



- Triple SP8T Terminated Microwave Multiplexer
- Ganged Relay Operation
- Rear RF interfaces
- 18 GHz Bandwidth
- 50Ω Characteristic Impedance
- High Performance Microwave Switching

- Compact 3U Form Factor
- LXI Standard 1.4 Compliant
- I/O & Direct I/O Drivers
- Supplied With Custom Soft Front Panel
- 3 Year Warranty

The 60-890-023 Microwave Multiplexer is suitable for switching 50Ω signals up to 18 GHz. With three SP8T switches it is ideal for constructing complex microwave switching systems for many applications. Connection is by SMA connectors mounted on the rear panel.

The multiplexer has automatic termination where signal channels are connected to 50Ω when not routed to the common terminal.

## Ganged Relay Operation

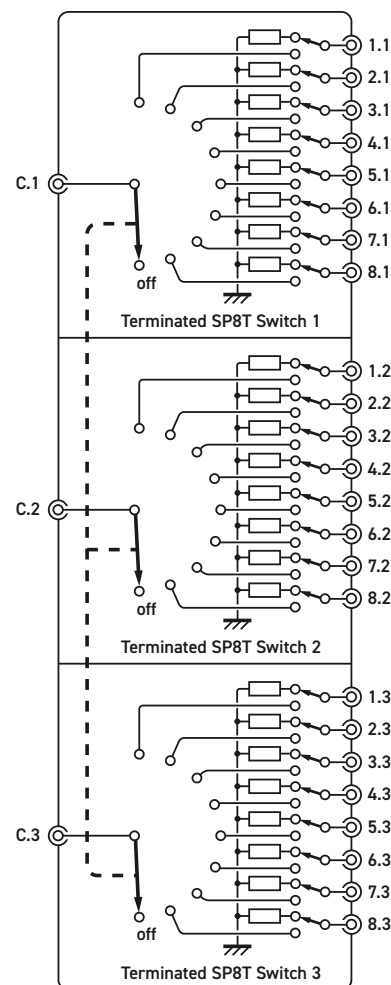
The 60-890-023 is provided with custom firmware that operates all three switches simultaneously to effectively create an eight channel 3-pole multiplexer.

## Controlling the System

The 60-890-023 is controlled through an LXI interface based on Ethernet 1000Base-T. This provides a quick and easy method of installing the 60-890-023 and a simple way of controlling the unit from a remote location through its API or built in custom soft front panel. The ability to control the unit at a distance allows the testing of systems without the need for a physical presence.

## Other Microwave Switching Configurations

We are able to offer other microwave switching solutions, if you have a custom requirement for switching please contact your local Pickering Interfaces sales representative.



**60-890-023 Triple SP8T  
Microwave Multiplexer**

## General Multiplexer Information

|                         |  |
|-------------------------|--|
| Configuration:          | Three SP8T terminated microwave switches controlled as a 3-pole 8-channel multiplexer. |
| Operate Time:           | 15 ms  |
| Maximum Voltage         | 100 VDC  |
| Maximum Switch Current: | 1A   |

## Specifications - 18 GHz SP8T Terminated Switch

|                            |  |
|----------------------------|--|
| Operating Frequency:       | 0 - 18 GHz   |
| Characteristic Impedance:  | 50 $\Omega$  |
| Connector Type:            | SMA  |
| Insertion Loss:            | <0.2 dB to 3 GHz<br><0.3 dB to 8 GHz<br><0.4 dB to 12.4 GHz<br><0.55 dB to 16 GHz<br><0.6 dB to 18 GHz |
| Isolation:                 | >80 dB to 3 GHz<br>>70 dB to 8 GHz<br><60 dB to 12.4 GHz<br><60 dB to 16 GHz<br>>60 dB to 18 GHz       |
| VSWR:                      | <1.2:1 0 to 3 GHz<br><1.3:1 to 8 GHz<br><1.4:1 to 12.4 GHz<br><1.5:1 to 16 GHz<br><1.6:1 to 18 GHz     |
| Maximum RF Carry Power:    | 240 W to 6 GHz<br>150 W to 8 GHz<br>120 W to 12.4 GHz<br>110 W to 16 GHz<br>100 W to 18 GHz            |
| Termination power rating:  | 1W per termination,<br>3 W total per 8 channel mux   |
| Expected Life (Low Power): | >2 million ops per position  |

## 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.

## Power Source

|  |                    |
|--|--------------------|
| Universal AC mains supply, 90-120/200-240 V 50-60 Hz |                    |
| Power Inlet:   | Male IEC connector |
| Power Rating:  | 100 VA maximum     |
| Fuse Rating:   | 5 A, 250 V         |

## LAN Interface

Compliant to LXI Standard 1.4, the 60-890-023 has a 1000Base-T Ethernet Interface via a standard RJ-45 connector mounted on the rear panel with an LCD display showing the unit's IP address.

