

General-Purpose 8-Slot Chassis for PXI

NI PXI-1042

- General-purpose, 8-slot chassis
- Accepts both 3U PXI and 3U CompactPCI modules
- Complies with PXI and CompactPCI specifications
- Complies with IEEE 1101.10 mechanical packaging
- Low-jitter internal 10 MHz reference clock
- External 10 MHz reference clock I/O connectors
- Filtered, forced-air cooling
- Enhanced fan control
- 300 W power supply with universal AC input
- Enhanced power monitoring
- Remote power inhibit and monitoring

Options

- Front and rear rack-mount kits
- Replacement power supply shuttle
- EMC filler panels
- Slot blockers

New



Overview

The National Instruments PXI-1042 chassis combines a high-performance 8-slot backplane with high-output power supply, integrated cooling, and compact structural design providing a versatile platform for a wide range of measurement and automation applications. The NI PXI-1042, which incorporates all features of the latest PXI specification, provides an excellent platform for bench-top or rack-mounted test and control systems. With its modular compact design, the PXI-1042 also provides an excellent platform for portable test and data acquisition applications.

Low-Jitter Internal 10 MHz Reference Clock

The backplane for the PXI-1042 incorporates all of the timing and triggering features defined in the latest PXI specification, including the built-in 10 MHz reference clock, trigger bus, star trigger, and module-to-module local bus. An added feature in the PXI-1042 chassis is the improved performance of the internal 10 MHz reference clock. The backplane oscillator provides the 10 MHz reference clock with an accuracy of 25 parts per million (ppm), jitter less than 5 ps, and a slot-to-slot skew of less than 250 ps. With this highly accurate, stable clock source, the PXI-1042 offers an ideal platform for test or control systems that require precision synchronization and timing. If this internal reference clock does not provide adequate synchronization, the PXI-1042 automatically senses and sources alternate external or Slot 2 clock sources (refer to the NI PXI-6608).

External 10 MHz Reference Clock I/O Connectors

The PXI-1042 incorporates two BNC connectors on the rear of the chassis for the 10 MHz reference clock, labeled IN and OUT (see

Figure 1). Through the IN connector, you can provide an external 10 MHz clock to the backplane. When the backplane detects a 10 MHz signal present on the IN connector, it automatically overrides the built-in 10 MHz clock and uses the external 10 MHz clock. The OUT connector provides a buffered, non-TTL version of the 10 MHz reference clock. You can use this signal to synchronize two or more PXI chassis to the same 10 MHz clock.

INFO CODE

For more information or to order products online, visit ni.com/info and enter:

pxi1042

BUY ONLINE!

Filtered, Forced-Air Cooling and Enhanced Fan Control

The National Instruments PXI-1042 offers superior cooling with improved airflow for all controller and peripheral module slots. Integrated fans provide filtered, forced-air cooling for the PXI slots, separate and independent of power supply cooling. NI integrated the power supply and fans into a single modular unit that you can remove quickly for service, resulting in an MTTR of less than five minutes. To accommodate the wide range of applications and application environments for the PXI-1042, two user-selectable fan speed settings are available. Select the HIGH fan speed setting for maximum cooling effectiveness or the AUTO fan speed setting to employ the new temperature sensing module that controls fan speed based on ambient air temperature. The chassis monitors the ambient air temperature and indicates elevated temperatures above 55 °C by a flashing green LED in the power switch on the front of the chassis.

