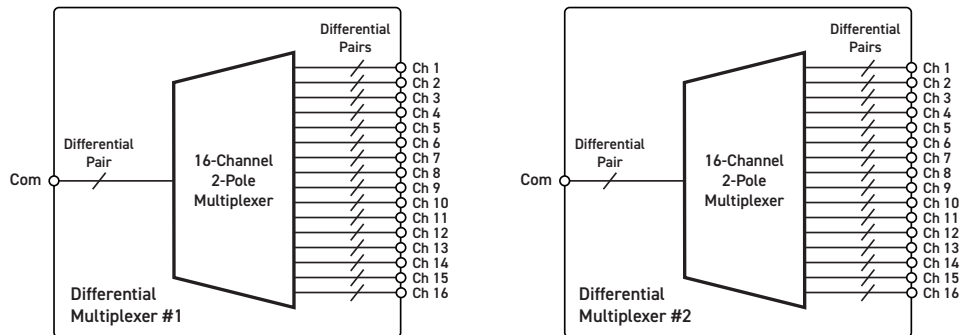


- Available as PXI or PXIe Modules
- Multiplexer Designed For Differential Signals
- Wide Differential Bandwidth
- Configurations from Single 4-Channel to Dual 16-Channel
- Dedicated Design for MIL-STD-1553 Applications
- Controlled Differential Impedance of $78\ \Omega$
- Designed to Minimize Path Resistance
- Relay Cycle Counting Included
- Drivers Supplied for Windows and Linux, Plus Support for Real-time Systems
- PXI Versions Supported by PXI or LXI Chassis
- Supported by *eBIRST™*
- 3 Year Warranty



Dual 16-Channel MIL-STD-1553 Multiplexer (Part No. 4x-739-002)



The 40-739 (PXI) and 42-739 (PXIe) are designed specifically for physical layer multiplexing or demultiplexing differential signals that conform to the MIL-STD-1553 specification. The module can be supplied as a single or dual multiplexer with 4, 8 or 16-channels. Multiplexers are 2-pole with each signal pair having a controlled $78\ \Omega$ differential impedance.

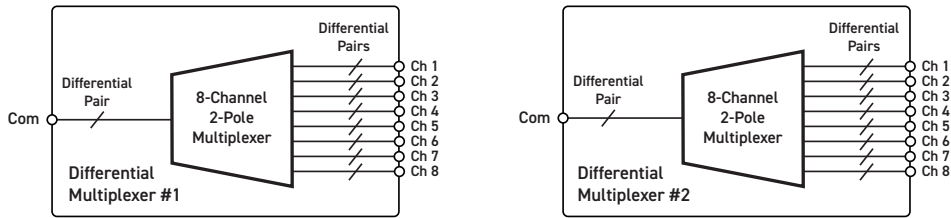
The module is ideal for the testing of multiple devices that use a serial communication interface, allowing the test system to select one target device from many. The design is bi-directional to permit use as a multiplexer or de-multiplexer with no impact on performance.

The module uses long lifetime electromechanical relays characterized for use in communications systems.

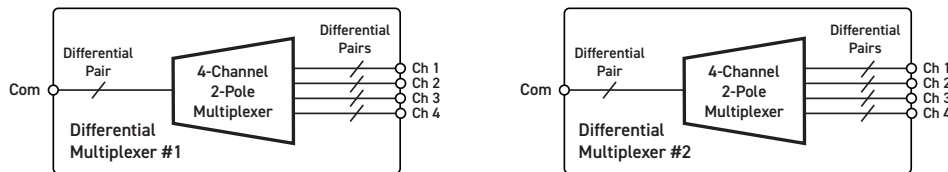
Relay Cycle Counting

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).

