Computer Methods (a division of Physio Systems, Inc.)
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INSTALLATION GUIDE

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Contents

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Introduction

PhoenixKonnect (PK) is a software application that supports data acquisition from SDVXI-only, MECALC-only or combined hardware configurations. The purpose of this document is to describe the process for installation of the PK application and associated drivers to support this broad range of hardware.

System Requirements

PK targets the Windows®10 (or higher) operating system. The recommended configuration of the host computer (PC or laptop) is:

- Intel i7 Processor
- 17.3-inch Monitor (Touch optional)
- 16GB DDR4 RAM
- 1TB SSD Hard Drive
- Gigabit Ethernet Adapter with RJ45 connection
- Windows®10 / 11 Professional

PK Downloads

Application and driver installation files are available for download at: https://www.phoenixkonnect.com/downloads.aspx.

MECALC systems connect to the computer via wired Ethernet. SDVXI chasses connect to the computer using one or combination of these controllers:

- USB
- EX2500a (Ethernet)

The table below details the files available on the download page and the configurations they support:

Installer File	MECALC	SDVXI + EX2500	SDVXI + USB
PhoenixKonnect Installer (latest version)	✓	✓	✓
MECALC QServer Firmware (latest version)	✓		
NIVXI 16.0		✓	✓
NIVISA 16.0 Runtime (*only needed to update existing NIVXI 16.0 installations*)		✓	✓
Agilent Connection Expert		✓	
EX2500A VXI Controller Driver 64B		✓	
EX2500A VXI Controller Driver 32B		✓	

Table 1: PK Download Files

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File Staging Area

The driver and installation files downloaded from the PK website should be staged in a protected folder on the local hard drive. This is useful for diagnostic and troubleshooting purposes. The best location for this folder depends on the user's environment. It simply needs to be somewhere that automated "cleanup" tools will not remove. Example locations might be:

- **C:\Users\Public\Documents\PK_DO_NOT_DELETE** (for compliance with Windows security)
- **C:\PK_DO_NOT_DELETE** (if user or public profiles are managed remotely or on a network)

Order of Operations

It is important that installers be applied in the following order:

1. If using SDVXI Hardware with either VXI-USB-2 or EX2500a
    a. NIVXI 16.0 (includes VXI-USB-2 controller support)
2. If using an EX2500a ethernet Controller
    a. Agilent Connection Expert
    b. EX2500A VXI Controller Driver 32B
    c. EX2500A VXI Controller Driver 64B
3. PhoenixKonnect

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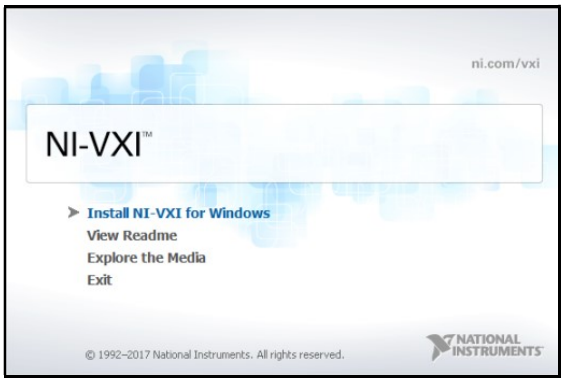
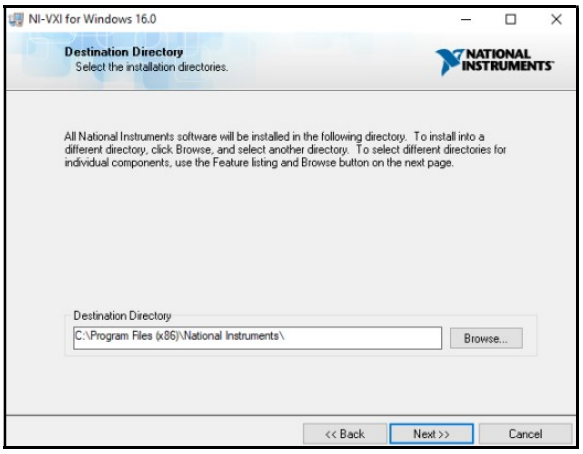
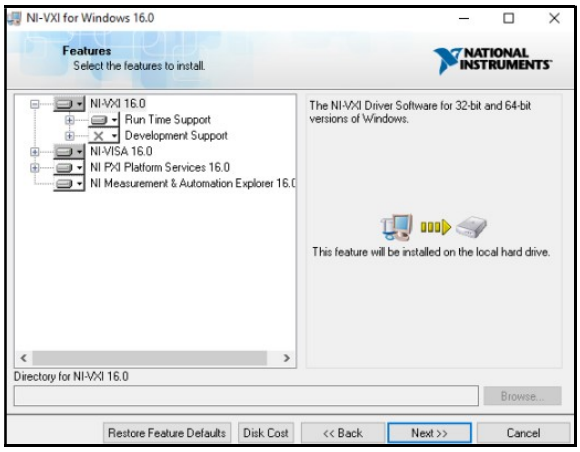
Driver Installation for SDVXI Hardware

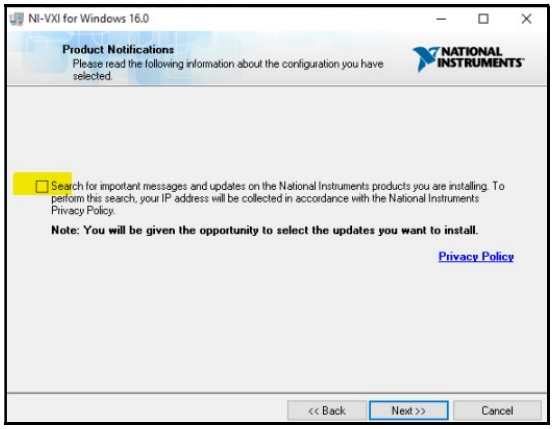
Step 1: NIVXI 16.0 Driver

Download and run the **NIVXI1600.EXE** setup file. After file extraction, select "Install NI-VXI for Windows. Advance through the screens as shown below accepting the defaults (except where indicated):









Uncheck the "Search" Checkbox

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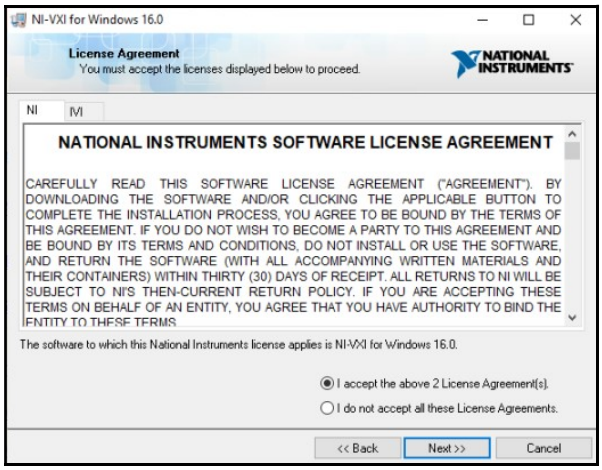

