PXIe-1081 User Manual

2025-11-05

Contents

PXIe-1081 User Manual

The PXIe-1081 User Manual provides detailed descriptions of the product functionality and the step by step processes for use.

Looking for Something Else?

For information not found in the User Manual for your product, such as specifications and API reference, browse ***Related Information***.

Related information:

- PXIe-1081 Specifications
- Software and Driver Downloads
- Release Notes
- Interactive Activation Guide
- Dimensional Drawings
- Product Certifications
- Letter of Volatility
- Discussion Forums
- NI Learning Center

PXIe-1081 Overview

The PXIe-1081 is a PXI chassis with an all-hybrid backplane that allows flexible placement of instrumentation modules across all peripheral slots. Use the PXIe-1081 to support demanding test and measurement applications with up to 58 W per slot and 2 GB/s system bandwidth.

PXIe-1081 Key Features

Learn about the features and capabilities of PXIe-1081 to support system integration and performance.

The PXIe-1081 chassis combines a high-performance 18-slot PXI Express backplane with a power supply and a structural design that has been optimized for maximum usability in a wide range of applications. The PXIe-1081 chassis fully complies with the ***PXI-5 PXI Express Hardware Specification***. The key features of the PXIe-1081 chassis include the following:

High Performance for Instrumentation Requirements

- Up to 250 MB/s dedicated bandwidth (single direction) per PXI Express slot (x1 Gen-1 PCI Express).
- 58 W per slot cooling meets increased PXI Express cooling requirements. Refer to the ***PXIe-1081 Specifications*** for more details.
- Low-jitter internal 10 MHz reference clock for PXI/PXI Express slots with ± 25 ppm stability
- Low-jitter internal 100 MHz reference clock for PXI Express slots with ± 25 ppm stability
- Quiet operation for 0 °C to 30 °C at 34.4 dBA
- Variable speed fan controller optimizes cooling and acoustic emissions
- Complies with PXI Specifications and CompactPCI Specifications

High Reliability

- 0 °C to 50 °C temperature range
- Power supply, temperature, and fan monitoring

- Field-replaceable fans

Additional, Optional Features

- Front and rear rack mount kits
- Filler panels
- Slot blockers for improved cooling performance
- Factory installation services
- Replacement fan kit

PXIe-1081 Driver Support

Determine the earliest driver version supported for your product.

Table 1. PXIe-1081 Earliest Driver Version Support

Driver Name	Earliest Version Support
PXI Platform Services	2025 Q3

Tip To optimize product performance, update to the most recent driver version.

Note When you install PXIe-1081, the installer also installs Hardware Configuration Utility and Measurement & Automation Explorer (MAX).

Related reference:

- PXIe-1081 Kit Contents

Related information:

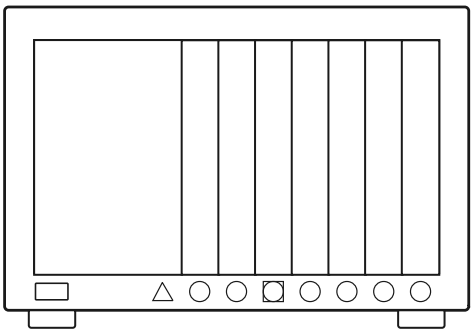
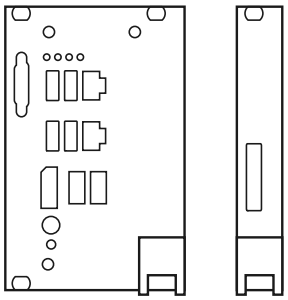
- PXI Platform Services Download
- What is NI Measurement & Automation Explorer

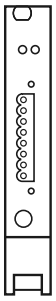
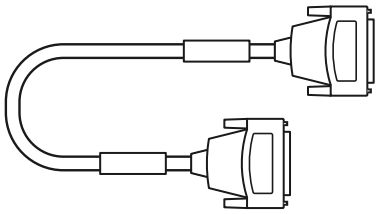
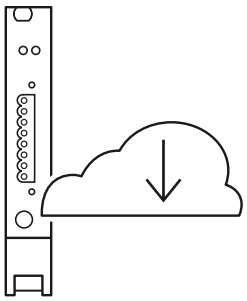
Components of a PXIe-1081 System

Learn how to build a system around the PXIe-1081 using the minimum required components. Add hardware, drivers, and software to optimize performance for your application.

Note A system and the surrounding environment must meet any requirements defined in the relevant specifications documents.

Table 2. Minimum Required PXIe-1081 System Components

Component	Description and Recommendations
PXI chassis 	Your PXI chassis. The PXI chassis houses the instruments and supplies power for instrument functions.
PXI system controller or PXI Remote Control Module 	You can install a PXI system controller or a PXI remote control (MXI) module depending on your system requirements. These components, installed in the same PXI chassis as the instrument, interface with the instrument using NI device drivers.
PXI Instrument	An example PXI instrument. Instrumentsintegrate into a PXI system by installing into the peripheral slots of the chassis. In these slots, the instruments interface with the

Component	Description and Recommendations
	PXI controller or a remote host. This setup enables synchronized measurements and control tasks as part of a modular test system.
Cables and accessories 	Cables and accessories allow connectivity to/from an instrument for measurements. Refer to ***Cables and Accessories*** for recommended cables and accessories and guidance.
PXI Platform Services software 	Software infrastructure that supports PXI chassis and controllers, enables system-level services, and facilitates hardware identification and trigger routing. **Note** For optimal performance, use the most current version of PXI Platform Services with the PXIe-1081.

Part Numbers for PXIe-1081 Recommended Cables and Accessories

Use part numbers to purchase the cables and the accessories for optimizing the performance of the PXIe-1081.

Part Numbers for Recommended Cables

Table 3. Recommended AC Cables

Region	Specification	Plug Type	Part Number
United States	125 V AC, 15 A	ANSI C.73.11/NEMA 5-15-P	763830-01
Brazil	250 V AC, 10 A	WS-002	785626-01
United Kingdom	230 V AC, 10 A	BS 1363	763064-01
Switzerland	220 V AC, 10 A	SEV 6534-2	763065-01
Europe	240 V AC, 10 A	Right Angle, CEE (7), II, IV, VII	763067-01
China	250 V AC, 10 A	GB-3P	784686-01
Korea	240 V AC, 10 A	Right Angle, Type F	784685-01
Japan	125 V AC, 12 A	JIS 8303	786377-01
Taiwan	125 V AC, 15 A	5-15P	787642-01
Australia	240 V AC, 10 A	AS/NZS 3112	763066-01

Part Numbers for Recommended Accessories

Table 4. Recommended Accessories

Accessory	Description	Part number
PXI slot blockers	Fills an empty instrument slot in a PXI chassis. Improves temperature regulation and shielding.	199198-01

Accessory	Description	Part number
	For more information about installing slot blockers and filler panels, go to `ni.com/r/pxiblocker`.	
PXI filler panel kit for 18-slot chassis	Fills empty instrument slots in 18-slot PXI chassis to improve temperature regulation and electromagnetic shielding.	778646-01
PXI EMC filler panels	Fills an empty instrument slot in a PXI chassis. Improves temperature regulation and electromagnetic shielding. Contains additional gaskets to control EMC emissions from the chassis. To learn more about using PXI EMC panels in your system, visit `ni.com/info`. Enter the code `emcpanels` to access the relevant information.	778700-01
Front Rack Mount	Hardware kit for mounting the PXIe-1081 securely from the front into standard equipment racks.	786371-01
Rear Rack Mount	Hardware kit for mounting the PXIe-1081 securely from the rear into standard equipment racks.	786372-01

Accessory	Description	Part number
Replacement Fan Kit	Includes rear and side fan assemblies for maintaining proper chassis cooling and airflow.	786324-02

Related tasks:

- Installing PXI Slot Blockers
- Installing PXI Filler Panels
- Connecting the PXIe-1081 to a Power Source
- Mounting the PXIe-1081 onto an Instrument Rack
- Replacing the PXI Module Fan Assembly for the PXIe-1081
- Replacing the Side Fan Assembly for the PXIe-1081

Related reference:

- PXIe-1081 Kit Contents

Related information:

- Installing Slot Blockers and Filler Panels

PXIe-1081 Theory of Operation

Learn how to use PXIe-1081 in PXI systems. Understand integration factors that affect performance, synchronization, and configuration workflows.

The chassis includes a high-speed PXI Express backplane. This backplane enables synchronized data transfer, timing coordination, and triggering across connected modules and systems. This architecture enables hybrid instrumentation setups with dynamic data exchange and precise timing control.

Backplane Architecture

The PXIe-1081 backplane includes two Gen1 x4 PCI Express switches and three PCIe-to-PCI bridges to support legacy PXI and CompactPCI modules. The chassis features:

- Seventeen hybrid peripheral slots (slots 2–18) that accept PXI Express, CompactPCI Express, and modified PXI modules
- One system controller slot (slot 1) with expansion capability and control over power and timing
- Up to 250 MB/s bandwidth per PXI Express slot in a single direction
- Up to 1 GB/s per link between the system controller and the backplane

Timing and Synchronization

The chassis generates and distributes three key timing signals from a common VCXO source:

- PXI_CLK10: 10 MHz reference clock for PXI modules
- PXIe_CLK100: 100 MHz reference clock for PXI Express modules
- PXIe_SYNC100: Synchronization clock derived from PXIe_CLK100

Low-skew buffers distribute the clocks to each slot, maintaining phase alignment and minimizing jitter.

Trigger Routing

The PXIe-1081 supports both static and dynamic trigger routing:

- PXI Trigger Bus: Eight shared lines with routing bridges between segments
- Hardware Configuration Utility/MAX: Used to configure trigger reservations and routing
- NI-DAQmx: Enables dynamic routing between modules and across chassis

Power and Cooling

The chassis accepts a universal AC input and works with region-specific power cables. Field-replaceable fans manage cooling and support multiple configurable modes.

- Auto mode: Fan speed adjusts based on intake temperature
- High mode: Fans run at full speed for maximum cooling

Slot blockers, standard filler panels, and EMC filler panels improve airflow and enhance shielding in PXI chassis. EMC filler panels specifically reduce electromagnetic interference (EMI). The front panel power button provides standard power control. A manual inhibit DIP switch offers an additional method for disabling power.

System Configuration

Using Hardware Configuration Utility or MAX and PXI Platform Services, you can:

- View and configure chassis settings
- Monitor voltages, temperatures, and fan speeds
- Route triggers and manage inhibit/fan modes
- Generate and manage system initialization files (`pxisys.ini`)

Maintenance and Serviceability

The PXIe-1081 is designed for easy maintenance. You can replace the rear and the side fan assemblies. Documented procedures guide interior and exterior chassis cleaning.

PXIe-1081 Backplane Architecture

Learn how the internal subsystems of PXIe-1081 support data communication, timing synchronization, and trigger routing across the modular backplane.

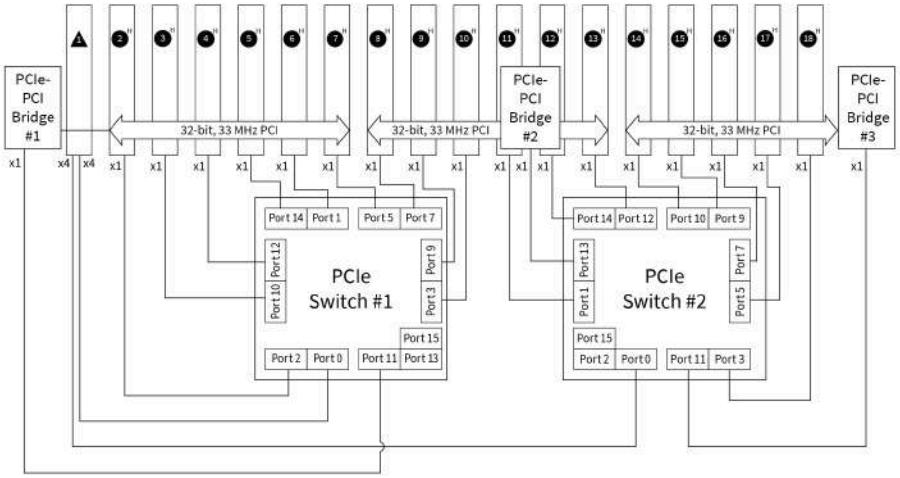
The backplane architecture diagram provides a visual overview of how the chassis

manages the following:

- Communication across the modular backplane
- Synchronization between installed modules
- Triggering signals for coordinated operation

PCI Express Backplane Architecture

Figure 1. PXIe-1081 PCI Express Backplane Architecture



The PXIe-1081 chassis uses a Gen1 PCI Express backplane to distribute data across slots and support legacy PXI and CompactPCI modules.

The system controller connects to two Gen1 x4 PCI Express switches. Each switch routes bandwidth to peripheral slots using dedicated x1 PCI Express links. Three PCI Express-to-PCI bridges provide 32-bit, 33 MHz PCI buses for hybrid peripheral slots.

- **System Slot Configuration**

  Slot 1 is the system controller slot. It uses a 2-Link configuration defined by the PXI Express and CompactPCI Express specifications. The chassis includes three expansion slots to the left of Slot 1. These slots support system controllers that occupy more than one slot without blocking peripheral slots.

- **Link 1 Architecture**

  Link 1 connects the system controller to PCI Express switch 1 using a Gen1 x4 PCI

Express link. This link provides up to 1 GB/s nominal bandwidth (single direction). Switch 1 connects to peripheral slots 2 to 10 using Gen1 x1 PCI Express links. PCI Express-to-PCI bridge 1 connects to switch 1 and provides a 32-bit PCI bus for hybrid slots 2 to 7.