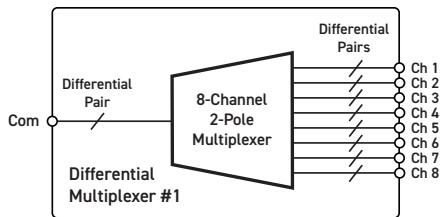
4x-739 Switching Configurations



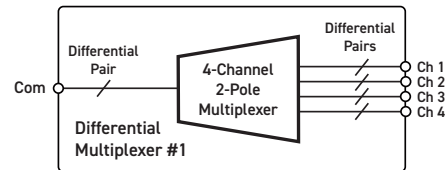
Dual 8-Channel Multiplexer (Part No. 4x-739-004)



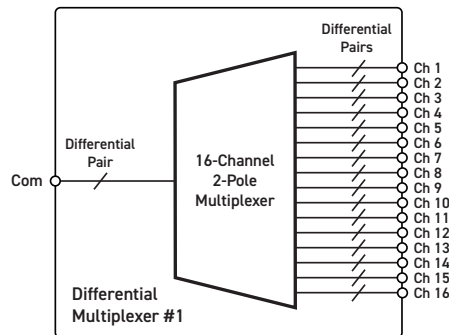
Dual 4-Channel Multiplexer (Part No. 4x-739-006)



Single 8-Channel Multiplexer
(Part No. 4x-739-003)



Single 4-Channel Multiplexer
(Part No. 4x-739-005)



Single 16-Channel Multiplexer
(Part No. 4x-739-001)

Relay Type

The 4x-739 is fitted with electro-mechanical Relays, these offer long life with good switching performance. A spare relay is built onto the circuit board to allow easy maintenance with minimum downtime.

Specification

Switching Configuration:	Single or Dual 4, 8 or 16-channel differential switching
Default (un-powered) signal path:	Com to highest channel no.
Differential Impedance:	78 Ω ±10 %
Single Ended Impedance:	39 Ω ±10 %
Voltage Rating:	120 V* between wires in same pair, 120 V* pair to pair
Current Rating:	800 mA
Maximum Power:	60 W
Minimum Switching Voltage:	100 μV
Contact Type:	Palladium Ruthenium, gold covered
Operate Time:	3 ms
Expected Life	
Mechanical Endurance:	>10 ⁸ operations
Full Power Load:	>10 ⁵ operations
Path Resistance:	<450 mΩ
Differential Bandwidth:	DC to 450 MHz

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

Power Requirements - 40-739

+3.3 V	+5 V	+12 V	-12 V
0.13 A	0.04 A	0	0

Power Requirements - 42-739

+3.3 V	+12 V
0.13 A	0.02 A

Mechanical Characteristics

40-739 - Single slot 3U PXI (CompactPCI card).

42-739 - Single slot 3U PXIe, compatible with PXIe hybrid slot

Module weight: 400 g

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

Connectors

40-739 - PXI bus via 32-bit P1/J1 backplane connector.

42-739 - PXIe bus via XJ3 and XJ4 backplane connectors.

Signals via front panel 78-pin male D-type connector, 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 Temperature: -20 °C to +75 °C

Humidity: Up to 90 % non-condensing

Altitude: 15000 m

PXI Product Order Codes

PXI MIL-STD-1553 Multiplexer	
Single 16-Channel, 2-Pole	40-739-001
Dual 16-Channel, 2-Pole	40-739-002
Single 8-Channel, 2-Pole	40-739-003
Dual 8-Channel, 2-Pole	40-739-004
Single 4-Channel, 2-Pole	40-739-005
Dual 4-Channel, 2-Pole	40-739-006

PXIe Product Order Codes

PXIe MIL-STD-1553 Multiplexer	
Single 16-Channel, 2-Pole	42-739-001
Dual 16-Channel, 2-Pole	42-739-002
Single 8-Channel, 2-Pole	42-739-003
Dual 8-Channel, 2-Pole	42-739-004
Single 4-Channel, 2-Pole	42-739-005
Dual 4-Channel, 2-Pole	42-739-006

Support Products

eBIRST Switching System Test Tool

This product is supported by the eBIRST test tools, the required eBIRST tools are detailed below.

Test Tool: 93-006-001

Adaptor: Not Required

Termination: 93-006-101

For more information go to pickeringtest.com/ebirst

Spare Relay Kits

Replacement relay kits are available for most Pickering's PXI switching products, simplifying servicing and reducing downtime.

