Important Information

Warranty

The NI PXI-1042 Series chassis are warranted against defects in materials and workmanship for a period of one year from the date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

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About This Manual

The *NI PXI-1042 Series User Manual* describes the features of the PXI-1042 Series chassis and contains information about configuring the chassis, installing the modules, and operating and using the PXI-1042 Series chassis.

Conventions

The following conventions are used in this manual:

» The » symbol leads you through nested menu items and dialog box options to a final action. The sequence **File**→**Page Setup**→**Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.

⚠️ This icon denotes a note, which alerts you to important information.

⚠️ This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on the product, refer to the *Read Me First: Safety and Radio-Frequency Interference* document, shipped with the product, for precautions to take.

**bold** Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Bold text also denotes parameter names.

*italic* Italic text denotes variables, emphasis, a cross reference, or an introduction to a key concept. This font also denotes text that is a placeholder for a word or value that you must supply.

**monospace** Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames, and extensions.

**PXI-1042/PXI-1042Q** The PXI-1042 chassis appears in the views throughout the manual. The mechanical features are identical between the PXI-1042 and the PXI-1042Q chassis unless otherwise noted.
About This Manual

Related Documentation

The following documents contain information that you might find helpful as you read this manual:

- Compact PCI Specification PICMG 2.0 R 3.0
- PXI Specification, Revision 2.0
1

Getting Started

This chapter describes the key features of the PXI-1042 Series chassis and lists the kit contents and optional equipment you can order from National Instruments.

Unpacking

Carefully inspect the shipping container and the chassis for damage. Check for visible damage to the metal work. Check to make sure all handles, hardware, and switches are undamaged. Inspect the inner chassis for any possible damage, debris, or detached components. If damage appears to have been caused during shipment, file a claim with the carrier. Retain the packing material for possible inspection and/or reshipment.

What You Need to Get Started

The PXI-1042 Series kit contains the following items:

- PXI-1042 or PXI-1042Q chassis
- Filler panels
- AC power cable (refer to Table 1-1 for AC power cables)
- *NI PXI-1042 Series User Manual*
- Software media with Chassis Initialization file, `chassis.ini`
- *Read Me First: Safety and Radio-Frequency Interference*
Table 1-1. AC Power Cables

<table>
<thead>
<tr>
<th>Power Cable</th>
<th>Reference Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 120 V (USA)</td>
<td>ANSI C73.11/NEMA 5-15-P/IEC83</td>
</tr>
<tr>
<td>Switzerland 220 V</td>
<td>SEV</td>
</tr>
<tr>
<td>Australia 240 V</td>
<td>AS C112</td>
</tr>
<tr>
<td>Universal Euro 230 V</td>
<td>CEE (7), II, IV, VII IEC83</td>
</tr>
<tr>
<td>North America 120 V</td>
<td>ANSI C73.20/NEMA 5-15-P/IEC83</td>
</tr>
<tr>
<td>United Kingdom 230 V</td>
<td>BS 1363/IEC83</td>
</tr>
</tbody>
</table>

If you are missing any of the items listed in Table 1-1, or if you have the incorrect AC power cable, contact National Instruments.

Key Features

The PXI-1042 Series combines a high-performance 8-slot PXI backplane with a high-output power supply and a structural design that has been optimized for maximum usability in a wide range of applications. The chassis’ modular design ensures a high level of maintainability, resulting in a very low mean time to repair (MTTR). The PXI-1042 Series fully comply with the PXI Specification, Revision 2.0, offering advanced timing and synchronization features.

The key features of the PXI-1042 Series include the following:

- PXI and CompactPCI (PICMG 2.0 R 3.0) module compatibility
- Compact 3U-sized, 8-slot chassis
- Universal AC input: automatic voltage and frequency ranging
- Over-current protection through push-reset circuit breaker (no AC-input fuses to replace)
- Removable modular power-supply shuttle
- Remote voltage monitoring and inhibit through a rear-panel connector
- On/Off (Standby) power switch on the front panel for easy access
- Temperature-sensing module that can adjust fan speed based on air-intake temperature to minimize audible noise
• Front-panel LED that can indicate power supply failure
• Carrying handle for portability
• Tilt feet for bench-top applications

Chassis Description

Figures 1-1 and 1-2 show the key features of the PXI-1042 chassis front and back panels. Figure 1-1 shows the front view of the PXI-1042. Figure 1-2 shows the rear view of the PXI-1042. Figure 1-3 shows the rear view of the PXI-1042Q.

![Figure 1-1. Front View of the PXI-1042 Chassis](image)

1. Backplane Connectors (Located in Slots 1–8)
2. On/Off (Standby) Power Switch
3. Removable Feet
4. Power LED
5. Controller Expansion Slots
6. System Controller Slot
7. Star Trigger Slot
8. Peripheral Slots
9. Filler Panel
10. Chassis Model
Figure 1-2. Rear View of the PXI-1042 Chassis

1 Circuit Breaker
2 Universal AC Inlet
3 Chassis Ground Screw
4 Fan Speed Selector Switch
5 10 MHz REF OUT BNC
6 Remote Inhibit and Voltage Monitoring Connector
7 10 MHz REF IN BNC
8 Metal Filter Cover
9 Power-Supply Shuttle Captive Screw
10 Power-Supply Shuttle
11 Filter Retainer Screw
Optional Equipment

Contact National Instruments to order the following options for the PXI-1042 Series chassis.

**EMC Filler Panels**

Optional EMC filler panel kits are available from National Instruments.

**Rack Mount Kits**

Two rack mount kit options are available for mounting the PXI-1042 Series chassis into a 19 in. instrument cabinet.
The first option is a pair of mounting brackets for use on the front of the chassis. The second option is a rear rack mount kit. The rear rack mount kit differs from the front kit to allow for easier installation into the rack. For more information, refer to Figure A-3, *PXI-1042 Series Chassis Rack Mount Kit Components*.

**Slot Blockers**

Optional slot blocker kits are available from National Instruments for improved thermal performance when all slots are not used.

