

- Available as PXI or PXIe Modules
- High Density Single-slot 3U PXI 2 A Matrix With 128 Crosspoints
- 32x4 Single Pole Configuration
- Maximum Current 2 A Hot or Cold Switching
- Switch up to 300 VDC/220 VAC and up to 60 W Max Power
- Uses Gold-Plated Contact Electro-mechanical Relays
- Drivers Supplied for Windows & Linux, Plus Support for Real-time Systems
- PXI Version Supported by PXI or LXI Chassis
- Supported by **BIRST™** and **eBIRST™** Test Tools
- 3 Year Warranty



The 40-528B (PXI) and 42-528B (PXIe) are 128 crosspoint matrices with single pole switching and a configuration of 32x4 using electro-mechanical relays with 2 A current handling.

The module is designed for switching medium voltage and power signals, typical applications include signal routing in ATE and data acquisition systems. The user signal connections are via a 50-pin D-type connector that is fully supported by our wide range of cable and connector accessories.

### 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 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

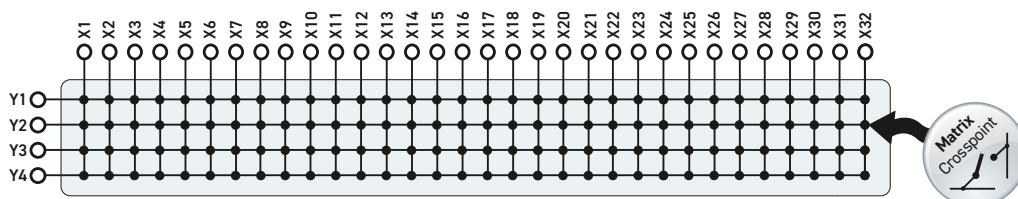
These module is also supported by our *eBIRST* test tools. These tools simplify fault-finding by quickly testing the system and graphically identifying the faulty relay.

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

Pickering's Range of 128 Crosspoint 2 A PXI/PXIe Matrix Modules			
Matrix Size	Poles	Max Current	Model No.
16x8	2	2 A	40-518A-002
32x4			40-519B-002
64x2	1	2 A	4x-527A-001
32x4	1	2 A	4x-528B-001
16x8	1	2 A	40-529B-001

### Updated Product Information

This product has been introduced as an update to the 40-528A, the changes are to provide PXIe options and an updated bus interface which will require the use of an updated software driver. Also, the module has a reduced path resistance of <400 mΩ compared to 500 mΩ for the previous version. Aside from the path resistance the electrical performance and the pinout of the 40-528A and 40-528B are identical.



2 A 1-Pole 32x4 Matrix  
(Part No. 4x-528B-001)

## Switching Specification

Switch Type:	Electro-mechanical
Contact Type:	Palladium-Ruthenium, Gold plated, bifurcated
Max Switch Voltage:	300 VDC/220 VAC*
Max Power:	62.5 VA, 60 W from 30 V to 220 VDC, 30 W to 300 VDC (resistive load)
Max Switch Current:	2 A
Max Continuous Carry Current:	2 A
Max Pulsed Carry Current	
Example (for a single switch path):	6 A for 100 ms (up to 10% duty cycle)
Initial On Path Resistance:	<400 mΩ
Off Path Resistance:	>10 <sup>9</sup> Ω
Thermal Offset:	<5 μV
Max Number of Simultaneously Closed Crosspoints:	100
Operate Time:	<3 ms
Expected Life (Operations)	
Very low power load:	>1×10 <sup>8</sup>
Low power load:	>1.5×10 <sup>7</sup> (0.1 A, 20 VDC)
Medium power load:	>5×10 <sup>6</sup> (1 A, 30 VDC)
Full power load:	>1×10 <sup>5</sup> (2 A, 30 VDC) >1×10 <sup>5</sup> (0.1 A, 300 VDC)

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

## RF Specification

Bandwidth (-3 dB):	12 MHz (typical)
Crosstalk (typical):	10 kHz: -65 dB
	100 kHz: -55 dB
	1 MHz: -35 dB
	10 MHz: -20 dB
Isolation (typical):	10 kHz: 60 dB
	100 kHz: 60 dB
	1 MHz: 40 dB
	10 MHz: 20 dB

## Power Requirements - 40-528B

+3.3 V	+5 V	+12 V	-12 V
130 mA (typical)	500 mA (typical) 1.3 A (max)	70 mA (typical)	0

## Power Requirements - 42-528B

+3.3 V	+12 V
390 mA (typical)	470 mA (typical)

## Mechanical Characteristics

40-528B - Single slot 3U PXI (CompactPCI card).

42-528B - Single slot 3U PXIe, compatible with PXIe hybrid slot.

Module weight: 400 g.

3D models for all versions in a variety of popular file formats are available on request.

## Connectors

40-528B - PXI bus via 32-bit P1/J1 backplane connector.

42-528B - PXIe bus via XJ3 and XJ4 backplane connectors.

Signal via front panel 50-pin male D-type connector, for pin outs please refer to the operating manual.

## PXI & CompactPCI Compliance - 40-528B

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus & Star Trigger are not implemented. Uses a 33 MHz 32-bit backplane interface.

## PXIe Compliance - 42-528B

The module is compliant with the PXIe Specification 1.0. Local Bus, Trigger Bus & Star Trigger are not implemented.

## 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

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PXI 32x4 Matrix Module, 1-pole (2 A, 60 W)	40-528B-001
PXle 32x4 Matrix Module, 1-pole (2 A, 60 W)	42-528B-001

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## 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.

