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# PXle-8881

# Getting Started

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# Getting Started

This section includes instructions for unpacking and installing your PXIe-8881 controller. It also describes the controller's front panel connectors.



**Caution** Using the PXIe-8881 controller in a manner not described in this guide can impair the protection the controller provides.



**Note** The PXIe-8881 requires a chassis with 82 W per slot cooling capacity.

## Unpacking

The PXIe-8881 ships in an antistatic package to prevent electrostatic discharge from damaging device components. To prevent such damage when handling the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis, and complete the following steps:

1. Touch the antistatic package to a metal part of the chassis before removing the device from the package.



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

2. Remove the device from the package and inspect the device for loose components or any other sign of damage.
3. Notify NI if the device appears damaged in any way. Do **not** install a damaged device into your chassis.

# Installing the PXIe-8881 into a PXI Express Chassis



**Note** The PXIe-8881 requires a chassis with 82 W per slot cooling capacity.

To install the PXIe-8881 into a PXI Express chassis, complete the following steps.

1. Plug in your chassis before installing the PXIe-8881. The power cord grounds the chassis and protects it from electrical damage while you install the module.



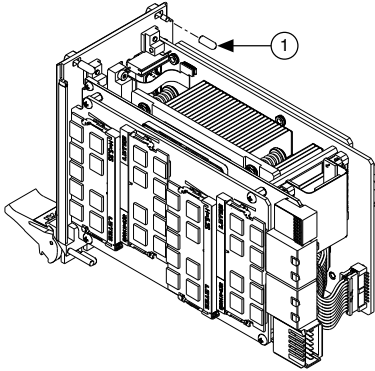
**Caution** In some NI chassis, you must ensure that the power LED is off. For more information about chassis power behavior, refer to the user manual for the specific chassis.



**Caution** To protect both yourself and the chassis from electrical hazards, leave the chassis off until you finish installing the PXIe-8881.

2. Remove any panels blocking access to the system controller slot (Slot 1) in the chassis.
3. Touch the metal part of the chassis case to discharge any static electricity that might be on your clothes or body.
4. Remove the protective plastic covers from the four bracket-retaining screws as shown in the following figure.

**Figure 1.** Removing Protective Plastic Covers



1. Protective Screw Cap (4x)

5. Make sure the injector/ejector handle is in its downward position. Align the PXIe-8881 with the card guides on the top and bottom of the system controller slot.



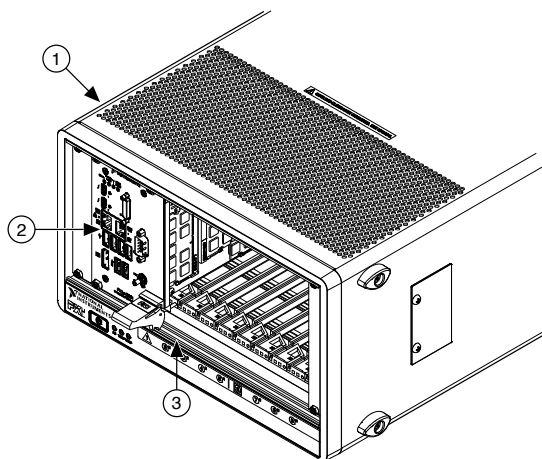
**Caution** Do **not** raise the injector/ejector handle as you insert the PXIe-8881. The module will not insert properly unless the handle is in its downward position so that it does not interfere with the injector rail on the chassis.

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 PXIe-8881 should be even with the front panel of the chassis.
8. Tighten the four bracket-retaining screws on the top and bottom of the front panel to secure the PXIe-8881 to the chassis.
9. Check the installation.
10. Connect the keyboard and mouse to the appropriate connectors.
11. Connect the DisplayPort monitor video cable or adapter to the DisplayPort connector.
12. Connect devices to ports as required by your system configuration.
13. Power on the display.

14. Power on the chassis.
15. Verify that the controller boots. If it does not boot, refer to the **Troubleshooting** section.

The following figure shows a PXIe-8881 controller installed in the system controller slot of a PXIe-1092 chassis.

**Figure 2.** PXIe-8881 Installed in a PXI Express Chassis

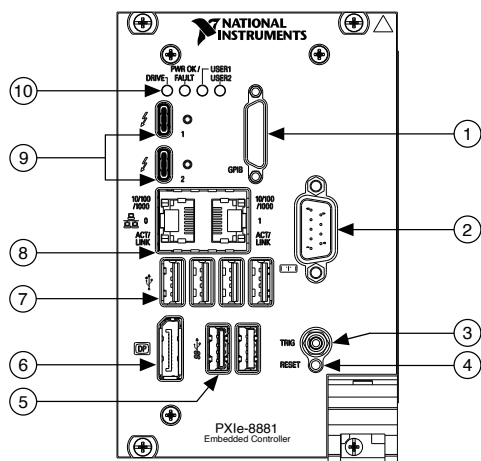


1. PXI Express Chassis
2. PXI Express Controller
3. Injector/Ejector Rail

## PXIe-8881 Front Panel

The following figure shows the PXIe-8881 front panel layout.

