INSTALLATION GUIDE

OSS-539

This guide describes the OSS-539, lists what you need to get started, and explains how to set up and get started with your hardware.

Contents

Safety Information

The following section contains important safety information that you must follow when installing and using the hardware.

Do not operate the hardware in a manner not specified in this document and in the user documentation. Misuse of the hardware can result in a hazard. You can compromise the safety protection if the hardware is damaged in any way. If the hardware is damaged, return it to National Instruments for repair.

Caution When this symbol is marked on a product, refer to the hardware documentation for information about precautions to take.

Electric Shock When this symbol is marked on a product, it denotes a warning advising you to take precautions to avoid electrical shock.

Hot Surface When this symbol is marked on a product, it denotes a component that may be hot. Touching this component may result in bodily injury.

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.

Do not substitute parts or modify the hardware except as described in this document. Use the hardware only with the chassis, modules, accessories, and cables specified in the installation instructions or specifications. You must have all covers and filler panels installed during operation of the hardware.

Do not operate the hardware in an explosive atmosphere or where there may be flammable gases or fumes unless the hardware is UL (U.S.) or Ex (EU) Certified and marked for hazardous locations. The hardware must be in a suitably rated IP 54 minimum enclosure for hazardous locations. Refer to the hardware documentation for more information.

You must insulate signal connections for the maximum voltage for which the hardware is rated. Do not exceed the maximum ratings for the hardware. Do not install wiring while the hardware is live with electrical signals. Do not remove or add connector blocks when power is connected to the system. Avoid contact between your body and the connector pins when hot-swapping hardware. Remove power from signal lines before connecting them to or disconnecting them from the hardware.

Operate the hardware only at or below Pollution Degree 2. Pollution is foreign matter in a solid, liquid, or gaseous state that can reduce dielectric strength or surface resistivity. The following is a description of pollution degrees:

- Pollution Degree 1 means no pollution or only dry, nonconductive pollution occurs. The pollution has no influence. Typical level for sealed components or coated PCBs.
- Pollution Degree 2 means that only nonconductive pollution occurs in most cases. Occasionally, however, a temporary conductivity caused by condensation must be expected. Typical level for most products.
- Pollution Degree 3 means that conductive pollution occurs, or dry, nonconductive pollution occurs that becomes conductive due to condensation.

Operate the hardware at or below the measurement category[1] marked on the hardware label. Measurement circuits are subjected to working voltages[2] and transient stresses (overvoltage) from the circuit to which they are connected during measurement or test. Measurement categories establish standard impulse withstand voltage levels that commonly occur in electrical distribution systems. The following is a description of measurement categories:

- Measurement Categories CAT I and CAT O (Other) are equivalent and are for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS[3] voltage. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels,

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[1] Measurement categories, also referred to as overvoltage or installation categories, are defined in electrical safety standards IEC 61010-1 and IEC 60664-1.

[2] Working voltage is the highest rms value of an AC or DC voltage that can occur across any particular insulation.

[3] MAINS is defined as a hazardous live electrical supply system that powers hardware. Suitably rated measuring circuits may be connected to the MAINS for measuring purposes.

special hardware, limited-energy parts of hardware, circuits powered by regulated low-voltage sources, and electronics.

- Measurement Category II is for measurements performed on circuits directly connected to MAINS. This category refers to local-level electrical distribution, such as that provided by a standard wall outlet (for example, 115 AC voltage for U.S. or 230 AC voltage for Europe). Examples of Measurement Category II are measurements performed on household appliances, portable tools, and similar hardware.
- Measurement Category III is for measurements performed in the building installation at the distribution level. This category refers to measurements on hard-wired hardware such as hardware in fixed installations, distribution boards, and circuit breakers. Other examples are wiring, including cables, bus bars, junction boxes, switches, socket outlets in the fixed installation, and stationary motors with permanent connections to fixed installations.
- Measurement Category IV is for measurements performed at the primary electrical supply installation typically outside buildings. Examples include electricity meters and measurements on primary overcurrent protection devices and on ripple control units.

To obtain the safety certification(s) for this product, visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the *Certification* column.

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 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.

