## Agilent I/O Libraries Read Me

Version L.02.00.11
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### General Information

This IO Libraries package supports Windows® 98, Windows Me, Windows NT®, Windows 2000 and Window XP Professional.

After you have installed the Agilent IO Libraries, you can double-click on the 'IO Readme' icon in the 'Agilent IO Libraries' folder to view the latest information about the Agilent IO Libraries.

These information and troubleshooting files are in HTML format and reside in the 'readme' subdirectory of the main IO Libraries installation directory. If you have installed the IO Libraries in the default location, these files are located in:

C:Program FilesAgilentIO Libraries

These files are also present in the 'readme' subdirectory on the Agilent IO Libraries CD-ROM.

Note that you must have a web browser installed on your computer to view these files.

Electronic manuals are also included on the CD-ROM in the 'Manuals' subdirectory. Setup options also allow you to install these manuals on the hard drive. They are installed in the 'Manuals' subdirectory of the main IO Libraries installation directory.

To view the electronic manuals that are included with IO Libraries you will need Adobe® Acrobat® Reader version 3.01 or later installed on your computer. You can obtain the latest Acrobat Reader from Adobe's web site at:

http://www.adobe.com/products/acrobat/readstep2.html (Note:  This link opens a new browser window.)

Adobe Acrobat Reader can also be installed from the IO Libraries CD-ROM. Double-click on the icon in the 'Adobe' subdirectory of the CD-ROM to install it.

### New Features and Changes

- Support for Agilent T&M Programmers Toolkit for Visual Studio® .NET has been added.
- When configuring a GPIB interface in IO Config, the default SICL name has been changed from hpib7 to gpib0. For backwards compatibility, you can run IO Config and change the SICL name back to hpib7 if desired.

- The VISA viLock function with VI_EXCLUSIVE_LOCK now obtains an underlying SICL lock as well. This has several implications:
  - Exclusive VISA locks will now work across a LAN. (Note that shared VISA locks are still local to the the computer on which viLock is executes. This is because the VXI-11 LAN protocol and the SICL-LAN protocol which are used by VISA do not support shared locks.)
  - If SICL and VISA are used in the same program, VISA will obey SICL locks and SICL will obey exclusive VISA locks.
  - In IO Config, a GPIB interface that has the 'Identify devices at run-time' box checked in the 'Edit VISA Config...' dialog box may cause VISA calls to devices on the same interface to return a VI_ERROR_RSRC_LOCKED error when another process calls viFindRsrc or viFindNext, even though no VISA function has locked the interface. This occurs because VISA itself will momentarily preempt the device lock and lock the entire interface when it scans for devices. You can avoid this problem by using one of the methods described below:
    - Pre-configure all your GPIB devices using the 'Add Device' or 'Auto Add devices' and make sure the 'Identify devices at run-time' box is not checked.
    - After you viOpen a GPIB session, call viSetAttribute(vi, VI_AGATTR_LOCKWAIT, VI_TRUE ) (see below) so rather than immediately returning a VI_ERROR_RSRC_LOCKED error, the function will wait the session timeout value for the device to become available. If it does not become available, a VI_ERROR_TMO will be returned. The time needed for viFindRsrc is usually less than the 2 second default VISA timeout value.
    - Set the default VISA lockwait value to VI_TRUE so all VISA INSTR sessions will wait the timeout value rather than returning VI_ERROR_RSRC_LOCKED. You can use this method on existing programs that you don't want to modify by adding the viSetAttribute call described above.
- A new Agilent-specific VISA ViBoolean local (per-session) attribute, VI_AGATTR_LOCKWAIT, as been added.
  - When a lock-abiding VISA call is made on a session to an exclusively locked resource:
    - If VI_AGATTR_LOCKWAIT is VI_FALSE, the call will immediately return with VI_ERROR_RSRC_LOCKED.
    - If VI_AGATTR_LOCKWAIT is VI_TRUE, the call will wait the session timeout interval for the lock to be released and then return VI_ERROR_TMO rather than VI_ERROR_RSRC_LOCKED.
  - The default value for VI_AGATTR_LOCKWAIT is normally VI_FALSE, but this default can be changed from the IO Control (the Agilent VISA Options | Default VISA LockWait menu) or from IO Config (the Options | Default VISA LockWait menu).
- The behavior of the %#s, %#S, %#t and %#T format specifier in the SICL iscanf and ipromptf functions and the VISA viScanf and  viQueryf function has changed. The '#' symbol signifies that a pointer to an integer is present the function argument list.
  On  entry to the function the value of the integer is now the maximum size of the string being read including the trailing NULL character. Previously, this size did not include the trailing NULL character and the number of characters written (including the NULL) could be one more than the size passed in. When the function returns, the value of this integer is set to the number of characters written to the string excluding the trailing NULL. The return value behavior has not changed from previous revisions of the IO Libraries.
- The format of the Microsoft® library (.lib) files in this release has changed. You must use Microsoft Visual C++ version 6.0 or later to link with the .lib files in this release. This change was required because the IO Libraries are now being built with MSVC 7 which does not offer a linker option to generate a .lib file in the older format.

