NI PXIe-2727 Specifications

16-Bit Resistor Module

This document lists specifications for the National Instruments PXIe-2727 16-bit resistor module. All specifications are subject to change without notice. Visit `ni.com/manuals` for the most current specifications.

Topology ..... Independent

Refer to the *NI Switches Help* for detailed topology information.

Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

Caution Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document at `ni.com/manuals` for important safety and compliance information.

Caution Using the NI PXI-2727 in a manner not described in this document may impair the protection the NI PXI-2727 provides.

About These Specifications

Specifications characterize the warranted performance of the instrument under the stated operating conditions.

Typical Specifications are specifications met by the majority of the instrument under the stated operating conditions and are tested at 23 °C. Typical specifications are not warranted.

All voltages are specified in DC, AC_{pk}, or a combination unless otherwise specified.

Input Characteristics

Number of channels 9

Maximum voltage

- Channel-to-channel ..... 60 VDC, 30 VAC_{rms}, CAT I
- Channel-to-ground..... 60 VDC, 30 VAC_{rms}, CAT I

Maximum current ..... 0.3 A (per channel)

Maximum power ..... 0.25 W (per channel)

Resistor accuracy..... 0.5%

TCR ..... 100 ppm

Resolution..... 0.25 Ω steps

Range..... 0.25 to 16,320 Ω (per channel)

Typical channel accuracy

- Channel set between 20 and 40 Ω..... <10.0%
- Channel set between 40 and 120 Ω..... <5.0%
- Channel set between 120 and 400Ω..... <2.0%
- Channel set between 400 and 16,000..... <1.0%

Channel accuracy is a function of the overall resistor accuracy, plus relay and trace path resistance, plus any affects of temperature.

Typical minimum resistance ..... 2 Ω

Typical DC offset resistance (per channel)

- Initial..... <2 Ω
- End-of-life..... ≥3 Ω

Channel resistance is a combination of relay contact resistance, trace resistance, and resistor value. Contact resistance typically remains low for the life of a relay. At the end of relay life, the offset resistance may rapidly rise above 3 Ω.

NATIONAL INSTRUMENTS

The following figures show the expected resistance error and the expected resistance.