- **Link 2 Architecture**

  Link 2 connects the system controller to PCI Express switch 2 using a Gen1 x4 PCI Express link. This link also provides up to 1 GB/s nominal bandwidth (single direction). Switch 2 connects to peripheral slots 11 to 18 using Gen1 x1 PCI Express links. PCI Express-to-PCI bridges 2 and 3 connect to switch 2 and provide 32-bit PCI buses for hybrid slots 8 to 13 and 14 to 18, respectively.

- **PXI Features**

  The system controller slot supports PXI features such as PXI_CLK10, PXI Trigger Bus, and PXI Local Bus. The system controller controls the power supply using the `PS_ON#` signal. A logic low on this signal turns the power supply on. The chassis must be in Default Inhibit Mode for the controller to manage power.

Hybrid Peripheral Slot Support

The PXIe-1081 chassis includes seventeen hybrid peripheral slots (Slots 2 to 18). These slots support multiple module types:

- PXI Express peripherals with x8, x4, or x1 PCI Express links
- CompactPCI Express Type-2 peripherals with x8, x4, or x1 PCI Express links
- Hybrid-compatible PXI peripherals with an XJ4 connector replacing the J2 connector
- CompactPCI 32-bit peripherals using the PCI bus of the backplane

Each PXI Express peripheral slot supports up to 250 MB/s nominal bandwidth (single direction) through a Gen1 x1 PCI Express link. Hybrid slots provide full PXI Express functionality and 32-bit PXI functionality, except for PXI Local Bus.

Each hybrid slot connects only to PXI Local Bus 6 left and right.

Interoperability with CompactPCI

The PXIe-1081 chassis supports interoperability with CompactPCI and CompactPCI Express modules. You can install the following module types in a single PXI Express chassis:

- PXI Express–compatible products
- CompactPCI Express–compatible 2-Link system controllers
- CompactPCI Express–compatible Type-2 peripherals
- PXI peripherals modified for hybrid slot compatibility
- CompactPCI peripherals modified for hybrid slot compatibility

PXIe-1081 System Reference Clocks

Learn how the chassis generates and distributes reference clocks. Understand the priority of external sources and the default behavior of synchronization outputs.

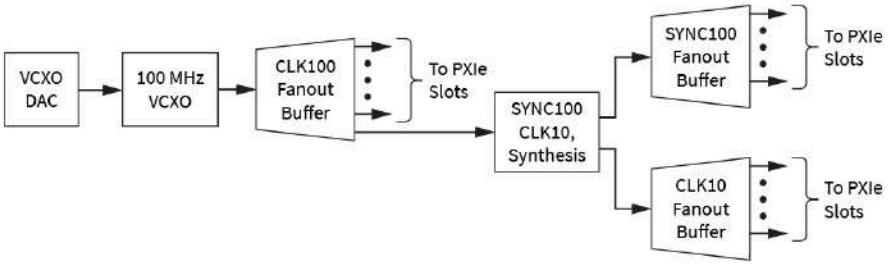
Reference Clock Architecture

The chassis generates the following PXI timing signals from a common 100 MHz voltage-controlled crystal oscillator (VCXO):

- PXIe_CLK100
- PXI_CLK10
- PXIe_SYNC100

The system derives PXIe_CLK100 directly from the oscillator, produces PXI_CLK10 by dividing the VCXO frequency by 10, and synthesizes PXIe_SYNC100 to maintain a defined phase relationship with PXIe_CLK100. This architecture ensures that PXI_CLK10 and PXIe_CLK100 remain coherent and protected from glitches when switching between clock sources. The system distributes all three signals through low-skew fanout buffers.

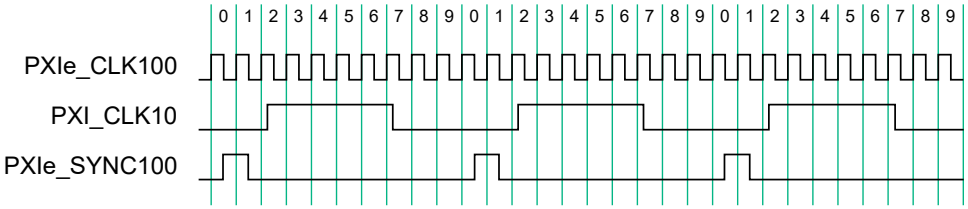
Figure 2. PXIe-1081 Reference Clock Architecture



Default Clock Synchronization Behavior

The chassis maintains the timing relationship between PXIe_CLK100, PXI_CLK10, and PXIe_SYNC100 across all slots. All three signals originate from the same 100 MHz voltage-controlled crystal oscillator (VCXO), ensuring consistent synchronization throughout the system. The clock architecture avoids glitches and phase shifts during transitions between internal and external clock sources.

Figure 3. PXIe-1081 System Reference Clock Default Behavior



PXIe-1081 PXI Local Bus

Learn how the PXI Local Bus architecture operates in hybrid peripheral slots. Understand its purpose and role in module-to-module communication.

The PXI backplane Local Bus is a daisy-chained signal path that connects each peripheral slot with its adjacent slots to the left and right. Modules exchange signals directly without passing through the system controller. Direct signal exchange between modules supports peer-to-peer communication and synchronization.

The backplane routes PXI Local Bus 6 between all slots. The backplane routes PXI Local Bus 6 between all slots. However, the left Local Bus 6 from Slot 1 and the right Local Bus 6 from Slot 18 terminate at their respective endpoints and do not continue beyond.

Depending on module specifications, Local Bus signals can range from high-speed TTL signals to analog signals as high as ±42 V.

Hybrid peripheral slots connect only Local Bus 6 Left and Right. The slots do not implement other local bus lines. During system initialization, the configuration software checks local bus compatibility between adjacent modules.

PXIe-1081 Trigger Bus

Learn how to share and route PXI trigger lines across bus segments in the PXIe-1081. Explore configuration options for static and dynamic routing.

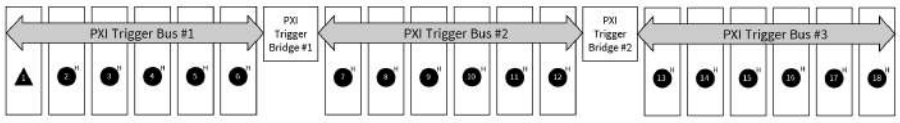
Each PXI bus segment shares eight PXI trigger lines across its slots. These lines synchronize the operation of multiple PXI peripheral modules. Modules pass triggers to one another, enabling precisely timed responses to asynchronous external events that the system monitors or controls.

Buffered trigger bridges route trigger signals between adjacent PXI bus segments, enabling trigger communication across all slots in the chassis.

Static trigger routing lets users manually assign specific trigger lines and directions. You can configure this setup using Hardware Configuration Utility or MAX. Certain NI drivers, such as NI-DAQmx, support dynamic trigger routing, which automatically assigns trigger lines.

The PXI trigger bus routing diagram illustrates the distribution of eight PXI trigger lines across three bus segments. Trigger bridges buffer and route signals between segments, enabling synchronized triggering across all slots.

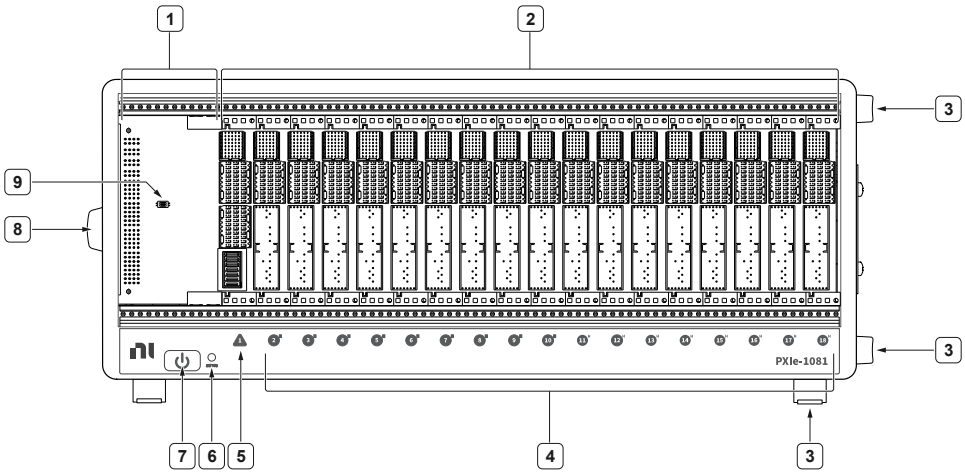
Figure 4. PXIe-1081 Trigger Bus Routing



PXIe-1081 Front Panel

The front panel includes controls and indicators that support chassis operation. Users can identify key components and access points for system setup and monitoring.

Figure 5. PXIe-1081 Front Panel



1. **System Controller Expansion Slot**: Accepts a PXI Express system controller for managing chassis operations.
2. **Backplane Connectors**: Provide connectivity between modules and the chassis backplane for data and timing signals.
3. **Removable Feet**: Support desktop placement. Remove the feet to prepare the chassis for rack-mount installation.
4. **PXI Express Hybrid Peripheral Slots (17x)**: Support PXI Express and PXI hybrid-compatible modules for flexible system configuration.
5. **PXI Express System Controller Slot**: Hosts the system controller module that manages chassis communication and control.
6. **Status LED**: Indicates chassis power status and system health.
7. **Power Inhibit Switch**: Allows users to disable chassis power remotely or during maintenance.
8. **Chassis Carry Handle**: Enables safe and convenient transport of the chassis.
9. **DIP Switches**: Allows for configuring chassis-specific settings.

Related concepts:

- Configure Cooling and Power Behavior of the PXIe-1081

Related tasks:

- Connecting the PXIe-1081 to a Power Source

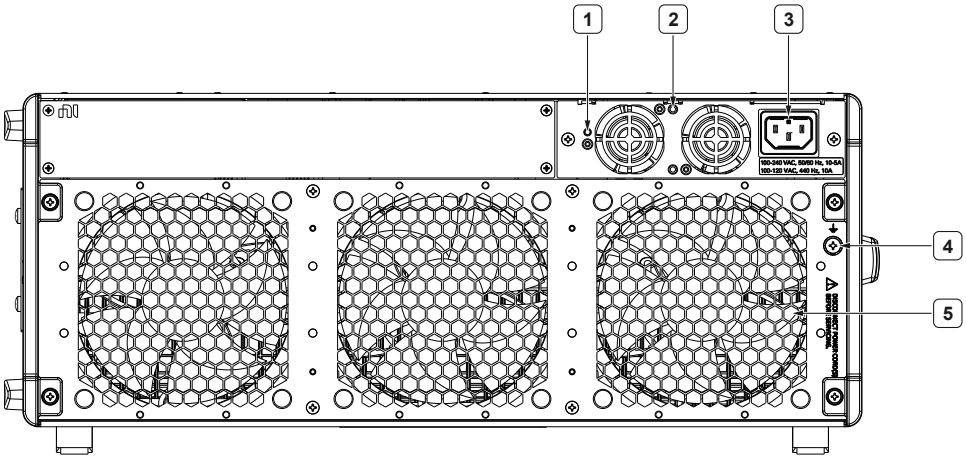
Related reference:

- Status LED
- DIP Switch Functions on the PXIe-1081

PXIe-1081 Rear Panel

The rear panel includes interfaces for power, cooling, synchronization, and control. These connections support system integration and thermal management.

Figure 6. PXIe-1081 Rear Panel



1. **Power Supply LED**: Indicates the operational status of the chassis power supply.
2. **Power Supply**: Delivers electrical power to the chassis and its installed modules.
3. **Universal AC Input**: Accepts a wide range of AC voltages for global power compatibility.
4. **Earth Ground Terminal**: Provides a grounding point to ensure safe operation and reduce electrical noise.
5. **Fan Module**: Maintains airflow and regulates internal temperature for reliable chassis performance.

Related tasks:

- Connecting the PXIe-1081 to a Power Source
- Connecting the PXIe-1081 to Earth Ground

Related reference:

- Power Supply LED

PXIe-1081 Pinouts

Use the pinouts to connect to terminals on the PXIe-1081 backplane.

