GETTING STARTED GUIDE

NI PXIe-6592R

High Speed Serial Module

This document explains how to install your NI PXIe-6592R (NI 6592R) high-speed serial module.

The NI 6592R provides access to FPGA multi-gigabit transceivers (MGTs) via Component Level IP (CLIP) for use in the following applications:

- Functional test for semiconductor production
- Protocol functional test
- Device interfacing
- High performance embedded systems

For more information about features and programming, refer to the *NI High-Speed Serial Instruments User Manual*. For device specifications, refer to the specifications document for your device. To access these documents, select **Start**»**All Programs**»**National Instruments**» **High Speed Serial Instruments**»**High Speed Serial Instruments Documentation**.

For the most current versions of documentation, visit *ni.com/manuals*. For the latest version of the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments driver, visit *ni.com/downloads*.

⚠️ **Caution**   The protection provided by this product may be impaired if it is used in a manner not described in this document.

Contents

NATIONAL INSTRUMENTS™

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) stated in the product specifications. These requirements and limits provide reasonable protection against harmful interference when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by National Instruments could void your authority to operate it under your local regulatory rules.

⚠ **Caution** To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

⚠ **Caution** To ensure the specified EMC performance, the length of all I/O cables must be no longer than 3 m (10 ft).

⚠ **Caution** To ensure the specified EMC performance, you must install PXI EMC Filler Panels, National Instruments part number 778700-01, in all open chassis slots. A kit of six single slot EMC Filler Panels can be ordered directly from NI by visiting `ni.com/info` and entering `partnumber`.

How to Use Your Documentation Set

Refer to the following table to learn how to use your documentation set.

Table 1. NI 6592R Document Locations and Descriptions

| Document	Location	Description
NI PXIe-6592R Getting Started Guide (this document)	Available from the Start menu and at *ni.com/ manuals*.	Contains installation instructions for your NI 6592R device and driver software.
NI High Speed Serial Instruments User Manual	Available from the Start menu and at *ni.com/ manuals*.	Contains information about developing applications for the NI 6591R and NI 6592R.

Table 1. NI 6592R Document Locations and Descriptions (Continued)

Document	Location	Description
NI High Speed Serial Instruments Help	Available from the Start menu and at *ni.com/ manuals*.	Contains hardware and programming support for NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments and the NI 6591 and NI 6592 modules.
NI PXIe-6592R Specifications	Available from the Start menu and at *ni.com/ manuals*.	Contains specifications for your NI 6592R module.

Device Front Panels

The following figure shows the available signals on the NI 6592R.

Figure 1. NI 6592R Front Panel and Connector Pinouts
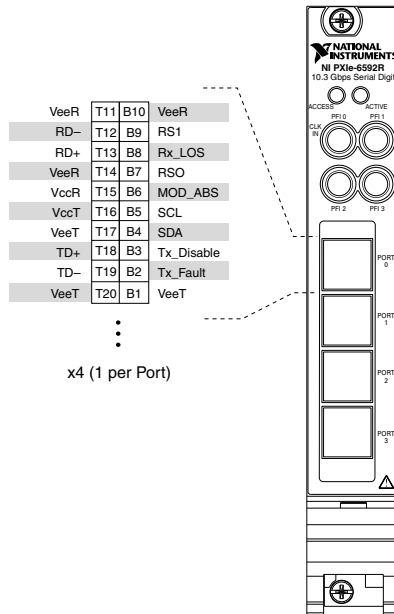
Verifying the System Requirements

To use the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments instrument driver, your system must meet certain requirements.

For more information about minimum system requirements, recommended system, and supported application development environments (ADEs), refer to the product readme, which is available on the driver software media or online at *ni.com/updates*.

NI 6592R Kit Contents

The following items are included in the device kit:
- The NI 6592R
- The NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments driver software media
- Other included items:
    - *Read Me First: Safety and Electromagnetic Compatibility*
    - *Maintain Forced-Air Cooling Note to Users*

Preparing the Environment

Ensure that the environment you are using the NI 6592R in meets the following specifications.

Operating ambient temperature..........................0 °C to 45 °C
(IEC-60068-2-1, IEC-60068-2-2)

Operating relative humidity................................10% to 90%, noncondensing
(IEC-60068-2-56)

Maximum altitude...2,000 m (800 mbar)
(at 25 °C ambient temperature)

Pollution degree...2

Indoor use only.