**PXI-1042 Series Backplane Overview**

**Interoperability with CompactPCI**

The PXI-1042 Series backplane is interoperable with PXI-compatible products and standard CompactPCI products. This is an important feature, because some PXI systems may require components that do not implement PXI-specific features. For example, you may want to use a standard CompactPCI network interface card in a PXI chassis.

The signals on the backplane P1 connector meet the requirements of the CompactPCI specification for both the peripheral and system modules.

The PXI-specific signals are on the P2 connector and are found only on the signal lines reserved or not used in the CompactPCI 64-bit specification. Therefore, all modules that meet the requirements of the CompactPCI 64-bit specification will function in the PXI-1042 Series.

**System Controller Slot**

The system controller slot is Slot 1 of the chassis as defined by the PXI specification. It has three controller expansion slots for system controller modules that are wider than one slot. As defined in the PXI specification, these slots allow the controller to expand to the left to prevent the controller from using peripheral slots.
Star Trigger Slot

The Star Trigger (ST) slot is Slot 2. This slot has dedicated equal-length trigger lines between Slot 2 and each remaining peripheral slot (refer to Figure 1-4). This slot is intended for modules with ST functionality that can provide individual triggers to all other peripheral modules. However, if you do not require advanced trigger functionality, you can install any standard peripheral module in this slot.

Peripheral Slots

There are seven peripheral slots including the Star Trigger slot.

Local Bus

The PXI backplane local bus is a daisy-chained bus that connects each peripheral slot with adjacent peripheral slots to the left and right, as shown in Figure 1-4.

The left local bus signals on Slot 2 are used for Star Trigger and do not connect to Slot 1. The right local bus signals on Slot 8 are not routed anywhere.

For example, a given peripheral slot’s right local bus connects to the adjacent slot’s left local bus, and so on. Each local bus is 13 lines wide and can pass analog signals between cards or provide a high-speed side-band digital communication path that does not reduce the PXI bus bandwidth.

Local bus signals may range from high-speed TTL signals to analog signals as high as 42 V.

Initialization software uses the configuration information specific to each adjacent peripheral module to evaluate local bus compatibility.
Trigger Bus

All slots share eight trigger lines. You can use these trigger lines in a variety of ways. For example, you can use triggers to synchronize the operation of several different PXI peripheral modules. In other applications, one module can control carefully timed sequences of operations performed on other modules in the system. Modules can pass triggers to one another, allowing precisely timed responses to asynchronous external events the system is monitoring or controlling.

System Reference Clock

The PXI-1042 Series chassis supply the PXI 10 MHz system clock signal (PXI_CLK10) independently to each peripheral slot. An independent buffer (having a source impedance matched to the backplane and a skew of less than 250 ps between slots) drives the clock signal to each peripheral slot. You can use this common reference clock signal to synchronize multiple modules in a measurement or control system. You can drive PXI_CLK10 from an external source through the PXI_CLK10_IN pin on the P2 connector of the Star Trigger Slot. Refer to Table B-4, *P2 (J2) Connector Pinout for the Star Trigger Slot*. Sourcing an external clock on this pin automatically replaces the backplane’s 10 MHz source. You also can drive PXI_CLK10 from the 10 MHz REF IN connector on the rear of the chassis. Sourcing an external clock on this connector automatically
overrides the backplane’s 10 MHz clock. If the clock signal is present on both the PXI_CLK10_IN pin of the Star Trigger Slot and the 10 MHz REF IN connector on the rear of the chassis, the signal on the Star Trigger Slot is selected and provided to all peripheral slots and the external 10 MHz REF OUT connector on the rear of the chassis.
This chapter describes how to prepare and operate the PXI-1042 Series chassis.

Before connecting the chassis to a power source, read this chapter and the Read Me First: Safety and Radio-Frequency Interference document included with your kit.

**Chassis Cooling Considerations**

The PXI-1042 Series chassis are designed to operate on a bench or in an instrument rack. Determine how you want to use the chassis and follow the appropriate installation instructions.

**Providing Adequate Clearance**

Apertures in the top and along both sides of the chassis facilitate power supply and module cooling. Air enters through filters and fan inlets in the lower rear of the chassis and exits through the upper sections on both sides and through the top, as shown in Figure 2-1. Place the chassis on a bench top or in an instrument rack so that the fans (air inlets) and the air outlet apertures along both sides and the top of the chassis have adequate ventilation. Keep other equipment a minimum of 3 in. away from the air inlets on the rear of the chassis.

When rack mounting a PXI-1042 Series chassis, provide 1.75 in. (44.5 mm) clearance above and on the sides of the unit for adequate venting. High-power applications may require additional clearance.
Install the chassis so that you can easily access the rear panel. This simplifies replacing the air filters or power supply shuttle assembly, if necessary.

**Setting Fan Speed**

The fan-speed selector switch is on the rear panel of the PXI-1042 Series chassis. Refer to Figure 1-2, *Rear View of the PXI-1042 Chassis*, and Figure 1-3, *Rear View of the PXI-1042Q Chassis*, to locate the fan-speed selector switch. Select HIGH for maximum cooling performance (recommended) or AUTO for quieter operation. When set to AUTO, the fan speed is determined by chassis intake air temperature.

**Installing Filler Panels**

To improve module cooling performance, install filler panels (provided with the chassis) in unused or empty slots. Secure with the captive mounting screws provided.
Installing Slot Blockers

The cooling performance of the chassis can be improved by installing optional slot blockers. Refer to ni.com for more details.

Rack Mounting

Rack mount applications require the optional rack mount kits available from National Instruments. Refer to the instructions supplied with the rack mount kits to install your PXI-1042 Series in an instrument rack. Refer to Figure A-3, PXI-1042 Series Chassis Rack Mount Kit Components.

Note You may want to remove the feet from the PXI-1042 Series when rack mounting. To do so, remove the screws holding the feet in place.

Connecting Safety Ground

Caution The PXI-1042 Series chassis are designed with a three-position NEMA 5-15 style plug for the U.S. that connects the ground line to the chassis ground. To minimize shock hazard, make sure the electrical power outlet you use to power the chassis has an appropriate earth safety ground.

