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# EX2500

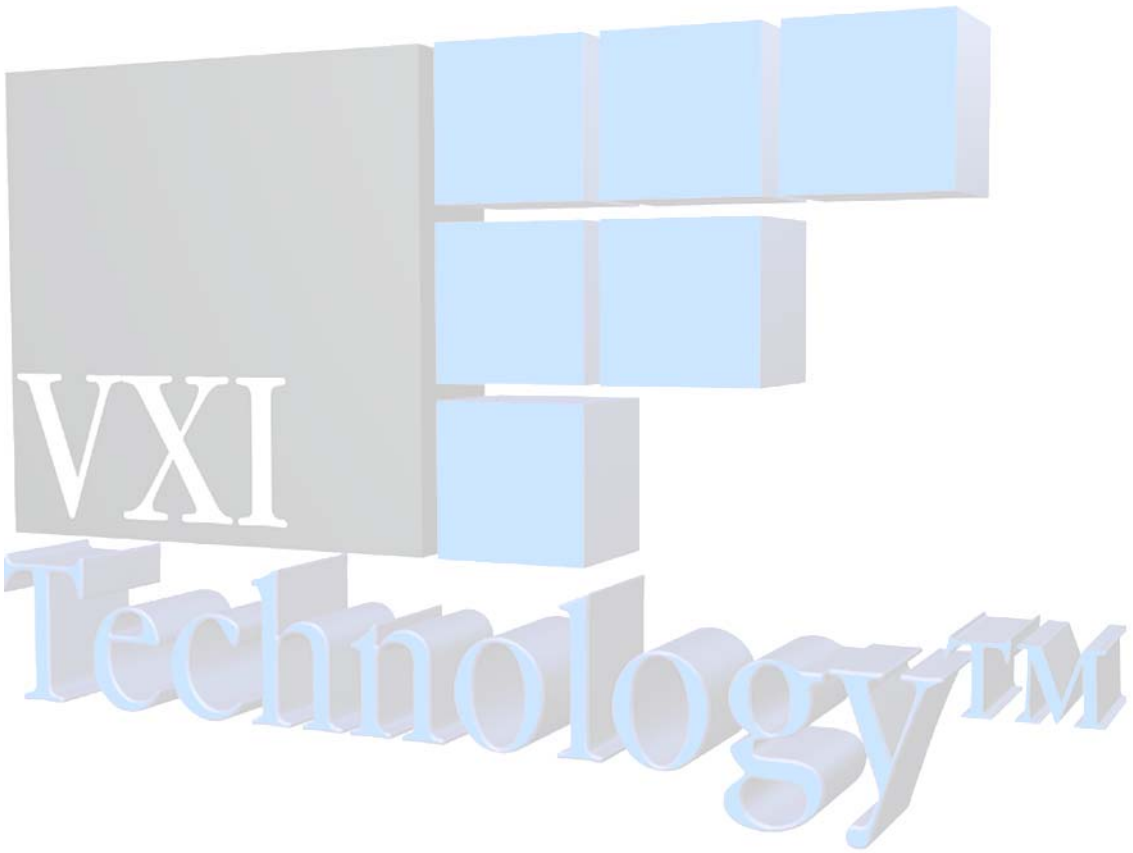
## LXI-VXI SLOT 0 INTERFACE

## QUICK START GUIDE

**P/N: 82-0115-001**
**Rev: May 23, 2006**

**VXI Technology, Inc.**

**2031 Main Street**
**Irvine, CA 92614-6509**
**(949) 955-1894**


VXI
Technology™

# TABLE OF CONTENTS

**INTRODUCTION**
Certification ..... 4
Warranty ..... 4
Limitation of Warranty ..... 4
Restricted Rights Legend ..... 4
DECLARATION OF CONFORMITY ..... 5
GENERAL SAFETY INSTRUCTIONS ..... 6
Terms and Symbols ..... 6
Warnings ..... 7
SUPPORT RESOURCES ..... 8
**SECTION 1 ..... 9**
OVERVIEW ..... 9
Introduction ..... 9
VISA Requirements ..... 9
Agilent VISA as Primary VISA Installation Path ..... 9
Agilent VISA as Secondary VISA Installation Path ..... 9
AGILENT VISA AS PRIMARY VISA ..... 10
VISA Installation ..... 10
EX2500 Driver Installation ..... 14
Add the EX2500 Interface to Agilent VISA ..... 16
AGILENT VISA AS SECONDARY VISA ..... 21
VISA Installation ..... 21
EX2500 Driver Installation ..... 25
Configure NI-VISA for Use with Agilent VISA ..... 27
Add the EX2500 Interface to Agilent VISA ..... 28
Web Interface ..... 33
Front Panel Indicators ..... 34

## CERTIFICATION

VXI Technology, Inc. (VTI) certifies that this product met its published specifications at the time of shipment from the factory. VTI further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (formerly National Bureau of Standards), to the extent allowed by that organization's calibration facility, and to the calibration facilities of other International Standards Organization members.

## WARRANTY

The product referred to herein is warranted against defects in material and workmanship for a period of three years from the receipt date of the product at customer's facility. The sole and exclusive remedy for breach of any warranty concerning these goods shall be repair or replacement of defective parts, or a refund of the purchase price, to be determined at the option of VTI.

For warranty service or repair, this product must be returned to a VXI Technology authorized service center. The product shall be shipped prepaid to VTI and VTI shall prepay all returns of the product to the buyer. However, the buyer shall pay all shipping charges, duties, and taxes for products returned to VTI from another country.

VTI warrants that its software and firmware designated by VTI for use with a product will execute its programming when properly installed on that product. VTI does not however warrant that the operation of the product, or software, or firmware will be uninterrupted or error free.

## LIMITATION OF WARRANTY

The warranty shall not apply to defects resulting from improper or inadequate maintenance by the buyer, buyer-supplied products or interfacing, unauthorized modification or misuse, operation outside the environmental specifications for the product, or improper site preparation or maintenance.

VXI Technology, Inc. shall not be liable for injury to property other than the goods themselves. Other than the limited warranty stated above, VXI Technology, Inc. makes no other warranties, express or implied, with respect to the quality of product beyond the description of the goods on the face of the contract. VTI specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

## RESTRICTED RIGHTS LEGEND

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subdivision (b)(3)(ii) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013.

VXI Technology, Inc.
2031 Main Street
Irvine, CA 92614-6509 U.S.A.

# DECLARATION OF CONFORMITY

**Declaration of Conformity According to ISO/IEC Guide 22 and EN 45014**

| | |
|---|---|
| **MANUFACTURER'S NAME** | VXI Technology, Inc. |
| **MANUFACTURER'S ADDRESS** | 2031 Main Street<br>Irvine, California 92614-6509 |
| **PRODUCT NAME** | LXI-VXI Slot 0 |
| **MODEL NUMBER(S)** | EX2500 |
| **PRODUCT OPTIONS** | All |
| **PRODUCT CONFIGURATIONS** | All |

*VXI Technology, Inc. declares that the aforementioned product conforms to the requirements of the* Low Voltage Directive 73/23/EEC *and the* EMC Directive 89/366/EEC *(inclusive* 93/68/EEC*) and carries the "CE" mark accordingly. The product has been designed and manufactured according to the following specifications:*

CE Mark Pending

| | |
|---|---|
| **SAFETY** | EN61010 (2001) |
| **EMC** | EN61326 (1997 w/A1:98) Class A<br>CISPR 22 (1997) Class A<br>VCCI (April 2000) Class A<br>ICES-003 Class A (ANSI C63.4 1992)<br>AS/NZS 3548 (w/A1 & A2:97) Class A<br>FCC Part 15 Subpart B Class A<br>EN 61010-1:2001 |

*I hereby declare that the aforementioned product has been designed to be in compliance with the relevant sections of the specifications listed above as well as complying with all essential requirements of the Low Voltage Directive.*

**May 2006**

CE

***Steve Mauga, QA Manager***

# GENERAL SAFETY INSTRUCTIONS

Review the following safety precautions to avoid bodily injury and/or damage to the product. These precautions must be observed during all phases of operation or service of this product. Failure to comply with these precautions, or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture, and intended use of the product.

***Service should only be performed by qualified personnel.***

## TERMS AND SYMBOLS

These terms may appear in this manual:

**WARNING** Indicates that a procedure or condition may cause bodily injury or death.

**CAUTION** Indicates that a procedure or condition could possibly cause damage to equipment or loss of data.

These symbols may appear on the product:



**ATTENTION -** Important safety instructions



Frame or chassis ground



Indicates that the product was manufactured after August 13, 2005. This mark is placed in accordance with *EN 50419, Marking of electrical and electronic equipment in accordance with Article 11(2) of Directive 2002/96/EC (WEEE).* End-of-life product can be returned to VTI by obtaining an RMA number. Fees for take-back and recycling will apply if not prohibited by national law.

## WARNINGS

Follow these precautions to avoid injury or damage to the product:

**Connect Cables Properly**

To avoid damage and potential loss of phone service, ensure that the RJ-45 connector on the front panel of the EX2500 is not connected to a standard telephone jack. This should only be connected to a network interface card, network router, or network hub.

**Avoid Electric Shock**

To avoid electric shock or fire hazard, do not operate this product with the covers removed. Do not connect or disconnect any cable, probes, test leads, etc. while they are connected to a voltage source. Remove all power and unplug unit before performing any service. ***Service should only be performed by qualified personnel.***

**Ground the Product**

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground.

**Operating Conditions**

To avoid injury, electric shock or fire hazard:

- Do not operate in wet or damp conditions.
- Do not operate in an explosive atmosphere.
- Operate or store only in specified temperature range.
- Provide proper clearance for product ventilation to prevent overheating.
- DO NOT operate if any damage to this product is suspected. ***Product should be inspected or serviced only by qualified personnel.***

**Class 1 Laser Product**

The SFP module in this instrument is a Class 1 Laser device. Do not attempt to disassemble this module. In the interest of safety, this equipment should only be serviced by an authorized VXI Technology representative. Please observe the following safety precautions:

- Do not open the unit
- If the unit requires service, contact VXI Technology
- Ensure proper use by reading and following the instructions carefully
- Do not attempt to make any adjustments to the unit



**Improper Use**

The operator of this instrument is advised that if the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.
Conformity is checked by inspection.

# SUPPORT RESOURCES

Support resources for this product are available on the Internet and at VXI Technology customer support centers.