Figure 3. PXIe-8881 Front Panel Layout



1. GPIB
2. RS-232 Serial
3. Trigger

4. Reset Button
5. USB 3.2 Gen 1
6. DisplayPort 1.2
7. USB 2.0
8. Ethernet
9. Thunderbolt 3
10. LEDs

## Front Panel Connectors

The following table lists various peripherals and their corresponding PXle-8881 external connectors, bus interfaces, and functions.

Peripheral	External Connector	Description
Video (DisplayPort 1.2)	DisplayPort	ATI Radeon E6465 Embedded GPU
Thunderbolt 3	USB Type-C (2 ports)	Thunderbolt 3 compliant, supports USB, PCI Express, and DisplayPort
Serial	COM1 (9-pin DSUB)	16550 RS-232 serial port
Ethernet Port 0	LAN (RJ45)	10/100/1000 Ethernet connection Intel I219  Wake on LAN
Ethernet Port 1	LAN (RJ45)	10/100/1000 Ethernet connection Intel I210
USB 2.0	USB 4-pin Series A stacked receptacle (4 ports)	Hi-Speed USB 2.0
USB 3.2 Gen 1	USB 9-pin Series A stacked receptacle (2 ports)	SuperSpeed USB, backwards compatible with USB 2.0



Peripheral	External Connector	Description
PXI trigger	Trigger (SMB)	Routing PXI triggers to or from the backplane trigger bus
GPIB	GPIB (25-pin Micro D)	General-Purpose Interface Bus, IEEE 488.2

## Front Panel Features

The PXIe-8881 has four front panel LEDs that show PC status:

- DRIVE LED— Indicates when an access to the internal drive is occurring.
- PWR OK/FAULT LED—Indicates the controller status. The LED indicates one of the following states:
  - Green ON steady—PXI and onboard power is on and within regulation limits.
  - Green BLINKING—The controller has entered the soft off state and is safe to power down.



**Note** This status is applicable only when the chassis is set to **Manual Inhibit Mode**.

- Green FADING—The controller has entered the standby (S3) state.
- OFF—The controller is powered off.
- Red BLINKING—The controller detected a power rail fault when trying to boot.
- Red SOLID—The controller detected a thermal fault and has shut down to protect the system.
- USER LEDs — Two bi-color green/yellow LEDs (USER1 and USER2) that you can define to meet the needs of your LabVIEW application.

## Removing the PXIe-8881 from a PXI Express Chassis

To remove the PXIe-8881 from a PXI Express chassis, complete the following steps.

1. Power off the chassis.
2. Remove any cables that may be attached to the controller front panel.
3. Unscrew the four bracket-retaining screws in the front panel.
4. Press the injector/ejector handle down.
5. Slide the unit out of the chassis.



**Note** If the PXI Express chassis Inhibit Mode is not set to Default, any attempt to shut down the PXIe-8881 through the power button or Windows will result in the controller Power OK LED blinking. The user must use the Remote Inhibit pin on the Remote Inhibit and Voltage Monitoring Connector to turn off the chassis. Refer to the PXI Express chassis user manual for details on the functionality of the Remote Inhibit and Voltage Monitoring controls.

# Common Configuration Questions

This section answers common configuration questions you may have when using a PXIe-8881 embedded controller.

## General Questions

### What do the LEDs on the front panel mean?

Refer to the LED status descriptions in the **Front Panel Features** section.

### How do I check which CPU is installed?

Use any of the following methods to identify the CPU model installed in your PXIe-8881:

- Check the physical unit front panel overlay.
- Reboot the PXIe-8881 and enter the BIOS setup.
- Use the Windows system information to review the processor data.
- Use NI MAX and review the controller properties. Select the controller in the left pane and refer to the CPU Model and CPU Cores properties in the System Settings tab in the right pane.

### How do I check the configuration of the memory, storage drive, time/date, and so on?

You can view these parameters in the BIOS setup utility. Complete the following steps to enter the BIOS setup:

1. Reboot the PXIe-8881.
2. Press <Delete> during the system boot up.

## Can I use the internal storage drive and an external storage drive at the same time?

Yes.

## Boot Options

### What devices can I boot from?

The PXle-8881 can boot from the following devices:

- The internal drive.
- A network PXE or iSCSI server on the same subnet.
- An external USB mass storage device such as a USB hard drive, USB CD/DVD-ROM, or USB flash drive.
- Most PCI or PCI Express-based devices that provide an Option ROM.

