Ordering Information | Detailed Specifications

For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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General-Purpose 14-Slot Chassis for PXI

NI PXI-1044

- Low-jitter (<5 ps) 10 MHz reference clock
- External 10 MHz reference clock with BNC I/O connectors
- Temperature-controlled fan speed
- Software-programmable trigger routing between bus segments

- Accepts both 3U PXI and 3U CompactPCI modules
- Up to 500 W removable, high-performance power supply with universal AC input
- High-performance 14-slot PXI chassis

Overview

The NI PXI-1044 chassis is a high-performance chassis, featuring 500 W of total power for a wide range of test and measurement applications. The 14-slot PXI chassis accepts both CompactPCI and PXI modules. The PXI-1044 incorporates a high-performance backplane with integrated timing and synchronization features, making it ideal for applications requiring multi-instrument synchronization and automated testing.

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Application and Technology

High Reliability

- 0 to 55 °C extended temperature range
- Overcurrent protection, no fuse to replace
- Remote power-inhibit control and voltage monitoring

Multichassis Synchronization

- Reference clock input and output for synchronization across chassis
- External reference clocks automatically detected by chassis backplane

Optional Features

- Front and rear rack-mount kits
- Replacement power supply and fan shuttle
- Slot blockers for improved cooling performance
- System assurance programs

High-Performance Backplane and Advanced Triggering

The PXI-1044 backplane supports all 3U PXI-compatible devices, as well as standard 3U CompactPCI devices. Three separate bus segments on the backplane of the PXI-1044 are connected with two 64-bit/33 MHz PCI-to-PCI bridges. Each bus segment on the backplane contains eight PXI trigger lines for routing timing and synchronization signals. The backplane also includes a dedicated matched trace-length Star trigger line for passing precise trigger signals from slot 2 to slots 3 through 14. PXI trigger lines can be reserved on the backplane of the PXI-1044 to prevent instruments from double-driving the trigger lines. In addition, you can programmatically configure the two trigger routing modules on the PXI-1044 backplane to route triggers to and from any of the three bus segments in the chassis.

PXI Timing and Synchronization

The PXI-1044 complies with PXI timing and synchronization standards. The chassis includes a low-jitter (<5 ps) 10 MHz system reference clock, which is supplied to each peripheral slot of the 14-slot chassis. You can use the internal system reference clock, with a slot-to-slot skew of less than 250 ps, to synchronize multiple modules in a measurement or control system. You can source external reference clocks, which are automatically detected by the chassis backplane, with a precise PXI system timing module in slot 2 of the PXI-1044 chassis or an imported 10 MHz source on the BNC connector on the rear of the chassis.

Optimized Cooling and Acoustic Emissions

The PXI-1044 offers 30 W of power and cooling in every peripheral slot for the increased capabilities of high-performance modules. It features an AUTO/HIGH fan-speed selector that provides a HIGH fan-speed setting to maximize cooling at any ambient temperature and an AUTO fan setting to minimize acoustic emissions. When set to AUTO, the PXI-1044 chassis monitors the air intake temperature and adjusts the fan speed accordingly. With this technology, the PXI-1044 achieves acoustic noise levels as low as 49 dBA.

Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
NI PXI-1044			
NI 14/18-Slot Chassis Front Rack Mount Kit	778644-01	No accessories required.	
Power Cord, 240V, 10A, North America	763068-01	No accessories required.	
Power Cord, AC, U.S., 120 VAC, 2.3 meters	763000-01	No accessories required.	
NI 14/18-Slot Chassis Rear Rack Mount Kit	778644-02	No accessories required.	

Support and Services

System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at ni.com/advisor to find a system assurance program to meet your needs.

Technical Support

Get answers to your technical questions using the following National Instruments resources.

