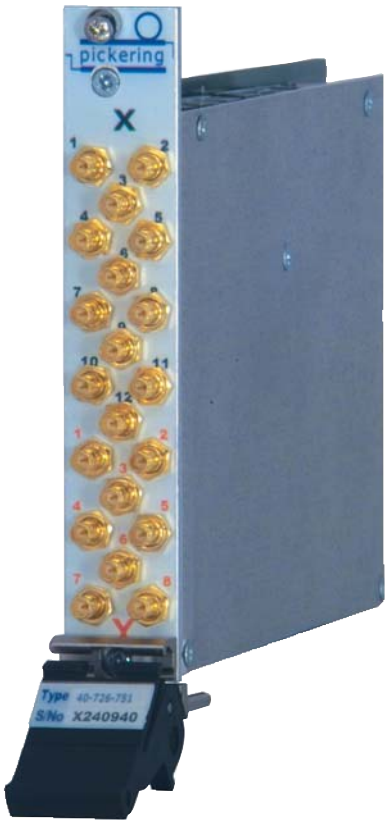
40-726A
12x8 RF Coaxial Matrix

- 12x8 RF Coaxial Matrix
- Up to 300MHz Bandwidth
- 50Ω and 75Ω Versions Available
- Easy To Use Loop Thru Options, Enabling Simple Expansion Via Built-In Cabling With No Hidden Expense
- High Density SMB Coaxial Connectors
- 75Ω Version Suitable for Telecoms and High Quality Video Switching
- VISA, IVI & Kernel Drivers Supplied for Windows XP/Vista/7/8
- Supported by PXI or LXI Chassis
- 3 Year Warranty



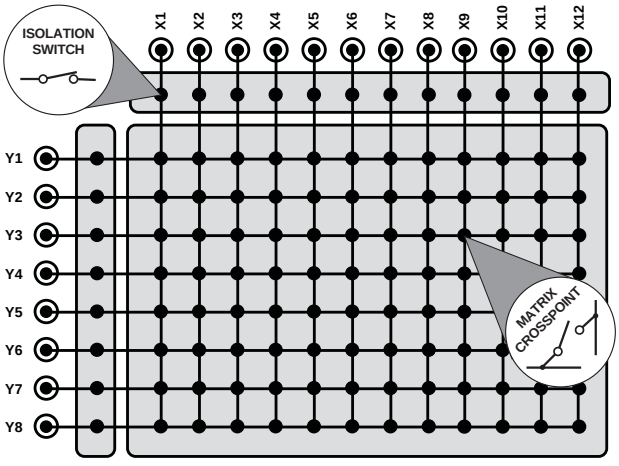
The 40-726A is a 12x8 RF Matrix Module suitable for switching frequencies up to 300MHz. The 40-726A is available in either 50Ω or 75Ω versions with a choice of coaxial connectors. The module is designed to provide a simple and scalable bidirectional matrix to RF frequencies. It is intended for the easy construction of high performance bidirectional matrix switching systems.

Isolation Switches are located on all coaxial connectors (refer to drawing), these disconnect the matrix from the external test fixture. This maximises isolation and RF performance.

Matrix Operation

The 40-726A is a true 12x8 high density matrix, any combination of crosspoints may be selected. Only the signal is switched, all grounds are common.

This module is based on the same construction as the popular 40-725 RF matrix module, but has increased capacity and optional built in loop thru on the Y axis to allowing easy expansion with a minimum loss of bandwidth.



12x8 Coaxial Matrix Schematic Diagram

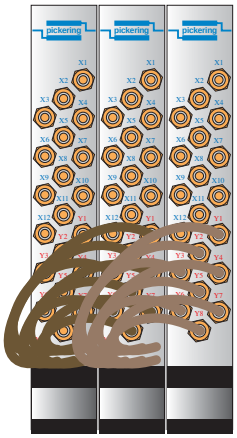
Other RF Matrix Modules in Pickering's PXI Range:

