PXI/PXIe 50 Ω 4-Channel Terminated RF MUX 4x-873A

- Available as PXI or PXIe Modules
- Terminated 3 GHz RF Multiplexer
- Single and Dual Versions
- SMB or MCX Connector Versions
- High Performance, Low Cost
- Relay Cycle Counting Included
- Drivers Supplied for Windows and Linux, Plus Support for Real-time Systems
- PXI Versions Supported by PXI or LXI Chassis
- 3 Year Warranty

The 40-873A (PXI) and 42-873A (PXIe) are 4 to 1 RF Multiplexers available with 1 or 2 banks in a single PXI or PXIe slot. Additionally, extra switching allows unused channels to be terminated into 50 Ω, maintaining signal integrity.

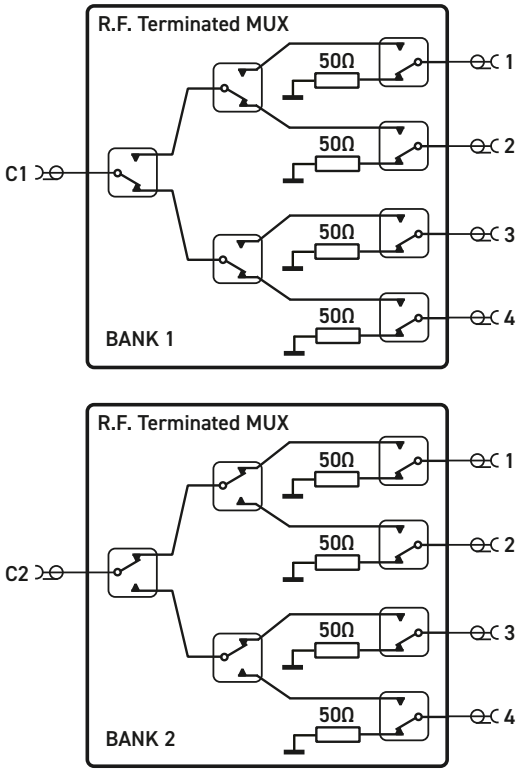
The module has low insertion loss and VSWR through the use of modern RF relay technology at an affordable cost. The multiplexers have excellent and repeatable RF characteristics to 3 GHz with each path having a nominally equal insertion loss. The 4x-873A minimizes the injection of noise and unwanted signals into the signal path by careful attention to the mechanical and electrical design.

Versions with MCX or SMB connectors are available, allowing users to simplify cabling issues by matching them to other connectors in their test system.

The 4x-873A is supplied with drivers that allow support in all popular software environments. The PXI versions can also be supported in all Pickering's LXI Modular Switching chassis, allowing the use of a PXI or LAN controlled switching solution with the same high levels of performance.

Relay Cycle Counting

To aid with module "health" monitoring all versions are provided with a relay cycle counting cycle feature. The number of operations per contact are stored on the module and can be used to determine if a relay is approaching EOL. This information could allow system connections to be revised so that signals applied to heavily used contacts are swapped with lightly used contacts to prolong the working life of the relay(s).



Dual 4 to 1 Terminated RF MUX (Part No. 4x-873A-x02)
Default Switch Paths Shown

Issue 2.0 January 2023

RF Specification

RF Frequency Range:	DC to 3 GHz, usable to 3.5 GHz
Insertion Loss:	Typically <0.5 dB to 1 GHz Typically <0.8 dB to 2 GHz Typically <1.5 dB to 3 GHz
VSWR:	Typically <1.2:1 to 1 GHz Typically <1.3:1 to 3 GHz
Termination VSWR:	Typically <1.25:1 to 1 GHz Typically <1.5:1 to 3 GHz
Isolation:	Typically >60 dB to 1 GHz Typically >45 dB to 3 GHz
Crosstalk:	Typically <-42 dB to 1 GHz Typically <-35 dB to 3 GHz
Maximum RF Power:	1 W (terminated)

Other Switching Specifications

Operating Time:	3 ms typical
Life Expectancy:	10 million operations at <100 mW

Power Requirements - 40-873A

+3.3 V	+5 V	+12 V	-12 V
0.03 A	0.23 A	0	0

Power Requirements - 42-873A

+3.3 V	+12 V
0.03 A	0.12 A

Mechanical Characteristics

40-873A - Single slot 3U PXI (CompactPCI card).