General-Purpose 8-Slot Chassis for PXI

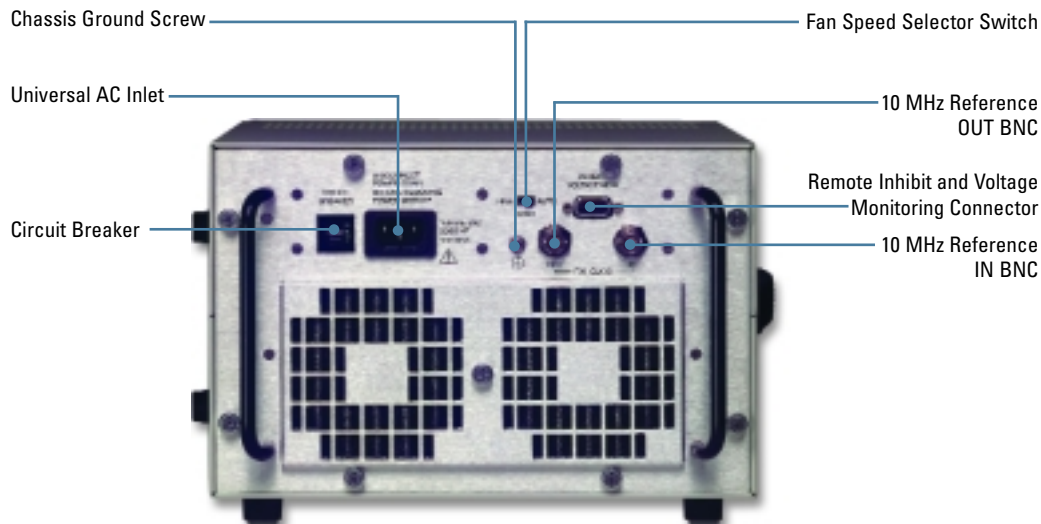


Figure 1. Rear View of the NI PXI-1042 Chassis

Power Supply

The PXI-1042 chassis incorporates a 300 W universal AC power supply with built-in overcurrent protection via a push-reset circuit breaker. The cooling fans are fed from a separate, isolated 12 VDC power supply line, significantly reducing fan electrical noise on the +12 VDC backplane bus.

Remote Power Inhibit and Monitoring

The PXI-1042 incorporates remote power inhibit and monitoring through a DB-9 connector on the rear of the chassis (see Figure 1). Use this connector to switch power off remotely or monitor the power in your chassis. The chassis also monitors power supply voltages and a flashing red LED in the power switch on the front of the chassis indicates a power supply error.

Installation

The PXI-1042 has a flexible design for easy installation in a variety of applications. For bench top use, you can adjust the supporting feet to tilt the chassis up for more comfortable access to module front panels. You can also set the feet to level the chassis with the bench top, or completely remove them. Add the optional rack

mount kits (see Figure 2) to install the PXI-1042 in a 19 in. rack. You can install a rack-mount kit on the front or the rear of the chassis, and you can use them to recess the PXI-1042 in your instrument cabinet. For portable applications, the PXI-1042 comes with a built-in carrying handle. For custom or embedded applications, use the mounting points located on each side of the chassis (see Figure 3). You can assemble or disassemble all these configurations without having to disturb the interior of the chassis.

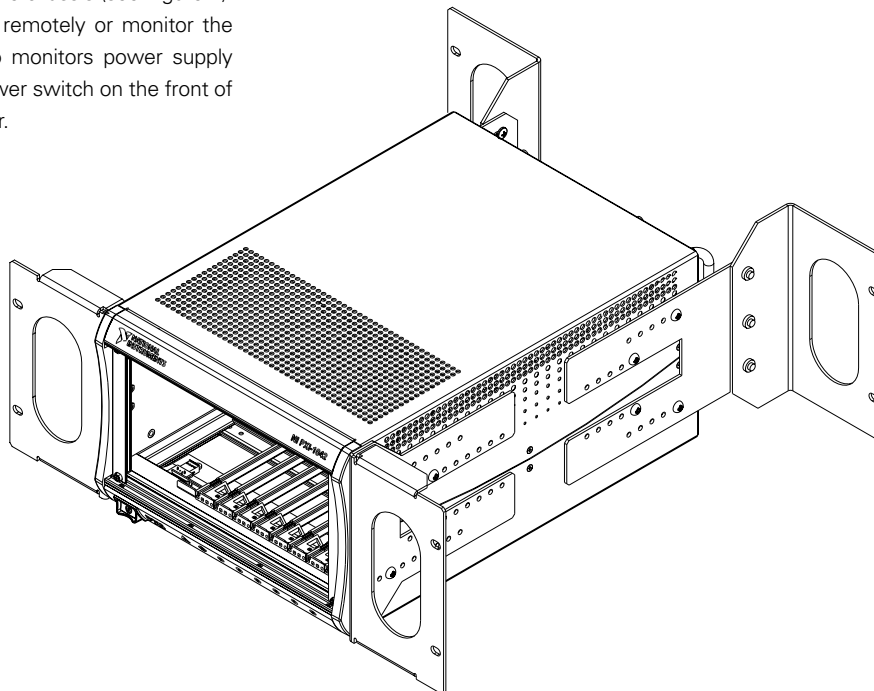


Figure 2. The NI PXI-1042 Chassis with the Optional Front and Rear Rack Mount Kits

