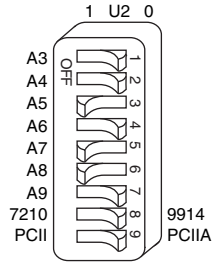
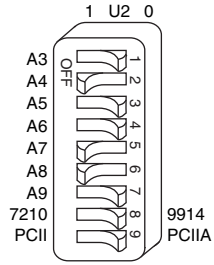
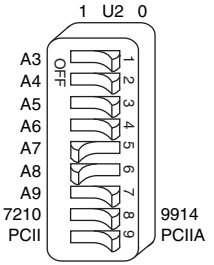
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
220		228	
230		238	
240		248	

View Parts Locator Diagram

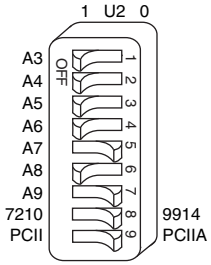
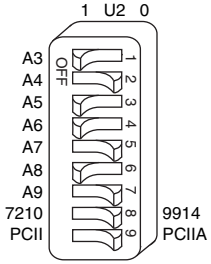
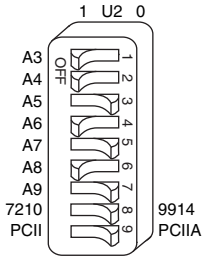
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

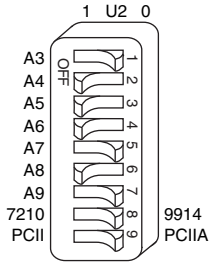
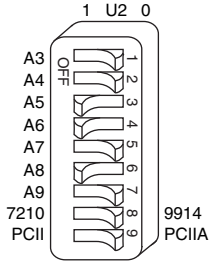
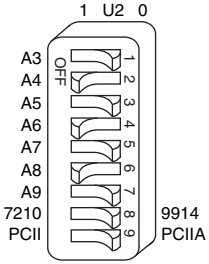
Base I/O Address (hex)	Switch Setting
250	
260	
270	

Base I/O Address (hex)	Switch Setting
258	
268	
278	

View Parts Locator Diagram

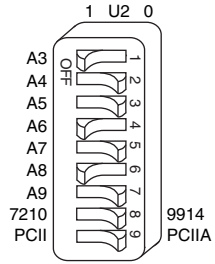
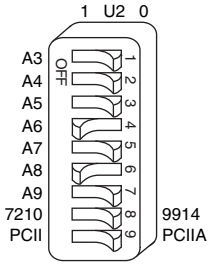
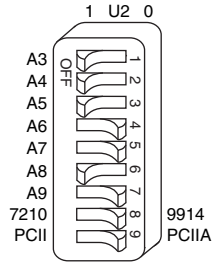
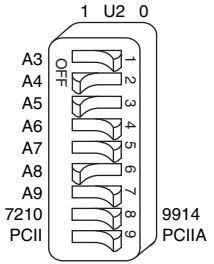
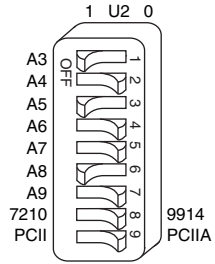
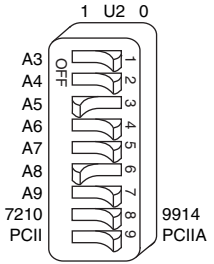
Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting
280	
290	
2A0	

Base I/O Address (hex)	Switch Setting
288	
298	
2A8	

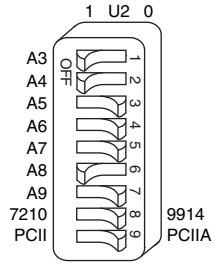
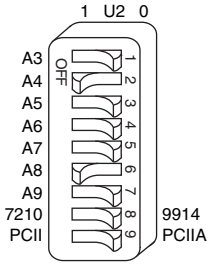
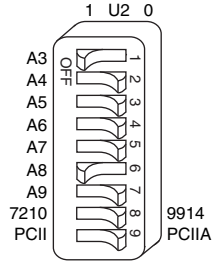
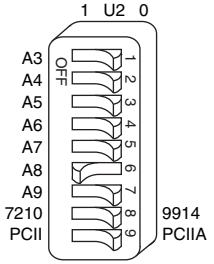
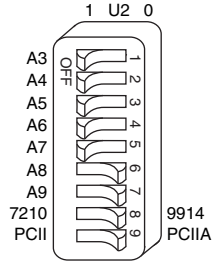
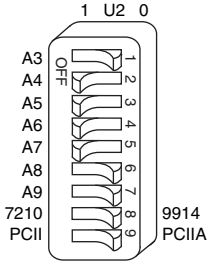
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
2B0		2B8 (Default)	
2C0		2C8	
2D0		2D8	

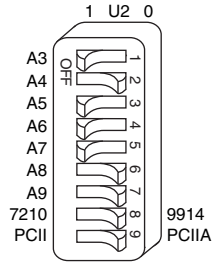
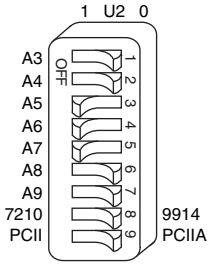
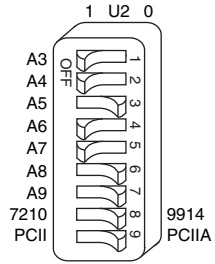
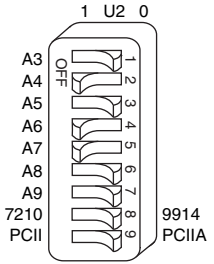
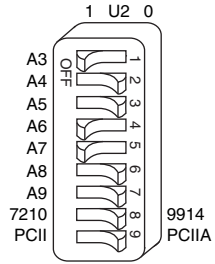
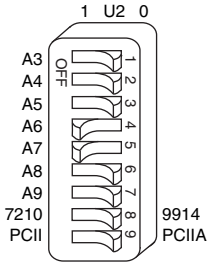
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
2E0		2E8	
2F0		2F8	
300		308	

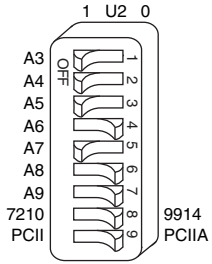
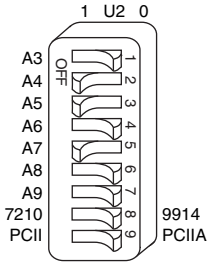
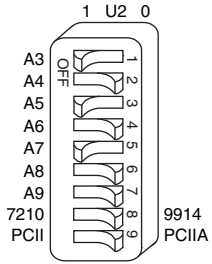
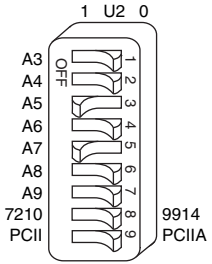
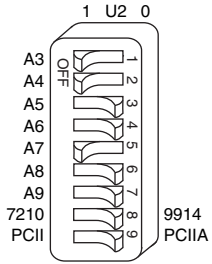
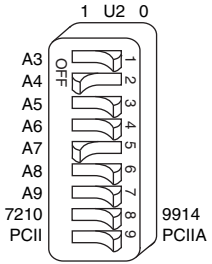
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
310		318	
320		328	
330		338	

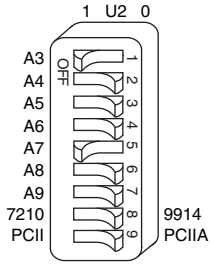
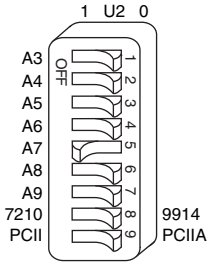
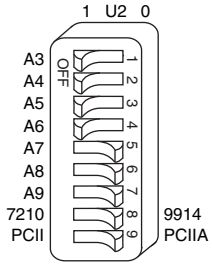
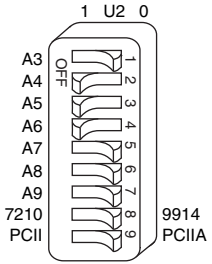
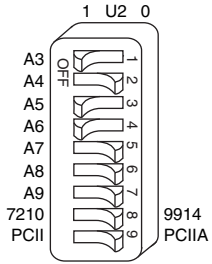
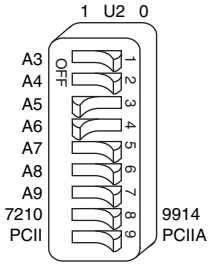
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
340		348	
350		358	
360		368	

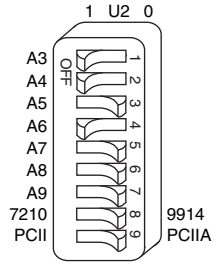
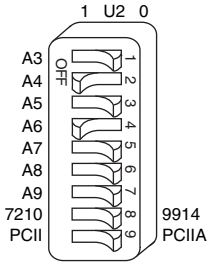
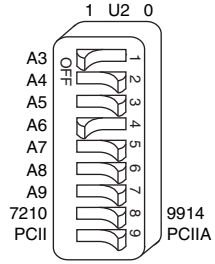
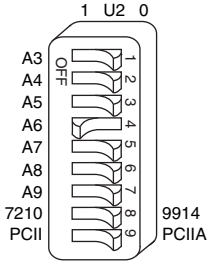
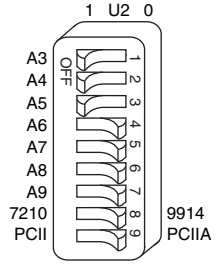
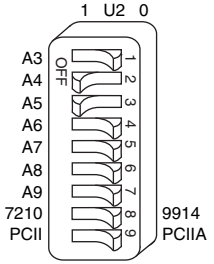
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
370		378	
380		388	
390		398	

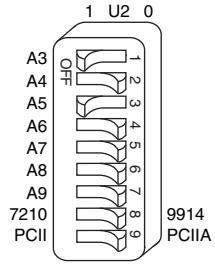
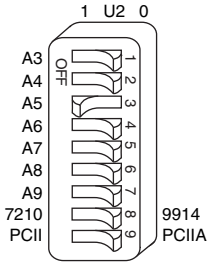
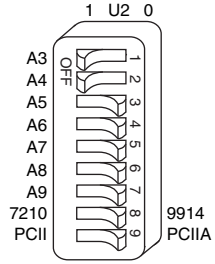
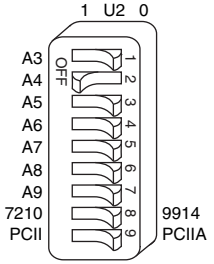
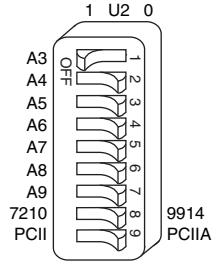
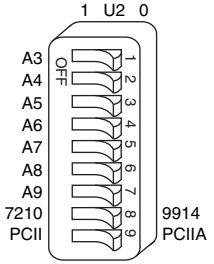
View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
3A0		3A8	
3B0		3B8	
3C0		3C8	

View Parts Locator Diagram

Table 4. Possible Base I/O Address Switch Settings for GPIB-PCII/IIA (PCII Mode) (Continued)

Base I/O Address (hex)	Switch Setting	Base I/O Address (hex)	Switch Setting
3D0		3D8	
3E0		3E8	
3F0		3F8	

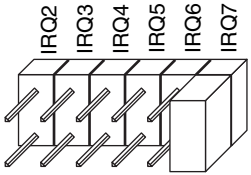
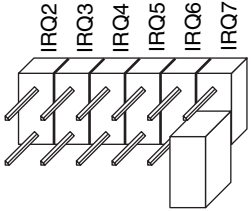
View Parts Locator Diagram

Configure the GPIB-PCII/IIA Interrupt Line (IRQ) (GPIB-PCII Mode)

Change the jumper settings to match the interrupt line (IRQ) assigned to your board. By default, the GPIB-PCII/IIA is configured to use interrupt line (IRQ) 7.

If you do not know what resources were assigned to your GPIB-PCII/IIA, click here to Determine Assigned Resources.