About the OSS-539

Description and Overview

The OSS-539 is a 1-slot 3U PXI Express peripheral module that uses dual Intel 82599 controllers to provide up to 10 Gigabit Ethernet (GbE) connectivity on four SFP+ ports for a PXI Express system. It can attach to a PXI Express system via a high-bandwidth, low-latency PXI Express backplane Gen3 x8 link.

With 10 Gigabit Ethernet, the OSS-539 allows offloading data from a PXI Express system to an external storage solution or a server for further analysis. It also allows data exchange and aggregation across two or more PXI Express systems.

What You Need to Get Started

To set up and use your OSS-539 for PXI Express, you need the following hardware:

- OSS-539
- PXI Express controller and chassis
- Approved SFP+ cable

Caution Your OSS-539 is sensitive to electrostatic damage (ESD). ESD can damage several components on the system.

Caution *Never* touch the exposed pins of connectors. Doing so may damage the device.

To avoid such damage in handling the device, take the following precautions:

- Ground yourself using a grounding strap or by holding a grounded object.
- Touch any antistatic packaging to a metal part of the chassis before removing the device from the package.

Hardware Installation and Use

This section explains how to install and use the OSS-539 for PXI Express.

Installing the OSS-539

Complete the following steps to install the OSS-539 in your PXI Express or CompactPCI Express chassis:

1. Power off your PXI Express or CompactPCI Express chassis, but leave it plugged in while installing the OSS-539. The power cord grounds the chassis and protects it from electrical damage while you install the module.
2. Locate an available PXI Express or CompactPCI Express slot in the chassis. Do *not* install the OSS-539 in the controller slot (slot 1 in a PXI Express chassis).

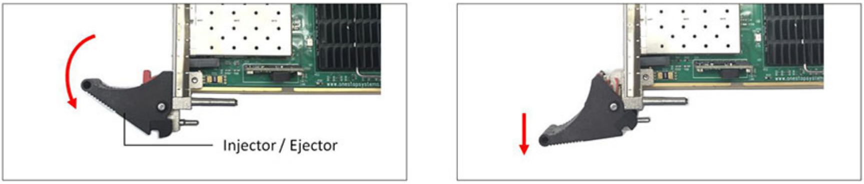
   Caution To protect both yourself and the chassis from electrical hazards, leave the chassis off until you finish installing the OSS-539.

3. Remove or open any doors or covers blocking access to the slot where you intend to install the OSS-539.
4. Touch the metal part of the case to discharge any static electricity that might be on your clothes or body.
5. Make sure the injector/ejector handle is in its downward position, as shown in Figure 1. Be sure to remove all connector packaging and protective caps from retaining screws on the

module. Align the OSS-539 with the card guides on the top and bottom of the system controller slot.

Caution Do *not* raise the injector/ejector handle as you insert the OSS-539. It will not insert properly unless the handle is in its downward position so that it does not interfere with the injector/ejector rail on the chassis.

Figure 1. OSS-539 Injector/Ejector Handle Position

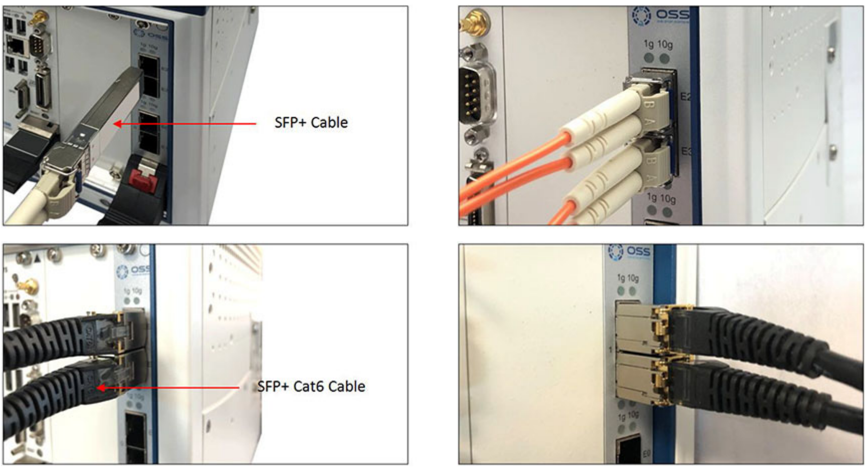


6. Hold the handle as you slowly slide the module into the chassis until the handle catches on the injector/ejector rail.
7. Raise the injector/ejector handle until the module firmly seats into the backplane receptacle connectors. The front panel of the OSS-539 should be even with the front panel of the chassis.
8. Tighten the bracket-retaining screws on the top and bottom of the front panel to secure the OSS-539 to the chassis.
9. Replace or close any doors or covers on the chassis.

