

Pickering - LXI Solutions Map

LOW FREQUENCY MATRICES																																																
Features	High Density						High Power			Low Thermal EMF		Switched Guard Matrix																																				
	<ul style="list-style-type: none"> Scalable Matrix With Y size of 20 or 40 User Configurable X Dimension Loop-Thru Connections For Expansion 	<ul style="list-style-type: none"> Single Pole High Density Matrix Up to 4096 Crosspoints Dual Analog Bus 		<ul style="list-style-type: none"> Single Pole High Density Matrix Up to 4096 Crosspoints Dual Analog Bus 		<ul style="list-style-type: none"> Double Pole High Density Matrix Up to 4096 Crosspoints Up to 4096 Crosspoints Dual Analog Bus 		<ul style="list-style-type: none"> Single Pole High Density Matrix Up to 4096 Crosspoints X and Y Axis Loop-Thru Easily Expanded to Larger Sizes 			<ul style="list-style-type: none"> Wide Choice of Matrix Sizes, Multiple Analog Buses Add Between One and Six Plug-in Modules Built-In Scan Lists & Triggering Reduce Test Times 			<ul style="list-style-type: none"> Scalable Matrix With Y size of 10 User Configurable X Dimension Loop-Thru Connections For Expansion 		<ul style="list-style-type: none"> Single Pole Low Thermal EMF Matrix Up to 1848 Crosspoints Uses Instrumentation Grade Reed Relays 		<ul style="list-style-type: none"> 1-Pole Low Thermal EMF Matrix Up to 1848 Crosspoints Scalable in X and Y using Loop-Thru Connectivity 																														
Model Family	65-219		60-550		60-551		60-553		60-555		60-556		60-552			60-554			60-590			65-221			65-223			65-225			65-227			65-239			60-600			60-510			60-511			65-290		
Configurations	Between 10x40 & 50x40 (60x40 with no Y access) or between 10x20 & 50x20 (60x20 with no Y access)		1-Pole: Between 128x8 and 512x8		1-Pole: Between 128x4 and 512x4		1-Pole: Between 256x4 and 1024x4		2-Pole: Between 192x8 and 512x4		2-Pole: Between 192x4 and 512x4		1-Pole: Between 16x64 and 64x64			1-Pole: Between 64x16 and 256x16			40x20 or 40x40 (can be used as Dual 40x20), Includes two "S" buses with Isolation Switching			128x4 to 1536x4, 6 or 12 Analog Buses			64x8 to 768x8, 6 Analog Buses			32x16 to 384x16, 3 Analog Buses			32x32 to 192x32, 1 Analog Bus			Between 10x10 & 60x10 (60x10 with no Y access) or between 8x10 & 48x10 (48x10 with no Y access)		1-Pole: Single 16x16, 16x8, 16x4, 32x8, 32x4, 64x4 or Dual 16x8, 32x4		1-Pole: Single, 56x33, 44x33, 42x33, 28x33 or 14x33			1-Pole: Single, 56x33, 42x33, 28x33 or 14x33			1-Pole: Up to 768 Crosspoints via Plug-in Modules				
Relay Type	Electro-mechanical												Pickering Instrumentation Ruthenium Reed			Electro-mechanical		Ruthenium Reed		Electro-mechanical		Ruthenium Reed																										
Max Switch Voltage	220 VDC/125 VAC		300 VDC/250 VAC		150 VDC/100 VAC		300 VDC/250 VAC		300 VDC/250 VAC			180 VDC/130 VAC			150 VDC/100 VAC			125 VDC/250 VAC		400 VDC/250 VAC Cold Switching, 125 VDC/250 VAC Hot Switching		150 VDC/100 VAC		200 VDC/170 VAC		100 V																						
Max Switch/Carry Current	2A												1A			8A		10A		1A			250mA																									
Max Switch Power	60W												20W			240W/2000VA		300W/2500VA		10W			-																									
Typical Operate Time	4 ms		3ms Crosspoint, 6ms Crosspoint + Isolation		4ms Crosspoint, 8ms Crosspoint + Isolation		3ms Crosspoint, 6ms Crosspoint + Isolation		3ms			2ms			10ms		10.5ms		0.5ms			3ms		<2ms																								
Connector Type	15-pin D-type & 50-pin D-type		78-pin D-type		160-pin DIN 41612		78-pin D-type			78-pin D-type & 25-pin D-type			50-pin D-type & 25-pin D-type			200-pin LFH			20-pin GCMC		8-pin Power D-type		37-pin D-type & 25-pin D-type			MMCX																						
Enclosure Size	2U High, Full Rack Width, 500mm Deep		1U High, Full Rack Width, 500mm Deep		1U High, Full Rack Width, 500mm Deep			1U High, Full Rack Width, 500mm Deep			2U High, Full Rack Width, 500mm Deep			2U High, Full Rack Width, 500mm Deep			2U High, Full Rack Width, 500mm Deep		1U High, Full Rack Width, 500mm Deep		2U High, Full Rack Width, 500mm Deep			2U High, Full Rack Width, 500mm Deep																								

