NI 778662-01

Power Supply Assembly for PXI-1042

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General-Purpose 8-Slot Chassis for PXI

NI PXI-1042 Series

- 0 to 55 °C extended temperature range (PXI-1042)
- 43 dBA acoustic emissions (PXI-1042Q)
- Accept both 3U PXI and CompactPCI modules
- Comply with all PXI and CompactPCI Specifications
- Low-jitter internal 10 MHz reference clock, with accuracy of 50 ppb using the PXI-6653 timing and synchronization module
- Remote power-inhibit control and voltage monitoring
- HALT tested for increased reliability
- AUTO/HIGH fan selector to optimize cooling and acoustic emissions
- Removable high-performance AC power supply

Optional Features

- Front and rear rack-mount kits
- Replacement power supply and fan shuttle
- Slot blockers for improved cooling performance
- Factory installation services

Overview

The National Instruments PXI-1042 Series 8-slot chassis are designed to meet the needs of a wide range of test and measurement applications. The NI PXI-1042 Series includes the PXI-1042 and the PXI-1042Q. The PXI-1042 operates in a temperature range extended to 55 °C. The PXI-1042Q offers quieter operation, with acoustic emissions as low as 43 dBA. The PXI-1042 Series chassis incorporate all features of the latest PXI specification; including the built-in 10 MHz reference clock, PXI trigger bus, star trigger, and local bus.

Optimized Cooling and Acoustic Emissions

The PXI-1042 Series chassis integrate two system fans and a power supply fan to provide filtered, forced-air cooling that exceeds the cooling demands of PXI and CompactPCI modules. Both the PXI-1042 and PXI-1042Q offer a HIGH fan setting to maximize cooling, and an AUTO fan setting to minimize acoustic emissions. The chassis monitor air intake temperature and adjust fan speed accordingly. With this technology, the PXI-1042Q achieves acoustic noise levels as low as 43 dBA (sound pressure level measured at operator position according to ISO 7779). The lower acoustic emissions make the PXI-1042Q ideally suited for office, laboratory, or benchtop applications (see Table 1).

PXI Timing and Synchronization

The PXI-1042 Series backplane provides a 10 MHz reference clock with an accuracy of 25 parts per million (ppm), less than 5 ps jitter, and a slot-to-slot skew of 250 ps. To extend the accuracy of the 10 MHz PXI reference clock, use the NI PXI-6653 slot 2 timing and synchronization module to achieve 50 parts per billion (ppb) accuracy, and less than 0.1 deg phase mismatch.

Acoustic Emissions

	PXI-1042Q 0 to 40 °C	PXI-1042 0 to 55 °C
Sound Pressure Level[1] (dBA) (measured at operator position)		
Auto Fan (25 °C ambient)	43.4	50.5
High Fan	52.9	58.7
Sound Power[1] (dBA)		
Auto Fan (25 °C ambient)	52.2	58.8
High Fan	62.4	67.7

[1]Tested in accordance with ISO 7779

Table 1. PXI-1042 Series Acoustic Emissions

Software System Configuration

PXI 1042 Series chassis are configured with NI Measurement & Automation Explorer (MAX). With this software configuration tool, users can easily configure PXI-1042 Series systems without time-consuming manual installation of initialization files. MAX creates the pxisys.ini file that defines the layout and parameters of your PXI system including chassis, controller, and plug-in modules.

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General-Purpose 8-Slot Chassis for PXI

