NI PXI-2532 Specifications

512-Crosspoint, 1-Wire Matrix

This document lists specifications for the NI PXI-2532 512-crosspoint matrix. All specifications are subject to change without notice. Visit `ni.com/manuals` for the most current specifications.

Configurations..... 4 × 128, 1-wire matrix
8 × 64, 1-wire matrix
4 × 64, 2-wire matrix
8 × 32, 2-wire matrix
Dual 4 × 64, 1-wire matrix
Dual 8 × 32, 1-wire matrix

Note The NI PXI-2532 has an internal matrix configuration of 16 banks of 2 × 16 crosspoints, from which many configurations can be derived. Contact National Instruments for custom terminal block designs.

Input Characteristics

All input characteristics are DC, AC_{pk}, or a combination unless otherwise specified.

Maximum switching voltage

Channel-to-channel..... 100 V

Channel-to-ground..... 100 V, CAT I

Caution This module is rated for Measurement Category I and intended to carry signal voltages no greater than 100 V. This module can withstand up to 500 V impulse voltage. Do *not* use this module for connection to signals or for measurements within Categories II, III, or IV. Do *not* connect to MAINs supply circuits (for example, wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Radio-Frequency Interference* document for more information on measurement categories.

When hazardous voltages (>42.4 V_{pk}/60 VDC) are present on any relay terminal, safety low-voltage (<42.4 V_{pk}/60 VDC) cannot be connected to any other relay terminal.

NATIONAL INSTRUMENTS

Maximum current .....0.5 A
(switching or carry, per channel)

Maximum switching power .....10 W
(per channel)

DC path resistance

Initial.....<1 Ω

End of life .....≥2 Ω

Open channel .....>10^9 Ω

Note DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rises rapidly above 2 Ω. Load ratings apply to relays used within the specification before the end of relay life.

Thermal EMF

1-wire.....<50 µV

2-wire.....<20 µV

Bandwidth (–3 dB, 50 Ω termination)

1-wire row/column .....≥30 MHz

2-wire row/column .....≥25 MHz

Crosstalk (50 Ω termination)

Channel-to-channel

10 kHz .....<–89 dB

100 kHz .....<–73 dB

1 MHz.....<–54 dB

10 MHz.....<–36 dB

Isolation (50 Ω termination)

Open channel

10 kHz .....>91 dB

100 kHz .....>71 dB

1 MHz.....>51 dB

10 MHz.....>32 dB

Dynamic Characteristics

Maximum cycle speed .....2,000 cycles/s

Simultaneous drive limit.....40 relays

Relay operate time ..... 0.25 ms

Release time ..... 0.25 ms

Expected relay life

Mechanical ..... 10^9 cycles

Electrical (resistive)

10 V, 100 mA ..... 10^7 cycles

20 V, 500 mA ..... 5×10^6 cycles

100 V, 10 mA ..... 5×10^5 cycles

Note Optional series protection resistance, available for the terminal blocks, increases the expected relay life at higher voltages. This series protection resistance shields the reed relays from the effects of cable and load capacitance. For more information, refer to the *Reed Relay Protection* tutorial at `ni.com/zone`.

Trigger Characteristics

Input trigger

Sources ..... PXI trigger lines 0–7

Minimum pulse width ..... 150 ns

Note The NI PXI-2532 can recognize trigger pulse widths <150 ns if you disable digital filtering. For information about disabling digital filtering, refer to the *NI Switches Help* at `ni.com/manuals`.

Output trigger

Destinations ..... PXI trigger lines 0–7

Pulse width ..... Programmable (1 µs to 62 µs)

Physical Characteristics

Relay type ..... Reed

Relay contact material ..... Rhodium

I/O connectors ..... 2, 160 pos,
Samtec BTE-EM series

Note Terminal block connectivity is with standard 0.050 in. pitch headers. Refer to the *Accessories* section for more information.

PXI power requirement .....10 W at 5 V
2 W at 3.3 V

Dimensions (W × H × D).....Single PXI slot, 3U
2 cm × 10 cm × 17.5 cm
(0.8 in. × 3.9 in. × 6.9 in.)

Weight .....454 g (1 lb)

Environment

The NI PXI-2532 is intended for indoor use only.

Operating temperature .....0 °C to 55 °C

Storage temperature .....–20 °C to 70 °C

Relative humidity .....5% to 85%, noncondensing

Pollution Degree 2

Approved at altitudes up to 2,000 m.

Accessories

Visit `ni.com` for more information about the following accessories.

Note The specifications listed in this document, including the safety and compliance certifications, also apply to the NI PXI-2532 terminal blocks unless otherwise noted in the terminal block installation instructions.