If your power outlet does not have an appropriate ground connection, you must connect the premise safety ground to the chassis grounding screw located on the rear panel. Refer to Figure 1-2, Rear View of the PXI-1042 Chassis, and Figure 1-3, Rear View of the PXI-1042Q Chassis, to locate the chassis grounding screw. To connect the safety ground, complete the following steps:

1. Connect a 16 AWG (1.3 mm) wire to the chassis grounding screw using a grounding lug. The wire must have green insulation with a yellow stripe or must be noninsulated (bare).
2. Attach the opposite end of the wire to permanent earth ground using toothed washers or a toothed lug.
Connecting to Power Source

**Caution** Do not install modules prior to performing the following power-on test.

Attach input power through the rear AC inlet using the appropriate AC power cable supplied. Refer to Figure 1-2, *Rear View of the PXI-1042 Chassis*, and Figure 1-3, *Rear View of the PXI-1042Q Chassis*, to locate the AC inlet.

The power switch allows you to power on the chassis or place it in standby mode. Push the power switch to the On (recessed) position (if not already on). Observe that all fans become operational and the power switch LED is a steady green.

**Caution** To remove power, you must disconnect the AC power cable.

Installing a PXI Controller

This section contains general installation instructions for installing a PXI controller in a PXI-1042 Series chassis. Refer to your PXI controller user manual for specific instructions and warnings. To install a controller, complete the following steps:

1. Plug in the PXI chassis before installing the controller. The power cord grounds the chassis and protects it from electrical damage while you install the controller. Make sure the power switch is in the Off (standby) position.

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

2. Install the controller into the system controller slot (red card guides) by first placing the controller edges into the front controller guides (top and bottom). Slide the controller to the rear of the chassis (making sure that the injector/ejector handle is pushed down as shown in Figure 2-2).
3. When you begin to feel resistance, push up on the injector/ejector handle to inject the controller fully into the chassis frame. Secure the controller front panel to the chassis using the controller front-panel mounting screws.

4. Connect the keyboard, mouse, and monitor to the appropriate connectors. Connect devices to ports as required by your system configuration.

5. Power on the chassis. Verify that the controller boots. If the controller does not boot, refer to your controller user manual.

Figure 2-3 shows a PXI controller installed in the system controller slot of a PXI-1042 chassis. You can place CompactPCI or PXI modules in any other slot.
Installing PXI Modules

⚠️ Caution Disconnect the AC power cable before installing CompactPCI or PXI modules.

To install a module, complete the following steps:

1. Install a module into a chassis slot by first placing the module card edges into the front module guides (top and bottom), as shown in Figure 2-4. Slide the module to the rear of the chassis, making sure that the injector/ejector handle is pushed down as shown in Figure 2-2.
2. When you begin to feel resistance, push up on the injector/ejector handle to fully inject the module into the chassis frame. Secure the

---

Figure 2-3. NI Controller Installed in a PXI-1042 Chassis
module front panel to the chassis using the module front-panel mounting screws.

Figure 2-4. Installing PXI or CompactPCI Modules

1. PXI-1042 Series Chassis
2. NI Controller
3. PXI Module
4. Injector/Ejector Handle
5. Injector/Ejector Rail
Power Switch LED Indicator

The chassis power switch has an integrated LED. This LED indicates one of three different conditions:

- If the power switch LED is steady green (not flashing), the chassis is powered on and operating normally.
- If the power switch LED is flashing green, the air-intake temperature has exceeded the chassis operating range.
- If the power switch LED is flashing red, the power supply outputs are not within voltage regulation requirements.

Remote Voltage Monitoring and Control

The PXI-1042 Series chassis support remote voltage monitoring and inhibiting through a male 9-pin D-SUB (DB-9) connector located on the rear panel. Table 2-1 shows the pinout of the 9-pin D-SUB (DB-9) connector.

<table>
<thead>
<tr>
<th>DB-9 Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Logic Ground</td>
</tr>
<tr>
<td>2</td>
<td>+5 VDC</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>+3.3 VDC</td>
</tr>
<tr>
<td>5</td>
<td>Inhibit (Active Low)</td>
</tr>
<tr>
<td>6</td>
<td>+12 VDC</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>−12 VDC</td>
</tr>
<tr>
<td>9</td>
<td>Logic Ground</td>
</tr>
</tbody>
</table>
You can use the Inhibit signal (active low) to power off the chassis. To remotely power off the chassis, connect the Inhibit pin (pin 5) to a Logic Ground pin (pin 1 or 9). As long as this connection exists, the chassis will remain off (standby); when you remove this connection, the chassis turns on.

**Note** For the Inhibit signal to control the On/Off (standby) state of the chassis, the front power switch must be in the On (recessed) position.

**Caution** When connecting digital voltmeter probes to the rear 9-pin D-SUB (DB-9) connector, be careful not to short the probe leads together. Doing so could damage the power supply.

You can use a digital voltmeter to ensure all voltage levels in the PXI-1042 Series are within the allowable limits. Referring to Table 2-2, connect one lead of the voltmeter to a supply pin on the remote voltage monitoring connector (9-pin D-SUB) on the rear panel. Refer to Table 2-1 for a pinout diagram of the remote voltage monitoring connector. Connect the reference lead of the voltmeter to one of the ground pins. Compare each voltage reading to the values listed in Table 2-2.

**Note** Use the rear-panel 9-pin D-SUB connector to check voltages only. Do not use the connector to supply power to external devices.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Supply</th>
<th>Acceptable Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>+5 V</td>
<td>4.75 to 5.25 V</td>
</tr>
<tr>
<td>4</td>
<td>+3.3 V</td>
<td>3.135 to 3.465 V</td>
</tr>
<tr>
<td>6</td>
<td>+12 V</td>
<td>11.4 to 12.6 V</td>
</tr>
<tr>
<td>8</td>
<td>−12 V</td>
<td>−12.6 to −11.4 V</td>
</tr>
<tr>
<td>1, 9</td>
<td>Logic Ground</td>
<td>0 V</td>
</tr>
</tbody>
</table>

If the voltages fall within the specified ranges, the chassis complies with the CompactPCI voltage-limit specifications.
PXI_CLK10 Rear Connectors

There are two BNC connectors on the rear of the PXI-1042 Series chassis for PXI_CLK10. The connectors are labeled IN and OUT. You can use them for supplying the backplane with PXI_CLK10 or routing the backplane’s PXI_CLK10 to another chassis.