- It is no longer possible to install the Agilent IO Libraries from floppy disks. A self-installing IO Libraries executable is available but it can no longer be used to generate floppy disks for installation.
- I-SCPI support has been removed from this version of the Agilent IO Libraries. Use version L.01.01 or earlier if you still require I-SCPI. Note that upgrading an earlier version of the IO Libraries to L.02.00 will not remove I-SCPI if it had been installed in the earlier version.
- On Windows NT 4.0, this version of the Agilent IO Libraries requires the following be installed to supply Microsoft DLL's that are not present on a bare Windows NT 4.0 installation:
    - Service Pack 6 or later -- oleacc.dll.
    - Microsoft Internet Explorer version 4.0 or later -- shlwapi.dll.

**Fixes**

- An over-current problem which prevented the 82357 USB/GPIB from working on some laptops has been fixed.
- For Visual Basic users, the sicl4.bas file has been replaced with sicl32.bas. Sicl32.bas removes the conditionally defined references to the old 16 bit sicl16.dll. These references did not cause a problem when calling SICL functions from Visual Basic but the Visual Basic distribution wrapper application would fail complaining that it could not find sicl16.dll when a developer attempted to package his VB program for distribution.
- A SICL isetlockwait problem where a function could return a bogus VI_ERROR_LOCKED error when isetlockwait was '0' has been fixed. On the 82341C and 82350A GPIB cards with isetlockwait set to '0', it was possible to get an I_ERR_LOCKED error returned from a function (e.g. iwrite) if two threads were attempting to access different devices on the same interface even though neither device was locked.
- IO Libraries will now function correctly if more than one user is logged on using Fast User Switching on Windows XP.
    - Fast User Switching is a new feature that has been added to Windows XP which allows more than one user to be logged on at one time and to quickly switch between these logged on users.
    - The Agilent IO Control is run automatically when the first user logs in and it will be terminated when that user logs out. For interfaces that rely on the IO Control to function properly, such as the E8491 (VXI) and 82357 (USB to GPIB), the first user must not log out as long as any user requires access to these interfaces.
    - Users other than the first user will not see the IO Control icon on the task bar.

**Issues**

- Use of the %F (file pointer) SICL format specifier is not recommended.
    - The %F specifier uses a file pointer returned from an fopen call. If this pointer is opened in an application and passed to a DLL (as it is will be to Sicl32.dll when calling ipriintf or iscanf), it will only be valid if both the application and the DLL load the same copy of the runtime libraries. Sicl32.dll is built using the Microsoft mult-threaded DLL version of the runtime libraries. Since we routinely upgrade to newer versions of Microsoft Visual C as we develop new versions of the IO Libraries, applications which use the %F format specifier that were compiled to work with one version of the IO Libraries will fail (usually with an access violation) when run under a newer version.
- The 82357 USB to GPIB converter will fail to install correctly on Windows 98SE systems if USBSCAN.SYS is not present.
    - USBSCAN.SYS is a Microsoft driver that is required for 82357 operation, but it may not be installed on some Windows 98 systems.

- o If USBSCAN.SYS is not present on your system, after installing the IO Libraries and then plugging in an 82357, the 'Adding New Hardware' wizard will prompt you for the location of USBSCAN.SYS. This file is present on the Windows 98SE installation disk.
  - o For more detailed instructions on this topic, refer to the 82357 USB/GPIB Troubleshooting Guide topic in the Troubleshooting Guide
- 82341C GPIB cards and E2075A GPIO cards are not supported on Windows Me.
  - o Due to Windows configuration manager changes made by Microsoft, these ISA cards are very difficult to configure and can cause the computer to hang during the configuration process. Refer to the html troubleshooting page for more information.
- The 82341D GPIB card is not supported on Windows 2000.
  - o Note, however, that the 82341C card is supported.
- The Adaptec PCI to 1394 card which originally shipped with the E8491 VXI to 1394 interface is not supported on Windows 2000.
  - o This original card was not OHCI compliant and only OHCI 1394 cards are supported on Windows 2000.
  - o The E8491 is now shipping with an OHCI compliant card which is supported on Windows 2000.
- Beginning with the J.01.00 release, the default paths for IO Libraries and VISA have changed to:
  - o For SICL:  Program FilesAgilentIO Libraries
  - o For VISA:  Program FilesVISA for VISA
  - o If you are installing over a previous version of the IO Libraries, the directories will not be changed.
- We recommend downloading a Windows 2000 hotfix from Microsoft to resolve two known problems which affect the E8491.
  - o Block write and I-SCPI performance on the E8491 on Windows 2000 are significantly reduced due to the workaround for a memory leak in the 1394 driver.
  - o Performance problems and missed interrupts on Windows 2000 are possible due to a busy-acknowledge defect in the 1394 driver. This is known to affect some E8491 firmware downloads and some I-SCPI and VXIplug&play drivers.
  - o Microsoft has implemented a hotfix which solves both of these problems. Go to http://www.microsoft.com and search for 'Q262814' to find the Knowledge Base article with information on obtaining the hotfix. If you have difficulty, contact Agilent Support for more information.
  - o The hotfix must be obtained from Microsoft. Microsoft does not allow Agilent to distribute Windows 2000 hotfixes.
  - o Microsoft has stated that this fix will be included in the Windows 2000 Service Pack 2 when it becomes available.
  - o The E8491 driver will sense the presence of the hotfix or Service Pack 2 and automatically switch to a higher performance mode if either is installed.
- We recommend downloading a Windows 98/Me hotfix from Microsoft to resolve a known Windows 98/Me IEEE 1394 problem which affects the E8491.
  - o Performance problems and missed interrupts on Windows 98 and Windows Me are possible due to a busy-acknowledge defect in the 1394 driver. This is known to affect some E8491 firmware downloads and some I-SCPI and VXIplug&play drivers.
  - o Microsoft has implemented a hotfix which solves this problem. You can find out more about this hotfix by going to http://www.microsoft.com and searching for Q252183 to find the Knowledge Base information on obtaining the hotfix. If you have difficulty, contact Agilent Support for more information.
  - o The hotfix must be obtained from Microsoft. Microsoft does not allow Agilent to distribute Windows hotfixes.
- There is a memory leak in Windows 98 which may affect the IO Libraries operation.