42-873A - Single slot 3U PXIe, compatible with PXIe hybrid slot.

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

Connectors

40-873A - PXI bus via 32-bit P1/J1 backplane connector.

42-873A - PXIe bus via XJ3 and XJ4 backplane connectors.

Signals via front panel SMB or MCX connectors.

PXI & CompactPCI Compliance - 40-873A

The module is compliant with the PXI Specification 2.2.
Local Bus, Trigger Bus & Star Trigger are not implemented.
Uses a 33 MHz 32-bit backplane interface.

PXIe Compliance - 42-873A

The module is compliant with the PXIe Specification 1.0.
Local Bus, Trigger Bus & Star Trigger are not implemented.

Safety & CE Compliance

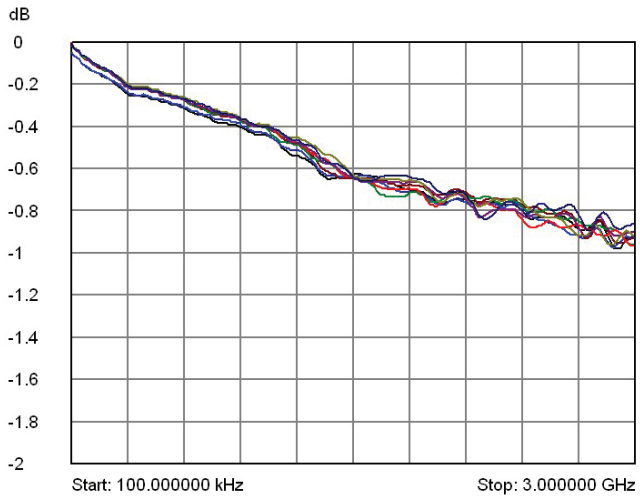
All modules are fully CE compliant and meet applicable EU directives:

Low-voltage safety EN61010-1:2010,
EMC Immunity EN61326-1:2013,
Emissions EN55011:2009+A1:2010.

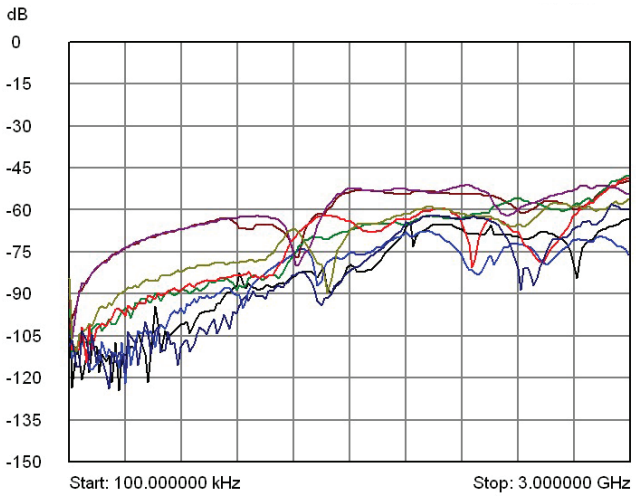
Operating/Storage Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

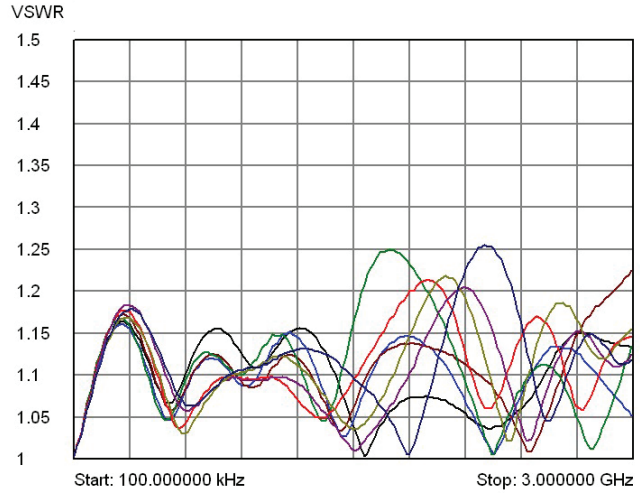
4x-873A RF Performance Plots
(Plots taken from typical sample showing all connecting paths for parameter)



