



- Integrated PXI Matrix Module With Built In High Performance Screened Analog Bus
- Available as 2, 4 and 8 Slot 3U PXI Modules
- Solid State 1-Pole Matrix With Sizes Between 64x8 and 384x8
- Low Thermal EMF
- Fast Switch Operation and Long Service Life
- Switch up to 40 Volts, 0.25A Continuous Current
- Automatic Analog Bus Isolation Switching Gives Maximum Bandwidth
- Supported by PXI or LXI Chassis
- VISA, IVI & Kernel Drivers Supplied for Windows
- Reduced Service and Maintenance Costs Through the Use of Built-In Diagnostics - **BIRST™**
- Supported by **eBIRST™**
- 3 Year Warranty

#### BRIC™ PXI Solid State Matrices

The 40-563A PXI BRIC is an ultra high density matrix module. It is available in 2, 4 or 8-slot sizes to suit high performance PXI Matrix requirements and are constructed using solid state switches.

With its high level of switching density, the 40-563A matrix modules allow 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 with a maximum size of 96x8.
- **BRIC4** is a 4-slot PXI Module, this can hold up to 6 matrix daughtercards with a maximum size of 192x8.
- **BRIC8** is an 8-slot PXI Module, which can hold up to 12 matrix daughtercards with a maximum size of 384x8.

#### High Reliability and Easy of Use

All models in the 40-563A range are constructed using solid state relays making them ideal for applications requiring fast operation and a long service life with frequent switch operations. Since the design is based on solid state switching, the matrix has no wear out mechanism.

The 40-563A 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 bus 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.

For more information go to: [pickeringtest.com/birst](http://pickeringtest.com/birst)

#### 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.

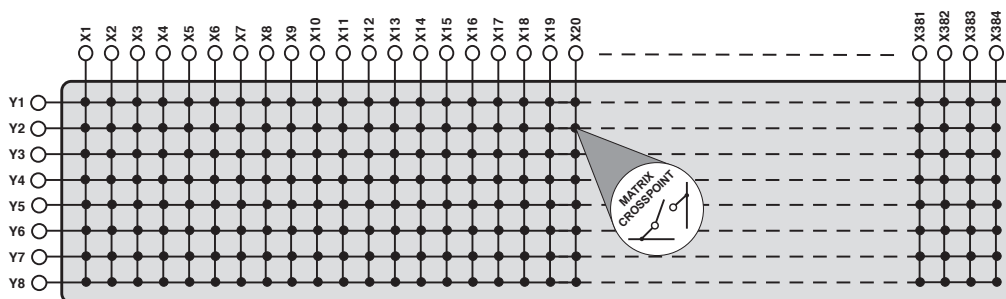
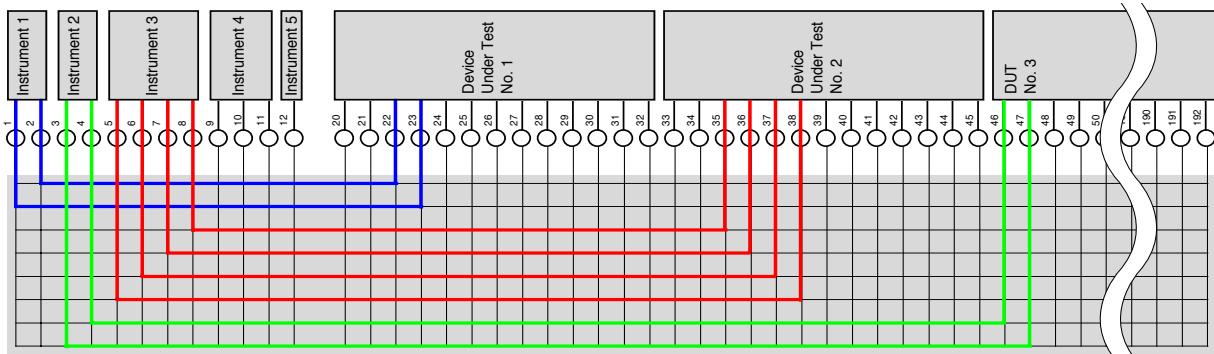
For more information go to: [pickeringtest.com/ebirst](http://pickeringtest.com/ebirst)

## Pickering Solid State BRIC Advantages

- Uses high speed, high reliability solid state relays.
- Long service life – solid state relays have no wear out mechanism.
- Low thermal EMF errors for accurate low voltage switching.
- 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 solid state switching solution in PXI.
- 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.