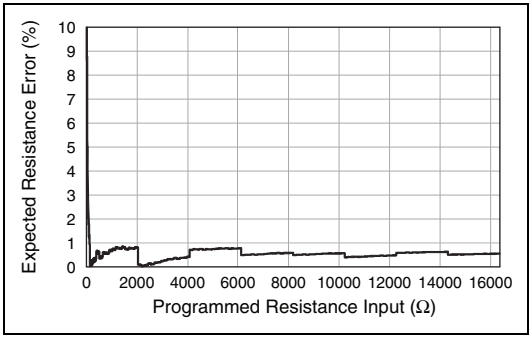


Figure 1. Expected resistance error between 0 and16000 Ω

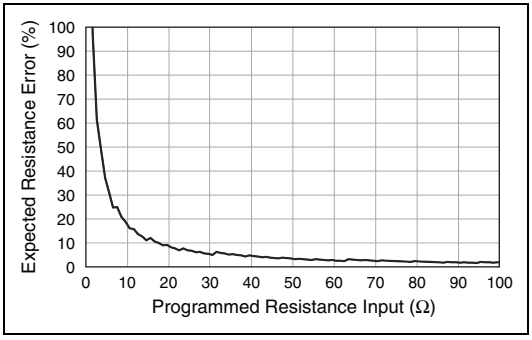


Figure 2. Expected resistance error between 0 and 100 Ω

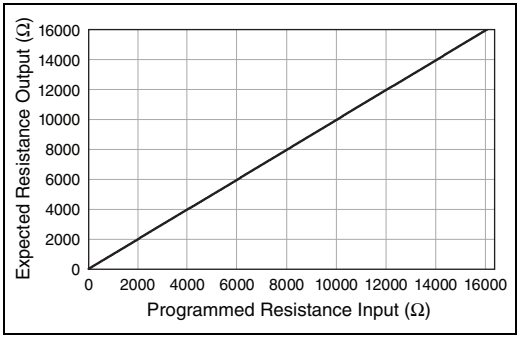


Figure 3. Expected resistance between 0 and 16000 Ω

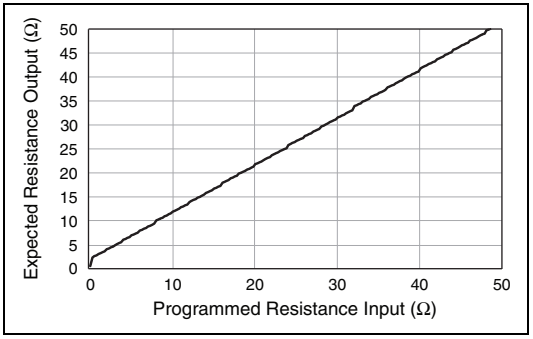


Figure 4. Expected resistance between 0 and 50 Ω

Dynamic Characteristics

Simultaneous drive limit..... 161 relays

Relay operate/release time..... 250 µs

Note Certain applications may require additional time for proper settling. Refer to the *NI Switches Help* for information about including additional settling time.

Typical relay life

Low power load (<50 mW)..... 1×10^8 cycles

Full power load (<250 mW)..... 1×10^6 cycles

Note Reed relays are highly susceptible to damage caused by switching capacitive and inductive loads. Capacitive loads can cause high inrush currents while inductive loads can cause high flyback voltages. The addition of appropriate resistive protection can greatly improve contact lifetime. For more information about adding protection circuitry to a capacitive load, visit `ni.com/info` and enter the Info Code `relaylifetime`. For information about inductive loads, enter the Info Code `relayflyback`.

Note The relays used in the NI PXIe-2727 are field replaceable. Refer to the *NI Switches Help* for information about replacing a failed relay.

Trigger Characteristics

Input trigger

Sources ..... PXI trigger lines 0–7,

Minimum pulse width ..... 150 ns

Note The NI PXIe-2727 can recognize trigger pulse widths that are less than 150 ns by disabling digital filtering. For information about disabling digital filtering, refer to the *NI Switches Help*.

Physical Characteristics

Relay types..... Reed

Note NI advises against installing reed relay modules directly adjacent to an embedded controller with a magnetic hard drive because of the sensitivity of reed relays and the possibility of interference.

Front panel connector ..... 37-pin D-SUB connector

DMM port..... 2 x2 Micro-Fit connector

PXIe power requirement..... 1.2 W at 3.3 V
4.2 W typical,
11 W maximum
at 12 V

Dimensions (L × W × H) ..... 3U, one slot,
PXIe/cPCI module,
21.6 × 2.0 × 13.0 cm
(8.5 × 0.8 × 5.1 in.)

Weight..... 323 g (11.3 oz)

Environment

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

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

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

Pollution Degree.....2

Maximum altitude .....2,000 m

Indoor use only.

Shock and Vibration

Operational shock.....30 g peak, half-sine,
11 ms pulse
(Tested in accordance
with IEC 60068-2-27.
Test profile developed
in accordance with
MIL-PRF-28800F.)