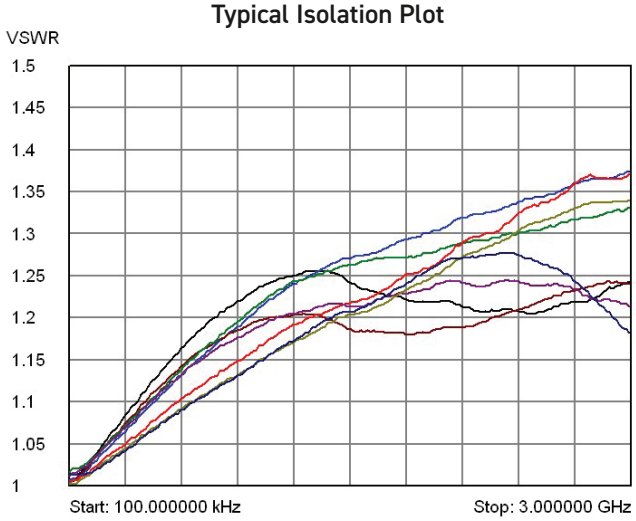
Typical Insertion Loss Plot



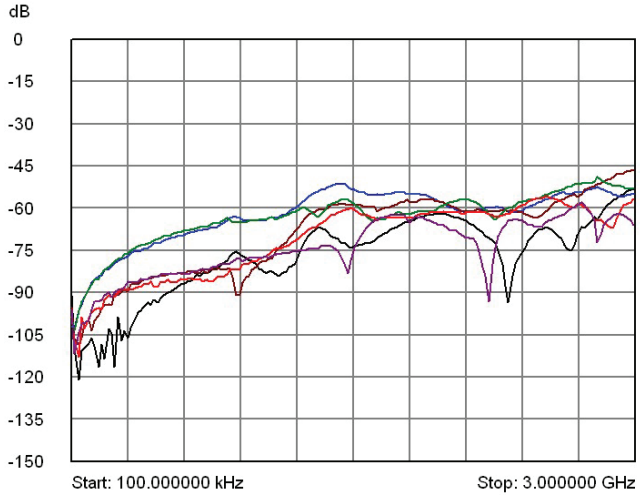
Typical Isolation Plot



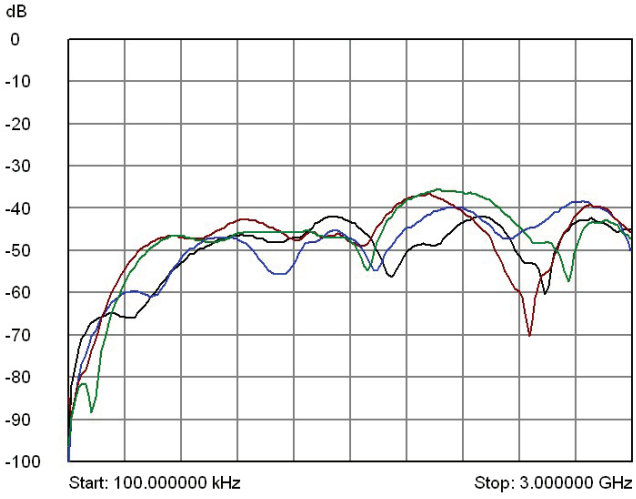
Typical VSWR Plot - Signal Paths



Typical VSWR Plot - Terminated



Typical Crosstalk Plot - Channel to Channel



Typical Crosstalk Plot - Bank to Bank

Product Order Codes

PXI Single 50 Ω Terminated 4:1 RF MUX, SMB	40-873A-001
PXI Dual 50 Ω Terminated 4:1 RF MUX, SMB	40-873A-002
PXI Single 50 Ω Terminated 4:1 RF MUX, MCX	40-873A-101
PXI Dual 50 Ω Terminated 4:1 RF MUX, MCX	40-873A-102
PXIe Single 50 Ω Terminated 4:1 RF MUX, SMB	42-873A-001
PXIe Dual 50 Ω Terminated 4:1 RF MUX, SMB	42-873A-002
PXIe Single 50 Ω Terminated 4:1 RF MUX, MCX	42-873A-101
PXIe Dual 50 Ω Terminated 4:1 RF MUX, MCX	42-873A-102

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.

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.

