LXI High Density 512x8 2-Pole EMR Matrix 60-555/556

- Double Pole High Density Matrix - Up To 4096 Crosspoints
- Dual Analog Bus
- Matrix Size 192x8 to 512x8 (60-555)
- Matrix Size 192x4 to 512x4 (60-556)
- Uses High Quality Electro-Mechanical Relays
- Switch up to 300 VDC/250 VAC & up to 60 W Max Power
- Maximum Switch Current of 2 A
- 1U Rack Mountable Enclosure

- LXI Standard 1.4 Compliant
- IVI & Direct I/O Drivers
- Supported by *BIRST* ™ & *eBIRST* ™ Test Tools
- 3 Year Warranty

The 60-555 is a high density double pole 512x8 matrix suitable for signal routing in large ATE systems. It is easily expanded to produce larger sizes, for example, two units can be linked to create a 1024x8 matrix. The 60-556 has an identical architecture to the 60-555 but has a 4-way instead of an 8-way Y-bus.

The matrix is constructed from 64x8 or 64x4 sub assemblies, allowing it to be supplied in sizes from 192 to 512 X connections in increments of 64.

Dual Analog Bus

The Y axis of each 64x8 sub-matrix can be connected to one of two analog buses (Dual Analog Bus). These can be used to maximize bandwidth by disconnecting unused stub matrices from the bus in use. They also provide configuration flexibility by giving the potential to divide the 60-555/556 into two independent matrices whose size can be set in increments of 64 X connections.

The 60-555/556 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 programmable via the LAN interface using Pickering's generic switch driver. Standard (W3C) web browsers can be used to change the configuration and access the soft front panels.

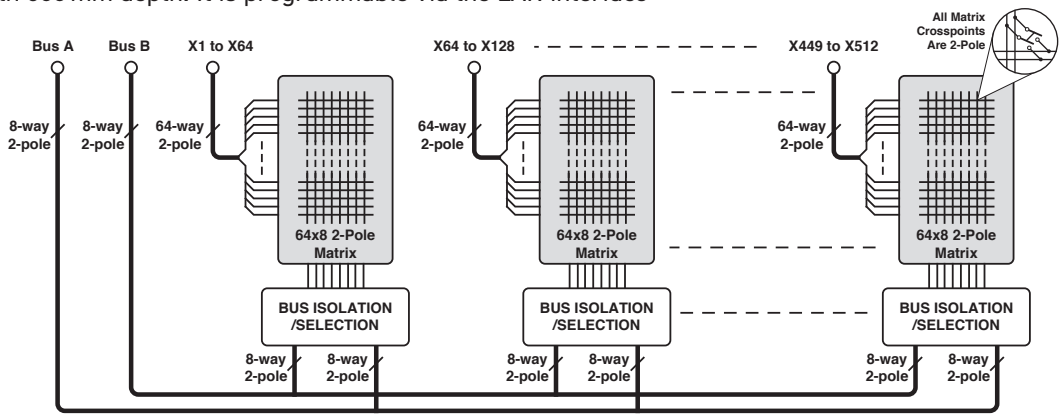
The 60-555/556 is ideal for situations where a simple start-up is required and for applications requiring control over large distances.

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



60-555 Double Pole 512x8 EMR Matrix Schematic Diagram.