System Controller Slot XP1 Connector Pinout

Pins	Signals
A	GND
B	12V
C	12V
D	GND
E	5V
F	3.3V
G	GND

System Controller Slot XP2 Connector Pinout

Pin	A	B	ab	C	D	cd	E	F	ef
1	2PETp1	2PETn1	GND	2PERp1	2PERn1	GND	2PETp2	2PETn2	GND
2	2PETp3	2PETn3	GND	2PERp3	2PERn3	GND	2PERp2	2PERn2	GND
3	2PETp4	2PETn4	GND	2PERp4	2PERn4	GND	2PETp5	2PETn5	GND
4	2PETp6	2PETn6	GND	2PERp6	2PERn6	GND	2PERp5	2PERn5	GND
5	2PETp7	2PETn7	GND	2PERp7	2PERn7	GND	2PETp8	2PETn8	GND
6	2PETp9	2PETn9	GND	2PERp9	2PERn9	GND	2PERp8	2PERn8	GND
7	2PETp10	2PETn10	GND	2PERp10	2PERn10	GND	2PETp11	2PETn11	GND
8	2PETp12	2PETn12	GND	2PERp12	2PERn12	GND	2PERp11	2PERn11	GND
9	2PETp13	2PETn13	GND	2PERp13	2PERn13	GND	2PETp14	2PETn14	GND
10	2PETp15	2PETn15	GND	2PERp15	2PERn15	GND	2PERp14	2PERn14	GND

System Controller Slot XP3 Connector Pinout

Pin	A	B	ab	C	D	cd	E	F	ef
1	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND

Pin	A	B	ab	C	D	cd	E	F	ef
2	RSV	RSV	GND	PWR_OK	PS_ON#	GND	LINKCAP	PWRBTN#	GND
3	SMBDAT	SMBCLK	GND	RSVD	RSVD	GND	RSVD	RSVD	GND
4	RSV	PERST#	GND	2RefClk+	2RefClk-	GND	1RefClk+	1RefClk-	GND
5	1PETp0	1PETn0	GND	1PERp0	1PERn0	GND	1PETp1	1PETn1	GND
6	1PETp2	1PETn2	GND	1PERp2	1PERn2	GND	1PERp1	1PERn1	GND
7	1PETp3	1PETn3	GND	1PERp3	1PERn3	GND	1PETp4	1PETn4	GND
8	1PETp5	1PETn5	GND	1PERp5	1PERn5	GND	1PERp4	1PERn4	GND
9	1PETp6	1PETn6	GND	1PERp6	1PERn6	GND	1PETp7	1PETn7	GND
10	2PETp0	2PETn0	GND	2PERp0	2PERn0	GND	1PERp7	1PERn7	GND

System Controller Slot XP4 Connector Pinout

Pin	Z	A	B	C	D	E	F
1	GND	GA4	GA3	GA2	GA1	GA0	GND
2	GND	5Vaux	GND	SYSEN#	WAKE#	ALERT#	GND
3	GND	RSV	RSV	RSV	RSV	RSV	GND
4	GND	RSV	RSV	RSV	RSV	RSV	GND
5	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND
6	GND	PXI_TRIG2	GND	RSV	PXI_STAR	PXI_CLK10	GND
7	GND	PXI_TRIG1	PXI_TRIG0	RSV	GND	PXI_TRIG7	GND
8	GND	RSV	GND	RSV	RSV	PXI_LBR6	GND

Hybrid Slot P1 Connector Pinout

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND

Pin	Z	A	B	C	D	E	F
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY#	BD_SEL#	TRDY#	GND
12 to 14	Key Area						
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ#	GND	3.3V	CLK	AD[31]	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	IPMB_PWR	HEALTHY#	# V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

Hybrid Slot XP3 Connector Pinout

Pin	A	B	ab	C	D	cd	E	F	ef
1	PXIe_ CLK100+	PXIe_ CLK100-	GND	PXIe_ SYNC100+	PXIe_ SYNC100-	GND	PXIe_ DSTARC+	PXIe_ DSTARC-	GND
2	PRSNT#	PWREN#	GND	PXIe_ DSTARB+	PXIe_ DSTARB-	GND	PXIe_ DSTARA+	PXIe_ DSTARA-	GND
3	SMBDAT	SMBCLK	GND	RSV	RSV	GND	RSV	RSV	GND
4	MPWRGD*	PERST#	GND	RSV	RSV	GND	1RefClk+	1RefClk-	GND
5	1PETp0	1PETn0	GND	1PERp0	1PERn0	GND	1PETp1	1PETn1	GND

Pin	A	B	ab	C	D	cd	E	F	ef
6	1PETp2	1PETn2	GND	1PERp2	1PERn2	GND	1PERp1	1PERn1	GND
7	1PETp3	1PETn3	GND	1PERp3	1PERn3	GND	1PETp4	1PETn4	GND
8	1PETp5	1PETn5	GND	1PERp5	1PERn5	GND	1PERp4	1PERn4	GND
9	1PETp6	1PETn6	GND	1PERp6	1PERn6	GND	1PETp7	1PETn7	GND
10	RSV	RSV	GND	RSV	RSV	GND	1PERp7	1PERn7	GND

Hybrid Slot XP4 Connector Pinout

Pin	Z	A	B	C	D	E	F
1	GND	GA4	GA3	GA2	GA1	GA0	GND
2	GND	5Vaux	GND	SYSEN#	WAKE#	ALERT#	GND
3	GND	12V	12V	GND	GND	GND	GND
4	GND	GND	GND	3.3V	3.3V	3.3V	GND
5	GND	PXI_ TRIG3	PXI_ TRIG4	PXI_ TRIG5	GND	PXI_ TRIG6	GND
6	GND	PXI_ TRIG2	GND	ATNLED	PXI_ STAR	PXI_ CLK10	GND
7	GND	PXI_ TRIG1	PXI_ TRIG0	ATNSW#	GND	PXI_ TRIG7	GND
8	GND	RSV	GND	RSV	PXI_ LBL6	PXI_ LBR6	GND

PXIe-1081 LED Indicators

Learn how to interpret front and rear panel LED states.

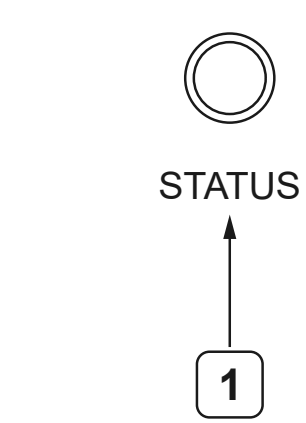
Refer to ***Front Panel*** and ***Rear Panel*** for LED locations.

Status LED

The Status LED, located on the front panel of the chassis, provides a quick visual indication of the operational state of the chassis.

The following table lists the Status LED states.

Figure 7. PXIe-1081 Status LED



1. Status LED

Table 5. Status LED Indicator Status

Status Indicator	Device State
(Off)	Chassis is powered off.
Steady green	Chassis is powered on and operating normally.
Steady red	Indicates that the temperature is out of range or an internal chassis fault has occurred.

Related tasks:

- Connecting the PXIe-1081 to a Power Source
- Powering On the PXIe-1081
- Powering Off the PXIe-1081

Related reference:

- PXIe-1081 Front Panel

Power Supply LED

The Power Supply LED, located on the rear panel of the chassis, indicates the operational status of the power supply.

Table 6. Power Supply LED Indicator Status

Status Indicator	Device State
(Off)	Power supply is unplugged or in standby.
Steady green	Main power is active and power supply is operating normally.
Blinking red	Power supply is operating outside of specification.
Steady red	Power supply has failed.

Related reference:

- PXIe-1081 Rear Panel

PXIe-1081 Kit Contents

Identify the contents of the PXIe-1081 kit.

- PXIe-1081 chassis
- Filler panels
- ***PXIe-1081 Safety, Environmental, and Regulatory Information***
- Chassis number labels

Note You must purchase an AC power cable separately. Refer to ***Part Numbers for Recommended Cables and Accessories*** for more information about AC power cables.

Related tasks:

- Installing PXI Filler Panels

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories
- PXIe-1081 Driver Support

PXIe-1081 Safety Guidelines

Follow these guidelines to use the PXIe-1081 safely.

Notice For comprehensive safety information, refer to the safety, environmental, and regulatory information document that shipped with your hardware.

Caution Observe all instructions and cautions in the user documentation. Using the product in a manner not specified can damage the product and compromise the built-in safety protection.

Caution Do not operate the PXIe-1081 in environments where flammable gases are present. The chassis is not rated for explosive atmospheres and may ignite gases or fumes.

Caution Do not remove protective covers while the chassis is powered. Dangerous voltages may be present. Only qualified service personnel should access internal components.

Caution Always disconnect all power cords before servicing the chassis or replacing components such as fan assemblies.

Caution Use only exact electrical and mechanical replacement parts when servicing the chassis. Substituting incompatible components may result in damage or safety hazards.

Notice Avoid using harsh chemical cleaning agents such as benzene, toluene, xylene, or acetone. These substances may damage the chassis surfaces and components.

Note The chassis must be connected to an earth safety ground during use. If the AC outlet lacks a ground connection, use a 16 AWG wire to connect the grounding screw to permanent earth ground.

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit `ni.com/product-certifications`, search by model number, and click the appropriate link.

PXIe-1081 Operating Guidelines

Follow these guidelines when operating the PXIe-1081.

Related concepts:

- Configure Cooling and Power Behavior of the PXIe-1081

Post-Shutdown Cooling Behavior

Learn how the chassis uses post-shutdown fan operation to protect internal components from residual heat. Recognize expected behavior and follow power handling precautions.

The PXIe-1081 uses active fan control to manage internal temperature. After shutdown, the fans may continue operating briefly to remove residual heat. This cooling behavior is part of the thermal protection strategy for the chassis. Completing the cooling cycle helps protect internal components and supports long-term reliability.

Note After powering off the chassis, the fans may continue running briefly to remove residual heat. This behavior supports thermal protection and helps safeguard internal components.

Notice Do not disconnect AC power immediately after shutdown. Premature power removal may interrupt the cooling cycle and reduce component lifespan.

Related tasks:

- Powering Off the PXIe-1081

ESD Precautions During Operation

Learn how to prevent electrostatic discharge during PXI system operation. Handle components properly to protect sensitive electronics and ensure long-term reliability.

Electrostatic discharge (ESD) can permanently damage sensitive electronics inside PXI modules and the chassis. Take precautions during operation to avoid introducing static charges into the system. Be especially careful when installing or removing PXI modules.

ESD Sensitive Always wear a grounded wrist strap and work on an anti-static surface when handling modules. Electrostatic discharge can permanently damage sensitive electronics.

Notice Avoid touching connector pins or exposed contacts with bare hands. Contaminants such as skin oils and dust can degrade signal integrity and cause long-term reliability issues.

Note Store unused modules in their original anti-static packaging to prevent ESD damage during transport or storage.

Setting up the PXIe-1081

Set up the PXIe-1081 and prepare it for use.

Proper installation and proper setup of the PXIe-1081 ensures safe operation and reliable system performance. Complete the following steps to set up the chassis for use.

1. Unpacking the Kit
   Take precautions to prevent electrostatic discharge when unpacking and inspecting your hardware.
2. Installing the Software
3. Connecting the PXIe-1081 to Earth Ground
   Learn how to ground the chassis to protect users and equipment from electrical hazards. If your AC outlet is properly grounded, you can proceed directly to connect power. Manual grounding is required only when the outlet lacks a ground connection.
4. Connecting the PXIe-1081 to a Power Source
   Learn how to connect power and verify chassis startup behavior.
5. Installing a PXI Express System Controller into the PXIe-1081
   Follow these steps to install a PXI Express system controller into slot 1 of a PXIe-1081 chassis. For controller-specific instructions and safety information, refer to the user manual of the system controller.
6. Installing Peripheral Modules into the PXIe-1081
   Follow these steps to install a peripheral modules in a PXIe-1081 chassis. For module-specific instructions and safety information, refer to the module's user manual.

Unpacking the Kit

Take precautions to prevent electrostatic discharge when unpacking and inspecting your hardware.

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.

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

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.
   Package Manager downloads with the driver software to handle the installation. Refer to the Package Manager Manual for more information about installing, removing, and upgrading NI software using 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.

Connecting the PXIe-1081 to Earth Ground

Learn how to ground the chassis to protect users and equipment from electrical hazards. If your AC outlet is properly grounded, you can proceed directly to connect

power. Manual grounding is required only when the outlet lacks a ground connection.

Grounding the chassis protects users and equipment from electrical hazards. A secure earth ground connection reduces the risk of electric shock. Stable operation is especially important in environments with sensitive instrumentation.

> **Caution** Ground the chassis during use to reduce shock hazards. Operating without a ground connection may create unsafe conditions.

- Place the chassis in its final installation location.
- Disconnect all AC power cables.

Complete the following steps to manually ground the PXIe-1081 before connecting power or installing modules.

1. Locate the grounding screw on the rear panel of the chassis.
2. Use a 16 AWG (1.3 mm) wire with green insulation and a yellow stripe, or a bare wire.
3. Attach the wire to the grounding screw using a grounding lug.
4. Secure the opposite end of the wire to permanent earth ground using toothed washers or a toothed lug.

The PXIe-1081 is now safely grounded and ready for power connection and system setup.

Related concepts:

- PXIe-1081 Mounting Requirements

Related tasks:

- Installing the PXIe-1081 onto a Flat Surface
- Mounting the PXIe-1081 onto an Instrument Rack

Related reference:

- PXIe-1081 Rear Panel

Related information:

- Safety Guidelines

Connecting the PXIe-1081 to a Power Source

Learn how to connect power and verify chassis startup behavior.

Note Do not install modules before completing the power-on test. Disconnect all power cords to fully remove power.

- Locate the AC inlet on the rear panel.
- Use a suitable AC power cable.

Complete the following steps to connect the PXIe-1081 to a power source.

1. Attach input power through the AC inlet.
2. Press and hold the Power Inhibit button for 4 seconds.
   All fans begin operating and the Status LED turns steady green.

The chassis powers on and enters normal operation. Repeat the button press to enter standby mode.

Related reference:

- PXIe-1081 Front Panel
- PXIe-1081 Rear Panel
- Status LED
- Part Numbers for PXIe-1081 Recommended Cables and Accessories

Installing a PXI Express System Controller into the PXIe-1081

Follow these steps to install a PXI Express system controller into slot 1 of a PXIe-1081 chassis. For controller-specific instructions and safety information, refer to the user manual of the system controller.

- Do not install any modules before performing a power-on test.
- Power off the chassis.

- Connect the AC power cord to ground the chassis and protect it from electrical damage during installation.

Complete the following steps to install a PXI Express system controller.

1. Insert the system controller into slot 1, identified by red card guides. Place the PCB into the top and bottom card guides at the front of the slot.
2. Slide the system controller toward the rear of the chassis with the ejector handle in the downward position.
3. When you feel resistance, push the ejector handle upward to fully seat the controller into the chassis backplane.
4. Secure the system controller using the front panel mounting screws.
5. Connect essential peripherals to the system controller.
   - Connect a keyboard, mouse, and monitor to the appropriate connectors.
   - Use DisplayPort or HDMI output depending on the system controller model.
   - Connect peripherals directly to the front panel of the system controller or use a KVM switch if available.
6. Power on the chassis and verify that the system controller boots.
   - Confirm that the chassis fans spin up and the Power LED turns solid green.
   - Observe the monitor for BIOS or boot splash screen activity.
   - Confirm that the system controller completes POST (Power-On Self-Test).
   - If the system controller runs a pre-installed OS, verify that the desktop or login screen appears.
   - If the system controller uses PXE boot or a custom image, confirm that the expected boot sequence starts.

