Quantum Design

Service Note 1070-811

Upgrading National Instruments 488.2 Drivers from Version 1.70 to Version 2.10

Quantum Design staff recommend upgrading the National Instruments (NI) 488.2 version 1.70 drivers to 488.2 version 2.10 for PPMS and MPMS systems using Windows XP. The version 1.70 drivers cause performance problems when they are used on QD systems in conjunction with the Windows XP operating system. Examples of the problems include intermittent GPIB timeout and/or SRQ errors that can occur at the rate of once every 1 to 10 hours and can cause Quantum Design software to crash. These problems have been especially evident when the PPMS Heat Capacity and Helium-3 options are used simultaneously, but they can occur at any time on any XP-equipped QD system that uses NI version 1.70 drivers.

The instructions below explain how to perform the upgrade. There are four phases, during which you will identify the current software version, install the driver, verify the presence of the driver; and verify that the software and hardware requirements have been met. To facilitate a trouble-free installation, we recommend that you review the entire set of instructions before you begin the upgrade.

Important: Be sure to follow these instructions, as some of them take precedence over the installation instructions from National Instruments.

Phase I—Identifying the Current Software Version

1. Shut down all active programs on the computer.

2. Start the **National Instruments Explorer** program and check the version of NI 488.2 driver that is being used on the computer.

    a. Open the Windows **Start** menu by clicking on the **Start** button.

    b. In the Windows **Start** menu, select **Programs >> National Instruments >> NI-488.2 >> Explore GPIB**. This will start the National Instruments **Explorer** program and the **MAX** opening screen shown in Figure 1A. This quickly turns into the **MAX Configuration** dialog shown in Figure 1B.

Figure 1A. Start page: National Instruments Measurement & Automation Explorer
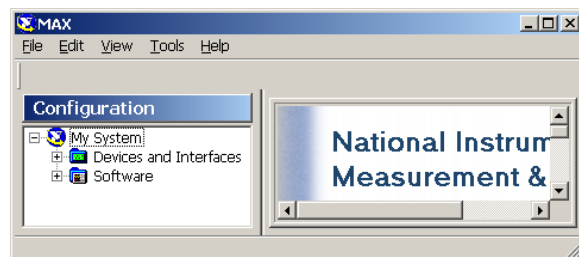

Figure 1B. Configuration page: National Instruments Measurement & Automation Explorer

A **User Preferences** dialog might also open (Figure 1C), overlapping the **Configuration** dialog. If so, click in the radio box so that MAX will search for new devices "Every time I launch MAX." (The check box to show the dialog is optional.) Then click on the **OK** button to close the dialog.
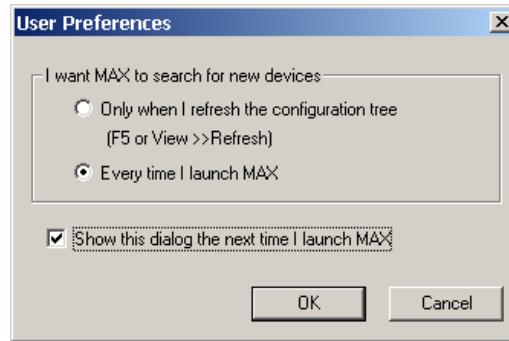

Figure 1C. User Preferences page: National Instruments Measurement & Automation Explorer

c. Refresh the screen by using the dropdown **View** menu at the top of the dialog (**View >> Refresh**), as shown in Figure 2, or press the **F5** key.

