

# IEEE 488

## APPLICATION BULLETIN

### FREQUENTLY ASKED QUESTIONS (FAQ) FOR ICS's 488.2V4 CONTROLLER LIBRARY

#### INTRODUCTION

This application note lists the Frequently Asked Questions (FAQ) for ICS's Model 488-LPCI, Model 488-PXI and 488-USB2 GPIB Controller Products when used with ICS's 488.2V4 Driver Library. This FAQ list changes often so look here first for the latest answers to your problems.

If you are using the 488.2V3 Driver, please see AB48-40.

#### **FAQ #1 What version operating system do I need to run ICS's 488.2V4 Library**

You require the following Windows software or later versions:

- Windows XP, Service Pack 3
- Vista, Service Pack 2
- Windows 7, Service Pack 1 plus all updates.
- Windows 8.1 plus all updates
- Windows 10 plus all updates

The 488.2V4 Driver works with the x86 (32-bit) and x64 (64-bit) installations of the above operating systems. In addition, check with your computer manufacturer for the latest version of BIOS for your computer. Some major PC manufacturers ship computers with older versions of BIOS for several months after posting newer versions on their website.

#### **FAQ #2 Do I need .NET Framework installed for the 488.2V4 Driver Library?**

Yes and it is included with these operating systems. The 488.2V4 Installer will install .NET Framework 2.0 if it is missing.

#### **FAQ #3 Do I need to replace my 488.2V3 Driver?**

It is best to update to the 488.2V4 Driver to take advantage of several bug fixes but an update is not mandatory.

#### **FAQ #4 What happened to GPIBkybd in the V4 Driver?**

The Communicate Window in ICS's Explorer handles all of the same functions that the standalone GPIBkybd did. The GPIBkybd was redundant and therefore not included in the 488.2V4 Installer.

GPIBkybd is still included on the Support CD and available for downloading from ICS's website. GPIBkybd is a VB6 program and was necessary for supporting operating systems that do not have NET Framework 2.0 installed.

#### **FAQ #5 What happened to Configure in the V4 Driver?**

The ICS's Explorer automatically finds and configures all ICS GPIB Controllers when it starts up. The Configure windows allows you to modify the GPIB Controller settings and GPIB assignments.

Configure is a VB6 program and was necessary for supporting operating systems that did not have NET Framework 2.0 installed. Since XP and later systems include the .NET Framework, Configure became redundant and was dropped from the 488.2V4 Installer.

#### **FAQ #6 Why is the 488-USB not included in the V4 Driver?**

The original 488-USB GPIB Controllers used a Cypress USB chip that is now obsolete. Cypress elected not to develop the low level 64-bit driver for it. Without that driver, we could not include the 488-USB in the 488.2V4 Driver.

ICS regrets Cypress's decision and is offering all 488-USB users who wish to upgrade to a 488-USB2 Controller, a \$100 discount when trading in their old 488-USB Controller. This offer is good until May 1, 2012.

### **FAQ #7 How do you install ICS's 488.2V4 GPIB Drivers over older GPIB Drivers?**

The GPIB DLLs from ICS have the same names as DLLs from Adlink, Keithley, National Instruments, Measurement Computing (formerly Computer Boards) and some other GPIB card manufacturers for program compatibility. However, the GPIB DLLs from different manufacturers are **not** compatible and only work with their respective hardware.

**If you had previously installed a GPIB card from some other manufacturer, uninstall the old software before installing ICS's software.** Use the manufacturer's recommended uninstall method. Search for and remove all old copies of GPIB.DLL and GPIB-32.DLL. Then install ICS's driver. ICS's new GPIB-32.DLL and GPIB.DLL DLLs will be placed in the Windows System or System32 directory.

### **FAQ #8 I get a '.NET not installed' error message when I try to run Explorer. How do I configure the ICS Controllers?**

You can run ICS's Configure program to manually configure ICS's Controllers and create the GPIB.INI file on machines that do not have .NET installed or where you do not want to add .NET. If this is computer is being used to develop programs, you are better off installing .NET Framework 2.0 or later.

### **FAQ #9 I get a 'Check Controller connection and re-run program.' error message when I try to run Explorer. What do I do?**

If this is an existing installation that was running correctly, verify that your GPIB Controller card is firmly seated in its PCI connector or that your USB Controller is plugged into a working USB port. The RDY LED on your USB Controller should be blinking.

If this is a new installation and you dismissed the Windows Update function, the USB Driver installation needs to be completed. Go to Device Manager and you will see a list of devices. The ICS GPIB Controller entry should have a yellow '!'. Right click on the yellow '!' and click 'Update Driver'. At this point the New Hardware Wizard will open and ask if Windows can connect to Windows Updates. Select 'Yes, this time only' and click 'Next'. It does not matter if the computer is connected to the Internet or not. On the next windows click 'Next' and 'Finish'. This procedure will have to be repeated for each USB Controller module connected to the computer.

