- **Very High Density 2A Matrix With Up To 768 Crosspoints Per 2-Slot BRIC, 1536 Crosspoints Per 4-Slot BRIC & 3072 Crosspoints Per 8-Slot BRIC (384 Crosspoints Per PXI Slot)**

- Integrated PXI Module With Built In High Performance Screened Analog Bus

- 2-Slot Configurations to 48x16 (1-Pole), 4-Slot Configurations to 96x16 (1-Pole) & 8-Slot Configurations to 192x16 (1-Pole)

- Switch up to 100VDC/70VAC, 2A, 60W

- Automatic Analog Bus Isolation Switching Maximizes Bandwidth and Matrix Reliability

- VISA, IVI & Kernel Drivers Supplied for Windows

- Supported by PXI or LXI Chassis

- Supported by *eBIRST ™*

- 3 Year Warranty

BRIC™ 2nd Generation PXI 2Amp Switch Matrix

The 40-598 PXI Matrix BRIC is a range of high density matrix modules able to switch up to 2A or 100VDC/70VAC. The 40-598 modules are available in 2, 4 or 8-slot sizes to suit most high performance PXI matrix requirements, they are constructed using high quality electro-mechanical relays for high switching confidence.

Typical applications include signal routing for Functional ATE systems. With its high level of switching density, the 40-596 PXI matrix allows a complete functional ATE system to be housed in a single 3U PXI chassis, BRIC Modules allow the use of a much lower cost 8-slot PXI chassis.

40-598-208 192x16 Matrix Switching Diagram (Fully Populated BRIC8)

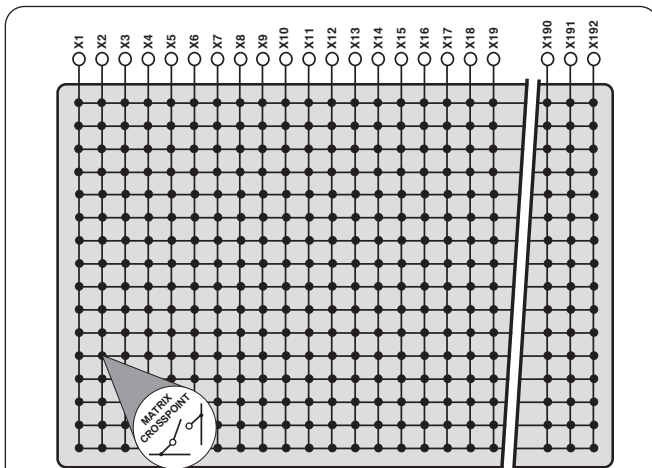The 40-598 supports 16 concurrent switch paths for X to X (see application diagram overleaf)

The 2 Amp Matrix BRIC is a higher power/voltage version of Pickering's established range of PXI Matrix BRIC modules. It features higher voltage, current and power handling capability than the ultra high density reed relay based BRICs. It is not as suited to switching low level signals, where Ruthenium Reed Relays are a better choice and have a very long lifetime of up to 1000 million operations. For superior low level switching please refer to our 40-560/561/562 range.

| Pickering's Range of 2A BRIC Matrix Modules				
Model No.	Poles	Y-Bus Size	Min. Matrix Size	Max. Matrix Size
40-568	1	4	75x4	600x4
40-596	1	6	58x6	464x6
40-567	1	8	44x8	352x8
40-597	1	12	32x12	256x12
40-598	1	16	24x16	192x16
40-566A	2	4	55x4	385x4
40-565A	2	8	24x8	192x8

