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PXIe-5842

PXle-5842

Getting Started

2023-03-29



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PXIe-5842 Product Overview

What is the PXIe-5842?

The PXIe-5842 is a modular RF vector signal transceiver (**VST**). The PXIe-5842 module combines with other modules to form complete PXIe-5842 instruments.

The PXIe-5842 combines a vector signal generator and vector signal analyzer with FPGA-based, real-time signal processing and control.

The PXIe-5842 name encompasses the following instruments:

Table 1. PXIe-5842 Instruments

Instrument	Constituent Modules
PXIe-5842 VST	<ul style="list-style-type: none"> ▪ PXIe-5842 ▪ PXIe-5655

Components of a PXIe-5842 System

The PXIe-5842 is designed for integration into a broader test system that requires test software, drivers, and, in addition to the parts included in your kit, hardware beyond the PXIe-5842 itself. Use the following list of typical PXIe-5842 system components as a starting point for building your test system.

PXIe-5842 VST Kit Contents

- PXIe-5842
- PXIe-5655
- Cables

Cable Type	Part Number	Quantity
Semi-rigid cable, PXIe-5842 REF: IN to PXIe-5655	136103A-01	1

Cable Type	Part Number	Quantity
REF OUT, 2.92 mm to 2.92 mm		
Semi-rigid cable, PXIe-5842 RF OUT: LO IN to PXIe-5655 LO 0 OUT, 2.92 mm to 2.92 mm	136104A-01	1
Semi-rigid cable, PXIe-5842 RF IN: LO IN to PXIe-5655 LO 1 OUT, 2.92 mm to 2.92 mm	136106A-01	1

- SMA driver bit
- Screwdriver
- **PXIe-5842 Safety, Environmental, and Regulatory Information**
- **PXIe-5655 Safety, Environmental, and Regulatory Information**

Other Hardware Components

A complete PXIe-5842 system also requires equipment that is not included in the kit for your PXIe-5842 instrument.

- A PXI Express chassis. Use a chassis capable of meeting the conditions stated in the **Conditions** section of the **PXIe-5842 Specifications** and in **PXIe-5842 System Requirements**.
- A PXI Express embedded controller or MXI controller compatible with your chosen chassis.
- PXI chassis slot blockers and EMC filler panels for unoccupied slots of the chassis.
- A 0.9 N · m (8 lb · in.) calibrated torque wrench, 5/16 in., NI part number 751120-01.
- A small flat blade screwdriver.

Software Components

- **Application development environment**—Development environments that support the development of applications that make use of the PXIe-5842 in supported programming languages.
 - LabVIEW
 - LabWindows™/CVI
 - C/C++
 - C# (.NET)
 - InstrumentStudio
- **Driver software**—Drivers that provide the API for controlling and taking measurements with the PXIe-5842.
 - RFmx
 - NI-RFSG
 - NI-RFSA

The version of the driver you install must provide support for your instrument. Refer to the release notes or readme for a driver to determine which versions of the driver support your instrument.



Note Driver software should be installed after you install any application development environment.

Related information:

- [NI software downloads](#)
- [NI software release notes](#)

PXIe-5842 System Requirements

Your system must meet the following minimum requirements to use the PXIe-5842.

Chassis Requirements

- **Slot cooling capacity**—Must be ≥ 82 W
- **Clearances**—Maintain the minimum required clearances around your PXI Express chassis. Clearances may vary by chassis. Follow the guidelines in the documentation for the chassis.
- **Available adjacent, compatible slots**—PXIe-5842 VST: 4
 - 3 for PXIe-5842 module
 - 1 for PXIe-5655 module

The modules that compose PXIe-5842 instruments can be installed in the following PXI chassis slot types:

- PXI Express Hybrid Peripheral Slot
 - PXI Express System Timing Slot
 - PXI Express Peripheral Slot
- **Power delivery**—See **PXIe-5842 Safety, Environmental, and Regulatory Information** or **PXIe-5842 Specifications**.



Note Power requirements may be specified on a module basis; the chassis must provide enough power for the complete PXIe-5842 instrument.

Controller or Host Computer Requirements

- **RAM**—4 GB. Depending on the amount of data acquired and/or processed, a larger amount of memory may be required.
- **Processor**—1 GHz 64-bit (x64)

PXIe-5842 Software Setup

Choosing Your Software

You can choose among multiple options for taking measurements with the PXIe-5842.

Depending on the measurements you want to take and how you want to customize your test system, choose the appropriate software from the following options.

If you want to	Choose
Perform physical layer measurements of supported communications and connectivity signals	RFmx personalities
Measure spectral performance and understand spectral characteristics	RFmx SpecAn
Measure modulation quality, including error vector magnitude (EVM)	RFmx Demod
Create, visualize, and play back RF waveforms	RFmx Waveform Creator
Perform custom measurements or applications that require I/Q data	NI-RFSA
Generate CW or modulated waveforms	NI-RFSG
Take interactive measurements with your instrument	InstrumentStudio

Installing the Software

You must be an Administrator to install NI software on your computer.

1. Install an ADE, such as LabVIEW or LabWindows™/CVI™.
2. Download the driver software installer from ni.com/downloads. NI Package Manager downloads with the driver software to handle the installation. Refer to the NI Package Manager Manual for more information

about installing, removing, and upgrading NI software using NI Package Manager.

3. Follow the instructions in the installation prompts.



Note Windows users may see access and security messages during installation. Accept the prompts to complete the installation.

4. When the installer completes, select **Restart** in the dialog box that prompts you to restart, shut down, or restart later.

Installing and Interconnecting PXIe-5842 Instruments

PXIe-5842 Installation and Interconnection Overview

Follow this general process to complete physical setup for your PXIe-5842 instrument.