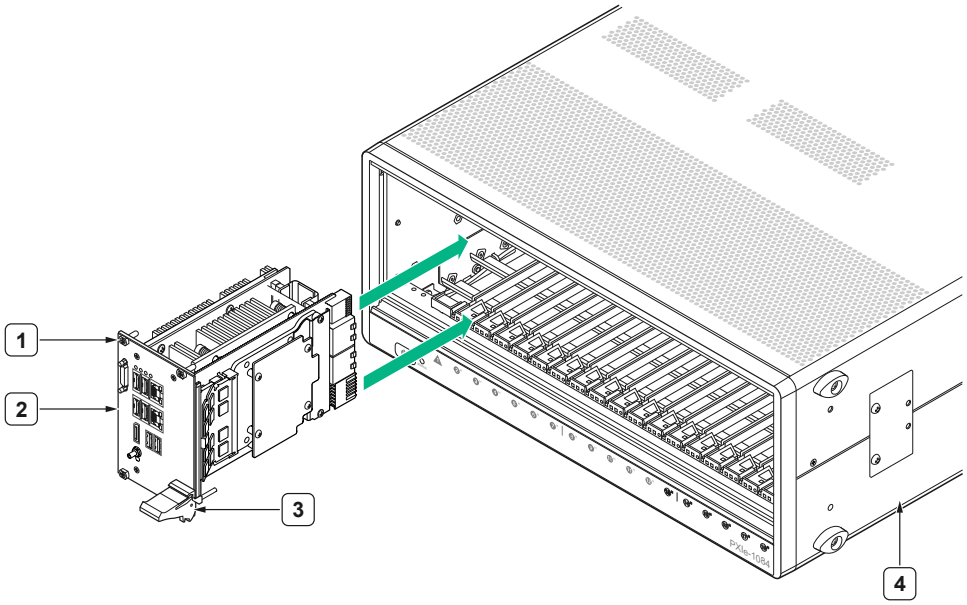
If the system controller does not boot or no video signal appears:

- Check monitor input settings and cable connections.
- Verify that the system controller is properly seated and the chassis provides power.
- Refer to the user manual of the system controller for LED status codes or beep patterns.
- Check the AC input and confirm that the power supply LEDs light up.

Note You can place the following module types in other slots, depending on the slot type:

- CompactPCI
- CompactPCI Express
- Hybrid-compatible PXI
- PXI Express

Figure 8. PXIe-1081 Installing a System Controller



1. System controller front panel mounting screws (4x)
2. PXI Express system controller
3. Ejector handle
4. PXIe-1081 chassis

Installing Peripheral Modules into the PXIe-1081

Follow these steps to install a peripheral modules in a PXIe-1081 chassis. For module-specific instructions and safety information, refer to the module's user manual.

Before you begin:

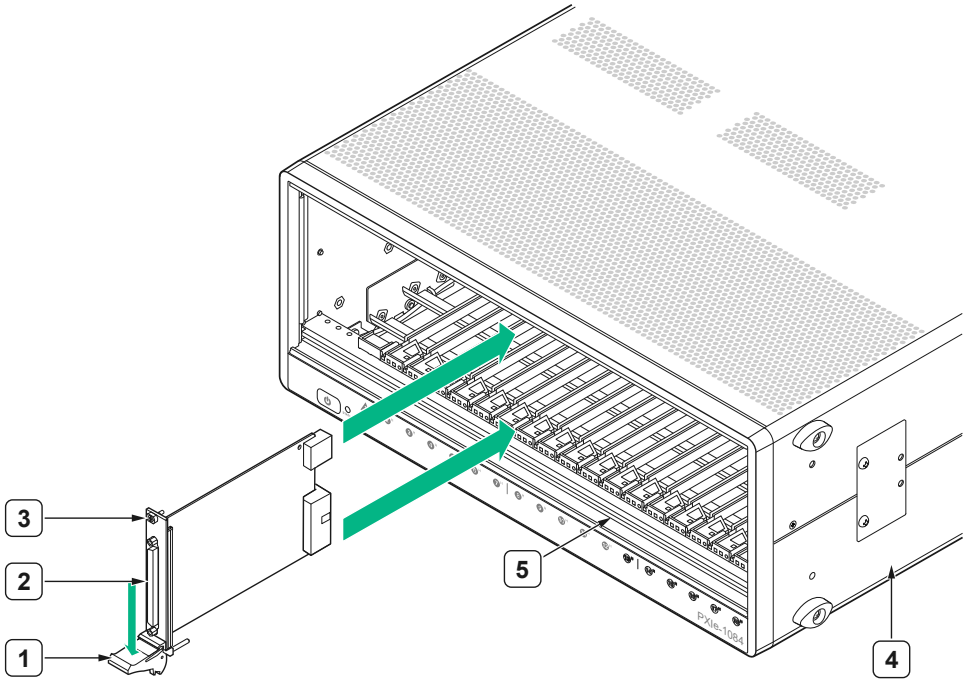
- Do not install any modules before performing a power-on test.
- Power off the chassis.
- Connect the AC power cord to ground the chassis and protect it from electrical

damage during installation.

Use the following steps to install peripheral modules.

1. Insert the PCB of the module into the top and bottom card guides at the front of the slot.
2. Slide the module toward the rear of the chassis with the ejector handle, if present, in the downward position.
3. When you feel resistance, push the ejector handle, if present, upward to fully seat the module into the chassis backplane.
4. Secure the module using the front panel mounting screws.

Figure 9. Installing PXI, PXI Express, or CompactPCI Instruments



1. Instrument ejector handle
2. PXI instrument
3. Instrument front panel mounting screws

Note The bottom front panel mounting screw is not visible on the image.

4. PXIe-1081 chassis
5. Chassis card guides

Note The top card guides are not visible on the image.

Follow the procedure described in ***Installing Slot Blockers*** to install slot blockers in all unused slots. Installing slot blockers helps maintain airflow and meet thermal specifications.

Related tasks:

- Installing PXI Slot Blockers

Safe Module Installation and Removal

Learn how to safely install or remove PXI modules. Understand when module removal is allowed and how chassis limitations affect safe operation to prevent electrical damage.

PXI modules connect directly to the backplane of the chassis, which carries power and signals. Power down the chassis before installing or removing modules. Failing to do so may cause electrical arcing, connector damage, or data loss. Follow timing guidelines to prevent damage during module handling.

Notice Always power off the chassis before inserting or removing PXI modules. Failure to do so may result in electrical damage to the module or chassis.

Caution Wait at least 30 seconds after powering off the chassis before handling modules. This delay allows internal capacitors to discharge safely.

Note The PXIe-1081 does not support hot-swapping for most modules. Refer to module-specific documentation to determine if hot-swap is supported.

Mounting the PXIe-1081

Learn how to mount the PXIe-1081 for safe operation and optimal thermal performance. Follow airflow, clearance, and grounding guidelines for benchtop or rack installation.

To ensure proper functionality across the full operating temperature range, you must mount the PXIe-1081 in a configuration that supports optimal airflow and thermal performance. Mounting the chassis according to the reference guidelines ensures reliable operation and protects internal components from overheating or environmental stress.

Observe the following guidelines when mounting the PXIe-1081:

- Maintain the cooling dimensions specified in ***Mounting Requirements***.
- Allow space for cabling clearance at the front and rear of the chassis.
- Use filler panels and optional slot blockers to preserve airflow integrity.
- Ensure the chassis is grounded properly before use.

Note

Before mounting the PXIe-1081, record the serial number from the rear panel. You will be unable to read the serial number after installation, and it is required for identifying the chassis in Hardware Configuration Utility and MAX.

The PXIe-1081 supports both benchtop and rack-mounted installations. Refer to ***Installing the PXIe-1081 onto a Flat Surface*** and ***Mounting the PXIe-1081 onto an Instrument Rack*** for detailed instructions.

Figure 10. PXIe-1081 Dimensions (Front)

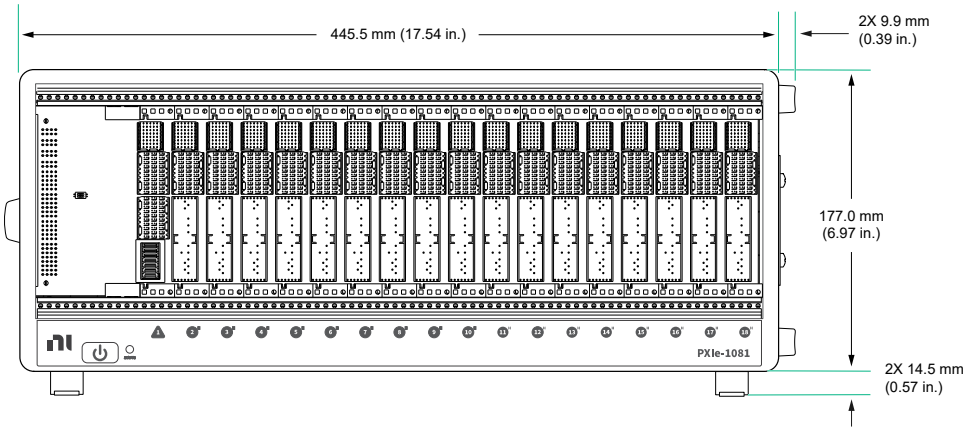


Figure 11. PXIe-1081 Dimensions (Side)

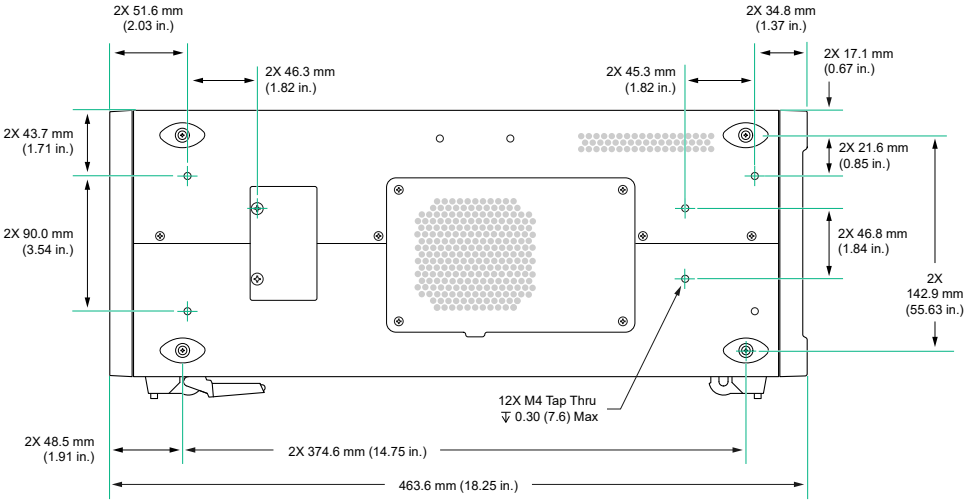
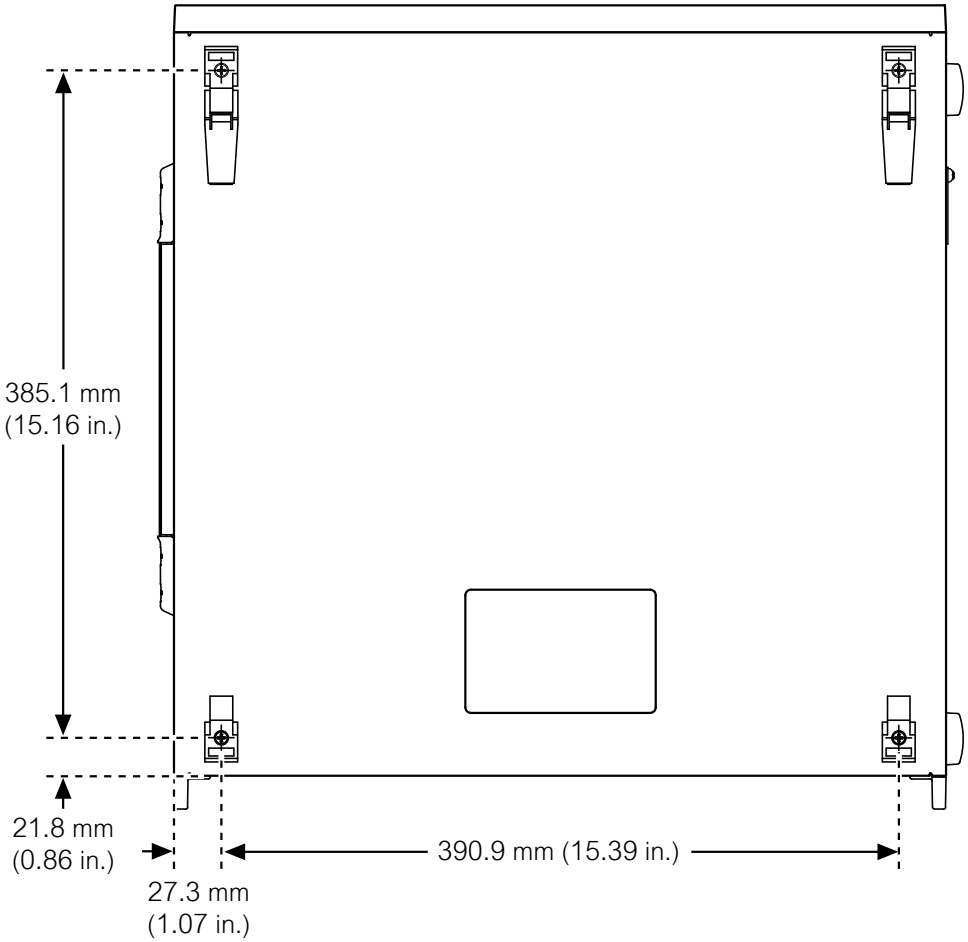


Figure 12. PXIe-1081 Dimensions (Bottom)



PXIe-1081 Mounting Requirements

Adhere to these requirements to maintain proper cooling and ensure safe operation of the PXIe-1081.