Table 1. NI Accessories for the NI PXI-2532

Accessory	Part Number
NI TB-2640 terminal block (4 × 128, 1-wire matrix)	779056-01
NI TB-2640 terminal block, with protection resistance	779056-02
NI TB-2641 terminal block (8 × 64, 1-wire matrix)	779056-03
NI TB-2641 terminal block, with protection resistance	779056-04
NI TB-2643 terminal block (4 × 64, 2-wire matrix or dual 4 × 64, 1-wire matrix)	779056-07
NI TB-2643 terminal block, with protection resistance	779056-08

Table 1. NI Accessories for the NI PXI-2532 (Continued)

Accessory	Part Number
NI TB-2644 terminal block (8 × 32, 2-wire matrix or dual 8 × 32, 1-wire matrix)	779056-09
NI TB-2644 terminal block, with protection resistance	779056-10

Note Refer to the terminal block installation instructions for signal connectivity and matrix expansion options. Contact National Instruments for custom terminal block designs.

Caution You *must* install mating connectors according to local safety codes and standards and according to the specifications provided by the connector manufacturer. You are responsible for verifying safety compliance of third-party connectors and their usage according to the relevant standard(s), including UL and CSA in North America and IEC and VDE in Europe.

Table 2. Third-Party Accessory for the NI PXI-2532

Accessory	Manufacturer	Manufacturer Part Number
Module mating connector	Samtec	BSE-080-01-L-D-A

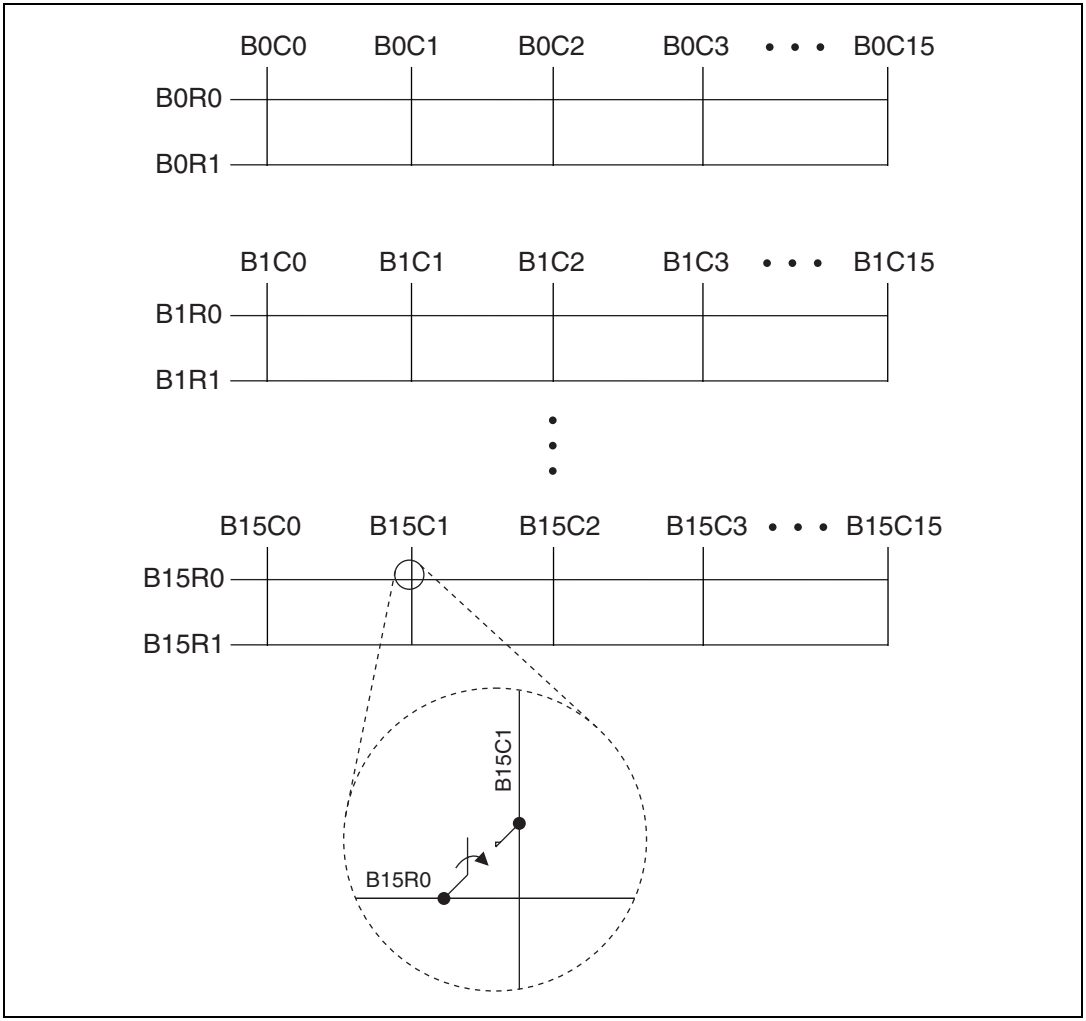

Figure 1. NI PXI-2532 Configuration (Relay Shown in Power-On State)

