

# SPECIFICATIONS

## PXIe-1078

This document includes specifications for the PXIe-1078 chassis.



**Caution** If the PXIe-1078 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.

## Contents

Electrical .....	2
AC Input .....	2
DC Output.....	2
How to Use Figure 1.....	3
Example Calculation.....	4
Chassis Cooling .....	5
Environmental .....	6
Operating Environment .....	6
Storage Environment .....	6
Shock and Vibration .....	6
Acoustic Emissions.....	7
Sound Pressure Level (at Operator Position) .....	7
Sound Power.....	7
Safety .....	7
Electromagnetic Compatibility .....	7
CE Compliance.....	8
Product Certifications and Declarations .....	8
Environmental Management.....	8
Waste Electrical and Electronic Equipment (WEEE) .....	8
Backplane .....	9
System Synchronization Clocks	
(PXI_CLK10, PXIe_CLK100, PXIe_SYNC100).....	9
10 MHz System Reference Clock: PXI_CLK10.....	9
100 MHz System Reference Clock: PXIe_CLK100 and PXIe-SYNC100 .....	9
Mechanical.....	10
Worldwide Support and Services .....	13

## Electrical

### AC Input

Input voltage range	100 VAC to 240 VAC
Operating voltage range <sup>1</sup>	90 VAC to 264 VAC
Input frequency	50 Hz/60 Hz
Operating frequency range <sup>1</sup>	47 Hz to 63 Hz
Input current rating	7 A-3.5 A
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.

### DC Output

DC current capacity ( $I_{MP}$ )

Voltage	Maximum Current
+3.3 V	28.5 A
+5 V	26.5 A
+12 V	22.0 A
-12 V	0.75 A
5 V <sub>AUX</sub>	1.5 A

<sup>1</sup> The operating range is guaranteed by design.



**Notes** Maximum total usable power is 300 W.

Total usable power derates linearly to 288 W from 40 °C to 50 °C operating ambient temperature range.

The maximum combined power available on +3.3 V and +5 V is 125 W.

The maximum combined power available on +3.3 V and +5 V derates linearly to 100 W from 40 °C to 50 °C operating ambient temperature range.

The maximum available current from +12 V derates linearly to 16.5 A from 40 °C to 50 °C operating ambient temperature range.

The -12 V regulation is  $\pm 5\%$  for loads of 8 A or less on the +12 V rail.

## Backplane slot current capacity

Slot	+5 V	V (I/O)	+3.3 V	+12 V	-12 V	5 V <sub>AUX</sub>
System Controller Slot	15 A	—	15 A	30 A	—	1 A
Hybrid Peripheral Slot with PXI-1 Peripheral	6 A	5 A	6 A	1 A	1 A	—
Hybrid Peripheral Slot with PXI-5 Peripheral	—	—	6 A	4 A	—	1 A
PXI Express Peripheral Slot	—	—	3 A	3 A	—	1 A



**Notes** Total system slot current should not exceed 45 A.

PCI V(I/O) pins in hybrid peripheral slots are connected to +5 V.

The maximum power dissipated in the system slot should not exceed 140 W.

The maximum power dissipated in a peripheral slot should not exceed 38.25 W.

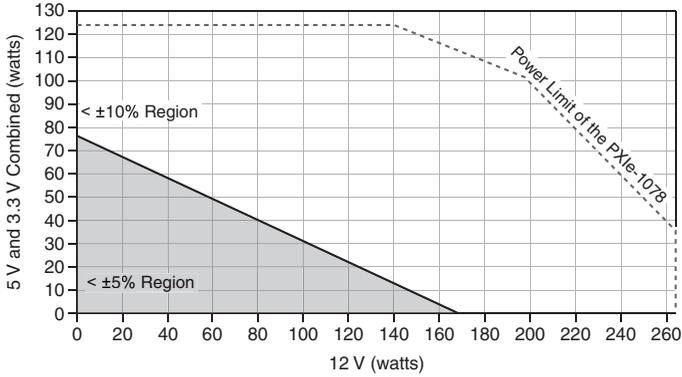
The -12 V power regulation depends on the +12 V, +5 V, and +3.3 V power rail loads. Use Figure 1 to ensure the system is operating within  $\pm 5\%$  on the -12 V power rail.

## How to Use Figure 1

1. Sum all PXI-1/PXI Express modules' power use in watts on the +12 V power rail.
2. Sum all PXI-1/PXI Express modules' power use in watts on the +5 V power rail.
3. Sum all PXI-1/PXI Express 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.