- Cooling Clearances:
  - Top clearance: Minimum 4.00 inches (101.60 mm)
  - Side clearance: Minimum 1.75 inches (44.45 mm) on each side
- Ventilation:
  - Intake vents are located on the rear and right side.
  - Exhaust vents are located on the top and left side.
  - Avoid placing heat-generating equipment near intake or exhaust areas.
- Thermal Monitoring:
  - Use Hardware Configuration Utility or MAX to monitor intake temperatures and ensure they remain within the operating range specified in ***PXIe-1081***

Specifications.

- Slot Management:
  - Install filler panels in unused slots to maintain airflow.
  - Use slot blockers (optional) to improve cooling performance.
- Grounding:
  - Connect the chassis to earth ground via the IEC 60320 C14 inlet or the rear grounding screw using a 16 AWG wire with green/yellow insulation.

Figure 13. PXIe-1081 Minimum Cooling Clearances

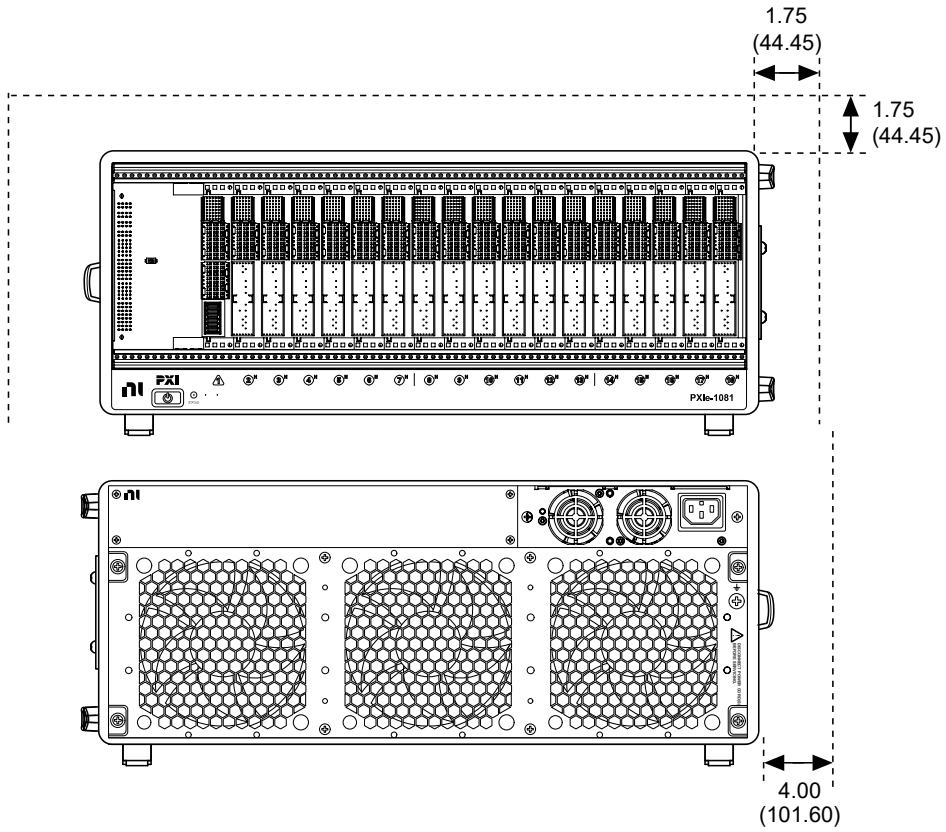


Figure 14. PXIe-1081 Rear Vents

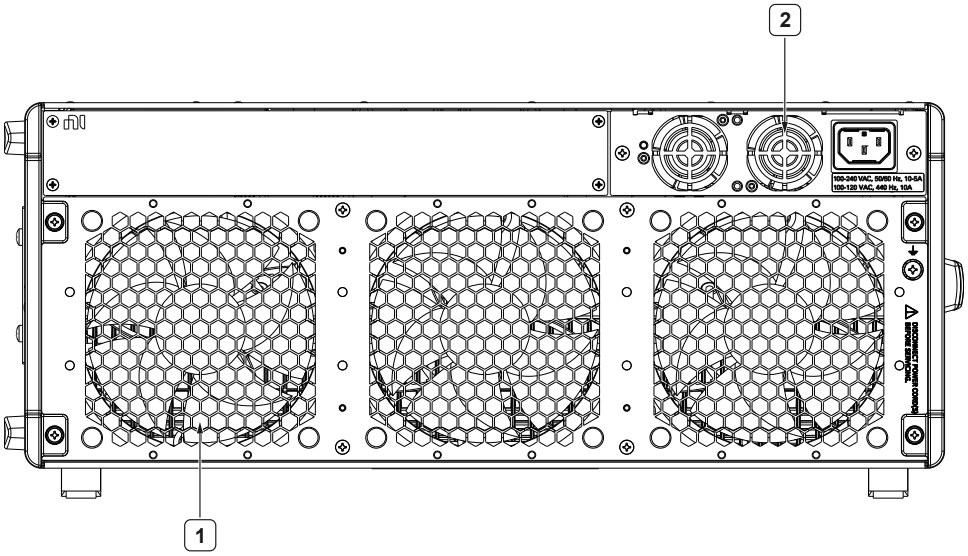
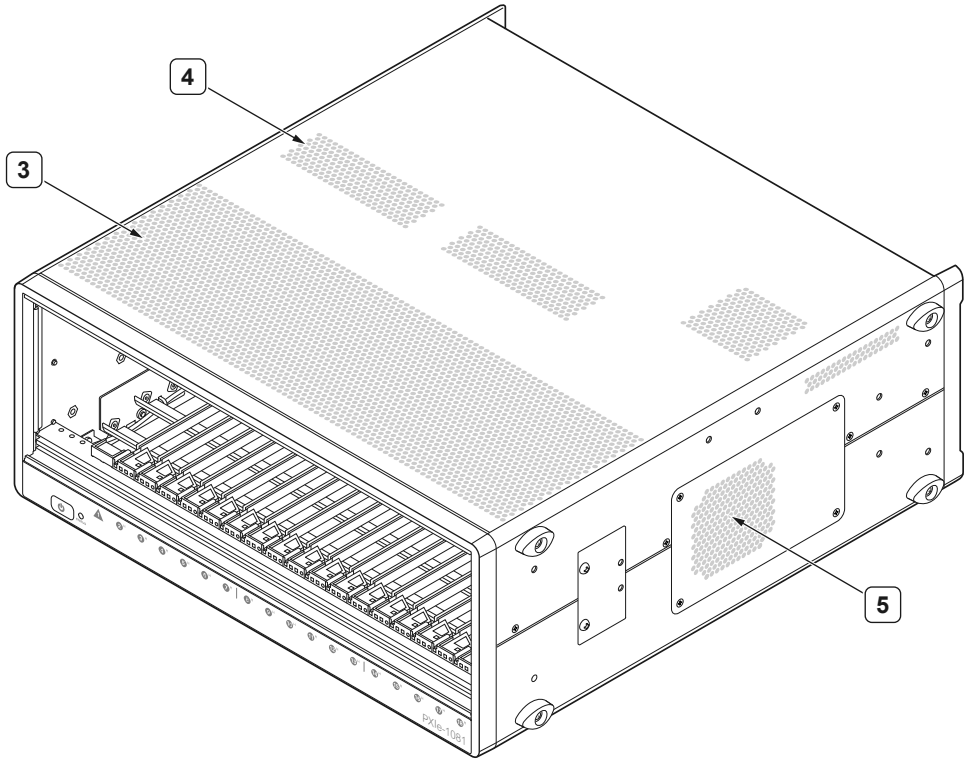


Figure 15. PXIe-1081 Top and Side Vents



1. PXI module air intake (3x)
2. Power supply intake
3. PXI module air exhaust vent
4. Power supply air exhaust vent
5. Side air intake vent (right)/Side air exhaust vent (left)

Note The images do not show the side air exhaust vent. The side air exhaust vent is located on the left side of the chassis.

Related tasks:

- Connecting the PXIe-1081 to Earth Ground
- Replacing the PXI Module Fan Assembly for the PXIe-1081
- Replacing the Side Fan Assembly for the PXIe-1081

Related information:

- PXIe-1081 Specifications

Installing the PXIe-1081 onto a Flat Surface

Follow these instructions to install the PXIe-1081 for benchtop operation.

- Record the serial number from the rear panel. It will be inaccessible after installation and is required for identifying the chassis in Hardware Configuration Utility and MAX.
- Do not install any modules before performing a power-on test.
- Ensure the chassis is properly grounded using the AC inlet or rear grounding screw.

Note Maintain minimum cooling clearances around the chassis:

- Top: 4.00 in (101.60 mm)
- Sides: 1.75 in (44.45 mm)

These clearances are required to ensure proper airflow and thermal performance.

Complete the following steps to properly install the PXIe-1081 onto a flat surface.

1. Place the chassis on a flat, stable surface.
2. Verify airflow:
   - Ensure intake vents (rear and right side) and exhaust vents (top and left side)

are unobstructed.
    - Avoid placing heat-generating equipment nearby.
3. Connect the AC power cable to the rear IEC 60320 C14 inlet.
4. If AC power does not provide grounding, follow the grounding procedure described in ***Connecting to Earth Ground***.
5. Power on the chassis:
    - Press and hold the Power Inhibit button for 4 seconds.
    - Verify that fans operate and the front panel LED is steady green.
6. Monitor intake temperatures using Hardware Configuration Utility or MAX to ensure ambient conditions remain within specification.

Related tasks:

- Connecting the PXIe-1081 to Earth Ground

Mounting the PXIe-1081 onto an Instrument Rack

Follow these instructions to install the PXIe-1081 in a rack-mounted configuration.

Before you begin:

- Record the serial number from the rear panel. It will be inaccessible after installation and is required for identifying the chassis in Hardware Configuration Utility or MAX.
- Do not install any modules before performing a power-on test.
- Ensure the chassis is properly grounded using the AC inlet or rear grounding screw.

Note Maintain minimum cooling clearances around the chassis:

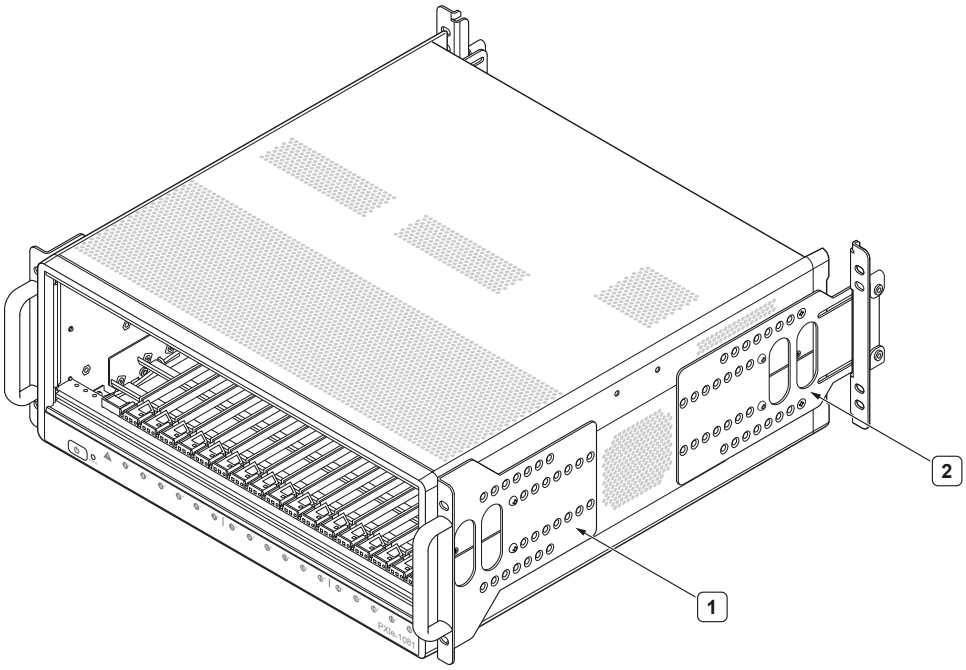
- Top: 4.00 in (101.60 mm)
- Sides: 1.75 in (44.45 mm)

These clearances are required to ensure proper airflow and thermal performance.

1. Remove the feet and carrying handle from the chassis if necessary.
2. Install the rack mount kit:

   - Use NI-provided front and rear rack mount kits compatible with the PXIe-1081.
   - Follow the instructions provided with the kit.
3. Secure the chassis in the rack, ensuring proper alignment and support.
4. Ensure ventilation:
   - Provide forced air ventilation within the rack.
   - Avoid placing heat-generating equipment adjacent to the chassis.
5. Connect the AC power cable to the rear IEC 60320 C14 inlet.
6. If AC power does not provide grounding, follow the grounding procedure described in ***Connecting to Earth Ground***.
7. Power on the chassis:
   - Press and hold the Power Inhibit button for 4 seconds.
   - Verify that fans operate and the front panel LED is steady green.
8. Monitor intake temperatures using Hardware Configuration Utility or MAX to ensure ambient conditions remain within specification.

Figure 16. PXIe-1081 Rack Mount Kit Components



1. Front Rack Mount
2. Rear Rack Mount

Related tasks:

- Connecting the PXIe-1081 to Earth Ground

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories

Powering the PXIe-1081

Learn how to properly power on and power off the chassis.