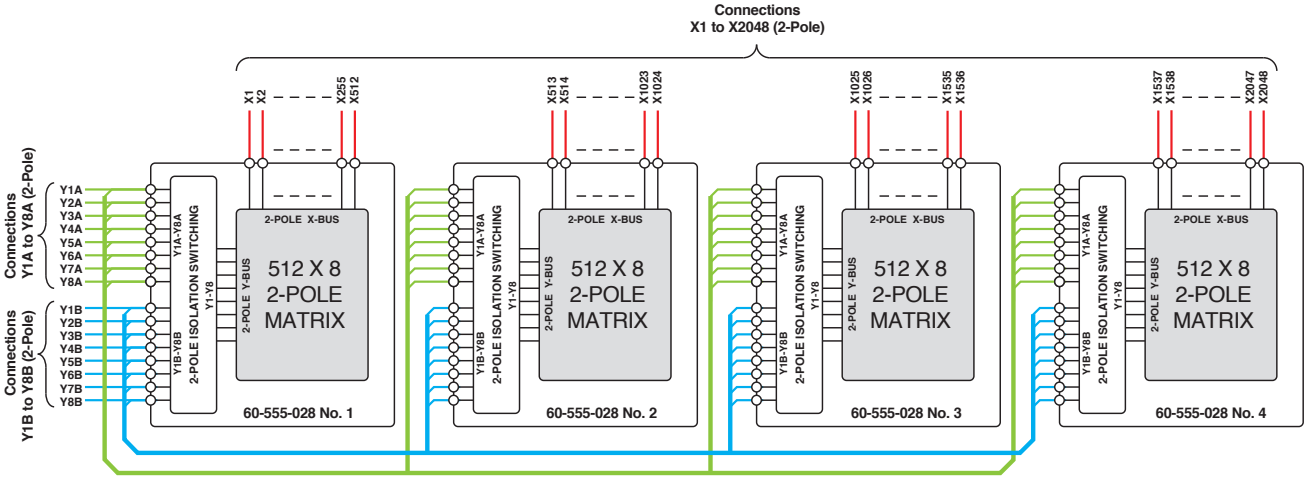
The 60-555 has up to eight 64x8 sub-matrices linked by two analog buses. Isolation/ selection switches connect the Y-bus of a sub-matrix to Bus A, Bus B or isolate it from other sub-matrices. The 60-556 has the same topology but with 64x4 sub-matrices and 4-way analog buses.

Issue 4.6 January 2024

Matrix Expansion

The 60-555/556 may be expanded to larger matrix sizes by using cabling to daisy-chain the Y signals.

The illustrations below show four 60-555-008 512x8 2-pole matrices interconnected as a 2048x8 2-pole matrix using specially constructed cables. The first diagram shows the matrix schematic and the second diagram shows how the front panel connectors are cabled together.



Schematic Diagram of four 60-555-028 matrices connected as a single 2048x8 2-pole matrix, the 60-555 is fitted with Dual 8-wire, 2-pole Analog Buses