- **40-725** - 8x9 500MHz, 50Ω/75Ω
- **40-727** - 16x4 300MHz, 50Ω/75Ω - Optional Y Loop-Thru
- **40-728** - 16x2 300MHz, 50Ω/75Ω - Optional Y Loop-Thru
- **40-729** - 8x4 300MHz, 50Ω/75Ω - Optional Y Loop-Thru
- **40-750** - 8x2 1.5GHz, 50Ω/75Ω - Y Loop-Thru
- **40-872** - single/dual 2x2 3GHz, 50Ω
- **40-832** - single/dual 2x2 3GHz, 75Ω
- **45-720A** - 6U, 16x16 250MHz, 50Ω/75Ω - Y Loop-Thru

Option For Loop Thru on Y Axis

The easy to use loop thru option allows 40-726A modules to be cascaded to form larger matrices whilst minimizing impact on RF performance, for example 8 modules can be used to construct a 96x8 matrix with bandwidth preserved at over 200MHz.

The Loop Thru Cables are already built into the loop thru version, they pass thru a slot in front panel and are simply connected to the next matrix module in the chain.



Schematic Showing Construction of a 36x8 RF Matrix (Loop-Thru cables interconnect each 12 x 8 Matrix module)

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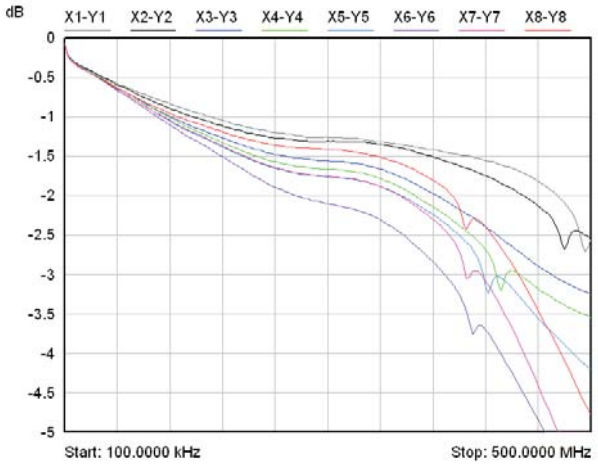
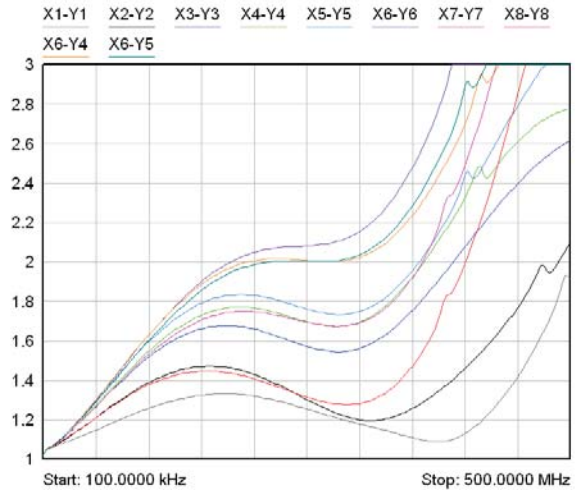
RF Performance Plots for 40-726A RF Matrix Module

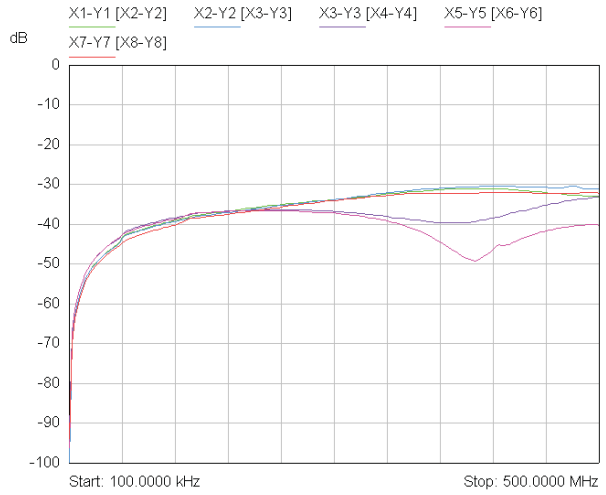
Typical curves are shown for matrix rows/columns with 1 crosspoint set. For optimum insertion loss and VSWR (reflection) performance ensure only one crosspoint is set in any one row/column. **Multiple crosspoints can be set on any one row or column but this will seriously degrade RF performance.** The performance is also dependent upon the area of the matrix where the crosspoint is set. Best performance is obtained at the corners (for example a X1-Y1 path), worse performance is obtained in the center (a X6-Y4 path). This is outlined in the Insertion Loss and VSWR plots below which also include the performance of a typical signal path between X3 and Y3. For more information on how performance is distributed throughout the matrix, please refer to the User Manual