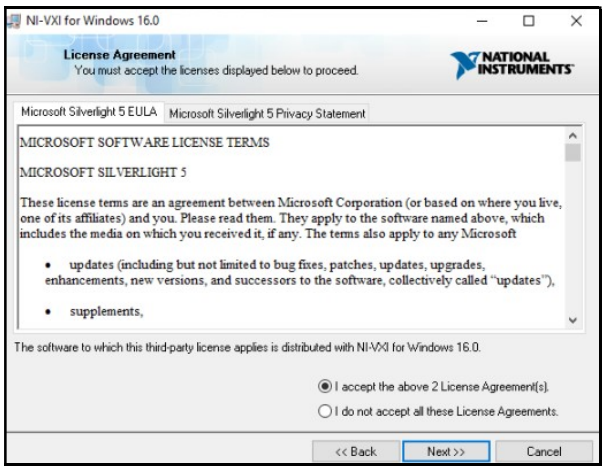

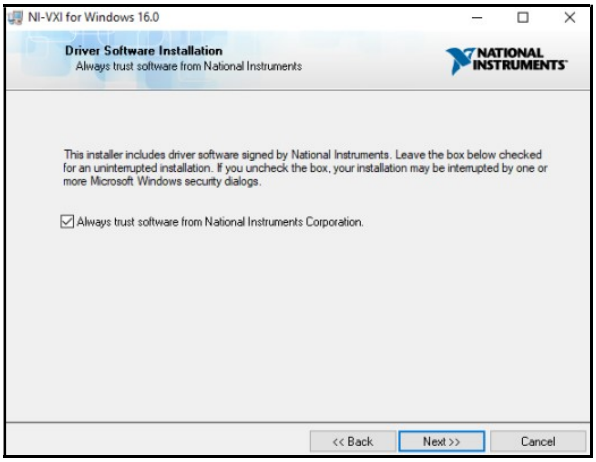

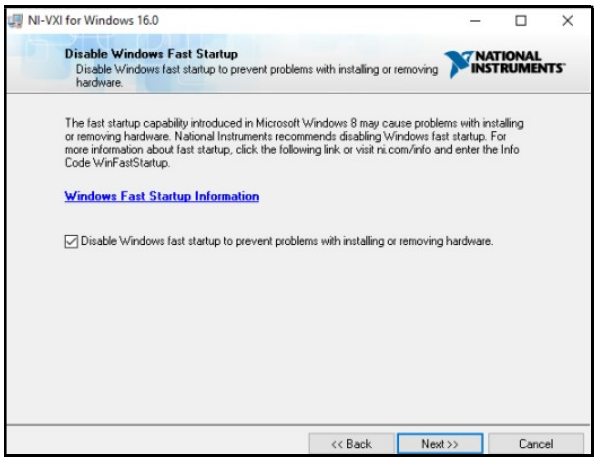

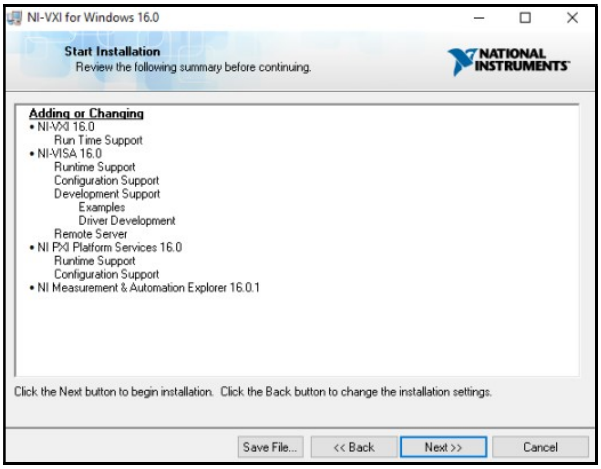

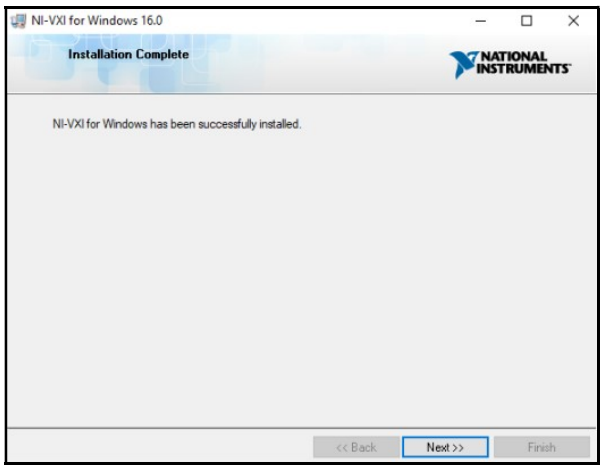

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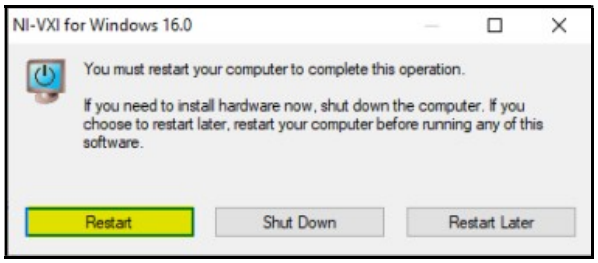
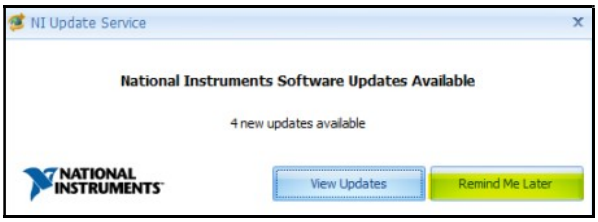


Restart the computer

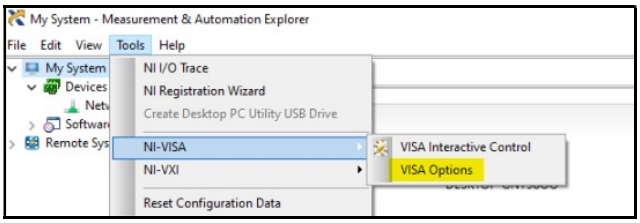


Decline the NI Updates

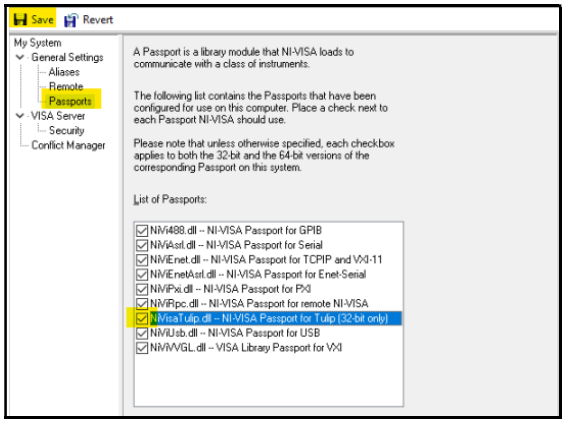
Step 2: Enable NIVisaTulip in NIMAX

This step is only needed to install the EX2500a ethernet controller. If there are only USB controllers present in SLOT 0 of the chassis, skip this step.

Run National Instrument's **NIMAX –** *Measurement and Automation Explorer* application. Configure the settings shown below:



Go to Tools > NI-VISA > VISA Options



Click ***Passports****, Enable* ***NIVisaTulip.dll*** *and* ***Save***

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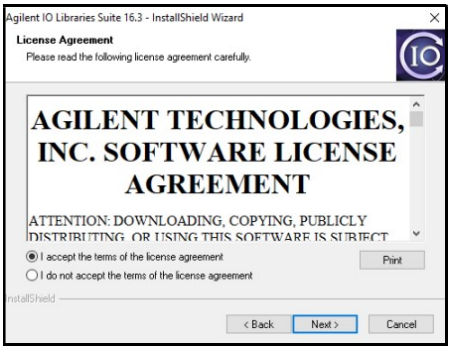
Close the application

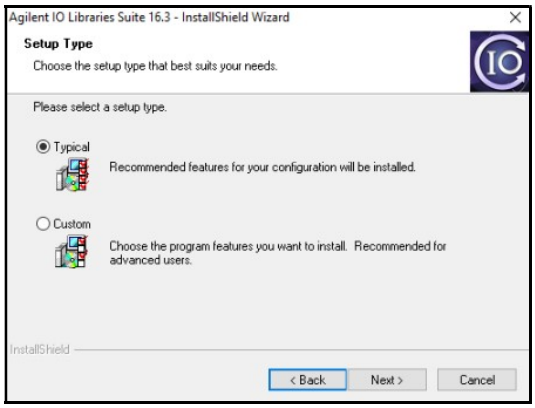
Step 3: Install Agilent Visa (Agilent Connection Expert)

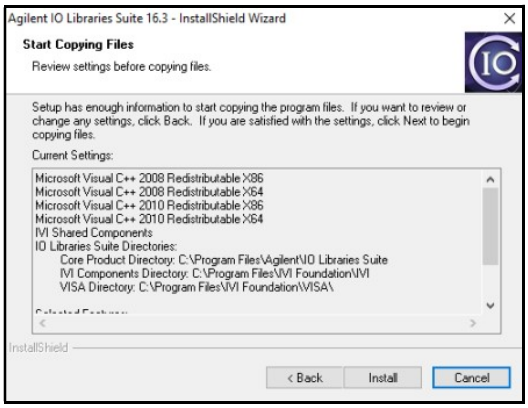
This step is only needed to install the EX2500a ethernet controller. If there are only USB controllers present in SLOT 0 of the chassis, skip this step.

Download the file from the **Agilent Visa** link on the PK downloads page. Run the "IOLibSuite_16_3_16603.exe" installer file "**As Administrator**" (right-click on the EXE file and choose "Run as Administrator").