   Be sure to refresh the screen. Otherwise, you might not be able to access the dropdown trees in the next steps.
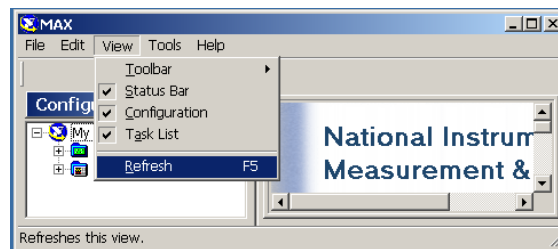
d. In the left or **Configuration** panel of the dialog, expand the **Software** group by clicking on the plus (+) sign next to it. As shown in Figure 3, a list of names will appear, including **NI-488.2 Software**.

e. To locate the driver version, select **NI-488.2 Software**. When you do this, the display in the right panel will change to show information about the selected software, including the version number, as shown in Figure 3.

Figure 2. View >> Refresh: National Instruments Measurement & Automation Explorer
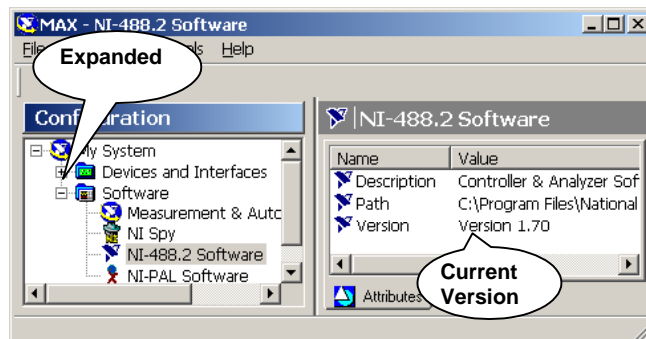

Figure 3. Software list (left) and software information (right), with callouts to expanded software list and version

   If the software version is 1.70 or 2.00, you *do not* need to remove it before you install version 2.10. Just follow the procedures explained in this document.

3. Close the **MAX Configuration** dialog (select **File >> Exit** or click on the "x" at the top right of the dialog).

Phase II–Starting the Driver Installation

1. If you have not inserted the "National Instruments 488.2 Version 2.10 driver" CD, do so now.

2. When the CD has been loaded, it will open the **NI-488.2 for Windows** dialog shown in Figure 4A. In the list of three options, click on **Install Software**. The **Setup** program will open the **NE-488.2 for Windows** dialog, which is shown in Figure 4B during the initialization process.
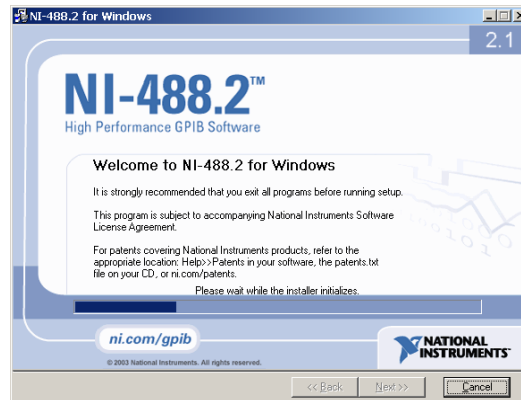
Figure 4A. NI-488.2 CD options

Figure 4B. NE-488.2 for Windows–Opening installation page

3. When the installer has completed initialization, click on the **Next >>** button.

4. The **License Agreement** (Figure 4C) will open. Click in the radio box to accept the agreement, then click on the **Next >>** button.

   Important: For all automated portions of the **Setup** process, such as accepting the license agreement, follow the CD instructions. Otherwise, use the options that are indicated in these instructions. For example, see Step 6.

5. The **Destination Folder** page will open (Figure 4D), which you can use to designate the location of the software. When you are finished, click on the **Next >>** button.

