

# PXI RF Matrix Switch Modules

PXI-2540, PXIe-2540, PXI-2541, PXIe-2541, PXI-2593, and PXIe-2593



- **Software:** Includes interactive soft front panel, API support for LabVIEW and text-based languages, shipping examples, and detailed help files
- Bandwidth up to 500 MHz
- Onboard relay count tracking
- Ability to store RF path calibration information in NI Switch Executive

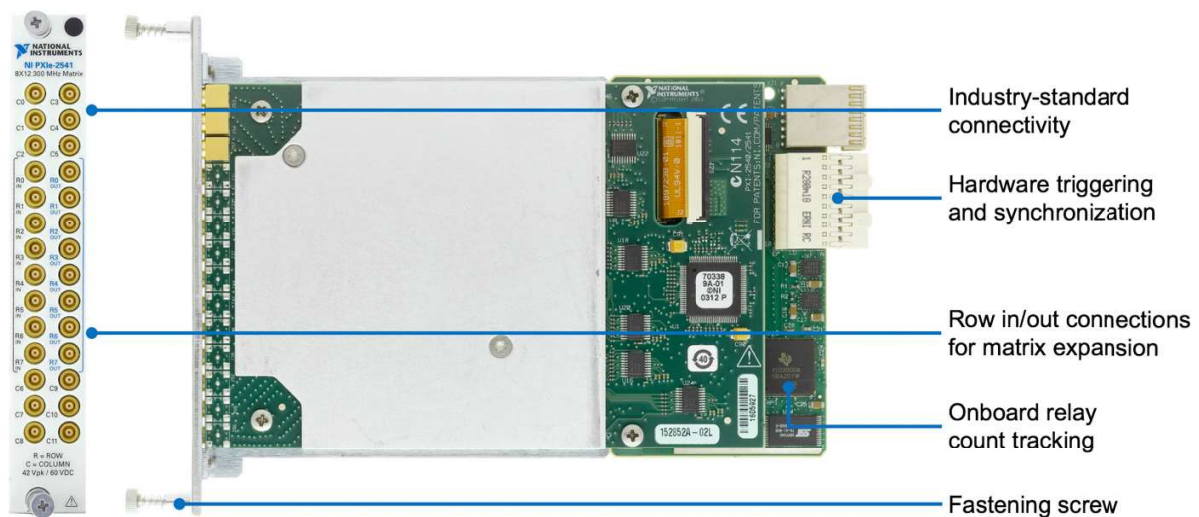
## Built for Automated Test and Measurement

PXI RF Matrix Switch Modules are organized into rows and columns and provide maximum flexibility for switching systems by allowing you to connect any channel to any other channel. Additionally, NI switch modules offer advanced features, such as hardware triggering, onboard relay count tracking, and a wide variety of reconfigurable models, providing you the option to modify the topology of the switch based on your needs. These advanced features offer a smarter way to tackle difficult applications in industries ranging from consumer electronics to aerospace and defense.

*Table 4. NI offers a variety of PXI RF Matrix Switch Modules, varying in topology, density, relay type, and bandwidth, allowing you to pick the model that best fits your needs.*

	Configuration	Maximum Bandwidth	Characteristic Impedance	Termination	Relay Type
PXI-2540 and PXIe-2540	8 x 9 RF matrix	350 MHz	50 $\Omega$	No	EMR
PXI-2541 and PXIe-2541	8 x 12 RF matrix	300 MHz	50 $\Omega$	No	EMR
PXI-2593 and PXIe-2593	16-channel, dimensionally flexible sparse matrix	500 MHz	50 $\Omega$	No	EMR