- **Support** - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
- **Discussion Forums** - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
- **Online Community** - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

- **Classroom training in cities worldwide** - the most comprehensive hands-on training taught by engineers.
- **On-site training at your facility** - an excellent option to train multiple employees at the same time.
- **Online instructor-led training** - lower-cost, remote training if classroom or on-site courses are not possible.
- **Course kits** - lowest-cost, self-paced training that you can use as reference guides.
- **Training memberships** and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

Detailed Specifications

⚠️ **Caution** If the PXI-1044 chassis is used in a manner inconsistent with the instructions or specifications listed by National Instruments, the protective features of the chassis may be impaired.

This appendix contains specifications for the PXI-1044 chassis.

Electrical

AC Input

Input voltage rating	100–240 VAC
Operating voltage range [1]	90–264 VAC
Input current rating	50/60 Hz
Operating frequency range[1]	47–63 Hz
Input current rating	10–5 A
Over-current protection	12 A circuit breaker

Line regulation

3.3 V	<±1%
5 V	<±1%
±12 V	<±1%

Efficiency	70% typical
Power disconnect	The AC power cable provides main power disconnect. Depressing the front-panel power switch controls the internal chassis power supply that provides DC power to the CompactPCI/PXI backplane. You can also use the rear-panel 9-pin D-Sub connector to control the internal chassis power supply.

DC Output

DC current capacity (I_{MP})	
Voltage	**0–55°C**
+3.3 V	32 A
+5 V	47 A
+12 V Peripheral slots	6.5 A
+12 V System slot	0.5 A
−12 V	3.5 A

Load regulation

Voltage	**Load Regulation**
+3.3 V	<0.5%
+12 V	<0.5%
+5 V	<0.5%
+5 V	<0.5%

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$_{pp}$

Over-current protection	All outputs protected from short circuit and overload with automatic recovery when the short or overload is removed.
Over-voltage protection	
	140 to 150% above nominal output voltage

3.3 V and 5 V	
5 V, +12 V, −12 V	120 to 130% above nominal output voltage
Power supply shuttle MTTR	Replacement in under 5 minutes

Chassis Cooling	
Per slot cooling capacity	Slot cooling capacity is 25 W with fan speed set to HIGH
Slot airflow direction	P1 to P2, bottom of module to top of module
Module cooling System	Forced air circulation (positive pressurization) through three 140 cfm fans with HIGH/AUTO speed selector
Intake	Bottom rear of chassis
Exhaust	Along both sides and top of chassis
Power supply cooling	
System	Forced air circulation through integrated fan
Intake	Right side of chassis
Exhaust	Left side of chassis
Fan filter material	30 ppi, 3/32 in (0.24 cm) polyurethane foam. Refer to the *Cleaning the Fan Filters* section of the *NI PXIe-1075 User Manual* for more information.

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 61010-1
• CAN/CSA-C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the product label or to ni.com/certification, 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	CE, C-Tick, and FCC Part 15 (Class A) compliant

Note For full 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, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental

Operating temperature	0 to 55 °C
Storage temperature	2–20 to 70 °C
Relative humidity	
Operating	10 to 90% non condensing
Nonoperational (storage)	5 to 95% non conducting
Shock	
Operational	30 g peak, half sine, 11 ms pulse
Nonoperational	30 g, half sine, 11 ms pulse
Operating location	Indoor use
Random vibration	

Operational		5 to 500 Hz, 0.31 g_{rms}
Nonoperational		5 to 500 Hz, 2.46 g_r
Altitude		2,000 m
Measurement Category		II
Pollution Degree		2

Backplane

Size	3U-sized; one system slot (with three system expansion slots) and 13 peripheral slots. Compliant with IEEE 1101.10 mechanical packaging. PXI Hardware Specification, Revision 2.1 compliant. Accepts both PXI and CompactPCI (PICMG 2.0 R 3.0) 3U modules.
V(I/O)	+5 V
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 max. (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 mVpp to 5 Vpp, 10 MHz squarewave or sinewave
Slot 2	5 V 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 Vpp ± 20% squarewave into 50 Ω 2 Vpp into open circuit
Output impedance	50 Ω ± 5 Ω

Mechanical

Overall dimensions (standard chassis)	
Height	177 mm (6.97 in.)