**VXI Technology**
**World Headquarters**

VXI Technology, Inc.
2031 Main Street
Irvine, CA 92614-6509

Phone: (949) 955-1894
Fax: (949) 955-3041

**VXI Technology**
**Cleveland Instrument Division**

5425 Warner Road
Suite 13
Valley View, OH 44125

Phone: (216) 447-8950
Fax: (216) 447-8951

**VXI Technology**
**Lake Stevens Instrument Division**

VXI Technology, Inc.
1924 - 203 Bickford
Snohomish, WA 98290

Phone: (425) 212-2285
Fax: (425) 212-2289

**Technical Support**

Phone: (949) 955-1894
Fax: (949) 955-3041
E-mail: support@vxitech.com

*Visit http://www.vxitech.com for worldwide support sites and service plan information.*

# SECTION 1

# OVERVIEW

## INTRODUCTION

The EX2500 driver was written to be used with Agilent®VISA and, therefore, requires this software to be installed to function properly. Two software installation paths should be considered by users when installing the required EX2500 software:

- Use with Agilent VISA software, where Agilent VISA is installed as the primary VISA.
- Use with existing National Instruments©VISA (NI-VISA) software, which requires Agilent VISA to be installed as the secondary VISA and NI-VISA to be configured properly to support Agilent VISA.

| | |
|---|---|
| **NOTE** | The screenshots provided in this section were captured on a Windows®XP® system using specific VISA (Virtual Instrument Software Architecture) installations. As such, it is possible that the images provided in this guide may not be identical to the images seen during a specific installation. |

## VISA REQUIREMENTS

In order to work properly in a test system, the EX2500 requires Agilent VISA to be installed on the host PC. Agilent VISA may be installed as either the primary VISA, or may be installed secondary to NI-VISA. The EX2500 is compatible with the following VISA software revisions:

1) Agilent VISA Revision 14.1 or later
2) NI-VISA Revision 2.6 or later for guaranteed operation (VXI Technology, Inc., however, recommends using revision 3.4 or later)

### *Agilent VISA as Primary VISA Installation Path*

If Agilent VISA revision 14.1 or later is installed on the PC that will be connected to the EX2500, go to page 14. If a different version of Agilent VISA is installed on the host PC, go to page 10 to install revision 14.1. It is recommended that previous versions of Agilent VISA be removed before installing revision 14.1.

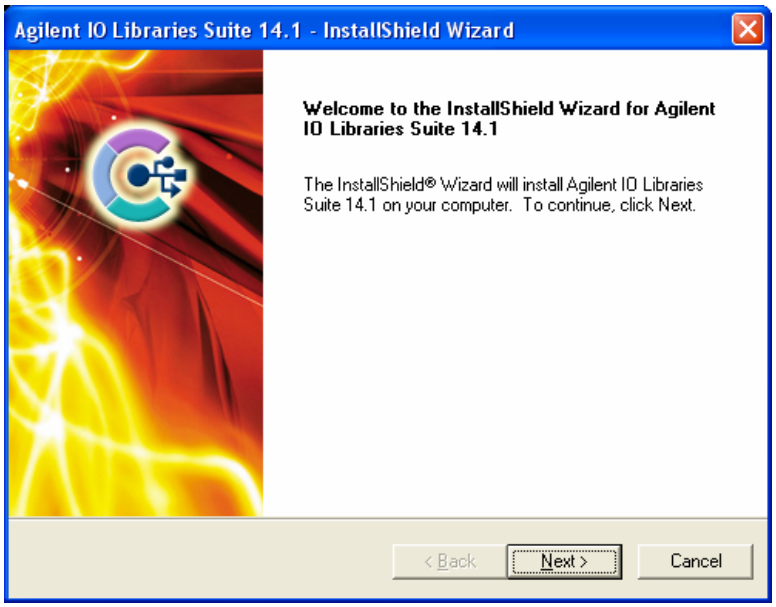
### *Agilent VISA as Secondary VISA Installation Path*

If NI-VISA revision 2.6 or later is installed on the host PC, go to page 21. If the version of NI-VISA installed on the host PC is lower than revision 2.6, please install an appropriate version of NI-VISA and then go to page 21.

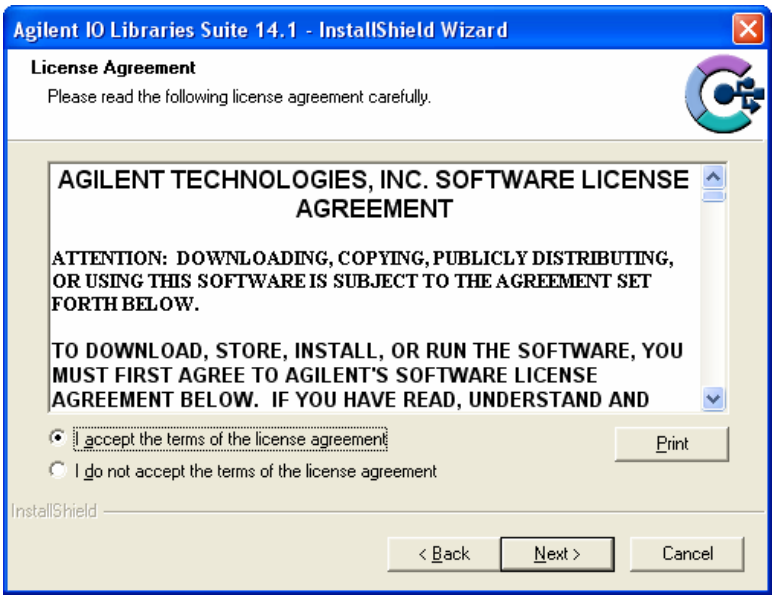
# AGILENT VISA AS PRIMARY VISA

## VISA INSTALLATION

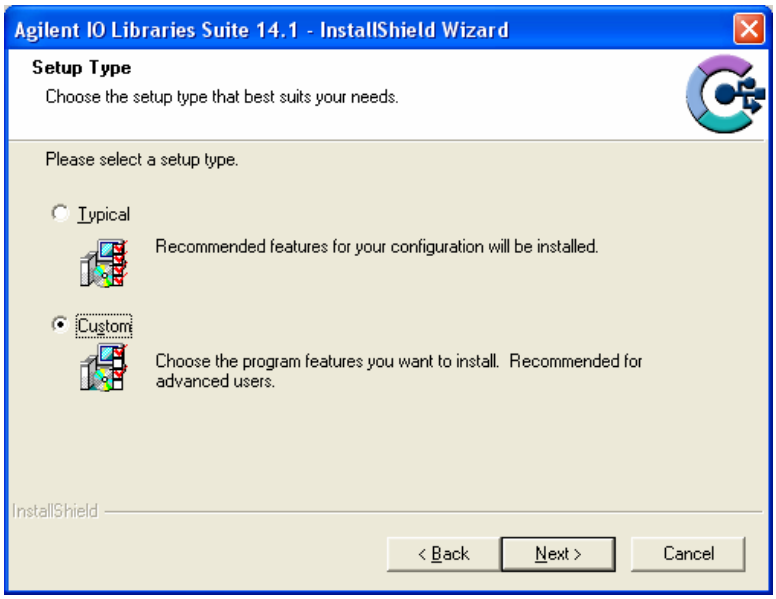
1) Start installation of Agilent VISA. From the VXI Technology, Inc. Distribution CD, run the program ***iolibs_suite_14_1_8016_0.exe*** (or later)**.** At the **Welcome** screen, click the *Next* button.



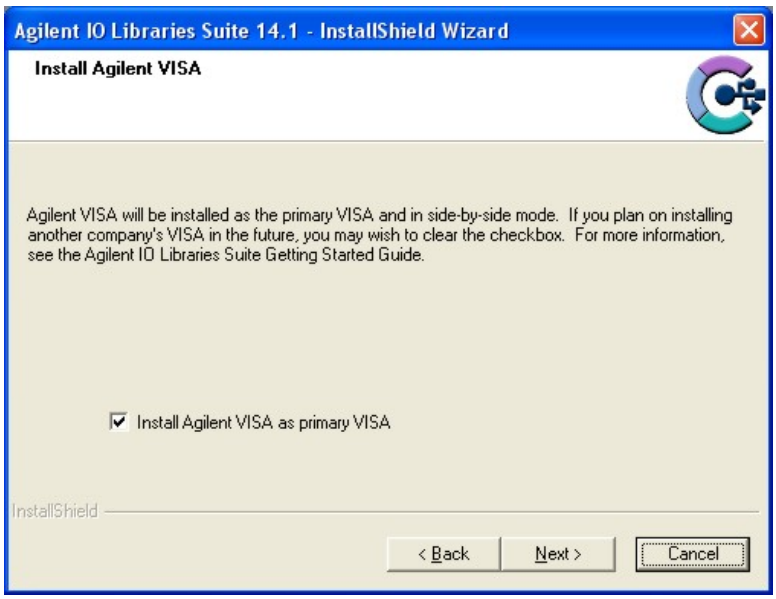

2) At the **License Agreement** dialog box, click on the "accept" radio button to accept the license agreement, and then click *Next* to continue. If this is not done, installation will cease.



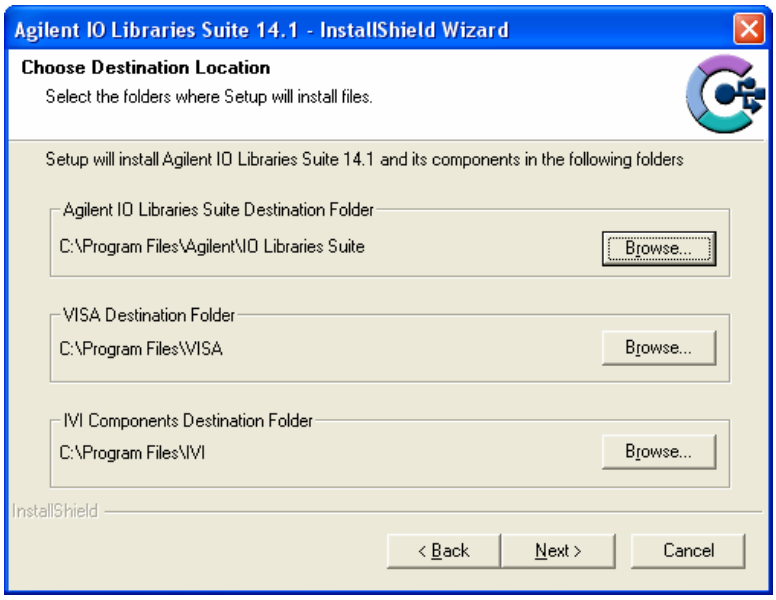
3) At the **Setup Type** dialog box, select the "Custom" radio button, then click the *Next* button.



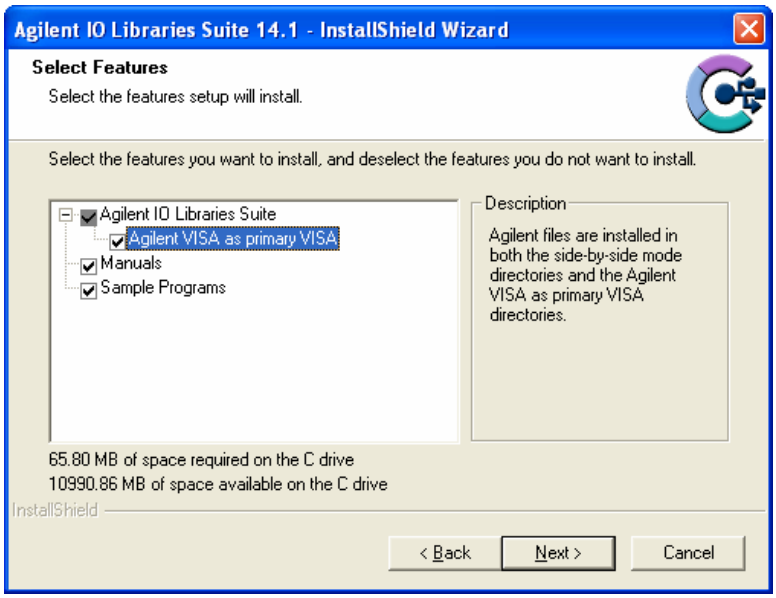

4) At the **Install Agilent VISA** dialog box, a prompt appears asking if Agilent VISA will be installed as the primary VISA. Ensure that "Install Agilent VISA as primary VISA" is selected, and then click the *Next* button.



