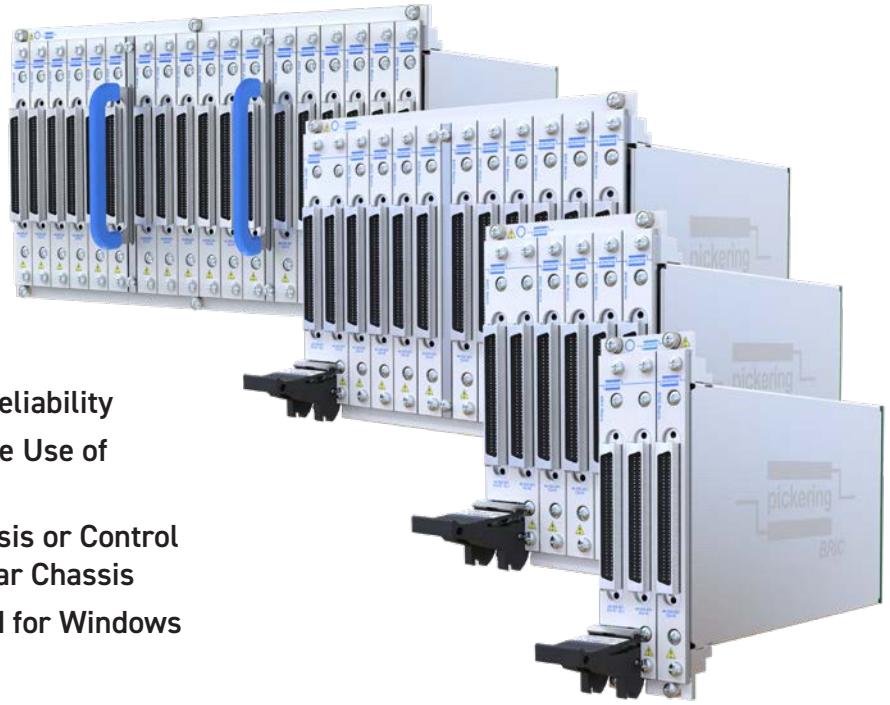
PXI BRIC™ Multi-Slot Matrix 40-562B

- Integrated PXI Matrix Module With Built-In High Performance Screened Analog Bus
- Available as 2, 4, 8 and 12-Slot 3U PXI Modules
- 1-Pole or 2-Pole Switching
- Switch up to 150Volts, 1A, 20W
- Automatic Isolation Relay Switches Maximizes Bandwidth and Matrix Reliability
- Simplified Maintenance Through The Use of Leaded Reed Relays
- Support in Any PXI Compliant Chassis or Control Through Ethernet in Our LXI Modular Chassis
- VISA, IVI & Kernel Drivers Supplied for Windows
- Built-In Diagnostics - *BIRST*™
- Supported by *eBIRST*™
- 3 Year Warranty



BRIC™ PXI Reed Relay Matrices

The 40-562B PXI BRIC is a high density matrix module available in 2, 4, 8 or 12-slot sizes to suit high performance PXI matrix requirements, it is constructed using instrumentation quality reed relays.

With its high level of switching density, the 40-562B matrix allows a complete functional ATE system to be housed in a single 3U PXI chassis, BRIC Modules allow the use of much lower cost 8 or 14-slot PXI chassis.

- **BRIC2** is a 2-slot PXI Module, this can hold up to 3 matrix daughtercards, up to 528 crosspoints.
- **BRIC4** is a 4-slot PXI Module, this can hold up to 6 matrix daughtercards, up to 1056 crosspoints.
- **BRIC8** is an 8-slot PXI Module, which can hold up to 12 matrix daughtercards, up to 2112 crosspoints.
- **BRIC12** is a 12-slot PXI Module, which can hold up to 18 matrix daughtercards, up to 3168 crosspoints.

High Reliability and Easy of Use

All models are constructed using the world's smallest and highest reliability ruthenium reed relays, offering >10^9 operations to give maximum switching confidence with long life and very stable contact resistance.