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

Width	445.5 mm (17.54 in.)
Depth	434.8 mm (17.12 in.)
Weight	12.6 kg (27.8 lbs)
Chassis materials	Sheet Aluminum (5052-H32, 3003-H14, and 6061-T6), Extruded Aluminum (6060-T6), 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-1044 dimensions. The holes shown are for the installation of the optional rack-mount kits as shown in Figure A-3. Notice that the front and rear rack mounting holes (size M4) are symmetrical.
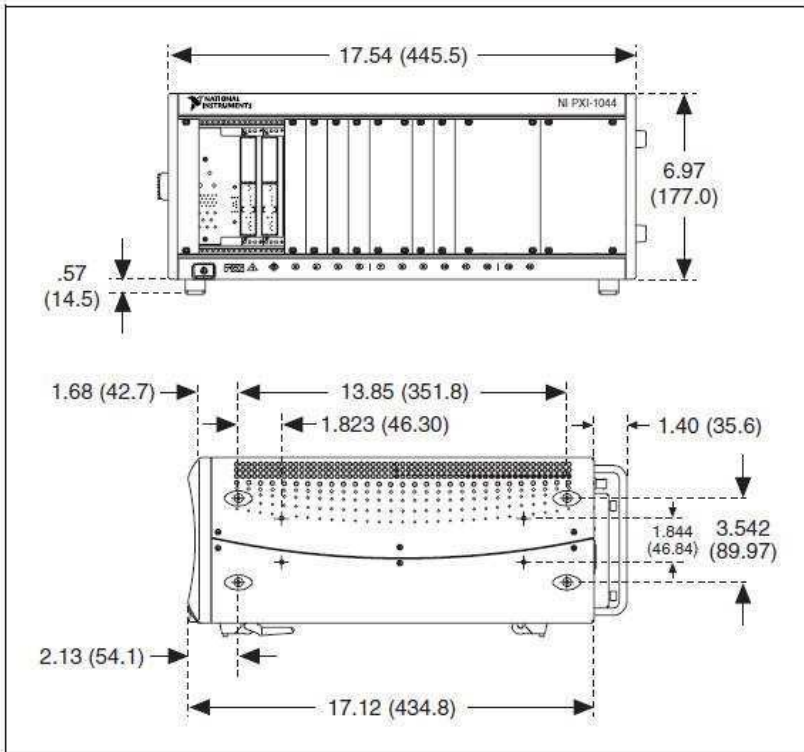
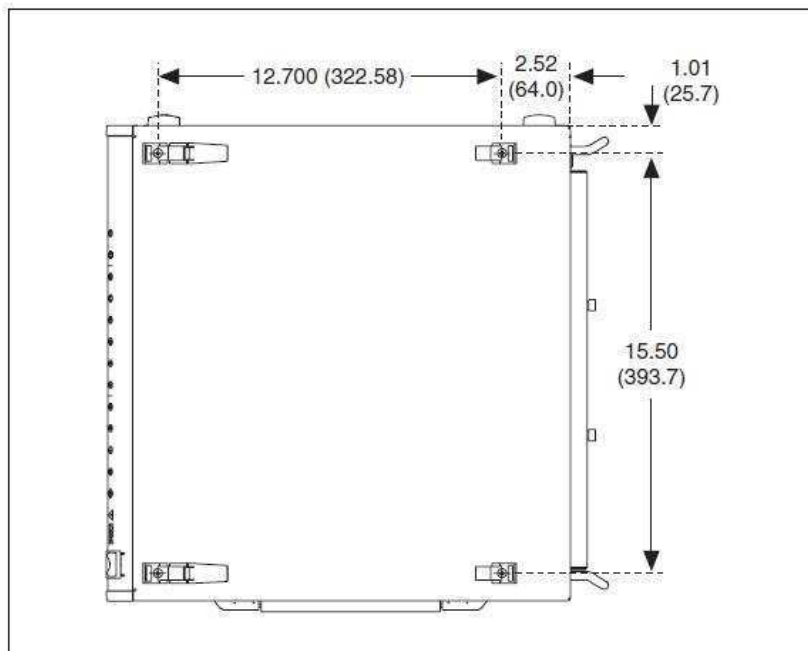**Figure A-1.** PXI-1044 Dimensions (Front and Side) in Inches (mm)