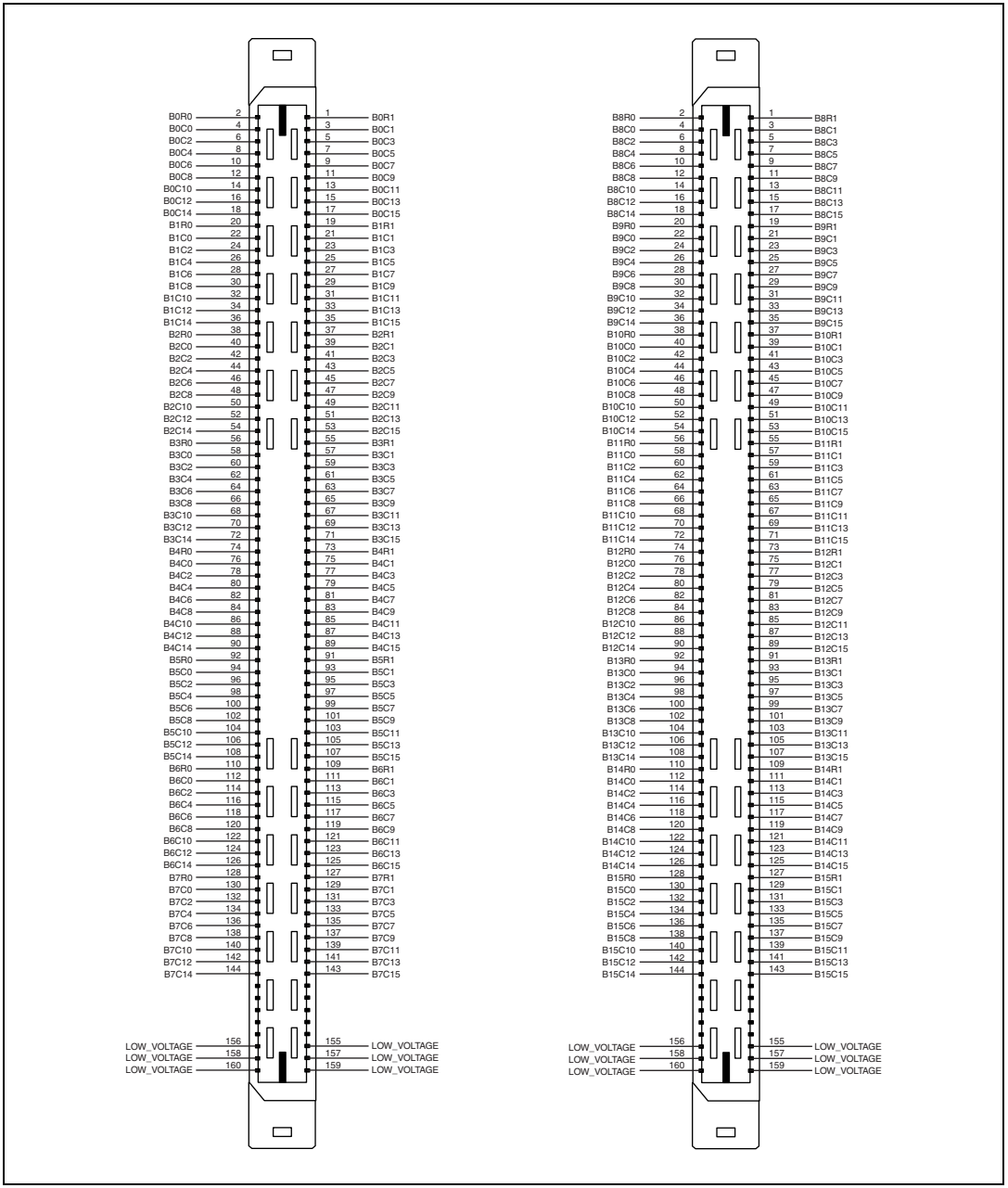

Figure 2. NI PXI-2532 Pinouts

Caution Low voltage pins are reserved for future use. These pins should remain disconnected and isolated from row and column channels when high voltage is present.

Compliance and Certifications

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 visit `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/EMI	CE, C-Tick, and FCC Part 15 (Class A) Compliant

Note For 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.

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