Relay Kit: 91-100-001

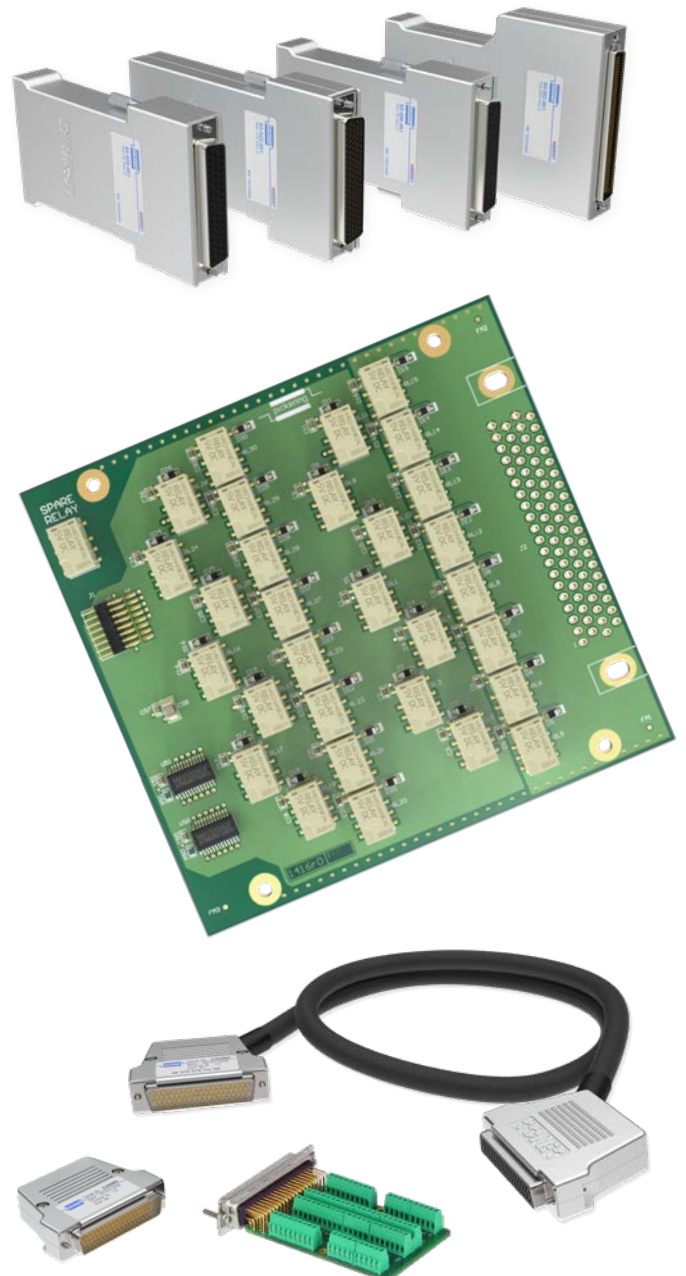
For further assistance, please contact your local Pickering sales office.

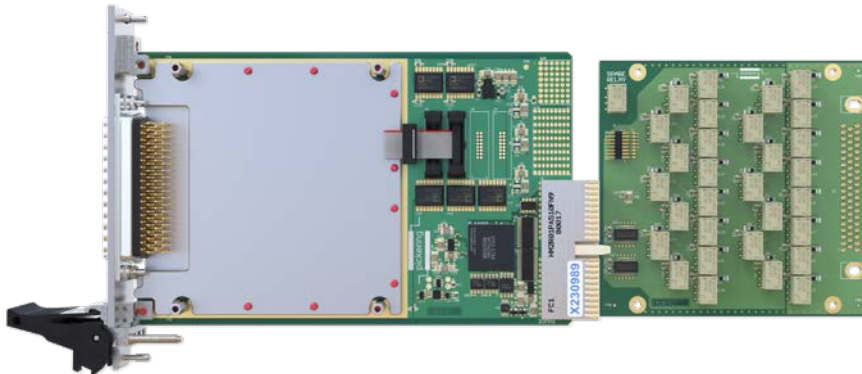
Connection Accessories

For a complete list of connection accessories and documentation for the 4x-739 module please refer to our [78-pin D-type datasheet \(90-006D\)](#).