Refer to the detailed procedures in this article to complete the following tasks:

1. Unpack your kit.
2. Install the PXI Express modules of your instrument in your PXI Express chassis.
3. Read and understand the guidelines before interconnecting the modules of your instrument.
4. Interconnect the PXI Express modules of your instrument.

Unpacking the Kit



Notice To prevent electrostatic discharge (ESD) from damaging the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis.

1. Touch the antistatic package to a metal part of the computer chassis.
2. Remove the device from the package and inspect the device for loose components or any other sign of damage.



Notice Never touch the exposed pins of connectors.



Note Do not install a device if it appears damaged in any way.

3. Unpack any other items and documentation from the kit.

Store the device in the antistatic package when the device is not in use.

Installing PXIe-5842 Modules in a PXI Express Chassis

You need to install modules in your PXIe-5842 instrument in a specific order and orientation to facilitate interconnection of the modules into a complete, functional instrument.

Ensure your PXI Express chassis meets the capacity, power, and slot cooling capacity requirements of your PXIe-5842 instrument.



Notice To prevent damage to the PXIe-5842 caused by ESD or contamination, handle each PXI module using the edges or the metal bracket.

Complete the following steps to install the PXI modules of your instrument in your PXI chassis:

1. Ensure the AC power source is connected to the chassis before installing the modules.
The AC power cord grounds the chassis and protects it from electrical damage while you install modules.
2. Power off the chassis.
3. Inspect the slot pins on the chassis backplane for any bends or damage prior to installation. Do not install a module if the backplane is damaged.
4. Remove the black plastic covers from all the captive screws on the front panels for all modules.
5. Select an appropriate set of PXI chassis slots so that you can install the modules that compose your instrument in the order indicated:

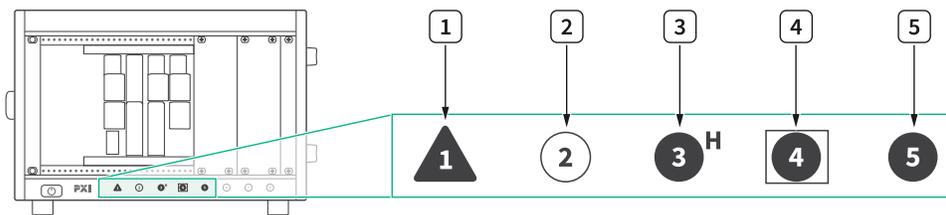
Instrument	Adjacent Compatible Slots Required
PXIe-5842 VST	4
Instrument	Module Installation Order, Left to Right
PXIe-5842 VST	<ol style="list-style-type: none"> 1. PXIe-5842 2. PXIe-5655

PXIe-5842 instruments can be installed in the following PXI chassis slot types:

- PXI Express Hybrid Peripheral Slot
- PXI Express System Timing Slot
- PXI Express Peripheral Slot

Use the following figure to identify compatible slots within your chassis:

Figure 1. Chassis Compatibility Symbols



1. PXI Express System Controller Slot
2. PXI Peripheral Slot
3. PXI Express Hybrid Peripheral Slot
4. PXI Express System Timing Slot
5. PXI Express Peripheral Slot
6. Touch any metal part of the chassis to discharge static electricity.
7. Place the edges of a module of your instrument into the module guides of the appropriate slot at the top and bottom of the chassis. Slide the module into the slot until it is fully inserted.
8. Secure the module front panel to the chassis using the front-panel mounting screws.



Note All front panel mounting screws must be attached to the PXI Express chassis to ensure all backplane connectors are fully mated. Tightening the mounting screws also increases mechanical stability and electrically connects the front panel to the chassis, which can improve the signal quality and electromagnetic performance.

9. Repeat steps [6](#) through [9](#) for each PXI module within your instrument until you have installed all PXI modules for your instrument.
10. Cover all empty slots using slot blockers and EMC filler panels.



Note For more information about installing slot blockers and filler panels, go to ni.com/r/pxiblocker.

11. Power on the chassis.

The in-chassis modules of your PXIe-5842 instrument are now correctly installed in your PXI chassis.

PXIe-5842 instruments also require interconnections between the installed modules. Continue with the interconnection procedure for your instrument according to the interconnection guidelines.

Ensuring Signal Quality when Interconnecting the PXIe-5842

After you install the PXIe-5842 modules into your chassis, you must use the included cables to interconnect the PXI Express modules to each other and subsequently to any modules external to the PXI Express chassis. To ensure proper connections that maintain signal quality, adhere to the following guidelines while interconnecting the modules.

- Inspect all RF connectors before attaching mating cables. Clean with dry compressed air, if necessary, to remove any contaminants that may be present.

- Position RF cables with instrument connectors to ensure center pins are straight and aligned before mating.
- For all threaded RF connectors for your PXIe-5842 instrument, engage and finger-tighten the connector nuts. The connector nuts should thread easily without binding, but if not, ensure the connector is straight and that center pins have not been damaged.
- Carefully tighten all threaded RF connectors to the torque specified in the interconnection process for your instrument using an appropriate torque wrench or torque screwdriver and driver bit; tighten only until the wrench reaches the torque limit.



Notice Incorrect torque at threaded connections can damage device connectors and degrade signal integrity.

Interconnecting the PXIe-5842 VST

Complete this procedure to interconnect the modules of the PXIe-5842 VST.

Before beginning this procedure, install the relevant modules for your instrument in your PXI Express chassis and refer to the interconnection guidelines.

All PXIe-5842 instrument configurations include a PXIe-5655 module physically adjacent to the PXIe-5842 module. These two modules are interconnected in the same way for all PXIe-5842 instrument configurations.

