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# PXle-7822

# Specifications

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# PXIe-7822 Specifications

## PXIe-7822 Specifications

This document contains the specifications for the PXIe-7822.



**Caution** Using the PXIe-7822 in a manner not described in this document may impair the protection the PXIe-7822 provides.

Specifications are typical at 25 °C unless otherwise noted.

## Revision History

Version	Date changed	Description
376825E-01	October 2025	Updated DMA quantity.
376825D-01	January 2025	Updated reconfigurable FPGA specifications.
376825C-01	November 2024	Updated title and minimum and maximum input voltage, added compliance topics.
376825B-01	June 2015	Clarified maximum DC output current per channel.
376825A-01	February 2015	Initial release.

## Looking For Something Else?

For information not found in the specifications for your product, such as operating instructions, browse *Related Information*.

### Related information:

- [PXIe-7822 Getting Started](#)
- [NI 78xx Models: R Series Cable and Accessory Compatibility](#)
- [Dimensional Drawings](#)

- [Product Certifications](#)
- [Letter of Volatility](#)

## PXIe-7822 Pinout

Figure 1. PXIe-7822 Pinout

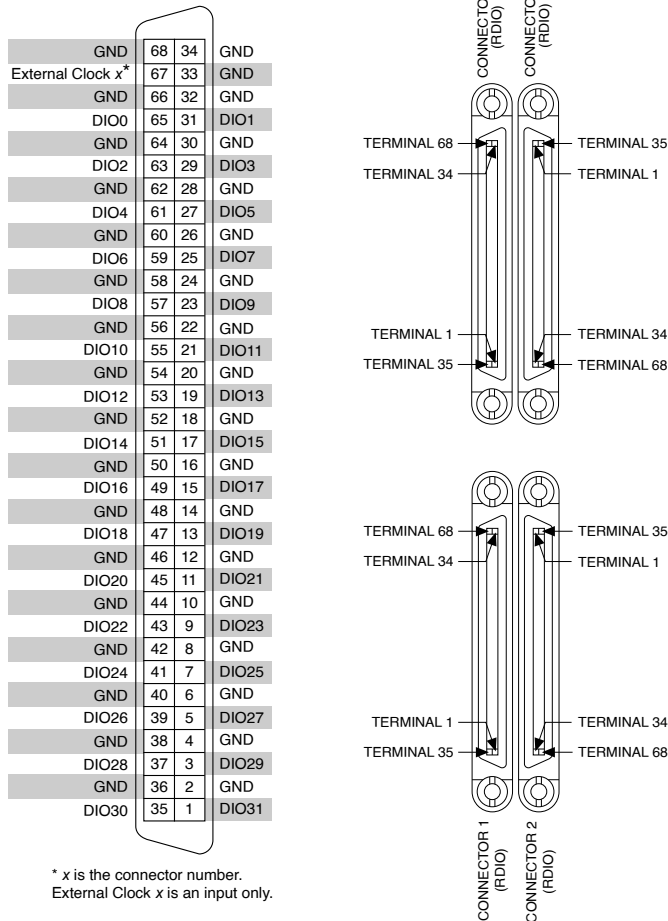


Table 1. Signal Descriptions

Signal	Description
DIO <0...31>	Digital I/O data through channels 0 through 31.
GND	Ground reference for signals.
External Clock	External clock input source that can be used for source synchronous acquisitions. The provided clock source must be stable and glitch-free.

# Digital I/O

Table 2. Digital I/O

Number of connectors	4
Number of channels per connector	32
Maximum frequency	80 MHz
Compatibility	LVTTL, LVCMOS
Logic family	Software-selectable
Default software setting	3.3 V

Table 3. Digital Input Logic Levels

Logic Family	Input Low Voltage ( $V_{IL}$ )		Input High Voltage ( $V_{IH}$ )	
	Minimum	Maximum	Minimum	Maximum
1.2 V	-0.3 V	0.40 V	0.84 V	1.5 V
1.5 V	-0.3 V	0.50 V	1.05 V	1.8 V
1.8 V	-0.3 V	0.60 V	1.25 V	2.1 V
2.5 V	-0.3 V	0.70 V	1.70 V	2.8 V
3.3 V	-0.3 V	0.80 V	2.00 V	3.6 V

Table 4. Input

Input leakage current	$\pm 15 \mu\text{A}$ maximum
Input impedance	50 k $\Omega$ typical, pull-down

Table 5. Digital Output Logic Levels

Logic Family	Current	Output Low Voltage ( $V_{OL}$ ) Maximum	Output High Voltage ( $V_{OH}$ ) Minimum
1.2 V	100 $\mu\text{A}$	0.20 V	1.00 V
1.5 V	100 $\mu\text{A}$	0.20 V	1.25 V