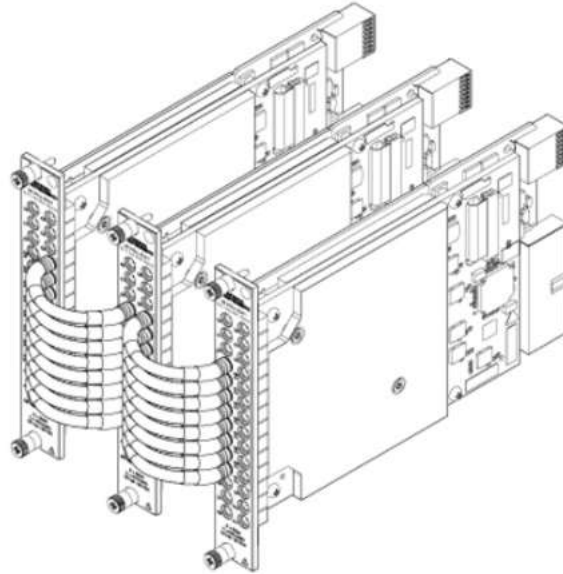
## Detailed View of PXIe-2541 RF Matrix Switch Module



## Key Features

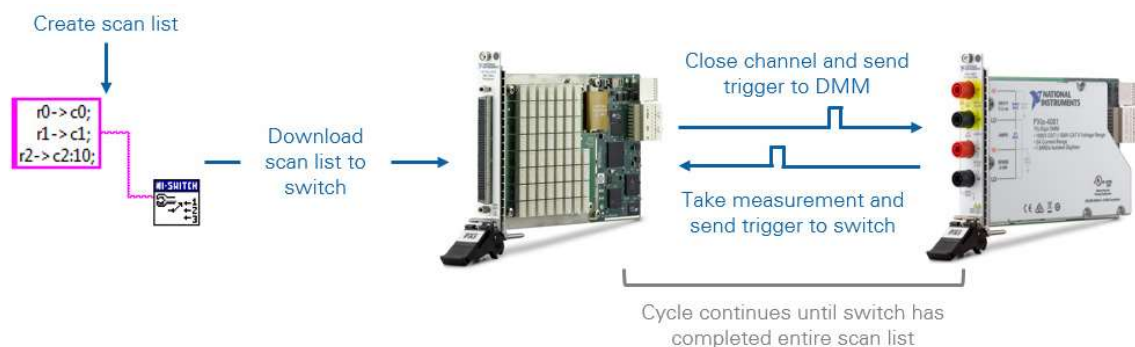
### Matrix Expansion

Matrix modules can also serve as building blocks for creating larger configurations that are well beyond the size of a single module. Column expansion is the process of connecting each row between two or more matrix modules, effectively doubling the number of columns within the expanded matrix. Some NI matrix modules offer cable or terminal block solutions for easy matrix expansion, such as the [PXIe-2541](#), making matrix expansion a simple task by simply connecting purchasable accessories.