Complete the following steps to interconnect the PXIe-5842 VST:

1. Connect the local oscillator for RF output.

Cable	Torque	PXIe-5842 Connector	PXIe-5655 Connector
Semi-rigid 2.92 mm (m)- to-2.92 mm (m), 136104A-01	0.9 N · m (8 lb · in.)	RF OUT: LO IN	LO 0 OUT

2. Connect the internal reference clock.

Cable	Torque	PXIe-5842 Connector	PXIe-5655 Connector
Semi-rigid 2.92 mm (m)- to-2.92 mm (m), 136103A-01	0.9 N · m (8 lb · in.)	REF: IN	REF OUT

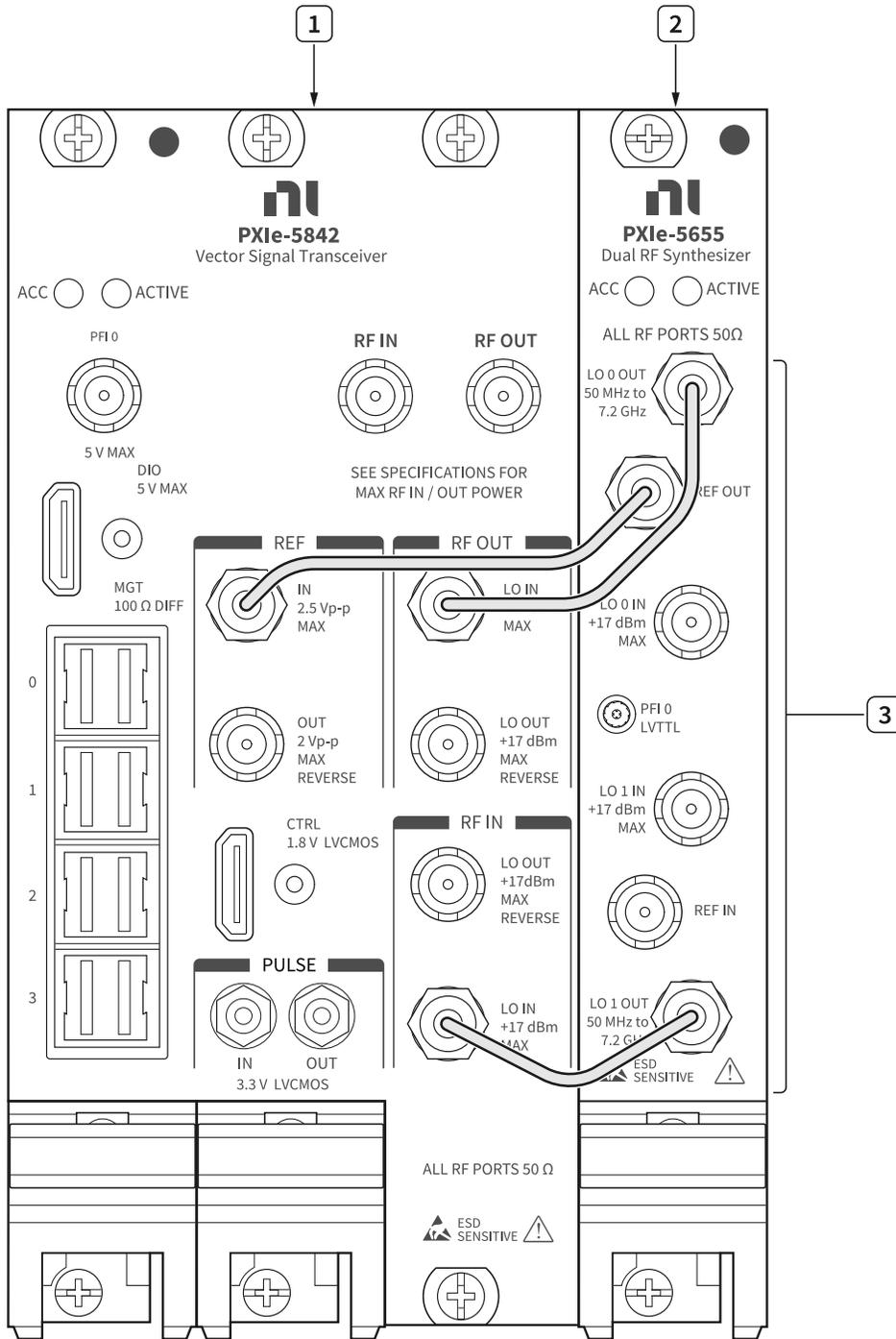
3. Connect the local oscillator for RF input.

Cable	Torque	PXIe-5842 Connector	PXIe-5655 Connector
Semi-rigid 2.92 mm (m)- to-2.92 mm (m), 136106A-01	0.9 N · m (8 lb · in.)	RF IN: LO IN	LO 1 OUT

You have now provided the reference clock and LO sources for the PXIe-5842 VST.

Your instrument should appear as follows:

Figure 2. Interconnected PXIe-5842 VST



1. PXIe-5842
2. PXIe-5655

3. Semi-rigid 2.92 mm (m)-to-2.92 mm (m) cables

Physical setup for the PXIe-5842 VST is now complete.

PXIe-5842 Operation Guidelines

Avoiding Damage when Making Direct Connections to the PXIe-5842

Because the PXIe-5842 is a precision RF instrument, it is sensitive to ESD and transients. When you make direct connections to the PXIe-5842, you can avoid damaging the RF ports by adhering to the following guidelines.

- Apply external signals only while the hardware is powered on.



Notice Applying external signals while the hardware is powered off may cause damage.

- Ensure you are properly grounded when manipulating cables or antennas connected to the instrument.
- If you are using non-insulated devices, such as an RF antenna, ensure the devices are maintained in a static-free environment.
- If you are using an active device, such as a preamplifier or switch routed to the PXIe-5842, ensure that the device cannot generate signal transients greater than the RF and DC specifications of the PXIe-5842.