OPTICAL SWITCHING				
Features	Fiber Optic Matrix		Fiber Optic Multiplexers	
	<ul style="list-style-type: none"> Single-Mode or Multi-Mode Fiber Support MEMS Based Actuation For Long Life and Fast Operation 	<ul style="list-style-type: none"> Single-Mode Fiber Support MEMS Based Actuation For Long Life and Fast Operation Loop-Thru Option For Easy Expansion 		<ul style="list-style-type: none"> Multi-Mode Fiber Support MEMS Based Actuation For Long Life and Fast Operation Loop-Thru Option For Easy Expansion
Model Family	65-280		60-850	
Configurations	Up to a Single 16x16 or Dual 5x5 1-Pole Matrix, or a 2x2 Insert/Bypass Switch via Plug-in Addition		Single 8-Channel, Dual 8-Channel, Single 16-Channel or Single 32-Channel	
Switching Technology	MEMS (Micro Electro-Mechanical Systems)		MEMS (Micro Electro-Mechanical Systems)	
Wavelength	1240 nm to 1640 nm		1240 nm to 1640 nm	
Internal Fiber Type	SM 9/125		MM 62.5/125	
Typical Operate Time	<1ms (Matrix <10ms)		1ms	
Cycle Rate	500/sec		500/sec	
Connector Type	FC/APC, FC/PC, SC/PC, ST, LC		SC, ST	
Enclosure Size	2U High, Full Rack Width, 500mm Deep		1U High, Full Rack Width, 340mm Deep	

LOW FREQUENCY MUX	
Features	High Density
	<ul style="list-style-type: none"> Scalable MUX with 4 Y-Axis Connections 4 x 4-Wire Internal Analog Buses
Model Family	65-260
Configurations	2-Pole: 96 to 576-Channels
Relay Type	Electro-mechanical
Max Switch Voltage	110VDC/125VAC
Max Switch/Carry Current	2A
Max Switch Power	30W
Typical Operate Time	<4ms
Connector Type	104-pin D-type & 5-pin Series 1B
Enclosure Size	2U High, Full Rack Width, 500mm Deep

HIGH VOLTAGE SWITCHES				
Features	SPST Switch		Matrices	
	<ul style="list-style-type: none"> Modular Design Up to 9 kV Rating Hardware Interlock Available 	<ul style="list-style-type: none"> Scalable MUX with 4 Y-Axis Connections 4 x 4-Wire Internal Analog Buses 		<ul style="list-style-type: none"> Double Pole High Voltage Matrix Up to 600 Crosspoints Up to 1000V Rating
Model Family	65-233		60-310	
Configurations	Up to 300 SPST Switches by Plugin Addition		2-Pole: Single 100x2, 200x2 or 300x2	
Relay Type	Tungsten Reed		Electro-mechanical	
Max Switch Voltage	9 kV		750 VDC Continuous/1000 VDC Pulse Cold Switching, 220 VDC/250 VAC Hot Switching	
Max Switch/Carry Current	0.25A		2A Cold Switching, 1A Hot Switching	
Max Switch Power	50W		30W Hot Switching	
Typical Operate Time	3ms		0.5ms	
Connector Type	REDEL S Series (51-Pin) HV		50-pin High Voltage D-type & 9-pin High Voltage D-type	
Enclosure Size	2U High, Full Rack Width, 500mm Deep		2U High, Full Rack Width, 500mm Deep	