### Synchronization and Integration

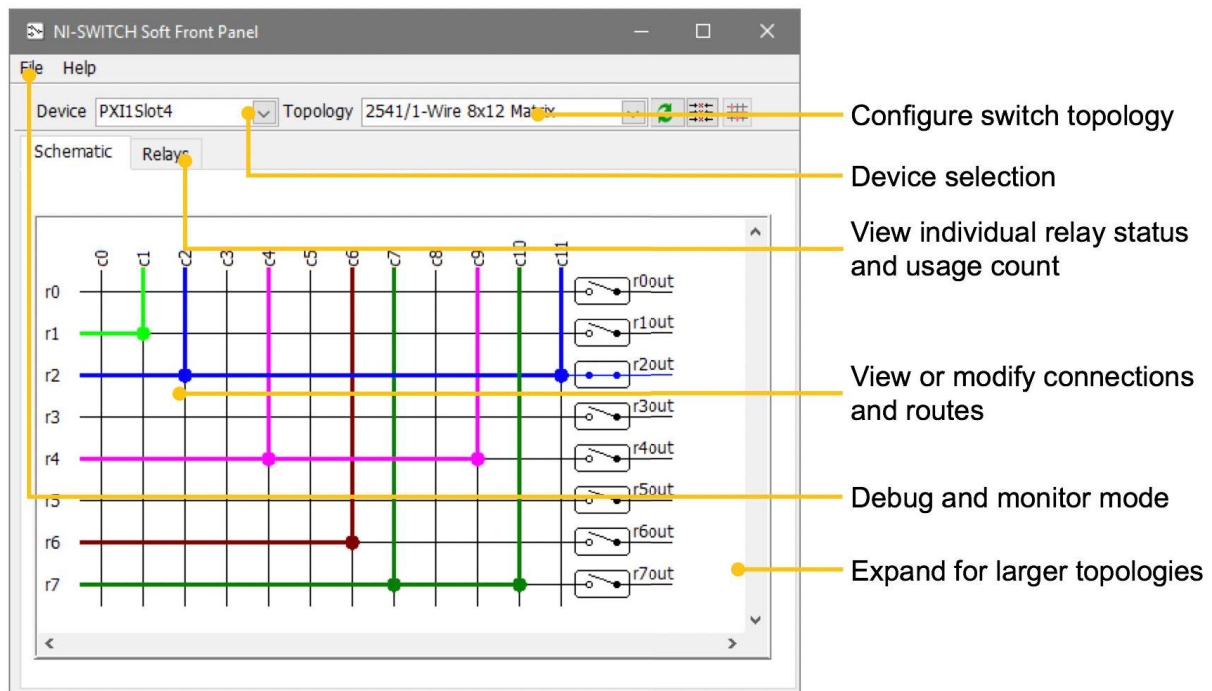
NI switches use the inherent timing and synchronization capabilities of the PXI platform to communicate with other instruments within the PXI chassis<sup>1</sup>. You can store a list of switch connections in memory onboard the switch module and then use the integrated hardware scanning and triggering engine to advance the switch sequence and rapidly communicate with any PXI instrument that can send and receive digital triggers, such as DMM or oscilloscope. This advanced switching method removes the software overhead and reduces the bus latency associated with traditional software-controlled switching operations for faster test execution with more repeatable timing.



<sup>1</sup>Triggering is available on most NI switches. To check if this feature is supported by a switch module, reference the "Trigger Characteristics" section of the product specification document.

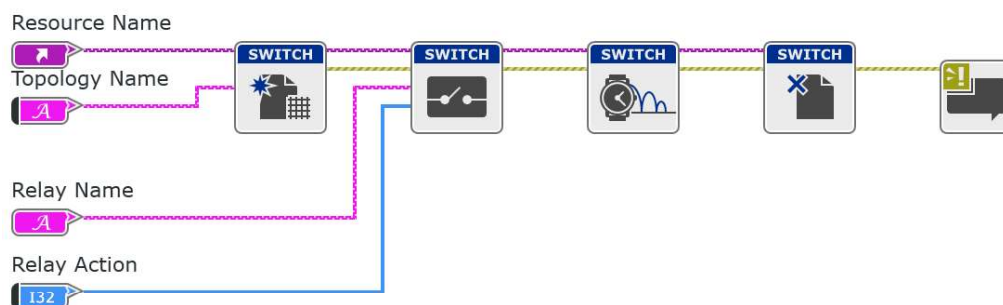
## NI-SWITCH Soft Front Panel

The NI-SWITCH driver software includes an interactive soft front panel for full out-of-the-box functionality. This interactive soft front panel allows you to configure the switch topology and change switch connections with a simple click. In addition, you can use the **Debug Driver Session** mode to monitor and debug the switch during automated measurement. For example, you can monitor which signal paths are active, which individual relays are open/closed, and how many times each relay has been used.