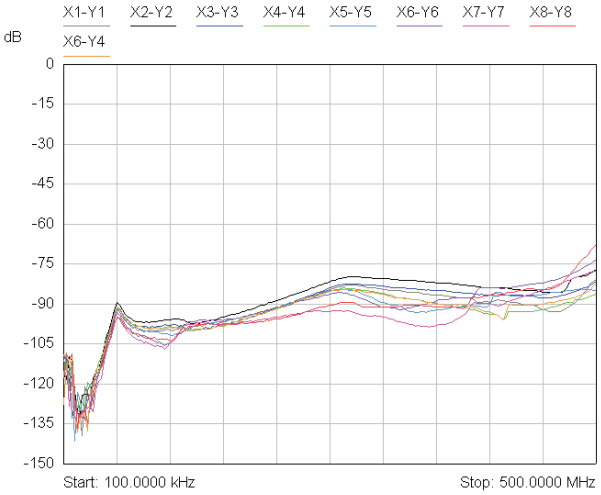
40-726A-511-L (50Ω Version) Insertion Loss Plot to 500MHz



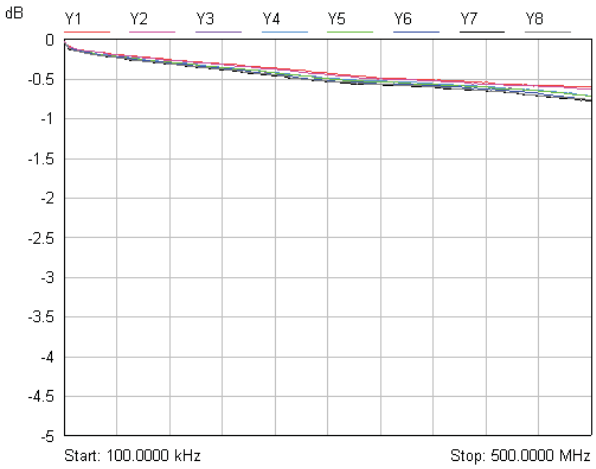
40-726A-511-L (50Ω Version) VSWR Plot to 500MHz



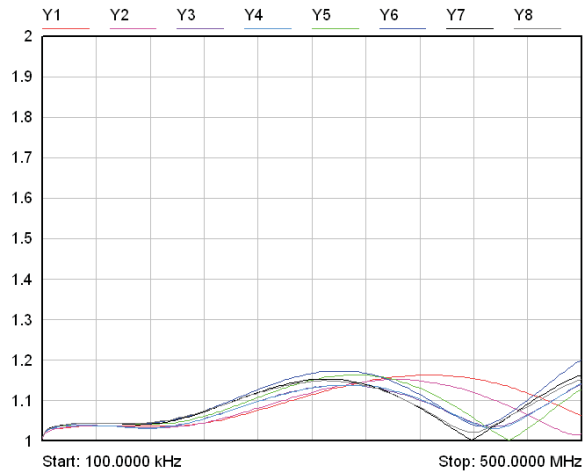
40-726A-511-L (50Ω Version) Crosstalk Plot to 500MHz