The 40-562B PXI BRICs are designed to minimize the cost and complexity of cable assemblies to the device under test and instrumentation. Analog busing is housed within the module using a high performance screened analog backplane. Pickering can construct custom cable assemblies for all of our PXI modules, please contact sales office for further assistance.

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 BRIC's connectors, launch the *BIRST* application and the tool will run a diagnostic test that will find all relays with faulty contacts.

Supported by *eBIRST*

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

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Pickering's BRIC Reed Relay Advantages

- Only uses the highest quality instrument grade reed relays – be wary of inferior copies.
- Simplified cabling and interconnection for large matrix solutions.
- Extensive accessory support.
- Built-in self-test to find defective and degrading relays with full path resistance characterisation.
- Simplified operation through automated isolation relay operation and single matrix presentation.
- Highest density reed relay solution in PXI.
- Designed for simple relay replacement and ease of field service.
- Extensive range of configurations and solutions.
- Fast operation through VISA driver with multiple relay operation in one command or have the convenience and simplicity of IVI drivers.

Pickering *SoftCenter*™ Instrumentation Grade Reed Relays

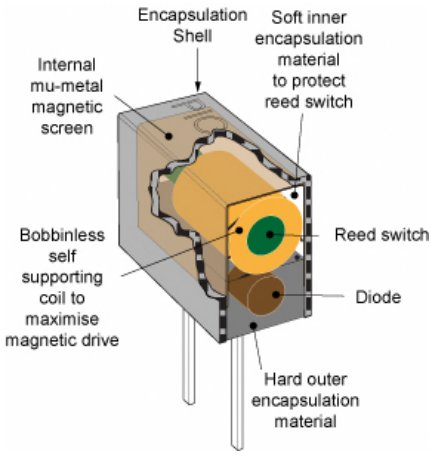
Reed relay switching solutions can only be as good as the relays they use, and we use only the highest quality instrumentation grade reed relays manufactured by our Relay Division.

These are the reed relays of choice for ATE manufacturers, providing the most reliable and consistent switching available in the industry.

Pickering has over 50 years of experience designing relays to the highest quality levels demanded by the ATE industry. We know what makes a good relay and how to construct a reliable relay.

All our reed relays use the ***SoftCenter*** construction, a construction that allows for the constant expansion and contraction of the reed relay coils and the glass body without fear of damage to wires or glass seals. The high performance of reed relays is due to their hermetic structure, and only the ***SoftCenter*** structure provides the means to reliably avoid seal or wire damage that ensures a long relay contact life.

So choose the right matrix solution, and use the best quality reed relays by choosing the Pickering Interfaces' reed relay BRICs.

