- 132x8 High Density Matrix in 6 U PXI Format
- Uses High Reliability Pickering Ruthenium Reed Relays For Maximum Performance
- Switch up to 100 VDC/70 VAC RMS, 0.5 A with 10 W Max Power
- Fast Operating Speed (typically 0.5 ms)
- VISA/IVI & Kernel Drivers Supplied for Windows
- Ease of Maintenance & Repair Through the Use of Leaded Relays
- Supported by *BIRST* ™ and *eBIRST* ™ Test Tools
- 3 Year Warranty

The 45-541 is an ultra high density 6 U PXI reed relay matrix in 132x8 format with 1 pole switching.

Typical applications include signal routing in functional ATE and data acquisition systems. The matrix is constructed using high reliability sputtered ruthenium reed relays with >10^9 operations to give maximum switching confidence with long life and stable contact resistance.

Larger matrices may be constructed by daisy chaining the common signals from multiple modules. However, for applications that require a very large matrix, Pickering's range of BRIC™ modules are the best solution.

Pickering Interfaces can construct custom cable assemblies for all of our PXI modules, please contact sales office for further assistance.

Relay Type

The 45-541 module is fitted with ruthenium sputtered reed relays, these offer very long life with good low level switching performance and excellent contact resistance stability. Spare reed relays are built onto the circuit board to allow easy maintenance with minimum downtime. All reed relays are manufactured by our Relay Division. For more information please vist: pickeringrelay.com

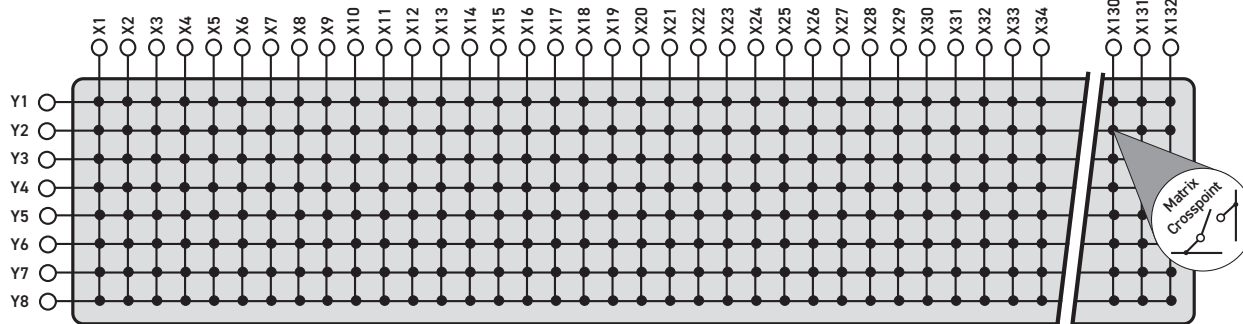### Built-In Relay Self-Test - *BIRST*

The *BIRST* facility provides a quick and simple way of finding relay failures. No test equipment is required, simply disconnect the UUT from the module's connector, launch the *BIRST* application and the tool will run a diagnostic test that will find all relays with faulty contacts.

For more information go to: pickeringtest.com/birst

Supported by *eBIRST*

In addition to *BIRST*, this module is supported by our *eBIRST* test tools. These tools simplify switching fault-finding by quickly testing the system and graphically identifying the faulty relay.

For more information go to: pickeringtest.com/ebirst

45-541 132x8 Matrix Switching Diagram

pickering

Switching Specification

Contact Type:	Ruthenium Reed
Maximum Switch Voltage:	100 VDC/70 VAC* RMS†
Maximum Power:†	10 W
Maximum Switch Current:	0.5 A
Maximum Carry Current:	0.5 A
Initial Path Resistance On (Single Module):	<750 mΩ
Off (Single Module):	>10^9 Ω
Operate Time:	0.5 ms typical
Maximum number of simultaneously operated relays:	100
Expected Life, low power load:	>10^9 operations
Expected Life, full power load:	>$5x10^6$ operations (20 V, 500 mA, 10 W)

* For full voltage rating, signal sources to be switched must be fully isolated from mains supply and safety earth.

† In phase signals only.

RF Specification - In a 50 Ω System

Bandwidth (-3dB insertion loss, 50 Ω):	10 MHz
Crosstalk:	Typically <-30 dB to 10 MHz
Isolation:	Typically >47 dB to 10 MHz

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
400 mA	1.1 A	50 mA	0

PXI & CompactPCI Compliance

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus and Star Trigger are not implemented.

Uses a 33 MHz 32-bit backplane interface.

Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2010, EMC Immunity EN61326-1:2013, Emissions EN55011:2009+A1:2010.

Mechanical Characteristics

Single slot 6 U PXI (CompactPCI) module.
3D models for all versions in a variety of popular file formats are available on request.

Chassis Compatibility

Pickering 6 U PXI modules will operate in any 6 U PXI chassis, in addition they will also operate (with 100 % compatibillity) in any 6U CompactPCI chassis.

