SPECIFICATIONS

PXI-1033

This document includes specifications for the PXI-1033 chassis.

Caution If the PXI-1033 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.

Note Specifications are subject to change without notice.

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NATIONAL INSTRUMENTS

Electrical

AC Input

Input voltage range	100 VAC-240 VAC
Operating voltage range[1]	90 VAC-264 VAC
Input frequency	50 Hz/60 Hz
Operating frequency range[1]	47 Hz-63 Hz
Input current rating	4 A-2 A
Efficiency	>70% at full load, normal input voltage
Power disconnect	The AC power cable provides main power disconnect. The front-panel power switch controls the internal chassis power supply that provides DC power to the CompactPCI/PXI backplane.

DC Output

DC current capacity (I_{MP})

Voltage	0 °C-50 °C
+3.3 V	10 A
+5 V	15 A
+12 V	2.5 A
-12 V	0.8 A

Over-current protection	All outputs protected from short circuit

[1] The operating range is guaranteed by design.

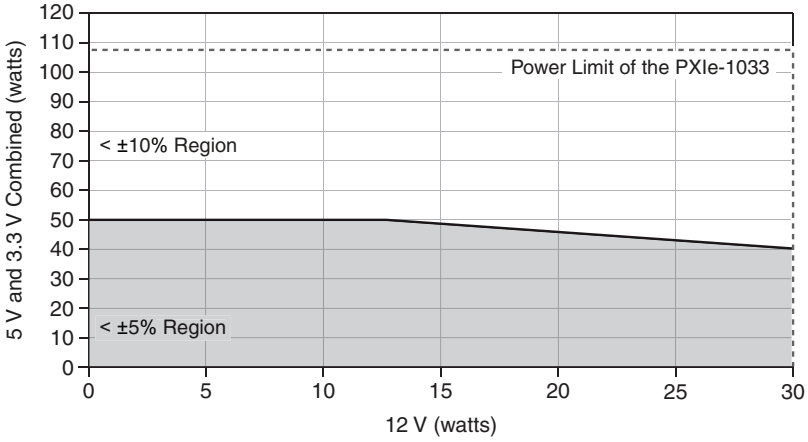
Over-Voltage at	Active Range	
	Minimum	Maximum
+3.3 V	3.76 V	4.3 V
+5 V	5.74 V	7.0 V
+12 V	13.4 V	15.6 V

The -12 V power regulation depends on the +12 V, +5 V, and +3.3 V power rail loads. Use Figure 1 to ensure the system is operating within ±5% on the -12 V power rail.

How to Use Figure 1

1. Sum all PXI modules' power use in watts on the +12 V power rail.
2. Sum all PXI modules' power use in watts on the +5 V power rail.
3. Sum all PXI modules' power use in watts on the +3.3 V power rail.
4. Sum the power use of the +5 V power rail and +3.3 V power rail for a combined +5 V and +3.3 V watts value.
5. Plot the +12 V watts versus the combined +5 V and +3.3 V watts in Figure 1.

Figure 1. -12 V Regulation within ± 5% vs. Chassis Voltage Rail Power



Example Calculation

You can find DC current or power use per rail for each module within the module's respective specification sheet. Current and power use in the specification sheets are max values unless otherwise noted as typical. When current use is in amps, convert the spec to power use in watts using power = voltage * current.

	DC Current Usage per Power Rail (Amps)			
Modules	***+3.3 V***	***+5 V***	***+12 V***	***-12 V***
PXI-5122	*1.4*	*1.5*	*0.11*	*0.27*
PXI-5122	*1.4*	*1.5*	*0.11*	*0.27*
PXI-6508	*0*	*0.4*	*0*	*0*
PXI-6221	*0.25*	*0.02*	*0.15*	*0*
PXI-6221	*0.25*	*0.02*	*0.15*	*0*

Total current draw on the +12 V rail is 0.25 A. Converting to power gives 6.24 W.