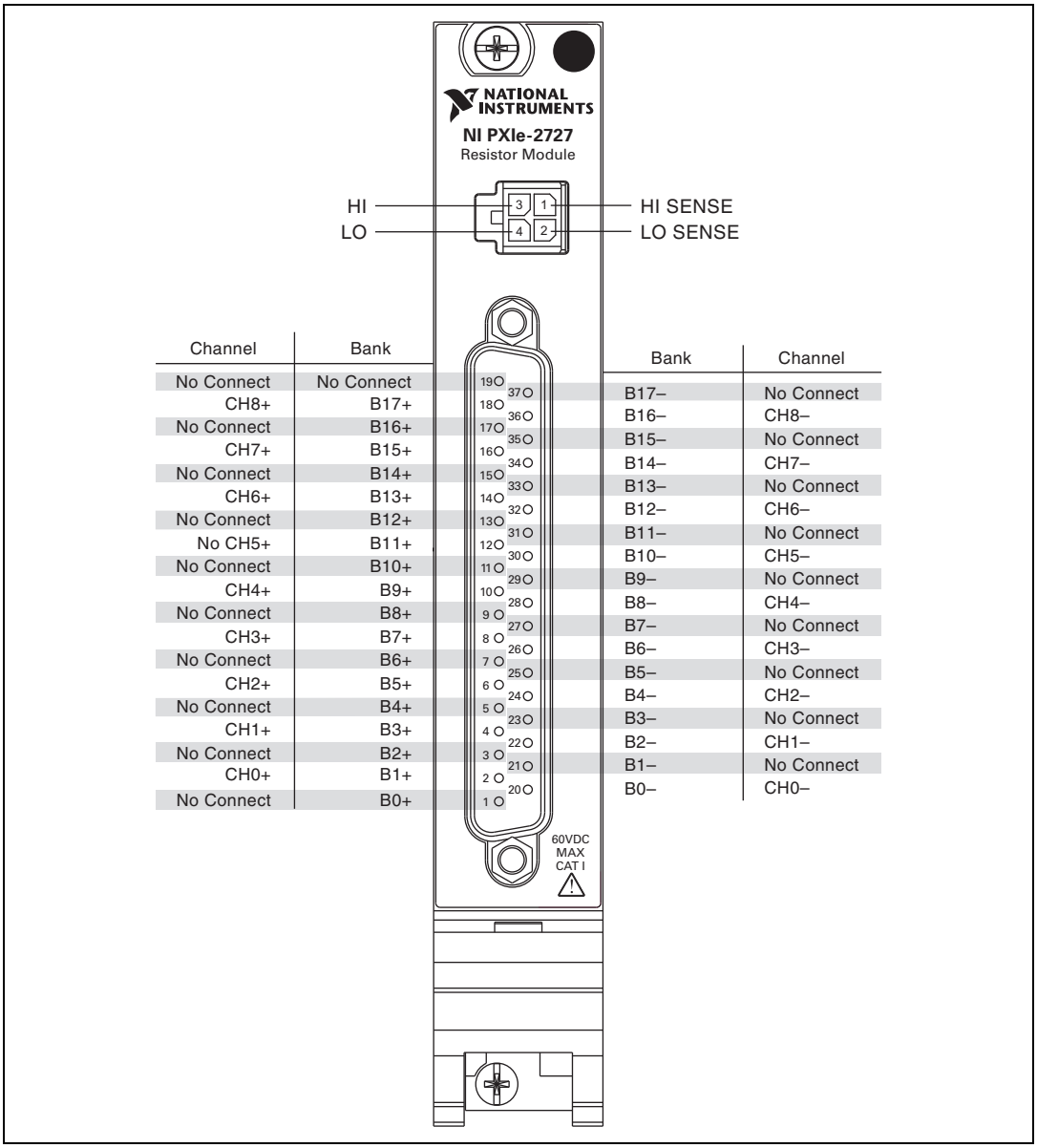
Random vibration

Operating .....5 to 500 Hz, 0.3 g_{rms}

Nonoperating .....5 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.)

Diagrams

The following figure shows the NI PXIe-2727 connector pinout.



Channel	Bank		Bank	Channel
No Connect	No Connect	19 37	B17–	No Connect
CH8+	B17+	18 36	B16–	CH8–
No Connect	B16+	17 35	B15–	No Connect
CH7+	B15+	16 34	B14–	CH7–
No Connect	B14+	15 33	B13–	No Connect
CH6+	B13+	14 32	B12–	CH6–
No Connect	B12+	13 31	B11–	No Connect
No CH5+	B11+	12 30	B10–	CH5–
No Connect	B10+	11 29	B9–	No Connect
CH4+	B9+	10 28	B8–	CH4–
No Connect	B8+	9 27	B7–	No Connect
CH3+	B7+	8 26	B6–	CH3–
No Connect	B6+	7 25	B5–	No Connect
CH2+	B5+	6 24	B4–	CH2–
No Connect	B4+	5 23	B3–	No Connect
CH1+	B3+	4 22	B2–	CH1–
No Connect	B2+	3 21	B1–	No Connect
CH0+	B1+	2 20	B0–	CH0–
No Connect	B0+	1		

Figure 5. NI PXIe-2727 Connector Pinout

Note For topology-specific connection information, refer to your device in the *NI Switches Help* and the installation instructions for any associated cables or terminal blocks.

Refer to the following figure for the power-on-state diagram of the NI PXIe-2727.