*Important: <u>Must</u> be installed as **Secondary** VISA*
Make sure NIVXI1600 is installed first





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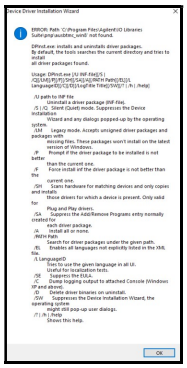
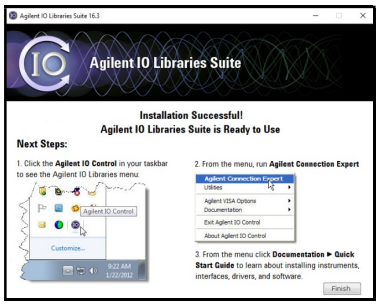


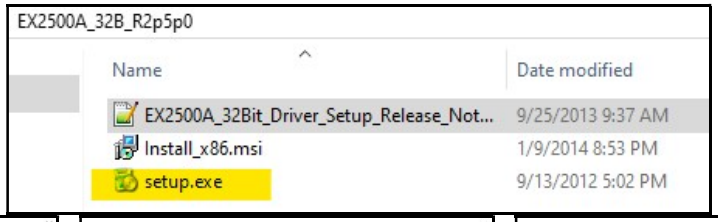
*Click **Ok** to move past this screen*

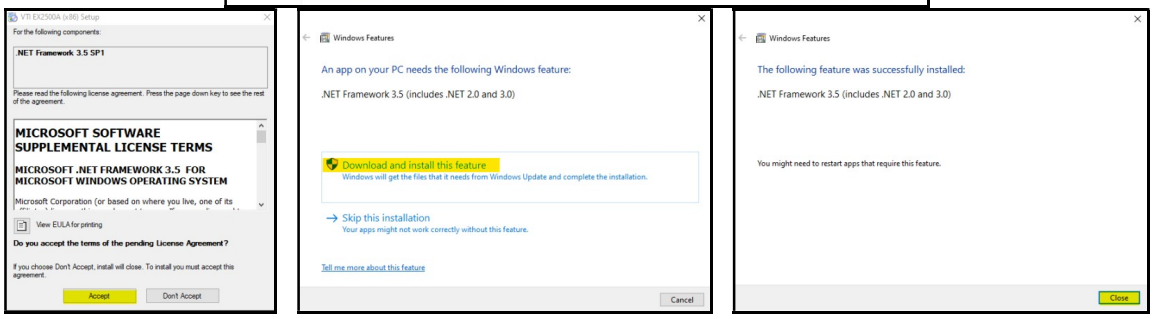


Step 4: Install the EX2500A Controller Drivers (32B and 64B)

This step is only needed to install the EX2500a ethernet controller. If there are only USB controllers present in SLOT 0 of the chassis, skip this step.

Download the file "EX2500A_32B_R2p5p0.zip". Extract the contents of the zip file to a temporary location. Open the folder "EX2500A_32B_R2p5p0" and run **setup.exe** "**As Administrator**" (right-click on the EXE file and choose "Run as Administrator")





If prompted, install the required .NET framework

Download the file "EX2500A_64B_R2p5p0.zip". Extract the contents of the zip file to a temporary location. Open the folder "EX2500A_64B_R2p5p0" and run **setup.exe** "**As Administrator**" (right-click on the EXE file and choose "Run as Administrator"). Follow the same steps as shown for the 32-bit driver installation.

Step 5: Verify Connectivity to the EX2500a Controller

This step is only needed to install the EX2500a ethernet controller. If there are only USB controllers present in SLOT 0 of the chassis, skip this step.

Make sure the VXI chassis (is/are) powered up.

Before the *Agilent Connection Expert* can be configured, it is important to verify that the EX2500a controller has acquired an IP address on the PC's network. For performance and troubleshooting, it is recommended that the EX2500a be connected to an isolated network. For multiple DAS system configurations (several controllers or combined EX2500a and MECALC mainframes), using a Gigabit switch is advisable. There are two general scenarios:

1. If the network supports DHCP (dynamic host control protocol), the controller will automatically acquire an IP address from the network.

2. When no DHCP server is detected, the host PC will auto-assign an IP address. (PC must be powered up first). The EX2500a will auto-detect the PC's address and select a non-conflicting address in the same subnet as the host to establish communications. Alternatively, static IP addresses can be assigned to the PC's adapter and the EX2500a controller. The organization's IT department may be needed to assist with these configurations and is outside the scope of this document. For questions or help, please contact support@computer-methods.com.

To verify that the EX2500a controller has acquired an IP address, open a Windows command prompt (Windows key + R, type *cmd* in the Run command box and press Enter). In the command window, type "arp -a". This command lists the MAC addresses and IPs for all devices seen on the PC's subnet.

The first three sets of two hexadecimal numbers in a MAC Address identify the card manufacturer. The manufacturer of the EX2500a is VXI Logic and their MAC address prefix is "00:0D:3F". See the snapshot below – the EX2500a controller on this example network has an IP address of "10.0.0.175". Keep this IP address in mind for the next step.

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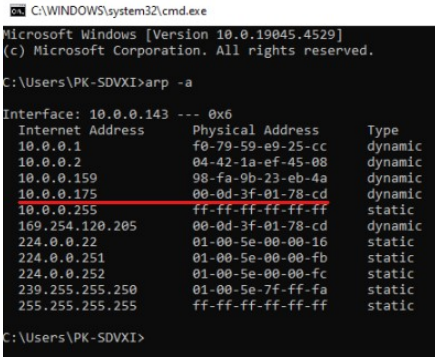
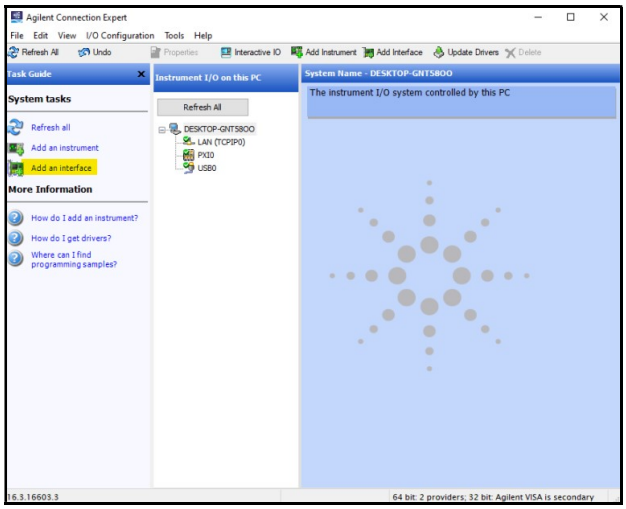
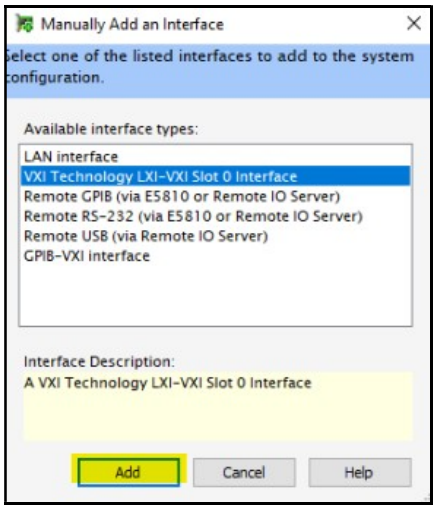


Step 6: Configure Agilent Connection Expert

This step is only needed to install the EX2500a ethernet controller. If there are only USB controllers present in SLOT 0 of the chassis, skip this step.

Launch the Agilent Connection Expert application "**As Administrator**". Under **System Tasks**, click the link to *Add an Interface*. Highlight the "VXI Technology LXI-VXI Slot 0 Interface" and click Add.





