- Single Pole High Density Matrix - Up To 4096 Crosspoints

- Single Matrix Sizes From 16x64 to 64x64

- Dual Matrix Sizes From 8x64 to 32x64

- Easily Expanded to Larger Matrix Sizes

- Uses High Quality Electro-Mechanical Relays

- Switch up to 300 VDC/250 VAC and up to 60 W Max Power

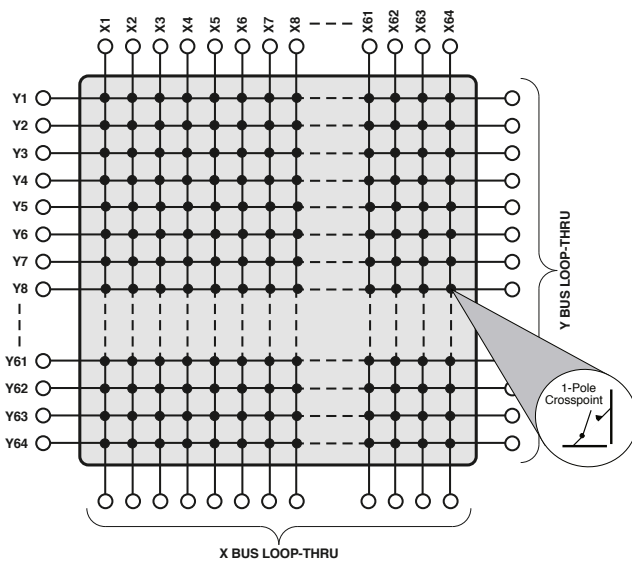- Maximum Switch Current of 2 A

- 1U Rack Mountable Enclosure

The 60-552 is a high density single pole matrix with a maximum size of 64x64 suitable for signal routing in large ATE systems. It can be expanded to produce larger matrix sizes, for instance, two units can be linked to create a 128x64 matrix. Expansion is made easy by the inclusion of front panel "Loop-Thru" connectors for daisy-chaining the X or Y bus. Where a smaller matrix size is required, 16x64, 24x64, 32x64, 40x64, 48x64 and 56x64 versions are available.

- LXI Standard 1.4 Compliant

- IVI & Direct I/O Drivers

- Built-In Diagnostics - *BIRST ™*

- Supported by *eBIRST ™*

- 3 Year Warranty

The 60-552 can also be supplied in dual matrix formats of 8x64, 16x64, 24x64 and 32x64. In these configurations the chassis contains two identical matrices which can be controlled separately.

The 60-552 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 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 60-552 is ideal for applications where a simple start-up process is required and for applications requiring control over large distances.
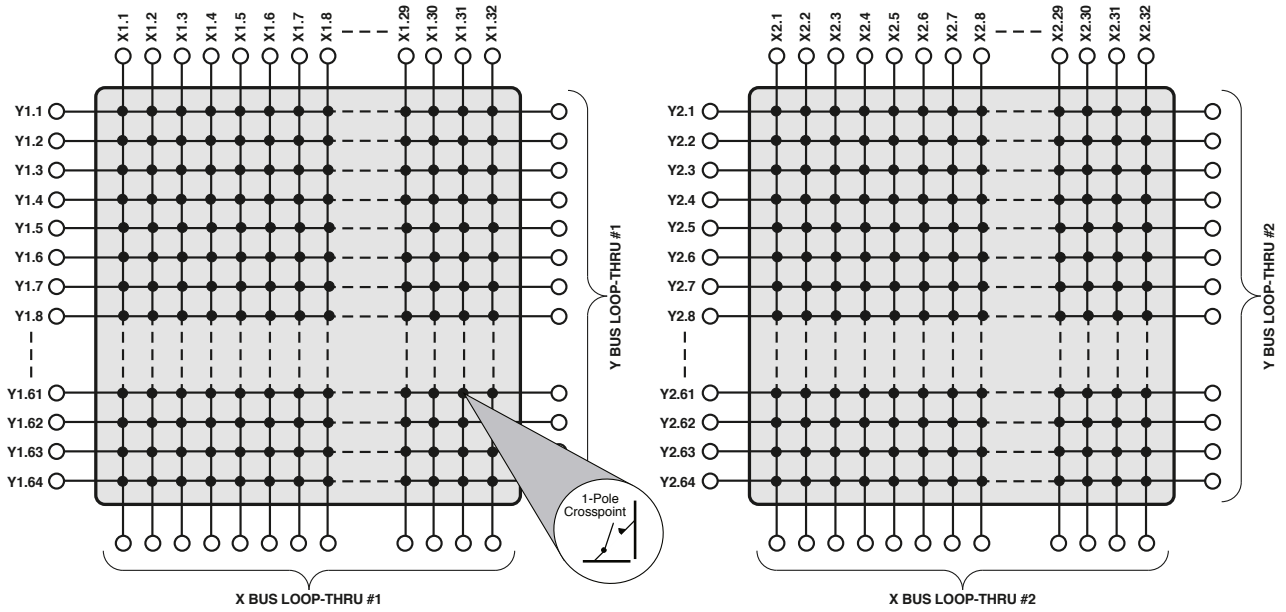
Built-In Relay Self-Test - *BIRST*