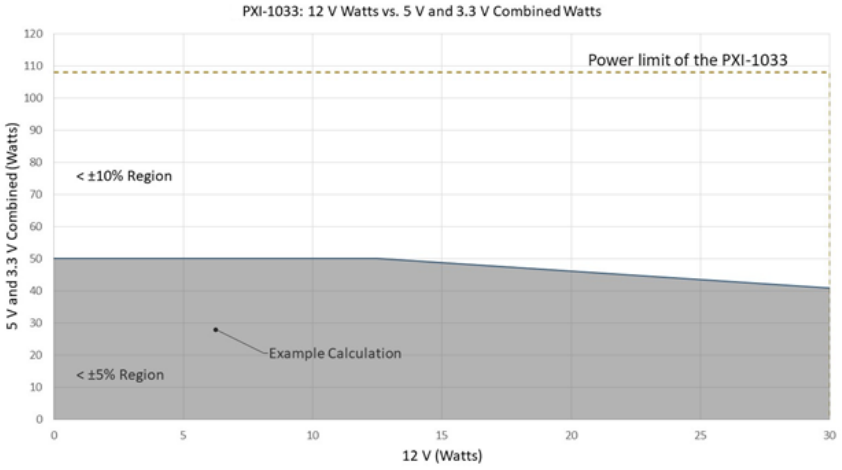
Total current draw on the +5 V rail is 3.44 A. Converting to power gives 17.2 W.

Total current draw on the +3.3 V rail is 3.3 A. Converting to power gives = 10.89 W.

Combined power on the +5 V and +3.3 V rail is 28.09 W.

After calculating the max power use on the +12 V power rail and combined +5 V and +3.3 V power rails, plot the point on the graph to determine if the system is operating with ±5% on the -12 V power rail, as shown in Figure 2.

Figure 2. *-12 V Calculation Example*



Chassis Cooling

Per slot cooling capacity	25 W
Slot airflow direction	P1 to P2, bottom of module to top of module
Module cooling	
System	Forced air circulation (positive pressurization) through a 101.1 CFM fan with High/Auto speed selector
Intake	Bottom of chassis
Exhaust	Along rear, right side, and top of chassis
Power supply cooling	
System	Forced air circulation through integrated fan
Intake	Front side of chassis
Exhaust	Rear side of chassis

Environmental

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient)
Measurement Category	II
Pollution Degree	2
For indoor use only.	

Operating Environment

Ambient temperature range	0 °C to 50 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and high temperature limit.)
Relative humidity range	20% to 80%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 85 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	10% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Shock and Vibration

Operational shock	20 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)

Random Vibration

Operating	5 Hz to 500 Hz, 0.3 g_{rms}
Nonoperating	5 Hz, 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. Meets MIL-PRF-28800F requirements.

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Auto fan (at 25 °C ambient)	37.4 dBA
High fan	51.5 dBA

Sound Power

Tested in accordance with ISO 7779.

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Auto fan (at 25 °C ambient)	43.8 dBA
High fan	60.9 dBA

Safety

This product is designed to meet the requirements of the following standards of safety for information technology equipment:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the product label or the *Product Certifications and Declarations* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations and certifications, and additional information, refer to the *Product Certifications and Declarations* section.

CE Compliance CE

This product meets the essential requirements of applicable European Directives as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Product Certifications and Declarations

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

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at `ni.com/environment`. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit `ni.com/environment/weee`.

电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。
关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。
(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Backplane

Size	3U-sized; integrated controller and 5 peripheral slots. Compliant with IEEE 1101.10 mechanical packaging. *PXI Hardware Specification, Revision 2.2* compliant. Accepts both PXI and CompactPCI 3U modules.
V(I/O)[1]	+5 V

[1] V(I/O) is connected to the +5 V DC power plane, so the same specifications apply to V(I/O) and +5 V.

Backplane bare-board material	UL 94 V-0 recognized.
Backplane connectors	Conform to IEC 917 and IEC 1076-4-101, and are UL 94 V-0 rated

10 MHz System Reference Clock (10 MHz REF)

Maximum clock skew between slots	250 ps
Built-in 10 MHz clock	
Accuracy	±25 ppm (guaranteed over the operating temperature range)

Mechanical

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

Note 12.7 mm (0.50 in.) is added to height when feet are installed.