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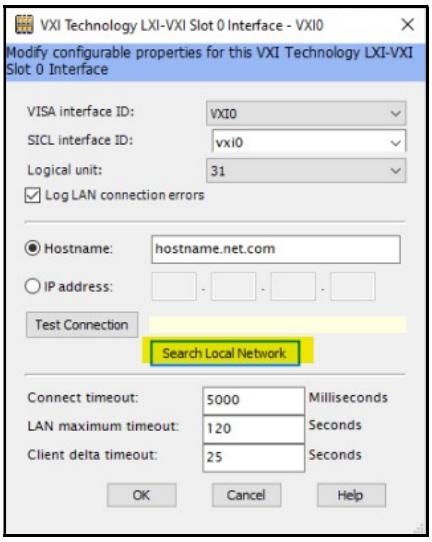
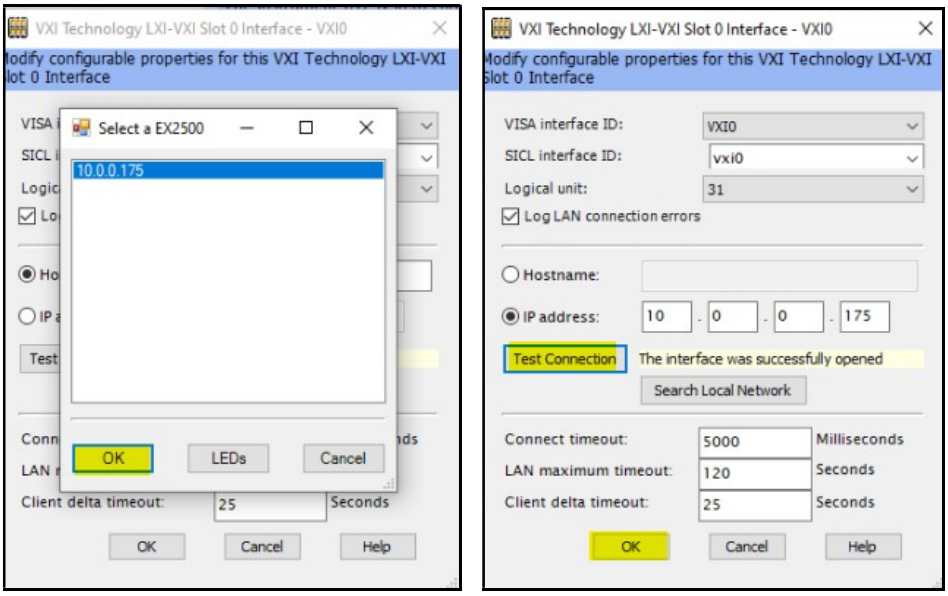


Click the button to Search Local Network
For multiple controllers, assign a unique "Logical Unit" number to each controller



Select the IP address of the controller and click OK
Test the connection and click OK
Repeat this process for all EX2500a controllers

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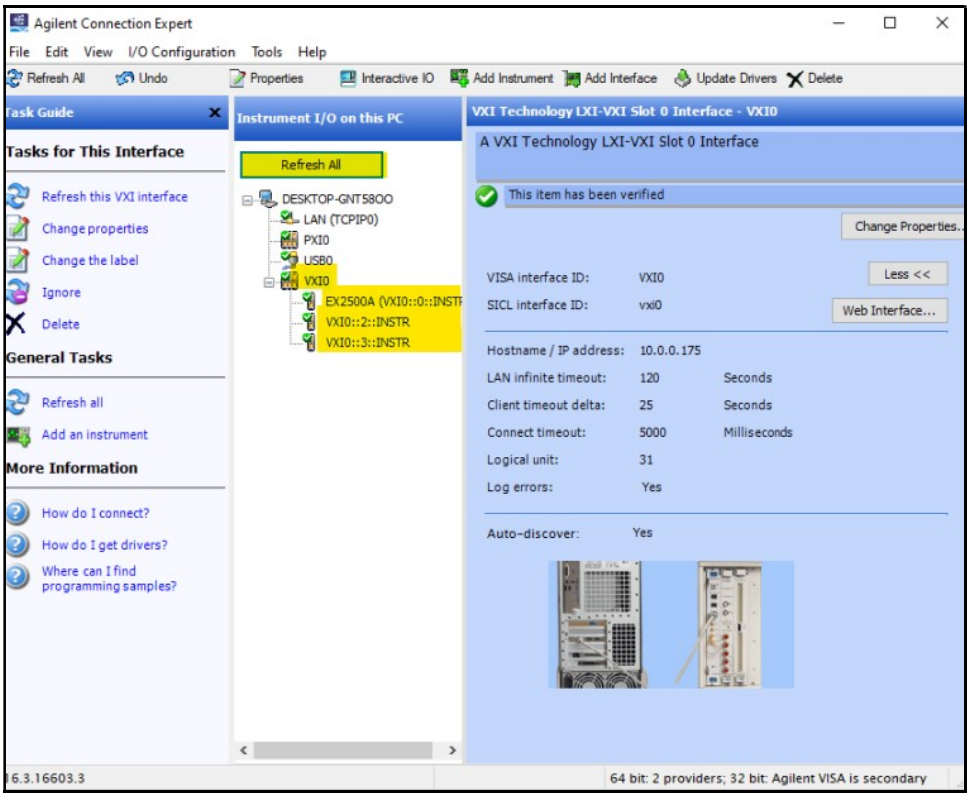

*Click **Refresh All***
The controller and VXI cards will be enumerated
REBOOT THE PC

Step 7: Verify that NIVISA Has Access to Resources (optional)

Ensure the PC has been restarted after Step 6 above.

Launch the NI MAX application. Click *Refresh* and expand the Devices and Interfaces node. All SDVXI cards in chassis with EX2500 controllers should be visible in the tree.

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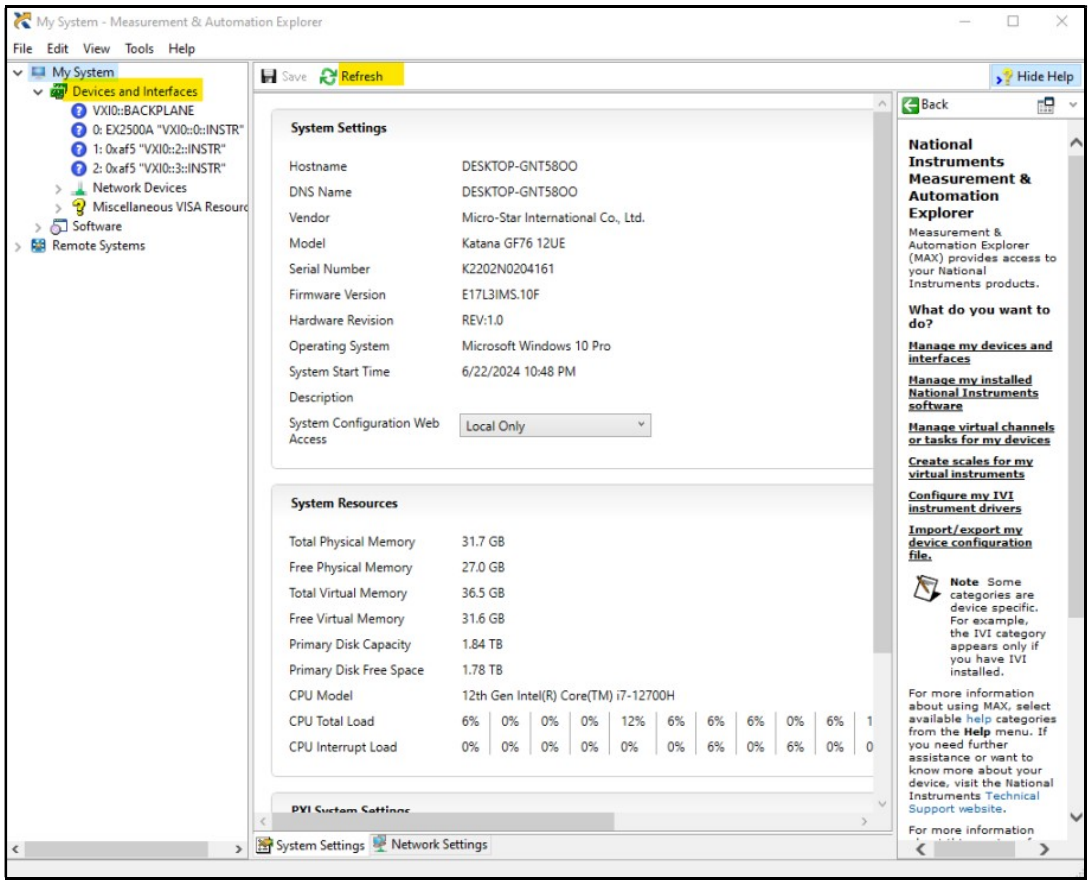

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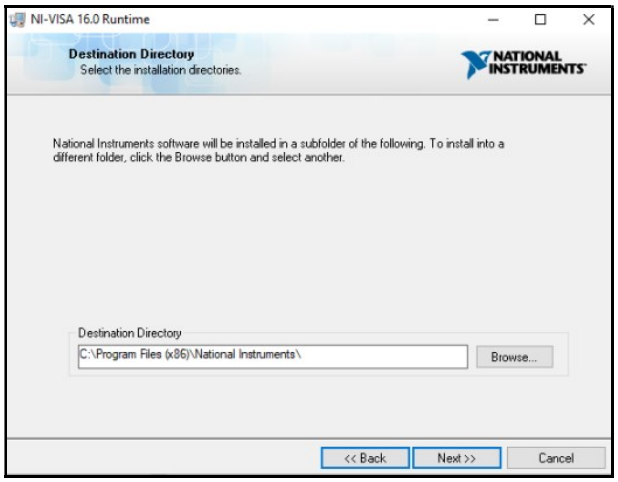
Legacy ImpaxSD Installations