The *BIRST* facility provides a quick and simple way of finding relay failures. No test equipment is required, simply un-plug the user 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*

In addition to *BIRST*, these matrices are 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


60-552 Single Pole, Single 64x64 High Density LXI Matrix Schematic Diagram

Issue 4.5 January 2024

The 60-552 High Density LXI Matrix is also available in dual configurations,
shown here is the schematic diagram for a dual 32x64 matrix.

Matrix Expansion

The 60-552 may be easily expanded to larger matrix sizes by using the front panel X and Y "Loop-Thru" connectors.

The illustrations below show four 60-552 64x64 matrices interconnected as a 128x128 matrix using four 78-pin D-type female to female cables. The first diagram shows the matrix schematic and the second diagram shows how the front panel connectors are cabled together. A suitable cable for interconnecting 60-552 units is the Pickering 40-970-078-0.25M.
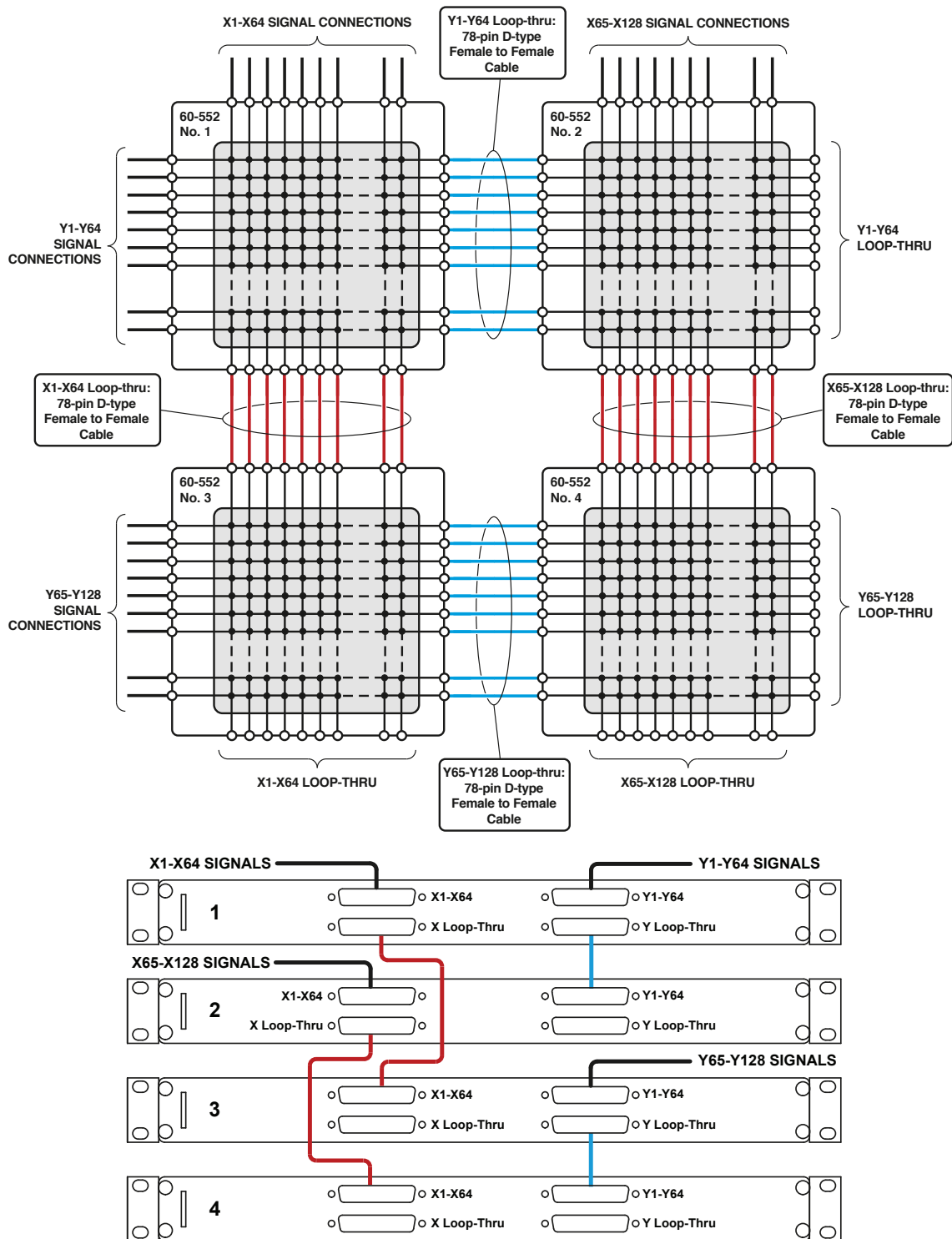
Relay Type

The 60-552 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 (single crosspoint):	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)
Max Combined Switch Path Power Dissipation:	80 W (eg. 20 Xpoints @2 A)
Path Resistance - On:	<1Ω
Path Resistance - Off:	>10^9 Ω
Minimum Voltage:	100 µV