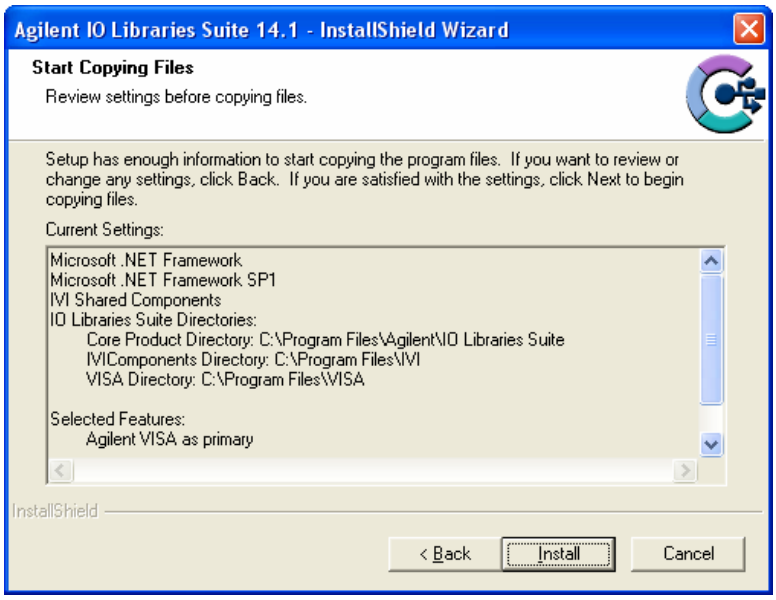
5) No changes are required at the **Choose Destination Location** dialog box. Click the *Next* button to continue.



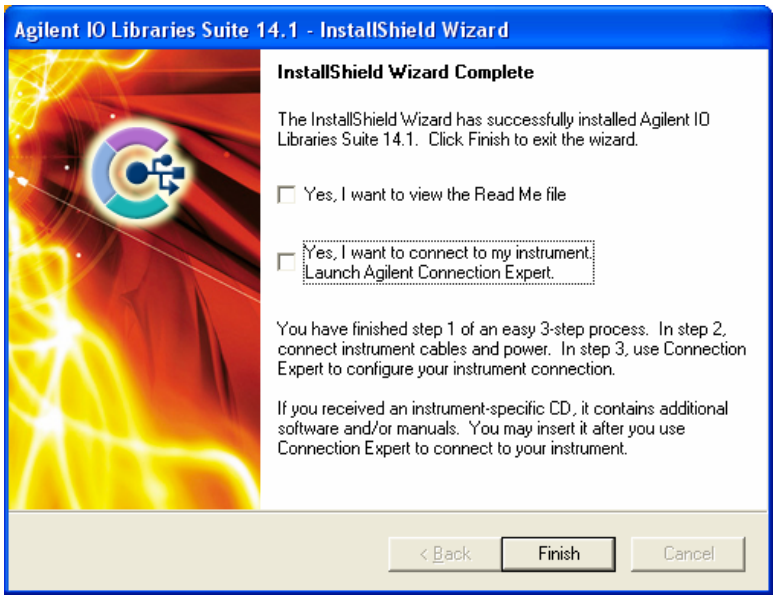

6) At the **Select Features** dialog box, a summary of features that will be installed is provided. Make certain that the "Agilent VISA as primary VISA" check box is selected. Once this has been verified, click the *Next* button to continue.



7) Next, the **Start Copying Files** dialog box will appear. To begin software installation, click the *Install* button.

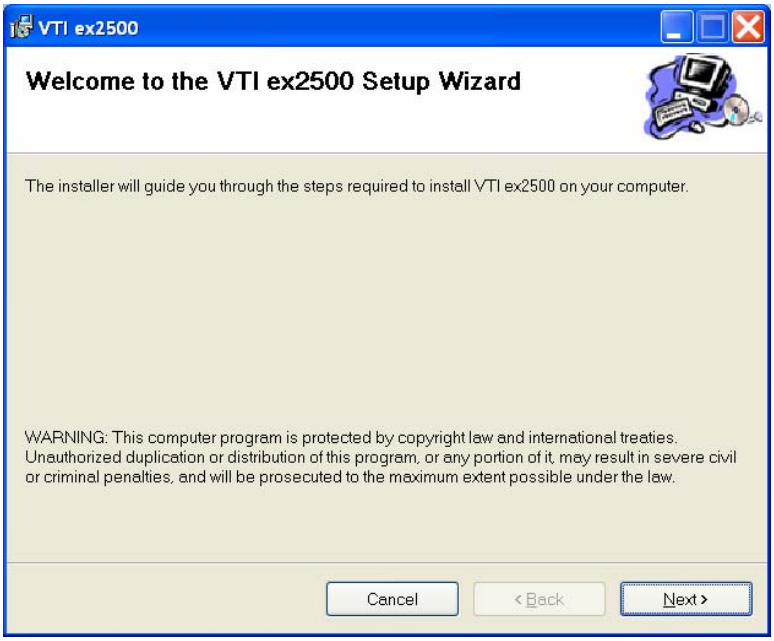



8) Once Agilent VISA installation is complete, the **InstallShield Wizard Complete** dialog box will appear. As the EX2500 driver must be installed before the Agilent Connection Expert can be used, ensure that both check boxes on this dialog box are not selected. Click the *Finish* button to complete VISA installation.

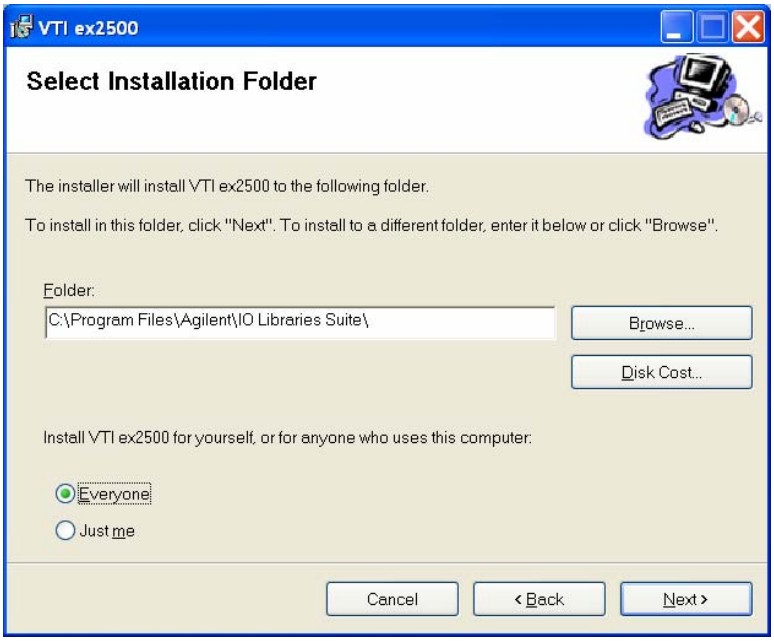


## EX2500 DRIVER INSTALLATION

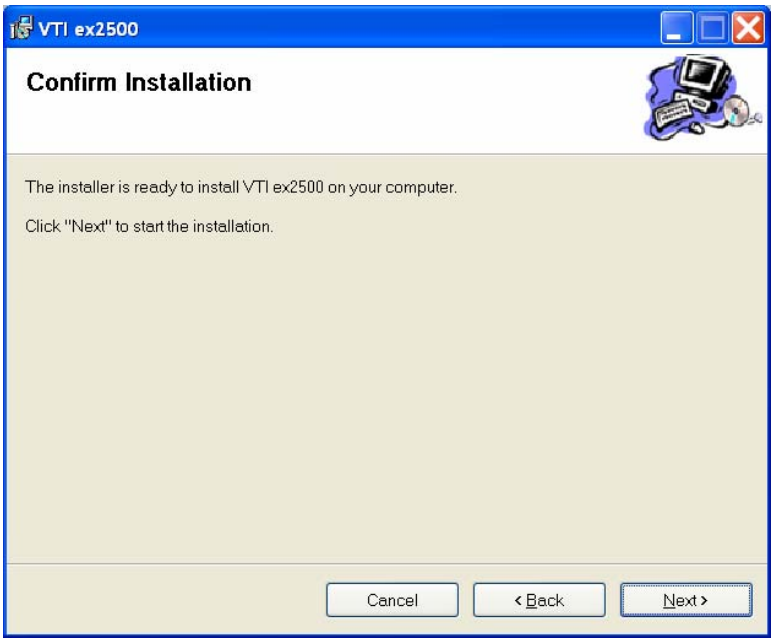
1) From the VXI*plug&play* Drivers and Product Manuals CD, run the program ***EX2500_Driver_R1p0p0.msi*** (or later). At the **Welcome** dialog box, click the *Next* button.



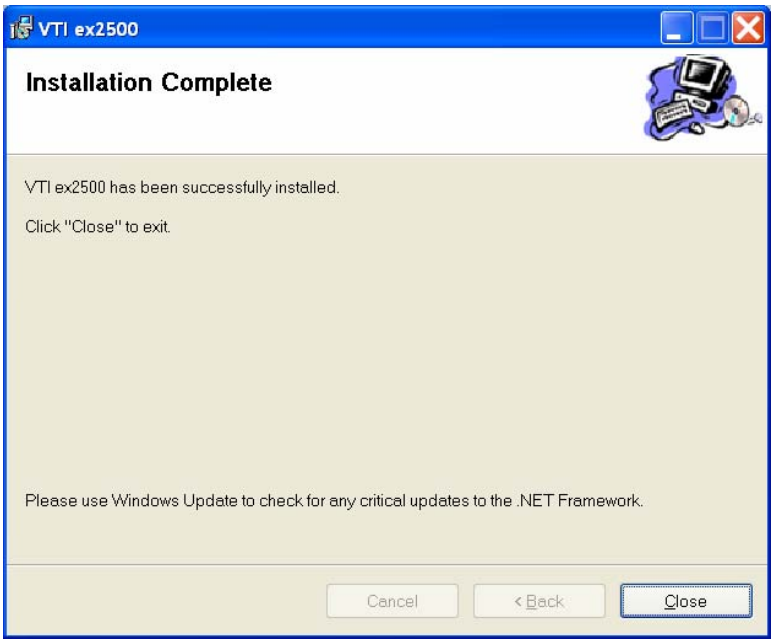

2) From the **Select Installation Folder** dialog box, select an appropriate radio button according to host PC demands. No changes are required in the **Folder** field. Click the *Next* button to proceed.



3) At the **Confirm Installation** dialog box, click the *Next* button.