Related tasks:

- Configuring Inhibit Mode for the PXIe-1081

Related reference:

- Inhibit Mode Behavior on the PXIe-1081

Powering On the PXIe-1081

Use the following method to safely power on the PXIe-1081 and verify operational readiness.

Before you begin:

- Connect the chassis to an AC power source.
- Ensure the chassis is in Default Inhibit Mode.
- Do not install any modules before performing the power-on test.

Follow the steps below to verify that the chassis powers on and operates normally.

1. Press and hold the Power Inhibit button for 4 seconds.
2. Confirm that:
   - All fans begin operating.
   - The Status LED turns steady green, indicating normal operation.

Related tasks:

- Configuring Inhibit Mode for the PXIe-1081

Related reference:

- Status LED

Powering Off the PXIe-1081

Use the following method to place the chassis into standby mode.

1. Press and hold the Power Inhibit button for 4 seconds.
2. Confirm that:
   - The Status LED turns off.
   - Fan operation ceases.

Related concepts:

- Post-Shutdown Cooling Behavior

Related reference:

- Status LED

Configure Cooling and Power Behavior of the PXIe-1081

Learn how to configure the PXIe-1081 chassis to manage fan speed and power behavior using DIP switches or Hardware Configuration Utility or MAX. Use these options to ensure optimal cooling, safe power control, and reliable system operation.

To configure cooling and power behavior on the PXIe-1081 chassis, you must understand how DIP switches interact with software settings:

- DIP switches control fan mode and the inhibit mode directly. When enabled, DIP switches override software settings.
- You can use Hardware Configuration Utility or MAX to configure fan speed and the inhibit mode only when the DIP switches are set to Default.

Related reference:

- PXIe-1081 Front Panel
- PXIe-1081 Operating Guidelines

Chassis Information Available in Hardware Configuration Utility and MAX for the PXIe-1081

Review available chassis data in Hardware Configuration Utility or MAX, including serial numbers, voltages, fan settings, and firmware status. Data availability depends on chassis and software versions.

Hardware Configuration Utility and MAX display detailed chassis data, including:

- Serial number and part number
- Chassis number
- Voltages, temperatures, and fan speeds
- Fan and cooling settings
- Power supply details

- Slot configuration
- Chassis self-test results
- Firmware update options

PXI Platform Services identifies PXI Express system components and generates configuration files (`pxiesys.ini` and `pxisys.ini`) that define system parameters. You can configure your PXI system using Hardware Configuration Utility or MAX.

In addition to monitoring chassis status, Hardware Configuration Utility and MAX provide the following configurable fields:

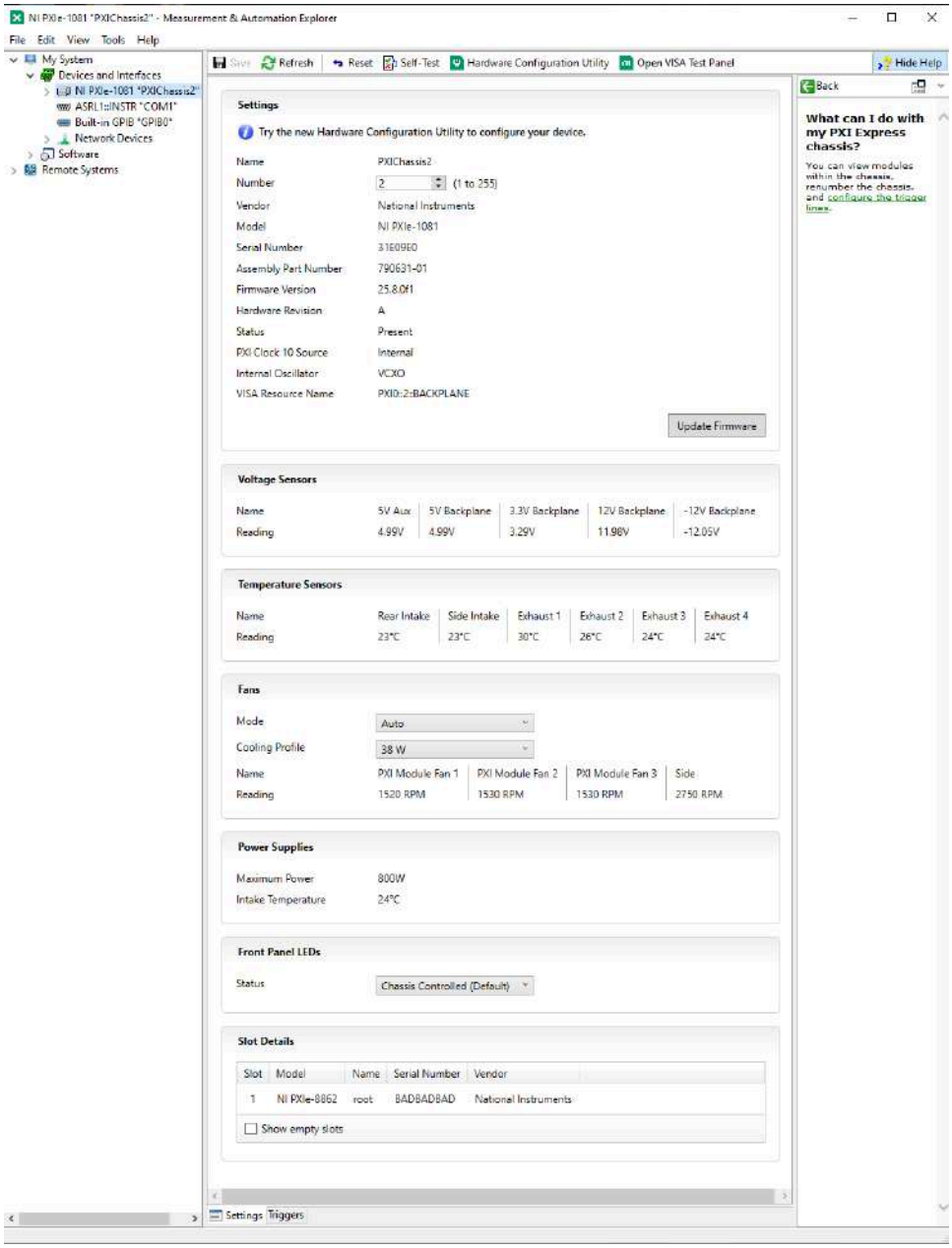
- **Chassis Number**—Set a unique number (1 through 255) to identify the chassis within multi-chassis systems.
- **Fan Mode**—Select Auto, High, or Manual fan control.
- **Cooling Profile**—Choose a cooling profile based on power consumption.
- **Front Panel LED Status**—Control LED behavior (for example, Chassis Controlled, Blink).

Hardware Configuration Utility and MAX also display read-only fields that identify hardware and report system health:

- Chassis name, vendor, model, serial number, part number, firmware version, and hardware revision
- Chassis status and detection
- PXI Clock 10 source and oscillator type
- VISA resource name
- Voltage and temperature sensor readings
- Fan speeds and power supply intake temperature
- Slot-level module details including model, serial number, and vendor

Availability of data depends on chassis variant, firmware version, and PXI Platform Services version.

Figure 17. PXIe-1081 Chassis Settings in MAX



Related concepts:

- PXIe-1081 Configuring PXI Trigger Routing

DIP Switch Functions on the PXIe-1081

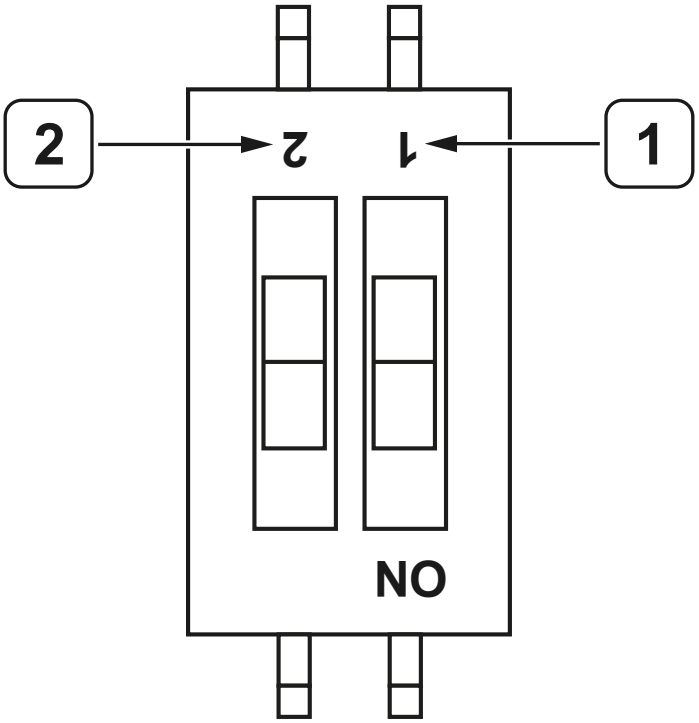
Learn how DIP switches control fan and inhibit modes on the PXIe-1081 chassis.

The PXIe-1081 backplane includes a DIP switch unit that controls fan and inhibit

modes. Looking at the front panel of the chassis, the DIP switch unit is located on the left side of the backplane. Refer to ***Front Panel*** for exact placement.

DIP Switch Overview

Figure 18. PXIe-1081 Backplane DIP Switches



1. Switch 1 (Fan)
2. Switch 2 (Power)

Table 7. Switch Functions

Label	State	Description
1	Off (Up)	Set chassis fan mode to Auto.
1	On (Down)	Set chassis fan mode to High.
2	Off (Up)	Set chassis inhibit mode to Default.
2	On (Down)	Set chassis inhibit mode to Manual.

Use Hardware Configuration Utility or MAX to set inhibit mode when DIP switch 2 in the Default (Off) position. If you set DIP switch 2 to Manual (On), the chassis ignores

software settings. Refer to ***Configure Inhibit Mode in Hardware Configuration Utility or MAX*** for more information.

Related reference:

- Inhibit Mode Behavior on the PXIe-1081
- PXIe-1081 Front Panel

Set DIP Switches on the PXIe-1081

Learn how to set DIP switches to configure fan and inhibit modes.

1. Locate the DIP switch unit on the left side of the backplane.
2. Set **Switch 1 (Fan)**:
   - Move the switch to the **Up (Off)** position to enable Auto mode.
   - Move the switch to the **Down (On)** position to enable High mode.
3. Set **Switch 2 (Power)**:
   - Move the switch to the **Up (Off)** position to enable Default inhibit mode.
   - Move the switch to the **Down (On)** position to enable Manual inhibit mode.

Note Set Switch 2 to Default (Off) to allow software configuration in Hardware Configuration Utility or MAX. If you set the switch to Manual, the chassis ignores software settings related to the Power Inhibit button.

Fan Modes and Cooling Profiles for the PXIe-1081

Understand and configure the available fan modes and cooling profiles for the PXIe-1081 chassis.

The chassis supports three fan modes:

- **Auto**—Adjusts fan speed that is based on intake temperature.
- **High**—Runs fans at full speed for maximum cooling.
- **Manual**—Allows direct control of fan speed (if supported).

Cooling profiles:

- **38 W profile**—Supports modules up to 38 W.
- **58 W profile**—Supports modules up to 58 W.

Set Switch 2 to Default (Off) to allow configuration in Hardware Configuration Utility or MAX. When you set the switch to Manual (On), the chassis ignores software settings related to the power inhibit button.

Configuring Fan Mode for the PXIe-1081 in MAX

Learn how to configure fan behavior for the PXIe-1081. DIP switch overrides, MAX settings, and cooling profiles support different module power levels.

The PXIe-1081 supports multiple fan operating modes to balance cooling performance and acoustic noise. Configure fan modes using DIP switches or MAX. DIP switch settings override software configuration. Chassis software selects the minimum cooling level required.

Note Set the DIP switches to High to keep the chassis in High fan mode. DIP switch settings override MAX configuration.

Note Chassis software automatically selects the minimum cooling level required to support installed modules.

- Power on the chassis and verify recognition in MAX.
- Install PXI Platform Services.

Use the following steps to adjust the fan behavior of the PXIe-1081 using MAX.

1. Launch MAX on the system controller.
2. Select the chassis by clicking on the PXIe-1081 chassis in the **Configuration tree**.
3. Navigate to Fan Settings.
   a. Click the **Settings** tab in the right-hand pane.
   b. Locate the **Fans** group.
4. Select one of the following modes:
   - **Auto**: Fan speed adjusts based on intake air temperature. Recommended for quieter operation.
   - **High**: Fans run at full speed for maximum cooling. Recommended for high-power module configurations.
   - **Manual**: Allows direct control of fan speed (if supported).
5. Select Cooling Profile by choosing between:

    - **38 W profile**: For modules up to 38 W.
    - **58 W profile**: For modules up to 58 W.
6. Click **Save** to apply the new fan settings.

The chassis now operates in the selected fan mode. The configuration matches the cooling requirements and the noise requirements of the system. Intake temperatures appear in MAX so you can monitor thermal performance.

Inhibit Mode Behavior on the PXIe-1081

Understand and configure how inhibit mode affects power control on the PXIe-1081 chassis.

The PXIe-1081 uses an Inhibit Mode to determine how the Power Inhibit button and DIP switch affect power state. The chassis supports two inhibit modes:

- **Default Mode**—The Power Inhibit button toggles the chassis between standby and operational states. This mode allows powering on the chassis even if no system controller is installed.
- **Manual Mode**—The chassis turns on automatically when AC power is present. You do not need to press the Power Inhibit button. This behavior is useful in automated test environments where physical access to the chassis is limited. DIP switch settings determine whether inhibit mode software configuration in Hardware Configuration Utility or MAX is allowed.

Note The PXIe-1081 does not support remote inhibit behavior.

Note You can use the DIP switch on the backplane or Hardware Configuration Utility/MAX to configure the inhibit mode. Setting the DIP switch to Manual overrides software settings.