Table 5. GPIB-PCII Interrupt Line Configurations

Interrupt Line (IRQ)	Interrupt Jumper Setting
2, 3, 4, 5, 6, 7 (IRQ 7 is shown)	
No Interrupt Line (IRQ)	

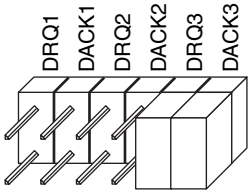
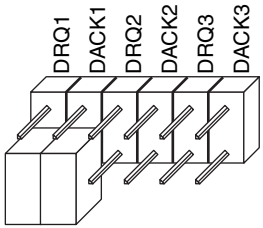
View Parts Locator Diagram

Configure the GPIB-PCII/IIA DMA Channel

Change the jumper settings to match the DMA channel assigned to your board. You must set both the DMA Acknowledge and DMA Request lines. By default, the GPIB-PCII/IIA is configured to use DMA channel 1.

If you do not know what resources were assigned to your GPIB-PCII/IIA, click here to Determine Assigned Resources.

Table 6. GPIB-PCII/IIA DMA Channel Settings

DMA Channel	DMA Jumpers
1, 2, or 3 (DMA 3 is shown)	
No DMA	

View Parts Locator Diagram

Set the GPIB-PCII/IIA Shield Ground Configuration

The GPIB-PCII/IIA is set at the factory with the jumper in place to connect the logic ground of the GPIB-PCII/IIA to its shield ground. This configuration minimizes EMI emissions.

Caution **The GPIB-PCII/IIA was tested for compliance with FCC and CE standards with the shield ground connected to logic ground. Removing the jumper might cause EMI emissions to exceed any or all of the applicable standards.**

Most users do not need to change the shield ground configuration. If you need to disconnect logic ground from shield ground, complete the following steps.

1. Locate the shield ground jumper W1 on the GPIB-PCII/IIA. (View the GPIB-PCII/IIA Parts Locator Diagram.)
2. Remove the jumper and place it across only one of the jumper pins, as shown in Figure 5.

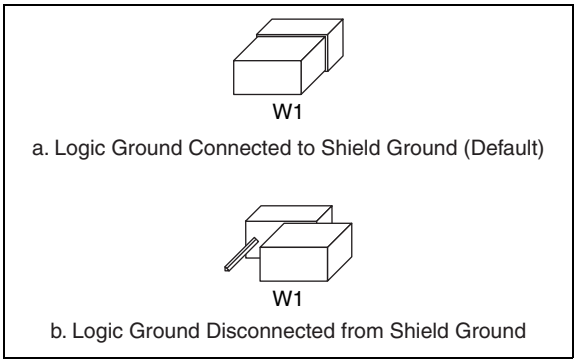


Figure 5. GPIB-PCII/IIA Ground Configuration Jumper Settings

Install the GPIB-PCII/IIA

PRINT THIS TOPIC!
Your computer needs to be off while you install your GPIB-PCII/IIA. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **35–36**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

Complete the following steps to install the GPIB-PCII/IIA.

1. Make sure that your board is configured to match the assigned resources. If you are not sure, view the instructions for configuring the GPIB-PCII/IIA.
2. Shut down Windows and power off your computer. Keep the computer plugged in so that it remains grounded while you install the GPIB-PCII/IIA.
3. Remove the top cover (or other access panels) to gain access to the computer expansion slots.
4. Find an unused expansion slot in your computer.
5. Remove the corresponding slot cover on the back panel of the computer.

6. Insert the GPIB-PCII/IIA into the slot with the GPIB connector sticking out of the opening on the back panel, as shown in Figure 6. It might be a tight fit, but do not force the board into place.

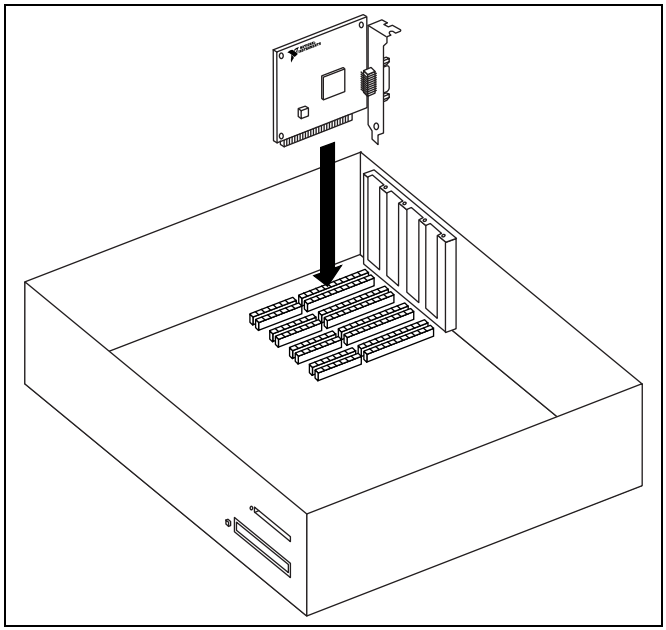


Figure 6. Installing the GPIB-PCII/IIA

7. Screw the mounting bracket of the GPIB-PCII/IIA to the back panel rail of the computer.
8. Replace the top cover (or the access panel to the expansion slot).
9. Power on your computer and start Windows.

The GPIB-PCII/IIA hardware installation is now complete.

Configure the GPIB-PCII/IIA in GPIB-PCIIA Mode

This section describes how to configure your GPIB-PCII/IIA board for use in GPIB-PCIIA mode.

Note **National Instruments recommends that you configure your GPIB-PCII/IIA in PCII mode. The NI-488.2 software allows you to install your GPIB-PCII/IIA board for use in GPIB-PCII or GPIB-PCIIA mode. The two modes use different I/O addresses and interrupt schemes. However, you should be aware of a potential problem with the Windows Device Manager when using your board in GPIB-PCIIA mode under Windows. The Device Manager does not reliably report base address conflicts involving the GPIB-PCII/IIA in GPIB-PCIIA mode. Additionally, the Device Manager fails to display all of the I/O addresses used by the GPIB-PCII/IIA in GPIB-PCIIA mode. Therefore, a base address conflict may go unchecked when using your board in GPIB-PCIIA mode. Base address conflicts can cause your computer to hang or otherwise behave unreliably. Therefore, it is safest to use the board only in GPIB-PCII mode, not in GPIB-PCIIA mode.**

1. Configure GPIB-PCIIA and 7210 Modes.
2. Configure the GPIB-PCII/IIA Base I/O Address (GPIB-PCIIA Mode).
3. Configure the GPIB-PCII/IIA Interrupt Line (IRQ) (GPIB-PCIIA Mode).
4. Configure the GPIB-PCII/IIA DMA Channel.

After you finish these steps, you are ready to Install the GPIB-PCII/IIA.

Configure GPIB-PCIIA and 7210 Modes

The GPIB-PCII/IIA comes already configured to run in PCII and 7210 modes. You need to change the configuration to PCIIA mode.

1. Examine switch 9 in switch block U2. (Click here to view the GPIB-PCII/IIA Parts Locator Diagram.) Press switch 9 down on the side labeled PCIIA, as shown in Figure 7.

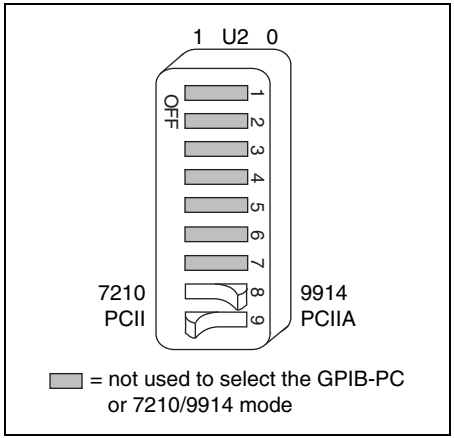


Figure 7. GPIB-PCIIA Mode Selection Setting

2. Verify that switch 8 is pressed down on the side labeled 7210.

Note **The National Instruments NI-488.2 software requires the board to be in 7210 mode.**

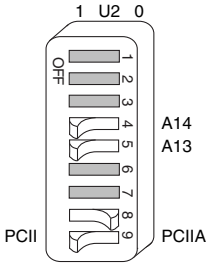
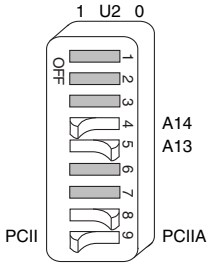
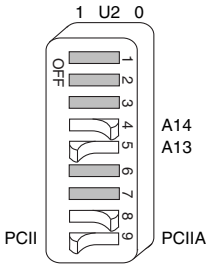
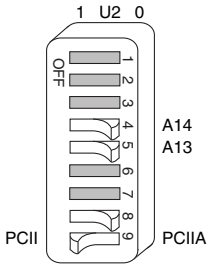
Configure the GPIB-PCII/IIA Base I/O Address (GPIB-PCIIA Mode)

Change the switch settings to match the base I/O address assigned to your board. By default, the GPIB-PCII/IIA is configured to use base I/O address 2E1 hex when in GPIB-PCIIA mode.

If you do not know what resources were assigned to your GPIB-PCII/IIA, click here to Determine Assigned Resources.

Table 7. Base I/O Settings for the GPIB-PCII/IIA in PCIIA Mode

View Parts Locator Diagram

Base I/O Address	Switch Setting	Base I/O Address	Switch Setting
2E1 (Default)		22E1	
42E1		62E1	

Configure the GPIB-PCII/IIA Interrupt Line (IRQ) (GPIB-PCIIA Mode)

Click the interrupt line (IRQ) setting assigned to your GPIB-PCII/IIA from the list below, and change the jumper and switch settings to match the interrupt line (IRQ) assigned to your board. By default, the GPIB-PCII/IIA is configured to use interrupt request line (IRQ) 7.

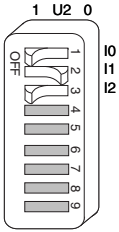
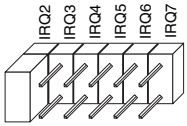
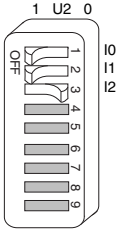
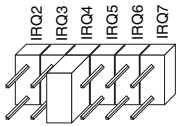
If you do not know what resources were assigned to your GPIB-PCII/IIA, click here to Determine Assigned Resources.

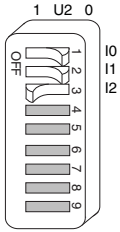
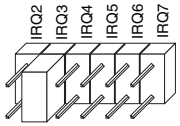
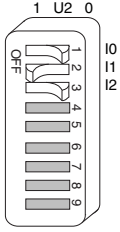
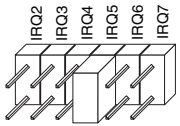
2 3 4

5 6 7

Interrupt Disabled

Table 8. Interrupt Request Settings for GPIB-PCII/IIA in PCIIA Mode

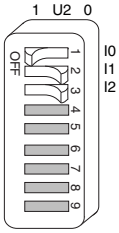
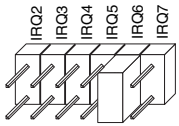
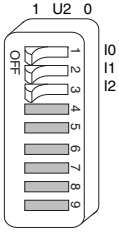
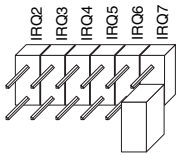
Interrupt Line	Switch	Jumper
2		
4		

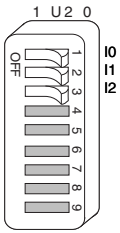
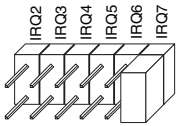
Interrupt Line	Switch	Jumper
3		
5		

The remaining steps in the installation and configuration process are the same for GPIB-PCII mode and GPIB-PCIIA mode. Click here to go to the section Configure the GPIB-PCII/IIA DMA Channel, and continue configuring and installing your GPIB-PCII/IIA.

