PXI 2-Pole High Density Matrix Module 40-950-001

- High Density Matrix in 2-Slot PXI Format
- 32x8 2-Pole Configuration
- Maximum Current 2 A Hot or Cold Switching
- Switch up to 220 VDC/250 VAC
- Bandwidth up to 70 MHz
- Automatic Isolation Relay Switching
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by ***eBIRST*** ™ Test Tools
- 3 Year Warranty

The 40-950-001-202 is a 32x8 high density 2-pole PXI matrix module capable of switching up to 2 A at 220 VDC/250 VAC. The module is in 2-slot format and is constructed using quality electromechanical relays for high switching confidence.

The matrix has been optimised for applications that require high signal bandwidth. With careful design and the use of isolation switching, the matrix has a bandwidth in the range of 35 MHz to 70 MHz depending upon path selected.

High Reliability and Ease of Use

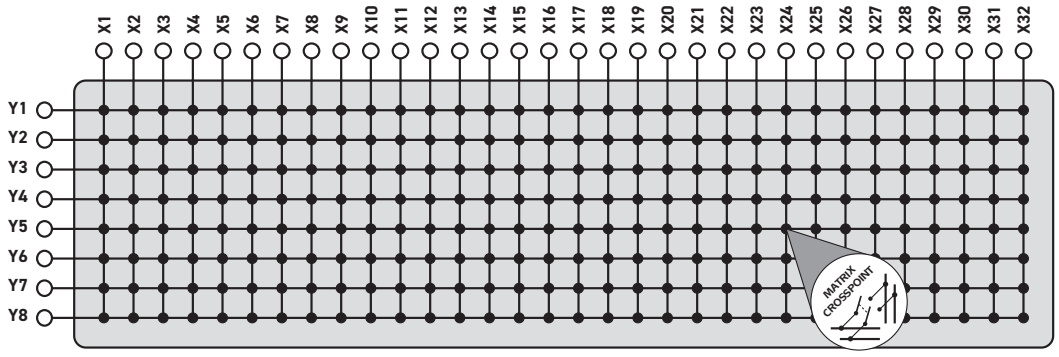
The 40-950-001-202 matrix is formed from two 16x8 matrix daughter cards with their Y-connections linked via an internal analog bus. This is designed to minimise the cost and complexity of interconnecting cable assemblies. Pickering can construct custom cables for all of our PXI modules, please contact sales office for further assistance.

Isolation Switching

The 40-950-001 daughter cards are fitted with isolation switches between the matrix Y-bus and the interconnecting analog bus. These ensure that only the required Y signal is routed to the front panel connector helping to preserve the bandwidth and crosstalk performance.

Supported by *eBIRST*

This module is supported by our *eBIRST* test tools. 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



The 40-950-001-202 is a 2-pole matrix with a size of 32x8 occupying 2 PXI Slots

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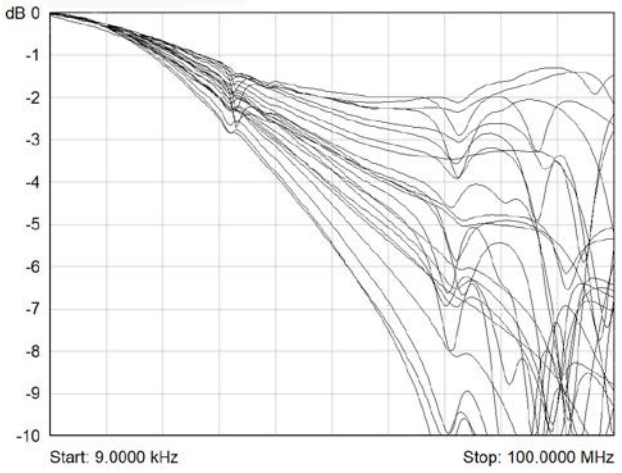
Switching Specifications

Switch Type:	Electro-mechanical
Contact Type:	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage:	220V DC/250 VAC*
Max Power: Max Switch Current: Max Continuous Carry Current: Max Pulsed Carry Current Example (for a single switch path):	62.5 VA, 60 W 2.0 A 2.0 A 6 A for 100 ms (up to 10 % duty cycle)
Initial Path Resistance On (Single Module): Off (Single Module): Minimum Voltage: Differential Thermal Offset:	 <450 mΩ (X-Y connection) $>10^9$ Ω 100 µV <10 µV
Operate Times Crosspoint Relay: Crosspoint & Isolation Relay:	 <3 ms <6 ms
Expected Life (operations) Very low power signal load: Low power load (2W): Medium power load (30W): Full power load (60W):	 $>1x10^8$ $>1.5x10^7$ (0.1 A 20V DC) $>5x10^6$ (1 A 30V DC) $>1x10^5$ (2 A 30V DC)

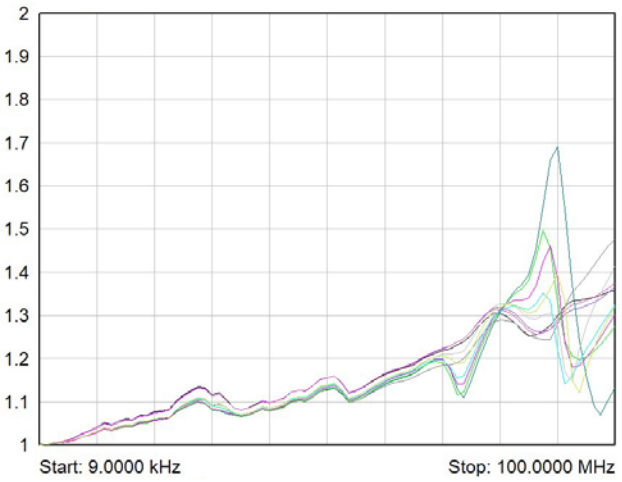
* For full voltage rating, signal sources to be switched must be fully isolated from mains supply and safety earth.