⚠ **Caution** Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free from contaminants before returning it to service.

📝 **Note** Refer to the *NI PXIe-6592R Specifications* at *ni.com/manuals* for complete specifications.

Unpacking the Kit

⚠ **Caution** 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.

⚠ **Caution** Never touch the exposed pins of connectors.

Notify NI if the device appears damaged in any way. Do not install a damaged device.

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 the Software

You must install the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments driver software before installing the NI 6592R.

1. Install LabVIEW. Refer to the *LabVIEW Installation Guide* for installation instructions for LabVIEW and system requirements for the LabVIEW software. Refer to the *LabVIEW Upgrade Notes* for additional information about upgrading to the most recent version of LabVIEW for Windows.

   Documentation for LabVIEW is available at *ni.com/manuals* and by selecting **Start**»**All Programs**»**National Instruments**»**LabVIEW**»**LabVIEW Manuals**.

2. Install the LabVIEW FPGA Module. Refer to the *LabVIEW FPGA Module Release and Upgrade Notes* for installation instructions and information about getting started with the LabVIEW FPGA Module.

   Documentation for the LabVIEW FPGA Module is available is available at *ni.com/manuals* and by selecting **Start**»**All Programs**»**National Instruments**»**LabVIEW**»**LabVIEW Manuals**.

3. Install the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments Help driver. Refer to the *NI High Speed Serial Instruments Readme* on the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments installation media for system requirements and installation instructions for the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments driver.

   Documentation for the NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments driver is available at *ni.com/manuals* and by selecting **Start**»**All Programs**»**National Instruments**»**High Speed Serial Instruments**»**High Speed Serial Instruments Documentation**.
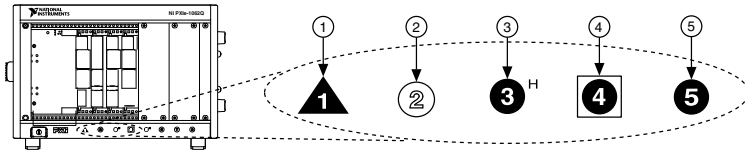
Installing the NI 6592R Module

> **Note** You must install the software before you install the hardware.

1. Power off and unplug the chassis. Refer to your chassis manual to install or configure the chassis.

2. Identify a supported module slot in the chassis. The figure below shows the symbols that indicate the slot types in the chassis.

Figure 2. Symbols for Module Slots

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

   PXI Express devices can be placed only in PXI Express slots and PXIe Express Hybrid slots. Refer to the chassis documentation for details.

3. Remove the filler panel of an unused module slot.

4. Touch any metal part of the chassis to discharge any static electricity. Place the module edges into the module guides at the top and bottom of the chassis, and slide the module into the chassis until the module is fully inserted.

5. Secure the device front panel to the chassis front panel mounting rail using the front panel mounting screws.

6. Plug in and power on the chassis.

Configuring the NI 6592R in MAX

Use Measurement & Automation Explorer (MAX) to configure your National Instruments hardware. MAX informs other programs about which devices reside in the system and how they are configured. MAX is automatically installed with NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments.

1. Launch MAX by navigating to **Start**»**All Programs**»**National Instruments**»**NI MAX** or by clicking the NI MAX desktop icon.

2. In the Configuration pane, double-click **Devices and Interfaces** to see the list of installed devices. Installed devices appear under the name of their associated chassis.

3. Expand your **Chassis** tree item. MAX lists all devices installed in the chassis. Your default device names may vary.

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

4. Record the device identifier MAX assigns to the hardware. Use this identifier when programming the NI 6592R.

5. Close MAX.

Accessing Sample Projects

NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments includes sample projects to help you get started designing for the NI 6592R.

