



- Single Pole High Density Matrix
- 40x20 and 40x40 Versions
- Loop-Thru Connections For Easy Expansion
- Isolation Switching for Maximum Bandwidth & Contact Life
- Uses High Quality Electro-Mechanical Relays
- Switch up to 180 VDC/130 VAC and up to 60 W Max Power
- Maximum Switch Current of 2 A

- 1U Rack Mountable Enclosure
- Fully Compliant To 1.4 LXI Standard
- IVI & Direct I/O Drivers
- Built-In Diagnostics
- 3 Year Warranty

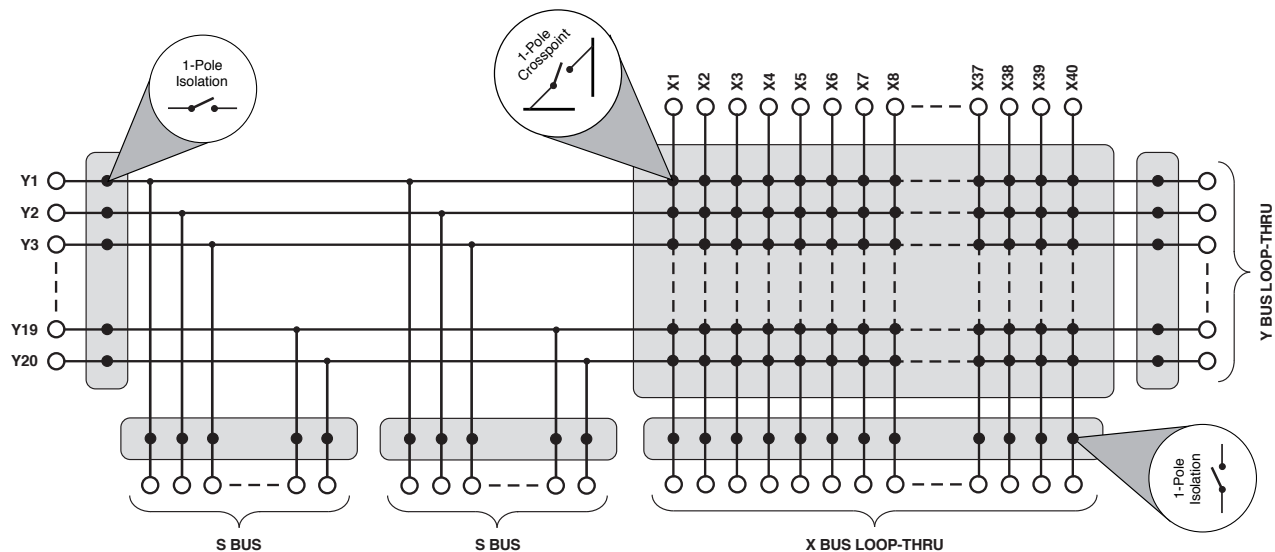
The 60-590 is a high density single pole matrix available in 40x20 or 40x40 configurations and is suitable for signal routing in large ATE systems.

Both the X bus and Y bus include loop-thru connections allowing easy expansion to produce larger matrix sizes.