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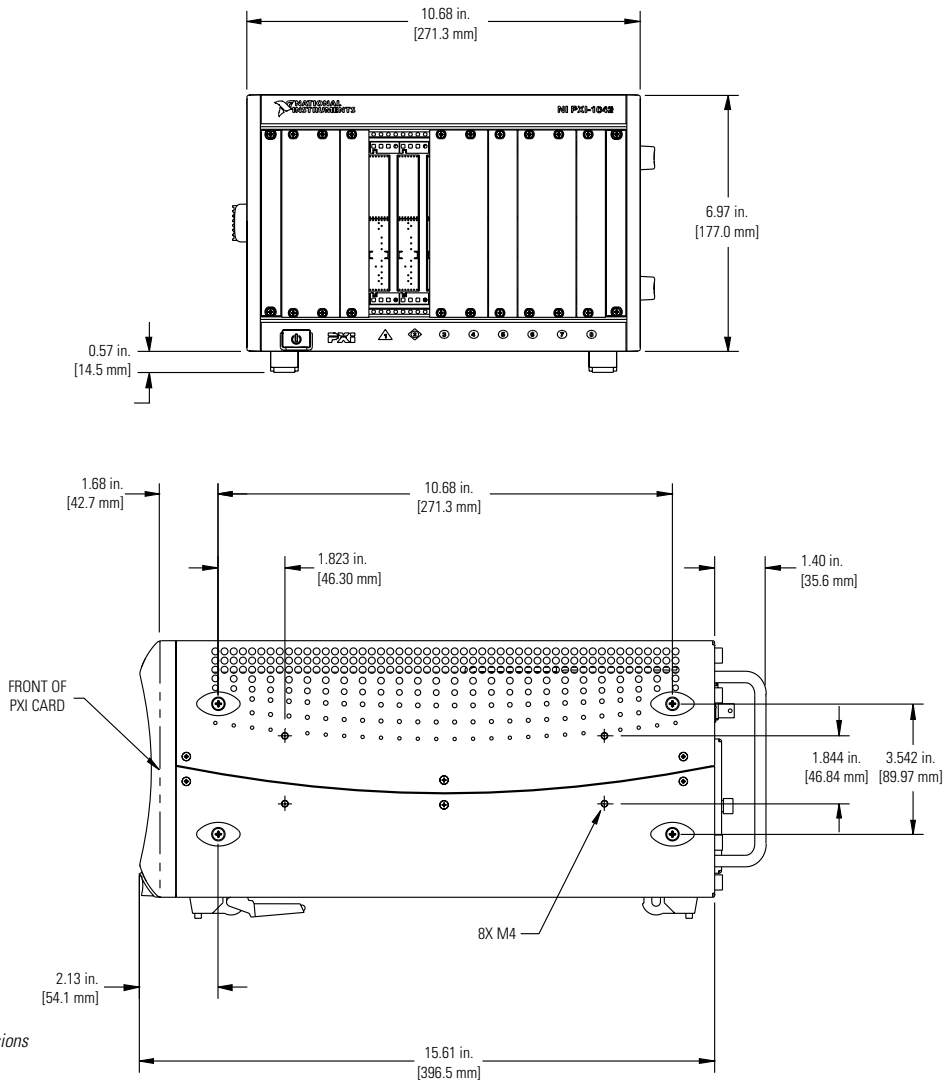


Figure 3. Front and Side Dimensions of the PXI-1042 Chassis

Ordering Information

Step 1. Select your chassis.

NI PXI-1042778636-01

Step 2. Select one or more power cords.

U.S. 120 VAC763000-01
 Japan 100 VAC763000-01
 United Kingdom 240 VAC763064-01
 Swiss 220 VAC763065-01
 Australian 240 VAC763066-01
 Universal Euro 240 VAC763067-01
 North American 240 VAC763068-01

Step 3. Select additional accessories.