Logic Family	Current	Output Low Voltage (V <sub>OL</sub> ) Maximum	Output High Voltage (V <sub>OH</sub> ) Minimum
1.8 V	100 $\mu$ A	0.20 V	1.54 V
2.5 V	100 $\mu$ A	0.20 V	2.22 V
3.3 V	100 $\mu$ A	0.20 V	3.00 V
	4 mA	0.40 V	2.40 V

Table 6. Maximum DC Output Current per Channel

Source	4.0 mA
Sink	4.0 mA

Table 7. Output

Output impedance	50 $\Omega$
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Table 8. Digital I/O Power and Protection

Power-on state (tristate by default)	Programmable, by line
Protection <sup>1</sup>	$\pm$ 20 V, single line
Digital I/O voltage selection	Programmable, per connector, and defined at compilation (not run-time configurable)
Direction control of digital I/O channels	Per channel
Minimum I/O pulse width	6.25 ns
Minimum sampling period	5 ns

- NI recommends minimizing long-term over/under-voltage exposure to the Digital I/O. Prolonged DC voltage stresses that violate the maximum and minimum digital input voltage ratings may reduce device longevity. Over/under-voltage stresses are considered prolonged if the cumulative time in the abnormal condition exceeds 1 year.

## External Clock

Table 9. External Clock

Direction	Input into device
Maximum input leakage	$\pm 15 \mu\text{A}$
Characteristic impedance	50 $\Omega$
Power-on state	Tristated
Minimum input	-0.3 V
Maximum input	3.6 V
Logic level	Inherited from programmed digital voltage selection per connector
Maximum input frequency	80 MHz

## Reconfigurable FPGA

Table 10. Reconfigurable FPGA

FPGA type	Kintex-7 325T
Number of flip-flops	407,600
Number of LUTs	203,800
Embedded Block RAM	16,020 kbits
Number of DSP48 slices	840
Timebase	10 MHz, 40 MHz, 80 MHz, 100 MHz, 120 MHz, 160 MHz, or 200 MHz
Default timebase	40 MHz
Timebase reference source	PXI Express 100 MHz (PXIe_CLK100)
Timebase accuracy	$\pm 100$ ppm, 250 ps peak-to-peak jitter
Data transfers	DMA, interrupts, programmed I/O

## Onboard DRAM

Table 11. Onboard DRAM

Memory size	1 Bank; 512 MB
Maximum theoretical data rate	800 MB/s streaming

## Synchronization Resources

Table 12. Synchronization Resources

Input/output source	PXI_Trig<0..7>
Input source	PXI_Star, PXIe_DStarA, PXIe_DStarB, PXI_Clk10, PXIe_Clk100, External Clock x
Output source	PXIe_DStarC

## Bus Interface

Table 13. Bus Interface

Form factor	x4 PXI Express, specification v1.0 compliant
Slot compatibility	x4, x8, and x16 PXI Express or PXI Express hybrid slots
Data transfers	DMA, interrupts, programmed I/O
Number of DMA channels	15

## Maximum Power Requirements

Power requirements are dependent on the digital output loads and configuration of the LabVIEW FPGA VI used in your application.

Table 14. Maximum Power Requirements

+3.3 VDC ( $\pm 5\%$ )	3 A
+12 V	2 A

# Physical Characteristics



**Note** If you need to clean the device, wipe it with a dry, clean towel.

Table 15. Physical Characteristics

Dimensions	16 cm by 10 cm (6.3 in. by 3.9 in.)
Weight	183 g (0.403 lb)
I/O connectors	x4 68-pin female high-density VHDCI type

## Environmental

Table 16. Environmental

Ambient operating temperature (IEC 60068-2-1, IEC 60068-2-2)	0 °C to 55 °C
Ambient storage temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 71 °C
Operating humidity (IEC 60068-2-56)	10% RH to 90% RH, noncondensing
Storage humidity (IEC 60068-2-56)	5% RH to 95% RH, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m at 25 °C

Indoor use only.

## Shock and Vibration

Table 17. Shock and Vibration

Operational shock	30 g peak, half-sine, 11 ms pulse
Random vibration, operating	5 Hz to 500 Hz, 0.3 g <sub>rms</sub>
Random vibration,	5 Hz to 500 Hz, 2.4 g <sub>rms</sub>

non-operating	
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## Safety Standards

This product meets 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, CSA 61010-1
- EN 60079-0:2012, EN 60079-15:2010
- IEC 60079-0: Ed 6, IEC 60079-15: Ed 4
- UL 60079-0: Ed 5, UL 60079-15: Ed 3
- CSA 60079-0: 2011, CSA 60079-15: 2012



**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 B emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class B emissions
- EN 55022 (CISPR 22): Class B emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class B emissions
- AS/NZS CISPR 22: Class B emissions
- FCC 47 CFR Part 15B: Class B emissions
- ICES-001: Class B 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 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** 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 *Engineering a Healthy Planet* 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.

## 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).)