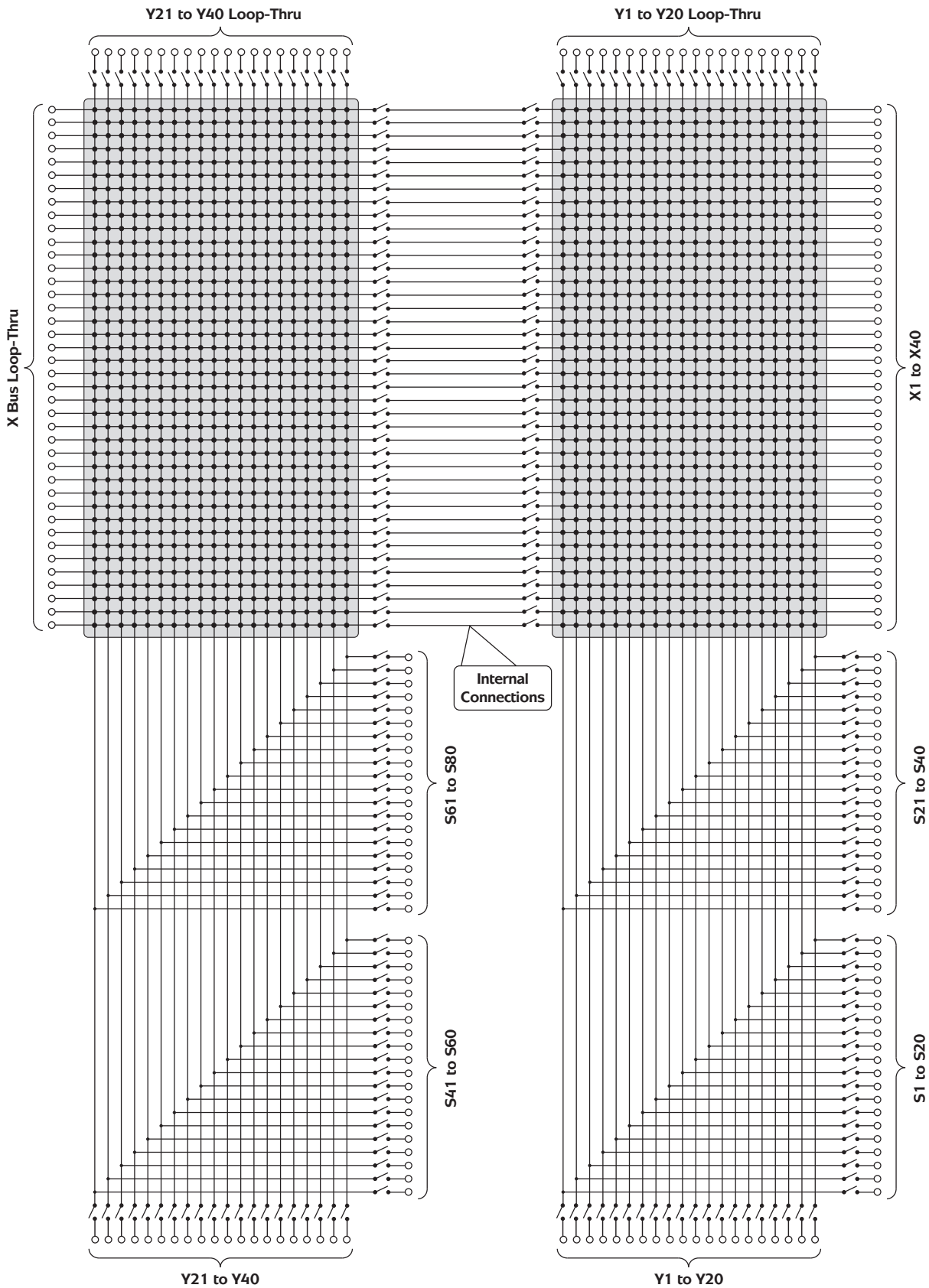
In addition to the loop-thru connections, the Y bus includes two sets of switched signal connections for the attachment of measurement equipment (see switching diagram).

The 60-590 is designed in accordance with the LXI Standard 1.4 and is supplied in a 1U high, full rack width case with 500 mm depth. It is fully programmable via the LAN interface using Pickering Interfaces' generic switch driver. Industry standard (W3C) web browsers can be used to access and change configuration information and provide access to the soft front panels.

The 60-590 is ideal for applications where a simple start-up process is required and for applications requiring control over large distances.



60-590-001 Single 40x20 Matrix Block Diagram



60-590-002 Single 40x40 Matrix Switching Diagram

## Relay Type

The 60-590 is fitted with high quality electro-mechanical relays. These relays are leaded types (not surface mount) so field maintenance is greatly simplified. Spare relays are built onto the circuit board to allow easy maintenance with minimum downtime.

## Switching Specification

Switch Type	Electro-mechanical
Contact Type:	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage:	180 VDC/130 VAC*
Max Power:	62.5 VA, 60 W
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)
Min Switch Current:	<1 nA
Initial Path Resistance - On:	<750 mΩ
Initial Path Resistance - Off:	>10 <sup>9</sup> Ω
Minimum Voltage:	100 μV
Thermal Offset:	<5 μV
Operate Time:	<3 ms
Expected Life (operations)	
Very low power signal load:	>1x10 <sup>8</sup>
Low power load (2 W):	>1.5x10 <sup>7</sup> (0.1 A 20 VDC)
Medium power load (30 W):	>5x10 <sup>6</sup> (1 A 30 VDC)
Full power load (60 W):	>1x10 <sup>5</sup> (2 A 30 VDC)
Bandwidth (X to Y measurement with no cables connected to loop-thru ports) typical worst case:	
60-590-001 (Single 40x20):	>5 MHz
60-590-002 (Single 40x40):	5 MHz
Crosstalk Performance:	<-40 dB to 1 MHz <-15 dB to 10 MHz
Max Number of simultaneously closed crosspoints:	100

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

## 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:	(F) 5 A, 250 V

## LAN Interface

Compliant to LXI Standard 1.4, the 60-590 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.\*

\*Note: Legacy units may not have 1000Base-T support or be fitted with an LCD display.