4) Click the close button and continue to *Add the EX2500 Interface to Agilent VISA.*

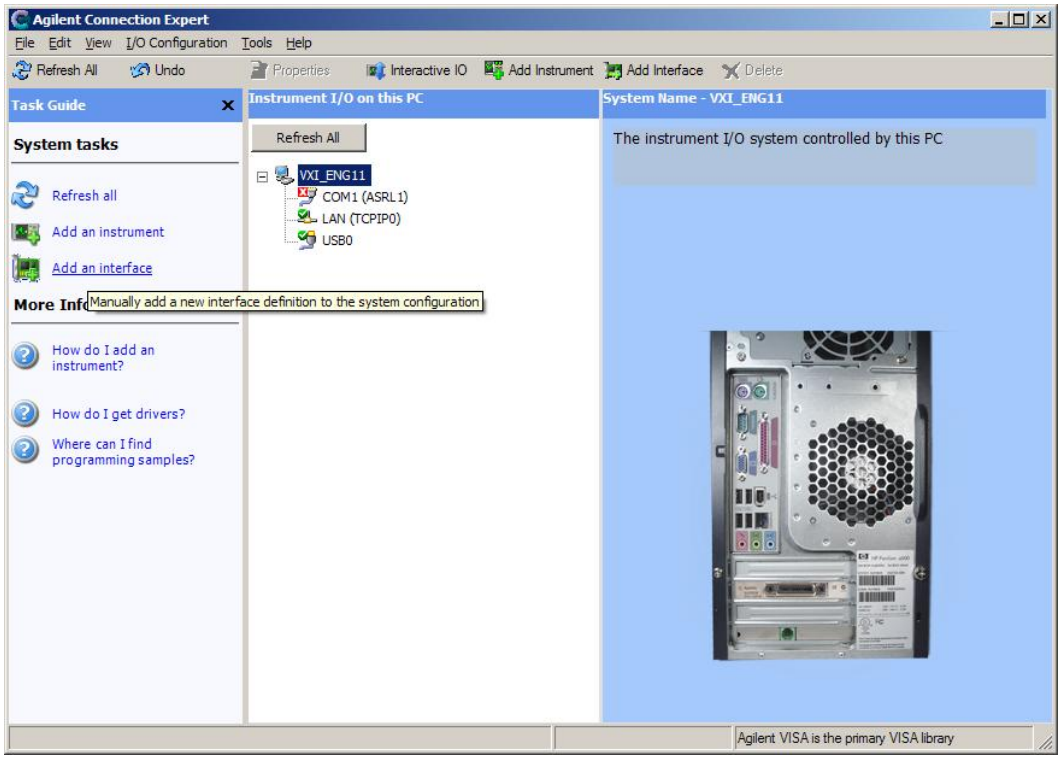


## ADD THE EX2500 INTERFACE TO AGILENT VISA

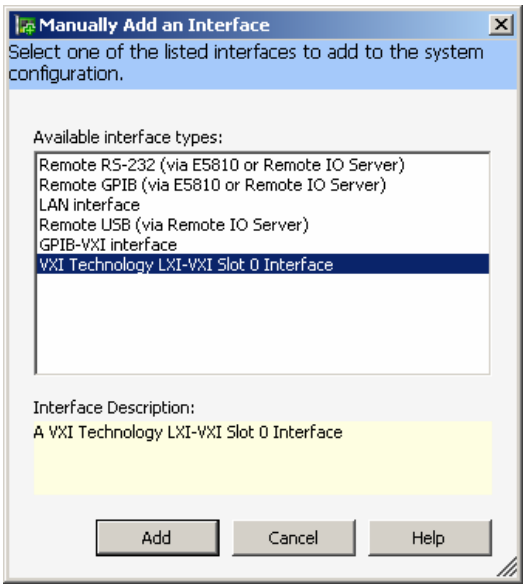
1) Open Agilent's Connection Expert© from the Start Menu via the path Start > All Programs > Agilent IO Libraries Suite > Agilent Connection Expert.



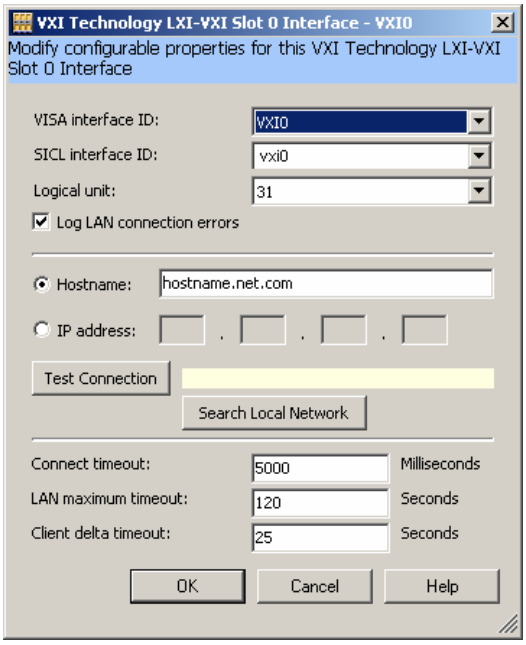

2) From the Connection Expert main window, click the "Add an interface" link in the **Task Guide** field.



3) From the **Manually Add an Interface** dialog box, select "VXI Technology LXI-VXI Slot 0 Interface" from the list and then click *Add*.



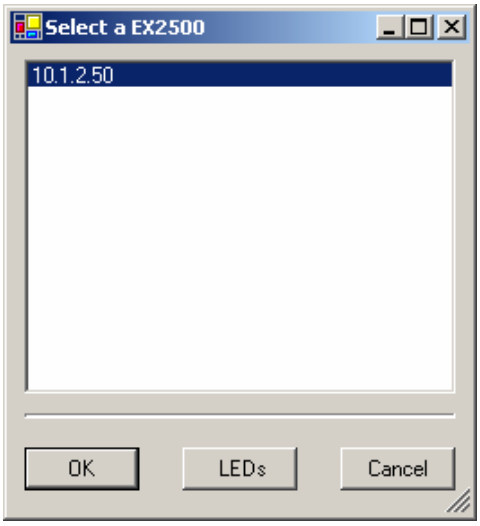

4) A configuration window will appear where a module is assigned a VISA interface ID which is then mapped to the device's IP address. There must be a unique VISA interface ID for each interface defined in a system. NOTE: if NI-VISA is installed, a VISA Interface ID other than VXI0 must be assigned, as NI-VISA reserves VXI0 for MXI-2 devices (whether a MXI-2 device is installed or not). To automatically search for the module, click on *Search Local Network* on the configuration window. This software utility will search for EX2500s. If the EX2500 is connected directly to the Network Interface Card (NIC) in the host system, the EX2500 software will automatically assign a link-local IP address based on the MAC address of the module. If the module is connected to a LAN that is DHCP enabled, the DHCP server will assign an IP address to the module. To determine if a LAN is DHCP enabled, please contact your Network Administrator.



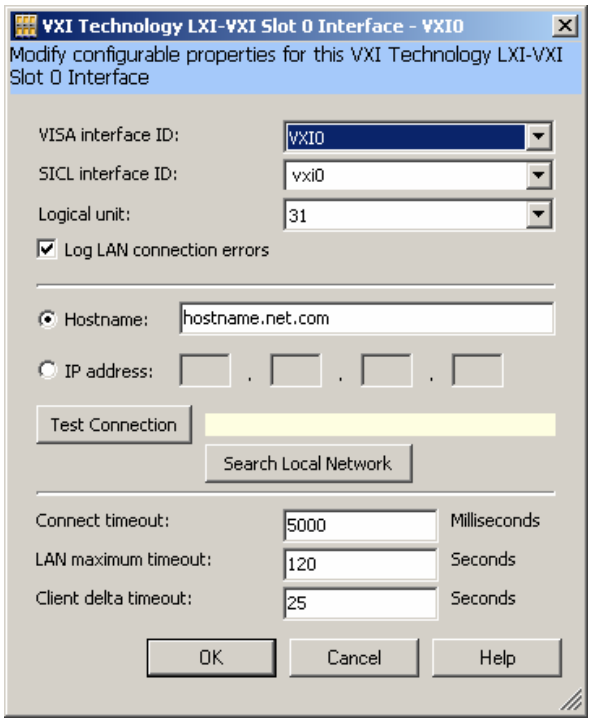
**NOTE** On PCs running Windows XP, the Windows Firewall utility may try to block Connection Expert from connecting to the EX2500. To avoid blocking multiple connections, it may be desirable to turn off Windows Firewall. Refer to Windows Help for more information.




5) Connection Expert will display the IP address of all EX2500s discovered on the network. Clicking *LEDs* runs a test on the LEDs of the highlighted EX2500 causing the Link Status LEDs to blink in a "leap-frog pattern". An additional dialog box will appear asking if this is the correct module. It this is the module of interest, click *OK* to establish the highlighted EX2500 as the target module.

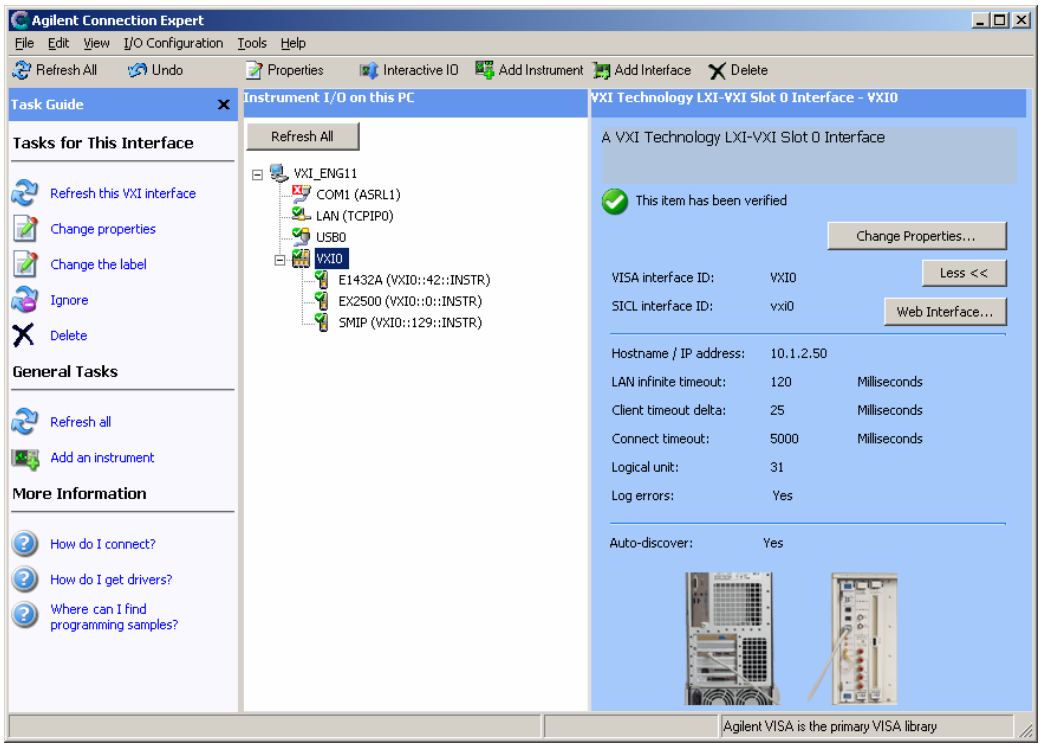


The **IP address** field will now contain the IP of the target EX2500. Clicking *OK* assigns the VISA interface ID shown to the target EX2500.




| | |
|---|---|
| **NOTE** | This process should be repeated for each EX2500 included in a test system. It is imperative that each EX2500 module have a unique VISA interface ID.<br><br>If a MXI-2 interface will be installed into a mainframe after an EX2500 has been installed, the EX2500 should have its VISA interface ID reassigned if its ID is VXI0. If this is not done, it will cause the I/O software to perform improperly and make accessing the EX2500 impossible. |

6) The Slot 0 interface to the EX2500 should now appear in the **Instrument I/O on this PC** field. The adjacent field contains buttons that allow for EX2500 properties to be changed and provide access to the built-in web interface.