Figure A-2. PXI-1044 Dimensions (Bottom) in Inches (mm)

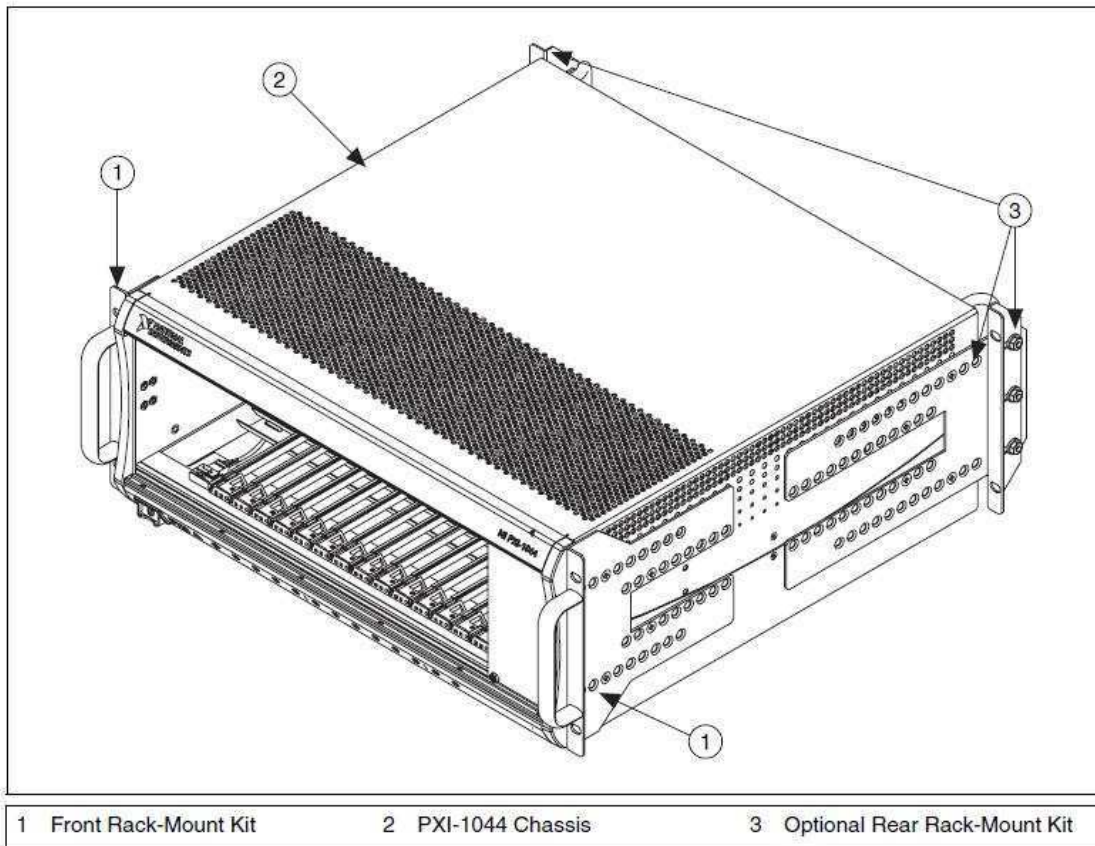Figure A-3 shows the PXI-1044 rack-mount kit components.

| 1 | Front Rack-Mount Kit | 2 | PXI-1044 Chassis | 3 | Optional Rear Rack-Mount Kit |

Figure A-3. PXI-1044 Rack-Mount Kit Components