- **Single Pole High Density Matrix - Up To 4096 Crosspoints**
- **Available in Sizes of 64x16 Up To 256x16**
- **Y-Axis Loop-Thru for Easy Matrix Expansion**
- **Uses High Quality Electro-Mechanical Relays**
- **Switch up to 300VDC/250VAC & up to 60W Max Power**
- **Isolation Switching for Maximum Bandwidth & Contact Life**

- **Maximum Switch Current of 2A**
- **1U Rack Mountable Enclosure**
- **LXI Standard 1.4 Compliant**
- **IVI & Direct I/O Drivers**
- **Supported by *BIRST*™ & *eBIRST*™ Test Tools**
- **3 Year Warranty**

The 60-554 is a high density single pole 256x16 matrix suitable for signal routing in large ATE systems. Y-axis Loop-Thru connections allow it to be expanded to produce larger sizes, for instance, two units can be easily linked to create a 512x16 matrix. Also, as the matrix consists of separate 32x16 daughter cards it can be ordered with between 2 and 8 cards giving sizes from 64x16 to 256x16 in increments of 32.

The 60-554 is designed in accordance with the LXI Standard 1.4 and is supplied in a 1U high, full rack width case with 500mm 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 60-554 is ideal for applications where a simple start-up process is required and for applications requiring control over large distances.

Isolation Switching

The 60-554 has up to eight 32x16 sub-matrices, each connected via isolation switching to an internal screened analog bus.

Isolation switching removes unused switch paths, maintaining maximum signal integrity by keeping capacitance, leakage and crosstalk to a minimum.

Key performance advantages include:

• Maximized bandwidth.

• Minimized contact life concerns (large matrices without isolation switching have an appreciable capacitance which may reduce relay life performance, even under cold switch conditions).
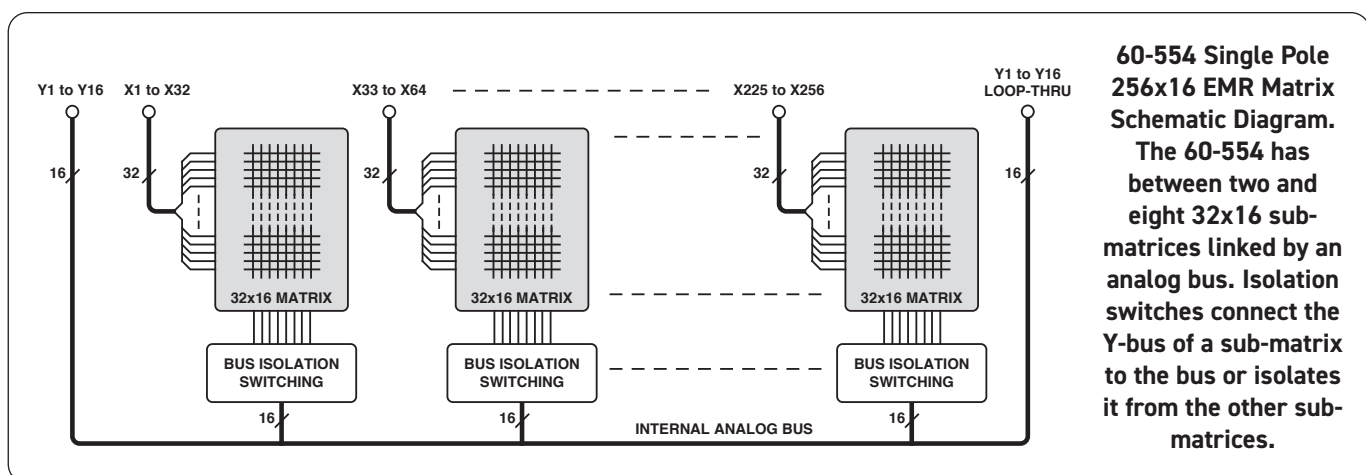
Built-In Relay Self-Test - *BIRST*

The BIRST facility provides a quick and easy way of finding relay failures. No test equipment is required, simply un-plug the connectors, launch the BIRST application and the tool will run a diagnostic test that will find all relays with faulty contacts.
For more information go to: pickeringtest.com/birst