10 MHz REF IN

You can use the 10 MHz REF IN connector to supply an external 10 MHz clock to the backplane. The external clock signal is buffered and provided to each peripheral slot’s PXI_CLK10 pin with a maximum slot-to-slot skew of 250 ps. When the backplane detects a 10 MHz signal on the 10 MHz REF IN connector, it automatically overrides the 10 MHz clock provided by the backplane and uses the externally provided clock. If the backplane detects a 10 MHz clock on the PXI_CLK10_IN pin of Slot 2 and a 10 MHz clock on the external 10 MHz REF IN connector, the backplane automatically selects the signal from Slot 2 and provides that signal to each peripheral slot.

The input impedance of the 10 MHz REF IN connector on the rear of the chassis is 50 $\Omega \pm 5 \Omega$. The backplane accepts a 10 MHz clock signal between 200 mV_{pp} and 5 V_{pp} and rejects any DC component of the PXI_CLK10_IN signal. The input signal may be a 10 MHz square wave or sine wave.

10 MHz REF OUT

The 10 MHz REF OUT connector provides a buffered non-TTL version of the PXI_CLK10 TTL signal supplied to the peripheral slots on the backplane. You can use this signal to synchronize multiple PXI chassis to the same PXI_CLK10 signal.

The output impedance of this connector is 50 $\Omega \pm 5 \Omega$. The output signal is a 1 V_{pp} ±20% non-TTL square wave.
Using System Configuration and Initialization Files

The PXI specification allows many combinations of PXI chassis and system modules. To assist system integrators, the manufacturers of PXI chassis and system modules must document the capabilities of their products. The minimum documentation requirements are contained in .ini files, which consist of ASCII text. System integrators, configuration utilities, and device drivers can use these .ini files.

The capability documentation for the PXI-1042 Series chassis is contained in the chassis.ini file on the software media that comes with the chassis. The information in this file is combined with information about the system controller to create a single system initialization file called pxisys.ini (PXI System Initialization). The system controller manufacturer either provides a pxisys.ini file for the particular chassis model that contains the system controller or provides a utility that can read an arbitrary chassis.ini file and generate the corresponding pxisys.ini file. System controllers from NI provide the pxisys.ini file for the PXI-1042 Series chassis, so you should not need to use the chassis.ini file. Refer to the documentation provided with the system controller or to ni.com/support for more information on pxisys.ini and chassis.ini files.

Device drivers and other utility software read the pxisys.ini file to obtain system information. The device drivers should have no need to directly read the chassis.ini file. For detailed information regarding initialization files, refer to the PXI specification at www.pxisa.org.
Maintenance

This chapter describes basic maintenance procedures you can perform on the PXI-1042 Series chassis.

⚠️ Caution ⚠️ Disconnect the power cable prior to servicing a PXI-1042 Series chassis.

Service Interval

Clean the chassis fan filters at a maximum interval of six months. Depending on the amount of use and ambient dust levels in the operating environment, the filters may require more frequent cleaning.

Clean dust from the chassis exterior (and interior) as needed, based on the operating environment. Periodic cleaning increases reliability.

Preparation

The information in this section is designed for use by qualified service personnel. Read the Read Me First: Safety and Radio-Frequency Interference document included with your kit before attempting any procedures in this chapter.

⚠️ Caution ⚠️ Many components within the chassis are susceptible to static discharge damage. Service the chassis only in a static-free environment. Observe standard handling precautions for static-sensitive devices while servicing the chassis. Always wear a grounded wrist strap or equivalent while servicing the chassis.
Cleaning

Cleaning procedures consist of exterior and interior cleaning of the chassis and cleaning the fan filters. Refer to your module user documentation for information on cleaning the individual CompactPCI or PXI modules.

⚠️ **Caution**  Always disconnect the AC power cable before cleaning or servicing the chassis.

**Interior Cleaning**

Use a dry, low-velocity stream of air to clean the interior of the chassis.

Use a soft-bristle brush for cleaning around components.

**Exterior Cleaning**

Clean the exterior surfaces of the chassis with a dry lint-free cloth or a soft-bristle brush. If any dirt remains, wipe with a cloth moistened in a mild soap solution. Remove any soap residue by wiping with a cloth moistened with clear water. Do not use abrasive compounds on any part of the chassis.

⚠️ **Caution**  Avoid getting moisture inside the chassis during exterior cleaning, especially through the top vents. Use just enough moisture to dampen the cloth.

Do not wash the front- or rear-panel connectors or switches. Cover these components while cleaning the chassis.

Do not use harsh chemical cleaning agents; they may damage the chassis. Avoid chemicals that contain benzene, toluene, xylene, acetone, or similar solvents.

**Cleaning and Replacing the Fan Filters**

Dirty fan filters can dramatically affect the cooling performance of a PXI-1042 Series chassis. Clean the filters whenever they become visibly dirty. You can easily remove the chassis air filters from the rear of the chassis by removing the filter retainer. To remove the filter retainer, loosen the retainer screw. The filter cover and retainer are shown in Figure 1-2, *Rear View of the PXI-1042 Chassis*, and Figure 1-3, *Rear View of the PXI-1042Q Chassis*. 
Clean the fan filters by washing them in a mild soap solution and then vacuuming or blowing air through them. Rinse the filters with water and allow them to dry before reinstalling them on the chassis.

If desired, you can replace the fan filters with part number FF 365-A/30P (pack of 10) from Air Filtration Products, Inc., Tucson, AZ 85705.

**Resetting the AC Mains Circuit Breaker**

If the PXI-1042 Series is connected to an AC source and encounters an over-current condition, the circuit breaker on the rear panel will trip to prevent damage to the chassis. Complete the following steps to reset the circuit breaker.

1. Set the front-panel power switch to the Off (nonrecessed) position.
2. Disconnect the AC power cable.
3. Depress the circuit breaker to reset it.
4. Reconnect the AC power cable.
5. Set the power switch to the On (recessed) position.