Cabling

Connect the SFP+ cable to any available port on the OSS-539, as shown in Figure 2.

Figure 2. Connecting an SFP+Cable to the OSS-539



Driver Installation

The OSS-539 requires the Intel 82599 driver. The driver is part of Windows 10 and Windows Server OS, which should automatically locate and install the driver after you install the OSS-539 in your chassis.

If manual installation is required, go to the following link and download the driver associated with your operating system:

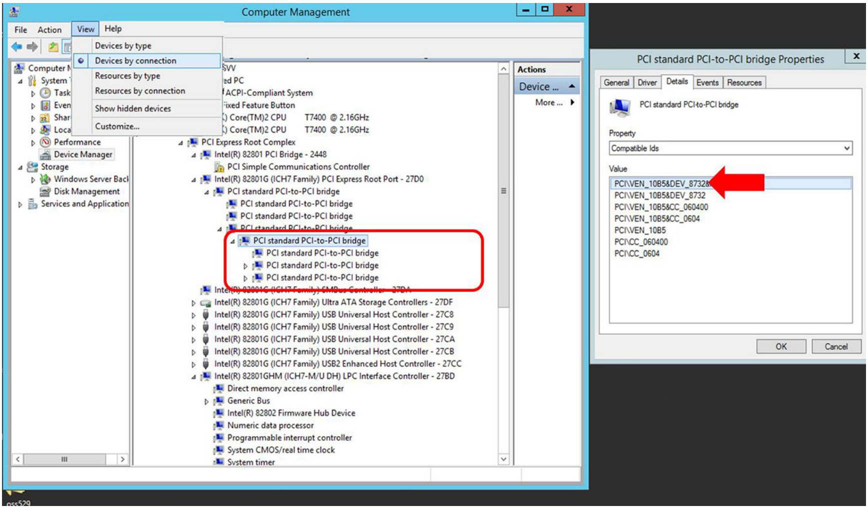
`https://downloadcenter.intel.com/product/32609/Intel-82599-10-Gigabit-Ethernet-Controller`

Verifying Hardware Installation

After installing the OSS-539 in your PXI express system, complete the following steps to verify the hardware installation in Windows:

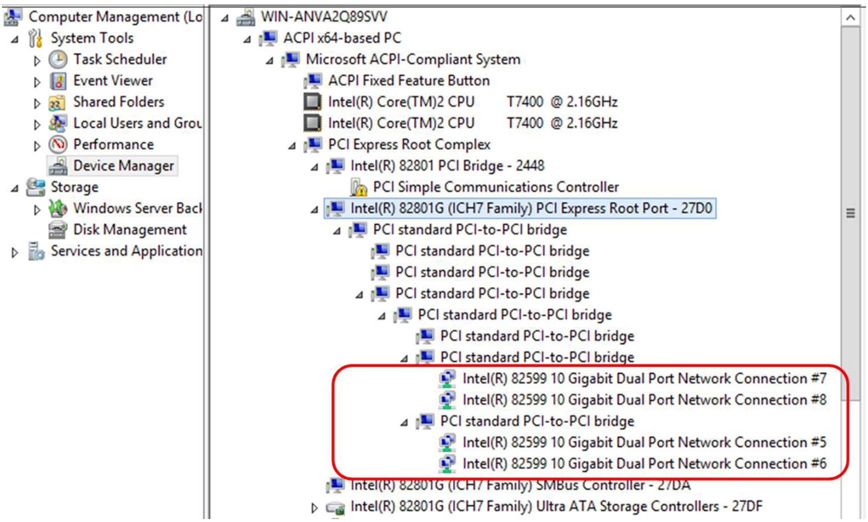
1. Restart your PXI Express system. As your system restarts, a message in the lower-right corner of the screen alerts you that Windows has found new hardware.
2. Navigate to the **This PC** icon and right-click on it.
3. Select **Manage** from the pop-up menu.
4. In the **Computer Management** window, click **Device Manager**.
5. Click the **View** menu and select **Devices by connection**.
6. In the system tree, open **ACPI (BIOS)**.
7. Open **PCI Bus**.
8. Open items in the tree until you reach **PCI Express Root Complex**.
9. Continue opening items until you see multiple subsets of **PCI standard PCI-to-PCI bridge**, as shown in Figure 3.
10. Right-click **PCI standard PCI-to-PCI bridge** and select **Properties**.
11. Click the **Details** tab.
12. Select **Compatible Ids** from the **Property** drop-down list. The vendor device 8732 is highlighted in the **Value** field, as shown in Figure 3; this is the PEX 8732 chip on the card. (All four PCI standard PCI-to-PCI bridge devices have the same PCI\VEN DEV 8732 value.)