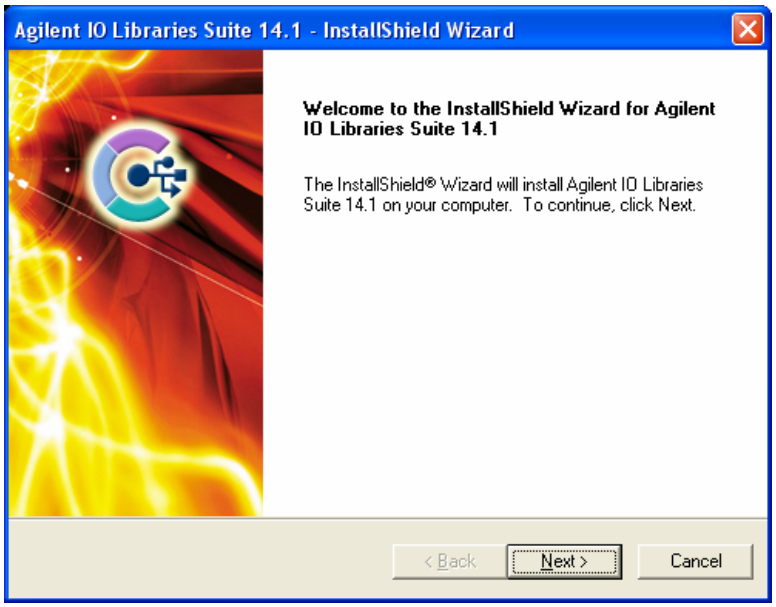



The EX2500 soft front panel and other programs should now be accessible.

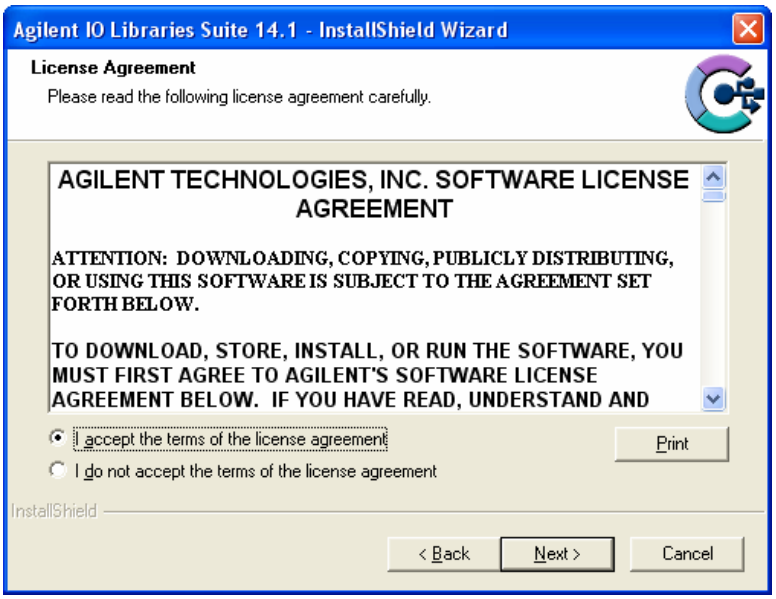
# AGILENT VISA AS SECONDARY VISA

## VISA INSTALLATION

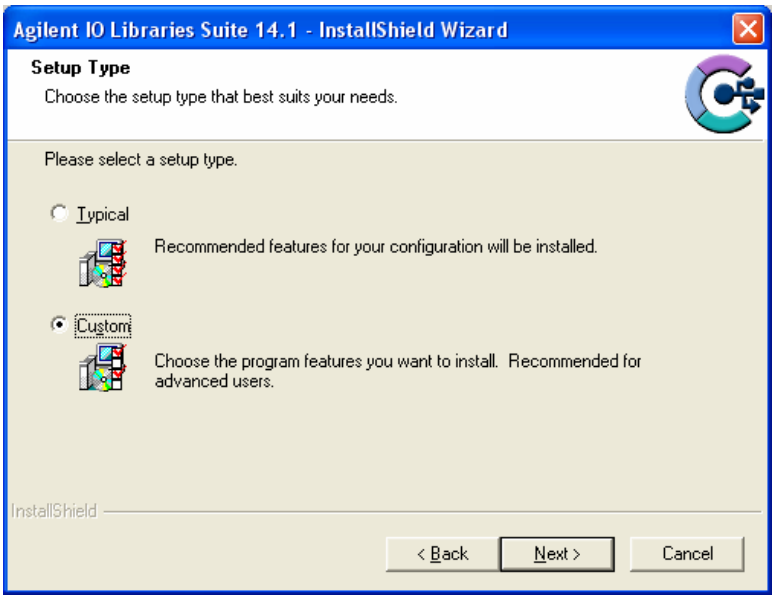
1) Start installation of Agilent VISA. From the VXI Technology, Inc. Distribution CD, run the program ***iolibs_suite_14_1_8016_0.exe*** (or later). At the **Welcome** screen, click the *Next* button.



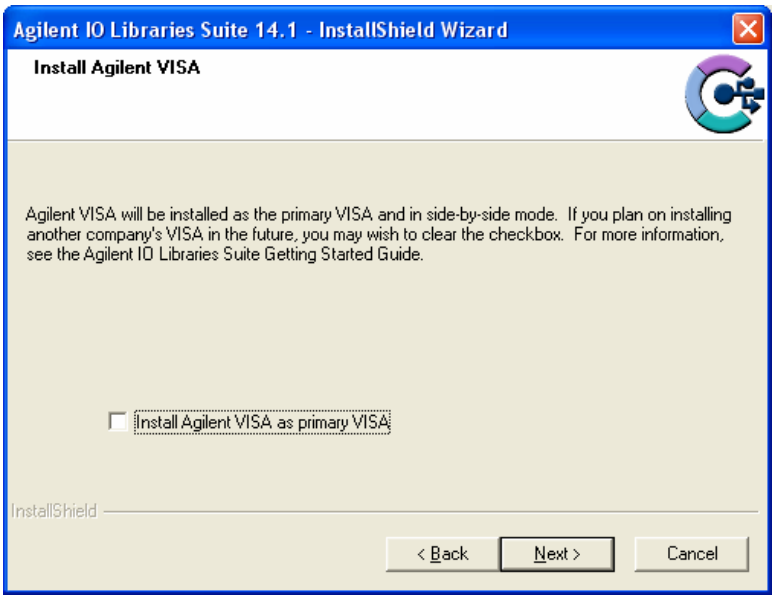

2) At the **License Agreement** dialog box, click on the "accept" radio button to accept the license agreement, and then click *Next* to continue. If this is not done, installation will cease.



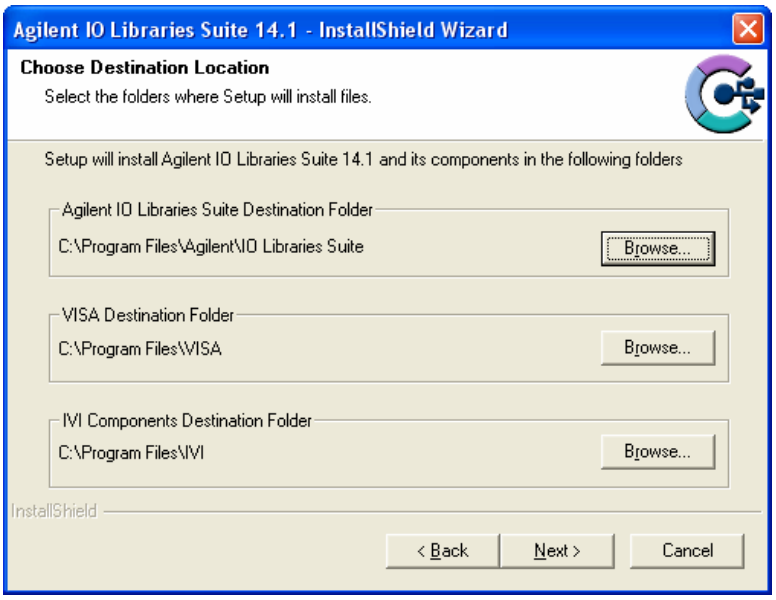
3) At the **Setup Type** dialog box, select the “Custom” radio button, then click the *Next* button.



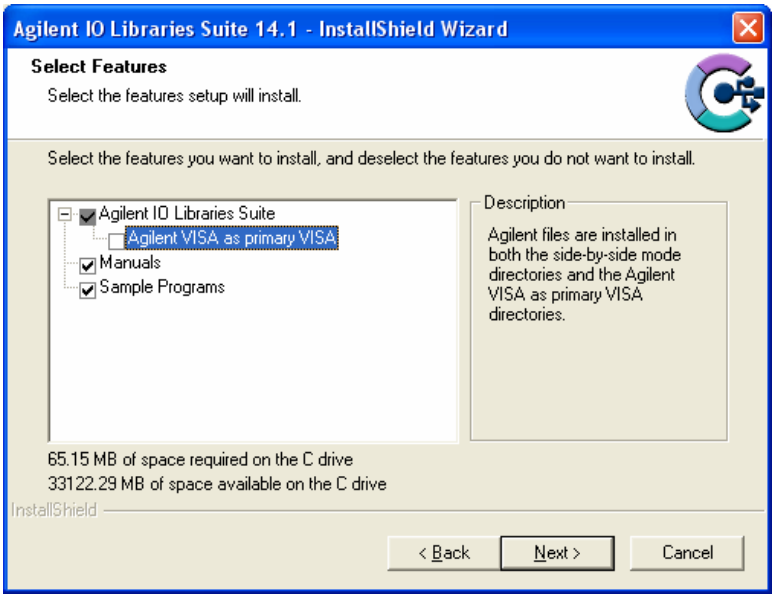

4) At the **Install Agilent VISA** dialog box, a prompt appears asking if Agilent VISA will be installed as the primary VISA. Ensure that “Install Agilent VISA as primary VISA” is not selected, and the click the *Next* button. The screenshot below is from a system with NI-VISA already installed.