Avoiding Damage when Removing Modules from the Chassis

If you need to move your composite instrument or remove individual modules for any reason, take care to avoid damaging modules or cables by first disconnecting all interconnections made between the modules of the instrument.



Notice All interconnections made between the in-chassis modules of your composite instrument must be disconnected prior to removing any

modules from the PXI chassis. Failure to do so could result in damage to the modules or interconnection cables.

Setting up the PXIe-5842 for Measurements

Configuring the PXIe-5842 in MAX

Use Measurement & Automation Explorer (MAX) to configure your NI hardware. MAX informs other programs about which NI hardware products are in the system and how they are configured. MAX is automatically installed with NI-RFSA, NI-RFSG, and RFmx.

1. Launch MAX.
2. In the configuration tree, expand **Devices and Interfaces** to see the list of installed NI hardware.
Installed modules appear under the name of their associated chassis.
3. Expand your **Chassis** tree item.
MAX lists all modules installed in the chassis. Your default names may vary.



Note If you do not see your module listed, press <F5> to refresh the list of installed modules. If the module is still not listed, power off the system, ensure the module is correctly installed, and restart.

4. Record the name MAX assigns to the PXIe-5842 or, if desired, provide a custom name to the PXIe-5842.
Use this name when programming the PXIe-5842.
5. Associate the hardware modules that compose your instrument.

Instrument	Process
PXIe-5842 VST	<ol style="list-style-type: none"> 1. Select the PXIe-5842 module to associate. 2. In the Associated Devices section, click the Associated LO dropdown and choose the PXIe-5655 to associate with the PXIe-5842 module. 3. Click Save.

6. Perform an intermediate self-test in MAX.
 1. Select the item in the configuration tree and click **Self-Test** in the MAX toolbar.
 2. Select the **Intermediate** radio button and then click **Start**.

The green signal illuminates and shows `PASS` when the self-test completes successfully.

Related tasks:

- [What Should I Do if the Instrument Does Not Initialize?](#)

When to Perform Self-Calibration

Self-calibration uses internal elements to adjust the PXIe-5842 for variations in the module environment.

PXIe-5842 modules are externally calibrated at the factory; however you should perform a self-calibration in any of the following situations:

- After first installing and interconnecting your PXIe-5842 instrument
- After any module in the chassis is installed, uninstalled, or moved
- After intermodule cabling has been changed, reconnected, or repositioned
- After changing controllers, computers, or reinstalling the driver software
- When the system is in an environment where the ambient temperature varies or the module temperature has drifted more than ± 5 °C from the temperature at the last self-calibration
- To periodically adjust for small performance drifts that occur with product aging



Note To ensure specifications before you use the instrument or perform self-calibration, power on the PXI Express chassis and wait for the operating system to completely load; and then allow the instrument to warm up for 30 minutes.



Note Ensure that any connected external hardware is in an idle state and not outputting signals during self-calibration. It is not recommended to perform self-calibration while connected in direct loopback configurations.



Note For the best image rejection and residual LO performance, run Self Cal or Self Calibrate Range for the image rejection and residual LO portion any time the module temperature changes beyond ± 1 °C.

Performing PXIe-5842 Self-Calibration

You can self-calibrate your VST either interactively or programmatically; each method yields the same self-calibration results.

- **Interactive methods**—Self-calibration in the InstrumentStudio application.
- **Programmatic methods**—Self-calibration in a supporting programming environment using an API directly.
 - NI-RFSA
 - Using the RFSA Self-Calibration programming example
 - Using self-calibration functions
 - NI-RFSG: using self-calibration functions
 - RFmx: using self-calibration functions

To get started, choose one of the self-calibration methods, and self-calibrate the PXIe-5842.

Performing a VST Self-Calibration Using InstrumentStudio

NI recommends you perform an initial self-calibration using InstrumentStudio.

NI VSTs are represented in InstrumentStudio as a vector signal analyzer and a vector signal generator. Performing self-calibration with either representation of the PXIe-5842 accomplishes the same self-calibration, so it is not necessary to use both when you self-calibrate the PXIe-5842.

Complete the following steps to self-calibrate your VST with InstrumentStudio:

1. Allow all modules of the PXIe-5842 instrument to warm up for 30 minutes after the PXI Express chassis has been powered on and the operating system has completely loaded.
2. Launch InstrumentStudio by navigating to **Start » National Instruments » InstrumentStudio**.
3. Click **File » New » RF Signal Analyzer** to create an analyzer panel for the PXIe-5842.
4. Click the tab created for the PXIe-5842 and click the gear icon (⚙) in the upper right corner of the right sidebar.
5. Hover over **Device Slot » Calibration** and click **Self-Calibrate...**
6. Click **Continue** to proceed.

The PXIe-5842 stores the new calibration data in its nonvolatile memory if the self-calibration is performed successfully.

Performing a Self-Calibration Using the NI-RFSA LabVIEW Example

Complete the following steps to self-calibrate the PXIe-5842 with the NI-RFSA programming example:

1. Allow all modules of the PXIe-5842 instrument to warm up for 30 minutes after the PXI Express chassis has been powered on and the operating system has completely loaded.
2. Select **Start » All Programs » National Instruments » LabVIEW** to launch LabVIEW.

3. Launch the Example Finder at **Help » Find Examples...** and navigate to the example.
 1. Select **Hardware Input and Output » Modular Instruments » NI-RFSA » Utilities » RFSA Self Calibration**.
 2. Open the example.
4. Complete the following steps to configure the example:
 1. Select the device identifier assigned to the PXIe-5842 in MAX in the **[Resource Name]** drop-down menu.
 2. Set Clock Source to **OnboardClock**.
 3. Set Self Calibration Step Operations to **Perform All Self Calibration Steps**.
5. Run the VI.