Operate Time:	3 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:	6.5 MHz typical (fully populated)†
Max number of simultaneously closed contacts:	128

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

† Measured bandwidth for 24x64 matrix is 7.5 MHz typical.

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 60-552 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, 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 (single matrix versions have 4 connectors, dual matrix versions have 8):

X and Y connections are via 78-pin male D-types.
X and Y loop-thru connections are via 78-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

LXI High Density Single 16x64 Matrix	60-552-021
LXI High Density Single 24x64 Matrix	60-552-022
LXI High Density Single 32x64 Matrix	60-552-023
LXI High Density Single 40x64 Matrix	60-552-024
LXI High Density Single 48x64 Matrix	60-552-025
LXI High Density Single 56x64 Matrix	60-552-026
LXI High Density Single 64x64 Matrix	60-552-027
LXI High Density Single 50x50 Matrix	60-552-921
LXI High Density Single 50x64 Matrix	60-552-922
LXI High Density Dual 8x64 Matrix	60-552-028
LXI High Density Dual 16x64 Matrix	60-552-029
LXI High Density Dual 24x64 Matrix	60-552-030
LXI High Density Dual 32x64 Matrix	60-552-031

Note: Standard configurations can be upgraded to larger ones on a return to the factory basis, please contact Pickering sales office for details.