### **FAQ #10 I get a GPIB0 Missing Error Message when I run Explorer. What do I do?**

The message also said to configure another controller as GPIB0 before running any programs. This is normally necessary because most GPIB programs are developed with the Controller designated as GPIB0. Multiple Controller programs refer to the other Controllers as GPIB1, GPIB2 etc.

Normally this message means that you have accidentally unplugged

your USB2 Controller. Find the open connection and plug it back into the computer. Wait a moment and refresh Explorer's Configuration Tree.

If you have a PCI GPIB Controller card, make sure that it is firmly seated in the PCI connector.

Alternately, you may want to replace GPIB0 with another Controller. In that case, physically plug the Controller into the computer and let Explorer find and configure it. Select the new Controller in the Tree window and click the Configure GPIB Controller button to open the Configure window. Change the Interface Name to GPIB0 and click Apply. Answer Yes when asked if you want to overwrite the existing Controller. Use Cancel to exit and refresh the Tree to see the new system configuration.

### **FAQ #11 Can I read the GPIB.INI file values?**

You can read some of the GPIB.INI file settings in Explorer by clicking on 'My Computer' in the Configuration Tree window. The Controllers' virtual name, serial number and status will be listed in the Device Properties window. Select a Controller in the Tree window and click the Configure GPIB Controller button to view each Controller's settings. Use Cancel to exit the Configuration window without changing any settings.

### **FAQ #12 What does a blank status mean?**

It means that there is no controller with that serial number found for that virtual controller name. The Controller may be unplugged or it may have been reconfigured as another GPIBn Controller. Typically this happens when several Controllers are plugged into the computer and GPIB0 is removed. Explorer will warn you that GPIB0 is missing and recommend that you assign a Controller as GPIB0. Moving a Controller from GPIBn to GPIB0 leaves a partial entry in the GPIB.INI file.

### **FAQ #13 How do I cleanup the GPIB.INI file?**

The GPIB.INI file is located in Program Files\ICS Electronics\Utilities folder. Microsoft's Vista operating system hides the GPIB.INI file. Click the Compatibility Files icon in the Menu bar to see the GPIB.INI file.

Quit all GPIB programs, unplug your USB Controllers and delete the GPIB.INI file. Run the 488.2V4 Installer and select Repair to create a blank GPIB.ini file. Reconnect the USB Controllers, wait a couple of seconds for the Device Manager to find the USB Controller and run Explorer to populate the GPIB.INI file.

### **FAQ #14 Can I copy my configuration file to another computer?**

Yes you can copy the GPIB.INI file to another computer. This may be helpful when changing or upgrading computers. Please note that the configurations are associated with the USB GPIB Module's serial number or PCI Card slot identification. Unless you are creating the identical configuration, it is easier to run Explorer and let it recreate the GPIB.INI file for you.

## FAQ #15 Are ICS's different GPIB Controllers interchangeable?

All efforts have been made to make the GPIB Controllers supported by our new 488.2V3 Driver Library interchangeable. Therefore a program developed on a PC with one type of Controller should work on another PC with a different type of Controller.

The user should verify that his program runs with both Controllers before making a final release.

## FAQ #16 What does the manual mean when it says some ibconfig functions are supported but are not used?

While it is possible to set up some ibconfig functions and to read them back with ibask, the unused functions do not change the behavior of the ICS's Controllers. They are supplied for compatibility with existing programs that may have called them. An example is ibcDMA which does nothing since ICS's GPIB Controllers do not use DMA.

## FAQ #17 What do I have to do to run LabVIEW?

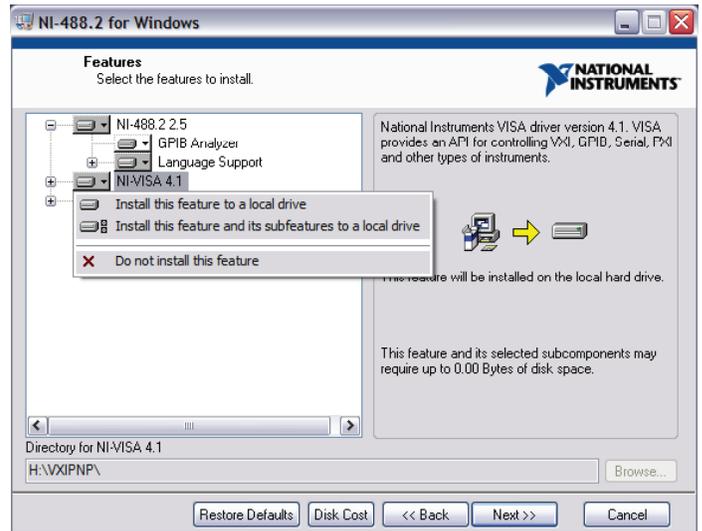
Install any version of LabVIEW (from version 8.1) and then install ICS's 488.2V4 Driver. Always download the latest version of the 488.2V4 Driver Library from ICS's website.