Connection Accessories

For a complete list of connection accessories and documentation for the 4x-873A module, please refer to our RF connectors datasheet (90-011D).

42-873A-002 PXIe Dual 50 Ω Terminated 4:1 RF Multiplexer

The 4x-873A is part of a range of 3 GHz multiplexers using electro-mechanical relays and 4 GHz multiplexers using MEMS switching technology:

Pickering's Range of PXI/PXIe 3 & 4 GHz Multiplexers			
Model No.	**Frequency**	**Channels**	**Bank Versions Available**
4x-872A	3 GHz	4	Single, Dual or Quad
4x-873A	3 GHz	4	Single or Dual (terminated channels)
4x-874A	3 GHz	8	Single or Dual
4x-875A	3 GHz	16	Single
4x-876A		4	Single, Dual or Quad (terminated common)
4x-878	4 GHz	4	Single, Dual or Quad (MEMS switching)

Chassis Compatibility

The PXI versions of this module are 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

The PXIe versions of this module are compatible with the following chassis types:

- All chassis conforming to the 3U PXIe specification
- PXIe and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis

Chassis Selection Guide

PXI and PXIe (with PXIe and/or Hybrid slots) Chassis from any Vendor:

- Mix our 1000+ PXI/PXIe switching & simulation modules with any vendor's PXI/PXIe 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 PXI Switching & Simulation Modules:

- Choose from 1000+ Pickering PXI 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. 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

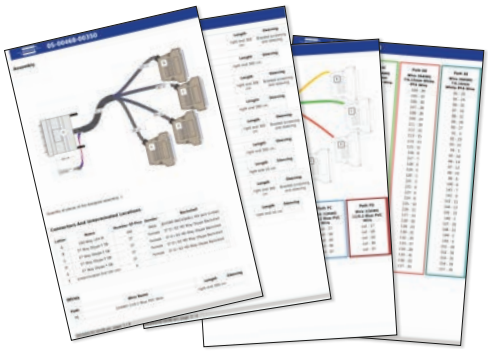
Breakouts

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



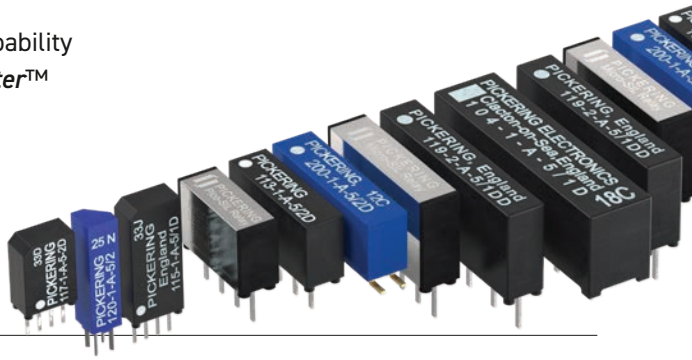
Mass Interconnect

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

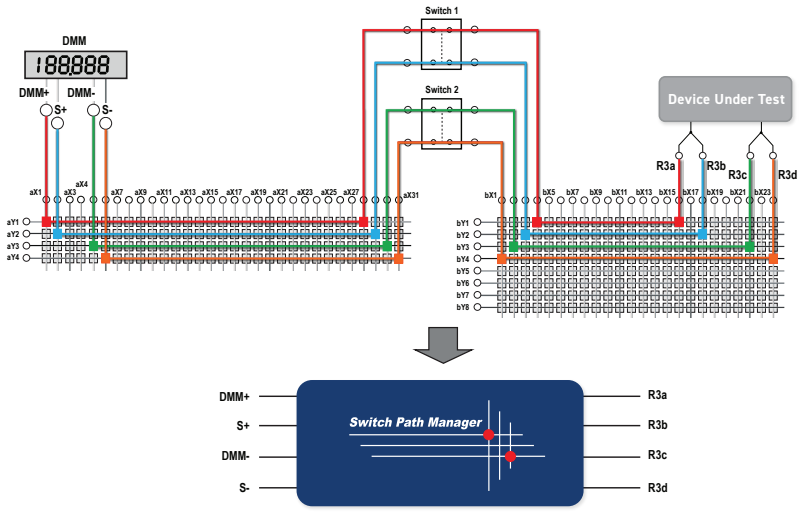
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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