Related concepts:

- Powering the PXIe-1081

Related tasks:

- Configuring Inhibit Mode for the PXIe-1081

Related reference:

- DIP Switch Functions on the PXIe-1081

Configuring Inhibit Mode for the PXIe-1081

Learn how to configure the inhibit mode using DIP switches or Hardware Configuration Utility/MAX. Set power control behavior and understand software limitations for Default Mode and Manual Mode.

Note Set the DIP switch to Default to enable inhibit mode software control in Hardware Configuration Utility/MAX. Manual Mode overrides software settings.

You can configure the inhibit mode using either the DIP switch or a software utility.

Method	Steps
DIP switch	a. Locate the DIP switch unit on the backplane. b. Set **Switch 2 (Power)** ◦ **Up (Off)** for Default Mode ◦ **Down (On)** for Manual Mode
Hardware Configuration Utility or MAX	a. Open Hardware Configuration Utility or MAX and navigate to the chassis under the **Configuration** tree. b. Select the **Settings** tab. c. Choose the desired inhibit mode under **Power Supplies**. d. Click **Save**.

Related concepts:

- Powering the PXIe-1081

Related tasks:

- Powering On the PXIe-1081

Related reference:

- Inhibit Mode Behavior on the PXIe-1081

PXIe-1081 Configuring PXI Trigger Routing

Learn how to reserve and route PXI trigger lines in Hardware Configuration Utility or MAX.

Each chassis includes one or more trigger buses with eight lines, numbered 0 through 7. You can reserve and route these lines statically or dynamically. You must configure routing manually for static setups or advanced use cases. Use the Triggers tab in Hardware Configuration Utility or MAX to reserve lines. Reserved lines remain unavailable to dynamically configured modules, which helps prevent signal conflicts. Trigger lines operate independently. For example, asserting line 3 on one bus does not affect other buses.

- **Static Routing**—You configure trigger connections manually before runtime. This method is suitable for fixed setups or advanced use cases that require precise control.
- **Dynamic Routing**—The system automatically establishes trigger connections during runtime based on device requirements. This method helps prevent conflicts and simplifies configuration for typical use cases.

Note Trigger routing behavior depends on the driver and device. Refer to your driver documentation for details on supported routing methods and runtime behavior.

Related reference:

- Chassis Information Available in Hardware Configuration Utility and MAX for the PXIe-1081

Manually Reserving and Routing PXI Trigger Lines for the PXIe-1081 in MAX

Follow these steps to configure PXI trigger routing manually for the PXIe-1081 chassis in MAX.

- Power on the chassis and confirm that MAX recognizes the hardware.
- Install PXI Platform Services and the required driver for your device. Refer to your driver documentation for installation steps and supported software versions.

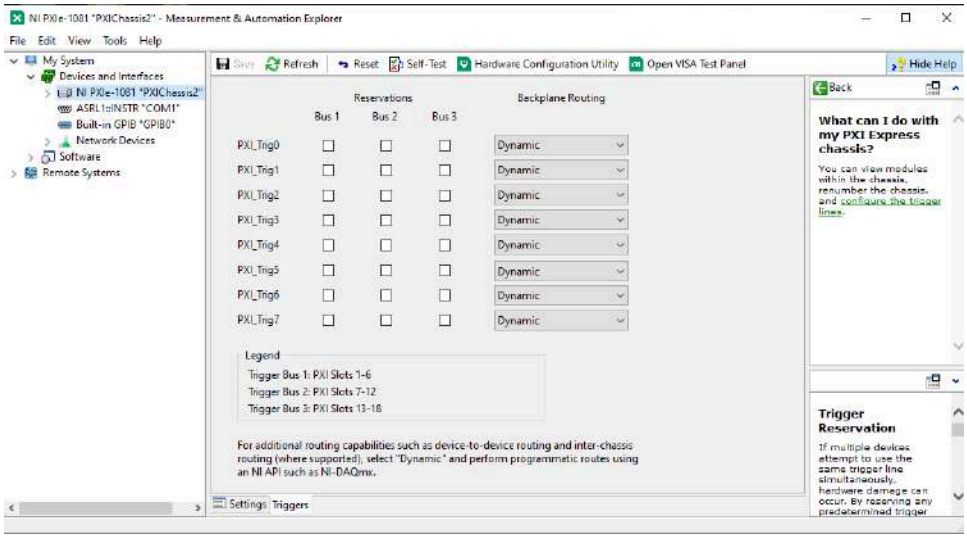
Note The system automatically handles dynamic routing in most cases. You must configure routing manually for static configurations or advanced setups. Refer to your driver documentation for details on supported routing methods and configuration steps.

Complete the following steps to reserve and route PXI trigger lines for the PXIe-1081 using MAX.

1. Launch MAX on the system controller.
2. Select the chassis by clicking on the PXIe-1081 chassis in the **Configuration tree**.
3. Reserve trigger lines.
   a. Navigate to the **Triggers** tab in the right-hand pane.
   b. Select which trigger lines (0–7) you want to reserve.
   c. Click **Save**.
4. Configure trigger routing.
   a. Navigate to the **Trigger Routing** tab.
   b. For each trigger line, choose one of the following:
      - **Away from Bus 1**
      - **Away from Bus 2**
      - **Away from Bus 3**
      - **Dynamic** (default behavior)
5. Click **Save** to commit the routing configuration.

Result: This configuration reserves and routes trigger lines based on system synchronization needs. The chassis now supports precise timing and avoids signal conflicts.

Figure 19. PXIe-1081 Trigger Configuration in MAX



Cleaning and Maintaining the PXIe-1081

Follow these guidelines to clean and maintain the chassis and to support long-term reliability and optimal performance.

Routine cleaning and routine maintenance help prevent dust buildup, overheating, and airflow obstruction, which can degrade system performance and shorten component lifespan. Regular upkeep ensures the chassis operates within its specified thermal limits and maintains safe electrical conditions, especially in demanding environments or dusty environments.

- Disconnect all AC power cables.
- Perform cleaning in a static-free environment.
- Wear a grounded wrist strap to protect sensitive components from electrostatic discharge.

1. Clean the interior of the chassis.
   Use a dry, low-velocity stream of air to remove dust from internal components. Use a soft-bristle brush to clean around connectors and sensitive areas.
2. Clean the exterior of the chassis.
   Wipe the chassis with a dry, lint-free cloth or soft-brisle brush. If needed, use a cloth moistened with mild soap solution followed by a cloth dampened with clean water. Avoid moisture ingress through vents and do not clean connectors or switches directly. Avoid using abrasive compounds or harsh chemicals such as benzene, toluene, or acetone.

   > **Notice** Never allow moisture to enter the chassis through vents or openings. Avoid using solvents that may damage the finish or internal components.

3. Perform periodic maintenance.
   Clean the chassis periodically based on environmental conditions. Increase cleaning frequency in dusty or high-traffic environments.

Periodic cleaning and maintenance help ensure the PXIe-1081 operates reliably and meets thermal and environmental specifications.

Maintaining Forced-Air Cooling

Inadequate air circulation can cause the temperature within a PXI chassis to rise above the maximum recommended operating temperature for your PXI/PXI Express module. Overheating can cause a thermal shutdown or damage to the PXI/PXI Express module.

Ensure the ambient temperature of your PXI system is within the specifications for all of the system components. Ensure the ambient temperature provides adequate cooling clearances for your chassis to achieve the required airflow through the chassis.

Note The ambient temperature of a PXI system is defined as the temperature at the chassis fan inlet (air intake).

Follow these guidelines to maintain optimal forced-air cooling for PXI and PXI Express modules in the chassis:

- NI highly recommends installing slot blockers in unused slots to maximize airflow in the slots populated with instrumentation.
- Install filler panels over slot blockers and unused slots.
  Missing filler panels disrupt the necessary air circulation in the chassis.
- Install your chassis so cooling clearances meet the specifications stated in the specifications.
  Allow space around the chassis fan intake and exhaust vents; if you remove the chassis feet, allow for adequate clearance below the chassis. Blocked fan vents impede the airflow needed for cooling.
- For rackmount PXI deployments, follow these guidelines:
  - Place high-power units within the rack above the PXI system where possible.
  - Use racks with open sides and/or rear panels.
  - Use fan trays within the rack, and at the top and bottom of the rack, to increase overall airflow and reduce ambient temperatures within the rack.
  - Use other methods that reduce ambient temperature within the rack.
- If your chassis includes fan filters, clean them at least every six months.
  Depending on the amount of chassis use and the ambient dust levels, filters may require more frequent cleaning. If regular maintenance of dirty or clogged filters is not possible, you can remove foam filters to maintain adequate cooling.
- Set all chassis fans to high unless directed otherwise by the PXI or PXI Express

module documentation; do not disable the fan(s).
- Ensure the ambient temperature does not exceed the rated ambient temperature specification.
  Refer to the chassis temperature LED, if available, or use a temperature probe to verify temperature.

Related tasks:

- Installing PXI Slot Blockers
- Installing PXI Filler Panels

Installing PXI Slot Blockers

PXI slot blockers improve system cooling in PXI chassis by rerouting airflow from empty slots to slots containing PXI modules.

NI recommends using PXI slot blockers with standard or EMC filler panels to improve cooling performance for all PXI chassis.

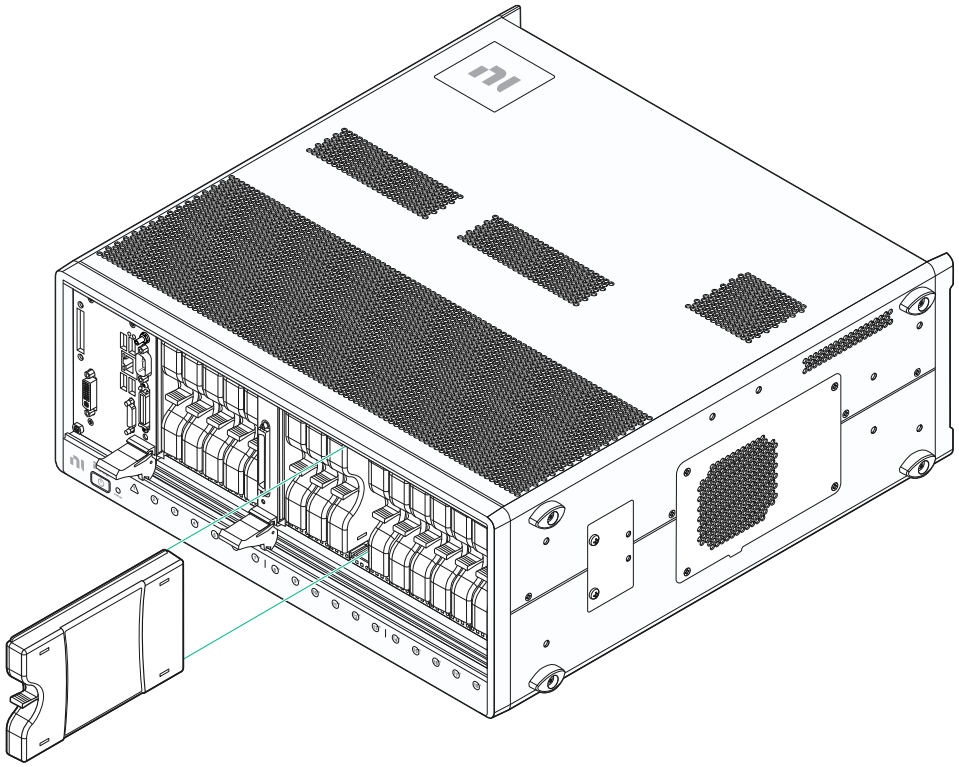
> **Notice** NI highly recommends installing PXI slot blockers if your PXI chassis features rear fans.

You can order PXI slot blockers (NI part number 199198-01) on `ni.com`.

To install PXI slot blockers in your PXI chassis, complete the following steps.

1. Install a PXI slot blocker in each empty slot of your PXI chassis.

Figure 20. Slot Blocker Installation



2. Install PXI filler panels over each slot containing a PXI slot blocker.

Related tasks:

- Installing Peripheral Modules into the PXIe-1081
- Installing PXI Filler Panels

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories

Installing PXI Filler Panels

To ensure proper cooling, install standard filler panels or EMC filler panels over each empty slot of a PXI chassis.

Filler panels improve the cooling performance of the system. EMC filler panels contain additional gaskets to control EMC emissions from the chassis. Some PXI/PXI Express modules require EMC filler panels to meet specification conditions.

Note To ensure adequate cooling of modules, you must install filler panels over all chassis slots. To ensure optimal cooling performance, NI recommends using slot blockers with filler panels.

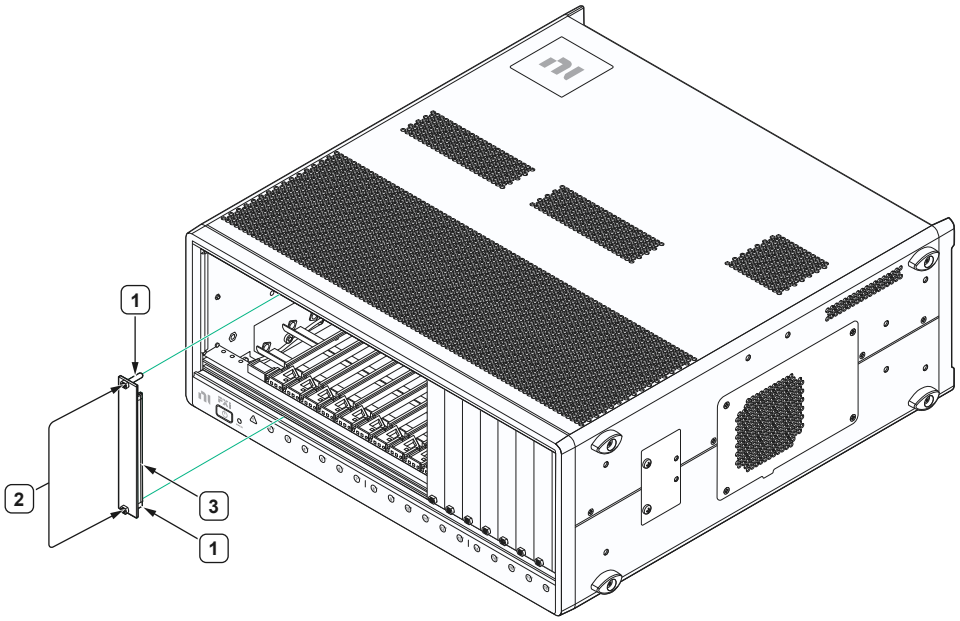
For more information about PXI filler panels, visit `ni.com/r/emcpanels`.