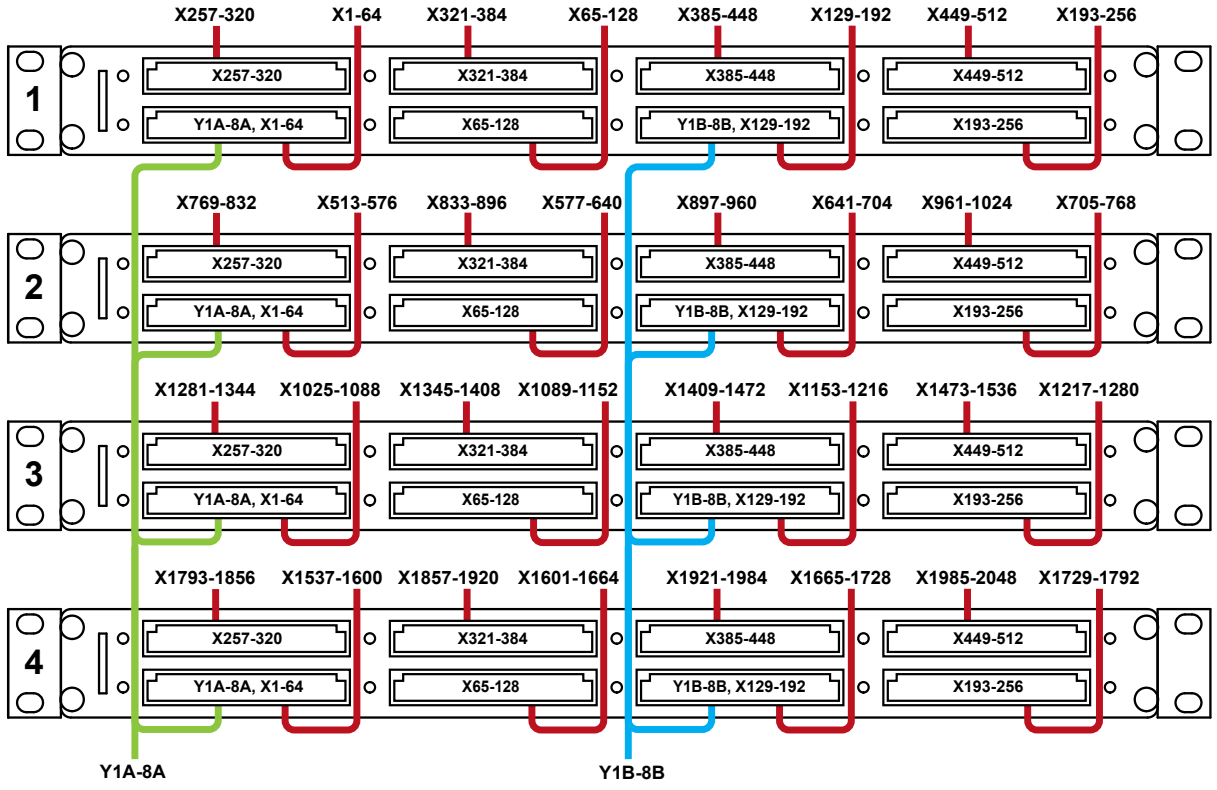


Diagram showing the front panel cabling required to interconnect four 60-555-028 matrices as a single 2048x8 2-pole matrix

Relay Type

The 60-555/556 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:	300 VDC/250 VAC*
Max Power:	62.5 VA, 60 W from 30 V to 220 VDC, 30 W to 300 VDC (resistive load)
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)
Initial Path Resistance - On:	1Ω typical (highest resistance path)
Initial Path Resistance - Off:	$>10^9$ Ω
Minimum Voltage:	100 µV
Differential Thermal Offset:	<2 µV
Operate Times	
Crosspoint Relay:	<3 ms
Crosspoint + Isolation Relay:	<6 ms
Expected Life (operations)	
Very low power signal load:	$>1x10^8$
Low power load (2 W):	$>1.5x10^7$ (0.1 A 20 VDC)
Medium power load (30 W):	$>5x10^6$ (1 A 30 VDC)
Full power load (60 W):	$>1x10^5$ (2 A 30 VDC)
	$>1x10^5$ (0.1 A 300 VDC)
Bandwidth:	5 MHz typical (fully populated)
Crosstalk:	40 dB typical at 600 kHz
Max Number of simultaneously closed crosspoints:	512

* 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 60-555/556 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 and Y connections are via 8 x160-pin DIN41612 plugs (Y connections are on the first and third X signal connectors).

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.

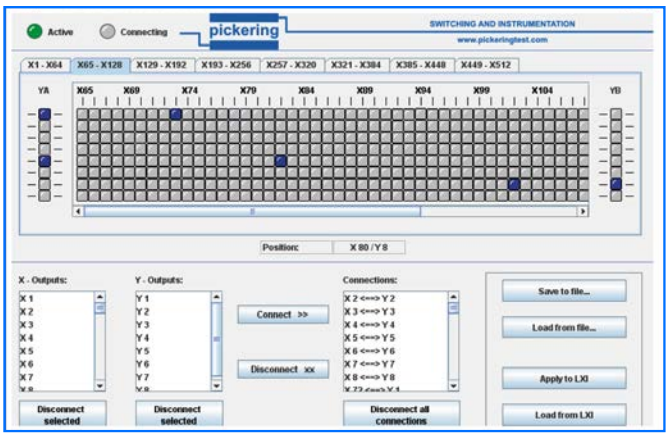
Product Order Codes

LXI High Density 192x8 2-Pole EMR Matrix	60-555-023
LXI High Density 256x8 2-Pole EMR Matrix	60-555-024
LXI High Density 320x8 2-Pole EMR Matrix	60-555-025
LXI High Density 384x8 2-Pole EMR Matrix	60-555-026
LXI High Density 448x8 2-Pole EMR Matrix	60-555-027
LXI High Density 512x8 2-Pole EMR Matrix	60-555-028
LXI High Density 192x4 2-Pole EMR Matrix	60-556-023
LXI High Density 256x4 2-Pole EMR Matrix	60-556-024
LXI High Density 320x4 2-Pole EMR Matrix	60-556-025
LXI High Density 384x4 2-Pole EMR Matrix	60-556-026
LXI High Density 448x4 2-Pole EMR Matrix	60-556-027
LXI High Density 512x4 2-Pole EMR Matrix	60-556-028

Product Order Codes Without BIRST

60-555/556 is still available for users who have qualified the product without the BIRST feature:

LXI High Density 192x8 2-Pole EMR Matrix	60-555-003
LXI High Density 256x8 2-Pole EMR Matrix	60-555-004
LXI High Density 320x8 2-Pole EMR Matrix	60-555-005
LXI High Density 384x8 2-Pole EMR Matrix	60-555-006
LXI High Density 448x8 2-Pole EMR Matrix	60-555-007
LXI High Density 512x8 2-Pole EMR Matrix	60-555-008
LXI High Density 192x4 2-Pole EMR Matrix	60-556-003
LXI High Density 256x4 2-Pole EMR Matrix	60-556-004
LXI High Density 320x4 2-Pole EMR Matrix	60-556-005
LXI High Density 384x4 2-Pole EMR Matrix	60-556-006
LXI High Density 448x4 2-Pole EMR Matrix	60-556-007
LXI High Density 512x4 2-Pole EMR Matrix	60-556-008



Soft Front Panel for the 60-555 Matrix - can be executed as a Java applet from the device's LXI home page and allows graphical control of the matrix

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

Product	Test Tool	Adaptor
60-555/556	93-002-001	93-002-410

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
60-555/556	91-100-001

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

Mating Connectors & Cabling

For connection accessories for the 60-555/556 please refer to the 90-001D 160-pin DIN41612 Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to our website.

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.

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

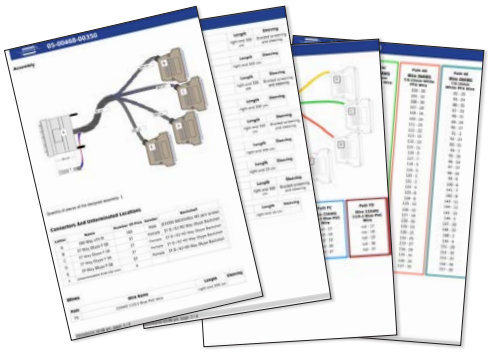
Breakouts

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



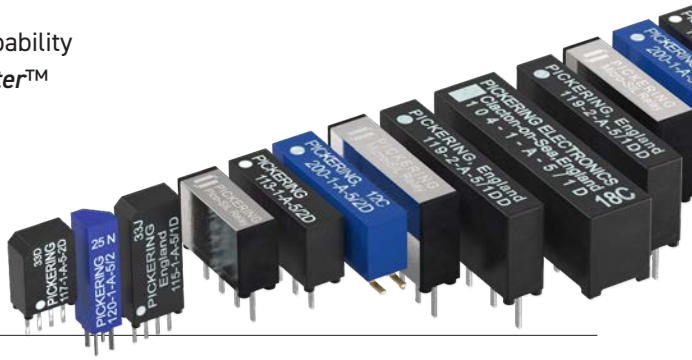
Mass Interconnect

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



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

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

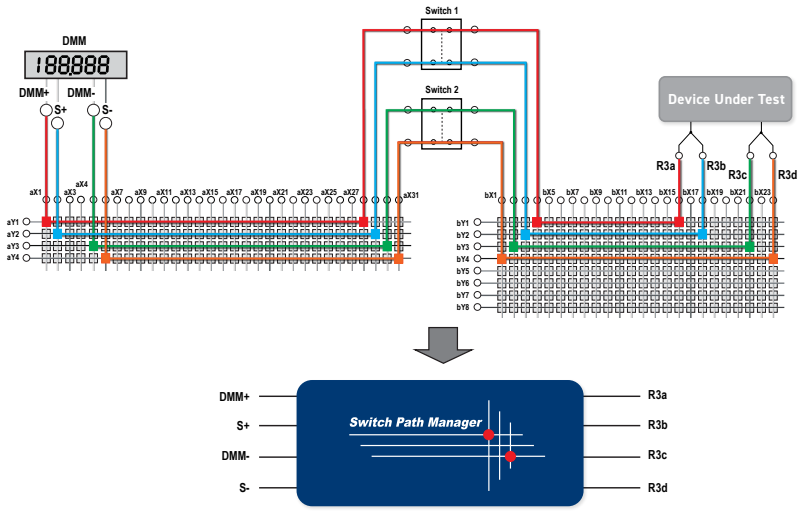
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

To learn more about software drivers and development environments go to pickeringtest.com/software

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



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

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

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

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