Test the VISA Drivers as directed in the manual to be sure that NI VISA is installed correctly and that it is working. **Always write your programs with synchronous commands when making VISA calls.** Also see FAQs 15 - 17.

## FAQ #18 How do I install LabVIEW Runtime?

National Instruments' LabVIEW Runtime package is designed to give you a way to run compiled LabVIEW programs. It assumes that you have installed National Instruments NI 488.2 driver and VISA layers. The correct installation sequence to use the LabVIEW Runtime package with ICS's GPIB Controllers is:

1. Stop all GPIB programs and unplug the 488-USB Controller if it is connected to your computer.
2. Download and install National Instruments' LabVIEW Runtime package for your version of LabVIEW
3. Download National Instruments NI-488.2 Drivers. Run the install program and manually select the NI-VISA 4.x option. Failure to do so will result in no VISA layer and no Runtime to ICS Driver communication.



NI-488.2 Driver Install Window

4. Install ICS's 488.2V4 Drivers even if they were already installed to be sure the ICS GPIB-32.DLL is installed.
5. Run ICS\_NI\_Support Install.
6. If you are using a 488-USB module, connect to the PC at this time. Note that the PC will find the new USB Controller twice if this is your first installation.
7. Run ICS's Explorer to define the USB Controller as GPIB0 and to verify communication with your instruments. If you do not have Microsoft's .NET 2.0 installed, you will have to run ICS Configure to define the GPIB0 Controller and then GPIBkybd to test communication with your instruments.
8. At this time you can run your LabVIEW program.

If you have any problems, first check the NI VISA layer operation with the VISA Interactive Control Program. See paragraph 4.7 in your 488.2V4 Driver manual for directions on how to do this.

## FAQ #19 How do I copy an ICS SPY listing to a text file?

ICS SPY is an MSDOS window and if the QuickEdit option is set, you can copy the SPY listing by selecting your text and then right click on it to copy it. Open Notepad and paste the copied selection into Notepad. The QuickEdit mode can be set by right clicking on the top bar of the MSDOS window and selecting Properties. Select the Options tab and check the QuickEdit mode box.

## FAQ #20 Why cannot I find my instrument in Explorer or GPIBkybd?

If the instrument is properly connected and turned on, Explorer should see it. However there are two potential problems:

1. Oscilloscopes may be left in talk-only state and do not respond to the FindLstn protocol. Set them to the auto-address mode and rerun FindLstn.
2. The instrument address may be the same as the GPIB Controller's. Change the GPIB Controller's address to an unused GPIB address such as 21 and rerun FindLstn.

**FAQ #21 ICS's GPIB-32.DLL is being copied over by another GPIB-32.DLL when not running an installation program.**

A background service running in your PC is the likely culprit. Agilent's PNA software is one source of such a service. Look in the Task Manager > Process Tab to see if a AgGPIB325vc.sys, AgGpib32Controller.exe or a similar service is running. Go to the Service manager under Administrative Tools and find the service in the list. Stop the service and then disable it. To be sure it stays disabled, use its properties to change ownership so only an administrator can re-enable it.

We recommend that you create an ICS\_DLL subdirectory in the SYSTEM32 directory and put a copy of ICS's DLL in it. That way, if you ever need to use the Agilent service, you can easily restore the ICS DLL when you are done.

**FAQ #22 Should I upgrade to Windows 8?**

The answer is NO. Windows 8 is a fancy touch screen shell that is wrapped over Windows 7 or XP and has numerous restrictions that make it very hard to use for Test and Measurement applications. See FAQ #23 for some of the problems associated with installing the 488.2 V4 Driver on Windows 8. If you have a choice of operating systems, stay with Windows XP or Windows 7.

**FAQ #23 How to install the 488.2V4 Driver in Windows 8?**

Follow the following steps to install the 488.2V4 Driver in a Windows 8 operating system.

1. Be sure your system has the latest updates. If you checked and were told your system was up to date, check your system status two more times after the last update was installed. Windows 8 seems to find updates no matter how many times you check.
2. Download and run ICS's 488.2V4 Installer. The Installer installs Microsoft's C++ Support package which is required by Windows 8. This installation is done in several iterations what takes about 5 minutes.
3. Install the 488-LPCI card in the computer or plug the 488-USB2 Controller into the computer. Run ICS Explorer. You will be told you need .NET Framework 2.0 and .NET Framework 3.5. Follow the on screen prompts to download and install the .NET Framework packages.
4. Rerun ICS Explorer. It will find your GPIB Controller card or USB module, generate the GPIB.ini file and display any GPIB devices connected to the GPIB bus. You are now ready to run your application.