RF & MICROWAVE MATRICES										
Features	Video Matrix		High Frequency Matrix		Wideband Matrix		RF Matrix - 1 GHz		RF Matrix - 2.4 GHz	
	<ul style="list-style-type: none"> Single or Dual 24x8 Matrix Suitable For Video Switching Applications Choice of RF Connectors 	<ul style="list-style-type: none"> Single or Dual 24x8 Matrix 50 MHz Bandwidth, Useable to 100 MHz SMB or BNC RF Connectors 		<ul style="list-style-type: none"> User Configurable For X and Y Dimensions Plug In As Many Cards As Required Built In Self-Test Checks all Relays 		<ul style="list-style-type: none"> High Bandwidth 75Ω Matrix Useable to 1.5GHz Automatic Termination of Unused Inputs 		<ul style="list-style-type: none"> High Bandwidth 50Ω Matrix Y Axis Loop-Thru Automatic Termination of Unused Inputs 		<ul style="list-style-type: none"> Versatile Microwave Matrix Switching Solution Loop-thru Option for Easy Expansion Internal Termination Option
Model Family	60-711		60-760		65-110A		60-730		60-770	
Configurations	Single or Dual 24x8 (Software Configurable)		Single or Dual 24x8 (Software Configurable)		RF Matrix with Sizes Between 24x8 and 104x8 or Between 16x16 and 104x16		32x16 Terminated, 24x16 Terminated, 16x16 Terminated		32x16 Terminated, 24x16 Terminated, 16x16 Terminated	
Impedance	75Ω		50Ω		50Ω		75Ω		50Ω	
Frequency Range	DC to 25 MHz		DC to 50 MHz (Useable to 100 MHz)		200 MHz Useable to 500 MHz		DC to 1 GHz (Useable to 1.5 GHz)		DC to 2.4 GHz	
Insertion Loss	<0.75 dB		<1 dB		<1 dB to 50 MHz		<2.5 dB		<2.5 dB	
Max Power	30W		10W		0.25W (Limited by Termination Resistors)		0.125W (Limited by Termination Resistors)		0.5W (Limited by Termination Resistors)	
Typical Operate Time	3ms		3ms		5ms		3ms		3ms	
Relay Type	Electro-mechanical		Electro-mechanical		Electro-mechanical		Electro-mechanical		Electro-mechanical	
Connector Type	SMB, MCX or BNC		SMB or BNC		SMB		F-type		SMA	
Enclosure Size	1U High, Full Rack Width, 340mm Deep or 2U High, Full Rack Width, 500mm Deep		1U High, Full Rack Width, 340mm Deep or 2U High, Full Rack Width, 500mm Deep		4U High, Full Rack Width, 500mm Deep		6U High, Full Rack Width, 500mm Deep		6U High, Full Rack Width, 500mm Deep	

RF & MICROWAVE MULTIPLEXERS										
Features	Video MUX		RF MUX - High Isolation		Microwave MUX				Microwave Switch	
	<ul style="list-style-type: none"> High Performance Multiplexer Suitable For Video Switching Applications Automatic Termination of Unused Inputs 	<ul style="list-style-type: none"> High Performance 12-Channel Multiplexer 1 GHz Bandwidth Single or Dual Multiplexer Banks 		<ul style="list-style-type: none"> High Performance 6-Channel Multiplexer Terminated Versions Available 		<ul style="list-style-type: none"> High Performance 6-Channel Multiplexer High Performance 4-Channel Multiplexer High Performance 4-Channel Multiplexer High Performance 4-Channel Multiplexer High Performance 4-Channel Multiplexer 				<ul style="list-style-type: none"> Flexible Combinations of Front Panel Mounted Microwave Relays up to 47 GHz Plus other RF Components Preconfigured Internally Wired Microwave Solutions up to 47 GHz Plus other RF Components
Model Family	60-721A		60-722		60-800				60-890	
Configurations	24, 48, 72, 96, 120 or 144-Channel MUX with Terminations		Single or Dual 12-Channel MUX		6-Channel Underterminated MUX with up to 16 Banks				Including Mixed Configurations of Microwave Switches	
Impedance	75Ω		75Ω		50Ω				50Ω, 75Ω or Mixed	
Frequency Range	1 GHz		1 GHz		18 GHz, 26.5 GHz, 40 GHz, 50 GHz or 67 GHz				18 GHz, 26.5 GHz, 40 GHz, 50 GHz or 67 GHz	
Insertion Loss	3.5 dB		1.3 dB		0.5 dB (18 GHz), 1.7 dB (67 GHz)				0.5 dB (18 GHz), 1.7 dB (67 GHz)	
Max Power	0.5W (Limited by Termination Resistors)		400W		100W/1W per Termination (18 GHz), 1W (67 GHz)				400W (up to 1 GHz)	
Typical Operate Time	5ms		20ms		18ms				18ms	
Relay Type	Electro-mechanical		Microwave Relay		Microwave Relay				Microwave Relay	
Connector Type	F-Type		F-Type		SMA, SMA-2.9, SMA-2.4 or SMA-1.85				SMA, SMA-2.9, SMA-2.4 or SMA-1.85	
Enclosure Size	2U or 3U High, Full Rack Width, 500mm Deep		2U High, Full Rack Width, 500mm Deep		2U or 3U High, Full Rack Width, 500mm Deep				2U High, Full Rack Width, 500mm Deep	