Supported by *eBIRST*

This matrix is also supported by eBIRST. These tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
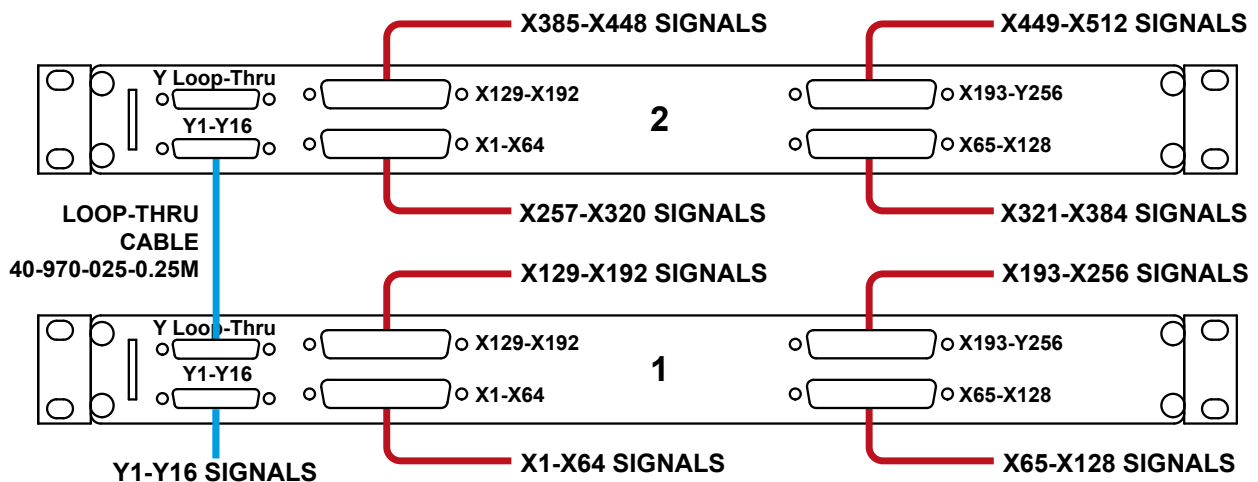For more information go to: pickeringtest.com/ebirst

60-554 Single Pole 256x16 EMR Matrix Schematic Diagram. The 60-554 has between two and eight 32x16 sub-matrices linked by an analog bus. Isolation switches connect the Y-bus of a sub-matrix to the bus or isolates it from the other sub-matrices.

Matrix Expansion

The 60-554 can be easily expanded to larger matrix sizes by using the front panel Y "Loop-Thru" connector.

The illustrations below shows two 60-554-008 256x16 matrices interconnected as a 512x16 matrix using a single 25-pin D-type female to female cable. The first diagram shows the matrix schematic and the second diagram shows how the front panel connectors are cabled together.

Connections X1 to X512

X1 X2 — — — — — — — — X255 X256   X257 X258 — — — — — — X511 X512

Connections Y1 to Y16

Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
Y9
Y10
Y11
Y12
Y13
Y14
Y15
Y16

256 X 16 MATRIX

X60-554-008 No. 1

256 X 16 MATRIX

X60-554-008 No. 2

Y1LT
Y2LT
Y3LT
Y4LT
Y5LT
Y6LT
Y7LT
Y8LT
Y9LT
Y10LT
Y11LT
Y12LT
Y13LT
Y14LT
Y15LT
Y16LT

Y Loop-Thru Connections

16 Loop-Thru Connections (25-pin D-type Cable)

X385-X448 SIGNALS　　　　**X449-X512 SIGNALS**

Y Loop-Thru

Y1-Y16

X129-X192　　　X193-Y256

X1-X64　　　X65-X128

2

LOOP-THRU CABLE 40-970-025-0.25M

X257-X320 SIGNALS　　　　**X321-X384 SIGNALS**

X129-X192 SIGNALS　　　　**X193-X256 SIGNALS**

Y Loop-Thru

Y1-Y16

X129-X192　　　X193-Y256

X1-X64　　　X65-X128

1

Y1-Y16 SIGNALS

X1-X64 SIGNALS　　　　**X65-X128 SIGNALS**

Relay Type

The 60-554 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:	300VDC/250VAC*
Max Power:	62.5VA, 60W from 30V to 220VDC, 30W to 300VDC (resistive load)
Max Switch Current:	2A
Max Continuous Carry Current:	2A
Max Pulsed Carry Current Example (for a single switch path):	6A for 100ms (up to 10% duty cycle)
Max Combined Switch Path Carry Current:	2A through 16 paths simultaneously
Initial Path Resistance - On:	<750mΩ typical†
Initial Path Resistance - Off:	$>10^9\Omega$
Minimum Voltage:	100µV
Thermal Offset:	<5µV
Bandwidth (X to Y):	6MHz typical
Operate Times Crosspoint Relay: Crosspoint + Isolation Relay:	3ms 6ms
Expected Life (operations) Very low power signal load:	$>1 \times 10^8$
Low power load (2W):	$>1.5 \times 10^7$ (0.1A 20VDC)
Medium power load (30W):	$>5 \times 10^6$ (1A 30VDC)
Full power load (60W):	$>1 \times 10^5$ (2A 30VDC)
	$>1 \times 10^5$ (0.1A 300VDC)
Max Number of simultaneously closed contacts:	272

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

† Path resistance is dependent upon the signal route selected.