Width	257.1 mm (10.12 in.)
Depth	212.8 mm (8.38 in.)
Weight	5 kg (11.0 lbs)
Chassis materials	Sheet Aluminum, Extruded Aluminum, Cold Rolled Steel, Nylon
Finish	Clear Chromate Conversion Coat on Aluminum Electrodeposited Nickel Plate on Cold Rolled Steel Polyester Urethane Powder Paint

Figure 3 and Figure 4 show the PXI-1033 dimensions. The holes shown are for the installation of the optional rack-mount kits as shown in Figure 5. Notice that the front and rear rack mounting holes (size M4) are symmetrical.

Figure 3. PXI-1033 Dimensions (Front and Side)

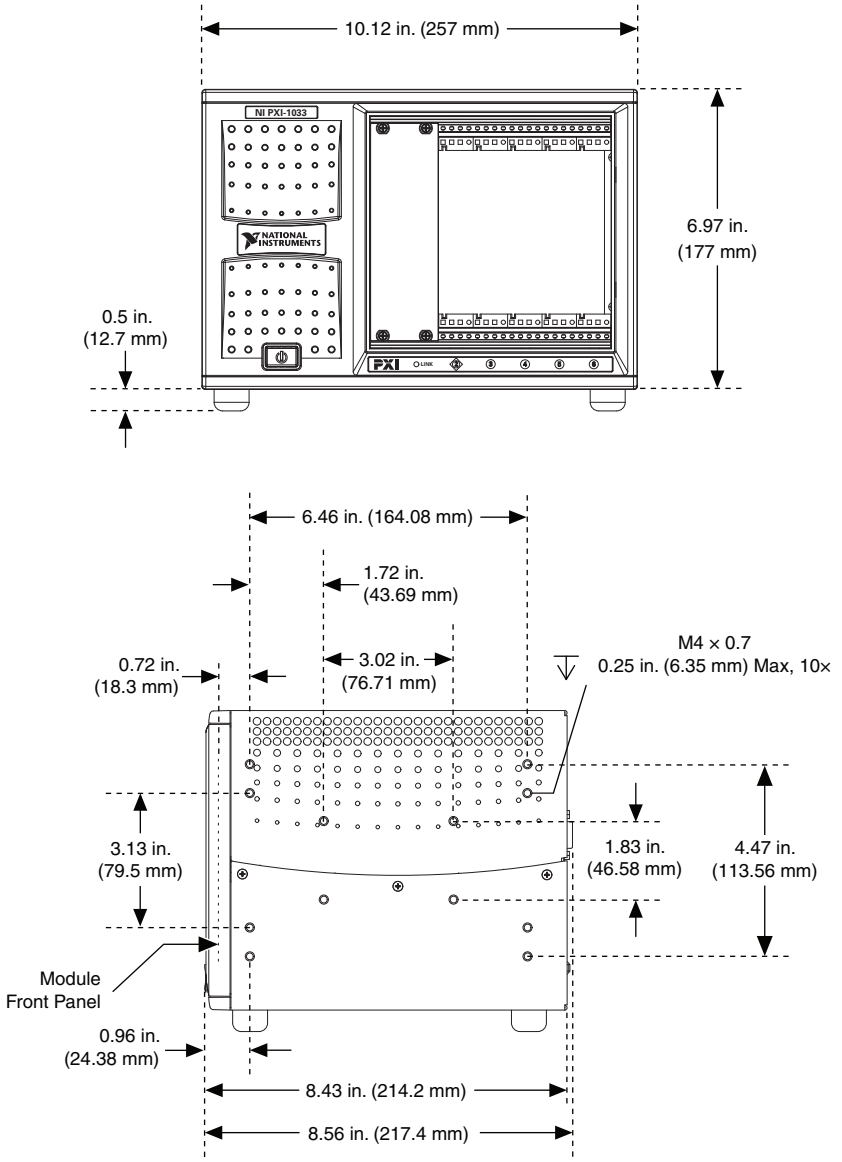


Figure 4. PXI-1033 Dimensions (Bottom)