Front rack-mount kit (for 19 in. rack)778643-01
 Rear rack-mount kit (for 19 in. rack)778643-02

Spare Power Supply and Fan Shuttle778662-01
 EMC filler panels (6 single-slot)778700-01
 Filler panels (3 double-slot and
 3 single-slot)*778679-01
 Slot blockers (2 single-slot)**778678-01

*Every NI PXI-1042 chassis comes with 3 double-slot and 3 single-slot filler panels.
 **Slot blockers are optional for improved thermal performance of your NI PXI-1042 system. Please refer to National Instruments KnowledgeBase entry on slot blocker usage criteria on ni.com/support for additional information on this optional system feature.

Step 4. Select system setup and installation services.

If you are ordering this chassis as part of a system, select NI Factory Installation Services to have your hardware/software installed and receive your new PXI system ready to use right out of the box.

NI Factory Installation Services – PXI Systems960596-01

General-Purpose 8-Slot Chassis for PXI

Specifications

Complies with PXI Specification
Accepts modules compliant with CompactPCI, PICMG 2.0 specification

Electrical

AC Input

Input voltage range.....	100 to 240 VAC
Operating voltage range ¹	90 to 264 VAC
Input frequency	50/60 Hz
Operating frequency range ¹	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

¹The operating range is guaranteed by design.

DC Output

DC Current Capacity (I _{MP})		Load Regulation	
Voltage	I _{MP} (Steady-State Current)	Voltage	Load Regulation
+3.3 V	20 A	+3.3 V	< 5%
+12 V	4 A	+12 V	< 5%
+5 V	29 A	+5 V	< 5%
-12 V	2 A	-12 V	< 5%

Maximum Ripple and Noise (20 MHz Bandwidth)	
Voltage	Maximum Ripple and Noise
+3.3 V	50 mV _{pp}
+12 V	120 mV _{pp}
+5 V	50 mV _{pp}
-12 V	120 mV _{pp}

Cooling

Fans	2 @ 60 cfm, with filters
Per-slot capacity.....	31 W worst-case, fan speed HIGH

Physical

Number of PXI slots	8 (1 controller, 7 peripheral)
Number of controller expansion slots.....	3 (left of controller slot)
Dimensions	177 by 271.3 by 396.5 mm (6.97 by 10.68 by 15.61 in.)
Height for rack-mount installation.....	4U
Weight	8.4 kg (18.6 lb)

Operating Environment

Ambient temperature range	0 to 50 °C (Meets IEC-60068-2-1 and IEC-60068-2-2)
Relative humidity range	10 to 90% noncondensing (Meets IEC 60068-2-56)
Altitude.....	2000 m (at 25 °C ambient temperature)

Storage Environment

Ambient temperature range	-20 to 70 °C (Meets IEC-60068-2-1 and IEC-60068-2-2)
Relative humidity range	5 to 95% noncondensing (Meets IEC 60068-2-56)

Backplane

Backplane bare-board material.....	UL 94 V-0 recognized
Backplane connectors.....	Conform to IEC 917 and IEC 1076-4-101, 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 _{pp} to 5 V _{pp} , 10 MHz squarewave or sinewave
Slot 2.....	5 or 3.3 V, 10 MHz TTL signal
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% square wave into 50 Ω
Output impedance.....	2 V _{pp} into open circuit 50 Ω ±5 Ω

Shock and Vibration

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

Operating.....	5 to 500 Hz, 0.31 g _{rms}
Nonoperating.....	5 to 500 Hz, 2.46 g _{rms} (Tested in accordance with IEC 60068-2-64. Nonoperating test profile developed in accordance with MIL-T-28800E and MIL-STD-810E Method 514.)

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:
IEC 61010-1, EN 61010-1 • UL 3111-1 • CAN/CSA C22.2 No. 1010.1

NOTE: For UL and other safety certifications, refer to the product label or to ni.com

Electromagnetic Compatibility

Emissions.....	EN 55011 Class A at 10 m. FCC Part 15A above 1 GHz
Immunity	EN 61326-1:1997 + A1:1998, Table 1 CE, C-Tick and FCC Part 15 (Class A) Compliant

NOTE: For EMC compliance, operate this device with shielded cabling.

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, click [Declarations of Conformity Information at ni.com/hardref.nsf/](http://ni.com/hardref.nsf/)



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