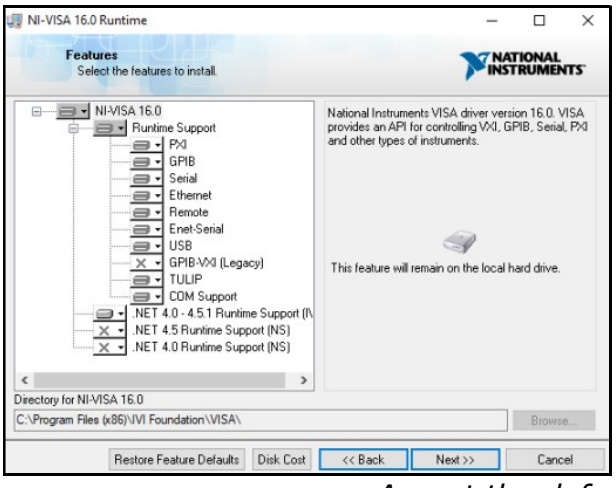
Step 1: NIVISA 16.0 Runtime

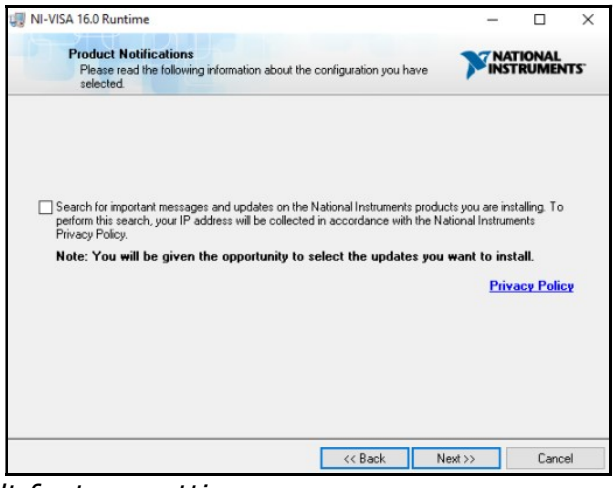
This step is only needed for existing (legacy) installations of ImpaxSD

The version of the National Instruments NIVXI 16.0 driver provided with ImpaxSD from Spectral Dynamics installed an older version of the NIVISA runtime library. The NIVXI 16.0 driver itself is ok to use with PhoenixKonnect. However, the NIVISA library must be updated.

Download and run the **setup.exe** installer in the **NIVISA1600runtime.zip** compressed folder.







Accept the default feature settings.
*Make sure the "Search for updates" checkbox is **unchecked**.*

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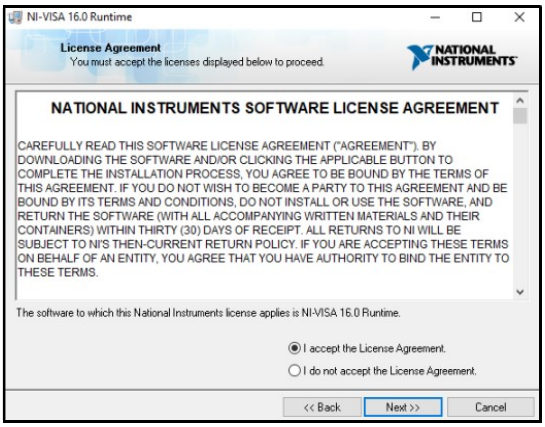

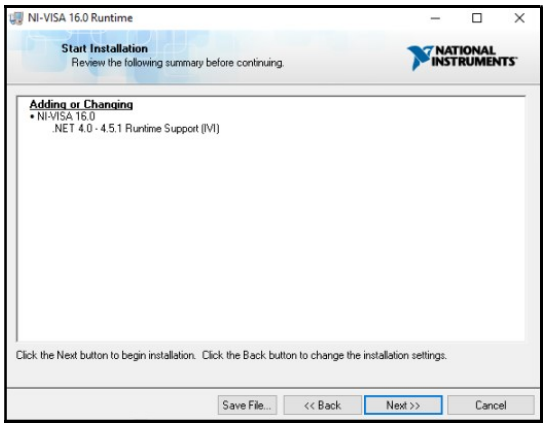

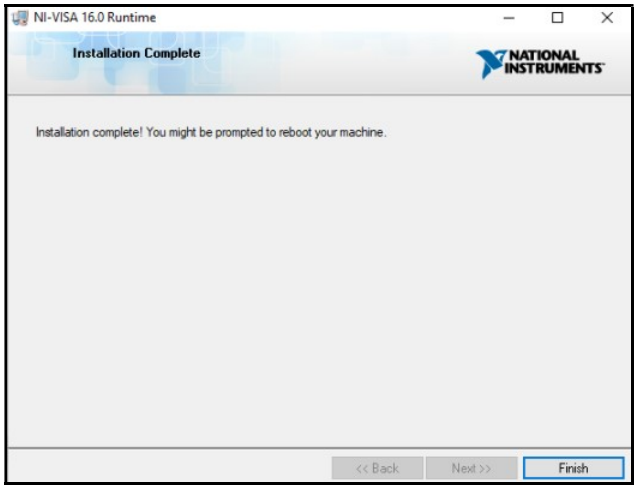

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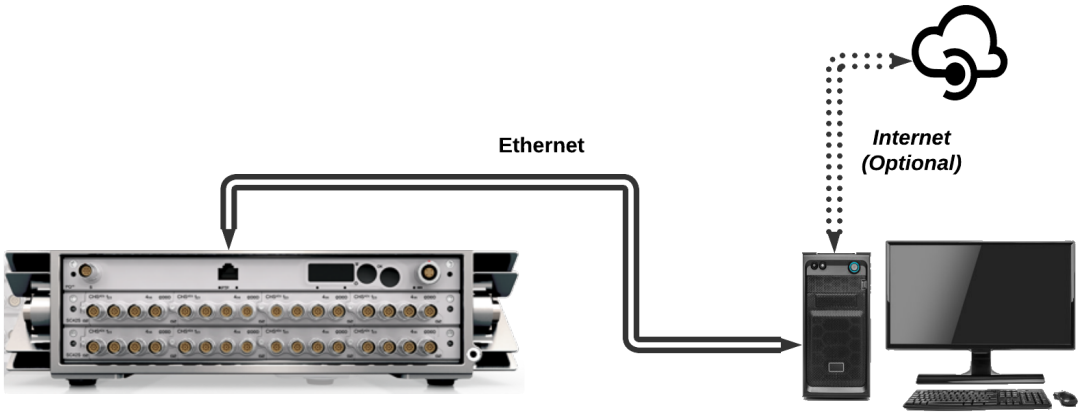
MECALC Mainframe Installation

MECALC mainframes communicate with the PC over Ethernet. Each mainframe supports a browser-based interface that configures the mainframe's network settings. There are several possible network topologies – the appropriate configuration depends on the number of mainframes and the site's IT requirements. This guide will present three common scenarios:

1. Single mainframe connected directly to PC
2. Multiple mainframes connected to a PC
3. Single mainframe connected to a local network with a high-speed video camera

Single mainframe connected directly to PC or laptop



By default, the network adapters in MECALC mainframes obtain an IP from the client's DHCP server. In the diagram above, there is no DHCP server available. Consequently, the mainframe's ethernet adapter will auto-assign its IP address (APIPA) in the range of 169.254.1.0 through 169.254.254.255 with a subnet mask of 255.255.0.0.

If the ethernet adapter of the PC is configured to "Obtain an IP address automatically", the adapter will also auto-assign an IP address in the same subnet. PhoenixKonnect can scan the local network and locate the mainframe.