- 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

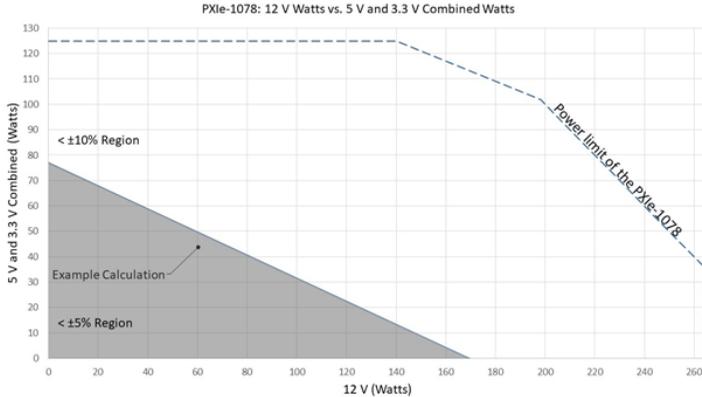
You can find DC current or power use per rail for each module within the module’s respective specification sheet. Current and power use in the specification sheets are max values unless otherwise noted as typical. When current use is in amps, convert the spec to power use in watts using power = voltage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

Modules	DC Current Usage per Power Rail (Amps)			
	+3.3 V	+5 V	+12 V	-12 V
PXIe-8840DC Typical Power	1.03	1.33	2.87	0
PXIe-6361	0.485	0	1.65	0
PXI-6514	0.3	0.25	0	0
PXI-6624	0.15	0.75	0	0
PXI-6711	0	1	0	0
PXI-8513	0.94	0.64	0	0
PXI-8513	0.94	0.64	0	0
PXI-4130	2	3.03	0.5	0.208

Total current draw on the +12 V rail is 5.02 A. Converting to power gives 60.24 W.  
 Total current draw on the +5 V rail is 4.913 A. Converting to power gives 24.57 W.  
 Total current draw on the +3.3 V rail is 5.845 A. Converting to power gives 19.29 W.  
 Combined power on the +5 V and +3.3 V rail is 43.85 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  $\pm 5\%$  on the -12 V power rail, as shown in Figure 2.

**Figure 2. -12 V Calculation Example**



## Chassis Cooling

Per slot cooling capacity	38.25 W
Module cooling system	Forced air circulation (positive pressurization) through 2 150 CFM fans with High/Auto speed selector
Slot airflow direction	Bottom of module to top of module
Module cooling intake	Bottom of chassis
Module cooling exhaust	Right side, rear, and top of chassis
Power supply cooling system	Forced air circulation through integrated fan
Power supply cooling intake	Front and left side of chassis
Power supply cooling exhaust	Rear of chassis

## Environmental

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient)
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Measurement Category	II
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Pollution Degree	2
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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 MIL-PRF-28800F Class 2 high temperature limit.)
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Relative humidity range	20% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)
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## Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
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Relative humidity range	10% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)
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## Shock and Vibration

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

Operating	5 Hz to 500 Hz, 0.3 g <sub>rms</sub>
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Nonoperating	5 Hz to 500 Hz, 2.4 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)
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## Acoustic Emissions

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### Sound Pressure Level (at Operator Position)

Tested in accordance with ISO 7779. Meets MIL-PRF-28800F requirements.

Auto fan (up to ~30 °C ambient)	49.9 dBA
High fan	65.4 dBA

### Sound Power

Auto fan (up to ~30 °C ambient)	59.3 dBA
High fan	74.1 dBA



**Note** Specifications are subject to change without notice.

## Safety

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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

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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

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](http://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](http://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](http://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](http://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china).)

## Backplane

Size	3U-sized; one system slot (with three system expansion slots) and eight peripheral slots. Compliant with IEEE 1101.10 mechanical packaging. PXI Express Specification compliant. Accepts both PXI Express 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

## System Synchronization Clocks (PXI\_CLK10, PXIe\_CLK100, PXIe\_SYNC100)

### 10 MHz System Reference Clock: PXI\_CLK10

Maximum slot-to-slot skew	500 ps
Accuracy	±25 ppm max (guaranteed over the operating temperature range)
Maximum jitter	5 ps RMS phase-jitter (10 Hz-1 MHz range)
Duty-factor	45%-55%
Unloaded signal swing	3.3 V ±0.3 V



**Note** For other specifications refer to the *PXI-1 Hardware Specification*.

### 100 MHz System Reference Clock: PXIe\_CLK100 and PXIe-SYNC100

Maximum slot-to-slot skew	100 ps
Accuracy	±25 ppm max (guaranteed over the operating temperature range)
Maximum jitter	3 ps RMS phase-jitter (10 Hz-12 kHz range) 2 ps RMS phase-jitter (12 kHz-20 MHz range)
Duty-factor for PXIe_CLK100	45%-55%

## Absolute differential voltage

(When terminated with a 50 $\Omega$ load to 1.30 V or Thévenin equivalent)	400-1000 mV
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**Note** For other specifications, refer to the *PXI-5 PXI Express Hardware Specification*.