Custom Interconnection Solutions

For applications where dedicated MIL-STD-1553 connectors / cable are required, a custom connectivity solution to convert from the module's D-connector can be supplied. Please contact your local sales office to discuss your requirements.





View showing the Daughter card of the MIL-STD-1553 Multiplexer

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.

Supported by *eBIRST* - Switching System Test Tools

These modules are supported by our *eBIRST* test tools which can quickly determine if a switching system has faults, identify the location of the fault at relay level and allow the user to take fast corrective action.

For more information go to pickeringtest.com/ebirst

PXI & CompactPCI Compliance - 40-739

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.

PXIe Compliance - 42-739

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.

The 4x-739 is part of a range of Differential Switching Modules suitable for data comms applications.

Pickering's Range of PXI/PXIe Data Comms Multiplexers		
Application	Configuration	Model No.
USB, RS232	Single 36 channel or Dual 18 channel, differential pair	40-735
1 Gb Ethernet, AFDX, BroadR-Reach, LVDS, USB, RS232	Single 32, Dual 16, Quad 8 channel, differential pair	40-736
USB1, USB2	Single 8:1 or 16:1 differential pair and power	4x-737A
MIL-STD-1553	Single or Dual, 4, 8 or 16 channel, differential pair	4x-739



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

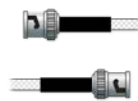
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed 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



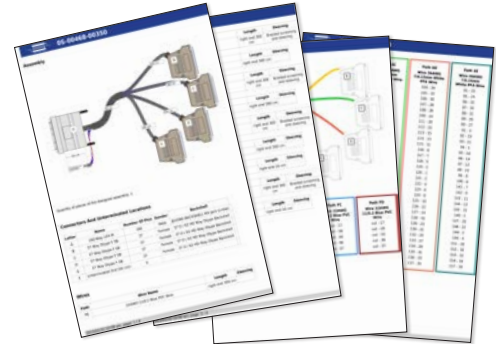
Breakouts



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

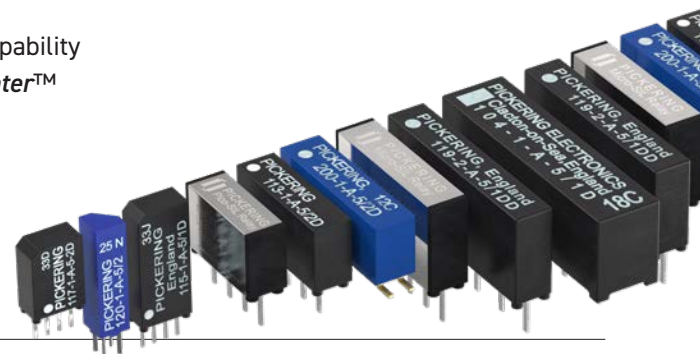
Mass Interconnect

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**

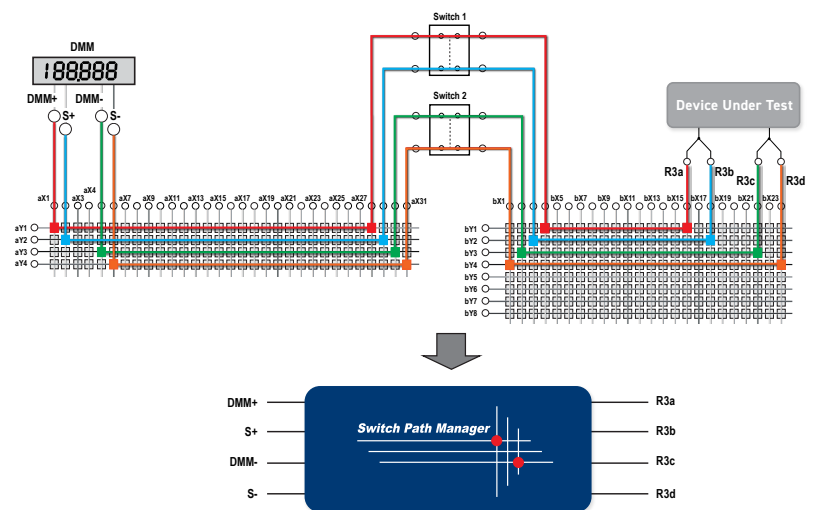
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