PXIe-5842 stores the new calibration data in its nonvolatile memory if the self-calibration is performed successfully.

Using NI Software with the PXIe-5842

Making a First Measurement

You can verify proper installation and configuration of your device by making a measurement using InstrumentStudio.

1. Depending on your instrument, connect the relevant RF input and RF output ports using the appropriate cable.

Instrument	Connection
PXIe-5842 VST	<ul style="list-style-type: none"> ▪ Ports: PXIe-5842 RF IN to RF OUT ▪ Cable: SMA (m)-to-SMA (m)

2. Launch InstrumentStudio at **Start » National Instruments » InstrumentStudio**.
3. Click **File » New » RF Signal Generator**.
4. Generate a 1 GHz CW tone RF signal at the RF output terminal of your instrument.
 1. Select **CW** in the panel for the instrument.
 2. In the **Frequency** box, enter 1 GHz.
 3. In the **Level** box, enter 0 dBm.
5. If the generator is not already running, click **Run**, and set the output to **On**. The instrument generates a signal with the settings you specify.
6. Click **File » New » RF Signal Analyzer**.
7. Verify on the RF signal analyzer panel that the PXIe-5842 is receiving the CW tone.
8. Close InstrumentStudio.

RF API Locations

Access the API to program your instrument, depending on your application development environment and RF driver.

Table 2. API Location for RFmx

ADE	Location
LabVIEW	Available on the LabVIEW Functions palette at Measurement I/O » NI-RFmx .
LabWindows/CVI	Available from the LabWindows/CVI Library menu at Library » RFmx SpecAn Library and Library » RFmx Demod Library .
Microsoft Visual C/C++	<p>Use the header files located in the <NIDir>\Shared\ExternalCompilerSupport\C\include directory and import library files located in one of the following directories:</p> <ul style="list-style-type: none"> ▪ 32-bit installation— <NIDir>\Shared\ExternalCompilerSupport\C\lib32\msvc ▪ 64-bit installation— <NIDir>\Shared\ExternalCompilerSupport\C\lib64\msvc <p>where <NIDir> is the following location:</p> <p>Program Files (x86)\National Instruments.</p>
Microsoft .NET	For the location of .NET class libraries, refer to the installed RFmx readme.

Table 3. API Location for NI-RFSA

ADE	Location
LabVIEW	Available on the LabVIEW Functions palette at Measurement I/O » NI-RFSA .
LabWindows/CVI	<p>Depending on bitness, available in the <IVIROOTDIR32>\Drivers\niRFSA or <IVIROOTDIR64>\Drivers\niRFSA directory, where <IVIROOTDIR32> and <IVIROOTDIR64> are the following:</p> <ul style="list-style-type: none"> • <IVIROOTDIR32>—Program Files (x86)\IVI Foundation\IVI • <IVIROOTDIR64>—Program Files\IVI Foundation\IVI
Microsoft Visual C/C++	<p>Depending on bitness, use the header files located in the <IVIROOTDIR32>\Include or <IVIROOTDIR64>\Include directory and import library files located in the <IVIROOTDIR32>\Lib or <IVIROOTDIR64>\Lib directory, where <IVIROOTDIR32> and <IVIROOTDIR64> are the following:</p> <ul style="list-style-type: none"> • <IVIROOTDIR32>—Program Files (x86)\IVI Foundation\IVI • <IVIROOTDIR64>—Program Files\IVI Foundation\IVI
Microsoft .NET	Use the NI-RFSA .NET class library by adding a reference to NationalInstruments.ModularInstruments.NIRfs a.Fx40 or NationalInstruments.ModularInstruments.NIRfs a.Fx45 and any dependent class libraries from within the Solution Explorer in Visual Studio.

Table 4. API Location for NI-RFSG

ADE	Location
LabVIEW	Available on the LabVIEW Functions palette at Measurement I/O » NI-RFSG .
LabWindows/CVI	<p>Depending on bitness, available in the <IVIROOTDIR32>\Drivers\niRFSG or <IVIROOTDIR64>\Drivers\niRFSG directory, where <IVIROOTDIR32> and <IVIROOTDIR64> are the following:</p> <ul style="list-style-type: none"> • <IVIROOTDIR32>—Program Files (x86)\IVI Foundation\IVI • <IVIROOTDIR64>—Program Files\IVI Foundation\IVI
Microsoft Visual C/C++	<p>Depending on bitness, use the header files located in the <IVIROOTDIR32>\Include or <IVIROOTDIR64>\Include directory and import library files located in the <IVIROOTDIR32>\Lib or <IVIROOTDIR64>\Lib directory, where <IVIROOTDIR32> and <IVIROOTDIR64> are the following:</p> <ul style="list-style-type: none"> • <IVIROOTDIR32>—Program Files (x86)\IVI Foundation\IVI • <IVIROOTDIR64>—Program Files\IVI Foundation\IVI
Microsoft .NET	Use the NI-RFSG .NET class library by adding a reference to NationalInstruments.ModularInstruments.NIRfsg.Fx40 or NationalInstruments.ModularInstruments.NIRfsg.Fx45 and any dependent class libraries from within the Solution Explorer in Visual Studio.

Using the NI Example Finder

If you are using RFmx, NI-RFSA, or NI-RFSG with LabVIEW or LabWindows/CVI, use the NI Example Finder to locate programming examples.

1. Launch LabVIEW or LabWindows/CVI.
2. Select **Help » Find Examples** to open the NI Example Finder.
3. Navigate to **Hardware Input and Output » Modular Instruments**.
4. Open the example that best matches your application requirements.

Finding Microsoft Visual Studio Examples

If you are developing VST applications with Microsoft Visual Studio, locate examples in the following directories.