## Operating/Storage Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m



42-528B Matrix Module  
in PXle Format

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

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Product	Test Tool	Adaptor	Termination
4x-528B	93-005-001	Not Required	93-005-101

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### Spare Relay Kits

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

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Product	Relay Kit
4x-528B	91-100-001

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

### Mating Connectors & Cabling

For connection accessories for the 4x-528B 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 website.



Pickering can supply mating 50-pin connectors and cable assemblies to enable easy integration of the 4x-528B matrix module

## Chassis Compatibility

The PXI versions of this module are 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

The PXIe versions of this module are compatible with the following chassis types:

- All chassis conforming to the 3U PXIe specification
- PXIe and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis

## Chassis Selection Guide

### PXI and PXIe (with PXIe and/or Hybrid slots) Chassis from any Vendor:

- Mix our 1000+ PXI/PXIe switching & simulation modules with any vendor's PXI/PXIe 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 PXI Switching & Simulation Modules:

- Choose from 1000+ Pickering PXI 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

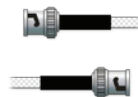
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed to mechanically and electrically mate to our modules. These accessories are detailed in Connector Accessories data sheets, where a complete list and documentation can be found for each accessory.



Connectors & Backshells



Multi-way Cable Assemblies



RF Cable Assemblies



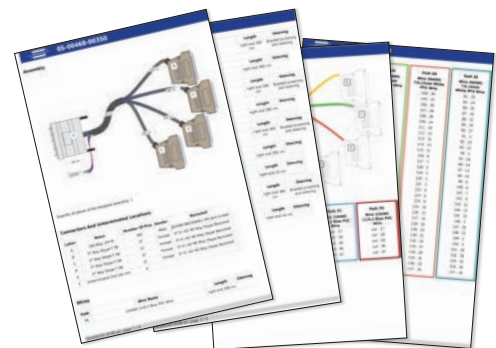
Breakouts



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.

- Fully supported on modern browsers and tablet operating systems.
- Built-in tutorials and videos allow you to get quickly up to speed.
- Store cable assemblies in the Cloud and develop over time.
- Each cable design has a downloadable PDF documentation file detailing all specifications



Start designing your custom cabling, go to [pickeringtest.com/cdt](http://pickeringtest.com/cdt)

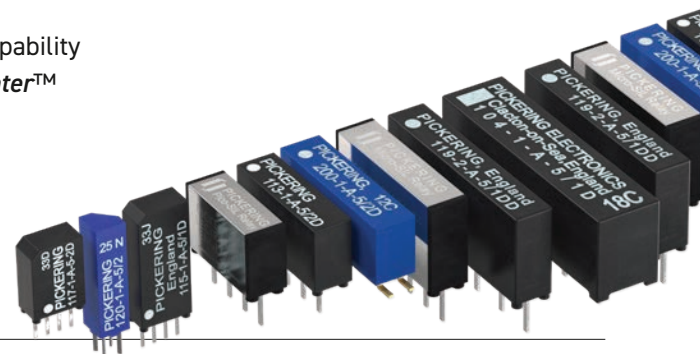
## Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for PXI/LXI based test systems. Our modules are fully supported by 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 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 more information go to [pickeringtest.com/os](http://pickeringtest.com/os)

The VISA driver support is provided for LabVIEW Real Time Operating Systems (Pharlap and Linux-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++)
- **Programming Languages C, C++, C#, Python**
- **Keysight VEE and OpenTAP**
- **Mathworks MATLAB, Simulink**
- **Marvin ATEasy**
- **MTQ Testsolutions Tecap Test & Measurement Suite**

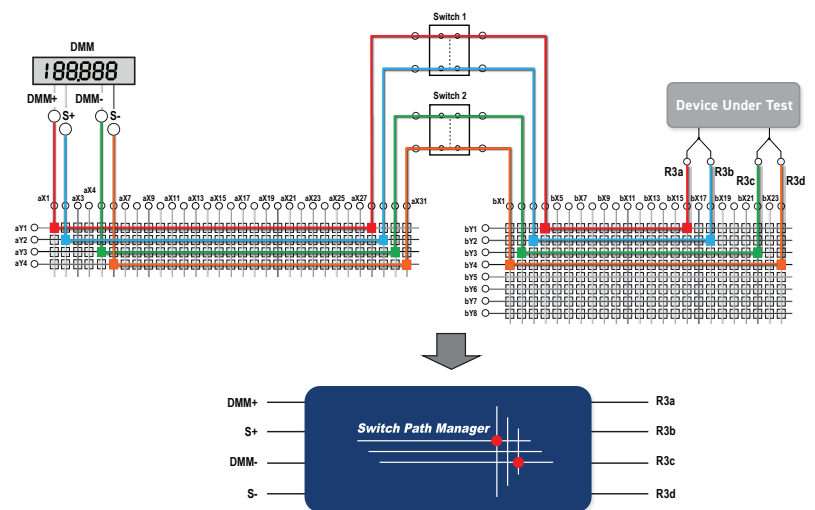
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

To learn more about software drivers and development environments 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 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 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 three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available with various levels for 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 go to [pickeringtest.com/support](http://pickeringtest.com/support)

## Available Product Resources

We have a library of resources including success stories, product and support videos, articles and white papers as well as application-specific brochures to assist you. We have also published reference books on switching technology and the PXI and LXI standards.

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