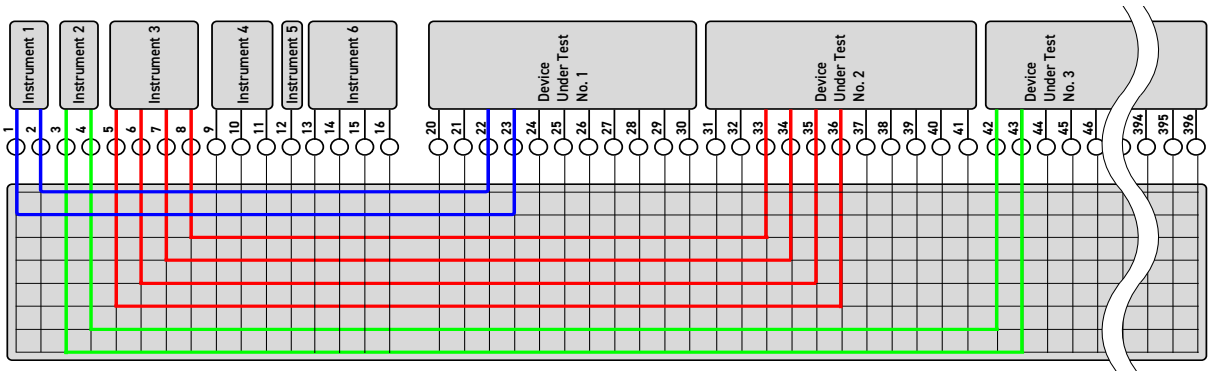


Pickering's Range of High Density BRIC Matrix Modules	
40-558 - 1-Pole Matrix - 0.5A Reed Relay	
BRIC2	Up to 252x6, 192x8, 126x12 or 96x16
BRIC4	Up to 504x6, 384x8, 252x12 or 192x16
BRIC8	Up to 1008x6, 768x8, 504x12 or 384x16
BRIC12	Up to 1512x6, 1152x8, 756x12 or 576x16
40-559 - 1-Pole Matrix - 1A Reed Relay	
BRIC2	256x4, 168x6, 128x8, 84x12 or 64x16
BRIC4	Up to 512x4, 336x6, 256x8, 168x12 or 128x16
BRIC8	Up to 1024x4, 672x6, 512x8, 336x12 or 256x16
40-560A - 1-Pole Matrix - 1A Reed Relay	
BRIC2	Up to 276x4, 138x8, 69x16
BRIC4	Up to 552x4, 276x8, 138x16
BRIC8	Up to 1104x4, 552x8, 276x16
40-561A - 1-Pole or 2-Pole Matrix - 0.5A Reed Relay	
BRIC2	Up to 90x8 or 45x16
BRIC4	Up to 180x8 or 90x16
BRIC8	Up to 360x8 or 180x16
40-562B - 1-Pole or 2-Pole Matrix - 1A Reed Relay	
BRIC2	Up to 132x4, 66x8, 33x16 or 15x32
BRIC4	Up to 264x4, 132x8, 66x16 or 30x32
BRIC8	Up to 528x4, 264x8, 132x16 or 60x32
BRIC12	Up to 792x4, 396x8, 198x16 or 90x32
40-563A - 1-Pole Matrix - 0.25A Solid State	
BRIC2	Up to 96x8
BRIC4	Up to 192x8
BRIC8	Up to 384x8

2 Amp BRIC Matrix Modules From Pickering
40-565B - 2-Pole Matrix - Electro-mechanical Relay
From 29x8 to 232x8
40-566A - 2-Pole Matrix - Electro-mechanical Relay
From 55x4 to 385x4
40-568 - 1-Pole Matrix - Electro-mechanical Relay
From 75x4 to 600x4
40-596 - 1-Pole Matrix - Electro-mechanical Relay
From 58x6 to 464x6
40-567 - 1-Pole Matrix - Electro-mechanical Relay
From 44x8 to 352x8
40-597 - 1-Pole Matrix - Electro-mechanical Relay
From 32x12 to 256x12
40-598 - 1-Pole Matrix - Electro-mechanical Relay
From 24x16 to 192x16

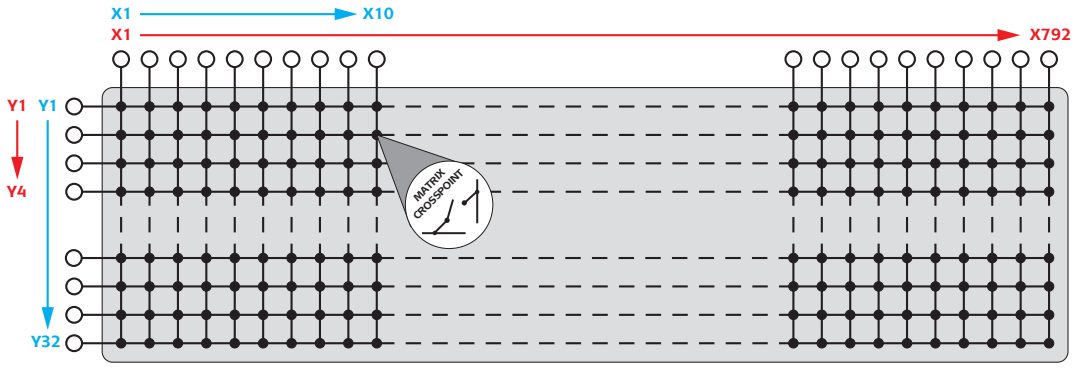
A BRIC Matrix allows the use of the much lower cost 8-slot 19 Inch PXI chassis, such as the Pickering 40-908 shown (leaving 5 PXI Instrument slots)