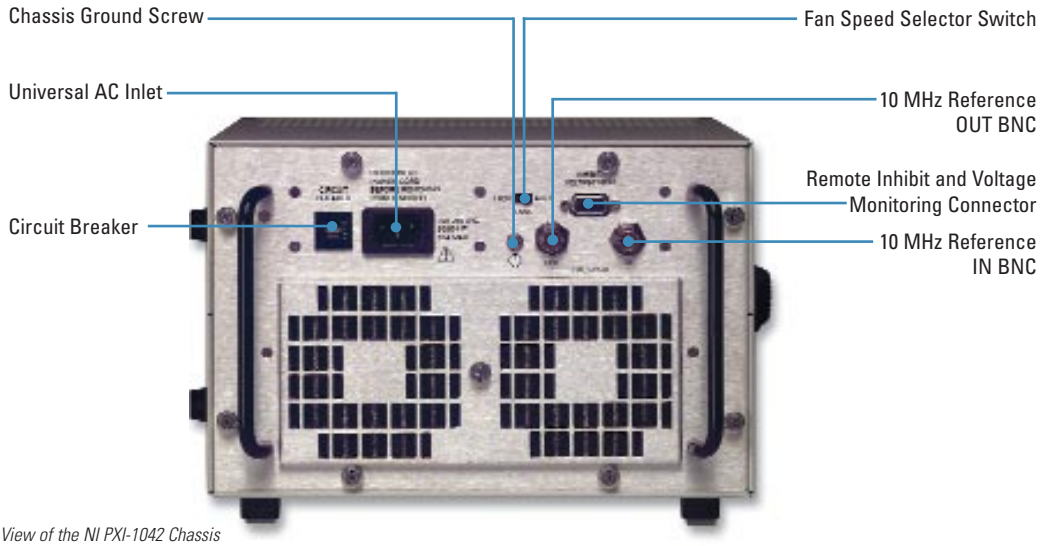


Figure 1. Rear View of the NI PXI-1042 Chassis

Power Supply

All PXI-1042 Series chassis include a removable high-performance universal AC power supply with built-in overcurrent protection. An isolated 12 VDC line provides power to the cooling fans, significantly reducing electrical noise on the chassis backplane. The PXI-1042 Series incorporates the power supply and fans into a single modular unit that can be removed quickly for service, resulting in a mean time to repair (MTTR) of less than five minutes.

External 10 MHz Reference Clock I/O Connectors

PXI-1042 Series chassis include IN/OUT BNC connectors for the 10 MHz reference clock on the rear of the chassis (see Figure 1). When the backplane detects a 10 MHz signal on the IN connector, it overrides the built-in 10 MHz clock and uses the external clock. The OUT connector provides a buffered, non-TTL version of the 10 MHz reference clock. To add synchronization for multiple chassis, add the NI PXI-6653 slot 2 module to your system.

Remote Power Inhibit and Monitoring

The PXI-1042 Series features remote power inhibit and voltage monitoring through a DB-9 connector on the rear of the chassis (see Figure 1). The chassis also monitors power supply voltages; a flashing red LED in the power switch on the front of the chassis indicates a power supply error.

Chassis Installation

The PXI-1042 Series has a flexible design for easy installation in a variety of applications. For benchtop use, you can adjust the supporting feet to tilt the chassis for more comfortable access to module front panels. You can also set the feet to level the chassis, or completely remove them. Front and rear rack-mount kits are available for 19 in. rack-mounted systems.

PXI Factory Installation Services

With National Instruments Factory Installation Services (FIS), users receive complete system level assembly and functional testing of the PXI chassis, controller, and all peripheral devices, as well as installation of all device drivers and software programs (such as LabVIEW™). For online configuration of a complete PXI system, including information about FIS, visit the PXI Advisor at ***ni.com/advisor***.