View Parts Locator Diagram

Table 8. Interrupt Request Settings for GPIB-PCII/IIA in PCIIA Mode (Continued)

Interrupt Line	Switch	Jumper
6		
Interrupt Disabled		

Interrupt Line	Switch	Jumper
7		

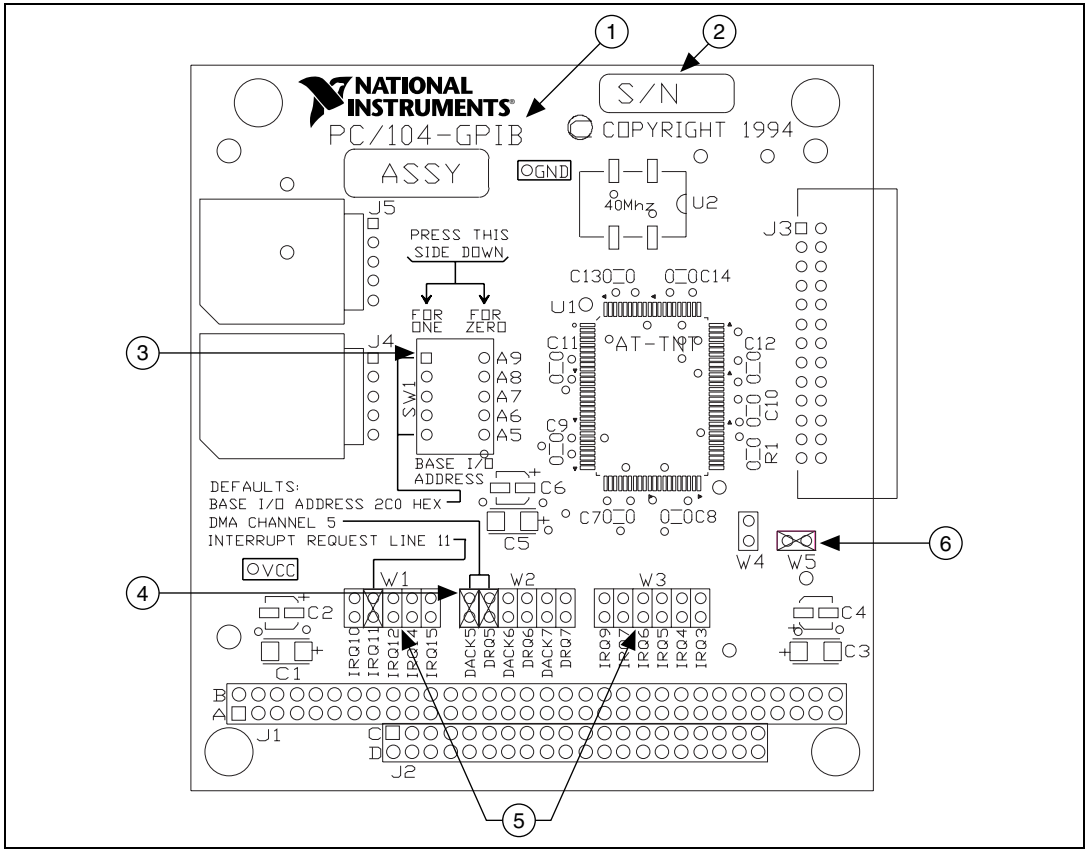
The remaining steps in the installation and configuration process are the same for GPIB-PCII mode and GPIB-PCIIA mode. Click here to go to the section Configure the GPIB-PCII/IIA DMA Channel, and continue configuring and installing your GPIB-PCII/IIA.

View Parts Locator Diagram

PC/104-GPIB

1. Configure the PC/104-GPIB Base I/O Address.
2. Configure the PC/104-GPIB Interrupt Line (IRQ).
3. Configure the PC/104-GPIB DMA Channel.

After you finish these steps, you are ready to Install the PC/104-GPIB.



1	Product Name and Assembly Number	3	Base I/O Address	5	Interrupt Line (IRQ)
2	Serial Number	4	DMA Channel	6	Shield Ground

Figure 8. PC/104-GPIB Parts Locator Diagram

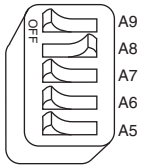
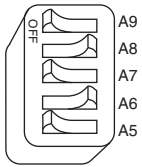
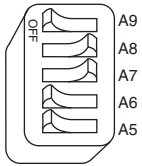
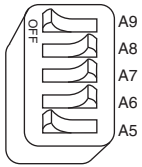
Configure the PC/104-GPIB Base I/O Address

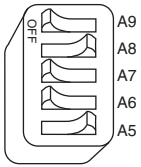
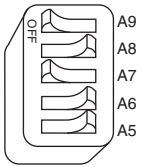
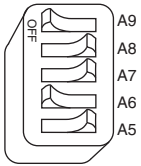
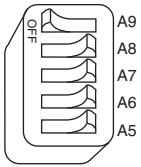
Click the base I/O address assigned to your PC/104-GPIB from the list below, and change the switch settings to match the base I/O address assigned to your board.

If you do not know what resources were assigned to your PC/104-GPIB, click here to Determine Assigned Resources.

100	200	300
120	220	320
140	240	340
160	260	360
180	280	380
1A0	2A0	3A0
1C0	2C0 (Default)	3C0
1E0	2E0	3E0

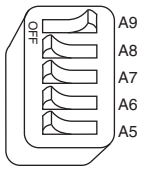
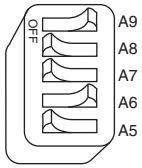
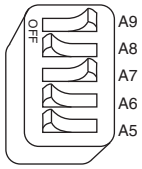
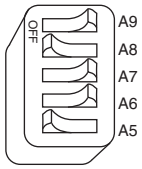
Table 9. Possible Base I/O Address Switch Settings for PC/104-GPIB

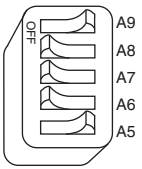
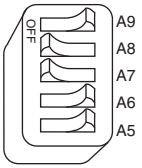
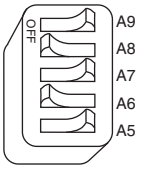
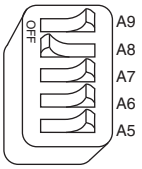
Base I/O Address (hex)	Switch Settings
100	
140	
180	
1C0	

Base I/O Address (hex)	Switch Settings
120	
160	
1A0	
1E0	

View Parts Locator Diagram

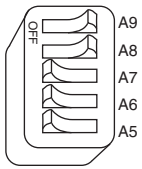
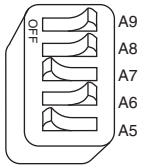
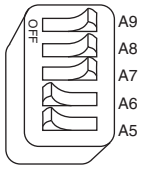
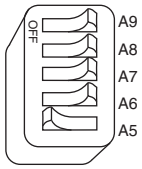
Table 9. Possible Base I/O Address Switch Settings for PC/104-GPIB (Continued)

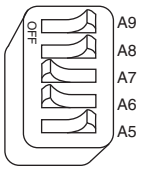
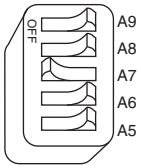
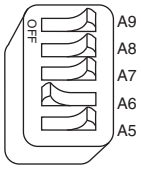
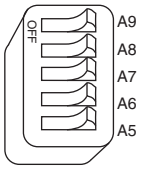
Base I/O Address (hex)	Switch Settings
200	
240	
280	
2C0 (Default)	

Base I/O Address (hex)	Switch Settings
220	
260	
2A0	
2E0	

View Parts Locator Diagram

Table 9. Possible Base I/O Address Switch Settings for PC/104-GPIB (Continued)

Base I/O Address (hex)	Switch Settings
300	
340	
380	
3C0	

Base I/O Address (hex)	Switch Settings
320	
360	
3A0	
3E0	

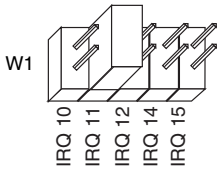
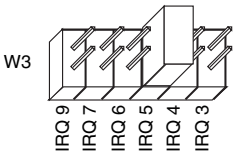
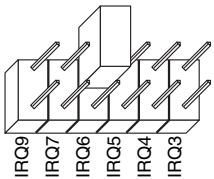
View Parts Locator Diagram

Configure the PC/104-GPIB Interrupt Line (IRQ)

Change the jumper settings to match the interrupt line (IRQ) assigned to your board. However, if you are installing the PC/104-GPIB in an 8-bit stack, change the setting to the line in the range IRQ3 to IRQ7 you chose on the **Resources** page of the **PC/104-GPIB Properties** dialog box. By default, the PC/104-GPIB is configured to use interrupt line (IRQ) 11.

If you do not know what resources were assigned to your PC/104-GPIB, click here to Determine Assigned Resources.

Table 10. PC/104-GPIB Interrupt Line Configuration

Interrupt Lines	Jumper Setting
Lines 10, 11, 12, 14, or 15 (IRQ 11 is shown)	
Lines 3, 4, 5, 6, 7, or 9 (IRQ 5 is shown)	
No IRQ	

View Parts Locator Diagram

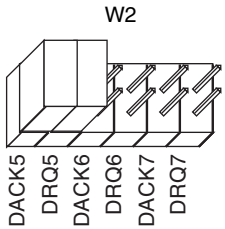
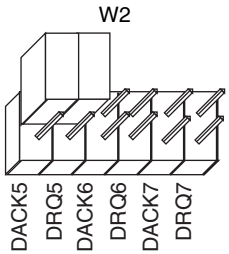
Configure the PC/104-GPIB DMA Channel

Change the jumper settings to match the DMA channel assigned to your board, or to no DMA if you are installing the PC/104-GPIB in an 8-bit stack. You must set both the DMA Acknowledge and DMA Request lines. By default, the PC/104-GPIB is configured to use DMA channel 5.

If your operating system is unable to assign a DMA resource to the PC/104-GPIB, or if you are installing it in an 8-bit stack, you can configure DMA to none and still use the NI-488.2 software.

If you do not know what resources were assigned to your PC/104-GPIB, click here to Determine Assigned Resources.

Table 11. PC/104-GPIB DMA Channel Settings

DMA Channel	DMA Jumpers
5, 6, or 7 (DMA 5 is shown)	
No DMA	

View Parts Locator Diagram

Set the PC/104-GPIB Shield Ground Configuration

The PC/104-GPIB is set at the factory with the jumper in place to connect the logic ground of the PC/104-GPIB to its shield ground. This configuration minimizes EMI emissions.

Note **The PC/104-GPIB was tested for compliance with FCC and CE standards with the shield ground connected to logic ground. Removing the jumper might cause EMI emissions to exceed any or all of the applicable standards.**

Most users do not need to change the shield ground configuration. If you need to disconnect the logic ground from shield ground, complete the following steps.

1. Locate the shield ground jumper W5 on the PC/104-GPIB. (View the PC/104-GPIB Parts Locator Diagram.)
2. Remove the jumper and place it across only one of the jumper pins, as shown in Figure 9.

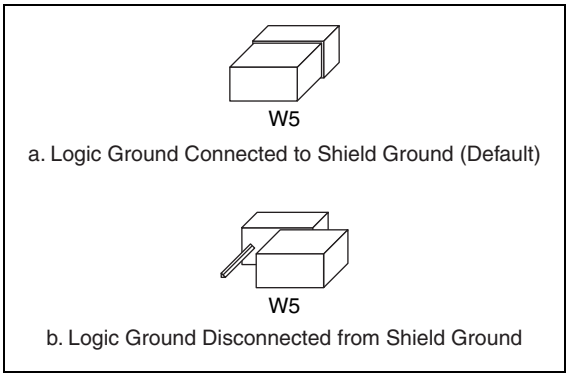


Figure 9. PC/104-GPIB Ground Configuration Jumper Settings

Install the PC/104-GPIB

PRINT THIS TOPIC!
Your computer needs to be off while you install your PC/104-GPIB. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **52–54**.