Table 5. Location of Microsoft Visual Studio Programming Examples

Software Option	Examples Location
RFmx	<p><NIDocDir>\<Personality>\Examples</p> <p>where <NIDocDir> is the Users\Public\Public Documents\National Instruments directory and <Personality> is the directory of your RFmx personality.</p>
NI-RFSA	<p><NIDocDir>\NI-RFSA\examples</p> <p>where <NIDocDir> is the Users\Public\Public Documents\National Instruments directory.</p>
NI-RFSG	<p><NIDocDir>\NI-RFSG\examples</p> <p>where <NIDocDir> is the Users\Public\Public Documents\National Instruments directory.</p>

PXIe-5842 Troubleshooting

Troubleshooting

If an issue persists after you complete a troubleshooting procedure, search our KnowledgeBase for additional information our technical support engineers create as they answer common user questions and resolve unexpected issues.

Related information:

- ni.com/support

What Should I Do if My Hardware Doesn't Appear in MAX?

1. Check that the ACCESS/ACC LED on the hardware is solid green.
2. In the MAX configuration tree, expand **Devices and Interfaces**.
3. Expand the **Chassis** tree to see the list of installed hardware, and press <F5> to refresh the list.
4. If the module is still not listed, power off the system, ensure that all hardware is correctly installed, and restart the system.
5. Navigate to the Device Manager by right-clicking the **Start** button and selecting **Device Manager**.
6. Depending on your controller type, verify Device Manager settings.

Controller Type	Description
PXI controller	<ol style="list-style-type: none"> 1. Verify that a National Instruments entry appears in the system device list 2. If error conditions appear in the list, right-click the module you are using in the Device Manager and select Update Driver.

Controller Type	Description
MXI controller	Right-click PCI-to-PCI Bridge and select Properties from the shortcut menu to verify that the bridge is enabled.

- Restart your computer.

Why Is the ACCESS LED Off When the Chassis Is On?

The LEDs may not light until the module has been configured in MAX. Before proceeding, verify that the module appears in MAX.

If the module appears in MAX but the ACCESS LED fails to light after you power on the chassis, a problem may exist with the chassis power rails, the hardware module, or the LED.



Notice Apply external signals only while the hardware is powered on. Applying external signals while the hardware is powered off may cause damage.

- Disconnect any signals from the PXI Express module front panel.
- Power off the PXI Express chassis.
- Remove the module from the PXI Express chassis and inspect it for damage. Do not reinstall a damaged device.
- Install the module in a different PXI Express chassis slot from which you removed it.
- Power on the PXI Express chassis.
- Restart your computer.
- Verify that the module appears in MAX.

What Should I Do if the PXIe-5842 Fails the Self-Test?

- Restart the system.

2. Launch MAX and perform an intermediate self-test.
 1. Select the item in the configuration tree and click **Self-Test** in the MAX toolbar.
 2. Select the **Intermediate** radio button and then click **Start**.

The green signal illuminates and shows `PASS` when the self-test completes successfully.

If the self-test fails, review the **Detailed Result** pane in the 5842 Self-Test window to identify the specific item(s) causing the failure, and inspect any cables and connections for the item(s). Address any issues you identify and perform an intermediate self-test again. If the self-test still fails, continue this procedure.

3. Power off the chassis.
4. Reinstall the failed instrument in a different set of slots.
5. Power on the chassis.
6. Perform an intermediate self-test again.

What Should I Do if the Instrument Does Not Initialize?

Failure to initialize may indicate a problem with module interconnections or with MAX.

If the niRFSA Initialize VI or niRFSG Initialize VI returns an error and the PXIe-5842 fails to initialize, complete the following steps:

1. Power off the system.
2. Inspect all PXIe-5842 front panel cables and, if there are no apparent issues, reconnect cables securely, according to the interconnection procedure for your instrument.
3. Power on your system and run the MAX configuration and intermediate self-test procedures.

Related tasks:

- Configuring the PXIe-5842 in MAX

PXIe-5842 Instrument Interface Descriptions

PXIe-5842 Front Panel and LEDs



Note This information applies to the PXIe-5842 module only.