## LXI Status Indicators

Front panel mounted LEDs:

- Power
- Ready
- Error
- LAN
- Active

## Mechanical Characteristics

Supplied with front panel ears to enable rack mounting on a shelf or other rear support mechanism.

Dimensions: 3U high, full 19" rack width, 500 mm depth  
 3D models for all versions in a variety of popular file formats are available on request.

## Connectors

Signals via rear panel SMA connectors.

## Cooling

Fan assisted cooling, side air intakes and rear exhaust.

## Operating/Storage Conditions

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

## Product Order Codes

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LXI 18 GHz Triple SP8T Terminated  
Microwave Multiplexer: 60-890-023

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## Product Customization

Pickering LXI units 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.

## Mating Connectors & Cabling

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For connection accessories for the 60-890-023 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 our website.

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## Further LXI RF Switching Solutions from Pickering Interfaces



**60-891-001 LXI 36:1 Microwave Multiplexer.**  
Available With SMA Connectors (18 GHz)  
or BNC Connectors (4 GHz).



**60-750/751 LXI Microwave Matrix.** Bandwidth up to 20 GHz and is available in sizes from Single 3x3 up to Dual 4x4 with Loop-Thru and termination options.



**60-721A LXI 72-Channel High Performance Video Multiplexer** with a 1 GHz bandwidth.



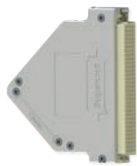
**60-801/802 LXI Microwave Multiplexer,** up to 40 GHz bandwidth and support for up to 16 banks of 6 or 4 way multiplexers.



**60-800/803 LXI Microwave Multiplexer.** Unterminated versions to 67 GHz with up to 16 banks. Terminated versions to 50 GHz with up to 14 banks. 6 or 4 way multiplexers supported.

## 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



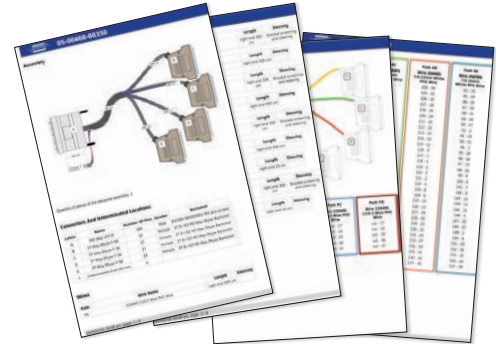
Breakouts



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)

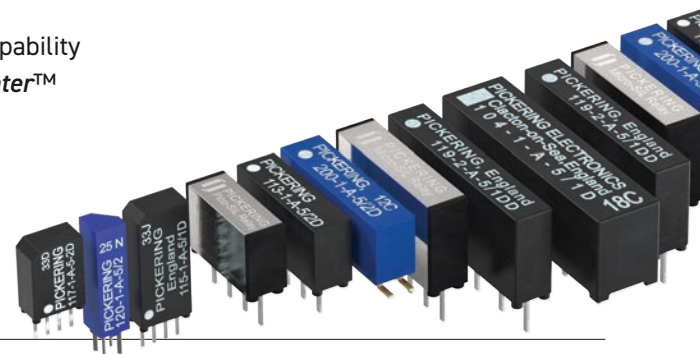
## Mass Interconnect

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**

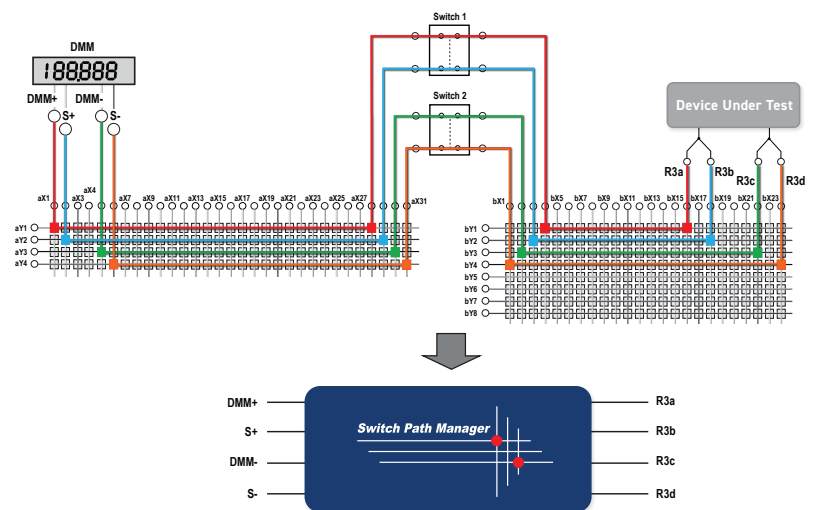
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

