PXI 10A Power EMR Matrix

40-551

- High Density, High Current Switching
- 1-Pole Power Matrix Available in 8x4, 8x2 and 4x4 Formats
- 8x4 Version Available With X and Y Loop-Thru Connections For Simple Expansion
- 10A Current Rating With 300W/2500VA Maximum Power
- Hot Switch to 125VDC/250VAC, Cold Switch to 400VDC/250VAC
- High Quality Electro-mechanical Relays
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- 3 Year Warranty

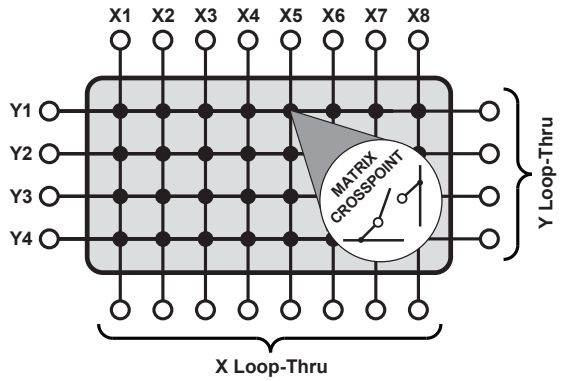
The 40-551 is a power matrix module, suitable for switching inductive/capacitive loads up to 10A with 125VDC/250VAC hot switching and 400VDC/250VAC cold switching. The matrix is available in the following configurations:

- 40-551-001 8x4 1-Pole 10A Matrix
- 40-551-101 8x4 1-Pole 10A Matrix with Loop-Thru
- 40-551-002 8x2 1-Pole 10A Matrix
- 40-551-003 4x4 1-Pole 10A Matrix

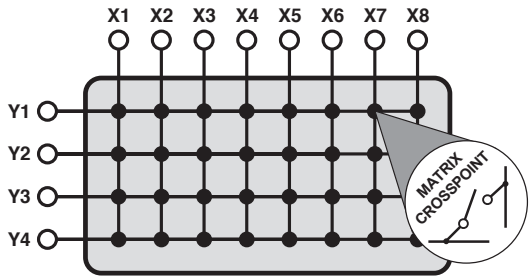
The version with loop-thru allows expansion between adjacent 40-551 modules, for example 16x4 or 8x8 matrices can easily be created.

X and Y connections are via a 20-pin GMCT plug, the 8x4 module with loop-thru has an additional 20-pin GMCT plug for module-to-module connection.

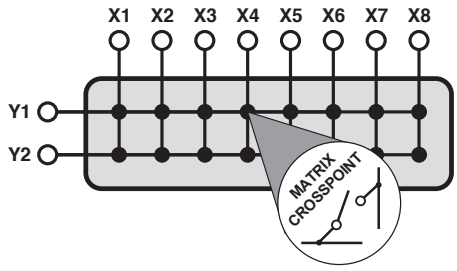
The module is suitable for applications requiring switching of either mains voltage or direct current or for slave switching large external relays, contactors or solenoids.



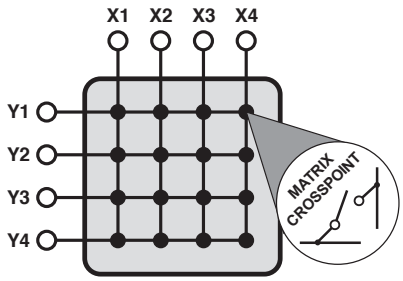
40-551-101 8x4 Power Matrix With X and Y Loop-Thru