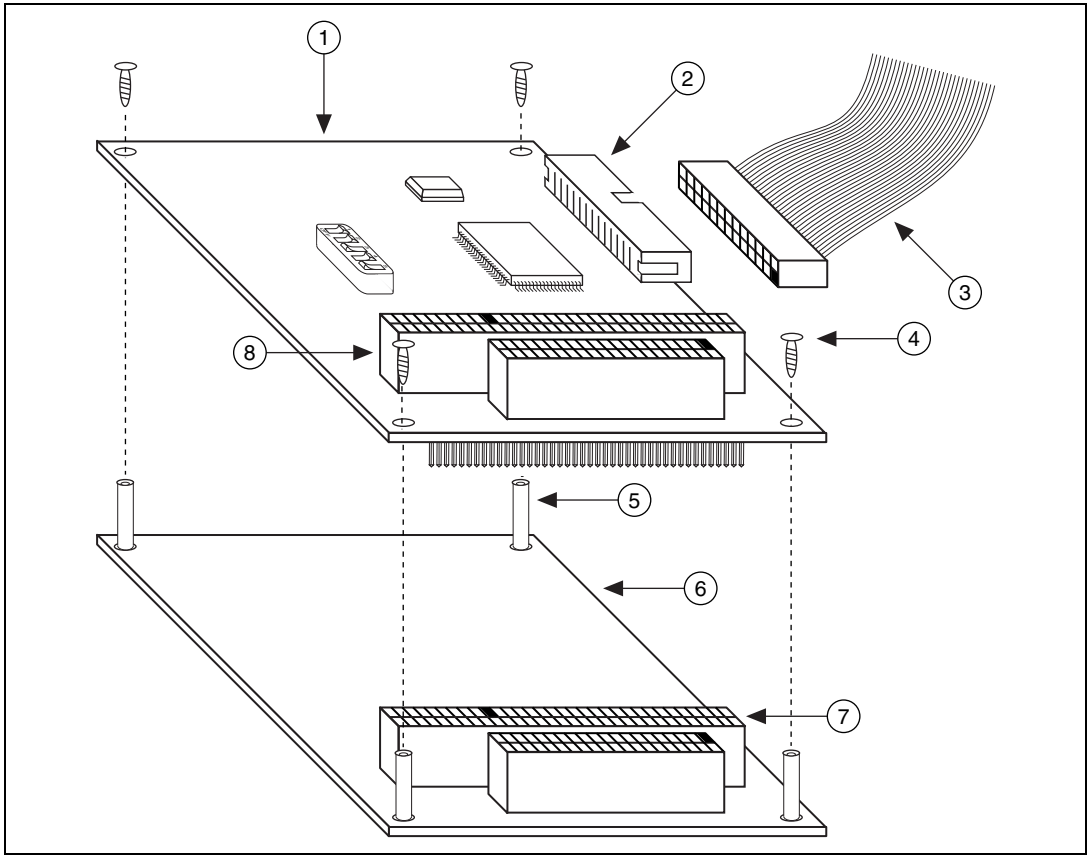
Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

The PC/104-GPIB is available in two versions: stackthrough 16-bit and stackthrough 8-bit. 16-bit modules have two PC/104 connectors and 8-bit modules have one PC/104 connector. Verify that you have the correct version for your system.

Complete the following steps to install the PC/104-GPIB. In this section, the term *parent module* generically refers to either the parent system or the adjacent PC/104 module you stack the PC/104-GPIB onto.

1. Shut down Windows and power off your computer. Keep the computer plugged in so that it remains grounded while you install the PC/104-GPIB.
2. Mount the provided standoffs to the parent module before installing the PC/104-GPIB. You might need to install the provided hex nuts on the bottom side of the parent module to secure the standoffs in place. Notice that the parent module might have only two mounting holes for the standoffs instead of four; in this case, you need only two standoffs.
3. Plug the PC/104-GPIB into the parent module. The PC/104 header is keyed so that it fits in only one direction. Do not force the PC/104 connector into place.

   After the PC/104-GPIB has been plugged in, ensure proper contact by gently pressing down at the PC/104 connector region of the PC/104-GPIB until the module is level with respect to the parent module.
4. Fasten the PC/104-GPIB to the standoffs with the provided 4-40 screws. Refer to Figure 10 to view how to install the board.



1	PC/104-GPIB	3	GPIB Ribbon Cable	5	Standoff	7	PC/104 Connector
2	GPIB Connection	4	Screw	6	Parent Module	8	PC/104 Header

Figure 10. Installing the PC/104-GPIB

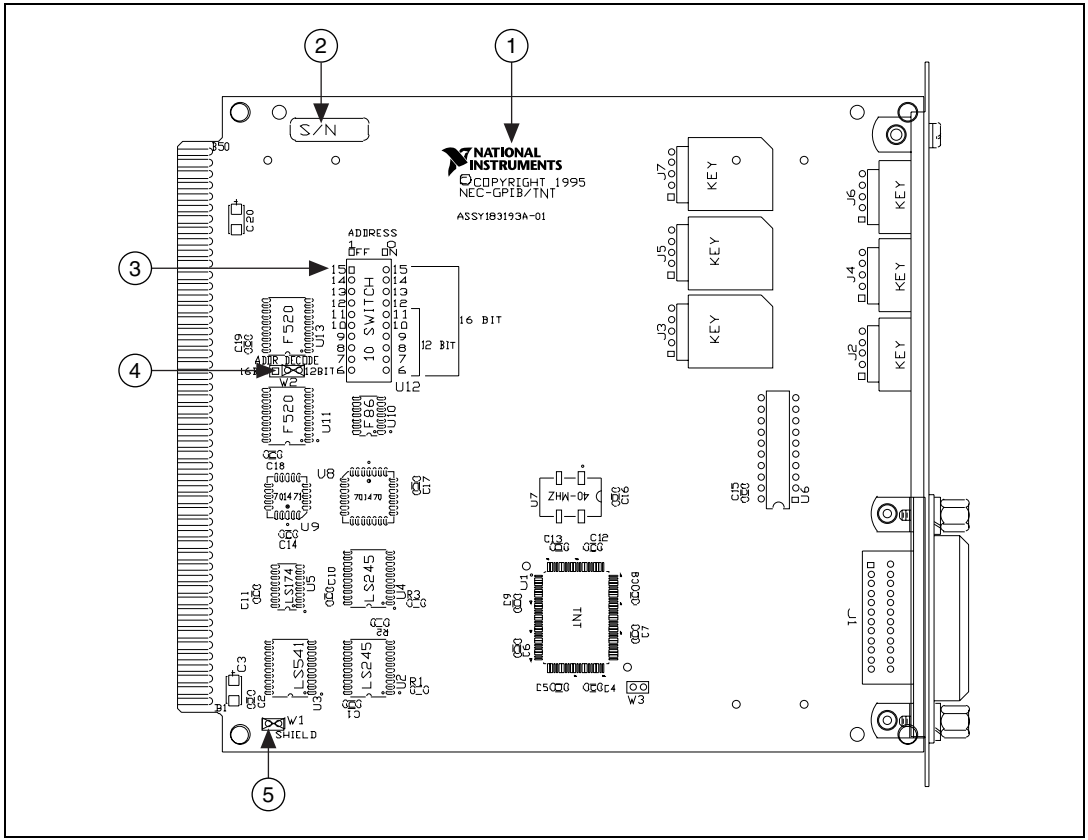
5. Plug the GPIB ribbon cable into the GPIB connection on the PC/104-GPIB. The GPIB connection is keyed so that it fits in only one direction. Do not force the GPIB ribbon cable connector into place. The GPIB ribbon cable is 20 in. long and terminated with a panel-mount GPIB connector that can be mounted for easy access in your system.

Note **If you plan to perform HS488 high-speed protocol transfers, you must configure the NI-488.2 software for the amount of GPIB cable length in your system. You must add the 20 in. GPIB ribbon cable to your total GPIB cable length.**

6. Power on your system and start Windows.

Configure the NEC-GPIB/TNT Base I/O Address.

After you finish configuration, you are ready to Install the NEC-GPIB/TNT.



1	Product Name and Assembly Number	3	Base I/O Address	5	Shield Ground
2	Serial Number	4	Address Decode		

Figure 11. NEC-GPIB/TNT Parts Locator Diagram

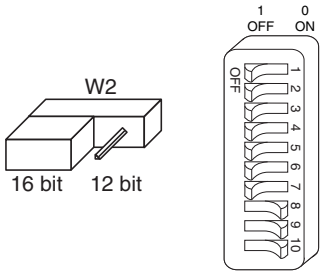
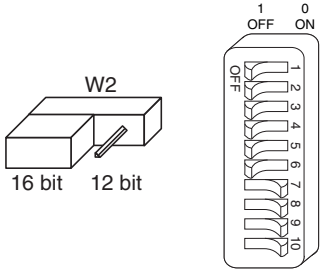
Configure the NEC-GPIB/TNT Base I/O Address

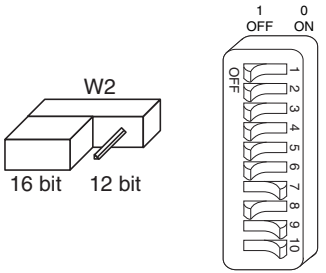
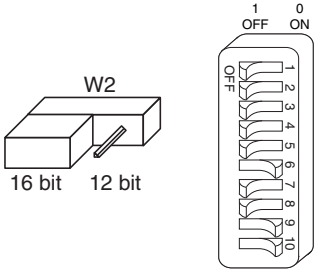
Click the base I/O address assigned to your NEC-GPIB/TNT from the list below, and change the switch settings to match the base I/O address assigned to your board.

If you do not know what resources were assigned to your NEC-GPIB/TNT, click here to Determine Assigned Resources.

1D0	2D0
3D0	4D0
5D0	6D0
7D0 (Default)	

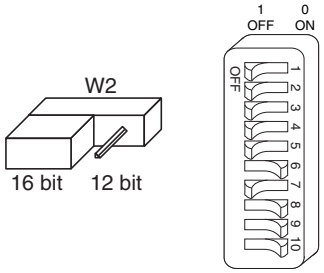
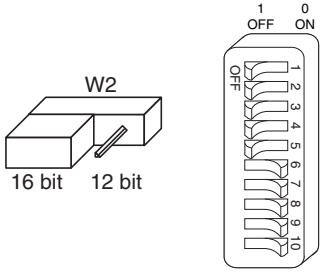
Table 12. Possible Base I/O Address Switch Settings for NEC-GPIB/TNT

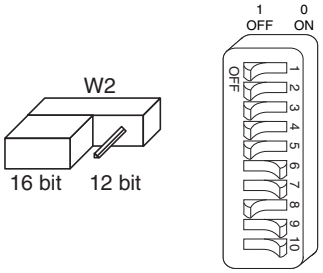
Base I/O Address (hex)	Switch Settings
1D0	
3D0	

Base I/O Address (hex)	Switch Settings
2D0	
4D0	

View Parts Locator Diagram

Table 12. Possible Base I/O Address Switch Settings for NEC-GPIB/TNT (Continued)

Base I/O Address (hex)	Switch Settings
5D0	
7D0 (Default)	

Base I/O Address (hex)	Switch Settings
6D0	

View Parts Locator Diagram

Set the NEC-GPIB/TNT Shield Ground Configuration

The NEC-GPIB/TNT is set at the factory with the jumper in place to connect the logic ground of the NEC-GPIB/TNT to its shield ground. This configuration minimizes EMI emissions.

Note **The NEC-GPIB/TNT was tested for compliance with FCC standards with the shield ground connected to logic ground. Removing the jumper might cause EMI emissions to exceed any or all of the applicable standards.**

Most users do not need to change the shield ground configuration. If you need to disconnect the logic ground from shield ground, complete the following steps.

1. Locate the shield ground jumper W1 on the NEC-GPIB/TNT. (View the NEC-GPIB/TNT Parts Locator Diagram.)
2. Remove the jumper and place it across only one of the jumper pins, as shown in Figure 12.