How to use the BRIC matrix to connect instrumentation to the UUT



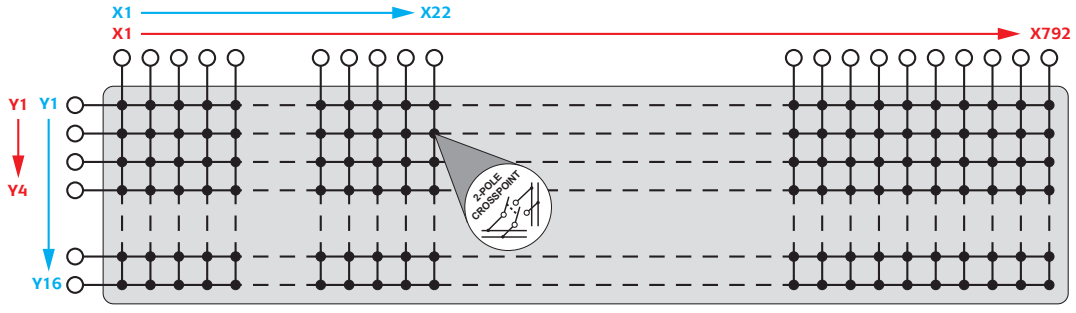
Single-Pole Matrices

Single-pole 40-562B matrices extend from 10x32 configurations to 792x4 configurations



Double-Pole Matrices

Double-pole 40-562B matrices extend from 22x16 configurations to 792x4 configurations



Relay Type

The 40-562B BRIC modules are 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 daughtercards to allow easy maintenance with minimum downtime.
All reed relays are manufactured by our our Relay Division:
pickeringrelay.com

General Switching Specification

Switch Type:	Ruthenium Reed
Max Switch Voltage:	150VDC/100VAC*
Max Power: Max Switch Current: Max Carry Current:	20W 1.0A 1.2A
Relay Resistance: Path Resistance X to X - on: Path Resistance - off:	100mΩ typical 1Ω typical (within same daughtercard) 2Ω typical (across different daughtercards) 10^9Ω
Typical Operate Time:	1ms
Typical Operate Time (-R version):	0.5ms
Expected Life (Operations) Low Power Load: Full Power Load:	 $>10^9$ $>5x10^6$
Bandwidth (-3dB):	8MHz
Crosstalk (typical):	-65dB at 10kHz -55dB at 100kHz -30dB at 1MHz -15dB at 10MHz
Isolation (typical):	100dB at 10kHz 75dB at 100kHz 50dB at 1MHz 15dB at 10MHz

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

Maximum Crosspoint Count

The 40-562B has a suggested maximum number of simultaneously operated crosspoints:

- 135 per BRIC2
- 267 per BRIC4
- 180 per BRIC8
- 473 per BRIC12

Please contact you local sales office for applications requiring higher closure counts.

Power Requirements

+3.3V	+5V	+12V	-12V
0.3A	6A Max (BRIC2/4/8) 12A Max (BRIC12)*	35mA	0

Note: +5V power consumption will vary by daughtercard loading.
* Both PXI connectors must be engaged for BRIC12 configurations.

Width and Dimensions

Two, four, eight or twelve-slot 3U PXI module (CompactPCI).
3D models for these modules in a variety of popular file formats are available on request.