6. The **Select Installation Types** page will open (Figure 4E). Click on the radio button for **Typical** installation, then click on the **Next >>** button.
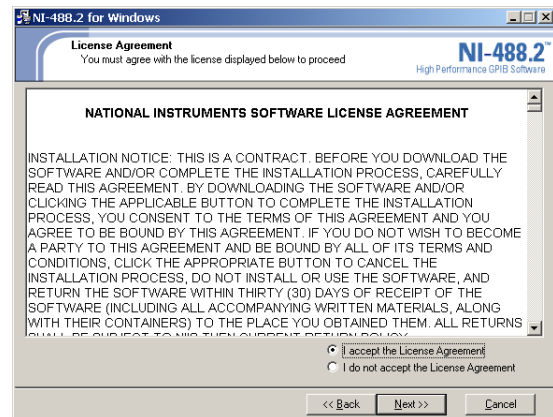

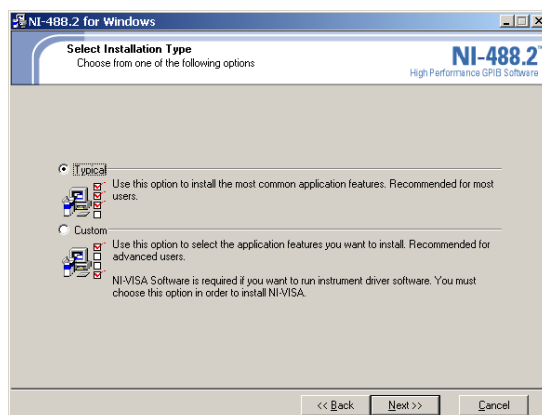Figure 4C. License agreement–installation page 2

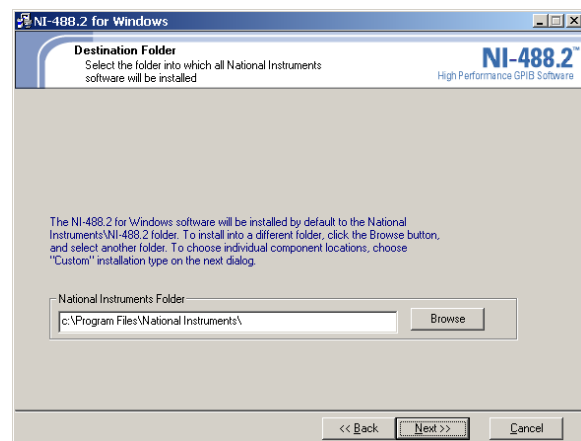Figure 4D. Destination directory–installation page 3

Figure 4E. Select Installation Types dialog– installation page 4

7. The **Start Installation** page will open (Figure 4F), showing the features that will be changed. Click on the **Next >>** button.

Note: If an **Unsatisfied Dependencies** page opens, as shown in Figure 4G, you can disregard it. You *do not* need to install **NI-VISA 2.6.1** as the dialog suggests. Just click on the **Next >>** button.
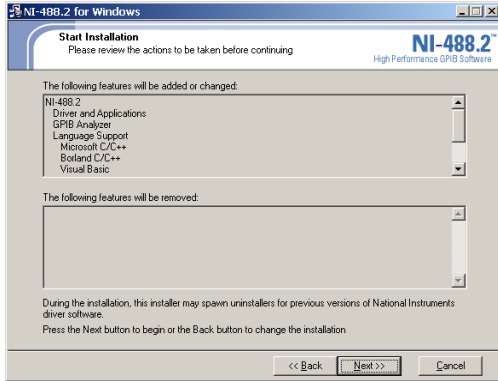

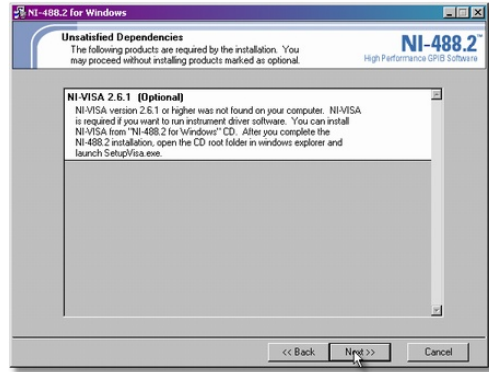Figure 4F. Add or change features–installation page 5