SIMULATION TOOL	
Features	LXI Simulation Tool
	<ul style="list-style-type: none"> Simulates All Pickering PXI & LXI Switching Products More than 1000 Switching Product Configurations Available Develop Code Independently from the Application Hardware
Model Family	60-901
Capacity	Over 18 Simulated User Slots Available
Display	Dual Function LED Matrix shows IP Address and Switch Status
LAN Interface	RJ45 Connector
Connection Speed	100baseT
Power Supply	5V 1A DC In-line Power Supply Supplied
Enclosure Size	Width 94 mm, Height 76 mm, Depth 32 mm

Pickering - LXI Solutions Map

SWITCHING & SIMULATION SOLUTIONS FROM PICKERING INTERFACES

About Us

At Pickering, we understand that to design, deploy and sustain your test system can be challenging, and we believe in offering you the products and services to help your engineering team get the job done on time and budget. Since 1988, our core focus has and continues to be high-density modular switching and simulation systems for PXI, PCI, LXI and USB applications.

We offer the industry's deepest portfolio (over 1,000 products in PXI alone), but the value doesn't end there. Take a look at the benefits of working with Pickering:

- When our product range doesn't fit your application, we have the agility and expertise needed to develop a system to your specifications, often with little to no engineering cost.
- We can also help accelerate software development and test time by offering tools to help with your programming efforts. These include our Switch Path Manager signal routing software that simplifies coding of switching systems, and simulation tools that allow development to begin before your hardware is received.



- We know that maximizing uptime of your test system is important — with our BIRST and eBIRST diagnostic test tools, you can identify faulty or damaged relays in a matter of minutes.
- Our products have a history of longevity, typically 15–20 years, which is critical to many of our customers. All products manufactured by us come with a standard 3-year warranty* and include guaranteed long-term support.
- Our technical staff can address any hardware or software problems you may encounter with Pickering Products. We have multiple offices located around the world and provide access to support engineers that have many years' experience in functional test and are committed to responding in a timely fashion.
- All module and cabling manufacturing processes are done within our two factories on flexible manufacturing lines allowing us to offer simple customization to meet your needs. The chances are good that we can enhance your engineering team's effectiveness with our collaborative, creative and agile culture.



Learn more: pickeringtest.com/whypickering
Note*: Currently the 110 GHz products come with a 1-year Warranty

TURNKEY LXI ETHERNET MICROWAVE SWITCH & SIGNAL ROUTING SUBSYSTEMS

60-891 Integrated Solutions

Do you have limited engineering resources or demand performance that can only be delivered with a fully integrated solution?

We have the expertise and ability to turn your high-level requirements for a microwave switching subsystem into the fully integrated solution that you need. You provide us with your unique configuration and specification, and our engineers will work closely with you to provide a well-defined, fully integrated and supportable end product that will satisfy your microwave testing needs.

- Designed and manufactured to your requirements by our switching experts
- **Compact rack-mount designs** incorporating an industry-standard LXI/Ethernet interface
- **Bandwidths from DC to 67 GHz @ 50 Ω**, with terminated or unterminated options, and **bandwidths up to 2.5 GHz @ 75 Ω**
- **Fast turnaround**, cost-effective Multiplexer, Matrix and complex routing solutions
- **Fully documented** to ensure performance repeatability in subsequent builds/orders
- **Familiar programming environment** using Pickering's standard switch API accelerates software integration
- Pickering can turn your custom-design into an 'off-the-shelf' product with **15+ years support**

For complex subsystems, our **Switch Path Manager** signal routing software can be used to significantly reduce integration time. Another important tool we offer is the **LXI hardware simulator**, this tool allows you to develop and test the system software independently from your application hardware.

Visit pickeringtest.com/turnkey to learn more.