- o We have observed a 4 Kb memory leak each time any program that dynamically links the Microsoft msvcrt.dll (even a program that does not do IO) is run and then exits on Windows 98. This DLL is the C runtime library supplied with Microsoft Visual Studio
  and it is used by many products.
  - o The IO Libraries dynamically link to msvcrt.dll so any program using SICL and / or Agilent VISA will exhibit this problem. If your application involves starting and stopping programs many times, you will eventually run out of memory. Windows 98 will
  gradually become sluggish and eventually quit. The only solution to this problem is to reboot.
  - o We are reporting this defect to Microsoft but there is no resolution yet available.
  - o Note: If in Microsoft Visual Studio, you choose 'Multithreaded DLL' in the 'Use run-time library:' box on the C/C++ Code Generation tab, your application will dynamically load msvcrt.dll.
- When three or more E8491's are connected to a single IEEE 1394 interface card, certain topologies may not work.
  - o In certain topologies the E8491 hardware is not properly identified on the 1394 bus. This will result in inconsistent behavior when the VXI resource manager tries to configure instruments in the VXI card cages.
  - o Behavior may include timeout errors while attempting to communicate with a particular instrument, and / or instruments appearing in cages where they are not actually located.
  - o Try reversing the cable connections to the ports on the host interface card. In general, cable connections with longer chains of E8491's should be on lower host ports.
- Don't re-run setup too quickly.
  - o After the IO Libraries Setup program exits, it takes several seconds to clean up and unload itself from memory. If Setup is re-run before this process is complete, you may see an error message or find that the re-installation does not behave as expected.
  - o Be sure to wait until the 'InstallShield Wizard' box on the Windows task bar has disappeared before attempting to re-run the IO Libraries Setup.
- Installing on dual boot systems can cause problems.
  - o Installing the IO Libraries on dual boot systems that share a common 'Program Files' directory between two operating systems is not recommended and may cause problems.
  - o If the IO Libraries are installed in the same directory for both operating systems (e.g. 'Program FilesAgilentIO Libraries'), files for one OS may overwrite files for the other OS. InstallShield uses a directory under 'Program Files' to log the name and location of files for later un-installation as well as the components that are currently installed. Uninstalling or modifying an installation on one OS may affect the files for the other OS rather that the currently booted OS, even if these files are installed in different directories.
- After installation on Windows 95 and Windows 98, Windows may fail to boot.
  - o When adding paths to the PATH statement in Autoexec.bat, InstallShield does not recognize '@PATH' as a path statement. It will create a second 'SET PATH' statement. If there is a second PATH statement, it will replace the existing Windows PATH and end up removing the Windows directories from the PATH.
  - o If Windows fails to boot with a message 'Cannot find WIN.COM, unable to continue loading Windows', you will need to edit the additional PATH statement in Autoexec.bat so the Windows directories are again included in the PATH.
    - ▪ From the DOS prompt type: 'c:windowscommandedit c:autoexec.bat'. (Substitute the actual paths if you have a non-standard installation.)

- Find the last 'SET PATH=...' statement and insert '%path%;' immediately after the equals sign. (e.g. 'SET PATH=%path%;...' and don't forget the semi-colon separator.)
- Save the modified file and reboot. Windows should now boot normally.
- If the E8491 is very busy and an IEEE 1394 bus reset occurs, it may become unresponsive and require a reset of the E8491 and/or a reboot of the computer.
  - This problem can occur when another 1394 device is added or removed while the E8491 is busy.

**Contact Support**

The Agilent IO Libraries support web page is:

http://www.agilent.com/find/iolib

For Telephone support:

- In the US, the phone number for support is 800-452-4844.
- In the Canada, the phone number for support is 877-894-4414.
- Outside the US and Canada, contact your country's Agilent support organization. A list of contact information for other countries is available on the Agilent website at: http://www.agilent.com/find/assist.

**Downloading the Latest Version of the Agilent IO Libraries**

You can download the latest released version of the Agilent IO Libraries from:

http://www.agilent.com/find/iolib

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