High Reliability and Easy of Use

The 40-598 PXI BRIC is designed to minimise 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.
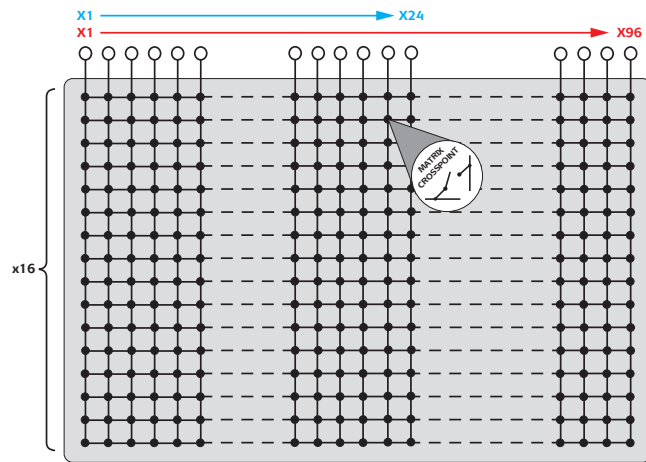
Supported by *eBIRST*

eBIRST switching system test tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
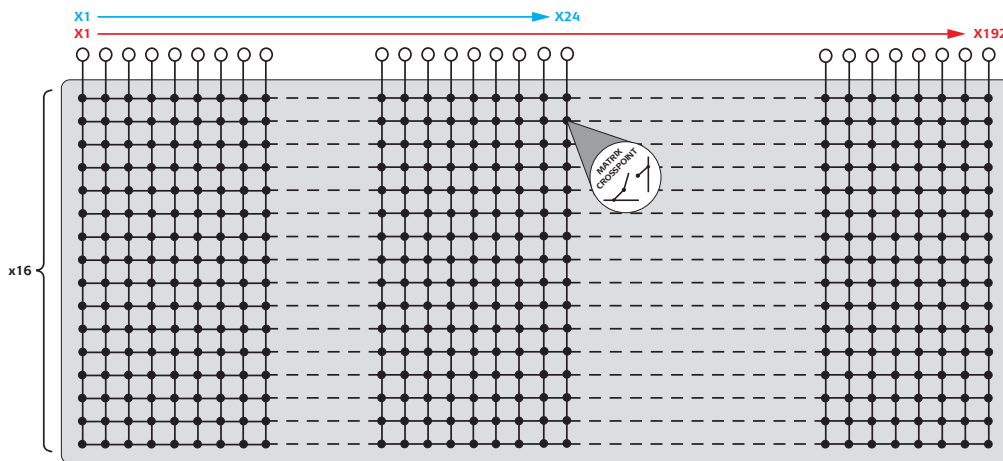
For more information go to: pickeringtest.com/ebirst

pickering
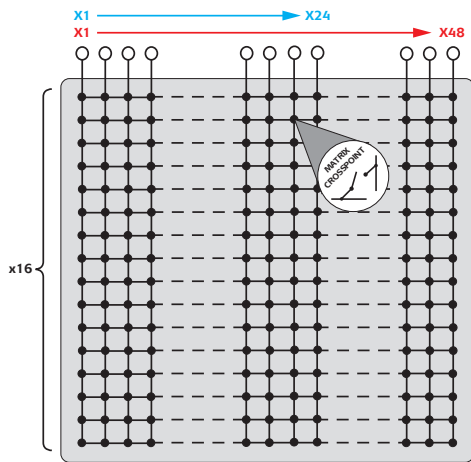
The 40-598 in BRIC2 Format is Available With Matrix Configurations of 24x16 and 48x16
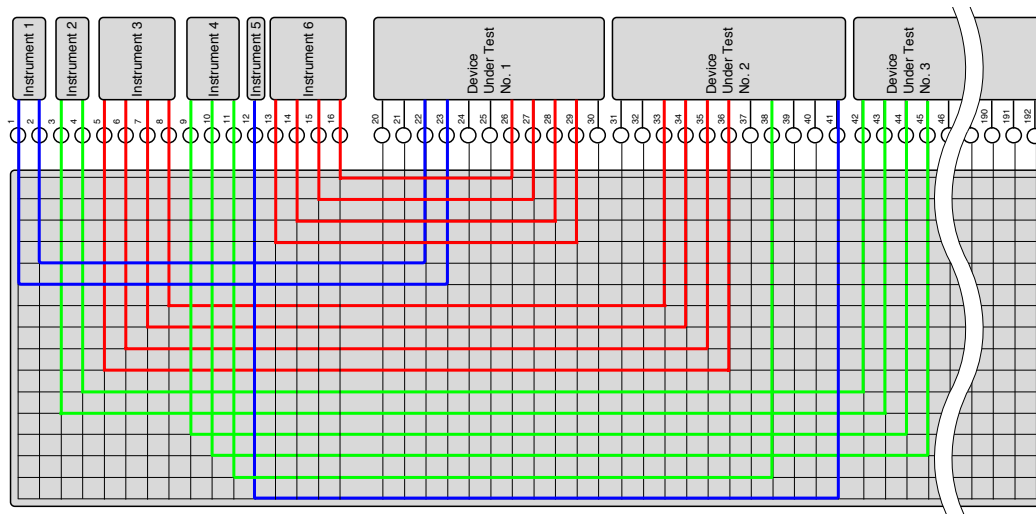