Figure 3. PXIe-5842 Front Panel

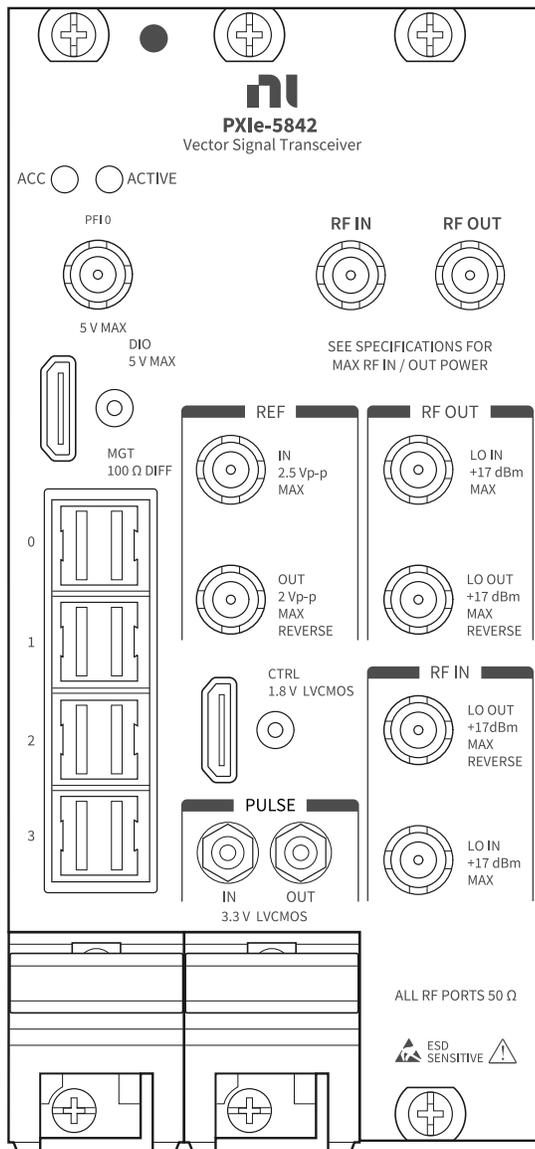


Table 6. PXIe-5842 RF Connector Descriptions

Connector	Connector Type	Description
RF IN	3.5 mm (f)	Input terminal for RF signals
RF OUT	3.5 mm (f)	Output terminal for RF signals
RF OUT: LO IN	SMA (f)	Intermodule connection only
RF OUT: LO OUT	SMA (f)	Output terminal for exporting the RF OUT LO signal
RF IN: LO OUT	SMA (f)	Output terminal for exporting the RF IN LO signal
RF IN: LO IN	SMA (f)	Intermodule connection only

Table 7. PXIe-5842 General Connector Descriptions

Connector	Connector Type	Description
REF: IN	SMA (f)	Intermodule connection only
REF: OUT	SMA (f)	Output terminal that can export a 10 MHz, 100 MHz, or 1 GHz reference clock
PFI 0	SMA (f)	Programmable function digital I/O (DIO) connector for use with triggers or events
DIO	Mini HDMI	Reserved
MGT	iPass+ zHD	Reserved
CTRL	Mini HDMI	Intermodule connection only
PULSE: IN	SMB (m)	Reserved
PULSE: OUT	SMB (m)	Reserved

Table 8. PXIe-5842 LED Indicators

LED	Indications
ACCESS	<p>Indicates the basic hardware status of the module.</p> <ul style="list-style-type: none"> • Off—The module is not yet functional or has detected a problem with a PXI Express power rail

LED	Indications
	<ul style="list-style-type: none"> • Amber—The module is being accessed; accessed means that you are writing to the module setup registers to control the module, reading from the module to monitor its status, or transferring data to or from the module • Green—The module is controllable through the software
ACTIVE	<p>Indicates the state of the module.</p> <ul style="list-style-type: none"> • Off—The module is idle • Solid green—The module is generating a waveform • Dim amber—The module is waiting for an acquisition Reference Trigger • Solid amber—The module is acquiring a waveform • Solid red—The module has detected an error; the LED remains red until the error condition is removed <p>For example, the module could have exceeded its operating temperature and entered thermal shutdown. In this case, check system airflow and reset the module in MAX.</p> <div style="border-left: 2px solid green; padding-left: 10px; margin-top: 20px;">  <p>Note Indicators are listed in increasing order of priority. For example, if you are generating a waveform using NI-RFSG and waiting on an acquisition Reference Trigger in NI-RFSA, the LED is dim amber.</p> </div>

PXIe-5842 MGT Connector Pinout

Single MGT connector shown; the PXIe-5842 front panel has four MGT connectors that have identical pinouts.

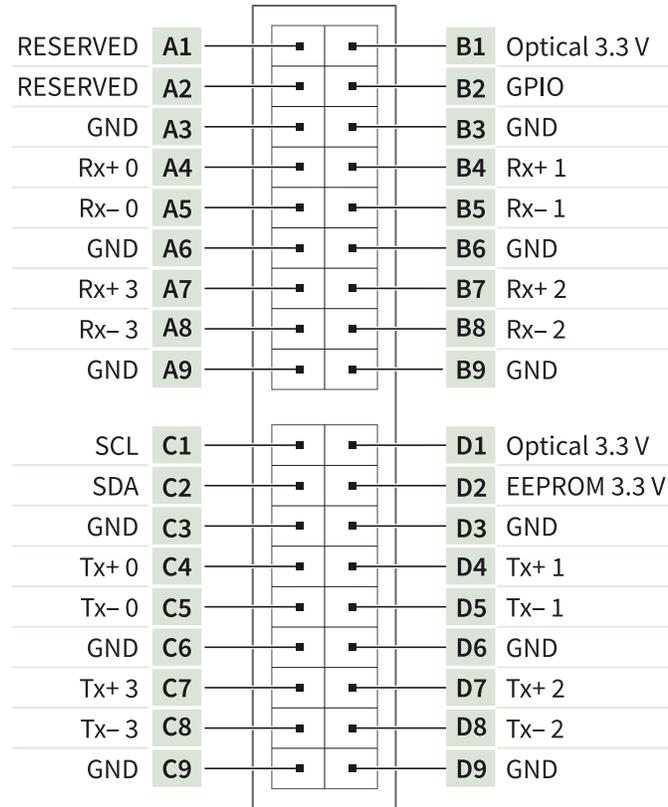


Table 9. PXIe-5842 MGT Signal Descriptions

Pin	Signal	Description
A1	Reserved	N/A
A2	Reserved	N/A
A3	GND	Ground reference for signals
A4	Rx+ 0	Receive channel 0, positive
A5	Rx- 0	Receive channel 0, negative
A6	GND	Ground reference for signals
A7	Rx+ 3	Receive channel 3, positive
A8	Rx- 3	Receive channel 3, negative
A9	GND	Ground reference for signals