If the circuit breaker trips again, complete the following steps:

1. Press the front-panel power switch to the Off (nonrecessed) position.
2. Disconnect the AC power cable.
3. Remove all modules from the chassis.
4. Complete the procedure described in the *Connecting to Power Source* section of Chapter 2, *Installation and Configuration*. If the power switch LED is not a steady green, contact National Instruments.
5. Verify that the PXI-1042 Series can meet the power requirements of your CompactPCI or PXI modules. Overloading the chassis can cause the breaker to trip. Refer to Appendix A, *Specifications*.
6. The over-current condition that caused the circuit breaker to trip may be due to a faulty CompactPCI or PXI module. Refer to the documentation supplied with the modules for troubleshooting information.
Replacing the Modular Power Supply

This section describes how to remove, configure, and install the AC power-supply shuttle in the PXI-1042 Series chassis.

**Note**  The AC power supply shuttles for the PXI-1042 and PXI-1042Q chassis are not interchangeable.

**Caution**  Disconnect the power cable prior to replacing the power supply.

Before connecting the power-supply shuttle to a power source, read this section and the *Read Me First: Safety and Radio-Frequency Interference* document included with the kit.

**Removal**

The PXI-1042 AC power-supply is a replacement part for the PXI-1042 AC chassis. The PXI-1042Q AC power-supply shuttle is a replacement part for the PXI-1042Q AC chassis. Before attempting to replace the power-supply shuttle, verify that there is adequate clearance behind the chassis. Set the power switch on the front panel to the Off (nonrecessed) position and disconnect the power cable from the power-supply shuttle on the back of the chassis. Identify the eight captive screws for the PXI-1042 or the eight SEMS screws for the PXI-1042Q that attach the power-supply shuttle to the chassis. Refer to Figure 1-2, *Rear View of the PXI-1042 Chassis*, or Figure 1-3, *Rear View of the PXI-1042Q Chassis*, for the screw locations. Using a Phillips screwdriver, loosen the captive screws. Pull on the two rear handles of the power-supply shuttle to remove it from the back of the chassis.

**Installation**

Ensure that there is no visible damage to the new power-supply shuttle. Verify that the housing and connector on the new power-supply shuttle have no foreign material inside. Remove the protective cap on the PXI_CLK10 connector. Install the new power-supply shuttle into the opening on the rear of the chassis. Tighten the eight captive screws with a Phillips screwdriver.
Chapter 3 Maintenance

Configuration

The fan-speed selector switch is on the rear panel of the power-supply shuttle. Refer to Figure 1-2, *Rear View of the PXI-1042 Chassis*, and Figure 1-3, *Rear View of the PXI-1042Q Chassis*, to locate the fan-speed selector. Select HIGH for maximum cooling performance (recommended) or AUTO for quieter operation. When set to AUTO, air-intake temperature determines the fan speed.

Connecting Safety Ground

Refer to the *Connecting Safety Ground* section of Chapter 2, *Installation and Configuration*.

Connecting to Power Source

Refer to the *Connecting to Power Source* section of Chapter 2, *Installation and Configuration*. 
Specifications

This appendix contains specifications for the PXI-1042 Series chassis.

Electrical

**AC Input**

Input voltage range................................. 100 to 240 VAC

Operating voltage range₁....................... 90 to 264 VAC

Input frequency ...................................... 50/60 Hz

Operating frequency range₁ ................... 47 to 63 Hz

Input current rating................................. 8 A

Over-current protection......................... 10 A circuit breaker

Line regulation

- 3.3 V................................................ <±0.2%
- 5 V................................................... <±0.1%
- ±12 V .............................................. <±0.1%

Efficiency ............................................... 70% typical

Power disconnect ................................. The AC power cable provides main power disconnect. The front-panel power switch causes the internal chassis power supply to provide DC power to the CompactPCI/PXI backplane. You also can use the rear-panel D-SUB 9-pin connector to control the internal chassis power supply.

₁ The operating range is guaranteed by design.
## DC Output

DC current capacity ($I_{MP}$)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>PXI-1042</th>
<th>PXI-1042Q</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0–50 °C</td>
<td>0–55 °C</td>
</tr>
<tr>
<td>+3.3 V</td>
<td>20 A</td>
<td>18 A</td>
</tr>
<tr>
<td>+5 V</td>
<td>29 A</td>
<td>25 A</td>
</tr>
<tr>
<td>+12 V Peripheral slots</td>
<td>3.5 A</td>
<td>3.5 A</td>
</tr>
<tr>
<td>+12 V System slot</td>
<td>0.5 A</td>
<td>0.5 A</td>
</tr>
<tr>
<td>−12 V</td>
<td>2 A</td>
<td>2 A</td>
</tr>
</tbody>
</table>

Load regulation

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Load Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.3 V</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>+12 V</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>+5 V</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>−12 V</td>
<td>&lt;5%</td>
</tr>
</tbody>
</table>

Maximum ripple and noise (20 MHz bandwidth)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Maximum Ripple and Noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.3 V</td>
<td>50 mV&lt;sub&gt;pp&lt;/sub&gt;</td>
</tr>
<tr>
<td>+12 V</td>
<td>120 mV&lt;sub&gt;pp&lt;/sub&gt;</td>
</tr>
<tr>
<td>+5 V</td>
<td>50 mV&lt;sub&gt;pp&lt;/sub&gt;</td>
</tr>
<tr>
<td>−12 V</td>
<td>120 mV&lt;sub&gt;pp&lt;/sub&gt;</td>
</tr>
</tbody>
</table>
Over-current protection.................. All outputs protected from short circuit and overload with automatic recovery

Over-voltage protection
3.3 V and 5 V............................... Clamped at 20 to 30% above nominal output voltage
+12 V and –12 V......................... Clamped at 26 to 29 V difference between +12 and –12 V outputs

Power-supply shuttle MTTR.............. Replacement in under 5 minutes

Chassis Cooling

Per slot cooling capacity ................. 25 W

Module cooling system
PXI-1042................................. Forced air circulation (positive pressurization) through two 60 cfm fans with HIGH/AUTO speed selector
PXI-1042Q............................... Forced air circulation (positive pressurization) through two 51 cfm fans with HIGH/AUTO speed selector

Slot airflow direction ...................... P1 to P2, bottom of module to top of module

Module cooling intake .................... Bottom rear of chassis

Module cooling exhaust................... Along both sides and top of chassis

Power supply cooling system............. Forced air circulation through integrated fan

Power supply cooling intake............. Right side of chassis

Power supply cooling exhaust............ Left side of chassis
Environmental

Operating location ..................................Indoor use

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

Installation Category ...............................II

Pollution Degree .....................................2

Operating Environment

Ambient temperature range

PXI-1042 ................................................0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

PXI-1042Q ..............................................0 to 40 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity range ..........................10 to 90%, noncondensing
 (Tested in accordance with IEC-60068-2-56.)