Example Turnkey Microwave Switching Systems

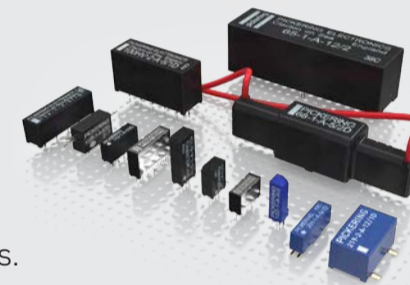


12x12 Microwave Matrix

SP36T Microwave Multiplexer

Reed Relays

Pickering is the only switch provider with in-house reed relay manufacturing capability. These instrument grade reed relays feature **SoftCenter™** technology, ensuring long service life and repeatable contact performance. In addition, most of our switch modules use through-hole technology relays (as opposed to surface mount) allowing easy replacement without the need for special tools. Learn more: pickeringrelay.com



LXI ETHERNET/USB MODULAR CHASSIS & ASSOCIATED MODULES

LXI USB
LXI/USB Modular Chassis:
2-Slot (60-104), 4-Slot (60-105) & 6-Slot (60-106)

7-Slot LXI/USB Modular Chassis (60-102D)

18-Slot LXI/USB Modular Chassis (60-103D)

In our PXI switching range, these include general purpose relays, matrices, multiplexers, RF switches and special switching functions such as fault insertion and serial communications. In our simulation range, these include a selection of modules such as programmable resistors, digital I/O, power supplies, battery simulators and attenuators.

For example, our 18-slot chassis can be fitted with a combination of high density relay modules, matrix modules, multiplexers, power relays, microwave relays and programmable resistors as shown above. Giving you enormous flexibility to define a switching/T&M system that exactly meets your requirements.

For more information go to: pickeringtest.com/lxi

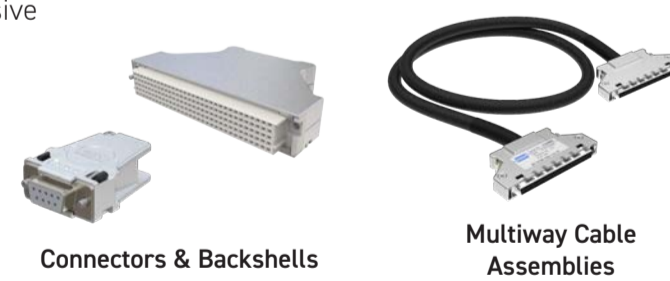
CONNECTIVITY

Cables & Connectors

To support our products we offer a comprehensive range of cable & connector solutions:

- 20+ connector product families
- Over 1000 individual products
- Customized cabling

For more information visit: pickeringtest.com/cables-connectors



Connectors & Backshells

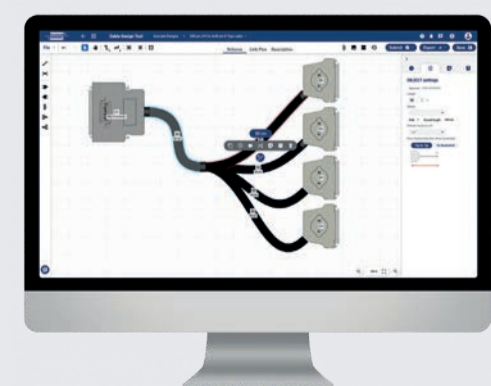
Multiway Cable Assemblies

RF Cable Assemblies

Cable Design Tool

Our Cable Design Tool is a free online tool that allows you to define a cable assembly to exactly meet your requirements.

- Graphical design of customized cable assemblies
 - Built-in library of standard cable sets can be used as the basis for customization, or cables can be defined from scratch
 - The ability to store cable assemblies in the Cloud and develop them over time
 - Each cable design has a PDF documentation file detailing all the specifications
 - Allows detailed design including: connector types, wire type, pin definitions, pin & cable labelling, cable bundling, length selection, sleeving, comments, etc.
 - Add your own connectors and wires
 - Fully supported on major tablet operating systems
- For more information visit: pickeringtest.com/cdt