40-551-001 8x4 Power Matrix



40-551-002 8x2 Power Matrix



40-551-003 4x4 Power Matrix

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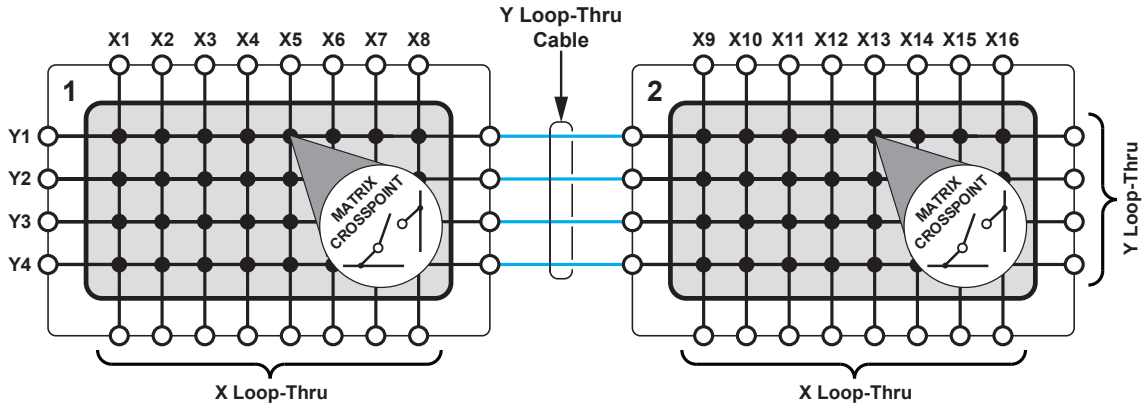
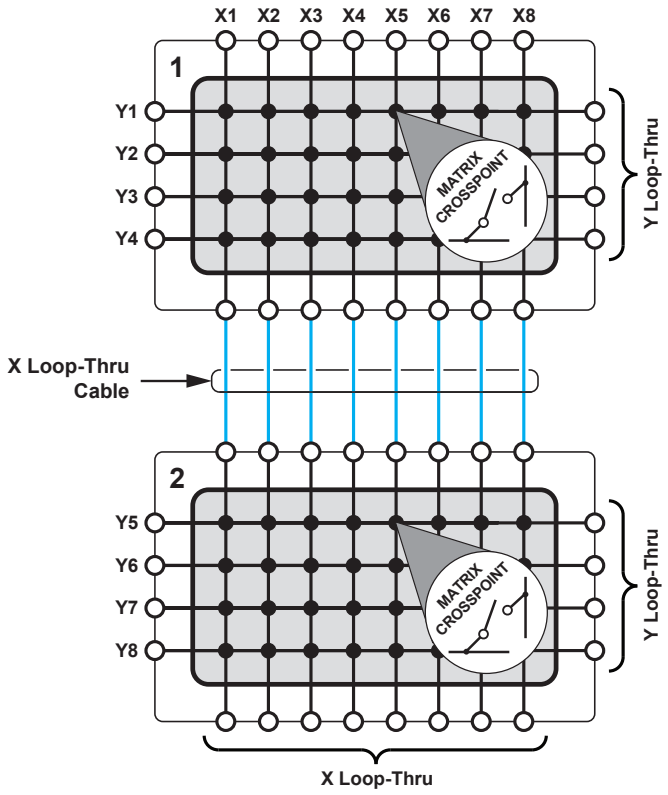
Matrix Expansion

The 40-551-101 may be expanded to larger matrix sizes using cabling to daisy-chain the X and Y signals.

The first illustration below shows two 40-551-101 8x4 matrices connected as a 16x4 matrix using a GMCT to GMCT cable wired with Y to Y connections. The second illustration shows two 40-551-101 8x4 matrices connected as an 8x8 matrix using a GMCT to GMCT cable wired with X to X connections.



Schematic Diagram of two 40-551-101 matrices connected as a single 16x4 1-pole matrix, using a custom loop-thru cable wired for Y to Y connections.



Schematic Diagram of two 40-551-101 matrices connected as a single 8x8 1-pole matrix, using a custom loop-thru cable wired for X to X connections.

Relay Type

The 40-551 is fitted with electro-mechanical power relays, gold-flash over silver alloy.

Switching Specification

Contact Type:	Gold flash over silver alloy
Cold Switching Capacity Maximum Current: Maximum Voltage:	 10A 400VDC/250VAC*
Hot Switching Capacity Maximum Current: Maximum Voltage: Maximum Power:† Minimum Switching Capacity:	 10A 125VDC/250VAC* 300W/2500VA 10mA, 5VDC ‡
Initial On Path Resistance: Off Path Resistance:	<100mΩ (40mΩ typical) $>10^9$Ω
Bandwidth (3dB insertion loss into 50Ω typically better than): Crosstalk (channel to channel typically better than): Isolation (open channel typically better than): 	13.5MHz -60dB @ 100kHz -42dB @ 1MHz -20dB @ 10MHz 60dB @ 100kHz 44dB @ 1MHz 10dB @ 10MHz
Operate Time:	10ms typical
Expected Life (operations) Mechanical Life: At Max Hot Switch Capacity:	 $>5x10^7$ $>1x10^5$

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

† For variation of maximum hot switching capacity of voltage with current refer to plot.

‡ Hot switching at/beyond the levels specified is recommended for optimal contact resistance stability. These values can change due to factors such as switching frequency, environmental conditions & desired reliability level.

Mechanical Characteristics

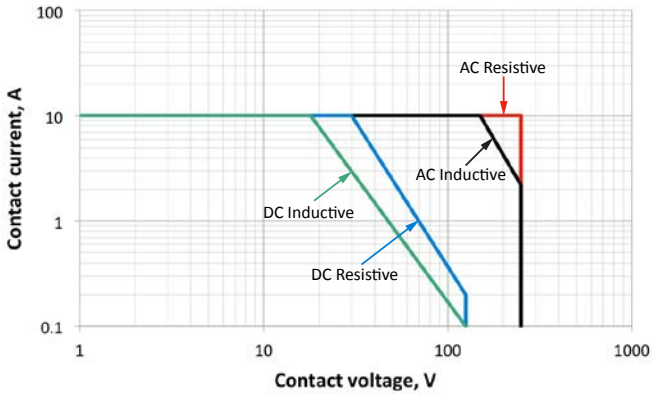
Single slot 3U PXI (CompactPCI card).
3D models for all versions in a variety of popular file formats are available on request.