### How do I configure the controller to boot from these devices?

You can configure the controller to permanently or temporarily change the boot order.

There are three methods.

- Enter Setup and select the Boot menu. You will see a list of all bootable devices, ordered by device type. You can set the boot order using <+> and <->. Set the order by device type and set the order for the devices listed within the device type.
- To boot from a different device without changing the boot order in the BIOS, enter Setup and select the Save & Exit menu. In the Boot Override section, select your desired boot entry.
- To boot from a different device without changing the boot order in the BIOS, press <F10> continuously while booting. After the BIOS completes the POST

and just before the controller boots the OS, the Boot menu is displayed. You can select the device type you want to boot from.

## Cables and Connections

### How do I connect a VGA monitor to the PXIe-8881?

You can use a DisplayPort-to-VGA adapter available from NI to connect a VGA monitor to a DisplayPort connector.

## Software Driver Installation

### How do I install or reinstall the video driver?

To download updated peripheral drivers, search for your product model on the [software download](#) page at ni.com.

### How do I install or reinstall the Ethernet driver?

To download updated peripheral drivers, search for your product model on the [software download](#) page at ni.com.

### How do I install software from a CD?

The compact size of the PXIe-8881 does not allow for an integrated USB CD/DVD-ROM drive. You have the following options:

- **USB CD/DVD-ROM**—You can install from a USB CD/DVD-ROM using a bootable installation CD.
- **Mapped network drive**—You can use the Ethernet to connect to another computer. If you share the USB CD/DVD-ROM drive on the other computer, you can map the shared USB CD/DVD-ROM drive to a drive letter on the PXIe-8881.

A USB CD/DVD-ROM drive is available from NI, part number 778492-01.

# Upgrade Information

## How do I upgrade system memory?

You can change the amount of installed RAM on the PXIe-8881 by augmenting or replacing the preinstalled SO-DIMM. Complete the following steps to replace the RAM.

1. Remove the PXIe-8881 from the PXI chassis.
2. Locate the SO-DIMM sockets on the side of the controller, as shown in the following figure.
3. Install the new SO-DIMM module into the slot.

### PXIe-8881 System Memory Information

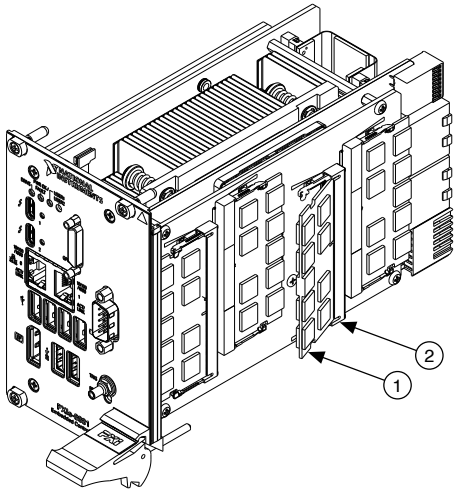
NI offers the following types of SO-DIMMs for use with the PXIe-8881 controller.

- 16 GB, DDR4-2666 MHz PC4-21300 compatible (NI part number 787659-01)



**Note** NI has tested and verified that the DDR4 SO-DIMMs listed above work with the PXIe-8881 controller. We recommend you purchase your SO-DIMM modules from NI. Other off-the-shelf modules are not guaranteed to work properly.

Figure 4. Installing a SO-DIMM in a PXIe-8881 Controller



1. DDR4 SO-DIMM Module
2. DDR4 SO-DIMM Socket

## How do I flash a new BIOS?

For more information, refer to [Determining and Upgrading PXI and VXI Embedded Controller BIOS Versions](#).

## Where do I get the latest software drivers?

The latest NI software is available by searching for your model number at [ni.com/downloads](http://ni.com/downloads).

# Troubleshooting

This section answers common troubleshooting questions you may have when using the PXIe-8881 embedded controller.

## What if the controller does not boot?

Several problems can cause a controller not to boot. Here are some things to look for and possible solutions.

Things to Notice:

- Which LEDs come on? The **PWROK/FAULT** LED should stay lit green. The **Drive** LED should blink during boot as the disk is accessed.
- What appears on the display? Does it hang at some particular point (BIOS, Operating System, and so on)? If nothing appears on the screen, try a different monitor and cable/adaptor. Does your monitor work with a different PC? If it hangs, note the last screen output that you saw for reference when consulting NI technical support.
- What has changed about the system? Did you recently move the system? Was there electrical storm activity? Did you recently add a new module, memory chip, or piece of software?
- Refer to your chassis documentation for additional troubleshooting steps.

