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# PXle-1083 Specifications

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# PXIe-1083 Specifications

This document contains specifications for the PXIe-1083 chassis.

## Electrical

The following section provides information about the PXIe-1083 AC input and DC output.

### AC Input

|  |  |
|--|--|
| Input rating                           | 100 VAC to 240 VAC, 50 Hz/60 Hz, 6 A to 3 A  |
| Operating voltage range <sup>1</sup>   | 90 VAC to 264 VAC  |
| Nominal input frequency                | 50 Hz/60 Hz  |
| Operating frequency range <sup>1</sup> | 47 Hz to 63 Hz   |
| Efficiency                             | 78% typical  |
| Over-current protection                | Internal fuse in line  |
| Main power disconnect                  | The AC power cable provides main power disconnect. Do not position the equipment so that it is difficult to disconnect the power cord. The front-panel power switch causes the internal chassis power supply to provide DC power to the PXI Express backplane. |



**Caution** Disconnect power cord to completely remove power.

## DC Output

DC output characteristics of the PXIe-1083.

| Voltage Rail | Maximum Current | Load Regulation | Maximum Ripple and Noise (20 MHz BW) |
|--------------|-----------------|-----------------|--------------------------------------|
| +5V_AUX      | 1.0 A           | ±5%             | 50 mVpp                              |
| +12 V        | 30.1 A          | ±5%             | 120 mVpp                             |
| +5 V         | 25.1 A          | ±5%             | 50 mVpp                              |
| +3.3 V       | 30.7 A          | ±5%             | 50 mVpp                              |
| -12 V        | 0.75 A          | ±5%             | 120 mVpp                             |

Maximum total available power for the PXIe-1083 is 293 W.

The maximum combined power available on +3.3 V and +5 V is 180 W.

The maximum power available for each Thunderbolt port is 15 W (5 V/3 A).

**Table 1.** Backplane Slot Current Capacity

| Slot   | +5 V | V (I/O) | +3.3 V | +12 V | -12 V | 5 V <sub>AUX</sub> |
|--|------|---------|--------|-------|-------|--------------------|
| Hybrid Peripheral Slot with PXI-5 Peripheral | -    | -       | 3 A    | 6 A   | -     | 1 A                |
| Hybrid Peripheral Slot with PXI-1 Peripheral | 6 A  | 5 A     | 6 A    | 1 A   | 1 A   | -                  |



**Note** PCI V(I/O) pins in Hybrid Peripheral Slots are connected to +5 V.



**Note** The maximum power dissipated in a peripheral slot should not exceed 58 W. Refer to the **Operating Environment** section for ambient temperature considerations at 58 W.

|                         |  |
|-------------------------|--|
| Over-current protection | All outputs are protected from short circuit and overload, they recover and return to regulation when the overload is removed and the power is cycled. |
| Over-voltage protection | +3.3 V clamped at 3.7 V to 4.3 V,<br>+5 V clamped at 5.7 V to 6.5 V,<br>+12 V clamped at 13.4 V to 15.6 V  |

## Chassis Cooling

|   |  |
|---|--|
| Module cooling                            | Forced air circulation (positive pressurization) through one 150 CFM fan |
| Module slot airflow direction             | Bottom of module to top of module  |
| Module intake                             | Bottom of chassis  |
| Module exhaust                            | Top, right side of chassis   |
| Slot cooling capacity                     | 58 W; slot 6 supports 58 W cooling with high fan mode                    |
| Power supply cooling                      | Forced air circulation through integrated fans                           |
| Power supply intake                       | Front and left side chassis  |
| Power supply exhaust                      | Rear of chassis  |
| <b>Minimum chassis cooling clearances</b> |  |

|              |                     |
|--------------|---------------------|
| Above        | 44.45 mm (1.75 in.) |
| Rear         | 44.45 mm (1.75 in.) |
| Sides        | 44.45 mm (1.75 in.) |
| <b>Below</b> |                     |
| Rack         | 44.45 mm (1.75 in.) |
| Desktop      | 25.4 mm (1.00 in.)  |

## Environmental

|                  |   |
|------------------|---|
| Maximum altitude | 2,000 m (6,560 ft.), 800 mbar (at 25 °C ambient, high fan mode) |
| Pollution Degree | 2   |

Indoor use only.