RF Specification

Bandwidth (-3dB):	35 MHz to 70 MHz (depending upon path selected, see manual for details)
VSWR (typical):	<1.5:1 to 85 MHz
Crosstalk (typical):	10k Hz: -65 dB 100 kHz: -65 dB 1 MHz: -45 dB 10 MHz: -25 dB 25 MHz: -25 dB 50 MHz: -25 dB
Isolation (typical):	10 kHz: 65 dB 100 kHz: 65 dB 1 MHz: 65 dB 10 MHz: 50 dB 25 MHz: 30 dB 50 MHz: 30 dB



40-950-001-202 Typical Insertion Loss Plot



40-950-001-202 Typical VSWR Plot

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
150 mA	750 mA (max)	0	0

Maximum Crosspoint Count

The 40-950-001-202 has a suggested maximum number of simultaneously operated crosspoints of 50 (please contact factory for applications requiring higher closure counts).

Mechanical Characteristics

Two slot 3U PXI (CompactPCI card).

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

Module weight: 720 g

Connectors

PXI bus via 32-bit P1/J1 backplane connector.

Signals via two front panel mounted 104-pin male D-type connectors:

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:	5000 m

Storage and Transport Conditions

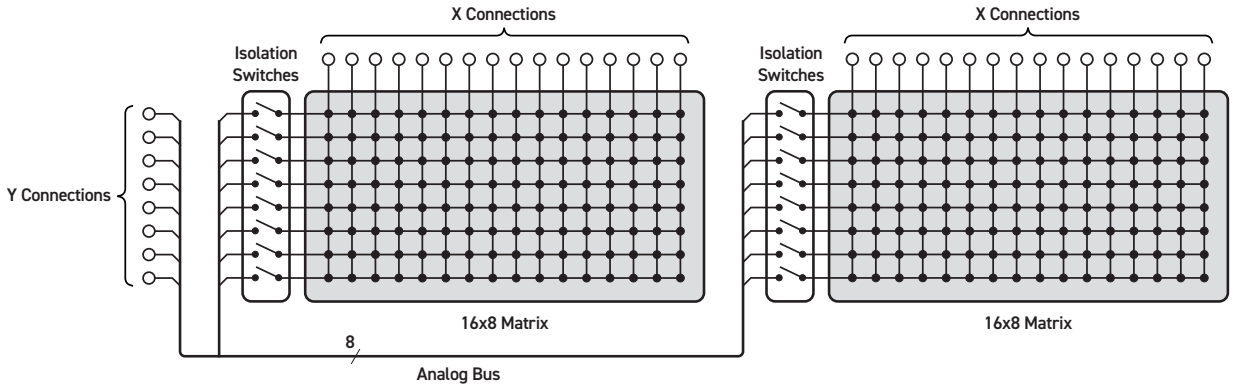
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

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 33 MHz 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.



Architecture diagram for the 40-950-001-202 showing how the two 16x8 daughter cards are interconnected with the analog bus to create a 32x8 matrix (all signal paths and crosspoints are 2-pole).

Product Order Codes

PXI 2-Slot 32x8 2-Pole High Density Matrix	**40-950-001-202**

Product Customization

Pickering 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.

System Ordering Information

The small form factor of the 60-104 LXI/USB modular chassis allows the 40-950-001 to be installed near the DUT using just the following items:

- **40-950-001-202**, 32x8 2-pole Switching Matrix, qty 1
- **60-104-001**, LXI/USB Modular Switching Chassis, 2-slot, qty 1
- **63-104-005**, Chassis Low Profile Mounting Kit, qty 1

The above components can be ordered by using the system level part number **60-104-901**.

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 listed below. This product requires master slave testing and two sets of tools are required together with the master slave cable: **93-970-301**
For more information go to: pickeringtest.com/ebirst

Product	Test Tool	Adaptor
40-950-001-202	**93-022-001**	**Not Required**

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
40-950-001-202	**91-100-113**

For further assistance, please contact the Pickering sales office.

Mating Connectors & Cabling

For connection accessories for the 40-950-001-202 module please refer to the 90-022D 104-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.

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:

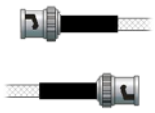
- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- Independence from Windows operating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

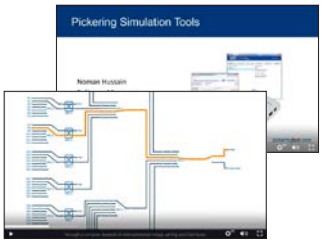
eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
To learn more, please go to: pickeringtest.com/ebirst

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 and white papers as well as application specific product brochures to assist when looking for the switching, simulation and connection 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