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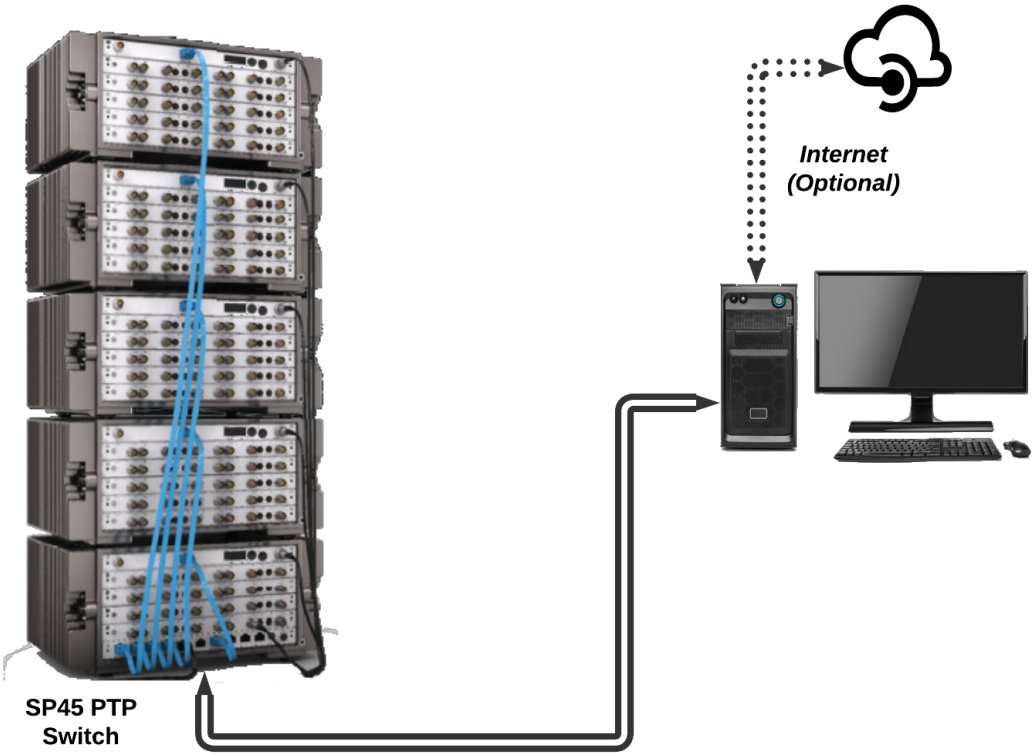
Multiple mainframes connected directly to PC



Multiple mainframes are connected to MECALC's SP45 PTP switch (installed in any one of the mainframes). The SP-45 supports the PTP network protocol. Each mainframe is configured for PTP, ensuring that clocks on all modules are synchronized for alignment of channel data. The PC connects to one of the open ports of the SP-45 switch.

The mainframes will auto-assign their IP addresses (APIPA) in the range of 169.254.1.0 through 169.254.254.255 with a subnet mask of 255.255.0.0. If the ethernet adapter of the PC is configured to "Obtain an IP address automatically", the adapter will also auto-assign an IP address in the same subnet. PhoenixKonnect can scan the LAN and detect the mainframes.

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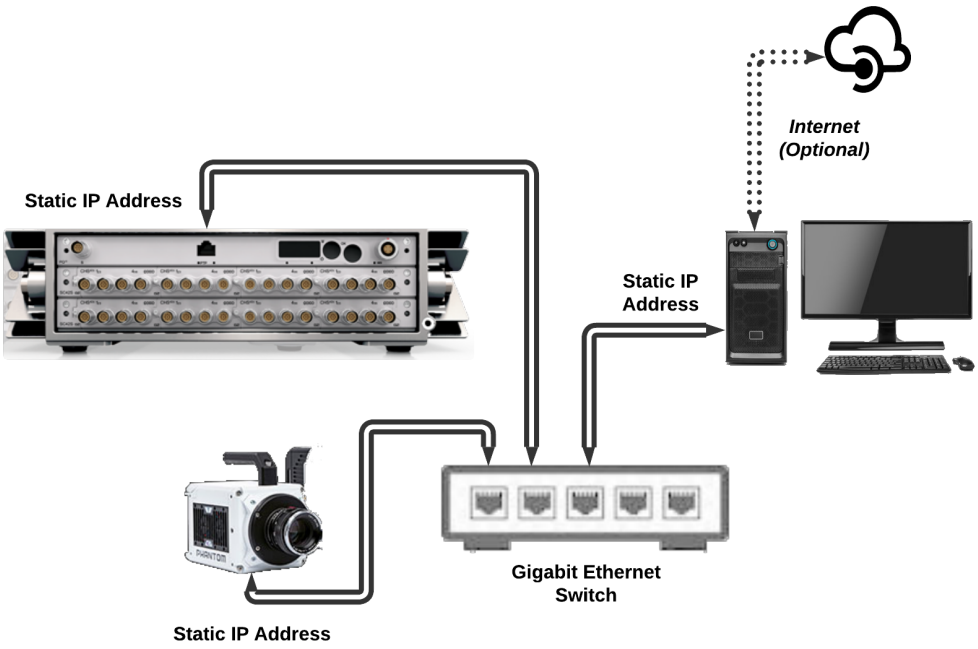
Single mainframe connected to a local network with high-speed video camera



Tools and software provided by a camera manufacturer may require a LAN with a specific IP address range. In the diagram above, all ethernet adapters are configured with a static IP address and appropriate subnet mask. Additional ethernet-based devices (such as an LXI-VXI EX2500a controller) can be added to the LAN if assigned a static IP in the subnet range.

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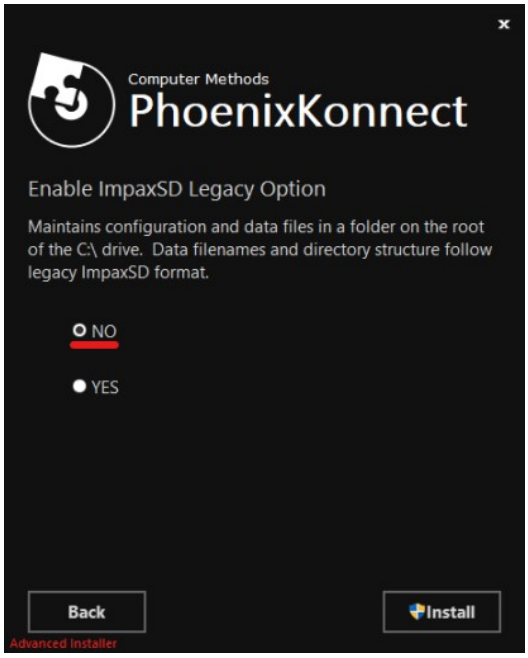
PhoenixKonnect Installation

Step 1: Download the Latest PhoenixKonnect Release

Download the **PhoenixKonnect** installer from the **Download** page of the PK website. The installer found on this page is the current production release. This link will be periodically updated as releases are made available.

Step 2: Run the PhoenixKonnect Setup File



By default, the PK installer will maintain compliance with Windows® best practices by placing all PK configuration and data files in the "Users\Public" folder. The *ImpaxSD Legacy* option is intended for current ImpaxSD users that have their own tools for accessing and post-processing of data files. When the legacy option is enabled, the installer will:

- Create a *Phoenix* folder on the root of the C:\ drive
- Maintain all configuration and data files in the *C:\Phoenix* location
- Store data files using legacy ImpaxSD naming conventions
    - Data files stored in a "flat" file directory structure for each test
    - Data file extensions reference run numbers

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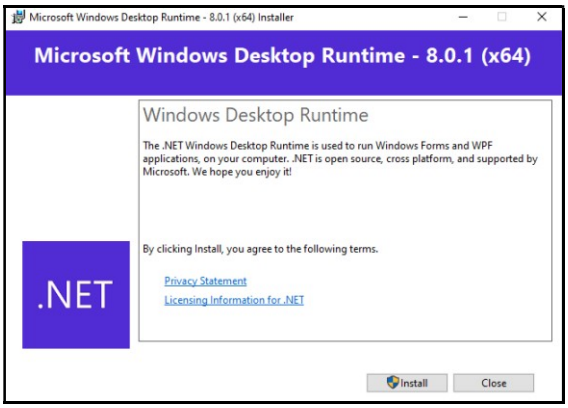

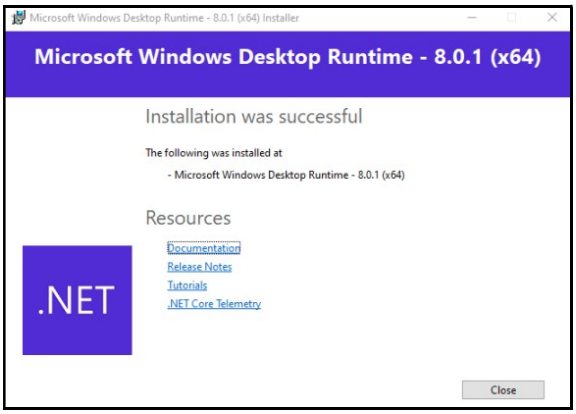

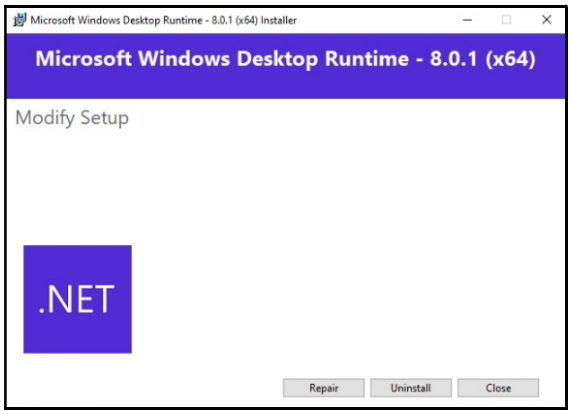

*If the **Modify Setup** dialog appears, it means*
this component has already been installed.
*Just click **Close**.*

Congratulations!
PhoenixKonnect is installed and ready to use.
A shortcut to the application will appear on the desktop.