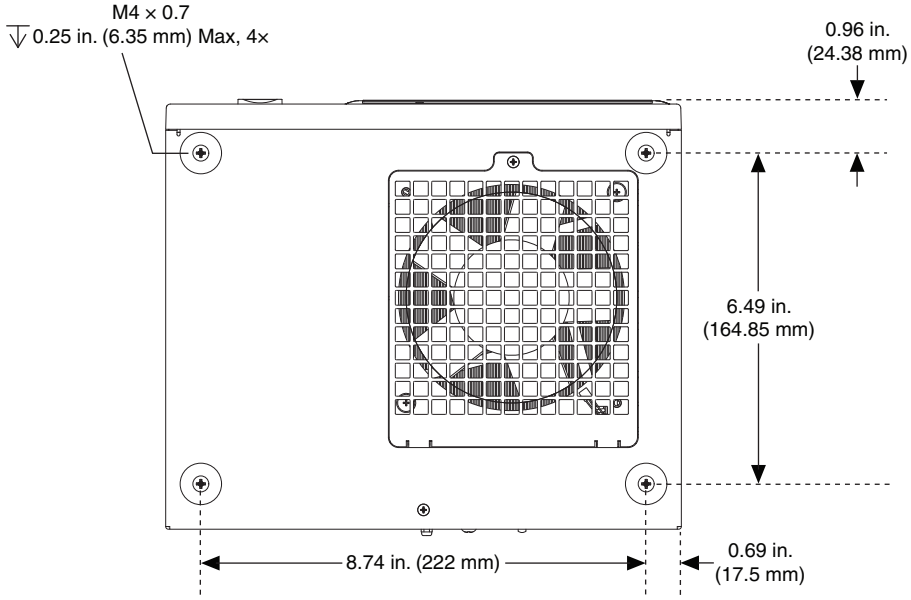
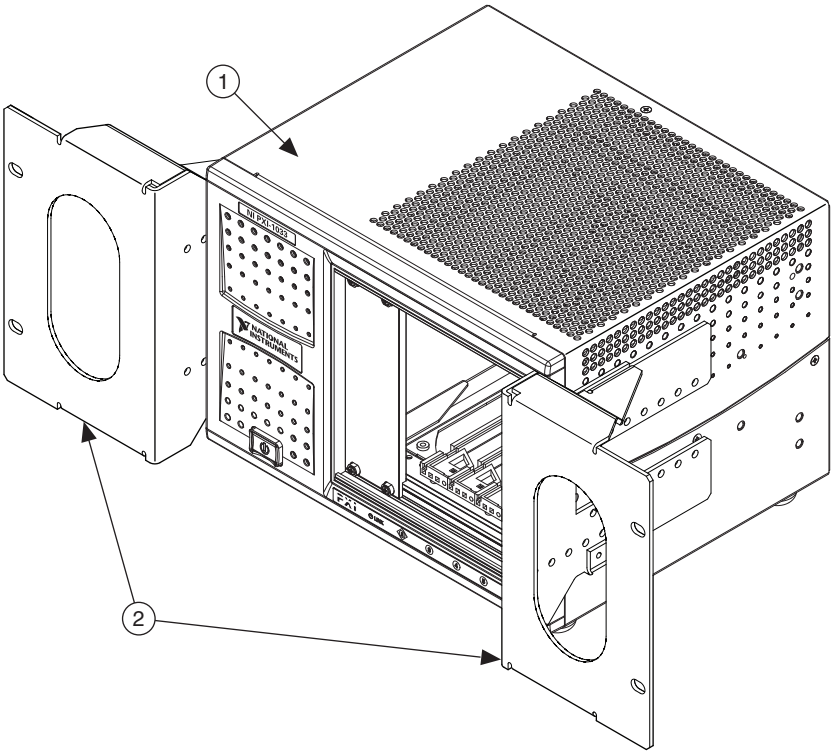


Figure 5 shows the PXI-1033 rack mount kit components.

Figure 5. PXI-1033 Rack Mount Kit Components



1	PXI-1033 Chassis	2	Rack Mount Kit

Worldwide Support and Services

The NI website is your complete resource for technical support. At ni.com/support you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

Visit ni.com/services for NI Factory Installation Services, repairs, extended warranty, and other services.

Visit ni.com/register to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting ni.com/certification. If your product supports calibration, you can obtain the calibration certificate for your product at ni.com/calibration.

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