# LXI Modular MEMS Fiber Optic 5x5 Matrix 65-280-422

PRELIMINARY DATA

- Optical Matrix in 5x5 Configuration
- MEMS Based Actuation For Long Life & Fast Operation
- 700 to 1700 nm Multi-Mode
- Small Form Factor LC Connectors
- High Repeatability & Temperature Stability
- Built-In Scan List Sequence Stores With Triggering Capability
- Fully Compliant to 1.5 LXI Standard
- 3 Year Warranty

The 65-280-422 is a dual 5x5 fiber optic matrix plugin module designed to be fitted into a 65-200 LXI Scalable Chassis. It uses multi-mode (62.5/125 µm) fiber and the optical interface is via front panel mounted LC high density connectors.

The matrix uses MEMS (Micro-Electro-Mechanical-Systems) based optical switches to route signals between terminals by redirecting the optical signal. This is achieved using micromechanical mirrors driven by a highly precise mechanism activated via an electrical control signal.

MEMS (Micro-Electro-Mechanical-Systems) technology offers many advantages over traditional Optical Prism Technology but with lower price, higher packing density, faster operate time and much longer operating life.

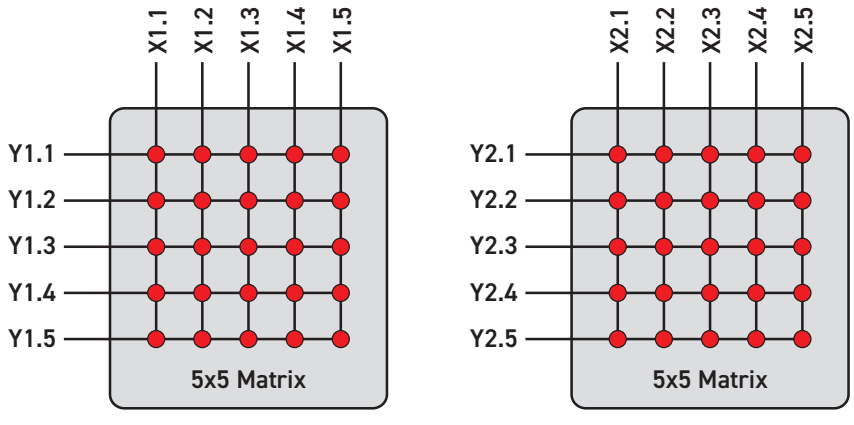
Pickering can construct custom optical systems to customers precise requirements. We have a large range of electrical switching modules which can form a complete PXI/PXIe or LXI based telecom switching solution.

Applications for these switches can be found in fiber network configuration, fiber optic component test or where optical signal routing is required.

### Configuring the Matrix

To select the parts that you need to create a matrix simply:

- Specify a 65-200-002 LXI Scalable Chassis.
- Add matrix Plugin Modules as required for your application.




**65-280-422 Dual 5x5 MEMS Optical Matrix Plugin Module**

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PRELIMINARY DATA

### General Specification - 5x5 Matrix

| Multi-Mode Fiber: | |
|---|---|
| Fiber Switch Type: | MEMS |
| Internal Fiber Type: | MM 62.5/125 |
| Wavelength: | 700 to 1700 nm |
| Insertion loss: | 1.8 dB Typ |
| Return loss (APC version): | 60 dB Min |
| Return loss (other versions): | 55 dB Min |
| Polarization dependent loss (PDL): | 0.2 dB Max |
| Repeatability: | ±0.01 dB Max |
| Crosstalk: | -60 dB Max |
| Optical Input Power: | 300 mW Max |
| Thermal Stability: (-10 to 75 °C insertion loss variation) | 0.2 dB Max |
| Expected Life: | >>$10^9$ operations |
| Maximum Switching Time: | 10 ms |
| Cycle Rate: | 500/sec |

### Operating/Storage Conditions

#### Operating Conditions

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

#### Storage and Transport Conditions

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

### Safety & CE Compliance

All products 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.

### Mechanical Specification

| | |
|---|---|
| Chassis Dimensions: | 2 U rack mountable full width, depth 500 mm. |
| Number of Plugins Supported: | 6 in 65-200-002 chassis |
| Plugin Weight: | TBD |
| Plugin Connectors: | LC optical connectors |
| Trigger Connector: | 25-pin male micro D-type |
| Cooling: | Front air intakes through plugin module holes, temperature controlled speed adjustable fans. |

### Power Source - Chassis

Universal AC mains supply, 90-120/200-240 V 50-60 Hz.

| | |
|---|---|
| Power Inlet: | Male IEC connector |
| Power Rating: | 100 VA maximum |
| Fuse Rating: | (F) 5 A 250 V |

### LAN Interface

1000Base-T Ethernet Interface with a standard RJ-45 connector mounted on the rear panel. Compliant to LXI Standard 1.5

### Triggering

- 16x Software Configurable Bidirectional Open Collector Triggers
- 1x Dedicated Software Reset Line
- 1x Dedicated Software Fault Line
- 1x Dedicated Interlock Line

### Scan List Sequencing

Capable of storing 5000 predefined test sequences, loaded from the host Controller to the LXI unit at process initialization, with the ability to be triggered through software or from any of the sixteen software configurable triggers.