1. Remove the captive screw covers, if present, from the filler panel.
2. Secure the captive mounting screws to the chassis.

   Note Do not overtighten the screws (2.5 in. · lb maximum).

   When installing EMC filler panels, ensure that the EMC gasket is on the right side as shown in the following figure.

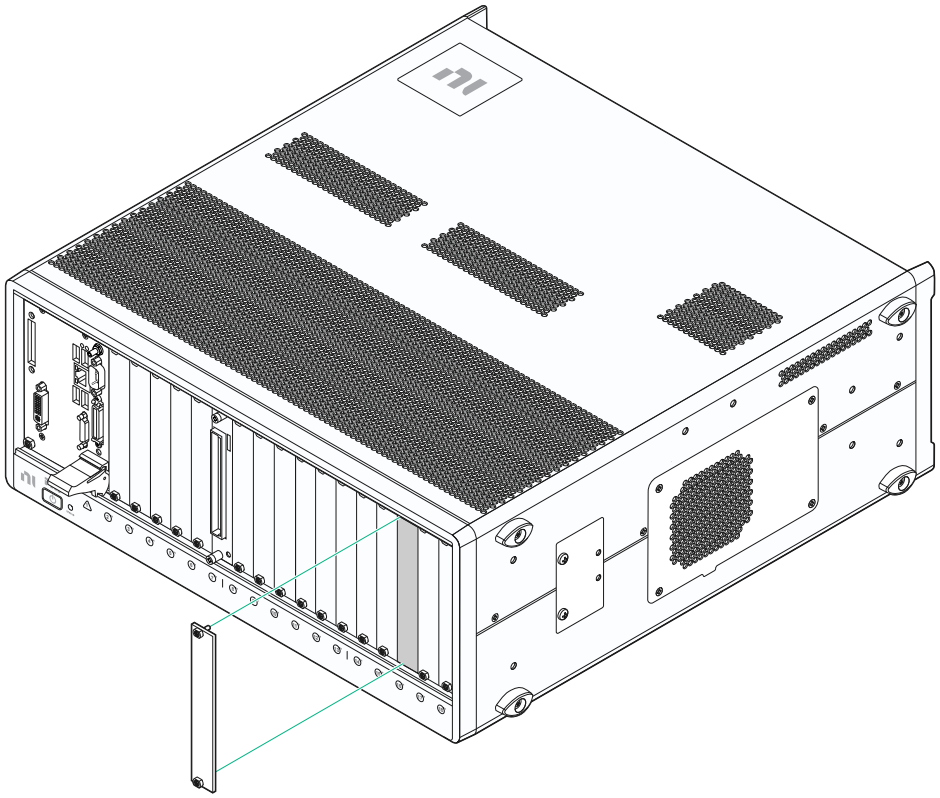
   Figure 21. EMC Filler Panel Installation



   1. Captive screw covers
   2. Captive mounting screws
   3. EMC gasket

   When installing standard filler panels, install as shown in the following figure.

Figure 22. Standard Filler Panel Installation



Related tasks:

- Installing PXI Slot Blockers

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories
- PXIe-1081 Kit Contents

Related information:

- Standard or EMC Filler Panels for My PXI Chassis

PXIe-1081 Installing Replacement Fan Assemblies

Learn how to remove and install fan assemblies in for PXIe-1081 chassis. Follow these procedures to maintain airflow and meet mechanical specifications.

Caution Disconnect all power cables and wait at least 30 seconds before replacing fan assemblies.

Replacing the PXI Module Fan Assembly for the PXIe-1081

Follow these steps to replace the rear fan assembly in the PXIe-1081 chassis.

Tools Required:

- Phillips screwdriver
- Torque screwdriver

Safety Precautions:

- Verify that there is adequate clearance behind the chassis.
- Disconnect the power cable from the power supply on the back of the chassis. Wait at least 30 seconds for the internal power to dissipate.

Complete the following steps to replace the rear fan assembly.

1. Remove the eight #6-32 mounting screws and the #8-32 grounding screw from the fan panel.
2. Remove the rear endcaps.
3. Keep the internal fan harness connected. Carefully pull and rotate the fan assembly from the rear cavity.
4. Disconnect the fan harness from the internal chassis receptacle.

   Notice Use caution to avoid damaging the fan wire harness.

5. Angle the new fan assembly to plug the harness into the internal chassis receptacle.

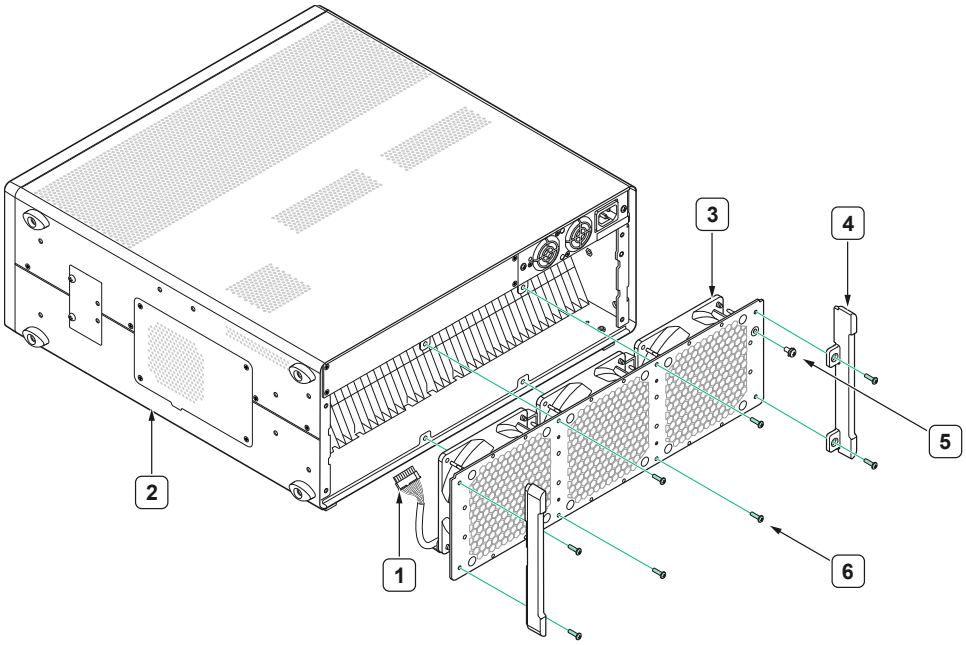
   Notice Use care to avoid damaging the fan harness or receptacle.

6. Install the fan assembly into the rear cavity of the chassis.

Notice Avoid pinching or damaging the wire harness.

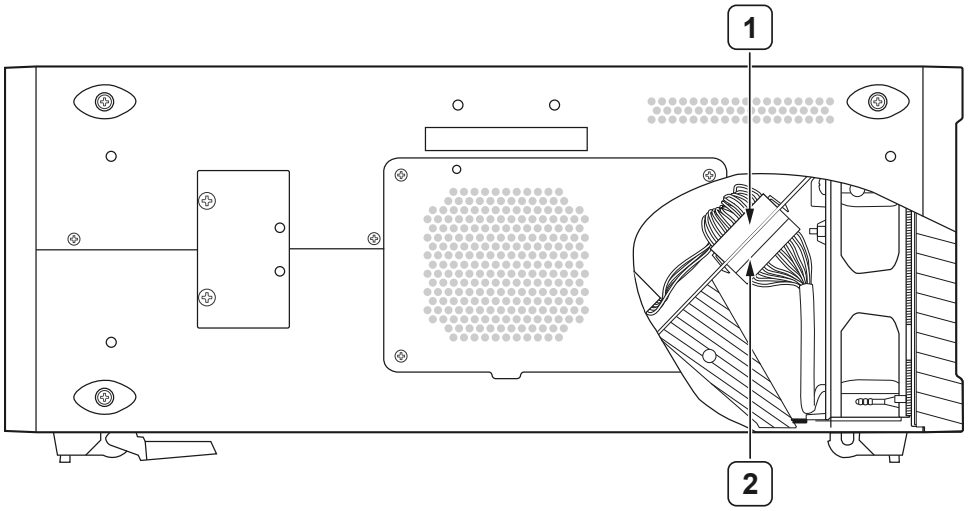
7. Replace the rear endcaps.
8. Tighten the eight #6-32 mounting screws and the #8-32 grounding screw into the rear of the chassis. Tighten screws to 1.3 N·m (11.5 lb·in.) to meet shock and vibration specifications listed in the ***PXIe-1081 Specifications***.

Figure 23. PXIe-1081 Replacing Rear Fan Module



1. Fan harness plug
2. PXIe-1081 chassis
3. PXI module fan assembly
4. Rear endcaps (2x)
5. Grounding screw
6. Mounting screws (8x)

Figure 24. PXIe-1081 Internal Fan Harness



1. Fan receptacle
2. Fan harness plug

Related concepts:

- PXIe-1081 Mounting Requirements

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories

Related information:

- PXIe-1081 Specifications

Replacing the Side Fan Assembly for the PXIe-1081

Follow these steps to replace the side fan assembly for the PXIe-1081 chassis.

Tools required:

- Phillips screwdriver
- Torque screwdriver

Safety precautions:

- Verify that there is adequate clearance to the side of the chassis.
- Disconnect the power cable from the power supply on the back of the chassis. Wait at least 30 seconds for the internal power to dissipate.

Use the following steps to replace the side fan assembly.

1. Remove the four #4-40 mounting screws from the side fan cover.
2. Remove the side fan cover from the chassis.
3. Remove the two #2-56 mounting screws from the side fan assembly.
4. Locate the fan harness in the internal chassis cavity and disconnect it from the chassis receptacle.

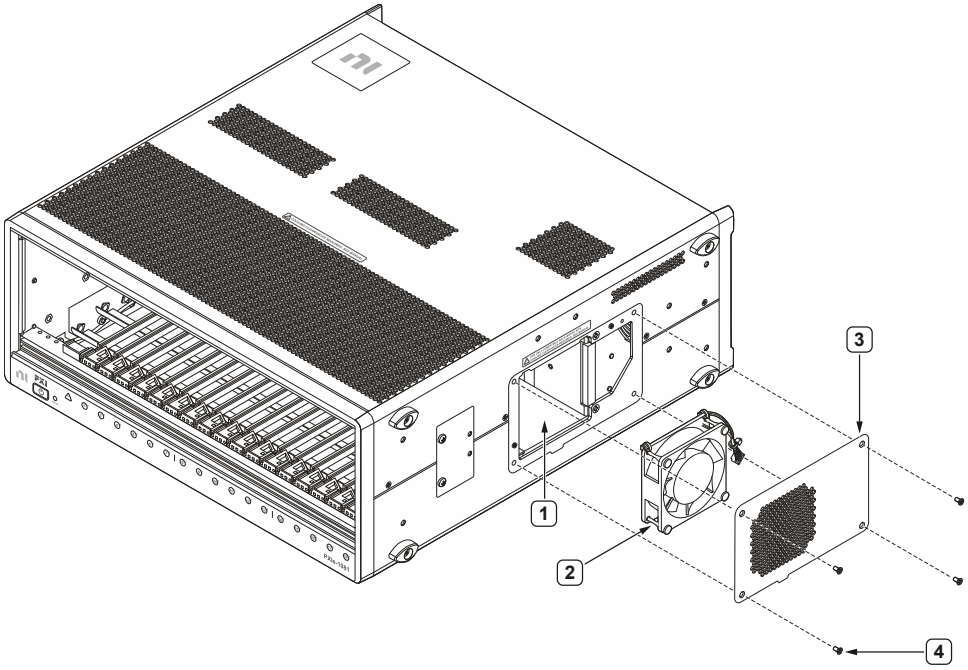
   Notice Use caution to avoid damaging the internal wire harness.

5. Pull the side fan assembly straight out of the chassis.
6. Plug the new side fan assembly into the internal chassis fan receptacle.
7. Set the fan assembly into the chassis side fan cavity.

   Notice Use caution when placing the wire harness to avoid damage.

8. Tighten the two #2-56 mounting screws. To meet the shock and the vibration specifications listed in the ***PXIe-1081 Specifications***, tighten the #2-56 screws to 0.6 N·m (5.3 lb·in.).
9. Use the side fan cutout to pull extra cable clear of the chassis side panels.
10. Place all extra cable into the chassis side fan cavity.
11. Tighten the four #4-40 side fan cover mounting screws. To meet the shock and the vibration specifications listed in the ***PXIe-1081 Specifications***, tighten the #4-40 screws to 0.8 N·m (7 lb·in.).

Figure 25. PXIe-1081 Replacing Side Fan Assembly



1. Chassis Side Fan Cavity
2. Side Fan Assembly
3. Side Fan Cover
4. Side Fan Cover Mounting Screws (4x)

Related concepts:

- PXIe-1081 Mounting Requirements

Related reference:

- Part Numbers for PXIe-1081 Recommended Cables and Accessories

Related information:

- PXIe-1081 Specifications