Figure 4G. Unsatisfied Dependencies dialog

8. The application will begin the installation process, as shown in Figure 5A. When it is finished (Figure 5B), register if you like, then click on the **Next >>** button to install the GPIB interface.
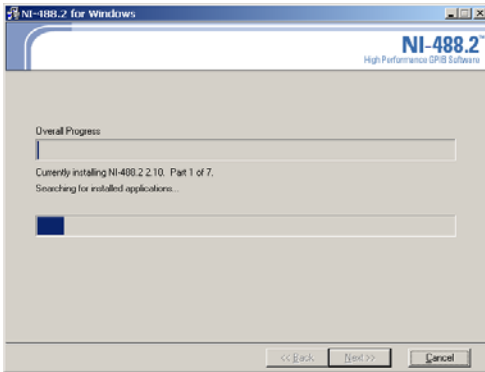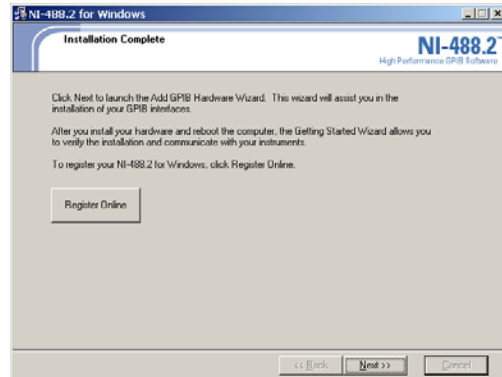

Figure 5A. Installation progress

Figure 5B. Installation complete

9. The **Add GPIB Hardware Wizard** will start (Figure 6A). Select the PCI-GPIB card, which will be used to communicate with Quantum Design instruments. Then click on the **Next >>** button.

10. Page 2 of the **Add GPIB Hardware Wizard** will open (Figure 6B), indicating that it has installed the GPIB interface and giving you additional options. Select **Restart** and click on the **Finish** button.
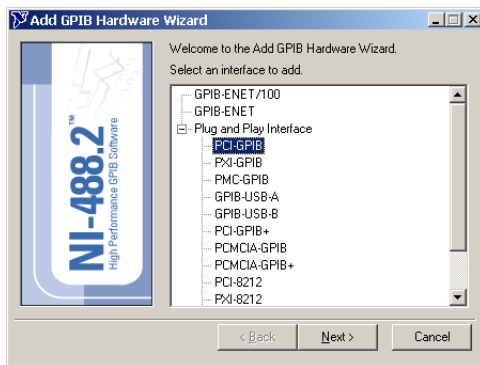

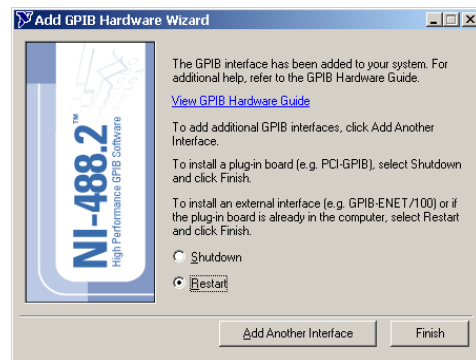Figure 6A. Add GPIB Hardware Wizard, select interface

Figure 6B. Add GPIB Hardware Wizard, Restart

11. When the computer restarts, it will open page 1 of the **NI-488.2 Getting Started Wizard** (Figure 7A). *Ignore this dialog*. The **Troubleshooting Wizard** dialog and the **No GPIB Interfaces Found** popup error message (Figures 7B and 7C) might also appear as an indication that the wizard automatically started verifying the hardware and software installation before it had been completed.

Ignore all these dialogs for now and go to the instructions in Phase III below. (If these dialogs are in the way, you can click on the error message **OK** button and hide the **Getting Started** and **Troubleshooting** wizards.)