Connectors

PXI bus via 32-bit P1/J1 backplane connector.
Signals via 3 front panel 50-pin male D-type connectors, for pin outs please refer to the operating manual.

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m

Storage and Transport Conditions

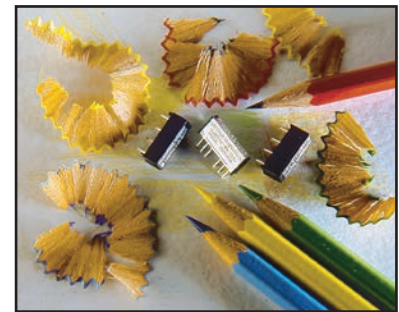|	
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

Pickering Electronics State-Of-The-Art Reed Relays

PXI Matrix modules are constructed using very high density Reed Relays manufactured by our Relay Division.

Sputtered Ruthenium Reed Relays offer maximum performance, they are hermetically sealed and offer a very stable, long life relay contact (typically 10^9 operations) with very fast operate time.

Alternative types such as electro-mechanical armature relays or non-instrumentation grade reed relays are lower cost but do not offer the consistent contact resistance, long life, fast switching speed and low level switching capability of a reed relay.

All of the reed relays used in our matrix switching modules are manufactured by our Relay Division, these offer maximum switching performance. For more information, please visit the reed relay web site: pickeringrelay.com

Product Order Codes

PXI 6 U Ultra High Density Matrix	
Single 132x8, 1-Pole	**45-541-001**

Product Customization

Pickering modules are designed and manufactured on our own flexible manufacturing lines, giving complete product control and enabling simple customization to meet very specific requirements.

Customization can include:

- Alternative relay types
- Mixture of relay types
- Alternative number of relays
- Different performance specifications

All customized products are given a unique part number, fully documented and may be ordered at any time in the future. Please contact your local sales office to discuss.

Support Products

eBIRST Switching System Test Tool

This product is supported by the *eBIRST* test tools which simplify the identification of failed relays, the required *eBIRST* tools are below. This product requires master slave testing and one set of each tool is required together with the master slave cable **93-970-301**. For more information go to: pickeringtest.com/ebirst

Product	Test Tool	Adaptor
45-541	**93-005-001**	**Not Required**

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's switching products, simplifying servicing and reducing down-time.

Product	Relay Kit
45-541	**91-100-009**

For further assistance, please contact your local Pickering sales office.

Mating Connectors & Cabling

For connection accessories for the 45-541 module please refer to the 90-005D 50-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

Connectivity Solutions

We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed to mechanically and electrically mate to our modules.

Connectors & Backshells

Multiway Cable Assemblies

RF Cable Assemblies

Connector Blocks

We also offer customized cabling and have a free online **Cable Design Tool** that can be used to create custom cable solutions for many applications. Visit: `pickeringtest.com/cdt` to start your design.

Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for a PXI or LXI based test system. Our modules are fully supported by both Virginia Panel and MacPanel.

Pickering Reed Relays

We are the only switch provider with in-house reed relay manufacturing capability via our Relay Division. These instrument grade reed relays feature **SoftCenter™** technology, ensuring long service life and repeatable contact performance.

To learn more, please go to: `pickeringrelay.com`

Programming

Pickering provide kernel, IVI and VISA (NI & Keysight) drivers which are compatible with all Microsoft supported versions of Windows and popular older versions. For a list of all supporting operating systems, please see: `pickeringtest.com/os`

The VISA driver is also compatible with Real-Time Operating Systems such as LabVIEW RT. For other RTOS support contact Pickering. These drivers may be used with a variety of programming environments and applications including:

- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries.
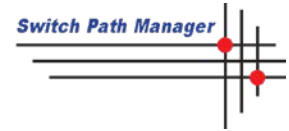
We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments, please go to: `pickeringtest.com/software`

Signal Routing Software

Our signal routing software, Switch Path Manager, automatically selects and energizes switch paths through Pickering switching systems. Signal routing is performed by simply defining test system endpoints to be connected together, greatly accelerating Test System software development.

To learn more, please go to: pickeringtest.com/spm

Diagnostic Relay Test Tools

eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.

To learn more, please go to: pickeringtest.com/ebirst

Three Year Warranty & Guaranteed Long-Term Support

All standard products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for a period of three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available for all our modules and systems with various levels to suit your requirements. Although we offer a 3-year warranty as standard, we also include guaranteed long-term support—with a history of supporting our products for typically 15-20 years. To learn more, please go to: pickeringtest.com/support

Available Product Resources

We have a large library of product resources including success stories, product and support videos, articles and white papers as well as application specific product brochures to assist when looking for the switching, simulation and connection solutions you need. We have also published handy reference books on Switching Technology and for the PXI and LXI standards.

To view, download or request any of our product resources, please visit: pickeringtest.com/resources