Power Source

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

LAN Interface

Compliant to LXI Standard 1.4, the 60-554 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 configured ready for rack mounting.

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

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

Connectors

Signals via front panel connectors.

X connections are via 4 x 78-pin male D-types.
Y connections are via a 25-pin male D-type.
Y Loop-Thru connections are via a 25-pin male D-type.

For pin outs please refer to the operating manual.

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

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

LXI High Density 64x16 EMR Matrix	**60-554-022**
LXI High Density 96x16 EMR Matrix	**60-554-023**
LXI High Density 128x16 EMR Matrix	**60-554-024**
LXI High Density 160x16 EMR Matrix	**60-554-025**
LXI High Density 192x16 EMR Matrix	**60-554-026**
LXI High Density 224x16 EMR Matrix	**60-554-027**
LXI High Density 256x16 EMR Matrix	**60-554-028**

Product Order Codes Without BIRST

60-554 is still available for users who have qualified the product without the BIRST feature:

LXI High Density 64x16 EMR Matrix	60-554-002
LXI High Density 96x16 EMR Matrix	60-554-003
LXI High Density 128x16 EMR Matrix	60-554-004
LXI High Density 160x16 EMR Matrix	60-554-005
LXI High Density 192x16 EMR Matrix	60-554-006
LXI High Density 224x16 EMR Matrix	60-554-007
LXI High Density 256x16 EMR Matrix	60-554-008

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.

Support Products

eBIRST Switching System Test Tool

This product is supported by the *eBIRST* test tools which simplify the identification of failed relays, the required *eBIRST* tools are below. This product requires master slave testing and one set of each tool is required together with the master slave cable **93-970-301**. For more information go to: pickeringtest.com/ebirst

Connector	Test Tool	Adaptor
78-pin	93-006-001	Not Required
25-pin	93-005-001	93-005-414

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's switching products, simplifying servicing and reducing down-time.

| Product	Relay Kit
60-554	**91-100-001**

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

Mating Connectors & Cabling

For connection accessories for the 60-554 please refer to the 90-006D 78-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 the Connection Solutions catalog.

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.
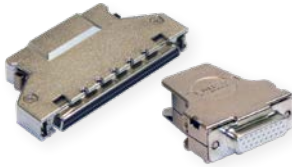
Connectors & Backshells

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 sister company, Pickering Electronics. 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

All LXI devices are supplied with built-in software drivers, web pages for configuration and soft front panels as required by the LXI specification. A variety of drivers are provided (C, .NET, IVI, SOAP) 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 drivers may be used in many commonly used 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++, 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

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, as well as complete product catalogs and product reference maps to assist when looking for the switching, simulation and cable and connector solutions you need. We have also published handy reference books on Switching Technology and for the PXI and LXI standards.
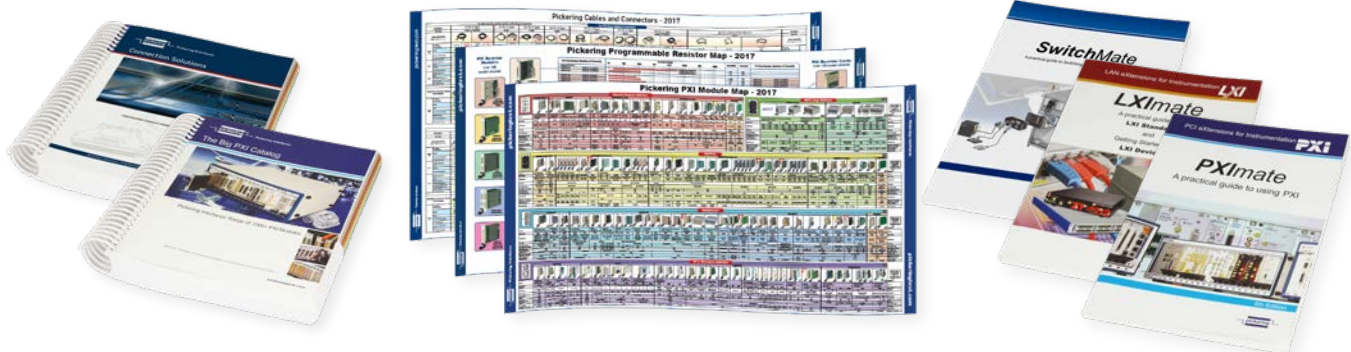
To view, download or request any of our product resources, please visit: pickeringtest.com/resources

pickering

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