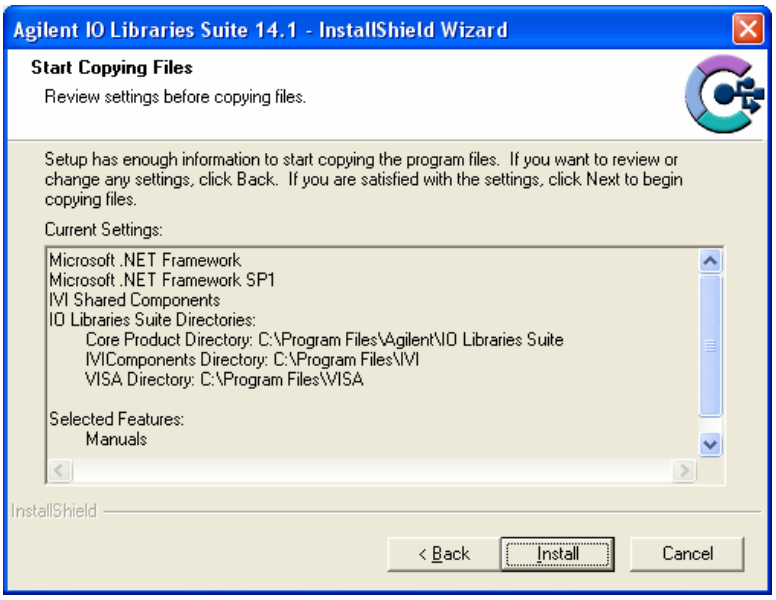
5) No changes are required at the **Choose Destination Location** dialog box. Click the *Next* button to continue.




6) At the **Select Features** dialog box, a summary of features that will be installed is provided. Ensure that the "Agilent VISA as primary VISA" check box is not selected.



7) Next, the **Start Copying Files** dialog box will appear. To begin software installation, click the *Install* button.

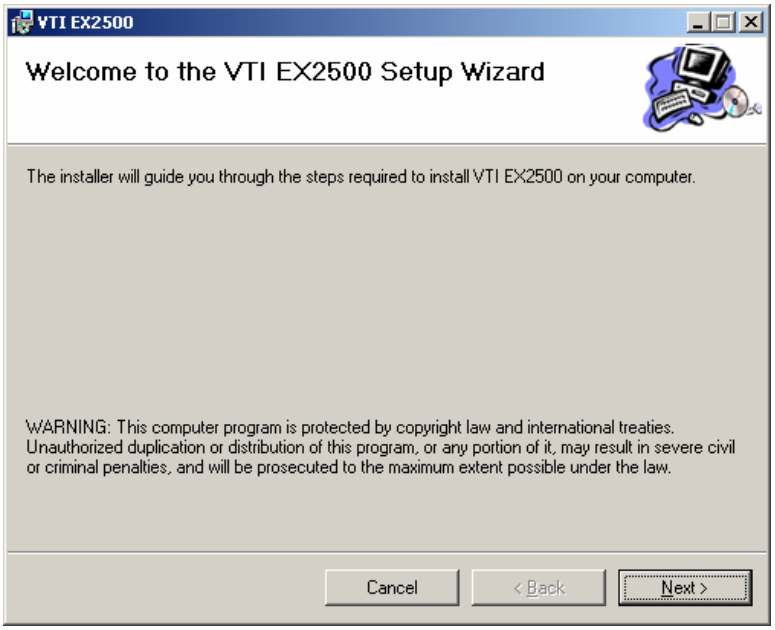



8) Once Agilent VISA installation is complete, the **InstallShield Wizard Complete** dialog box will appear. As the EX2500 driver must be installed before the Agilent Connection Expert can be used, ensure that both check boxes on this dialog box are no selected. Click the *Finish* button to complete VISA installation.

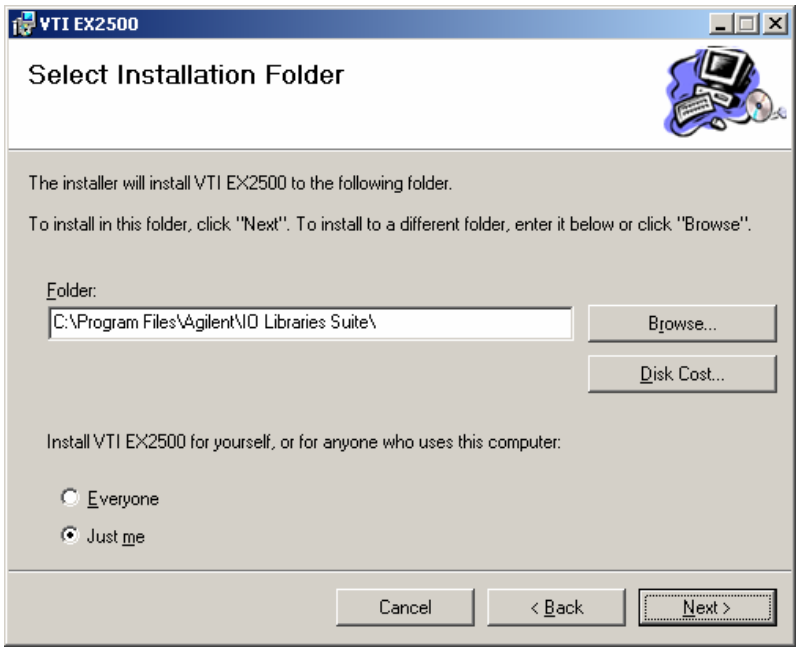


## EX2500 DRIVER INSTALLATION

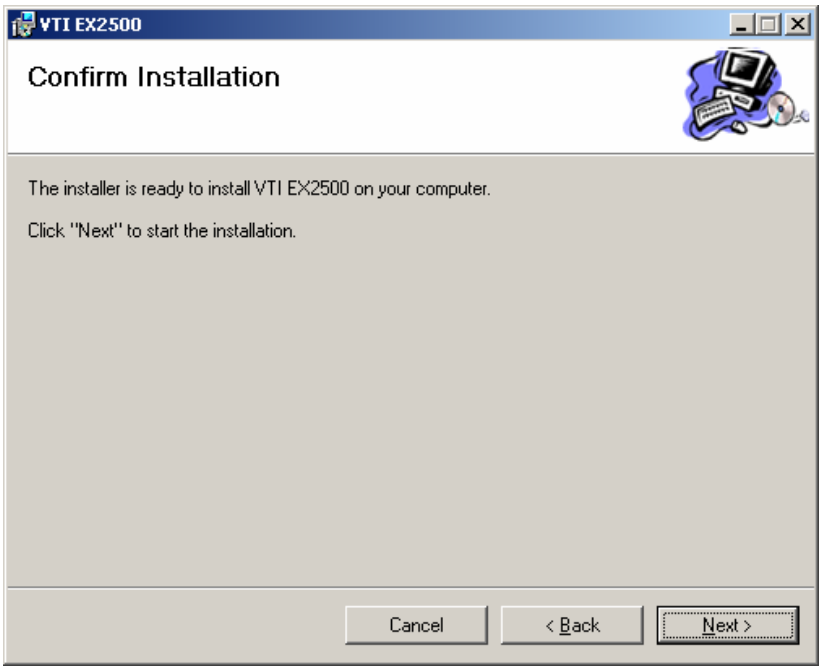
1) From the VXI*plug&play* Drivers and Product Manuals CD, run the program ***EX2500_Driver_R1p0p0.msi*** (or later)**.** At the **Welcome** dialog box, click the *Next* button.



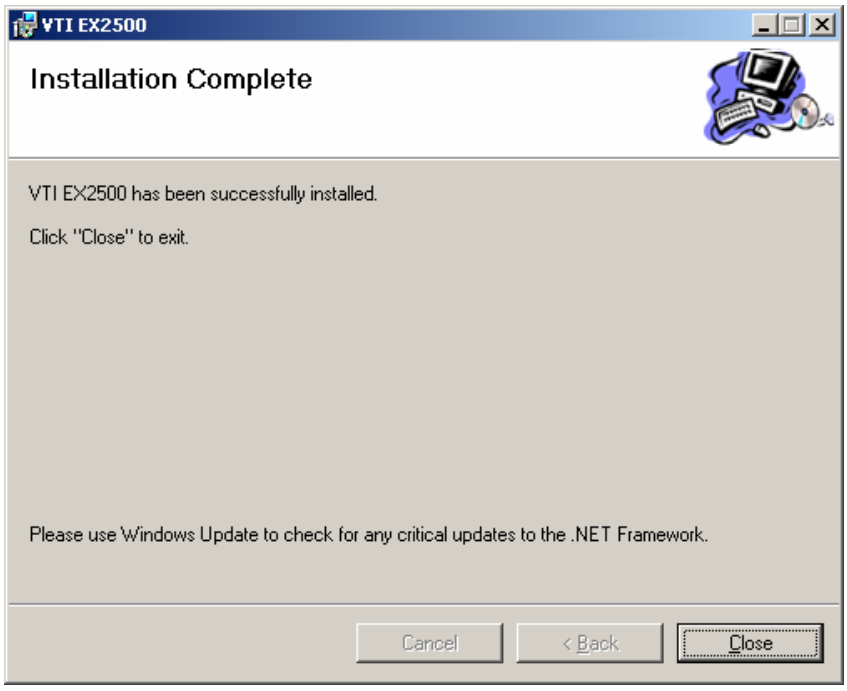

2) From the **Select Installation Folder** dialog box, select an appropriate radio button according to host PC demands. No changes are required in the **Folder** field. Click the *Next* button to proceed.



3) At the **Confirm Installation** dialog box, click the *Next* button.

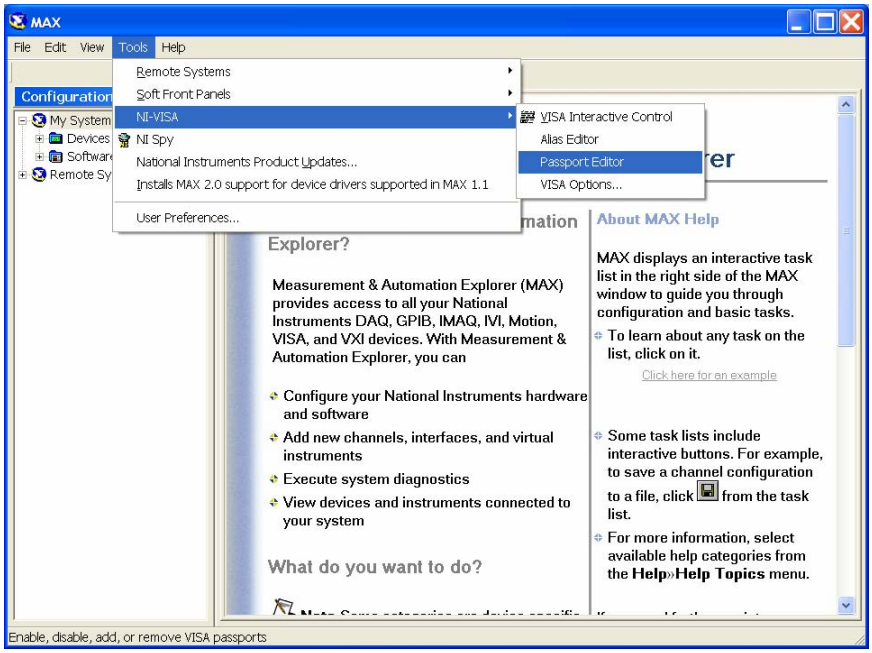



4) Click the close button and go to **Configure NI-VISA for Use with Agilent VISA**.