## Mechanical Characteristics

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

Dimensions: 1U high, full rack width, 500 mm depth

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

## Connectors

Signals via front panel connectors.

X, X Loop-Thru and S connections are via 50-pin male D-types  
Y and Y Loop-Thru connections are via 25-pin male D-types.

For pin outs please refer to the operating manual.

## 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

## 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.

## Product Order Codes

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LXI High Density 40x20 Matrix	60-590-001
LXI High Density 40x40 Matrix	60-590-002

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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 reed relay types
- Mixture of reed 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.

## Support Products

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### Mating Connectors & Cabling

For connection accessories for the 60-590 please refer to the [90-005D](#) 50-pin D-type and [90-008D](#) 25-pin D-type Connector Accessories data sheets where a complete list and documentation can be found for accessories, or refer to our [website](#).

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## 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



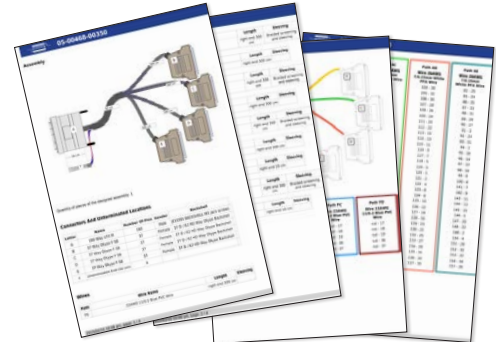
Breakouts



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)

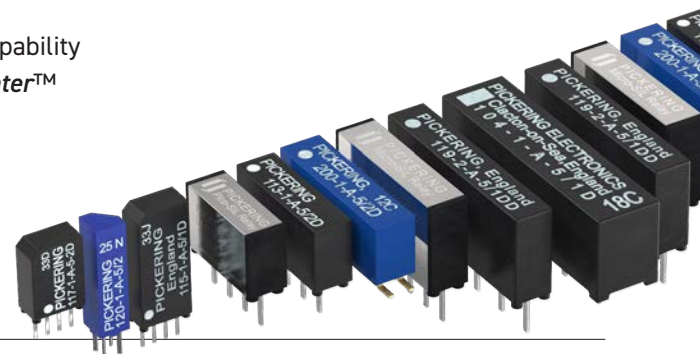
## Mass Interconnect

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**

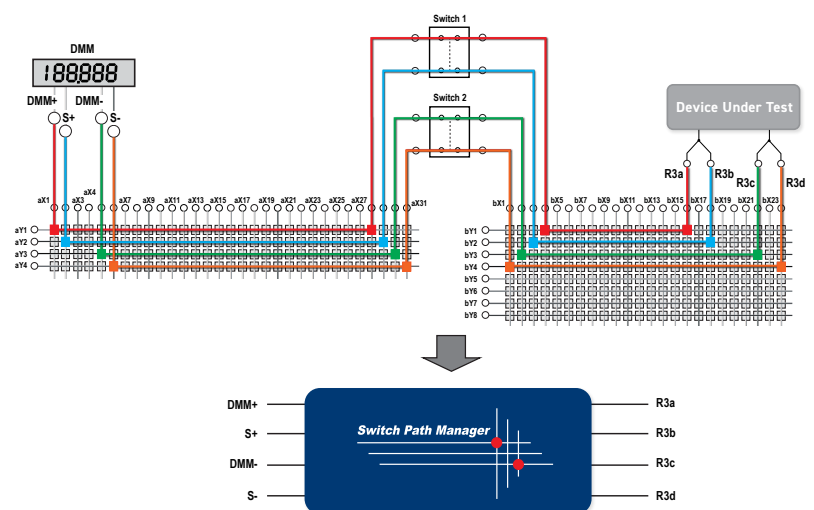
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