Connectors

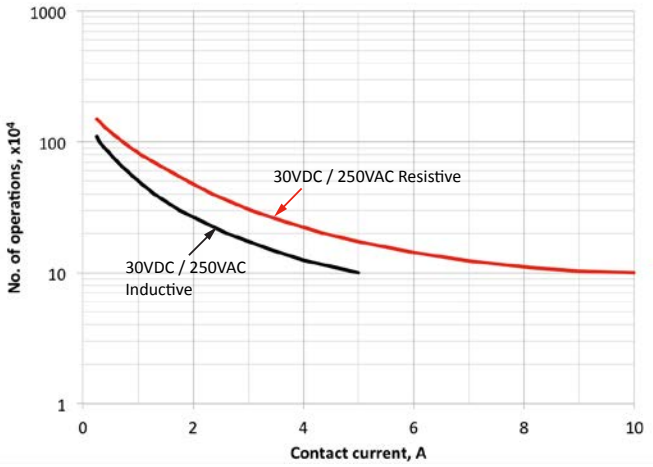
PXI bus via 32-bit P1/J1 backplane connector.
Signals via front panel connectors:

- 40-551-00x 20-pin male GMCT
- 40-551-101 2 x 20-pin male GMCT

For pin outs please refer to the operating manual.



40-551 Current/Voltage Plot



40-551 Current/Operating Life Plot

Power Requirements

+3.3V	+5V	+12V	-12V
0	70mA	0.5A	0

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

PXI & CompactPCI Compliance

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus and Star Trigger are not implemented.

Uses a 33MHz 32-bit backplane interface.

Safety & CE Compliance

All modules 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

10A Power EMR Matrix, 1-Pole, 8x4	40-551-001
10A Power EMR Matrix, 1-Pole, 8x4 With X and Y Loop-Thru	40-551-101
10A Power EMR Matrix, 1-Pole, 8x2	40-551-002
10A Power EMR Matrix, 1-Pole, 4x4	40-551-003

Product Customization

Pickering PXI modules 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

Spare Relay Kits

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

Product	Relay Kit
40-551-001/101/002/003	91-100-071 (Relay Kit 71)

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

Mating Connectors & Cabling

For connection accessories for the 40-551 module please refer to the 90-014D 20-pin GMCT Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

20 pin GMCT Power Connector, type 40-960-020

Chassis Compatibility

This PXI module must be used in a suitable chassis. It is compatible with the following chassis types:

- All chassis conforming to the 3U PXI and 3U Compact PCI (cPCI) specification
- Legacy and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis
- Pickering Interfaces LXI or LXI/USB Modular Chassis

Chassis Selection Guide

Standard PXI or hybrid PXIe Chassis from any Vendor:

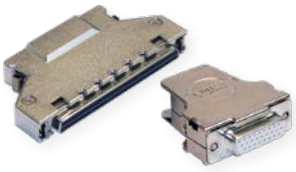
- Mix our 1000+ PXI switching & simulation modules with any vendor's PXI instrumentation
- Embedded or remote Windows PC control
- Real-time Operating System Support
- High data bandwidths, especially with PXI Express
- Integrated module timing and synchronization

Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- Independence from Windows operating system

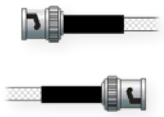
Connectivity Solutions

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.

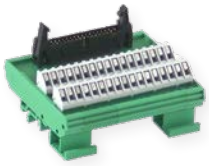


Connectors & Backshells

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

Pickering provide kernel, IVI and VISA (NI & Keysight) drivers 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 VISA driver is also compatible with Real-Time Operating Systems such as LabVIEW 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+)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **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, 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

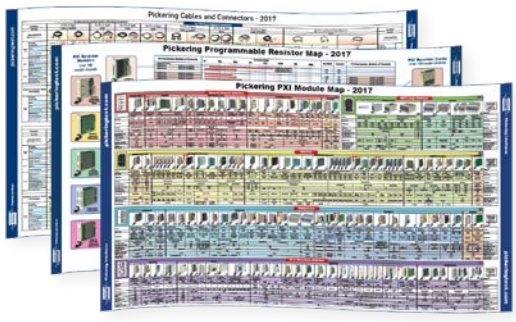
eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
To learn more, please go to: pickeringtest.com/ebirst

Three Year Warranty & Guaranteed Long-Term Support

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

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