**FAQ #24 Why is the 488-USB2 not detected after installing the 488.2V4 Driver?**

The USB drivers do not get registered or installed correctly on some systems. This can be corrected by opening the Device Manager and updating the driver.

1. Open the Device Manager and locate the 488-USB2 device. It should have a yellow triangle next to it.
2. Right click on it and select 'Update Driver'.
3. Follow the prompts to navigate to Program Files\ICS Electronics\ICSDrivers\488USB2\ folder.
4. XP users, select the wxp folder. Other users select the whl folder.
5. Select the x86 driver for the 32-bit systems. Select the x64 driver for the 64-bit systems.
6. Allow the system to update the driver. Recheck the Device Manager to be sure the yellow triangle is gone and that the Device Manager recognizes the 488-USB2 Controller.

Run the ICS Explorer to finish the installation by creating the GPIB.ini file and you can then run your GPIB programs.

**FAQ #25 My 64-bit program does not run. Why?**

When you installed the 488.2V4 driver, if you selected a 32-bit or 32-bit and 64-bit installation, the installer put a 32-bit GPIB-32.dll in the Windows\System32\ directory. This way, all of your 32-bit programs function normally.

To run a 64-bit program, copy the GPIB-32.dll from the Program Files\ICS Electronics\Utilities\64-bit folder and place it in the directory with your 64-bit program. When the program runs, it will find the 64-bit dll and be able to run the GPIB bus.

**FAQ #26 Do ICS Controllers work with Agilent Connection Expert in Windows 7?**

Yes they do but the setup is important due to the way Windows 7 operates. Uninstall ICS's 488.2V4 and Agilent IO Libraries and perform the following steps to correct the installation:

First - Check and update Windows 7. When done, reboot the computer and repeat the update step until there are no more updates.

Next, download and install the latest Agilent IO Libraries ver 16.3, Update 1 or later. Reboot the computer when done.

Next, download and install the latest 488.2V4 Driver from ICS Electronics' website. Plug the 488-USB2 module into the computer or install the 488-LPCI card in the computer. Run the ICS Explorer from the desktop icon to generate the GPIB.ini file for the GPIB Controller hardware.

Connect an instrument to the GPIB Controller, refresh the tree view and verify that the ICS Explorer can find it and read the instrument's IDN message.

Launch the Agilent Connection Expert. It should show a GPIB0 entry in the list of the 'Devices connected to this Computer' space. It should also show the instrument connected to the GPIB Controller. Highlight the instrument icon and use the Interactive IO in the menu bar to communicate with the instrument.

#### **FAQ #27 A GPIB0 icon does not appear in the Agilent Connection Expert. Why?**

The likelihood is that ICS's GPIB-32.DLL was not installed in the correct folder. Windows 7 sometimes blocks the installation. Backup copies of the GPIB-32.DLL are saved in the 32 Bit and 64 Bit folders in the Program Files (x86)\ICS Electronics\Utilities\ folder.

Windows folder System32 should have the 64-bit version of ICS's GPIB-32.DLL. SYSWOW64 should have the 32 Bit GPIB-32.DLL. To tell the DLLs apart, right click on them and check their Properties. The 64 Bit DLL will say x64 in the Description window. The 32 Bit DLL says x86 in the Description window.

Manually copy the DLLs to the correct Windows folder and reboot the computer. Do not install the NI 488.2 Driver or modify an Agilent file as instructed by other blogs or the Agilent Help file.

Launch the Agilent Connection Expert. It should now show a GPIB0 entry in the list of the 'Devices connected to this Computer' space.

#### **FAQ #28 MATLAB does not find GPIB instruments in Windows 8**

The likelihood is that ICS's GPIB-32.DLL was not installed in the correct folder. Windows 8 sometimes blocks the installation of ICS's DLLs or both size installations were not performed. Backup copies of the GPIB-32.DLL are saved in the 32 Bit and 64 Bit folders in the Program Files (x86)\ICS Electronics\Utilities\ folder.

To tell the DLLs apart, right click on them and check their Properties. The 64 Bit DLL will say x64 in the Description window. The 32 Bit DLL says x86 in the Description window.

Windows folder System32 should have the 64-bit version of ICS's GPIB-32.DLL. SYSWOW64 should have the 32 Bit GPIB-32.DLL. Manually copy the DLLs to the correct Windows folder and reboot the computer.

Run the ICS Explorer to verify that it can detect and control the GPIB devices. Launch MATLAB and use the 'tmtool' to check if it can detect the GPIB devices. For more information about tmtool please refer to the link below:

<http://www.mathworks.com/help/instrument/tmtool.html>