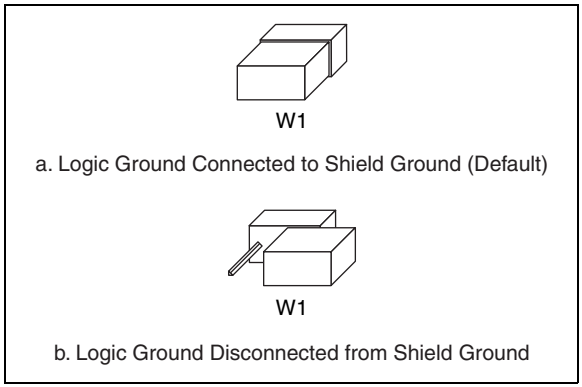


Figure 12. NEC-GPIB/TNT Ground Configuration Jumper Settings

Install the NEC-GPIB/TNT

PRINT THIS TOPIC!
Your computer needs to be off while you install your NEC-GPIB/TNT. To print this topic, select **File»Print**, select the **Pages** radio button, and print page **61**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

Complete the following steps to install the NEC-GPIB/TNT.

1. Make sure that your computer is powered off. Keep the computer plugged in so that it remains grounded while you install the GPIB hardware.
2. Find an unused expansion slot in your computer.
3. Remove the corresponding slot cover on the back panel of the computer.
4. Insert the NEC-GPIB/TNT into the slot. It might be a tight fit, but do not force the board into place.
5. Screw the mounting bracket of the NEC-GPIB/TNT to the back panel of the computer.
6. Power on your computer and start Windows.

The NEC-GPIB/TNT hardware installation is now complete.

Determine Assigned Resources

Before you configure and install your board, you need to know the resources assigned to your hardware.

Windows XP/2000/Me/98

The **Add GPIB Hardware Wizard** automatically opens this PDF file after it assigns resources to your GPIB hardware. The **Add GPIB Hardware Wizard** window is probably open on your desktop. Switch to that window to view the resources assigned to your GPIB hardware.

If you do not have the **Add GPIB Hardware Wizard** running, launch it by selecting **Start»Programs»National Instruments»NI-488.2»Add GPIB Hardware**. Follow the steps until it displays the list of resources assigned to your GPIB hardware.

Windows NT

Windows NT is not a true Plug and Play operating system; therefore, it does not have an **Add GPIB Hardware Wizard** concept. When you install new GPIB hardware, try to use the default hardware settings. If these settings fail due to a resource conflict, use the **Start»Programs»Administrative Tools»Windows NT Diagnostics** utility. Use the **Resources** tab of this utility to get a list of resources that are known to be in use. This list is not necessarily complete, so remember that the resources not listed only *might* be available. The only way to know if a resource is available is to configure your hardware to use it, try it, and see if the NI-488.2 Troubleshooting Wizard passes.

After you select your resources, configure and install your GPIB hardware using the information in this PDF file. Then, use the GPIB Configuration Utility to communicate the resources assigned to your GPIB hardware. Run the **NI-488.2 Getting Started Wizard** for instructions on using the GPIB Configuration Utility.

AT-GPIB/TNT (PnP) and AT-GPIB/TNT+

PRINT THIS TOPIC!
Your computer needs to be off while you install your interface. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **63–64**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

1. Make sure that your computer is powered off. Keep the computer plugged in so that it remains grounded while you install the GPIB hardware.
2. Remove the top cover (or other access panels) to gain access to the computer expansion slots.
3. Find an unused expansion slot in your computer. The AT-GPIB/TNT (PnP) board requires a 16-bit ISA expansion slot.
4. Remove the corresponding slot cover on the back panel of the computer.
5. Insert the GPIB board into the slot with the GPIB connector sticking out of the opening on the back panel, as shown in Figure 13. It might be a tight fit, but do not force the board into place.

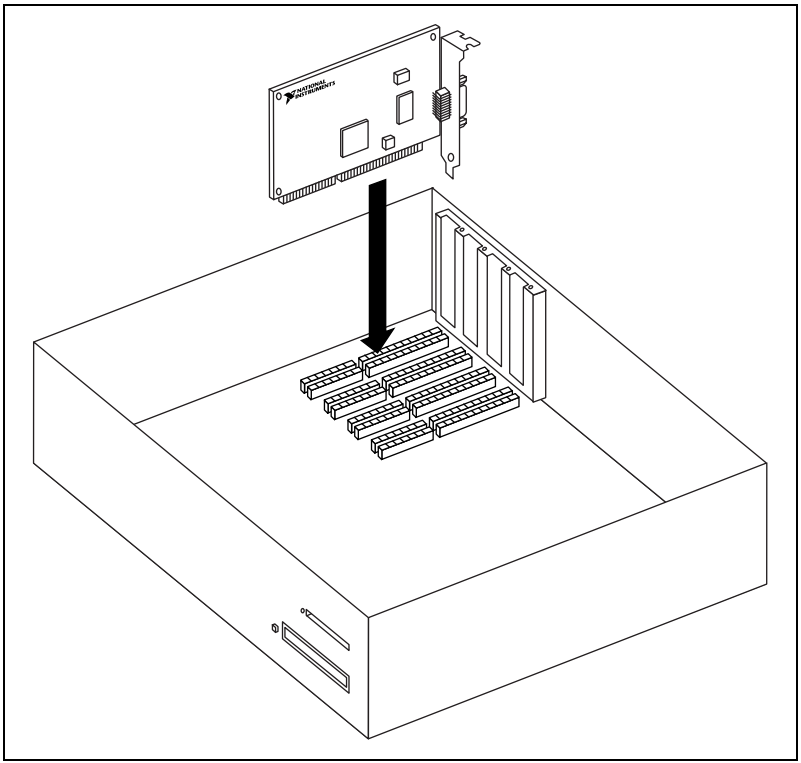
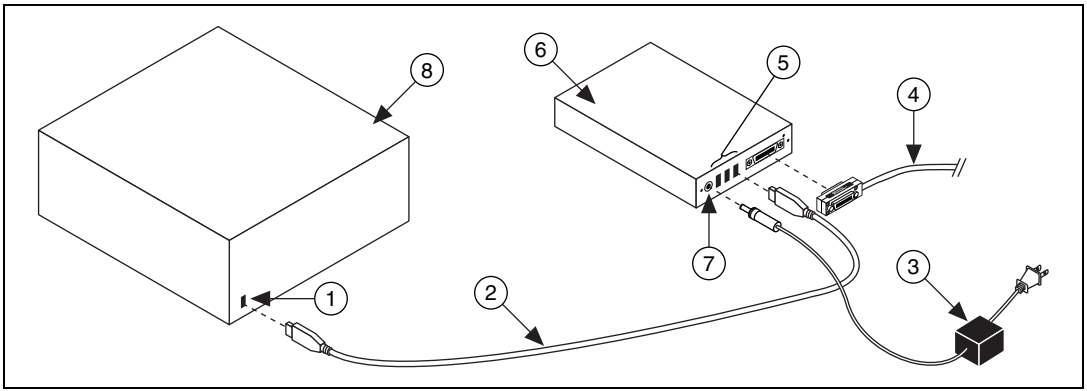


Figure 13. Installing the AT-GPIB/TNT (PnP) or AT-GPIB/TNT+

6. Screw the mounting bracket of the GPIB board to the back panel rail of the computer.
7. Replace the top cover (or the access panel to the expansion slot) and power on your computer.

The GPIB hardware installation is now complete.

1. Screw the DC power connector of the DC power supply into the DC power connector on the back panel of the GPIB-1394.
2. Plug the DC power supply into an AC outlet.



1	1394 Connector	3	DC Power Supply	5	1394 Connectors	7	DC Power Connector
2	1394 Cable	4	GPIB Cable	6	GPIB-1394	8	PC

Figure 14. Installing the GPIB-1394

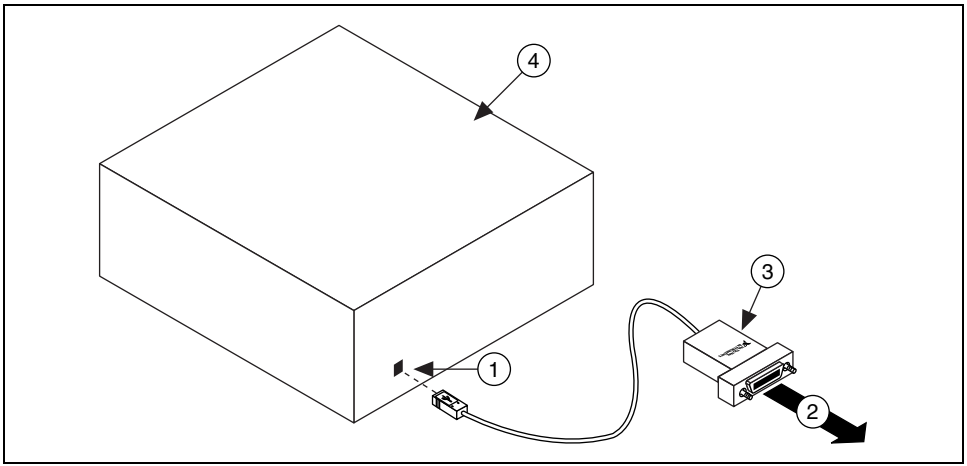
3. Connect 1394 cable to any available 1394 connector on your PC.
4. Connect 1394 cable to any available 1394 connector on your GPIB-1394.
5. Turn on the GPIB-1394 with the power switch on its front panel. The GPIB-1394 is now powered by the DC power supply.

If your computer is already running, the operating system automatically detects the GPIB hardware. Otherwise, the GPIB hardware is detected when you start your computer.

The GPIB-1394 installation is now complete.

GPIB-USB Interfaces

To install the GPIB-USB interface, connect the USB connector from the GPIB-USB interface to an available USB port on your computer. The GPIB-USB interface connects directly to most GPIB devices without requiring a GPIB cable. If your computer is already running, the operating system automatically detects the GPIB interface. Otherwise, the GPIB interface is detected when you start your computer.



1 USB Connector 2 To GPIB Devices 3 GPIB-USB Interface 4 PC

Figure 15. Installing the GPIB-USB Interface

NEC-GPIB/TNT (PnP)

PRINT THIS TOPIC!
Your computer needs to be off while you install your interface. To print this topic, select **File»Print**, select the **Pages** radio button, and print page **67**.

Complete the following steps to install the NEC-GPIB/TNT (PnP).

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

1. Make sure that your computer is powered off. Keep the computer plugged in so that it remains grounded while you install the GPIB hardware.
2. Find an unused expansion slot in your computer.
3. Remove the corresponding slot cover on the back panel of the computer.
4. Insert the NEC-GPIB/TNT (PnP) into the slot. It might be a tight fit, but do not force the board into place.
5. Screw the mounting bracket of the NEC-GPIB/TNT (PnP) to the back panel of the computer.
6. Power on your computer and start Windows.

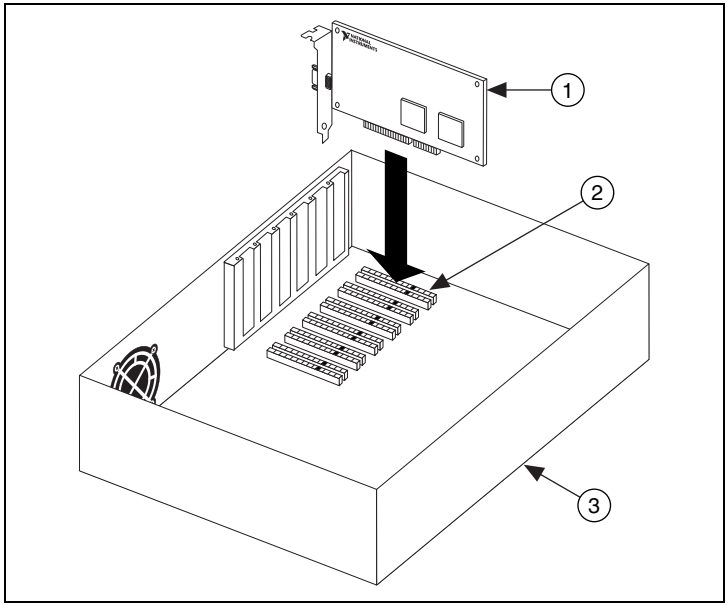
The NEC-GPIB/TNT (PnP) hardware installation is now complete.

