Technical Sales
United States
(866) 531-6285
info@ni.com

Last Revised: 2012-10-17 09:17:36.0

High-Density Multiconfiguration Matrix Modules

NI PXI-2529, NI PXIe-2529, NI SCXI-1129

- 8 matrix configurations
- Switch capacity: 150 VDC, 150 Vrms CAT I and 1 A switching/2 A carry
- 32,000-step scan list for deterministic scanning
- Fully software programmable
- Effortless matrix expansion
- Multiple-module synchronization with hardware triggers
- Electromechanical relays
- Available in both PXI and PXI Express versions for optimal slot placement
- NI PXI-2529/PXIe-2529: 128-crosspoint matrix and 4x32 and 8x16 2-wire matrix configurations
- NI SCXI-1129: 256-crosspoint matrix and six 2-wire matrix configurations

Overview

The NI PXI-2529, PXIe-2529, and SCXI-1129 are high-density matrix relay modules built for applications with high-channel counts. The modules are two-wire matrices that are configurable with front mounting terminal blocks to achieve many different matrix configurations. Table 1 provides a complete list of possible configurations. Expanding the matrix channel count is as easy as adding more modules. With the SCXI-1129, you can pass analog signals between two or more switch modules via a high-voltage backplane (HVAB), matrix expansion cables, or matrix expansion plugs. Using these connections, you can instantly expand your matrix without external wiring. The NI 2529 modules are designed to work well with both low- and high-voltage levels. They use relays with low thermal offset to ensure accurate low-voltage measurements. These relays can switch up to 150 Vrms or 150 VDC.

Back to Top

Requirements and Compatibility

OS Information

- Windows 2000/XP
- Windows NT
- Windows Vista

Driver Information

- NI-SWITCH

Software Compatibility

- ANSI C
- LabVIEW
- LabWindows/CVI
- Measurement Studio Visual C++ Support
- NI Switch Executive
- Visual Basic

Back to Top

Ordering Information

For a complete list of accessories, visit the product page on ni.com.

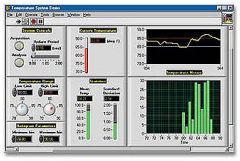
Products	Part Number	Recommended Accessories	Part Number

NI PXI-2529			
NI PXI-2529 – 4x32 2-Wire 2 A Matrix Requires: 1 Connector Block	778739-01	**Connector Block:** Screw Terminal - NI TB-2636 Front-Mounting Terminal Block	196762-01
NI PXI-2529 – 8x16 2-Wire 2 A Matrix Requires: 1 Connector Block	778739-01	**Connector Block:** Screw Terminal - NI TB-2635 Front-Mounting Terminal Block	778839-01
NI PXI-2529 – 4x32 2-Wire 2 A Matrix (ribbon cable headers) Requires: 1 Connector Block	778739-01	**Connector Block:** Unshielded - NI TB-2634 Front-Mounting Terminal Block	778840-01
NI SCXI-1129			
SCXI-1129 High-Density, Multiconfiguration Matrix	776572-29	No accessories required.	
NI PXIe-2529			
NI PXIe-2529 – 8x16 2-Wire 2 A Matrix Requires: 1 Connector Block	780587-29	**Connector Block:** Screw Terminal - NI TB-2635 Front-Mounting Terminal Block	778839-01
NI PXIe-2529 – 4x32 2-Wire 2 A Matrix (ribbon cable headers) Requires: 1 Connector Block	780587-29	**Connector Block:** Unshielded - NI TB-2634 Front-Mounting Terminal Block	778840-01
NI PXIe-2529 – 4x32 2-Wire 2 A Matrix Requires: 1 Connector Block	780587-29	**Connector Block:** Screw Terminal - NI TB-2636 Front-Mounting Terminal Block	196762-01

Back to Top

Software Recommendations

LabVIEW Professional Development System for Windows



- Advanced software tools for large project development
- Automatic code generation using DAQ Assistant and Instrument I/O Assistant
- Tight integration with a wide range of hardware
- Advanced measurement analysis and digital signal processing
- Open connectivity with DLLs, ActiveX, and .NET objects
- Capability to build DLLs, executables, and MSI installers

NI LabWindows™/CVI for Windows

- Real-time advanced 2D graphs and charts
- Complete hardware compatibility with IVI, VISA, DAQ, GPIB, and serial
- Analysis tools for array manipulation, signal processing statistics, and curve fitting
- Simplified cross-platform communication with network variables
- Measurement Studio .NET tools (included in LabWindows/CVI Full only)
- The mark LabWindows is used under a license from Microsoft Corporation.