The 40-598 in BRIC4 Format is Available With Matrix Configurations Between 24x16 and 96x16

The 40-598 in BRIC8 Format is Available With Matrix Configurations Between 24x16 and 192x16

Example Application of the 40-598 1-Pole 2A BRIC Matrix

Schematic diagram showing a 192x16 BRIC Matrix being used to parallel test multiple DUTs. The BRIC Matrix allows tremendous test system flexibility.

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Relay Type

The 40-598 BRIC modules are fitted with electro-mechanical relays (Palladium-Ruthenium, Gold Covered Bifurcated).

Switching Specification

Relay Type:	2A Electro-mechanical Relay
Contact Type:	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage:	100VDC/70VAC*
Max Power: Max Switch Current: Max Continuous Carry Current:	62.5VA, 60W 2A 2A
Max Pulsed Carry Current Example (for a single switch path):	6A for 100ms (up to 10% duty cycle)
Initial On Path Resistance: Off Path Resistance: Thermal Offset:	$<1\Omega$ $>10^9\Omega$ $10\mu V$ (X to X connection)
Max Number of Simultaneously Closed Crosspoints:	BRIC2 & BRIC4: 65 BRIC8: 130
Switch Operate Time:	6.5ms
Expected Life (operations) Very low power signal load: Low power load (2W): Medium power load (30W): Full power load (60W):	$>1\times10^8$ $>1.5\times10^7$ (0.1A 20VDC) $>5\times10^6$ (1A 30VDC) $>1\times10^5$ (2A 30VDC)

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

Typical Bandwidth and Crosstalk

Bandwidth (-3dB):	>5MHz	
Crosstalk (typical):	10kHz: 100kHz: 1MHz: 10MHz:	-65dB -50dB -35dB -20dB
Isolation:	10kHz: 100kHz: 1MHz: 10MHz:	100dB 85dB 65dB 40dB

Matrix Functionality

Permits any X to X with multiple connections and 16 concurrent Y paths. Direct Y connections are not provided at the user connector but can be accessed by reassignment of 16 off X connections to provide Y connections. The driver prevents the connection of Y axis connections together (e.g. Y1 to Y4).

Power Requirements - BRIC2 & BRIC4

+3.3V	+5V	+12V	-12V
50mA	1.5A	35mA	0

Power Requirements - BRIC8

+3.3V	+5V	+12V	-12V
115mA	2.2A	35mA	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	1.3Kg
BRIC4	0.9Kg	2.2Kg
BRIC8	1.6Kg	4.2Kg
BRIC daughter card	325g	

Connectors

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

Signals via multiple front panel 25-pin male D-type connectors (1 or 2 per 2 slot module, up to 4 per 4-slot module or up to 8 per 8-slot module), for pin outs please refer to the operating manual.

Special Versions

BRIC modules can be built in special versions, for example where an exact matrix size is required then partly populated daughtercards may be ordered.

Upgrading With Daughtercards

BRIC modules can be upgraded to larger matrix sizes using daughter-cards, please consult your local sales office for further information.