Storage Environment

Ambient temperature range ....................–20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity range .......................5 to 95%, noncondensing
 (Tested in accordance with IEC-60068-2-56.)

Shock and Vibration

Operational shock ................................30 g peak, half-sine, 11 ms pulse
 (Tested in accordance with IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)
Random Vibration

Operating................................................ 5 to 500 Hz, 0.3 g$_{rms}$

Nonoperating.......................................... 5 to 500 Hz, 2.4 g$_{rms}$

(Tested in accordance with IEC-60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Acoustic Emissions

Sound Pressure Level (at Operator Position)

(Tested in accordance with ISO 7779.)

PXI-1042Q
  Auto fan (at 25 °C ambient)............ 43.4 dBA
  High fan ................................... 52.9 dBA

PXI-1042
  Auto fan (at 25 °C ambient)............ 50.5 dBA
  High fan ................................... 58.7 dBA

Sound Power

(Tested in accordance with ISO 7779.)

PXI-1042Q
  Auto fan (at 25 °C ambient)............ 52.2 dBA
  High fan ................................... 62.4 dBA

PXI-1042
  Auto fan (at 25 °C ambient)............ 58.8 dBA
  High fan ................................... 67.7 dBA
Appendix A Specifications

Safety

The PXI-1042 Series chassis were evaluated using the criteria of EN 61010-1 and meets the requirements of the following standards for safety and electrical equipment for measurement, control, and laboratory use:

- EN 61010-1, IEC 61010-1
- UL 3111-1, UL 61010B-1
- CAN/CSA C22.2 No. 1010.1

Note For UL and other safety certifications, refer to the product label, or visit ni.com/hardref.nsf, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

Emissions................................................EN 55011 Class A at 10 m
FCC Part 15A above 1 GHz

Immunity ................................................EN 61326:1997 + A2:2001,
Table 1

EMC/EMI ...............................................CE, C-Tick, and FCC Part 15
(Class A) Compliant

Harmonics/Flicker .................................EN 61000-3-2 and EN 61000-3-3

Note For EMC compliance, you must operate this device with shielded cabling. In addition, all covers and filler panels must be installed.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

Low-Voltage Directive (safety)..............73/23/EEC

Electromagnetic Compatibility
Directive (EMC).................................89/336/EEC

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit ni.com/hardref.nsf, search by model number or product line, and click the appropriate link in the Certification column.
Backplane

Size ......................................................... 3U-sized; one system slot (with three system expansion slots) and seven peripheral slots. Compliant with IEEE 1101.10 mechanical packaging. PXI Specification Revision 2.0 compliant. Accepts both PXI and CompactPCI (PICMG 2.0 R 3.0) 3U modules.

Backplane bare-board material .......... UL 94 V-0 Recognized

Backplane connectors ....................... Conforms to IEC 917 and IEC 1076-4-101, and are UL 94 V-0 rated

10 MHz System Reference Clock (PXI_CLK10)

Maximum clock skew between slots ........................................ 250 ps

Built-in 10 MHz clock

Accuracy .............................................. ±25 ppm (guaranteed over the operating temperature range)

Maximum jitter .............................. 5 ps RMS in 10 Hz to 1 MHz range

External clock sources

Connectors ........................................... BNC on rear of chassis (ground referenced) or Slot 2 J2 (pin D17; refer to Table B-4, P2 (J2) Connector Pinout for the Star Trigger Slot)

Input frequency ............................... 10 MHz ±100 ppm or better

Input amplitude

Rear connector ............... 200 mV \text{pp} \text{ to } 5 \text{ Vpp}, 10 MHz squarewave or sinewave

Slot 2 .......................... 5 V or 3.3 V, 10 MHz TTL signal
Appendix A Specifications

Input impedance ......................... 50 Ω ± 5 Ω (rear connector)
Maximum jitter introduced
by backplane circuitry ............... 1 ps RMS in 10 Hz to 1 MHz range

External clock output
Connector .................................... BNC on rear of chassis
(ground-referenced)
Output amplitude ...................... 1 V_{pp} ±20% squarewave into 50 Ω
2 V_{pp} into open circuit
Output impedance ...................... 50 Ω ± 5 Ω

Mechanical

Overall dimensions
Standard chassis
Height ......................................... 6.97 in. (177 mm)
Width ......................................... 10.68 in. (271.3 mm)
Depth ......................................... 15.61 in. (396.5 mm)

Note 0.57 in. (14.5 mm) is added to height when feet are installed. When tilted with front
feet extended on table top, height is increased approximately 2.08 in. (52.8 mm) in front
and 0.583 in. (14.8 mm) in rear.

Weight ........................................... 8.4 kg (18.6 lb)

Chassis materials ....................... Sheet Aluminum (5052-H32,
3003-H14, and 6061-T6),
Extruded Aluminum (6060-T6),
and Cold Rolled Steel, PC-ABS,
Santoprene, Nylon

Finish ......................................... Conductive Clear Iridite
on Aluminum
Clear Chromate Zinc Plating
on Cold Rolled Steel
Polyurethane Enamel
Figures A-1 and A-2 show the PXI-1042 Series chassis dimensions. The holes shown are for the installation of the optional rack mount kit. You can install this kit on the front or rear of the chassis, depending on which end of the chassis you want to face toward the front of the instrument cabinet. Notice that the front and rear chassis mounting holes (size M4) are symmetrical.