PCI-GPIB, PCI-GPIB+, PCI-8212, and PCI-8232

PRINT THIS TOPIC!
Your computer needs to be off while you install your interface. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **68–69**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid such damage in handling your board, touch the antistatic plastic package to a metal part of your computer chassis before removing the board from the package.**

1. Make sure that your computer is powered off. Keep the computer plugged in so that it remains grounded while you install the GPIB hardware.
2. Remove the top cover (or other access panels) to gain access to the computer expansion slots.
3. Find an unused expansion slot in your computer. Your PCI card requires a PCI slot.
4. Remove the corresponding slot cover on the back panel of the computer.
5. Insert the GPIB board into the slot with the GPIB connector sticking out of the opening on the back panel, as shown in Figure 16. It might be a tight fit, but do not force the board into place.



1	PCI Board	2	PCI Slot	3	Personal Computer

Figure 16. Installing Your PCI Card

6. Screw the mounting bracket of the GPIB board to the back panel rail of the computer.
7. Replace the top cover (or the access panel to the expansion slot).
8. Power on your computer.

The GPIB hardware installation is now complete.

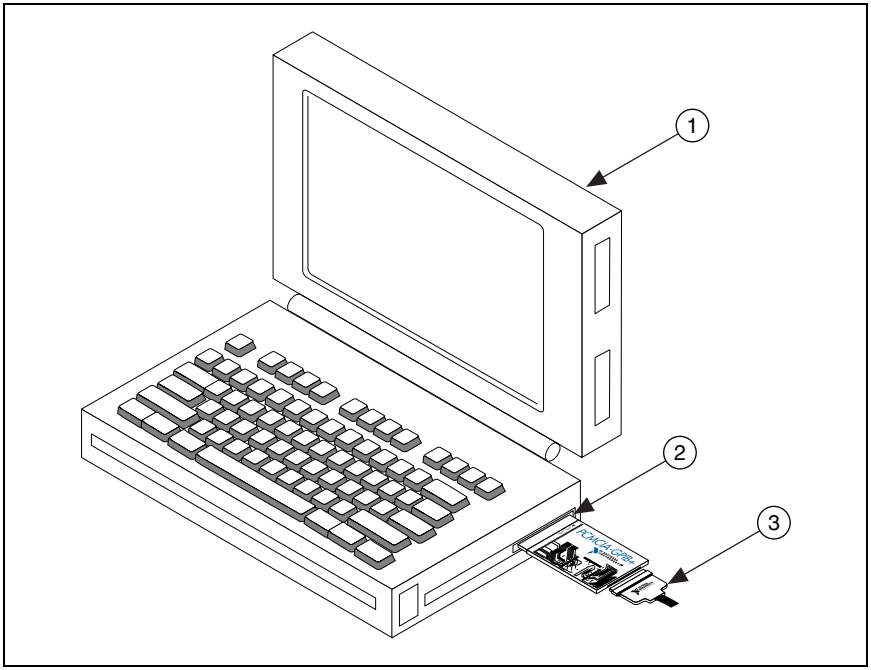
Windows XP/2000/Me/98, Macintosh

1. Reboot the computer.
2. If the PCMCIA-GPIB is not already inserted, insert it into a free PC Card (PCMCIA) socket. The card has no jumpers or switches to set, and you do not need to power down the system when you insert it.

Windows NT (PCMCIA-GPIB only)

1. Power off your computer.
2. Insert the PCMCIA-GPIB into a free PC Card (PCMCIA) socket. The card has no jumpers or switches to set.
3. Power on your computer and start Windows.

Figure 17 shows how to insert the PCMCIA-GPIB and how to connect the cable.



1	Portable Computer	2	PCMCIA Socket	3	PCMCIA-GPIB Cable

Figure 17. Inserting the PCMCIA-GPIB

The hardware installation is now complete.

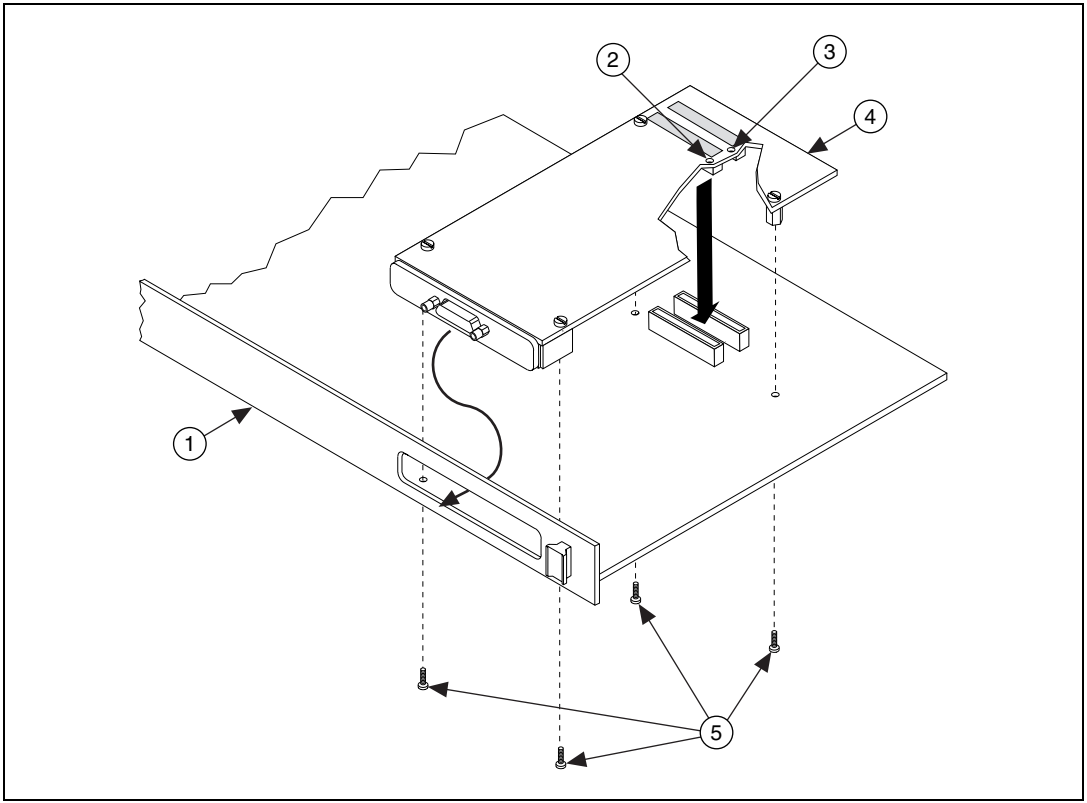
PMC-GPIB

PRINT THIS TOPIC!
Your computer needs to be off while you install your interface. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **72–74**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid electrostatic damage when you handle the board, touch the antistatic plastic package to a metal part of your system chassis before removing the board from the package.**

Complete the following steps to install your PMC-GPIB.

1. Power off your system.
2. Find an unused PMC slot in your system. You may need to remove the host from the system to access the PMC slot.
3. Remove the corresponding slot filler panel from the host.
4. Insert the PMC-GPIB into the slot as shown in Figure 18. It might be a tight fit, but do not force the board into place.



1	Host Face Plate	2	3.3 V Keying Hole	3	5 V Keying Hole	4	PMC-GPIB Board	5	Mounting Screws

Figure 18. Installing the PMC-GPIB

5. Use the mounting hardware provided to fasten the PMC-GPIB to the host.
6. Reinstall the host, if you removed it to install the PMC-GPIB.
7. Power on your system and start Windows.

The PMC-GPIB hardware installation is now complete.

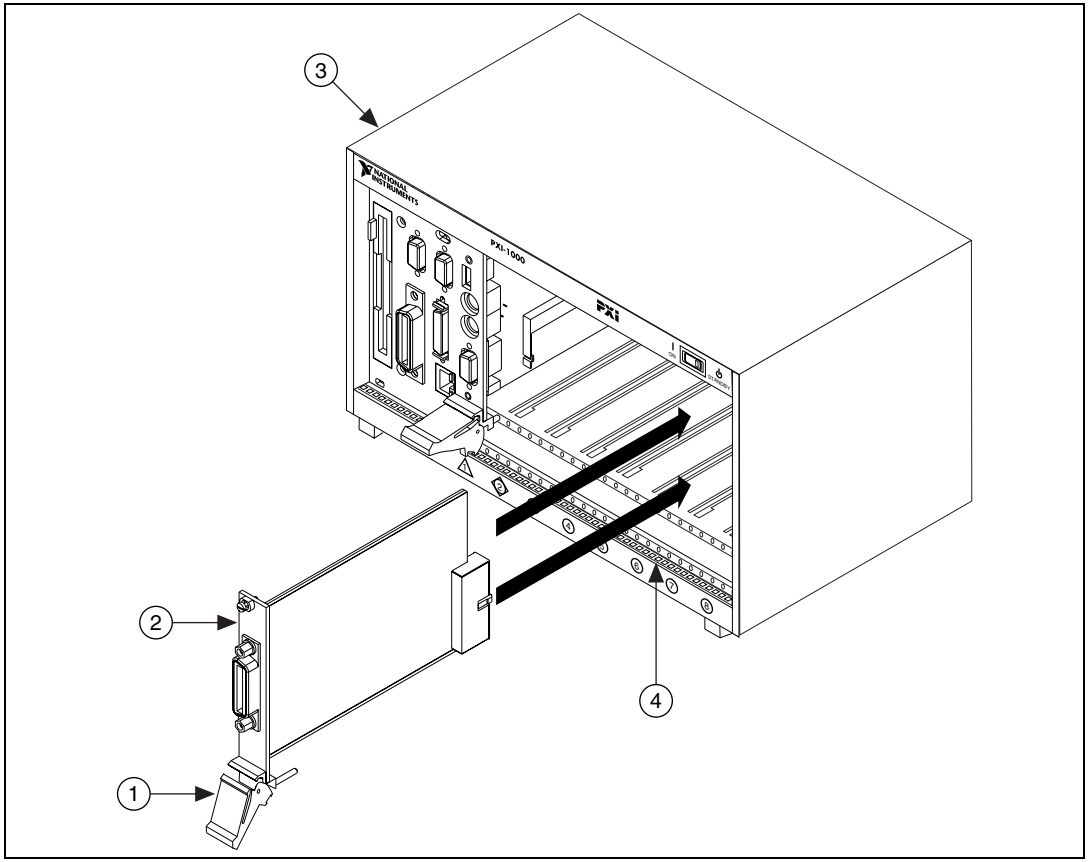
PXI-GPIB, PXI-8212, and PXI-8232

PRINT THIS TOPIC!
Your computer needs to be off while you install your interface. To print this topic, select **File»Print**, select the **Pages** radio button, and print pages **75–77**.

Caution **Electrostatic discharge can damage several components on your GPIB board. To avoid electrostatic damage when you handle the board, touch the antistatic plastic package to a metal part of your system chassis before removing the board from the package.**

Complete the following steps to install your PXI card:

1. Make sure that your PXI or CompactPCI chassis is powered off. Keep the PXI or CompactPCI chassis plugged in so that it remains grounded while you install your PXI card.
2. Choose an unused PXI or CompactPCI 5 V peripheral slot. For maximum performance, your PXI card has an onboard DMA controller that can only be used if the board is installed in a slot that supports bus arbitration, or bus master cards. National Instruments recommends installing your PXI card in such a slot. If you install the board in a non-master slot, you must disable your PXI cards onboard DMA controller using the board-level call `ibdma`. Refer to the *NI-488.2 Online Help* for a complete description of `ibdma`.
3. Remove the filler panel for the peripheral slot you have chosen.
4. Touch a metal part on your chassis to discharge any static electricity that might be on your clothes or body.
5. Insert your PXI card into the selected 5 V slot. Use the injector/ejector handle to fully inject the device into place. Figure 19 shows how to install your PXI card into a PXI or CompactPCI chassis.



1	Injector/Ejector Handle (In Down Position)	3	PXI Chassis
2	Your PXI Card	4	Injector/Ejector Rail

Figure 19. Installing Your PXI Card

6. Screw the front panel of the PXI card to the front panel mounting rail of the PXI or CompactPCI chassis.
7. Power on your PXI or CompactPCI chassis and start Windows.