Product Order Codes Without BIRST

60-552 is still available for users who have qualified the product without the BIRST feature:

LXI High Density Single 16x64 Matrix	60-552-001
LXI High Density Single 24x64 Matrix	60-552-002
LXI High Density Single 32x64 Matrix	60-552-003
LXI High Density Single 40x64 Matrix	60-552-004
LXI High Density Single 48x64 Matrix	60-552-005
LXI High Density Single 56x64 Matrix	60-552-006
LXI High Density Single 64x64 Matrix	60-552-007
LXI High Density Single 50x50 Matrix	60-552-901
LXI High Density Single 50x64 Matrix	60-552-902
LXI High Density Dual 8x64 Matrix	60-552-008
LXI High Density Dual 16x64 Matrix	60-552-009
LXI High Density Dual 24x64 Matrix	60-552-010
LXI High Density Dual 32x64 Matrix	60-552-011

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

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
60-552	93-006-001	Not Required

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
60-552	91-100-001

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

Mating Connectors & Cabling

For connection accessories for the 60-552 please refer to the 90-006D 78-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to our website.

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
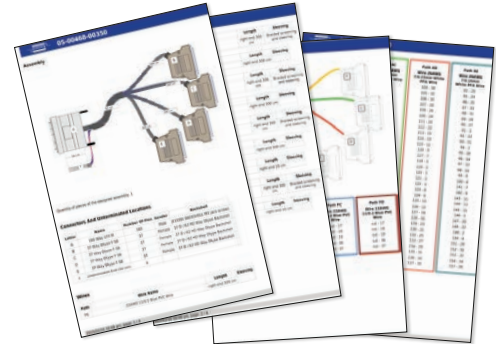
Start designing your custom cabling, go to pickeringtest.com/cdt

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
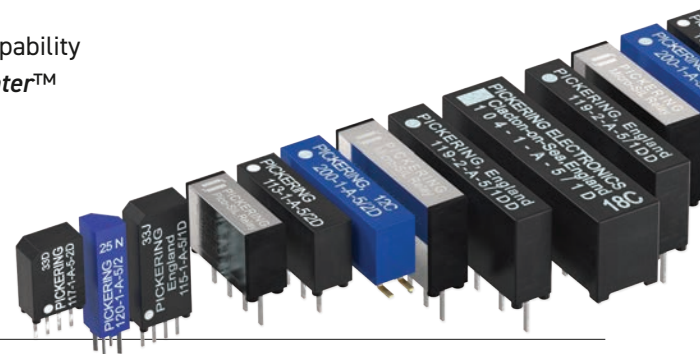
Programming

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
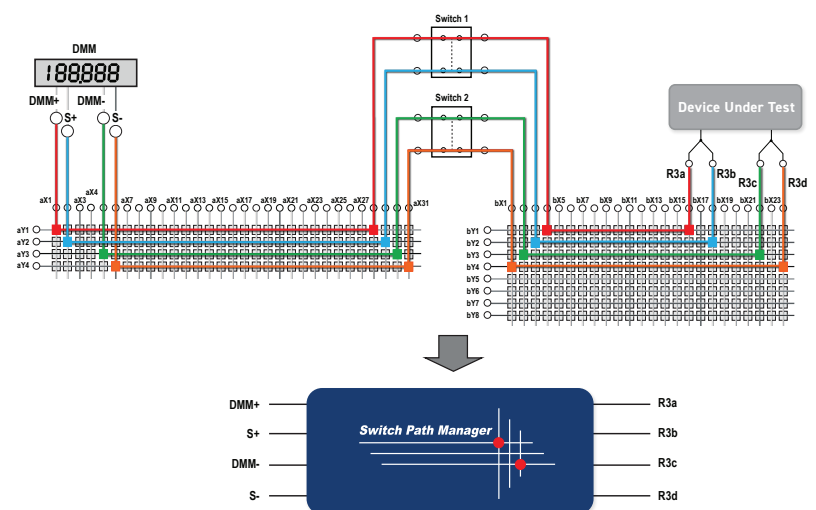
Diagnostic Relay Test Tools

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