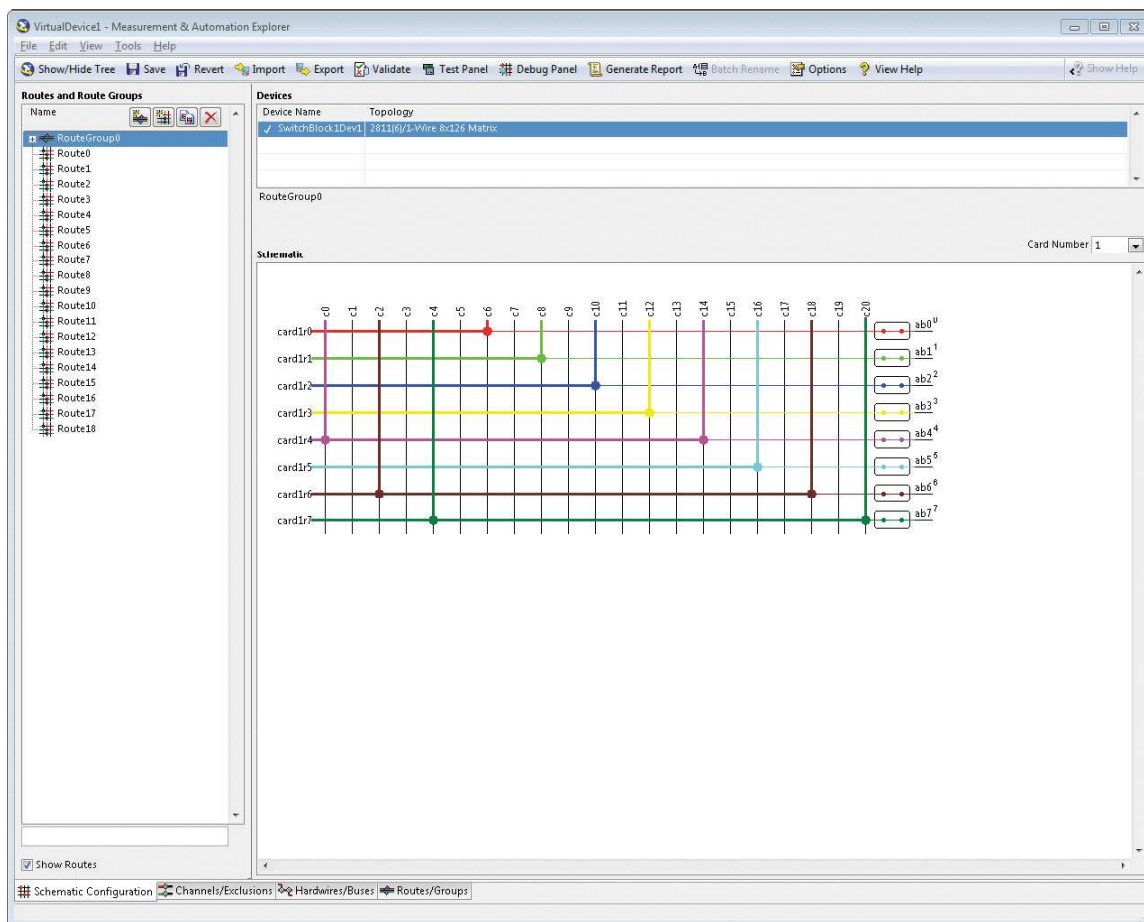
## NI-SWITCH Application Programming Interface (API)

In addition to the soft front panel, the [NI-SWITCH driver](#) includes a best-in-class API that works with a variety of development options such as LabVIEW, C, C#, and others. The driver also provides access to help files, documentation, and dozens of ready-to-run shipping examples you can use as a starting point for your application.



## Switch Executive Application Software

While the NI-SWITCH driver provides all the low-level functionality required to program switch actions, [Switch Executive](#) is application software for intelligent switch management and routing that accelerates development and simplifies maintenance of complex switch systems. The point-and-click graphical configuration and automatic routing capabilities make it easy to design your switch system. Using intuitive channel aliases and route names keeps your system documented for future modifications. Save time and increase test code reuse by integrating your system with TestStand, LabVIEW, LabWindows™ /CVI, and Measurement Studio.



- Graphically configure routes and route groups
- Develop reusable switching code and integrate it into NI TestStand or NI LabVIEW
- Automatically route signals between switch endpoints
- Scale switch configuration using Microsoft Excel
- Maintain switch configuration using route validation, reporting and debugging features