## Mechanical

### Overall dimensions

#### Standard chassis

Height	6.97 in. (177 mm)
Width	14.00 in. (355.6 mm)
Depth	8.43 in. (214.2 mm)

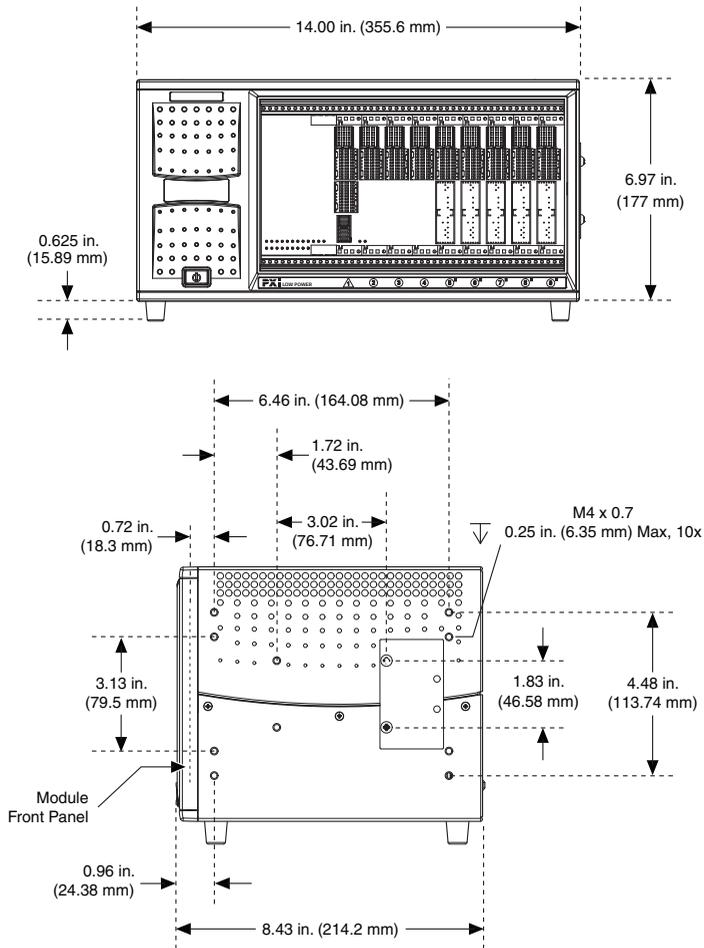


**Note** 0.625 in. (15.89 mm) is added to height when feet are installed.

Weight	7.55 kg (16.6 lb)
Chassis materials	Stainless Steel, Extruded Aluminum, Cold Rolled Steel, and PC-ABS
Finish	Conductive Clear Iridite on Aluminum, Clear Chromate Zinc Plating on Cold Rolled Steel, Polyurethane Enamel, and Polyester Urethane Powder Paint

Figures 3 and 4 show the PXIe-1078 chassis dimensions. The holes shown are for the installation of the optional rack mount kits. Notice that the front and rear chassis mounting holes (size M4) are symmetrical.

**Figure 3. PXIe-1078 Chassis Dimensions (Front and Side)**



**Figure 4. PXIe-1078 Chassis Dimensions (Bottom)**

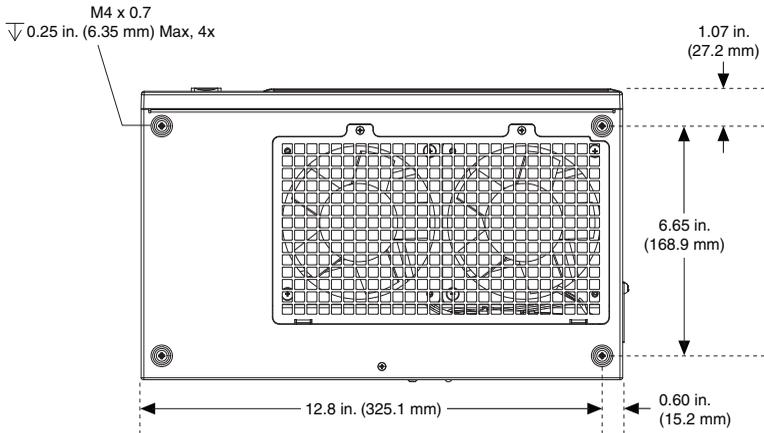
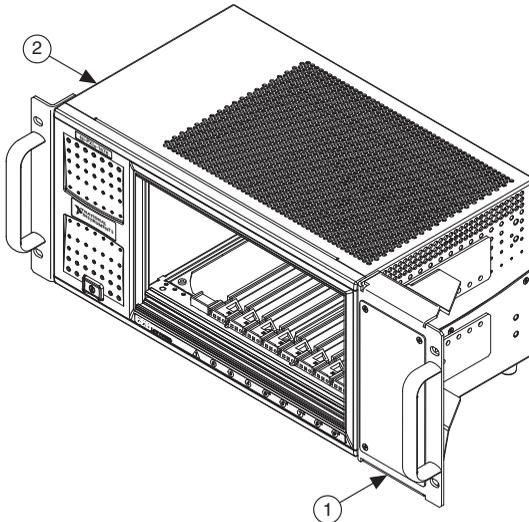


Figure 5 shows the chassis rack mount kit components.

**Figure 5. PXIe-1078 Chassis Dimensions (Bottom)**



1 Front Rack Mount Kit

2 NI Chassis

## Worldwide Support and Services

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The NI website is your complete resource for technical support. At [ni.com/support](https://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](https://ni.com/services) for NI Factory Installation Services, repairs, extended warranty, and other services.

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

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