## Operating Environment

|   |   |
|---|---|
| <b>Ambient temperature range</b>  |   |
| When all peripheral modules require $\leq 38$ W cooling capacity per slot | 0 °C to 50 °C (IEC 60068-2-1 and IEC 60068-2-2.) <sup>2</sup><br>Meets MIL-PRF-28800F Class 3 low temperature limit and high temperature limit.                     |
| When any peripheral module requires $> 38$ W cooling capacity per slot    | 0 °C to 40 °C (IEC 60068-2-1 and IEC 60068-2-2.) <sup>2</sup> Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 4 high temperature limit. |

|                         |                           |
|-------------------------|---------------------------|
| Relative humidity range | 20% to 80%, noncondensing |
|-------------------------|---------------------------|

## Storage Environment

|                           |  |
|---------------------------|--|
| Ambient temperature range | -40 °C to 71 °C (IEC-60068-2-1 and IEC-60068-2-2.) <sup>[3]</sup> Meets MIL-PRF-28800F Class 3 limits. |
| Relative humidity range   | 10% to 95%, noncondensing  |

## Shock and Vibration

|                              |  |
|------------------------------|--|
| Operational shock            | 30 g peak, half-sine, 11 ms pulse (IEC-60068-2-27.) <sup>3</sup> Meets MIL-PRF-28800F Class 2 limits.  |
| Operational random vibration | 5 to 500 Hz, 0.3 g <sub>rms</sub>  |
| Non-operating vibration      | 5 to 500 Hz, 2.4 g <sub>rms</sub> (IEC 60068-2-64.) <sup>3</sup> Non-operating 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.)

|                                |          |
|--------------------------------|----------|
| <b>38 W Profile</b>            |          |
| Auto fan (up to 30 °C ambient) | 33.7 dBA |
|                                |          |

|          |          |
|----------|----------|
| High fan | 50.8 dBA |
|----------|----------|

| <b>58 W Profile</b>            |          |
|--------------------------------|----------|
| Auto fan (up to 30 °C ambient) | 54.7 dBA |
| High fan                       | 55.3 dBA |

## Sound Power Level

| <b>38 W Profile</b>            |          |
|--------------------------------|----------|
| Auto fan (up to 30 °C ambient) | 44.9 dBA |
| High fan                       | 60.3 dBA |

| <b>58 W Profile</b>            |          |
|--------------------------------|----------|
| Auto fan (up to 30 °C ambient) | 63.4 dBA |
| High fan                       | 64.2 dBA |



**Note** The protection provided by the PXIe-1083 can be impaired if it is used in a manner not described in this document.

## Safety Compliance Standards

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

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





**Note** For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) section.

## EMC Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) stated in the product specifications. These requirements and limits provide reasonable protection against harmful interference when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by NI could void your authority to operate it under your local regulatory rules.

## EMC Notices

Refer to the following notices for cables, accessories, and prevention measures necessary to ensure the specified EMC performance.



### Notice

For EMC declarations and certifications, and additional information, refer to the [Product Certifications and Declarations](#) section.



**Notice** Changes or modifications to the product not expressly approved by NI could void your authority to operate the product under your local regulatory rules.



**Notice** Operate this product only with shielded cables and accessories.

## Electromagnetic Compatibility Standards

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
- AS/NZS CISPR 11: Group 1, Class A emissions



**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** In Europe, Canada, Australia, and New Zealand (per CISPR 11) Class A equipment is intended for use in nonresidential locations.

## 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)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

## 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](https://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 **Engineering a Healthy Planet** web page at [ni.com/environment](https://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.

## EU and UK Customers

-  **Waste Electrical and Electronic Equipment (WEEE)**—At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit [ni.com/environment/weee](https://ni.com/environment/weee).