Figure 7A. NI-488.2 Getting Started Wizard with "verify installation" message
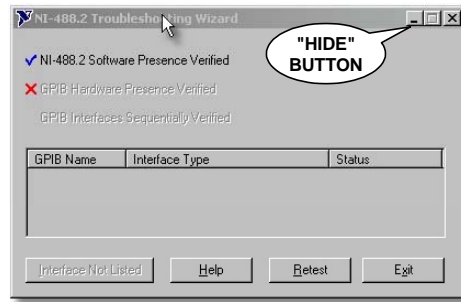
Figure 7B. NI-488.2 Troubleshooting Wizard with verification message

Figure 7C. No GPIB Interface error message

Phase III–Verifying the Hardware Driver

Phase III of the update process uses the **Found New Hardware Wizard** (Figure 8) to install the software and verify that the hardware driver is present. However, the system might not open this dialog.

1. Ideally, the **Found New Hardware Wizard** dialog (Figure 8) will appear when the system restarts. This could take a minute or two. If the dialog activates, skip to Step 3 below. Otherwise, go to Step 2.

2. If the **Found New Hardware Wizard** dialog does not appear, look for a balloon message in the lower right corner of your screen.

Figure 8. Found New Hardware Wizard dialog

   a. If there is a balloon, click on it to open the **Found New Hardware Wizard** dialog. Then go to Step 3.

   b. If there is no balloon or **Found New Hardware Wizard** dialog, it means that the system cannot find the GPIB hardware. Verify that the GPIB card is plugged in properly. Then uninstall the Version 2.10 software and redo the update procedure, beginning at Phase II. If this does not resolve the problem, contact Customer Service at Quantum Design.

Note: It could take several minutes before the **Found New Hardware Wizard** appears.

3. In the **Found New Hardware Wizard** dialog, click in the radio button for **Install the Software Automatically** and click on the **Next >>** button.

4. When the **Found New Hardware Wizard** has completed the software installation it will close and the **NI-488.2 Getting Started Wizard** dialog (Figures 7A and 9A) will reappear.

5. The next step varies according to whether the **No GPIB** error message (see Figure 7C) appeared when you restarted the computer.

    a. If the error message *did not* appear, the **NI-488.2 Getting Started Wizard** dialog will look like Figure 9A. Click on **Verify your hardware and software installation** and proceed to Step 6 below.

    b. If the error message *did* appear, click on the **Retest** button in the **NI Troubleshooting Wizard** (Figure 9B) to clear the wizard so that you can proceed with the verification process. (You might need to click on the **OK** button in the error message (Figure 7C) before you can perform the retest.)

6. When the **NI Troubleshooting Wizard** verifies that the installation has been successful, the dialog will show check marks next to the listed items, as in Figure 10A.

    a. A popup **Troubleshooting Wizard Help** message will appear (Figure 10B) when the verification process has been completed. Click on the **OK** button to close the popup message.

    b. Back in the **NI Troubleshooting Wizard** (Figure 10A)**,** click on the **Exit** button.

7. The **Getting Started Wizard** dialog (Figure 11) will now show another verification step, **Communicate with your instrument**, which is optional. If you want to verify that the GPIB card can talk to the equipment, click on that step to activate the instruction dialogs. If you do not know how to do this, click on the **Exit** button.
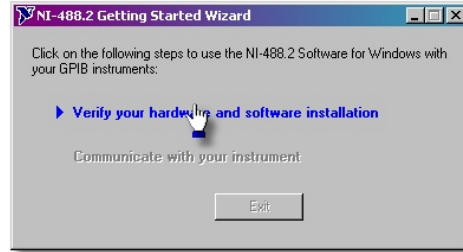