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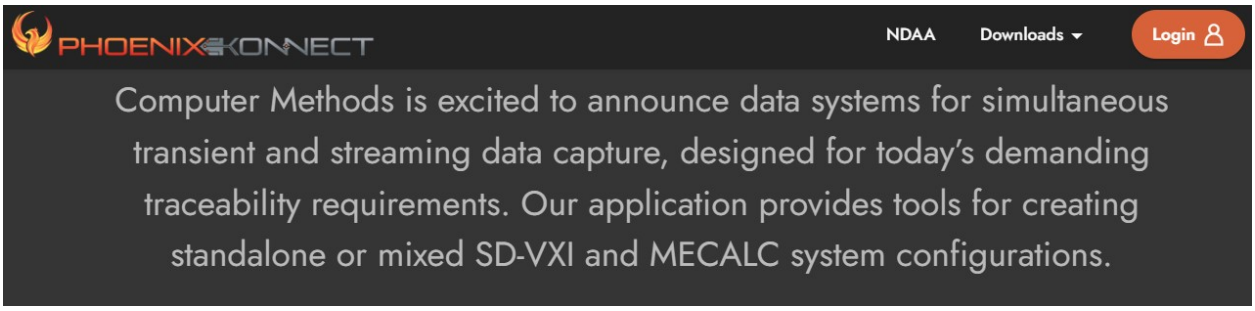
There are tutorials available on the website to get started with the PK application. Go to https://phoenixkonnect.com, click on the **Downloads** menu and navigate to **Tutorials and Guides**.



Note: When running NI-VXI and Agilent VISA drivers (for access to SD-VXI) resources, it may be necessary to launch PhoenixKonnect.exe "**As Administrator**".

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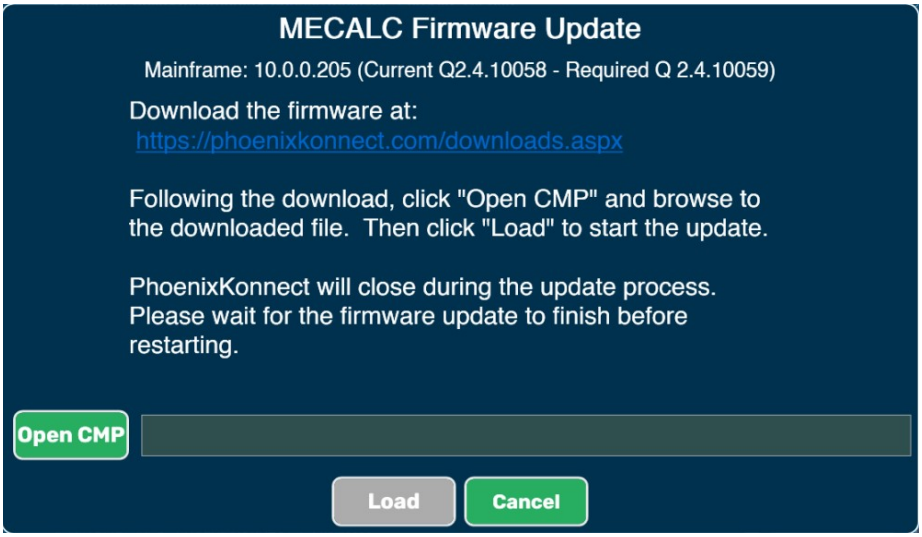
PhoenixKonnect Updates

Step 1: Download and Install the Latest PhoenixKonnect Release

Download and run the **PK** installer from the **Download** page of the website (see *PhoenixKonnect Installation* above). The setup file will replace the current application with the update. Configuration, transducer database and data files are not touched by the update process.

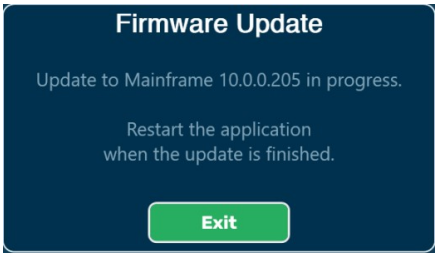
Step 2: If Prompted, Download and Apply the Firmware Update

Run the **PK** application and open (or build) a test. If **PK** detects a mismatch between the existing and expected firmware versions, the following screen will appear:



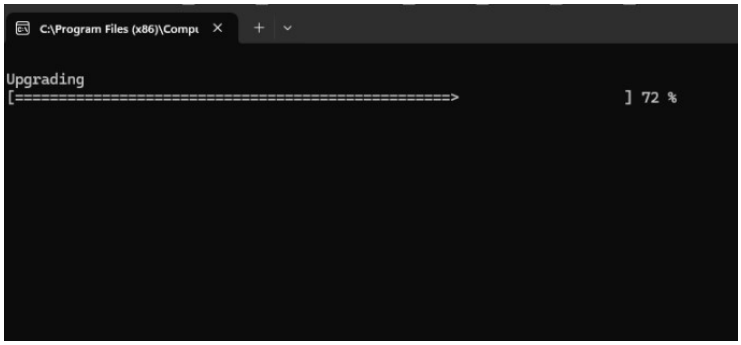
Note: This screen can be canceled, allowing **PK** to continue working. However, **PK** may attempt to access features not supported by the firmware. This can cause unpredictable behavior.

Click the "Open CMP" button, navigate to the location where the .CMP file was downloaded and select the file. Then click the "Load" button. **PK** will display the screen below. Click "Exit" to close **PK**.



Step 3: Wait for the Updater Tool to Complete

PK opens a Command window and launches a standalone update utility. The progress of the update is displayed as shown below.



After the tool has applied the update file, the mainframe will reboot. Be aware that additional update steps are executed during the reboot phase. For example, if the FPGAs on the ALI cards require an update, the boot process could take 10 or 15 minutes.

Step 4: Monitor the Reboot Process

MECALC mainframes support a browser interface that is useful for viewing system level, module and channel statuses. The interface can be accessed by navigating to the IP address of the mainframe using a standard browser. The mainframe's IP address is shown in the PK firmware update screen (Step 2 above).

During the boot process, the screen will display a "booting" message with a progress bar. It is advisable to periodically refresh the browser page.