Things to Try:

- Make sure the chassis is plugged in to a working power source.
- Check any fuses or circuit breakers in the chassis or other power supply (possibly a UPS).
- Make sure the controller module is firmly seated in the chassis.
- Remove all other modules from the chassis.
- Remove any nonessential cables or devices.
- Try the controller in a different chassis.



- Try a similar controller in the same chassis.
- Reset the CMOS.
- Recover the internal drive on the controller.
- Make sure the RAM is properly seated.

## What if I can't see the video?

If you do not see your BIOS screen on boot up, check all cables, adapters, and monitor connections and power.

## What if MAX warns me that my chassis is not supported?

Only PXI Express chassis that support 82 W slot cooling capacity, such as the PXIe-1092 or PXIe-1095, support the PXIe-8881. Operation and performance is not guaranteed in other chassis across the operating conditions outlined in the **PXIe-8881 Specifications**.

## My system boots fine as long as a particular module is not in my chassis. How do I boot the chassis with the module installed?

The most common cause of this problem is a damaged module. Try the module in a different chassis or with a different controller. Also, remove any external cables or terminal blocks connected to the system. If the module does not work in these cases, it is likely damaged. Contact the module manufacturer for further troubleshooting.

## What if some modules installed in a remote Thunderbolt chassis show up in Windows Device Manager with yellow exclamation points?

Thunderbolt does not allow peripherals to take advantage of legacy IO Space. Some devices (such as serial or Ethernet modules) may rely on IO Space, creating resource allocation issues in the system. These modules should not prevent boot or operation of other devices, but will not function using IO Space.

For more information, go to [ni.com/support](https://ni.com/support).

## What if some devices, when installed in a system with many remote chassis, show up in Windows Device Manager with yellow exclamation points?

PCI Express systems are allocated 256 unique bus segments. The Thunderbolt 3 ports on the PXIe-8881 consume 50 segments each (two ports total), leaving the residual segments for remote chassis connections. Disabling the Thunderbolt 3 ports from your PXIe-8881 BIOS allows those 100 bus segments to be allocated to remote chassis.

For more information, go to [ni.com/support](https://ni.com/support).

## My chassis or controller does not appear in MAX. How do I use MAX to identify and configure my PXI system?

If you are using MAX to configure your PXI system, you must install the PXI Platform Services software on your controller to identify NI PXI and PXI Express chassis and modules in MAX. You can install PXI Platform Services from the software CD included with your controller or from [ni.com/downloads](https://ni.com/downloads).

PXI Platform Services version 20.0 or later supports the PXIe-8881.

## My CMOS is corrupted. How do I set it back to default?

There are two methods that you can use to reset the CMOS.

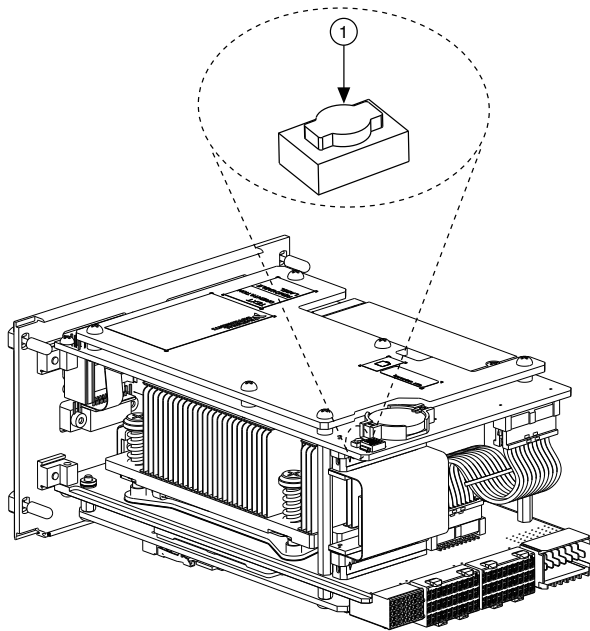
### 1. First Method

1. Enter the BIOS setup program.
2. Press <F9> to load BIOS defaults.
3. Answer Y (Yes) to the verification prompt.
4. Select **Save and Exit Setup**.

### 2. Second Method

1. Power off the chassis.
2. Remove the controller from the chassis.
3. Press the Clear CMOS button (SW2) as shown in the following figure.
4. Reinstall the controller in the chassis.

**Figure 5.** Clearing the CMOS Contents



1. Push-Button Switch SW2

## NI Services

Visit [ni.com/support](https://ni.com/support) to find support resources including documentation, downloads, and troubleshooting and application development self-help such as tutorials and examples.

Visit [ni.com/services](https://ni.com/services) to learn about NI service offerings such as calibration options, repair, and replacement.

Visit [ni.com/register](https://ni.com/register) to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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