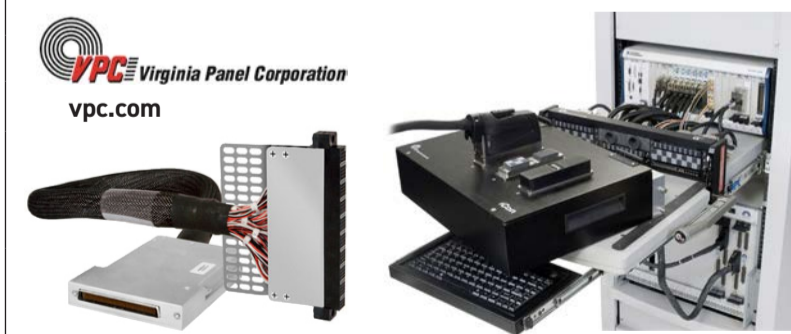


DIN Rail Mounted Connector Blocks

Module Mounted Connector Blocks

Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required to be used with a PXI based test system. The complete range of our PXI modules are fully supported by both VPC and MacPanel mass interconnect solutions.



MAC-PANEL macpanel.com



FLEXIBLE LXI ETHERNET MICROWAVE SWITCH PLATFORMS

60-890 Microwave Switch

These flexible, configurable LXI microwave switch platforms may be specified with a mix of high-performance microwave relays up to **67GHz bandwidth** with **50 Ω** impedance or up to **2.5 GHz** with **75 Ω** and a range of connector types.

- Available relays include **Transfer, SPDT, SP4T, SP6T, SP8T, SP10T and SP12T** in unterminated and terminated versions
- Flexibility in front-panel relay positioning helps minimize external interconnecting cable lengths
- **LED indication** of energized switch paths
- Compact **1U to 6U form factors**. An example is our LXI Microwave Multiplexers, offering the highest density configuration possible, packaging up to 16 multiplexers in a 2U high rack-mount enclosure
- Excellent RF and repeatability characteristics

Example 60-890 Switches



Microwave Switch Design Tool

There are times when a standard microwave switching product is not quite what you want. You may need a variety of switches in one unit that are not available in Pickering's standard range. A custom switching product can be designed using our **free online Microwave Switch Design Tool**.

With this tool, you can design your custom LXI switch assembly by using our built-in library of standard microwave switches. Once completed and approved, our engineers will generate a 3D model and provide a competitive quote ready for manufacture. We are excited about the features that this tool offers, including:

- Graphical design of customized LXI microwave assemblies including switches, LEDs and labels
- Built-in library of standard microwave switches and LXI boxes to be used as the basis for customization
- The ability to store assemblies in the Cloud and develop over time
- Each customized design can be exported as a pdf file detailing the specification
- Detailed design characteristics including the specific switches selected are provided
- Runs on modern browsers & supported on major tablet operating systems
- Built-in tutorials allow you to get quickly up to speed



To learn more or give the tool a try, go to: pickeringtest.com/msdt

Ethernet Controlled Switching for Test, Measurement and Data Acquisition

- General purpose
- Matrices
- Multiplexers
- **400+** Switching systems
- Chassis support for **1000+** modular solutions
- Custom designed and turnkey solutions
- Flexible microwave switch platforms
- Connectivity & Cables



LXI eXTensions for Instrumentation

Pickering's LXI Solutions Map is a single sheet reference to our range of LXI Switch Systems and LXI Modular Solutions, including their basic specifications and cabling options.



pickering LXI Solutions Map

LXI is the power of Ethernet and the Web applied to Test & Measurement (T&M) instruments, offering you new possibilities in test systems—local, remote, distributed and time-aware. Pickering is a Strategic Member of the LXI Consortium. We were early adopters of the LXI standard to provide a standardized interface for Ethernet (LAN) controlled instruments and continue to be active in the specification's evolution. For more information on the LXI Standard, please visit their website at lxistandard.org.

We manufacture a wide range of LXI (Ethernet controlled) switching solutions, including **low-frequency matrices, multiplexers, RF & Microwave up to 67 GHz, optical systems**, as well as **LXI/USB modular chassis and Turnkey Solutions**.

- Extensive Range of Switching: Matrix, MUX and General Purpose
- Turnkey LXI Microwave Switch and Signal Routing Subsystems
- Comprehensive Range of Cables and Connectors
- Standard Three Year Warranty on all Modules and Switch Systems
- RF/Microwave Switching to **67 GHz**
- High Current to **10 A**, High Voltage to **9 kV**
- Gigabit Ethernet control interface
- USB Support



Example Turnkey Microwave Switch Solutions from Pickering

Switching | Simulation | Programmable Resistors | Custom Design | Software | Reed Relays | Connectivity & Cables

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