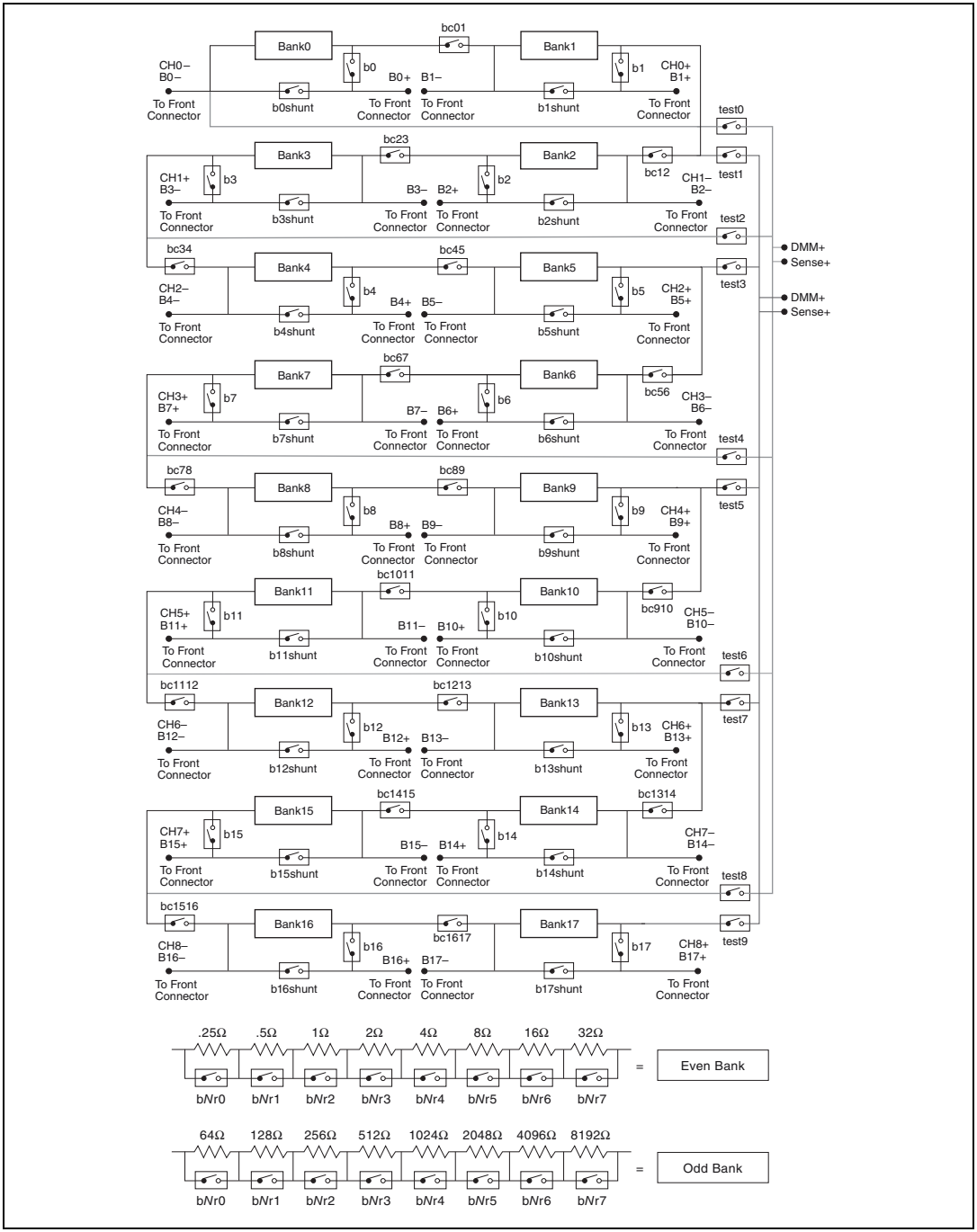


Figure 6. NI PXI-2727 Power-On-State

Accessories

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

Table 1. Accessories Available for the NI PXIe-2727

Accessory	Part Number
37-pin female to male shielded I/O cable, 1 m	778621-01
37-pin female to male shielded I/O cable, 2 m	778621-02
37-pin solder cup terminals, D-SUB female shell w/strain relief	779184-01
High-voltage DIN-rail screw terminal block	779491-01
Crimp-and-Poke 37-pin D-SUB custom connectivity accessory	779185-01
Solder cup 37-pin D-SUB custom connectivity accessory	779184-01
2 x 2 microfit DMM connector	782465-01

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.

Compliance and Certifications

Safety

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

Note For UL and other safety certifications, refer to the product label or the *Online Product Certification* 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
- AS/NZS CISPR 11: Group 1, 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 generates radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations and certifications, refer to the *Online Product Certification* section.

CE Compliance CE

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

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

To obtain product certifications and the Declaration of Conformity (DoC) for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

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 Electrical 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`.)

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