## 电子信息产品污染控制管理办法（中国 RoHS）

-  **中国 RoHS**—NI 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 NI 中国 RoHS 合规性信息，请登录 [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)

## Backplane

|                               |  |
|-------------------------------|--|
| Size                          | 3U-sized; 5 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, UL 94 V-0 rated  |

## System Synchronization Clocks

10 MHz System Reference Clock: PXI\_CLK10

|                           |  |
|---------------------------|--|
| Maximum slot-to-slot skew | 250 ps   |
| Accuracy                  | $\pm 25$ ppm max (guaranteed over the operating temperature range) |
| Maximum jitter            | 5 ps RMS phase-jitter (10 Hz–1 MHz range)                          |
| Duty-factor               | 45% to 55%   |
| Unloaded signal swing     | 3.3 V $\pm$ 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 to 12 kHz range),<br>2 ps RMS phase-jitter (12 kHz to 20 MHz range) |
| Duty-factor for PXIe_CLK100   | 45% to 55%   |
| Absolute differential voltage (When terminated with a 50 Ω load to 1.30 V or Thévenin equivalent) | 400 mV to 1000 mV  |



**Note** For other specifications, refer to the **PXI-5 PXI Express Hardware Specification**.

## Mechanical

| Standard chassis dimensions |                      |
|-----------------------------|----------------------|
| Height                      | 177.1 mm (6.97 in.)  |
| Width                       | 257.1 mm (10.12 in.) |
| Depth                       | 214.2 mm (8.43 in.)  |
| Weight                      | 6.7 kg (14.8 lb)     |

|                   |   |
|-------------------|---|
| Chassis materials | Extruded Aluminum (6063-T5, 6060-T6), Cold Rolled Steel/Stainless Steel, Santoprene, Urethane Foam, PC-ABS, Nylon, Polyethylene |
| Finish            | Conductive Clear Iridite on Aluminum, Electroplated Nickel on Cold Rolled Steel, Electroplated Zinc on Cold Rolled Steel        |

The following figures show the PXIe-1083 chassis dimensions. The holes shown are for installing the optional rack mount kits.

**Figure 1.** PXIe-1083 Chassis Dimensions (Front)

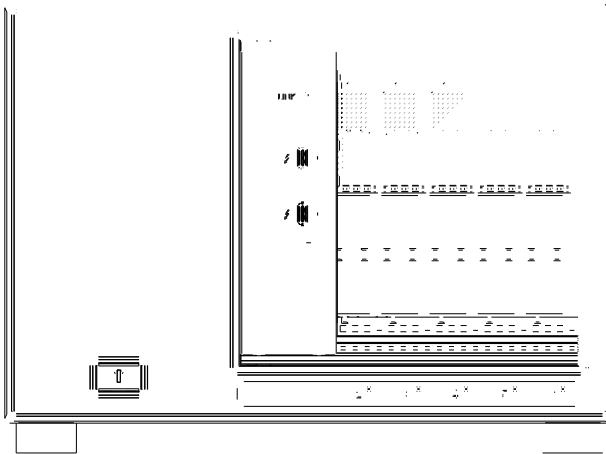


Figure 2. PXIe-1083 Chassis Dimensions (Side)

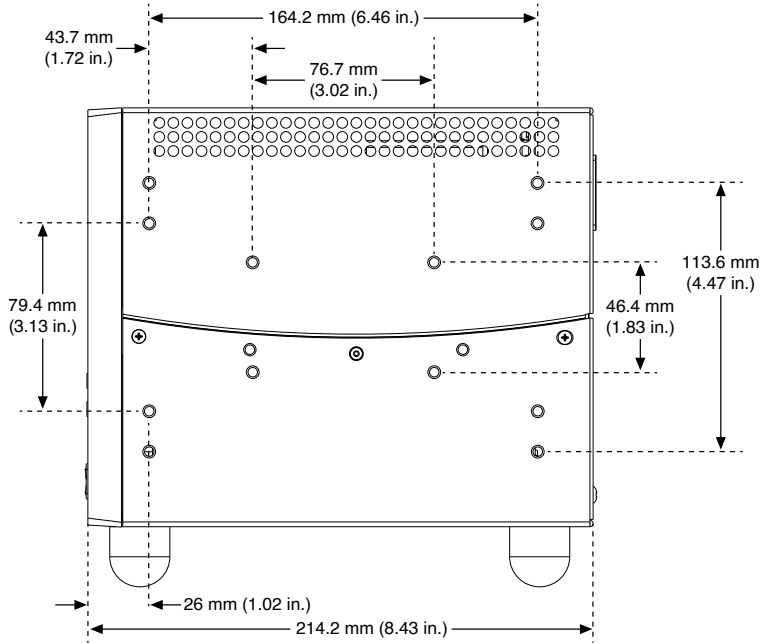


Figure 3. PXIe-1083 Chassis Dimensions (Bottom)