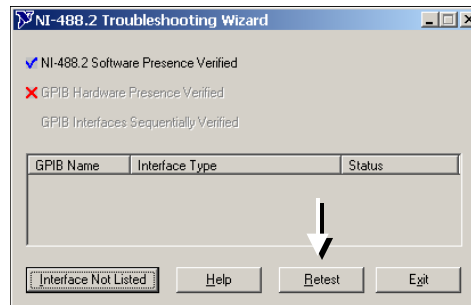Figure 9A. Getting Started wizard page 1

Figure 9B. Troubleshooting Wizard and retest
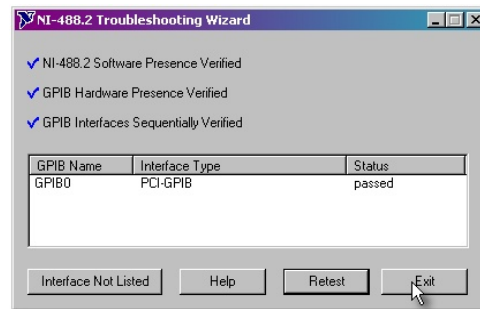

Figure 10A. Troubleshooting Wizard, successful verification

Figure 10B. Popup Troubleshooting Wizard Help

Figure 11. Getting Started and final, optional step

8. When you have completed this phase, proceed to Phase IV to verify that the upgrade was successful**.**

Phase IV (Essential)–Verifying Requirements

This phase is *essential* to verify that the QD software and instrument requirements have been met.

1. Verify that the system is using version 2.10 of the NI 488.2 driver. These are the procedures in Phase I, but the dialogs will now have a different appearance.

   a. Open the **Measurement & Automation Explorer** dialog: In the Windows **Start** menu, select **Programs >> National Instruments >> NI-488.2 >> Explore GPIB**.

   b. Using this dialog, refresh the screen (select **View >> Refresh)** so that you will be able to view the dropdown trees.

   c. In the **Configuration** panel, expand the **Software** group by clicking on the plus (+) sign. When the list of names appears, click on **NI-488.2**. If the update has been completely successful, the right panel will show version number 2.10.

   d. Close the **Software** group by clicking on the minus (–) sign next to it.

2. Now verify that the **Devices and Interfaces** settings are correct.

   a. In the **Configuration** panel, expand the **Devices and Interfaces** group by clicking on the plus (+) sign next to it, as shown in Figure 12. Systems with only one GPIB card will only show GPIB0 (PCI-GPIB).

   b. Place your cursor on the icon representing your PCI-GPIB card and right-click on it. This will open the popup menu shown in Figure 12.
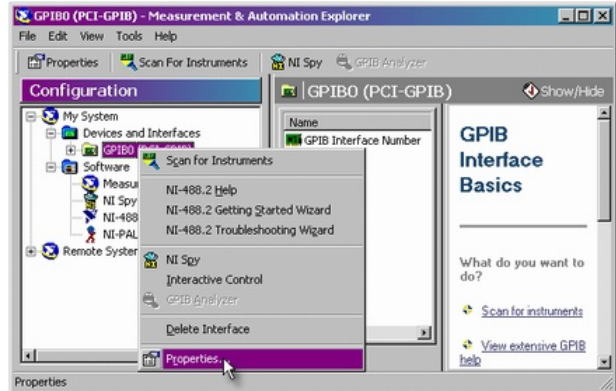
   c. Select **Properties**. This opens the **GPIB Configuration** dialog (Figure 13). If necessary, click on the **Advanced** tab to bring it forward.

   d. Verify that the **Automatic Serial Polling** check box is *not* checked. If it is checked, click in the box to clear it.

      Important: If you forget or omit this step, you could experience intermittent GPIB errors or you could have problems running Quantum Design software.

   e. Click on the **OK** button.

   f. Start MultiVu and verify that the application starts up with no errors and that it can communicate with the instrument.

Figure 12. Measurement & Automation Explorer dialog with popup menu for GPIB0 open

Figure 13. GPIB Configuration dialog, Advanced tab

   Note: Sometimes it takes several attempts to start MultiVu. If it does not start on the first attempt, close the program and attempt to start it again. If you continue to encounter problems, contact Customer Service at Quantum Design.