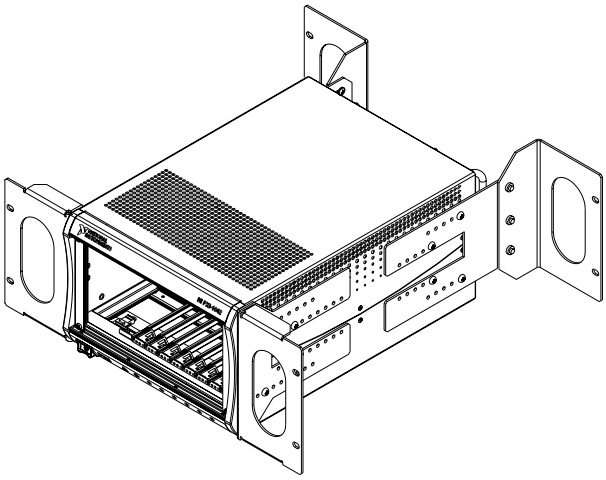


Figure 2. PXI-1042 Series 8-slot Chassis with Front and Rear Rack-Mount Kits

General-Purpose 8-Slot Chassis for PXI

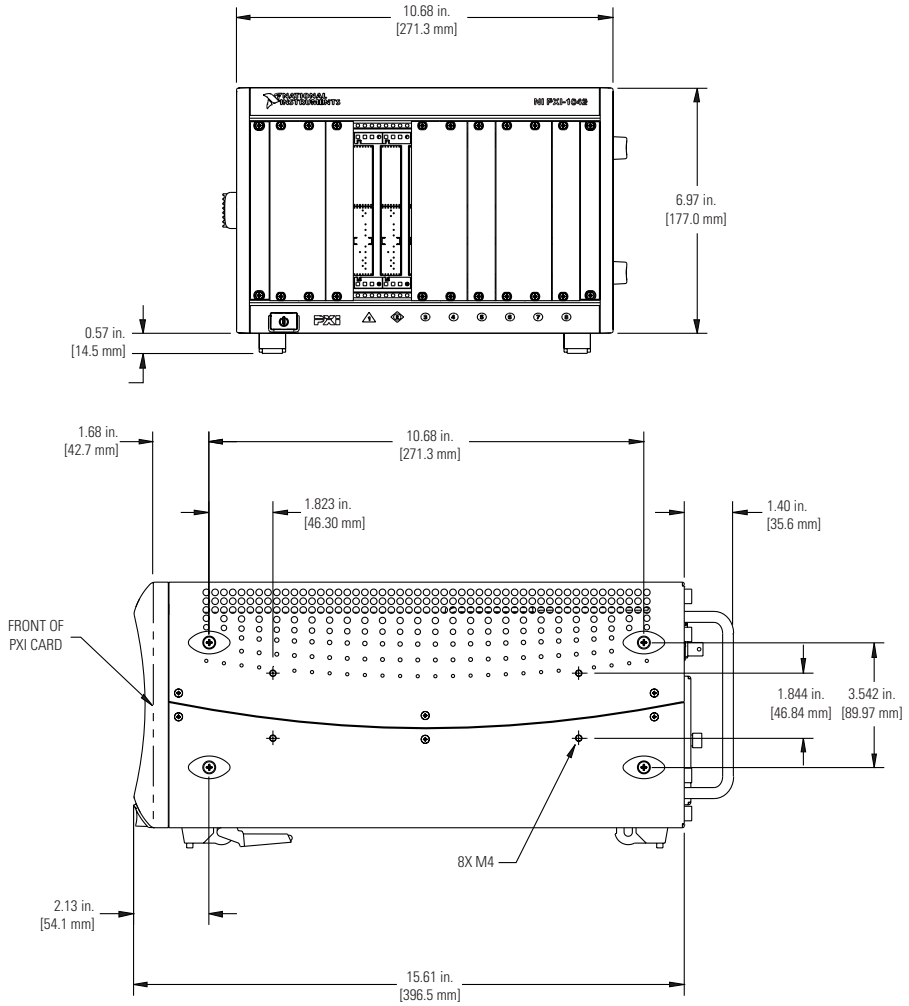


Figure 3. PXI-1042 Series Front and Side Dimensions

Ordering Information

Step 1. Select your chassis.

NI PXI-1042 778636-01
NI-PXI-1042Q 778636-02

Step 2. Select one or more power cords.

U.S. 120 AC 763000-01
Japan 100 VAC 763000-01
United Kingdom 240 VAC 763064-01
Swiss 220 VAC 763065-01
Australian 240 VAC 763066-01
Universal Euro 240 VAC 763067-01
North American 240 VAC 763068-01

Step 3. Select additional accessories.

NI PXI-6653 Timing and Synchronization Module 778715-01
Front rack-mount kit (for 19 in. rack) 778643-01
Rear rack-mount kit (for 19 in. rack) 778643-02
NI PXI-1042[1] spare power supply and fan shuttle 778662-01
NI-PXI-1042Q[1] spare power supply and fan shuttle 779021-01
EMC filler panels (6 single-slot) 778700-01
Filler panels (3 double-slot and 3 single-slot)[2] 778679-01
Slot blockers (2 single-slot)[3] 778678-01

[1]The PXI-1042 and 1042Q power supply shuttles are not interchangeable.

[2]Every NI PXI-1042 and 1042Q chassis comes with 3 double-slot and 3 single-slot filler panels.

[3]Slot blockers are optional for improved thermal performance of your NI PXI-1042 and PXI-1042Q 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 Systems 960596-01

BUY ONLINE!

*Visit **ni.com/info** and enter pxi1042.*

General-Purpose 8-Slot Chassis for PXI

Specifications

Complies with the PXI Specification
Accepts modules compliant with the CompactPCI and 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
- Overcurrent protection ..... 10 A circuit breaker
- Line regulation
  - 3.3 V ..... <±0.2%
  - 5 V ..... <±0.1%
  - ±12 V ..... <±0.1%
- Efficiency ..... 70% typical

[1]The operating range is guaranteed by design.