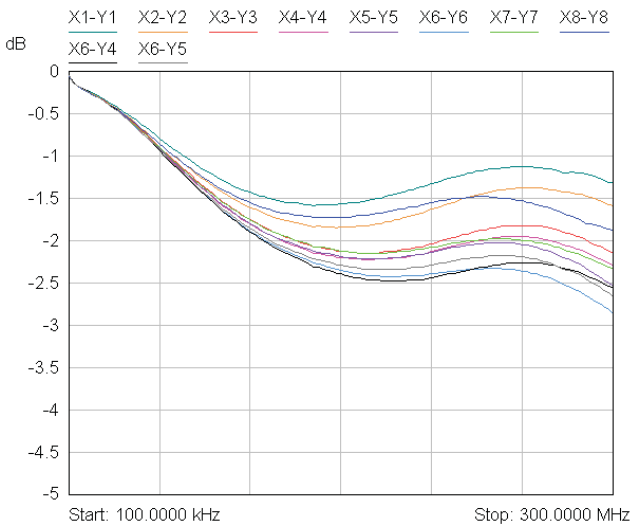
40-726A-511-L (50Ω Version) Isolation Plot to 500MHz



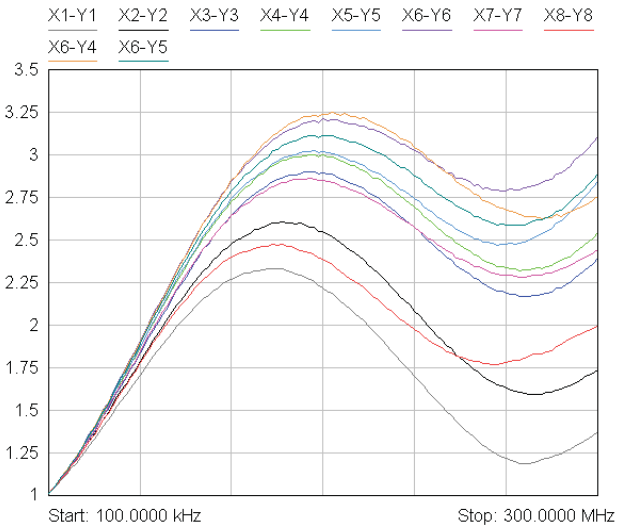
40-726A-511-L (50Ω Version) Loop-Thru Insertion Loss Plot to 500MHz



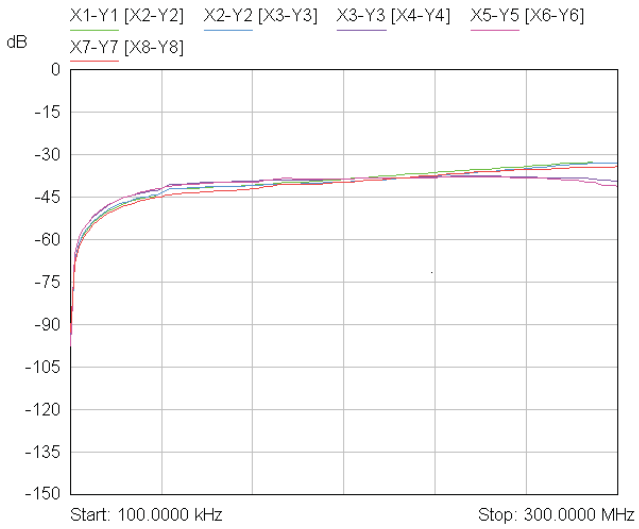
40-726A-511-L (50Ω Version) Loop-Thru VSWR Plot to 500MHz



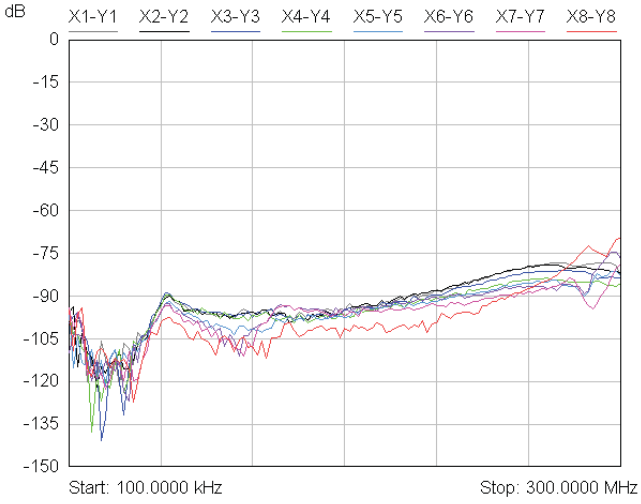
40-726A-751-L (75Ω Version) Insertion Loss Plot to 300MHz