Back to Top

Support and Services

System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at ni.com/advisor to find a system assurance program to meet your needs.

Calibration

NI measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of your measurement hardware, NI offers basic or detailed recalibration service that provides ongoing ISO 9001 audit compliance and confidence in your measurements. To learn more about NI calibration services or to locate a qualified service center near you, contact your local sales office or visit ni.com/calibration.

Technical Support

Get answers to your technical questions using the following National Instruments resources.

- **Support** - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
- **Discussion Forums** - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
- **Online Community** - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

- **Classroom training in cities worldwide** - the most comprehensive hands-on training taught by engineers.
- **On-site training at your facility** - an excellent option to train multiple employees at the same time.
- **Online instructor-led training** - lower-cost, remote training if classroom or on-site courses are not possible.
- **Course kits** - lowest-cost, self-paced training that you can use as reference guides.
- **Training memberships** and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

Back to Top

Detailed Specifications

128-Crosspoint Relay Matrix

This document lists specifications for the NI PXI/PXIe-2529 (NI 2529) matrix module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Topologies	2-wire 4 × 32 matrix 2-wire 8 × 16 matrix 2-wire dual 4 × 16 matrix

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

Input Characteristics

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

Maximum switching voltage	
Channel-to-channel	150 V
Channel-to-ground	150 V, CAT I

Caution This module is rated for Measurement Category I and intended to carry signal voltages no greater than 150 V. This module can withstand up to 800 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 (such as wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for more information about measurement categories.

Caution 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.

Caution The maximum switching power is limited by the maximum switching current and the maximum voltage, and must not exceed 30 W, 37.5 VA.

Maximum switching power (per channel)	30 W, 37.5 VA
Maximum switching current (per channel)	1 A
Maximum carry current (per channel)	2 A
Maximum module current	8 A

Note Switching inductive loads (for example, motors and solenoids) can produce high voltage transients in excess of the module's rated voltage. Without additional protection, these transients can interfere with module operation and impact relay life. For more information about transient suppression, visit ni.com/info and enter the Info Code *induct*.

DC path resistance	
Initial	<1 Ω
End-of-life	≥2 Ω

Path resistance is a combination of relay contact resistance and trace resistance and is measured as the combined resistance of the high and low signal paths from one row to one column. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rises rapidly above 1.0 Ω.

Thermal EMF	< 9 µV

Minimum Current	10 µV
RF Performance Characteristics	
Typical single crosspoint bandwidth	>10 MHz (50 Ω system, one row to one column)
Typical crosstalk (50 Ω system)	
10 kHz	<–80 dB
100 kHz	<–65 dB
1 MHz	<–50 dB
Dynamic Characteristics	
Relay operate time	
Typical	1 ms
Maximum	3.4 ms
Note Certain applications may require additional time for proper settling. Refer to the *NI Switches Help* for information about including additional settling time.	
Maximum scan rate	120 channels/s
Expected relay life	
Mechanical	5 × 107 cycles
Electrical	
10 VDC, 100 mADC resistive	1 × 106 cycles
10 VDC, 1 ADC resistive	5 × 105 cycles
30 VDC, 1 ADC resistive	1 × 105 cycles
Note The relays used in the NI 2575 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 2575 can recognize trigger pulse widths less than 150 ns by disabling digital filtering. For information about disabling digital filtering, refer to the *NI Switches Help*.	
Output trigger	
Destinations	PXI trigger lines 0–7
Pulse width	Programmable (1 µs to 62 µs)
Physical Characteristics	
Relay type	Electromechanical, latching
Relay contact material	Silver, gold covered
I/O connector	200 POS LFH Matrix 50, receptacle
Power requirement	
PXI	6 W at 5 V, 2.5 W at 3.3 V
PXI Express	7.5 W at 12V, 2.5 W at 3.3 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, PXIe compatible 21.6 × 2.0 × 13.0 cm (8.5 × 0.8 × 5.1 in.)
Weight	289 g (10.2 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.)

Compliance and Certifications

Safety Standards

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, 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 (IEC 61326): 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 For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

Note For EMC compliance, operate this device with shielded cables.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as amended for CE marking, 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 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 not only to the environment but also 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.htm.

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.)

[1] To ensure the typical thermal EMF, power down all relays and avoid pulsing high currents near the channels you are measuring. For more information about powering down latching relays, refer to the *Power Down Latching Relays After Debounce* property in NI-SWITCH or the *Power Down Latching Relays After Settling* property in NI-DAQmx.

Back to Top