Module Weight

	Empty BRIC	Fully Loaded BRIC
BRIC2	0.6Kg	1.2Kg
BRIC4	0.9Kg	2.1Kg
BRIC8	1.6Kg	4.0Kg
BRIC12	2.5Kg	6.1Kg
BRIC daughtercard	0.2Kg	

Connectors

BRIC2/4/8 - PXI bus via 32-bit P1/J1 backplane connector.
BRIC12 - PXI bus via two 32-bit P1/J1 backplane connectors (second PXI connector on BRIC12 is for power only).
Signals are carried via multiple front panel connectors (up to three per 2-slot module, up to six per 4-slot module, up to twelve per 8-slot module or up to eighteen per 12-slot module), the types are as follows:

- x4 Configurations: 96-pin male SCSI style micro D
- x8 Configurations: 68-pin male SCSI style micro D
- x16 Configurations: 68-pin male SCSI style micro D
- x32 Configurations: 68-pin male SCSI style micro D

Operating/Storage Conditions

Operating Conditions

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

Storage and Transport Conditions

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

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 33MHz 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.

40-562B BRIC Matrix Product Order Codes

BRIC2 - 2-Slot 1-Pole Matrix	40-562B-221-(config)
BRIC2 - 2-Slot 2-Pole Matrix	40-562B-222-(config)
BRIC4 - 4-Slot 1-Pole Matrix	40-562B-021-(config)
BRIC4 - 4-Slot 2-Pole Matrix	40-562B-022-(config)
BRIC8 - 8-Slot 1-Pole Matrix	40-562B-121-(config)
BRIC8 - 8-Slot 2-Pole Matrix	40-562B-122-(config)
BRIC12 - 12-Slot 1-Pole Matrix	40-562B-321-(config)
BRIC12 - 12-Slot 2-Pole Matrix	40-562B-322-(config)

When ordering 40-562B modules the matrix configuration **must** be specified, this includes the prefix code together with the configuration code, see the tables for specific details.
x4, x8 and x16 versions are available as 1-pole (-x21-) and 2-pole versions (-x22-), x32 is only available as 1-pole.

For the expansion of an existing BRIC matrix or replacement of faulty BRIC daughtercards please contact your local sales office.

40-562B Isolation Switching

Isolation switches are only available on the x4 and x8 configurations, x16 and x32 configurations do not have isolation switching.

x4 Configuration Options

	BRIC2 40-562B-221/222	BRIC4 40-562B-021/022	BRIC8 40-562B-121/122	BRIC12 40-562B-321/322
88x4 Matrix	-88x4	-88x4	-88x4	-88x4
132x4 Matrix	-132x4	-132x4	-132x4	-132x4
176x4 Matrix		-176x4	-176x4	-176x4
220x4 Matrix		-220x4	-220x4	-220x4
264x4 Matrix		-264x4	-264x4	-264x4
308x4 Matrix			-308x4	-308x4
352x4 Matrix			-352x4	-352x4
396x4 Matrix			-396x4	-396x4
440x4 Matrix			-440x4	-440x4
484x4 Matrix			-484x4	-484x4
528x4 Matrix			-528x4	-528x4
572x4 Matrix				-572x4
616x4 Matrix				-616x4
660x4 Matrix				-660x4
704x4 Matrix				-704x4
748x4 Matrix				-748x4
792x4 Matrix				-792x4
Further Options - Isolation Relays Removed				
This will improve path resistance by 150mΩ but will degrade isolation and bandwith.				-R

x8 Configuration Options

	BRIC2 40-562B-221/222	BRIC4 40-562B-021/022	BRIC8 40-562B-121/122	BRIC12 40-562B-321/322
44x8 Matrix	-44x8	-44x8	-44x8	-44x8
66x8 Matrix	-66x8	-66x8	-66x8	-66x8
88x8 Matrix		-88x8	-88x8	-88x8
110x8 Matrix		-110x8	-110x8	-110x8
132x8 Matrix		-132x8	-132x8	-132x8
154x8 Matrix			-154x8	-154x8
176x8 Matrix			-176x8	-176x8
198x8 Matrix			-198x8	-198x8
220x8 Matrix			-220x8	-220x8
242x8 Matrix			-242x8	-242x8
264x8 Matrix			-264x8	-264x8
286x8 Matrix				-286x8
308x8 Matrix				-308x8
330x8 Matrix				-330x8
352x8 Matrix				-352x8
374x8 Matrix				-374x8
396x8 Matrix				-396x8
Further Options - Isolation Relays Removed				
This will improve path resistance by 150mΩ but will degrade isolation and bandwith.				-R