Pin	Signal	Description
B1	Optical 3.3 V	Power supply for active/optical cables
B2	GPIO	Reserved
B3	GND	Ground reference for signals
B4	Rx+ 1	Receive channel 1, positive
B5	Rx- 1	Receive channel 1, negative
B6	GND	Ground reference for signals
B7	Rx+ 2	Receive channel 2, positive
B8	Rx- 2	Receive channel 2, negative
B9	GND	Ground reference for signals
C1	SCL	Serial clock
C2	SDA	Serial data
C3	GND	Ground reference for signals
C4	Tx+ 0	Transmit channel 0, positive
C5	Tx- 0	Transmit channel 0, negative
C6	GND	Ground reference for signals
C7	Tx+ 3	Transmit channel 3, positive
C8	Tx- 3	Transmit channel 3, negative
C9	GND	Ground reference for signals
D1	Optical 3.3 V	Power supply for active/optical cables
D2	EEPROM 3.3 V	EEPROM power supply
D3	GND	Ground reference for signals
D4	Tx+ 1	Transmit channel 1, positive
D5	Tx- 1	Transmit channel 1, negative
D6	GND	Ground reference for signals
D7	Tx+ 2	Transmit channel 2, positive
D8	Tx- 2	Transmit channel 2, negative
D9	GND	Ground reference for signals

PXIe-5842 DIO Connector Pinout

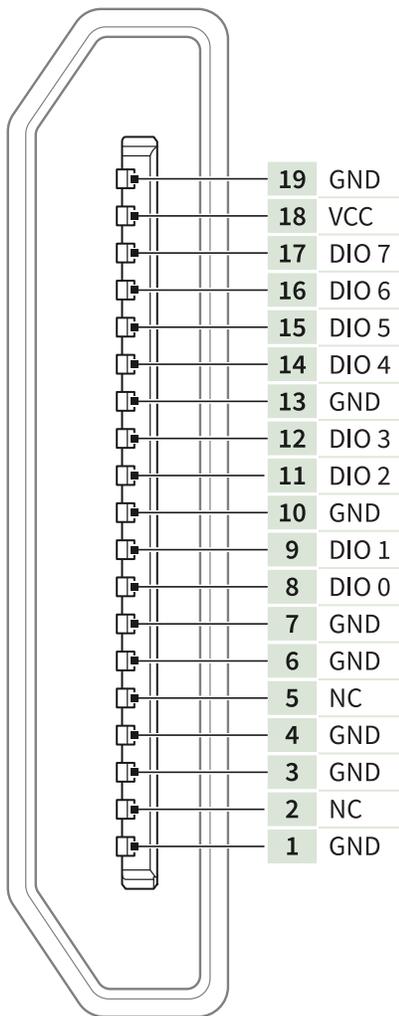


Table 10. PXIe-5842 DIO Signal Descriptions

Pin	Signal	Description
19	GND	Ground reference for signals
18	VCC	+3.3 V power (200 mA maximum)
17	DIO 7	Bidirectional digital I/O line
16	DIO 6	Bidirectional digital I/O line
15	DIO 5	Bidirectional digital I/O line
14	DIO 4	Bidirectional digital I/O line

Pin	Signal	Description
13	GND	Ground reference for signals
12	DIO 3	Bidirectional digital I/O line
11	DIO 2	Bidirectional digital I/O line
10	GND	Ground reference for signals
9	DIO 1	Bidirectional digital I/O line
8	DIO 0	Bidirectional digital I/O line
7	GND	Ground reference for signals
6	GND	Ground reference for signals
5	NC	No connection
4	GND	Ground reference for signals
3	GND	Ground reference for signals
2	NC	No connection
1	GND	Ground reference for signals

PXIe-5655 Front Panel and LEDs

Figure 4. PXIe-5655 with SMA Front Panel

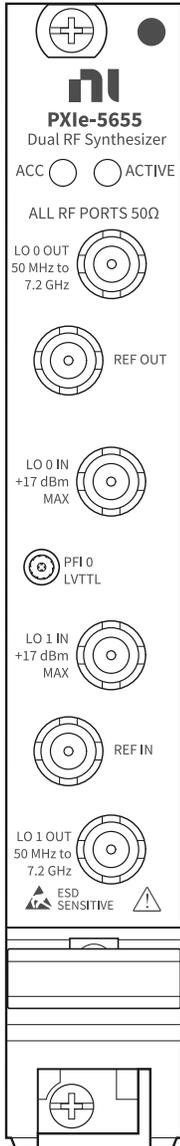


Table 11. PXIe-5655 Connector Descriptions

Connector	Connector Type	Description
REF OUT	SMA (f)	Output terminal that can export a 100 MHz Reference Clock.

Connector	Connector Type	Description
PFI 0	—	This is reserved and not enabled for use with the PXIe-5842.
REF IN	SMA (f)	Input terminal that allows the use of an external Reference Clock with one of the following frequencies: <ul style="list-style-type: none"> ▪ 10 MHz ▪ 100 MHz ▪ 270 MHz ▪ 3.84 MHz × y, where y is 4, 8, 16, 24, 25, or 32
LO 0 OUT	SMA (f)	Output terminal for the LO source. This terminal has no signal at power on and reset.
LO 0 IN	SMA (f)	Input terminal that allows the use of an external local oscillator.
LO 1 IN	SMA (f)	Input terminal that allows the use of an external local oscillator.
LO 1 OUT	SMA (f)	Output terminal for the LO source. This terminal has no signal at power on and reset.

Table 12. PXIe-5655 LED Indicators

LED	Indications
ACCESS	Indicates the basic hardware status of the module. <ul style="list-style-type: none"> • Off—The module is not yet functional or has detected a problem with a PXI Express power rail. • Amber—The module is being accessed. Accessed means that you are writing to the

LED	Indications
	<p>device setup registers to control the device, reading from the device to monitor the device status, or transferring data to or from the device.</p> <ul style="list-style-type: none">• Green—The module is controllable through the software.
ACTIVE	<ul style="list-style-type: none">• Off—The module is idle or locked to the requested reference.• Solid red—The PLL is unlocked or the module temperature is out of the specified operating range.