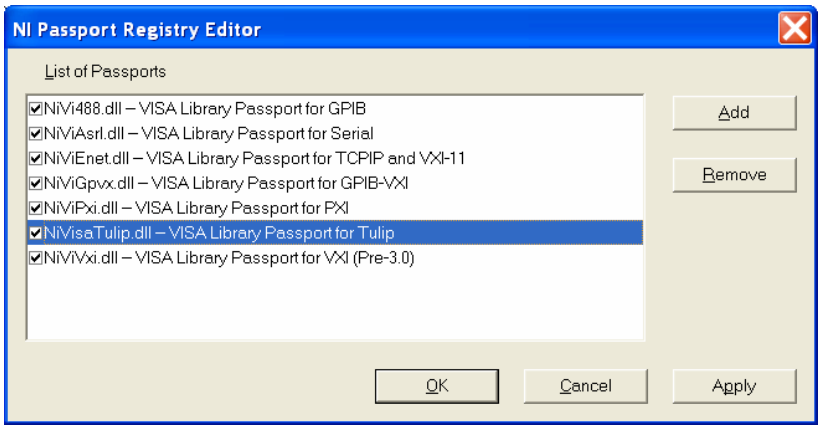


## CONFIGURE NI-VISA FOR USE WITH AGILENT VISA

1) Open NI's ***MAX***® (Measurement and Automation Explorer) software and go to ***Tools>NI-VISA>Passport Editor***. Note that in other versions of NI_VISA, Passport Editor may be found in another location. Please refer to the software's Help file for additional assistance.




2) When the **NI Passport Registry Editor** dialog box appears, ensure that the NiVisaTulip.dll check box is selected. Click *Apply*, and then click *OK*.




3) A warning will appear, indicating that MAX must be restarted for changes to take effect. Click *OK*, then close MAX.

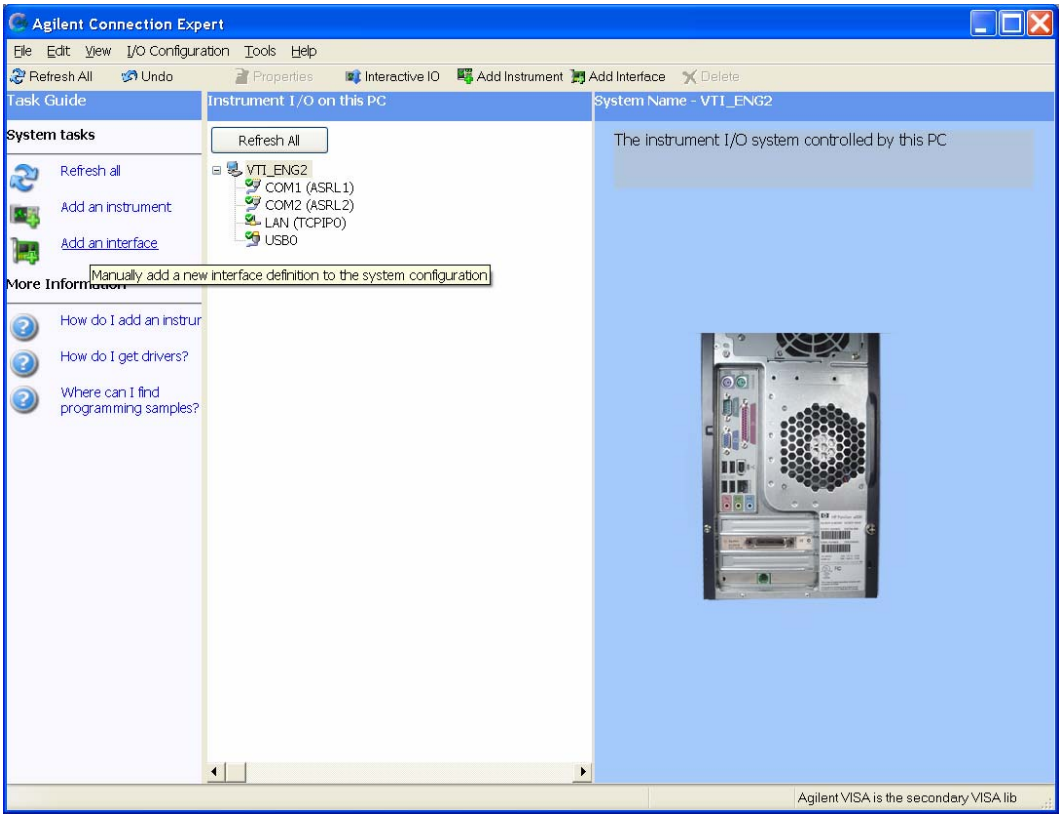


## ADD THE EX2500 INTERFACE TO AGILENT VISA

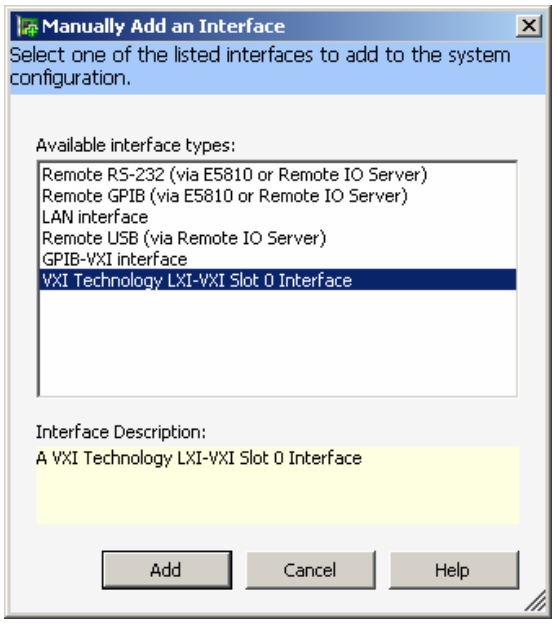
1) Open Agilent's Connection Expert© from the Start Menu via the path Start > All Programs > Agilent IO Libraries Suite > Agilent Connection Expert.



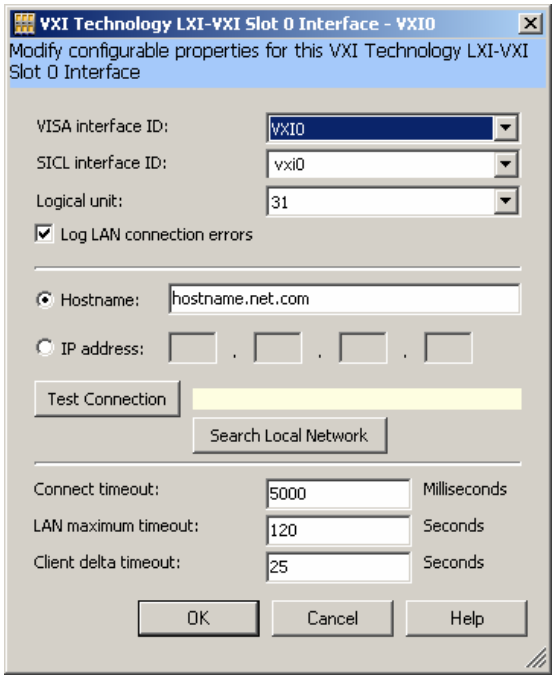

2) From the Connection Expert main window, click the "Add an interface" link in the **Task Guide** field.



3) From the **Manually Add an Interface** dialog box, select “VXI Technology LXI-VXI Slot 0 Interface” from the list and then click *Add*.



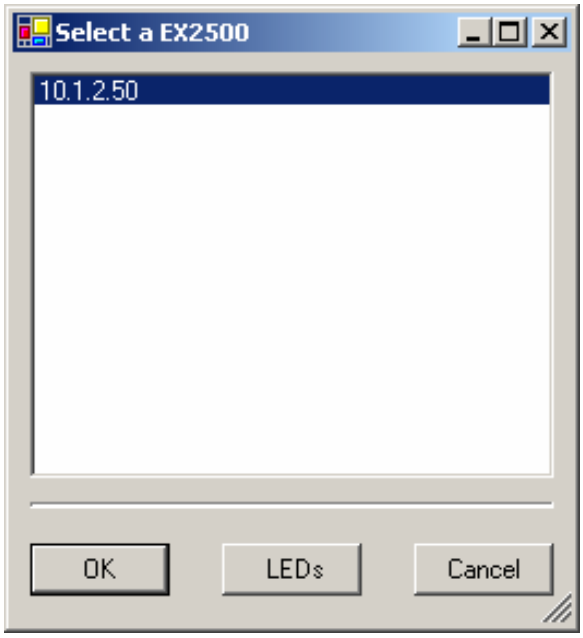

4) A configuration window will appear. In VXI systems, the VISA interface ID cannot conflict with any other existing VXI interface IDs (in multi-mainframe systems). To ensure that this does not occur, click on *Search Local Network* on the configuration window. This software utility will search for EX2500s. If the EX2500 is connected directly to the NIC in the host controller, the EX2500 software will automatically assign an IP address based on the MAC address of the module. If the module is connected to a LAN that is DHCP enabled, the DHCP server will assign an IP address to the module. To determine if a LAN is DHCP enabled, please contact your Network Administrator.



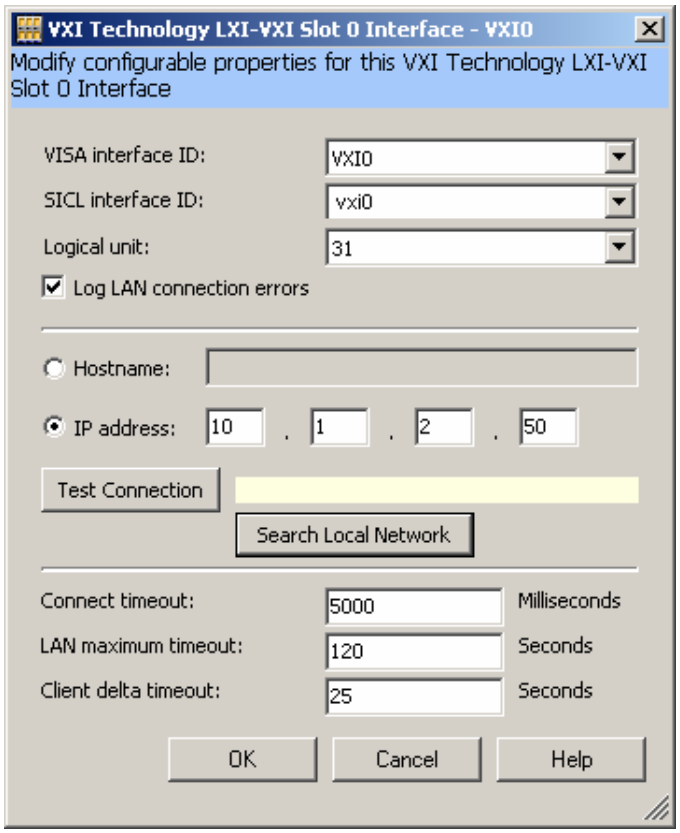
**NOTE** On PCs running Windows XP, the Windows Firewall utility may try to block Connection Expert from connecting to the EX2500. To avoid blocking multiple connections, it may be desirable to turn off Windows Firewall. Refer to Windows Help for more information.