DC Output

DC steady-state current capacity (I_{mp})

	PXI-1042		PXI-1042Q
Voltage (V)	**0 to 50 °C**	**0 to 55 °C**	**0 to 40 °C**
+3.3	20 A	18 A	20 A
+5	29 A	25 A	29 A
+12 peripheral slot	3.5 A	3.5 A	3.5 A
+12 system slot	0.5 A	0.5 A	0.5 A
-12	2 A	2 A	2 A

Load regulation

Voltage (V)	Load Regulation
+3.3	< 5%
+12	< 5%
+5	< 5%
-12	< 5%

Maximum ripple (20 MHz bandwidth)

Voltage (V)	Maximum Ripple and Noise (mV_{pp})
+3.3	50
+12	120
+5	50
-12	120

Cooling

PXI-1042
- Fans ..... 2 @ 60 cfm, with filters
- Per-slot cooling capacity ..... 25 W worst-case 0 to 55 °C

PXI-1042Q
- Fans ..... 2 @ 51 cfm, with filters
- Per-slot cooling capacity ..... 25 W worst-case 0 to 40 °C

Acoustic Emissions

	PXI-1042Q 0 to 40 °C	PXI-1042 0 to 55 °C
Sound Pressure Level[1] (dBA) (measured at operator position)		
Auto Fan (25 °C ambient)	43.4	50.5
High Fan	52.9	58.7
Sound Power[1] (dBA)		
Auto Fan (25 °C ambient)	52.2	58.8
High Fan	62.4	67.7

[1]Tested in Accordance with ISO 7779

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)

Mean Time between failures (MTBF)

PXI-1042 ..... 113,000 hours
(Predictions performed in accordance with Belcore methods)

Operating Environment

PXI-1042
- Ambient temperature range ..... 0 to 55 °C (Meets IEC-60068-2-1 and IEC-60068-2-2)

PXI-1042Q
- Ambient Temperature range ..... 0 to 40 °C (Meets IEC-60068-2-1 and IEC-60068-2-2)

PXI-1042 Series
- Relative humidity range ..... 10 to 90% noncondensing (Meets IEC 60068-2-56)
- Altitude ..... 2000 m (at 25 °C ambient temperature)

Storage Environment

- Ambient temperature ..... -20 to 70 °C (Meets IEC-60068-2-1 and IEC-60068-2-2)
- Relative humidity ..... 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±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; 2 V_{pp} into open circuit
- Output impedance ..... 50±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.)

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, UL 61010B-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. In addition, all covers and filler panels must be installed.

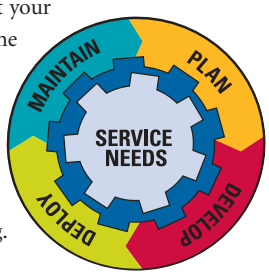
CE Compliance

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, click Declarations of Conformity Information at ***ni.com/hardref.nsf/***

NI Services and Support

NI has the services and support to meet your needs around the globe and through the application life cycle – from planning and development through deployment and ongoing maintenance. We offer services and service levels to meet customer requirements in research, design, validation, and manufacturing. Visit ni.com/services.



Training and Certification

NI training is the fastest, most certain route to productivity with our products. NI training can shorten your learning curve, save development time, and reduce maintenance costs over the application life cycle. We schedule instructor-led courses in cities worldwide, or we can hold a course at your facility. We also offer a professional certification program that identifies individuals who have high levels of skill and knowledge on using NI products. Visit ni.com/training.

Professional Services

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide NI Alliance Partner Program of more than 600 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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OEM Support

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In offices worldwide, our staff is local to the country, giving you access to engineers who speak your language. NI delivers industry-leading technical support through online knowledge bases, our applications engineers, and access to 14,000 measurement and automation professionals within NI Developer Exchange forums. Find immediate answers to your questions at ni.com/support.

We also offer service programs that provide automatic upgrades to your application development environment and higher levels of technical support. Visit ni.com/ssp.

Hardware Services

NI Factory Installation Services

NI Factory Installation Services (FIS) is the fastest and easiest way to use your PXI or PXI/SCXI™ combination systems right out of the box. Trained NI technicians install the software and hardware and configure the system to your specifications. NI extends the standard warranty by one year on hardware components (controllers, chassis, modules) purchased with FIS. To use FIS, simply configure your system online with ni.com/pxiadvisor.

Calibration Services

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. We provide manual calibration procedures, services to recalibrate your products, and automated calibration software specifically designed for use by metrology laboratories. Visit ni.com/calibration.

Repair and Extended Warranty

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