For more information on the Pickering Sequence Manager, please go to: pickering-sequence-manager

PRELIMINARY DATA

### Product Order Codes

Specify which modules are required to build the matrix, Pickering Interfaces will supply the chassis with the modules installed if ordered at the same time. Plugin modules can be ordered for chassis already supplied.

| | |
|---|---|
| **Chassis** | |
| 2U LXI Scalable Chassis, 6-Slot | **65-200-002** |
| **Plugin Module** | |
| MEMS Fiber Optic Matrix, Dual 5x5, Multi-Mode, LC Connectors | **65-280-422-M62.5** |

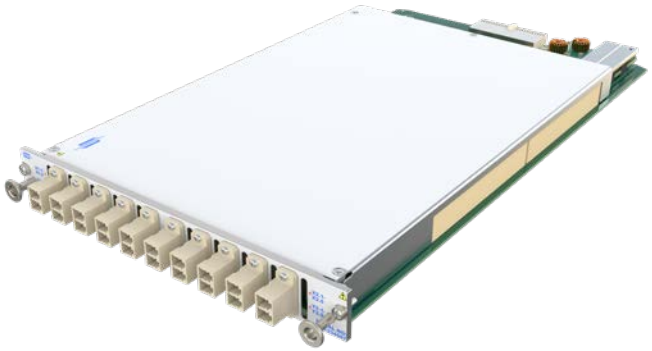
### Product Customization

Pickering products 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.



**65-280-422-M62.5 Optical Matrix Plugin Module**

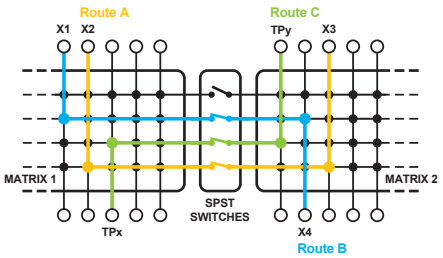
**The 65-280-422 is part of a growing family of Scalable Switching systems available from Pickering Interfaces. Illustrated is the LXI 65-219 Modular 2 Amp Matrix, available in sizes up to 60x40.**

**Available from Pickering are the 60-102B and 60-103B 7 & 18 slot LXI Modular Chassis. These are capable of hosting any of our range of PXI switching and programmable resistor modules under LXI contol via a Gigabit Ethernet interface. Also available are the 60-104, 60-105 & 60-106 USB/LXI Modular Chassis with 2, 4 & 6 slots which include USB as well as Ethernet control.**

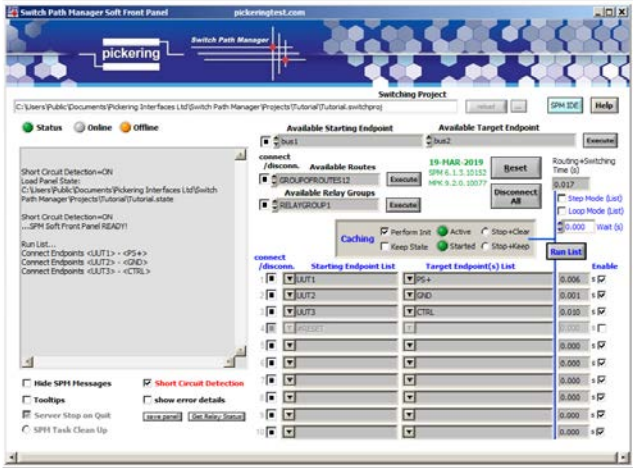
PRELIMINARY DATA

## Switch Path Manager Signal Routing Software

Our signal routing software, Switch Path Manager (SPM), simplifies signal routing through switching systems and speeds up the development of switching system software. Switch Path Manager supports our switching modules and the interconnection between them. Once a switching system model has been created, signal routing can be performed by simply defining the endpoints that are required to be connected together. The ability to automate signal routing results in simple and effective switching system management, safe and fast. The short circuit detection feature avoids unwanted shorts between routes.

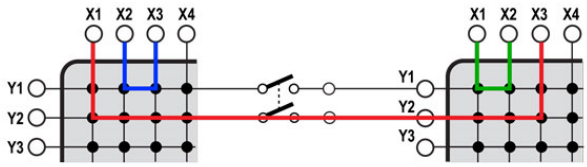



**Switch Path Manager Signal Routing Example**

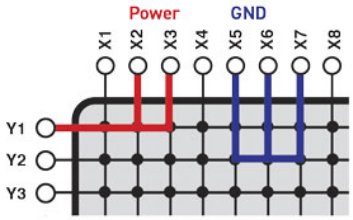



## SPM Features:

- Manages Complex Switching Systems
- Reduces Switching Software Development Effort
- Debug Monitor and Manual Control Capability
- Supports all Pickering PXI, LXI and PCI Switching
- APIs available for C, C++, .NET, LabWindows™/CVI and LabVIEW
- Windows 32-bit or 64-bit Compatible
- Free Evaluation License
- Provides Switching Safety Features, including Short Circuit Detection and Endpoint Protection - see below:




**Short Circuit Detection** - avoids shorting the blue path with the green path when trying to apply the red path via the 2-pole relay.




**Endpoint Protection** - prevents accidental connection of critical nodes such as Power or Ground (Y1, X2, X3) and (X5, X6, X7) are attributed to different Protection Groups in SPM. The software will not allow pins in different groups to be connected together.

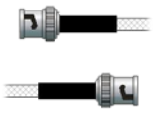
Switch Path Manager is available in a full version and a lower-cost lite version. For more informaion please visit our Switch Path Manager web page.

## 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:

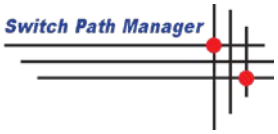
- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

As well as various open source environments such as:

- **Sharp Develop**
- **Dev-C++**

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

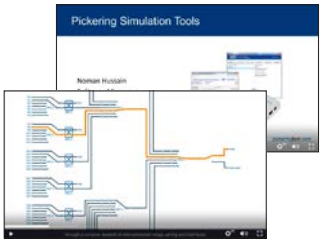

***eBIRST*** Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
To learn more, please go to: pickeringtest.com/ebirst

## 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 and white papers as well as application specific product brochures to assist when looking for the switching, simulation and connection 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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