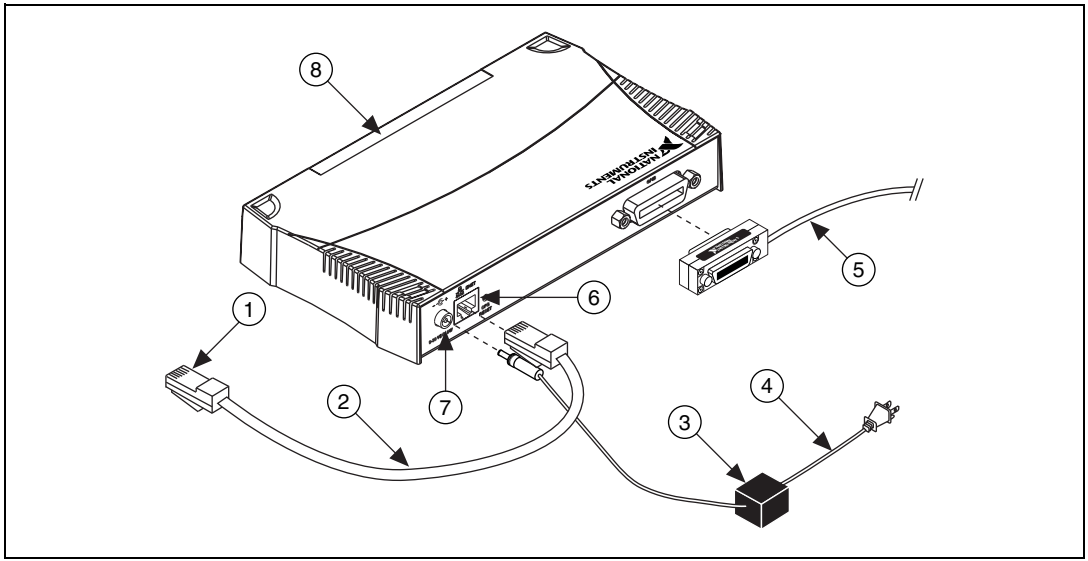
The PXI card installation is now complete.

GPIB-ENET/100

GPIB-ENET/100 Installation
Startup
Ethernet Configuration
Firmware Update
PWR/RDY LED Signaling
CFG RESET Switch

GPIB-ENET/100 Installation

1. Connect one end of your Ethernet cable to your GPIB-ENET/100. Connect the other end of the Ethernet cable to your Ethernet network.
2. Connect one end of the power cord to the power supply. Screw the power connector on the other end of the power supply onto the power jack of the GPIB-ENET/100.
3. Plug the other end of the power cord into an AC outlet.



1	To Ethernet Network	3	Power Supply	5	GPIB Cable	7	Power Connector
2	Ethernet Cable	4	Power Cord	6	Ethernet Connector	8	Front Panel LEDs

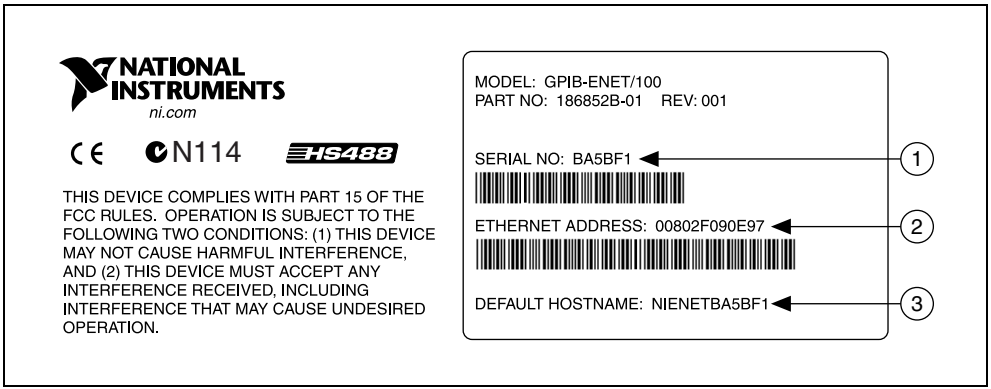
Figure 20. Installing the GPIB-ENET/100

4. Refer to the Baseplate Identification Label and make a note of the serial number, Ethernet address, and default hostname. You will need this information when you run some of the utilities.
5. Contact your network administrator to determine whether your network supports DHCP or if you need to manually perform the Ethernet configuration to set up the network parameters. If your network uses DHCP, the network configuration is performed automatically at startup. A steady yellow **PWR/RDY** LED indicates the GPIB-ENET/100 passed its self-tests and acquired its IP address. The unit is now ready to operate. You may need to run software configuration and verification utilities at this time.
6. Connect the GPIB cable to the GPIB-ENET/100. Connect the other end to your GPIB instrument.

Baseplate Identification Label

When you configure the GPIB-ENET/100 for use on your network, you will need to differentiate it from other network devices. Every GPIB-ENET/100 has a unique serial number, Ethernet address, and default hostname. You can find this information on the baseplate identification label on the GPIB-ENET/100.

Note **The Ethernet address is not the IP address. All devices on an Ethernet network are assigned a unique physical address—the Ethernet address—so they can communicate with each other.**



1 Serial Number	2 Ethernet Address	3 Default Hostname

Figure 21. GPIB-ENET/100 Baseplate Identification Label

You can use the NI Ethernet Device Configuration utility to change the hostname.

Startup

Turn on the front-panel power switch. The **PWR/RDY** LED flickers orange rapidly while the GPIB-ENET/100 completes its power-on self-tests and attempts to acquire its network parameters. Each Ethernet and GPIB LED lights up as its functionality is tested.

By default, the GPIB-ENET/100 attempts its network configuration automatically through DHCP. The time required for assigning the IP address depends on your network and the configuration of your GPIB-ENET/100. Allow up to 90 seconds and observe the state of the **PWR/RDY** LED to determine the outcome of the self tests. One of the following should occur:

- A steady yellow **PWR/RDY** LED indicates the GPIB-ENET/100 passed its self tests and acquired its IP address. The unit is now ready to operate. When using DHCP, the GPIB-ENET/100 typically is ready to operate about 15 seconds after you power it on.
- If the **PWR/RDY** LED continues to flicker orange rapidly, the unit was unable to use DHCP to configure its network parameters. It is now in network configuration mode. Refer to Ethernet Configuration for information on configuring the network parameters manually. If this utility is successful, the **PWR/RDY** LED should become steady yellow.
- If the **PWR/RDY** LED blinks a slow red/yellow pattern, the GPIB-ENET/100 did not pass its self tests. Refer to PWR/RDY LED Signaling to interpret the flash pattern before calling National Instruments Technical Support.
- If the **PWR/RDY** LED is steady red, the GPIB-ENET/100 has an unrecoverable error. Contact National Instruments Technical Support.

Table 13, LED Descriptions, summarizes the functionality of all the front-panel LEDs on the GPIB-ENET/100.

Table 13. LED Descriptions

LED	Description
PWR/RDY	Flashes orange rapidly at start-up while performing self tests and when acquiring network parameters. A steady yellow state indicates the box is ready for operation. A distinct red/yellow flashing pattern indicates an error occurred.
LINK 10/100	Indicates the GPIB-ENET/100 detected a twisted pair (10Base-T or 100Base-TX) link. The color indicates the connection speed. If yellow, the speed is 10 Mbits/s. If green, the speed is 100 Mbits/s.
TX	Indicates the GPIB-ENET/100 is transmitting to the Ethernet network.
RX	Indicates the GPIB-ENET/100 is receiving Ethernet network traffic.
TALK	Indicates the GPIB-ENET/100 is configured as a GPIB Talker.
LISTEN	Indicates the GPIB-ENET/100 is configured as a GPIB Listener.

Ethernet Configuration

Use the NI Ethernet Device Configuration utility if you need to manually configure the network parameters of the GPIB-ENET/100. If your network uses DHCP, the network configuration is performed automatically at startup and you do not need to run this utility unless you want to change the hostname. Consult your network administrator if you do not know whether your network uses DHCP.

In addition to manually configuring the network parameters, you can use the NI Ethernet Device Configuration utility for any of the following purposes:

- Enable DHCP
- Verify or change the hostname
- Add or change a comment to help identify the device

Using the NI Ethernet Device Configuration Utility

The GPIB-ENET/100 must be in network configuration mode—the **PWR/RDY** LED continuously flickers orange rapidly—before you can make changes to the network parameters. The GPIB-ENET/100 automatically enters network configuration mode if it is unable to obtain its network configuration through DHCP. During normal operation, you also can enter network configuration mode by pressing and holding the rear-panel CFG RESET switch for three seconds.

Run the NI Ethernet Device Configuration Utility. For Windows, select **Start»Programs»National Instruments»NI-488.2»Explore GPIB** to launch Measurement & Automation Explorer. Select **Help»Help Topics»NI-488.2** to view the NI-488.2 online help. Search for the topic **Set Network Settings for the GPIB-ENET/100** and click the link to launch the utility.

If you are using a Macintosh or UNIX platform, launch the utility from its installation location.

The **NI Ethernet Device Configuration** window displays a list of National Instruments Ethernet devices found on your subnet, sorted by model. You can identify your device by the Ethernet address or the serial number found on the GPIB-ENET/100 baseplate label.

The listed devices can be in one of four possible states, as indicated in the **IP address/hostname** column:

- A hostname indicates the device has successfully been configured by DHCP.
- A numerical IP address indicates the device has successfully been configured with a static IP address.
- ***Unconfigured*** indicates the device is configured to use DHCP, but DHCP failed to attain network parameters.
- ***Busy*** indicates the device is configured to use DHCP and currently is attempting to acquire network parameters.

View the properties for any of the following reasons:

- You need to configure an unconfigured IP address.
- You need to change the current network parameters.
- You previously used DHCP, but it is no longer available.
- You are using DHCP and need to change the hostname of the GPIB-ENET/100.
- The **IP address/hostname** column displays an exclamation point (**!**) next to your GPIB-ENET/100, indicating a configuration problem. Refer to Verifying the Hostname for help resolving this problem.
- You want to add or change a comment to help identify the device.

Refresh the list of Ethernet devices if you do not see your GPIB-ENET/100 in the list, or to discover a device that you recently added to the subnet.

Exit if you are finished using the NI Ethernet Device Configuration utility or if you are using DHCP and you do not need to change the hostname of the GPIB-ENET/100.

Changing the Network Settings

Your GPIB-ENET/100 must be in network configuration mode before you can use the NI Ethernet Device Configuration utility to change its network settings. You also can Enter Network Configuration Mode during Normal Operation if the **PWR/RDY** LED is not currently flickering orange rapidly.

1. View the properties for your GPIB-ENET/100.

   The current hostname is displayed. The hostname associates a name with a numerical IP address. **Hostname** is a required field.

   The GPIB-ENET/100 attempts to use the hostname when registering with DHCP. Many DHCP servers have the ability to register the hostname and the assigned IP address. You then can reliably use the hostname to communicate with your GPIB-ENET/100 even if the numerical IP address changes.

   However, some DHCP servers do not implement hostname registration. The GPIB-ENET/100 requires Domain Name Server (DNS) registration when using DHCP. If your DHCP server does not support DNS registration, you must use static network parameters.

2. Select either **Obtain an IP address automatically (DHCP)** or **Use the following IP settings**.
   a. If you select **Obtain an IP address automatically (DHCP)**, you do not need to enter any network parameters unless you want to change the hostname of the Ethernet device.
   b. If you select **Use the following IP settings**, enter the Static IP Parameters you have chosen for the host IP address, subnet mask, gateway IP, and DNS server IP.
3. You can enter an optional comment to help you identify each device.
4. Confirm your changes and exit the NI Ethernet Device Configuration utility.

The GPIB-ENET/100 automatically reboots with the new configuration in effect.

Static IP Parameters

If DHCP is not available, you must provide the GPIB-ENET/100 with several important network parameters.