Figure A-1. PXI-1042 Series Chassis Dimensions (Front and Side)
Figure A-2. PXI-1042 Series Chassis Dimensions (Bottom)
Figure A-3 shows the PXI-1042 Series chassis rack mount kit components.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front Rack Mount Kit</td>
</tr>
<tr>
<td>2</td>
<td>PXI-1042 Series Chassis</td>
</tr>
<tr>
<td>3</td>
<td>Optional Rear Rack Mount Kit</td>
</tr>
</tbody>
</table>

**Figure A-3.** PXI-1042 Series Chassis Rack Mount Kit Components
Pinouts

This appendix describes the P1 and P2 connector pinouts for the PXI-1042 Series backplane.

Table B-1 shows the P1 (J1) connector pinout for the System Controller slot.

Table B-2 shows the P2 (J2) connector pinout for the System Controller slot.

Table B-3 shows the P1 (J1) connector pinout for the Star Trigger slot.

Table B-4 shows the P2 (J2) connector pinout for the Star Trigger slot.

Table B-5 shows the P1 (J1) connector pinout for the peripheral slots.

Table B-6 shows the P2 (J2) connector pinout for the peripheral slots.

Note PXI signals are shown in boldface.

For more detailed information, refer to the PXI Specification, Revision 2.0. Contact the PXI Systems Alliance for a copy of the specification.
### Table B-1. P1 (J1) Connector Pinout for the System Controller Slot

<table>
<thead>
<tr>
<th>Pin</th>
<th>Z</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>GND</td>
<td>5V</td>
<td>REQ6#</td>
<td>ENUM#</td>
<td>3.3V</td>
<td>5V</td>
<td>GND</td>
</tr>
<tr>
<td>24</td>
<td>GND</td>
<td>AD[1]</td>
<td>5V</td>
<td>V(I/O)</td>
<td>AD[0]</td>
<td>ACK6#</td>
<td>GND</td>
</tr>
<tr>
<td>18</td>
<td>GND</td>
<td>SERR#</td>
<td>GND</td>
<td>3.3V</td>
<td>PAR</td>
<td>C/BE[1]#</td>
<td>GND</td>
</tr>
<tr>
<td>17</td>
<td>GND</td>
<td>3.3V</td>
<td>IPMB_SCL</td>
<td>IPMB_SDA</td>
<td>GND</td>
<td>PERR#</td>
<td>GND</td>
</tr>
<tr>
<td>16</td>
<td>GND</td>
<td>DEVSEL#</td>
<td>GND</td>
<td>V(I/O)</td>
<td>STOP#</td>
<td>LOCK#</td>
<td>GND</td>
</tr>
<tr>
<td>15</td>
<td>GND</td>
<td>3.3V</td>
<td>FRAME#</td>
<td>IRDY#</td>
<td>GND</td>
<td>TRDY#</td>
<td>GND</td>
</tr>
<tr>
<td>12–14</td>
<td>Key Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>GND</td>
<td>C/BE[3]#</td>
<td>GND</td>
<td>AD[23]</td>
<td>GND</td>
<td>AD[22]</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>REQ0#</td>
<td>GND</td>
<td>3.3V</td>
<td>CLK0</td>
<td>AD[31]</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>BRSVP1A5</td>
<td>BRSVP1B5</td>
<td>RST#</td>
<td>GND</td>
<td>GNT0#</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>IPMB_PWR</td>
<td>HEALTHY</td>
<td>V(I/O)</td>
<td>INTP</td>
<td>INTS</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>INTA#</td>
<td>INTB#</td>
<td>INTC#</td>
<td>5V</td>
<td>INTD#</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>TCK</td>
<td>5V</td>
<td>TMS</td>
<td>TDO</td>
<td>TDI</td>
<td>GND</td>
</tr>
<tr>
<td>1</td>
<td>GND</td>
<td>5V</td>
<td>–12V</td>
<td>TRST#</td>
<td>+12V</td>
<td>5V</td>
<td>GND</td>
</tr>
</tbody>
</table>
### Table B-2. P2 (J2) Connector Pinout for the System Controller Slot

<table>
<thead>
<tr>
<th>Pin</th>
<th>Z</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>GND</td>
<td>GA4</td>
<td>GA3</td>
<td>GA2</td>
<td>GA1</td>
<td>GA0</td>
<td>GND</td>
</tr>
<tr>
<td>21</td>
<td>GND</td>
<td>CLK6</td>
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<td>V(I/O)</td>
<td>C/BE[4]#</td>
<td>PAR64</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>V(I/O)</td>
<td>PXI_BRSVB4</td>
<td>C/BE[7]#</td>
<td>GND</td>
<td>C/BE[6]#</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>PXI_LBR7</td>
<td>GND</td>
<td>PXI_LBR8</td>
<td>PXI_LBR9</td>
<td>PXI_LBR10</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>PXI_LBR11</td>
<td>PXI_LBR12</td>
<td>UNC</td>
<td>PXI_LBL7</td>
<td>PXI_LBL8</td>
<td>GND</td>
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<tr>
<td>1</td>
<td>GND</td>
<td>PXI_LBL9</td>
<td>GND</td>
<td>PXI_LBL10</td>
<td>PXI_LBL11</td>
<td>PXI_LBL12</td>
<td>GND</td>
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Technical Support and Professional Services

Visit the following sections of the National Instruments Web site at ni.com for technical support and professional services:

- **Support**—Online technical support resources at ni.com/support include the following:
  - **Self-Help Resources**—For immediate answers and solutions, visit the award-winning National Instruments Web site for software drivers and updates, a searchable KnowledgeBase, product manuals, step-by-step troubleshooting wizards, thousands of example programs, tutorials, application notes, instrument drivers, and so on.
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- **Calibration Certificate**—If your product supports calibration, you can obtain the calibration certificate for your product at ni.com/calibration.
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## Glossary

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>pico</td>
<td>$10^{-12}$</td>
</tr>
<tr>
<td>n</td>
<td>nano</td>
<td>$10^{-9}$</td>
</tr>
<tr>
<td>μ</td>
<td>micro</td>
<td>$10^{-6}$</td>
</tr>
<tr>
<td>m</td>
<td>milli</td>
<td>$10^{-3}$</td>
</tr>
<tr>
<td>k</td>
<td>kilo</td>
<td>$10^3$</td>
</tr>
<tr>
<td>M</td>
<td>mega</td>
<td>$10^6$</td>
</tr>
<tr>
<td>G</td>
<td>giga</td>
<td>$10^9$</td>
</tr>
<tr>
<td>T</td>
<td>tera</td>
<td>$10^{12}$</td>
</tr>
</tbody>
</table>

### Symbols

- °: Degrees.
- ≥: Equal or greater than.
- ≤: Equal or less than.
- %: Percent.