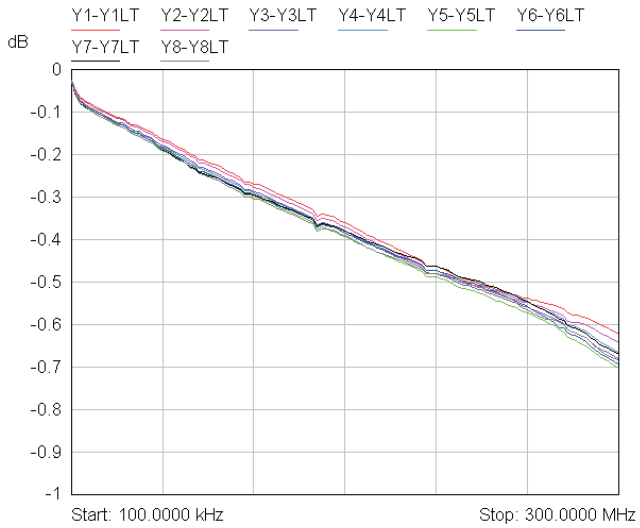
40-726A-751-L (75Ω Version) VSWR Plot to 300MHz



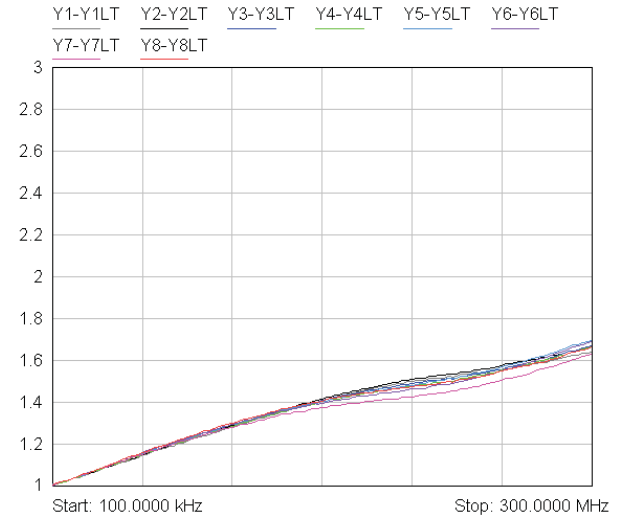
40-726A-751-L (75Ω Version) Crosstalk Plot to 300MHz



40-726A-751-L (75Ω Version) Isolation Plot to 300MHz



40-726A-751-L (75Ω Version) Loop-Thru Insertion Loss Plot to 300MHz



40-726A-751-L (75Ω Version) Loop-Thru VSWR Plot to 300MHz

General Matrix Switching Specification

Maximum Voltage:	100VDC
Maximum Power:	10W
Maximum Switch Current:	0.5A
Maximum Carry Current:	0.5A
Characteristic Impedance:	50Ω or 75Ω
Initial On Path Resistance:	<1000mΩ
Off Path Resistance:	$>10^8$Ω
Thermal Offset:	<30µV
Expected Life (Low Power):	$1x10^9$ operations
Expected Life (Max Power):	$>5x10^6$ operations
Operate Time:	<1ms, 0.5ms typical

RF Specification

Maximum Frequency - 50Ω Version:	300MHz
Maximum Frequency - 75Ω Version:	250MHz
Typical Rise Time:	800ps †
Insertion Loss - 50Ω Version:	<3dB to 300MHz †
Insertion Loss - 75Ω Version:	<3dB to 250MHz †
V.S.W.R. - 50Ω Version:	<2.8:1 to 300MHz †
V.S.W.R. - 75Ω Version:	<3:1 to 100MHz †
Crosstalk - 50Ω Version:	<40dB at 50MHz † <28dB at 300MHz
Crosstalk - 75Ω Version:	<40dB at 50MHz <30dB at 250MHz

Loop Thru RF Specification

Insertion Loss (<100MHz):	<1dB
V.S.W.R. (<100MHz):	<1:1.05
Isolation (<300MHz):	>70dB
Operate Time:	<1ms, 0.5ms typical

† Matrix RF Performance is entirely dependant upon the combination of crosspoints currently selected, these figures are for **one** selected crosspoint on any X or Y channel only, refer to graphs. For further assistance on getting maximum performance using the 40-726A please refer to the Operating Manual.