5) Connection Expert will display the IP address of all EX2500s discovered on the network. Clicking *LEDs* runs a test on the LEDs of the highlighted EX2500 causing the MODE LEDs to blink in a "leap-frog pattern." An additional dialog box will appear asking if this is the correct module. It this is the module of interest, click *OK* to establish the highlighted EX2500 as the target module

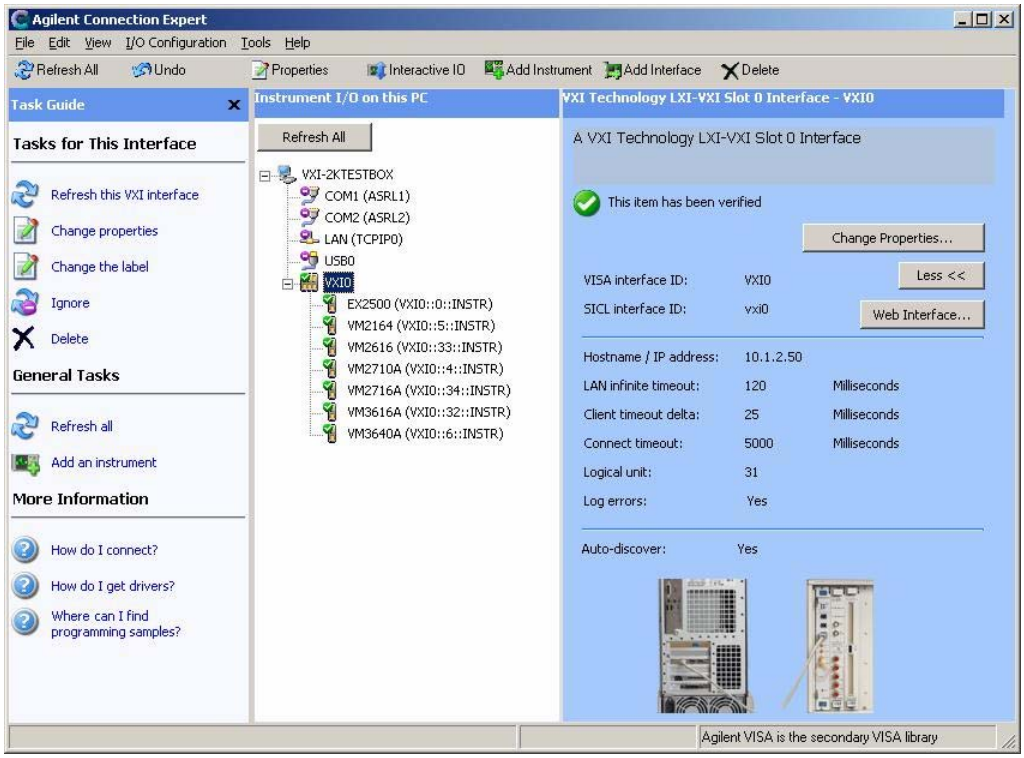


The **IP address** field will now contain the IP of the target EX2500. Clicking *OK* assigns the VISA interface ID shown to the target EX2500.




| | |
|---|---|
| **NOTE** | This process should be repeated for each EX2500 included in a test system. It is imperative that each EX2500 module have a unique VISA interface ID.<br><br>If a MXI-2 interface will be installed into a mainframe after an EX2500 has been installed, the EX2500 should have its VISA interface ID reassigned if its ID is VXI0. If this is not done, it will cause the I/O software to perform improperly and make accessing the EX2500 impossible. |

6) The Slot 0 interface to the EX2500 should now appear in the **Instrument I/O on this PC** field. The adjacent field contains buttons that allow for EX2500 properties to be changed and provide access to the EX2500's web interface.




The EX2500 soft front panel and other programs should now be accessible.

## WEB INTERFACE

The EX2500's embedded web interface can be accessed via standard Internet browsers, such as Internet Explorer©. Simply type the module's IP address (10.1.2.140 from the example above) into the browser's address bar to access the web interface. The web interface allows user's to pass formatted I/O commands (to message-based devices) or to directly access device registers through the "device status" hyperlink.

| NOTE | The web interface currently supports network configuration of the EX2500 along with trigger setup, interrupt setup, and other functions. Because the EX2500 includes RESMAN in the module, the modules in the rack can be identified, peeked and poked, or sent word serial commands. |
|---|---|

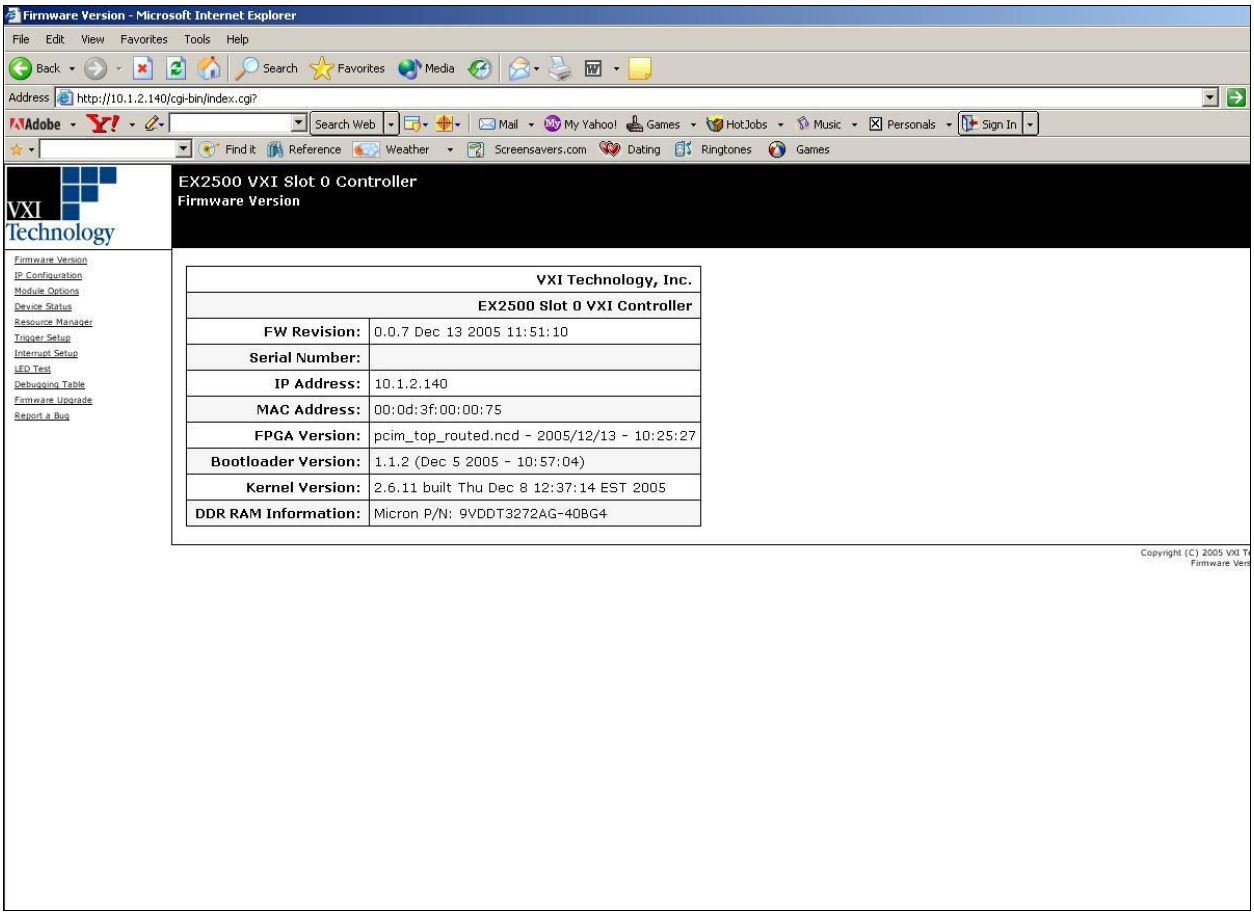
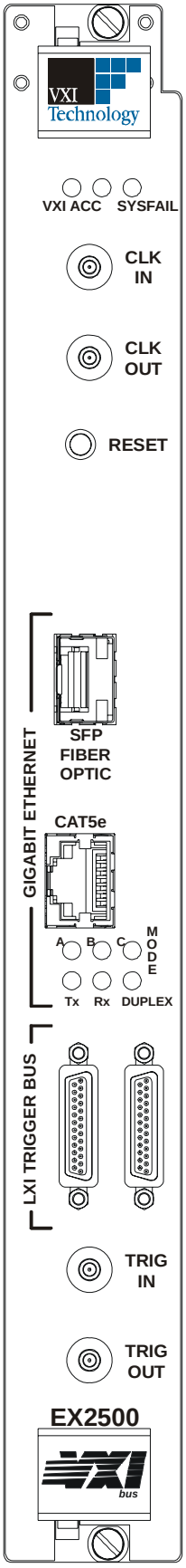



**FIGURE 1-1: EX2500 WEB INTERFACE**




## FRONT PANEL INDICATORS

The front panel of the unit includes the following interfaces and indicators:

- **VXI_ACC** – VXI access indication, this LED will blink green for backplane accesses that terminate properly. It will blink orange for accesses that terminate in retry or bus error.
- **SYSFAIL** – This LED shows the Sysfail status of the EX2500.
- **EXT CLK IN** and **OUT** – These SMB connectors provide external clocking options for the EX2500.
- **RESET** – Issues system reset and initiates Resource Manager Execution.
- **GIGABIT ETHERNET** – The module provides connection to gigabit Ethernet via either a Small Form Factor Pluggable (SFP) fiber module or via standard category 5 (Cat 5) twisted pair. The EX2500 automatically detects which interface is active and switches without user intervention. For Cat 5 connections, the EX2500 provides auto-MDIX (medium dependent interface crossover) functionality that automatically handles crossover in point-to-point connections. The unit will also detect and correct pairs that are wired backwards. Therefore, crossover cables can be used, although are not required.

  Multiple gigabit indicators are present to provide detailed information to the user regarding link status. Individual TX, RX, and DUPLEX LEDs are provided. Link status is shown on mode LEDs A, B, and C per the following table. NOTE: Ensure that LED control is returned to “Normal” when exiting the LED test section of the web interface.

| LED A | LED B | LED C | Mode |
|---|---|---|---|
| OFF | ON | ON | 1000 Mb/s Fiber, Link-up |
| ON | OFF | ON | 1000 Mb/s Cat 5 Master, Link-up |
| OFF | OFF | ON | 1000 Mb/s Cat 5 Slave, Link-up |
| OFF | ON | OFF | 100 Mb/s Cat 5, Link-up |
| ON | OFF | OFF | 10 Mb/s Cat 5, Link-up |
| OFF | OFF | OFF | Link Down |

- **TRIGGER BUS** – The trigger bus is an 8-channel LXI compliant trigger mechanism that can be used to route all VXI TTL triggers rack to rack or rack to LXI module.
- **EXT TRIG IN** and **OUT** – These SMB connectors allow users to route VXI TTL triggers and trigger bus signals.

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