x16 Configuration Options

	BRIC2 40-562B-221/222	BRIC4 40-562B-021/022	BRIC8 40-562B-121/122	BRIC12 40-562B-321/322
22x16 Matrix	-22x16	-22x16	-22x16	-22x16
33x16 Matrix	-33x16	-33x16	-33x16	-33x16
44x16 Matrix		-44x16	-44x16	-44x16
55x16 Matrix		-55x16	-55x16	-55x16
66x16 Matrix		-66x16	-66x16	-66x16
77x16 Matrix			-77x16	-77x16
88x16 Matrix			-88x16	-88x16
99x16 Matrix			-99x16	-99x16
110x16 Matrix			-110x16	-110x16
121x16 Matrix			-121x16	-121x16
132x16 Matrix			-132x16	-132x16
143x16 Matrix				-143x16
154x16 Matrix				-154x16
165x16 Matrix				-165x16
176x16 Matrix				-176x16
187x16 Matrix				-187x16
198x16 Matrix				-198x16

x32 Configuration Options (1-pole only)				
	BRIC2 40-562B-221	BRIC4 40-562B-021	BRIC8 40-562B-121	BRIC12 40-562B-321
10x32 Matrix	-10x32	-10x32	-10x32	-10x32
15x32 Matrix	-15x32	-15x32	-15x32	-15x32
20x32 Matrix		-20x32	-20x32	-20x32
25x32 Matrix		-25x32	-25x32	-25x32
30x32 Matrix		-30x32	-30x32	-30x32
35x32 Matrix			-35x32	-35x32
40x32 Matrix			-40x32	-40x32
45x32 Matrix			-45x32	-45x32
50x32 Matrix			-50x32	-50x32
55x32 Matrix			-55x32	-55x32
60x32 Matrix			-60x32	-60x32
65x32 Matrix				-65x32
70x32 Matrix				-70x32
75x32 Matrix				-75x32
80x32 Matrix				-80x32
85x32 Matrix				-85x32
90x32 Matrix				-90x32

Product Customization

Pickering PXI 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 reed relay types
- Mixture of reed 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 listed below. This product requires master slave testing and two sets of tools are required together with the master slave cable: **93-970-301**.

Config	Test Tool	Adaptor	Termination
x4	93-002-001	93-002-226	93-016-103
x8, x16, x32	93-006-001	93-006-222	93-015-103

Spare Relay Kits

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

Product	Relay Kit
1-Pole Versions	91-100-003
2-Pole Versions	91-100-005

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

Mating Connectors & Cabling

For connection accessories for the 40-562B series BRIC modules please refer to the 90-015D 68-pin micro-D or 90-016D 96-pin micro-D Connector Accessories data sheets where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

Chassis Compatibility

This PXI module must be used in a suitable chassis. It is compatible with the following chassis types:

- All chassis conforming to the 3U PXI and 3U Compact PCI (cPCI) specification
- Legacy and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis
- Pickering Interfaces LXI or LXI/USB Modular Chassis

Chassis Selection Guide

Standard PXI or hybrid PXIe Chassis from any Vendor:

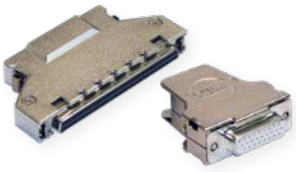
- Mix our 1000+ PXI switching & simulation modules with any vendor's PXI instrumentation
- Embedded or remote Windows PC control
- Real-time Operating System Support
- High data bandwidths, especially with PXI Express
- Integrated module timing and synchronization

Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- Independence from Windows operating system

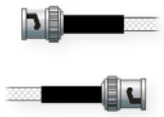
Connectivity Solutions

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.

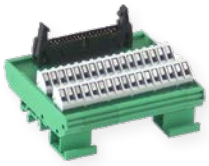


Connectors & Backshells

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, as well as complete product catalogs and product reference maps to assist when looking for the switching, simulation and cable and connector solutions you need. We have also published handy reference books on Switching Technology and for the PXI and LXI standards.