- **IP address**—The unique, computer-readable address of a device on your network. An IP address typically is represented as four decimal numbers separated by periods (for example, `130.164.54.215`). Refer to the Choosing a Static IP Address section.
- **Subnet mask**—A code that helps the network device determine whether another device is on the same network or a different network.
- **Gateway IP**—The IP address of a device that acts as a gateway, which is a connection between two networks. If your network does not have a gateway, set this parameter to `0.0.0.0`.
- **DNS Server**—The IP address of a network device that stores hostnames and translates them into IP addresses. If your network does not have a DNS server, set this parameter to `0.0.0.0`.

Choosing a Static IP Address

For a Network Administered by a Network Administrator

If you are adding the GPIB-ENET/100 to an existing Ethernet network, you must choose IP addresses carefully. Contact your network administrator to obtain an appropriate static IP address for your GPIB-ENET/100. Also have the network administrator assign the proper subnet mask, gateway, and DNS server addresses.

For a Network without a Network Administrator

If you are assembling your own small Ethernet network, you can choose your own IP addresses. The format of the IP addresses is determined by the subnet mask. You should use the same subnet mask as the computer you are using with your GPIB-ENET/100. If your subnet mask is `255.255.255.0`, the first three numbers in every IP address on the network must be the same. If your subnet mask is `255.255.0.0`, only the first two numbers in the IP addresses on the network must match.

For either subnet mask, numbers between 1 and 254 are valid choices for the last number of the IP address. Numbers between 0 and 255 are valid for the third number of the IP address, but this number must be the same as other devices on your network if your subnet mask is `255.255.255.0`.

If you are setting up your own network, you probably do not have a gateway or DNS server, so you should set these values to `0.0.0.0`.

Verifying the Hostname

The NI Ethernet Device Configuration utility automatically verifies that the hostname for each DHCP-enabled device matches the DNS entry for the assigned IP address. This verification process automatically occurs when you either run the utility or refresh the list of devices. The utility alerts you if it detects a problem with the network settings.

To correct the problem with the hostname, complete the following steps:

1. Locate the device that has a problem. This is indicated by an exclamation point (**!**) on the device icon.
2. View the properties for the device. The utility displays four options for resolving the verification error. Select the one that best fits your situation.
   - **Change the device's hostname to match the DNS entry**—Use this option if you want to accept the hostname assigned by the DHCP server, or if you cannot contact the network administrator to change the DNS entry.
   - **Use static network parameters instead of DHCP**—Use this option if you cannot use the hostname assigned by the DHCP server. Contact your network administrator to obtain a valid IP address, subnet, and gateway. This option disables DHCP on the device.
   - **Edit the current hostname**—Use this option to change the hostname to a name other than either the configured hostname or the name assigned by the DHCP server. Contact your network administrator to obtain a valid name.
   - **Keep the existing hostname**—Use this option if you wish to keep the previously assigned hostname. If you select this option, contact your network administrator to change the DNS entry.
3. Confirm the network parameter settings. The device reboots with the new settings in effect.
4. After the device reboots, refresh the list of devices to verify that the hostname is now valid.
5. Exit when you are finished using the NI Ethernet Device Configuration utility.

Firmware Update

The GPIB-ENET/100 software includes a firmware update utility you can use to access new features that may be added to the GPIB-ENET/100 in the future. You must update the firmware to take advantage of any new features.

The GPIB-ENET/100 always ships with the most recent firmware. You do not need to run the firmware update utility on a new product. You can obtain the latest upgrade at the following path:

```
ftp://ftp.ni.com/support/gpib/firmware/GPIBENET100/
```

You need to know either the IP address or hostname of your GPIB-ENET/100 before you run the NI Ethernet Device Firmware Update utility. If you do not remember this information, first run the NI Ethernet Device Configuration utility.

Caution **Do *not* power-off the GPIB-ENET/100 or disconnect the power supply while running the NI Ethernet Device Firmware Update utility. Doing so will damage the unit. The GPIB-ENET/100 reboots automatically when the update completes.**

Note **The NI Ethernet Device Firmware Update utility cannot update the firmware while any network connections are active. Close any open connections before you attempt a firmware update. Hosts cannot connect to the GPIB-ENET/100 while it is updating the firmware.**

1. In Windows, run the Measurement & Automation Explorer. Right-click on any GPIB-ENET/100 interface and select **Firmware Update** from the drop-down menu. For Macintosh or UNIX platforms, launch the utility from its installation location.
2. Specify the hostname or IP address of the GPIB-ENET/100 and enter the full path of the binary file where the firmware image is located.
3. The NI Ethernet Device Firmware Update utility communicates with the specified GPIB-ENET/100 to verify the box has no open network connections and determine the current version of the firmware in the unit.

4. When prompted, confirm the change you are about to perform. The update utility transfers the firmware image to your GPIB-ENET/100 and displays the status of the update, including whether the firmware update completed successfully or failed. The GPIB-ENET/100 automatically reboots with the new firmware in effect.
5. Exit the NI Ethernet Device Firmware Update utility.

PWR/RDY LED Signaling

The **PWR/RDY** LED blinks slowly in a distinct red/yellow pattern to alert you of internal errors. Use this section to interpret and record the pattern that the **PWR/RDY** LED flashes, and then contact National Instruments.

Note **By recording the PWR/RDY LED status messages before calling National Instruments, you can save yourself time, and the Product Support Department can answer your questions more accurately and efficiently. Do not switch off power to your GPIB-ENET/100 before recording the flashing PWR/RDY LED pattern.**

PWR/RDY LED signaling can report up to 81 different errors. The errors are numbered from 11 to 99 and are reported through sequences of **PWR/RDY** LED flashes.

Note **There is no zero in any error message. This means that error message numbers 0–10, 20, 30, 40, 50, 60, 70, 80, and 90 are not possible.**

Step 1. Count the Long Flashes

A three-second interval, during which the **PWR/RDY** LED is yellow, separates each repetition of the sequence. The sequence begins with a series of long one-second flashes—that is, one second red, one second yellow. These long flashes represent the digit in the tens column. There can be one to nine long flashes, which represent digits 1 through 9. For example, one long flash represents the digit 1 in the tens column, and nine long flashes represent the digit 9 in the tens column.

Step 2. Count the Short Flashes

The long flashes are followed by shorter flashes; each short flash lasts about one-fifth of a second—that is, one-fifth of a second red, one-fifth of a second yellow. These short flashes represent the digit in the ones column. Again, there can be one to nine flashes, which represent the digits 1 through 9. For example, one short flash represents the digit 1 in the ones column, and nine short flashes represent the digit 9 in the ones column.

Using this method, the **PWR/RDY** LED flashes the following sequence to represent status message 11:

<three seconds yellow> <one long red flash> <one short red flash>
<three seconds yellow>…

The **PWR/RDY** LED flashes the following sequence to represent status message 31:

<three seconds yellow> <three long red flashes> <one short red flash>
<three seconds yellow>…

Step 3. Record Your Status Code Number

When you have computed your error message number, write it down and also note the ON/OFF state of the **LINK**, **TX**, and **RX** LEDs. Have this information available when calling National Instruments.

CFG RESET Switch

The Configuration Reset (CFG RESET) switch is a recessed switch located beside the ENET connector on the rear panel.

You can use this switch to either reset the unit to its default network characteristics or place the GPIB-ENET/100 in network configuration mode.

Reset the Default Network Characteristics at Startup

If you want to reset the unit to its default network characteristics, you can use the CFG RESET switch at power-on. By pressing and holding the CFG RESET switch while you power on the GPIB-ENET/100, the network parameters revert to the default settings as defined on the baseplate label.

You must press and hold the switch for three seconds. If you release the switch prior to three seconds, no change occurs to the network configuration, and the GPIB-ENET/100 continues to boot normally.

Observe the **PWR/RDY** LED as it goes through the following changes during these three seconds.

1. The LED begins slowly alternating between red and yellow.
2. The alternating pattern increases in tempo.
3. At three seconds, the **PWR/RDY** LED becomes steady red. This indicates the network configuration will be set to the factory default settings.
4. When you release the CFG RESET switch, the box continues to boot as normal, and the **PWR/RDY** LED indicates the boot process as described in Table 13, LED Descriptions.

Enter Network Configuration Mode during Normal Operation

While the GPIB-ENET/100 is operational, as indicated by a steady yellow **PWR/RDY** LED, you can use the CFG RESET switch to place the box into network configuration mode. You then can use the NI Ethernet Device Configuration utility.

Because you cannot change the network parameters unless you deliberately place the GPIB-ENET/100 into network configuration mode, the parameters are protected while in normal operation. Hosts cannot connect to the GPIB-ENET/100 while it is in network configuration mode.

Note **Pressing the CFG RESET switch has no effect if hosts are currently connected.**

Close all connections, then press and hold the CFG RESET switch for three seconds. If you release the switch prior to three seconds, the GPIB-ENET/100 continues to operate normally.

The **PWR/RDY** LED goes through the following changes during these three seconds.

1. The LED begins slowly alternating between red and yellow.
2. The alternating pattern increases in tempo.
3. At three seconds, the **PWR/RDY** LED becomes steady red. This indicates the GPIB-ENET/100 is ready to enter network configuration mode.
4. Now release the CFG RESET switch. The **PWR/RDY** LED alternates rapidly between red and yellow to indicate the GPIB-ENET/100 is now in network configuration mode.

This mode remains in effect until you switch off the GPIB-ENET/100 or you use the NI Ethernet Device Configuration utility to change its network characteristics. The GPIB-ENET/100 automatically reboots when you exit the utility.

Specifications/Compliance

Refer to the online catalog at ni.com/products or the print catalog for complete specifications.

Refer to the Declaration of Conformity (DoC) for these products for any regulatory compliance information. To obtain the DoC for these products, click **Declarations of Conformity Information** at ni.com/hardref.nsf/. This Web site lists the DoCs by product family. Select the appropriate product family, followed by your product, and a link to the DoC appears in Adobe Acrobat format. Click the Acrobat icon to download or read the DoC.

Technical Support Resources

NI Web Support

National Instruments Web support is your first stop for help in solving installation, configuration, and application problems and questions. Online problem-solving and diagnostic resources include frequently asked questions, knowledge bases, product-specific troubleshooting wizards, manuals, drivers, software updates, and more. Web support is available through the Technical Support section of `ni.com`.

Worldwide Support

National Instruments has offices located around the world to help address your support needs. You can access our branch office Web sites from the Worldwide Offices section of `ni.com`. Branch office Web sites provide up-to-date contact information, support phone numbers, email addresses, and current events.

If you have searched the technical support resources on our Web site and still cannot find the answers you need, contact your local office or National Instruments corporate. For telephone support in the United States, dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 02 612 9672 8846, Austria 43 0 662 45 79 90 0, Belgium 32 0 2 757 00 20,
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Canada (Ottawa) 613 233 5949, Canada (Québec) 514 694 8521, Canada (Toronto) 905 785 0085,
Canada (Vancouver) 514 685 7530, China 86 21 6555 7838, Czech Republic 420 2 2423 5774,
Denmark 45 45 76 26 00, Finland 385 0 9 725 725 11, France 33 0 1 48 14 24 24,
Germany 49 0 89 741 31 30, Greece 30 2 10 42 96 427, India 91 80 51190000,
Israel 972 0 3 6393737, Italy 39 02 413091, Japan 81 3 5472 2970, Korea 82 02 3451 3400,
Malaysia 603 9131 0918, Mexico 001 800 010 0793, Netherlands 31 0 348 433 466,
New Zealand 64 09 914 0488, Norway 47 0 32 27 73 00, Poland 48 0 22 3390 150,

Portugal 351 210 311 210, Russia 7 095 238 7139, Singapore 65 6226 5886,
Slovenia 386 3 425 4200, South Africa 27 0 11 805 8197, Spain 34 91 640 0085,
Sweden 46 0 8 587 895 00, Switzerland 41 56 200 51 51, Taiwan 886 2 2528 7227,
Thailand 662 992 7519, United Kingdom 44 0 1635 523545

Important Information

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The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

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