### A

- **A**: Amperes.
- **AC**: Alternating current.
- **ANSI**: American National Standards Institute.
- **AUTO**: Automatic fan speed control.
- **AWG**: American Wire Gauge.
## Glossary

### B
- **backplane**
  An assembly, typically a printed circuit board, with connectors and signal paths that bus the connector pins.
- **BNC**
  Bayonet Neill Concelman connector; a commonly used coaxial connector.

### C
- **C**
  Celsius.
- **cfm**
  Cubic feet per minute.
- **CFR**
  Code of Federal Regulations.
- **cm**
  Centimeters.
- **CompactPCI**
  An adaptation of the Peripheral Component Interconnect (PCI) Specification 2.1 or later for industrial and/or embedded applications requiring a more robust mechanical form factor than desktop PCI. It uses industry standard mechanical components and high-performance connector technologies to provide an optimized system intended for rugged applications. It is electrically compatible with the PCI Specification, which enables low-cost PCI components to be utilized in a mechanical form factor suited for rugged environments.
- **CSA**
  Canadian Standards Association.

### D
- **daisy-chain**
  A method of propagating signals along a bus, in which the devices are prioritized on the basis of their position on the bus.
- **DB-9**
  A 9-pin D-SUB connector.
- **DC**
  Direct current.
- **DoC**
  Declaration of Conformity.
- **D-SUB**
  Subminiature D connector.
### Glossary

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td><strong>efficiency</strong></td>
</tr>
<tr>
<td></td>
<td>EIA</td>
</tr>
<tr>
<td></td>
<td>EMC</td>
</tr>
<tr>
<td></td>
<td>EMI</td>
</tr>
<tr>
<td>F</td>
<td><strong>FCC</strong></td>
</tr>
<tr>
<td></td>
<td>filler panel</td>
</tr>
<tr>
<td>G</td>
<td><strong>g</strong></td>
</tr>
<tr>
<td></td>
<td>GPIB</td>
</tr>
<tr>
<td></td>
<td>gRMS</td>
</tr>
<tr>
<td>H</td>
<td><strong>hr</strong></td>
</tr>
<tr>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td>I</td>
<td><strong>IEC</strong></td>
</tr>
<tr>
<td></td>
<td>IEEE</td>
</tr>
<tr>
<td></td>
<td>I_{MP}</td>
</tr>
</tbody>
</table>
Glossary

in. Inches.
inhibit To turn off.

J

jitter A measure of the small, rapid variations in clock transition times from their nominal regular intervals. Units: seconds RMS.

K

kg Kilograms.
km Kilometers.

L

lb Pounds.
LED Light emitting diode.
line regulation The maximum steady-state percentage that a DC voltage output will change as a result of a specified change in input AC voltage (step change from 90 to 132 VAC or 180 to 264 VAC).
load regulation The maximum steady-state percentage that a DC voltage output will change as a result of a step change from no-load to full-load output current.

M

m Meters.
MHz Megahertz. One million Hertz; one Hertz equals one cycle per second.
mi Miles.
ms Milliseconds.
MTBF Mean time between failure.
MTTR Mean time to repair.
<table>
<thead>
<tr>
<th>N</th>
<th>NEMA</th>
<th>National Electrical Manufacturers Association.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>NI National Instruments.</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>power-supply shuttle</td>
<td>A removable module that contains the chassis power supply.</td>
</tr>
<tr>
<td></td>
<td>PXI</td>
<td>PCI eXtensions for Instrumentation.</td>
</tr>
<tr>
<td></td>
<td>PXI_CLK10</td>
<td>10 MHz PXI system reference clock.</td>
</tr>
<tr>
<td>R</td>
<td>RH Relative humidity.</td>
<td></td>
</tr>
<tr>
<td>RMS</td>
<td>Root mean square.</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>s Seconds.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>skew Deviation in signal transmission times.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>slot blocker An assembly installed into an empty slot to improve the airflow in adjacent slots.</td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>Star Trigger.</td>
<td></td>
</tr>
<tr>
<td>standby</td>
<td>The backplane is unpowered (off), but the chassis is still connected to AC power mains.</td>
<td></td>
</tr>
<tr>
<td>Star Trigger slot</td>
<td>This slot is located at Slot 2 and has a dedicated trigger line between each peripheral slot. Use this slot for a module with ST functionality that can provide individual triggers to all other peripherals.</td>
<td></td>
</tr>
</tbody>
</table>
Glossary

System controller: A module configured for installation in Slot 1 of a PXI chassis. This device is unique in the PXI system in that it performs the system controller functions, including clock sourcing and arbitration for data transfers across the backplane. Installing such a device into any other slot can damage the device, the PXI backplane, or both.

System reference clock: A 10 MHz clock, also called PXI_CLK10, that is distributed to all peripheral slots in the chassis, as well as a BNC connector on the rear of the chassis labeled 10 MHz REF OUT. The system reference clock can be used for synchronization of multiple modules in a measurement or control system. The 10 MHz REF IN and OUT BNC connectors on the rear of the chassis can be used to synchronize multiple chassis to one reference clock. The PXI backplane specification defines implementation guidelines for PXI_CLK10.

T

TTL: Transistor-transistor logic.

U

UL: Underwriter’s Laboratories.

V

V: Volts.

VAC: Volts alternating current.

V_{pp}: Peak-to-peak voltage.

W

W: Watts.
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