OTHER PXI BRIC MODULES FROM PICKERING	
<b>40-560A - 1-Pole Matrix with BIRST</b>	
<b>BRIC2</b>	Up to 276x4, 138x8 or 69x16
<b>BRIC4</b>	Up to 552x4, 276x8 or 138x16
<b>BRIC8</b>	Up to 1104x4, 552x8 or 276x16
<b>40-561A - 1-Pole, 1-Pole Screened or 2-Pole Matrix with BIRST</b>	
<b>BRIC2</b>	Up to 90x8 or 45x16
<b>BRIC4</b>	Up to 180x8 or 90x16
<b>BRIC8</b>	Up to 360x8 or 180x16
<b>40-562A - 1-Pole, 1-Pole Screened or 2-Pole Matrix with BIRST</b>	
<b>BRIC2</b>	Up to 132x4, 66x8, 33x16 or 15x32
<b>BRIC4</b>	Up to 264x4, 132x8, 66x16 or 30x32
<b>BRIC8</b>	Up to 528x4, 264x8, 132x16 or 60x32
<b>40-565A - 2-Pole, 2 Amp Matrix with BIRST</b>	
<b>BRIC4</b>	Up to 96x8
<b>BRIC8</b>	Up to 192x8
<b>40-566A - 2-Pole, 2 Amp Matrix with BIRST</b>	
<b>BRIC4</b>	Up to 165x4
<b>BRIC8</b>	Up to 385x4
<b>40-592 - Fault Insertion Breakout Matrix</b>	
<b>BRIC4</b>	Up to 124x8 with 2 or 3-pin breakout
<b>BRIC8</b>	Up to 248x8 with 2 or 3-pin breakout
<b>40-595 - Power Fault Insertion Breakout Matrix</b>	
<b>BRIC8</b>	Up to 30x8 with 3-pin breakout
<b>40-569 - ARINC 608 Resource Distributor/Bus Matrix</b>	
<b>BRIC4</b>	1 or 2 Resource Distributor, 1 to 4 Bus Matrix Cards
<b>BRIC8</b>	1 or 2 Resource Distributor, 1 to 6 Bus Matrix Cards

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



**Switching Diagram for the 40-563A Solid State Matrix**  
 Available With a Minimum Size of 64x8 and a Maximum Size of 384x8

## Relay Type

The 40-563A BRIC modules are fitted with solid state relays based on fully isolated MOSFET switches that exhibit a long service life under all conditions within its capacity ratings. The switches can withstand short term surges without damage.

## General Switching Specification

Switch Type:	Solid State Relay
Max Switch Voltage:	±40V*
Max Continuous Switch Current:	0.25A
Surge Current:	0.75A for 100ms
Relay Resistance:	800mΩ typical
Path Resistance X to X - on:	2.4Ω typical (within same daughter card) 4.8Ω typical (across different daughter cards)
Leakage Current (off state):	Typically <1nA at 40V, X to X.
Thermal Offset:	Typically <3μV (X to Y) Typically <5μV (X to X)
Programming Time:	<0.5ms
Switching Time:	<20μs, no bounce
Expected Life:	Unlimited at full load
Typical Bandwidth for 192x8 Matrix (40-563A-021-192x8):	8MHz
Isolation:	-48dB typ at 8MHz 50Ω
Crosstalk:	-27dB at 1MHz 50Ω

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

## Power Requirements

+3.3V	+5V	+12V	-12V
0	4A (typical 1A)	0	0

## Width and Dimensions

Two, four or eight 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
BRIC daughter card	0.2Kg	

## Connectors

PXI bus via 32-bit P1/J1 backplane connector.