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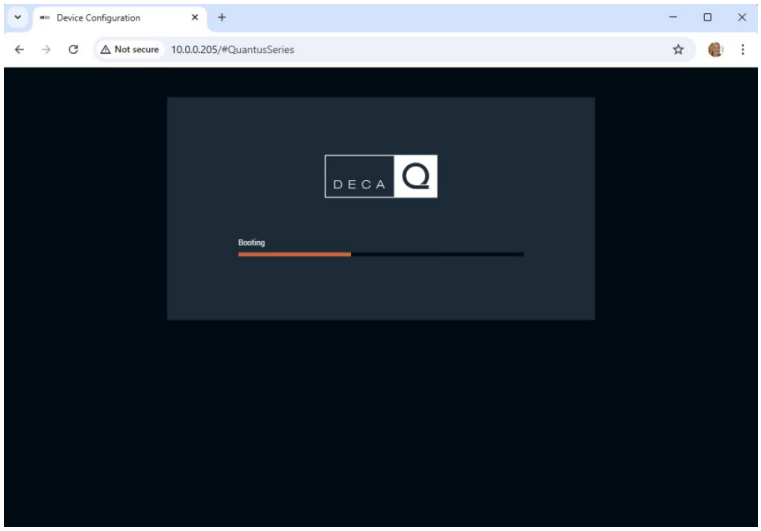
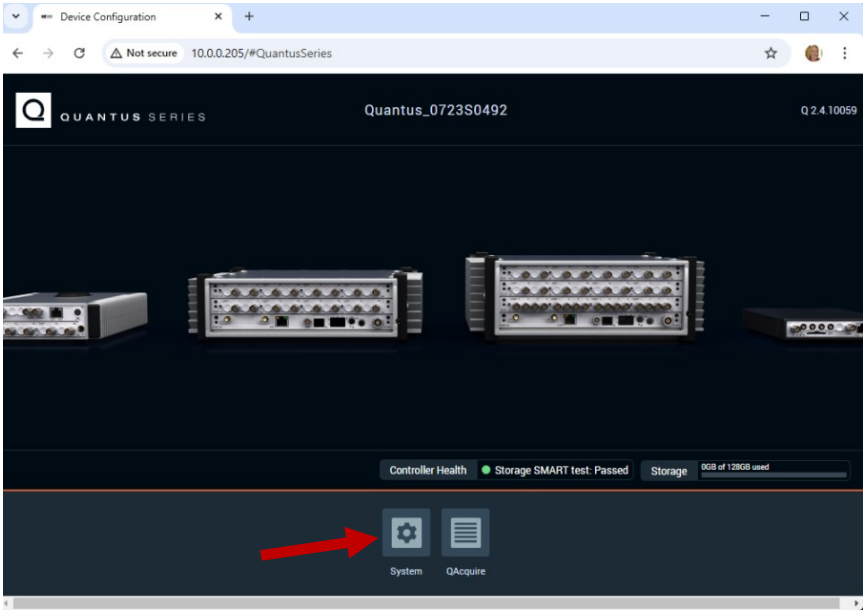


Step 5: Restart the Mainframe

When the update process is completed, the browser interface will display the QuantusSeries landing page. It is advisable to power-cycle the mainframe after an update. This can be performed using the black buttons on the device front panel, or through the browser interface. Click the "System" icon at the bottom of the screen for system options.



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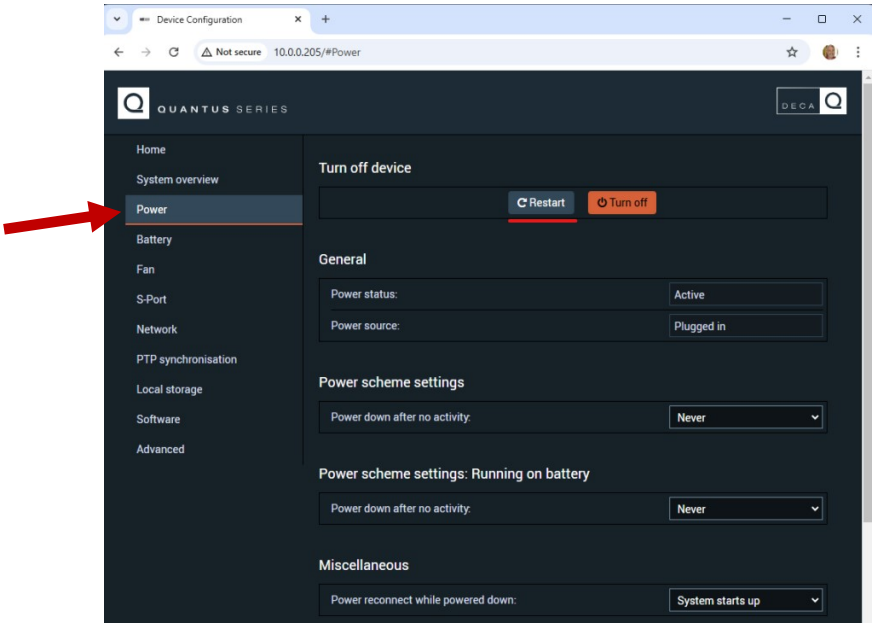
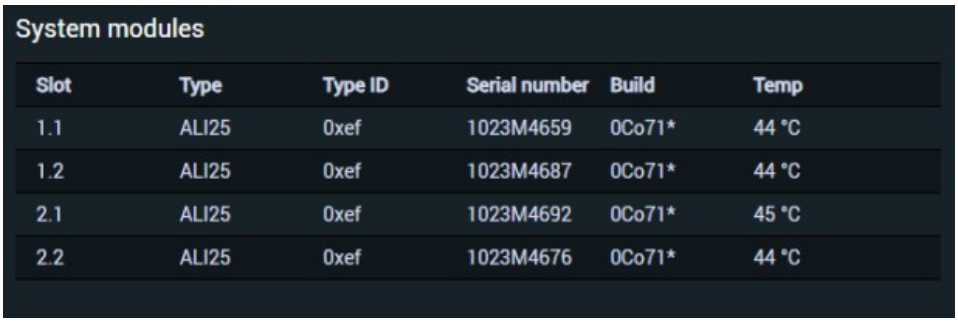
Click the "Power" button in the navigation bar, then click the "Restart" button to power-cycle the mainframe.



Step 6: Check Mainframe Health

When the mainframe has booted and displays the landing page (see Step 5 above), click the "System" icon at the bottom of the screen. Look for the "System Modules" section. If the modules are operating normally, serial number, build and temperature will appear for each module.



The mainframe's firmware update is complete! Launch the **PK** application to resume normal operation.

Step 7: Alternate Firmware Update Procedure

Some client systems are locked down by the IT department and the OS may restrict PhoenixKonnect from launching the updater tool. An alternative method for updating the mainframe's firmware is supported through the browser interface.

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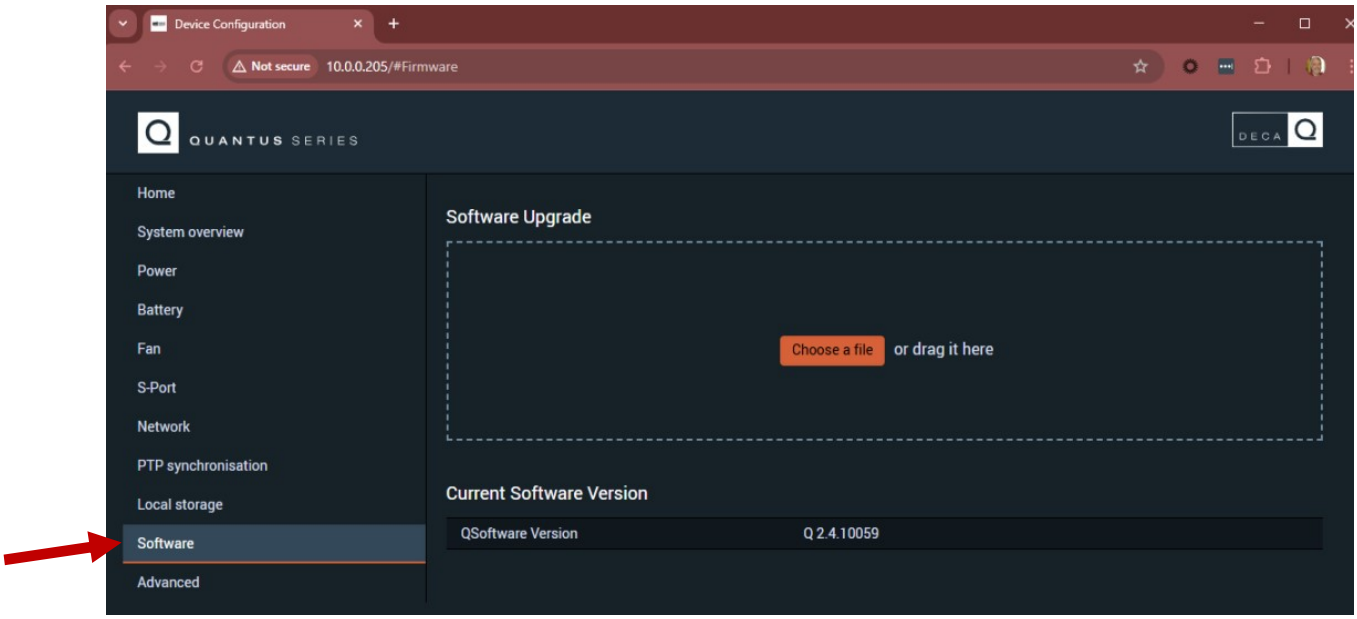
Navigate to the IP address of the mainframe as shown in Step 4 above and click on the "System" icon. Then click on the "Software" option in the navigation bar.



Click on the "Choose a file" button to navigate to the location of the QSoftware .CMP file that was downloaded from the **PK** website (or drag the file inside the dotted box). QServer will upload the CMP file – this process can take several minutes. QServer will then initiate a "reboot". Monitor the progress of the update by following Steps 4 through 6 above.