Power Requirements

+3.3V	+5V	+12V	-12V
0	500mA (typ 350mA)	0	0

Mechanical Characteristics

Single slot 3U PXI (CompactPCI card).

Module weight: 340g (40-726A-511)
400g (40-726A-751-L)

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

Connectors

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

X and Y signals are via 20 front panel mounted coaxial SMB connectors.

Versions with **-L** suffix have Y signal loop-thru via 8 off SMB flying leads with a nominal length of 120mm.
A clearance of 80mm from the front panel of the module is required for routing the leads to an adjacent module.

Product Order Codes

PXI 12x8 RF Coaxial Matrix	
SMB, 50Ω	**40-726A-511**
SMB, 50Ω with loop-thru on Y axis	**40-726A-511-L**
SMB, 75Ω	**40-726A-751**
SMB, 75Ω with loop-thru on Y axis	**40-726A-751-L**

Support Products

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's PXI switching modules, simplifying servicing and reducing down-time.
The relay kit for the 40-726A range is as follows:

91-100-004 kit for 40-726A-511/751

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

Mating Connectors & Cabling

For connection accessories for the 40-726A range please refer to the **90-011D** RF Cable Assemblies data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

Optional Y-axis loop-thru allows easy expansion. Shown here is a 60x8 RF matrix with over 200MHz bandwidth.

Programming

Pickering provide kernel, IVI and VISA (NI and Agilent) drivers which are compatible with 32/64-bit versions of Windows including XP, Vista, 7 and 8 operating systems. 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:

- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Agilent** VEE
- **Mathworks** Matlab
- **Geotest** ATE Easy
- **MTQ Testsolutions** Tecap

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries.

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 33MHz 32-bit backplane interface.

Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2001, EMC Immunity EN61000-6-1:2001, Emissions EN55011:1998.

PXI & LXI Chassis Compatibility

Compatible with all chassis conforming to the 3U PXI and 3U cPCI specification. Compatible with Legacy and Hybrid peripheral slots in a 3U PXI Express chassis.

Compatible with Pickering Interfaces LXI Modular Switching chassis. For information on driving your switching solution in an LXI environment refer to the LXI Product Guide.

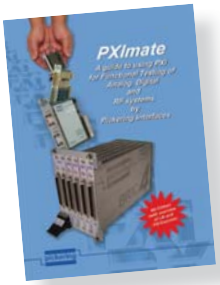
Latest Details

Please refer to our Web Site for Latest Product Details.

www.pickeringtest.com

Please refer to the Pickering Interfaces "**Connection Solutions**" catalog for the full list of connector/cabling options, including drawings, photos and specifications. This is available in either print or as a download. Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering PXI modules.

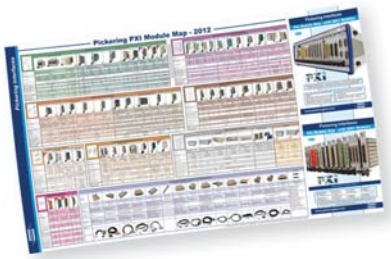
"**The Big PXI Catalog**" gives full details of Pickering's entire range of PXI switch modules, instrument modules and support products.
At over 500 pages, the Big PXI Catalog is available on request or can be downloaded from the Pickering website.



Ever wondered what PXI is all about?

Pickering Interfaces' "**PXImate**" explains the basics of PXI and provides useful data for engineers working on switch based test systems.

The PXImate is available free on request from the Pickering website.



The "**PXI Module Map**" - a simple fold-out selection guide to all Pickering's 600+ PXI Modules.

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