Signals via multiple front panel 68-pin male micro-D connectors (3 per 2-slot module, 6 per 4-slot module or 12 per 8-slot module), 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:	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.

## 40-563A BRIC Solid State Matrix Product Order Codes

<b>BRIC2 - 2-Slot Solid State 1-Pole Matrix 0.25A/40V</b>	<b>40-563A-221-(config)</b>
<b>BRIC4 - 4-Slot Solid State 1-Pole Matrix 0.25A/40V</b>	<b>40-563A-021-(config)</b>
<b>BRIC8 - 8-Slot Solid State 1-Pole Matrix 0.25A/40V</b>	<b>40-563A-121-(config)</b>

When ordering 40-563A modules the matrix configuration **must** be specified, this includes the prefix code together with the configuration code, see the configuration table below for specific details. All versions are 1 pole with 8-way Y-bus.

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

### 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 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 listed below. This product requires master slave testing and two sets of tools are required together with the master slave cable:

93-970-301. For more information go to: [pickeringtest.com/ebirst](http://pickeringtest.com/ebirst)

Config	Test Tool	Adaptor	Termination
All Types	93-006-001	93-006-222	93-015-103

#### Mating Connectors & Cabling

For connection accessories for the 40-563A series BRIC modules please refer to the [90-015D](#) 68-pin micro-D Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

x8 Configuration Options			
	BRIC2 40-563A-221	BRIC4 40-563A-021	BRIC8 40-563A-121
64x8 Matrix	-64x8	-64x8	-64x8
96x8 Matrix	-96x8	-96x8	-96x8
128x8 Matrix		-128x8	-128x8
160x8 Matrix		-160x8	-160x8
192x8 Matrix		-192x8	-192x8
224x8 Matrix			-224x8
256x8 Matrix			-256x8
288x8 Matrix			-288x8
320x8 Matrix			-320x8
352x8 Matrix			-352x8
384x8 Matrix			-384x8

## 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

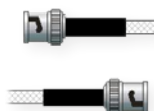
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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



Connectors & Backshells



Multiwire 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](http://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 sister company, Pickering Electronics. These instrument grade reed relays feature **SoftCenter®** technology, ensuring long service life and repeatable contact performance.

To learn more, please go to: [pickeringrelay.com](http://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](http://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](http://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](http://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](http://pickeringtest.com/ebirst)

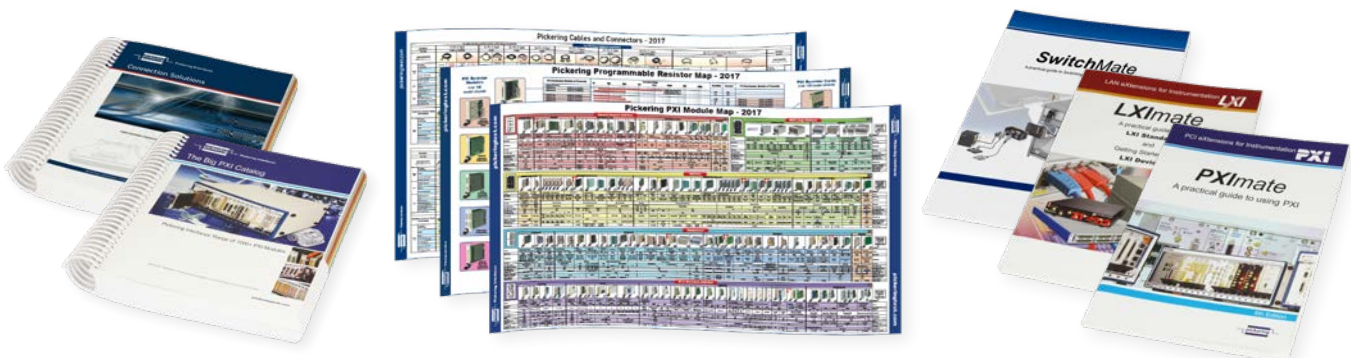


## Three Year Warranty & Guaranteed Long-Term Support

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](http://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.



To view, download or request any of our product resources, please visit: [pickeringtest.com/resources](http://pickeringtest.com/resources)