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.

Product Order Codes

BRIC2 - 2-Slot High Density Matrix	
2 Amp 1-Pole 24x16 Matrix	40-598-201
2 Amp 1-Pole 48x16 Matrix	40-598-202

BRIC4 - 4-Slot High Density Matrix	
2 Amp 1-Pole 24x16 Matrix	40-598-001
2 Amp 1-Pole 48x16 Matrix	40-598-002
2 Amp 1-Pole 72x16 Matrix	40-598-003
2 Amp 1-Pole 96x16 Matrix	40-598-004

BRIC8 - 8-Slot High Density Matrix	
2 Amp 1-Pole 24x16 Matrix	40-598-101
2 Amp 1-Pole 48x16 Matrix	40-598-102
2 Amp 1-Pole 72x16 Matrix	40-598-103
2 Amp 1-Pole 96x16 Matrix	40-598-104
2 Amp 1-Pole 120x16 Matrix	40-598-105
2 Amp 1-Pole 144x16 Matrix	40-598-106
2 Amp 1-Pole 168x16 Matrix	40-598-107
2 Amp 1-Pole 192x16 Matrix	40-598-108

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 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

Product	Test Tool	Adaptor
40-598	93-005-001	93-005-414

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
40-598	91-100-001

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

Mating Connectors & Cabling

For connection accessories for the 40-598 modules please refer to the 90-008D 25-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.

**All Pickering's 1-Pole 2A BRICs
are Available in 2, 4 or 8-Slot Formats**

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
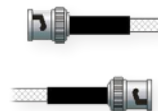- Independence from Windows operating system

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.
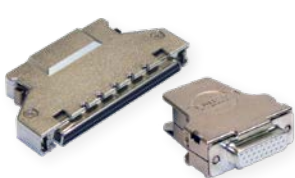
Connectors & Backshells   **Multiway Cable Assemblies**   **RF Cable Assemblies**   **Connector Blocks**

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 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

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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
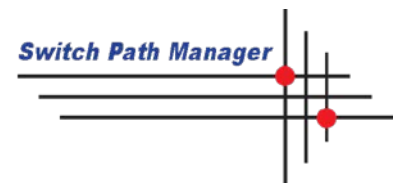
Diagnostic Relay Test Tools

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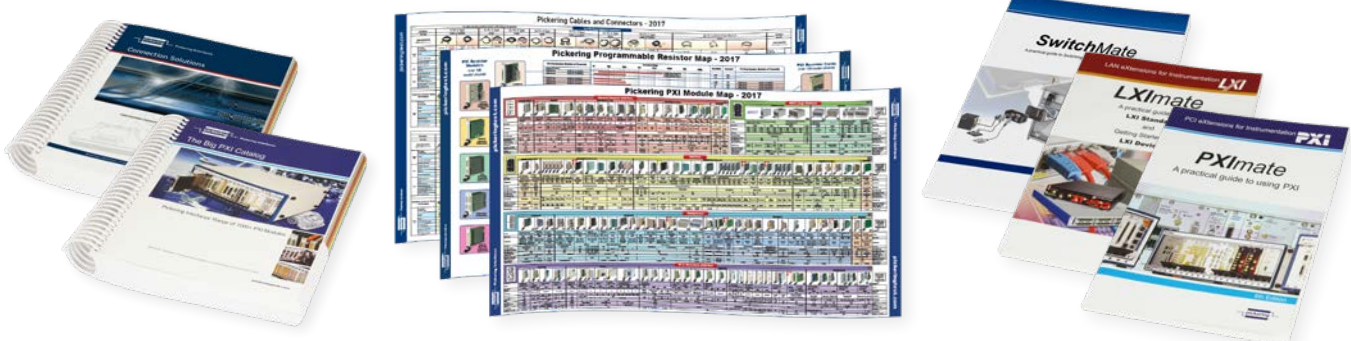
To view, download or request any of our product resources, please visit: pickeringtest.com/resources

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