Figure 3. Navigating to PCI Standard PCI-to-PCI Bridge



13. Open the instances of **PCI standard PCI-to-PCI bridge** to see four instances of **Intel 82599 10 Gigabit Dual Port Network Connection** devices, as shown in Figure 4.

Figure 4. Intel 82599 10 Gigabit Dual Port Network Connection Devices



The following four figures show the bus, device, and function numbers, and their corresponding physical SFP ports on the card.

Figure 5. PCI Bus 9, Device 0, Function 1 SFP Port

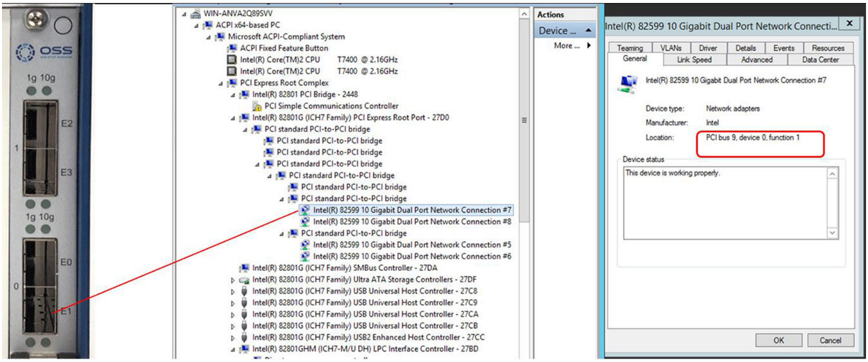


Figure 6. PCI Bus 9, Device 0, Function 0 SFP Port

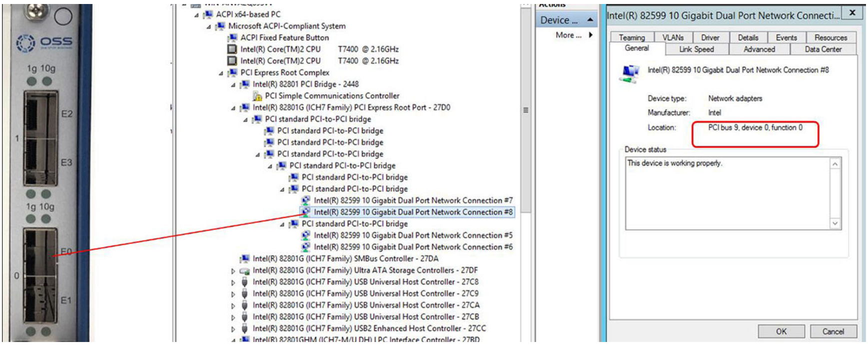


Figure 7. PCI Bus 10, Device 0, Function 0 SFP Port

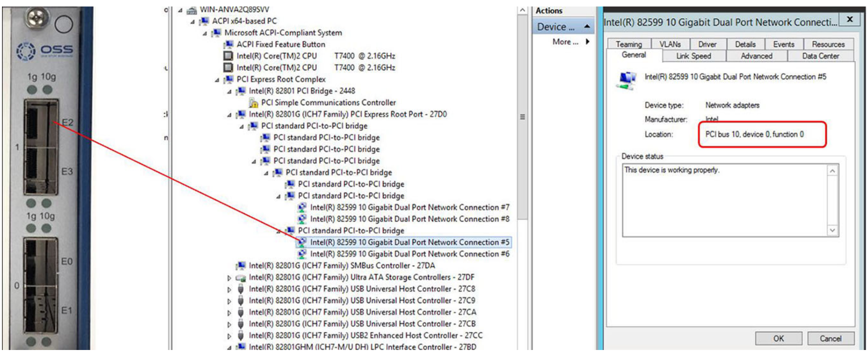
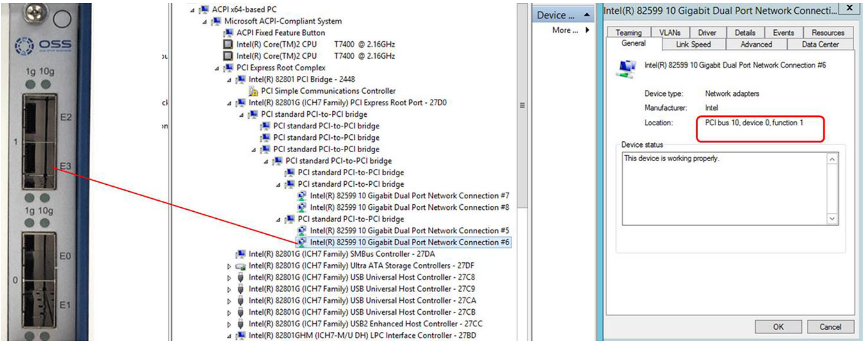


Figure 8. PCI Bus 10, Device 0, Function 1 SFP Port



LED Indicators

The front panel LEDs indicate the link status, as shown in Figure 9.

Figure 9. LED Indicators

Specifications

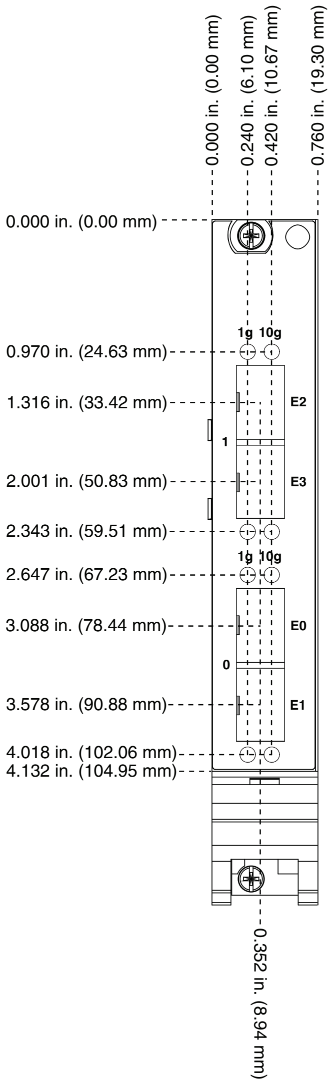
The OSS-539 includes the following features:

- 3U EXP.0 Type 2 form factor
- Dual Intel 82599ES 10 Gb Ethernet controllers
  - Jumbo frame support
  - I/O virtualization
  - 160 KB Tx and 512 KB Rx FIFOs per port
  - iSCSI boot
- Four SFP+ connectors
- RoHS compliance

Form factor	CPCIe Type 2
Dimensions	3.937 in. x 6.299 in. (100 mm x 160 mm)
Front panel indicators	Two green LEDs per port indicate link status and speed
Power consumption	12 V @ 1.375 A 3.3 V @ 0.1 A 16.8 W maximum
Temperature range	0° to 50° C (32° to 122° F)
Relative humidity	10% to 90% noncondensing
Conformal coating	HumiSeal 1A33 urethane
Agency	CE EN 55035:2017 EN 55024:2010 IEC 62368-1 FCC 47 CFR Part 15, Subpart B ICES-003 Issue 6: 2016 EN 55032: 2015 + AC: 2016-07 CISPR 32: 2015/COR1: 2016 AS/NZS CISPR 32:2015 EN 61000-3-2: 2014 EN 61000-3-3: 2013

Front Panel Dimensions

Figure 10. OSS-539 Front Panel Dimensions



Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit `ni.com/environment/weee`.

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