1. Open LabVIEW and select **Create Project**.

2. In the **Create Project** dialog box, select **High-Speed Serial** and select a sample project for your device.

3. Click **Next**.

4. Configure the **Project Name**, **Project Root**, and **File Name Prefix (Optional)** fields.

5. Click **Finish**.

Troubleshooting

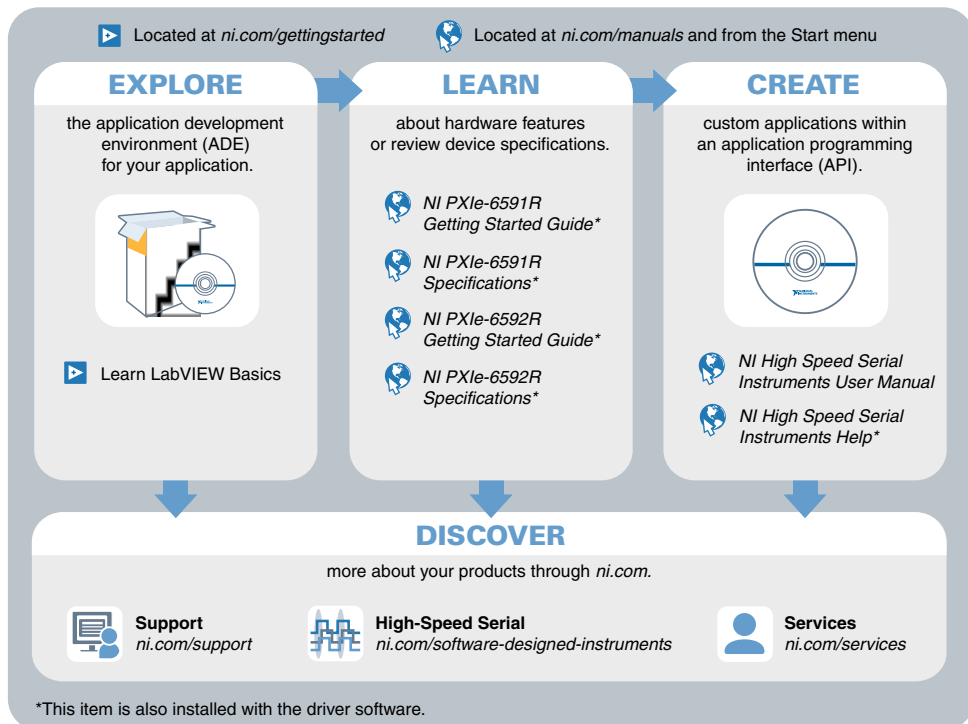## What Should I Do if the NI 6592R Doesn't Appear in MAX?

1. In the MAX configuration tree, click **Devices and Interfaces**.

2. Expand the **Chassis** tree to see the list of installed devices, and press <F5> to refresh the list.

3. If the module is still not listed, power off the system, ensure that all hardware is correctly installed, and restart the system.

4. Navigate to the Device Manager.

Operating System	Description
Windows 8.*x*/8	Right-click the Start screen, and select **All apps**»**Control Panel**»**Hardware and Sound**»**Device Manager**.
Windows 7	Select **Start**»**Control Panel**»**System**»**Hardware**»**Device Manager**.

5. If you are using a PXI controller, verify that a **National Instruments** entry appears in the system device list. Reinstall NI LabVIEW Instrument Design Libraries for High Speed Serial Instruments and the device if error conditions appear in the list. If you are using an MXI controller, right-click **PCI-to-PCI Bridge**, and select **Properties** from the shortcut menu to verify that the bridge is enabled.

Where to Go Next

Refer to the following figure for information about other product tasks and associated resources for those tasks.

Located at *ni.com/gettingstarted*   Located at *ni.com/manuals* and from the Start menu

EXPLORE

the application development environment (ADE) for your application.

▶ Learn LabVIEW Basics

LEARN

about hardware features or review device specifications.

🌐 *NI PXIe-6591R Getting Started Guide**

🌐 *NI PXIe-6591R Specifications**

🌐 *NI PXIe-6592R Getting Started Guide**

🌐 *NI PXIe-6592R Specifications**

CREATE

custom applications within an application programming interface (API).

🌐 *NI High Speed Serial Instruments User Manual*

🌐 *NI High Speed Serial Instruments Help**

DISCOVER

more about your products through *ni.com*.

Support
ni.com/support

High-Speed Serial
ni.com/software-designed-instruments

Services
ni.com/services

*This item is also installed with the driver software.

Worldwide Support and Services

The National Instruments website is your complete resource for technical support. At *ni.com/support*, you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

Visit *ni.com/register* to register your National Instruments product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting *ni.com/certification*. If your product supports calibration, you can obtain the calibration certificate for your product at *ni.com/calibration*.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world. For telephone support in the United States, create your service request at *ni.com/support* or dial 1 866 ASK MYNI (275 6964). For telephone support outside the United States, visit the *Worldwide Offices* section of *ni.com/niglobal* to access the branch office websites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.