- Available as PXI or PXIe Modules
- Multiplexer Designed For Differential Signals
- Wide Differential Bandwidth
- Configurations from Single 4:1 to Dual 16:1
- Dedicated Design for MIL-STD-1553 Applications
- Controlled Differential Impedance of 78 Ω
- Designed to Minimize Path Resistance
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by *eBIRST ™*
- 3 Year Warranty

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 Ω 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.

Supported by *eBIRST*

eBIRST switching system test 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

Pickering's Range of Data Comms Multiplexers		
Model No.	Configuration	Application
40-735	Single 36 channel or Dual 18 channel, differential pair	USB, RS232
40-736	Single 32, Dual 16, Quad 8 channel, differential pair	1 Gb Ethernet, AFDX, BroadR-Reach, LVDS, USB, RS232
40-737	Single 8:1 or 16:1 differential pair and power	USB1, USB2
40/42-739	Single or Dual, 4, 8 or 16 channel, differential pair	MIL-STD-1553
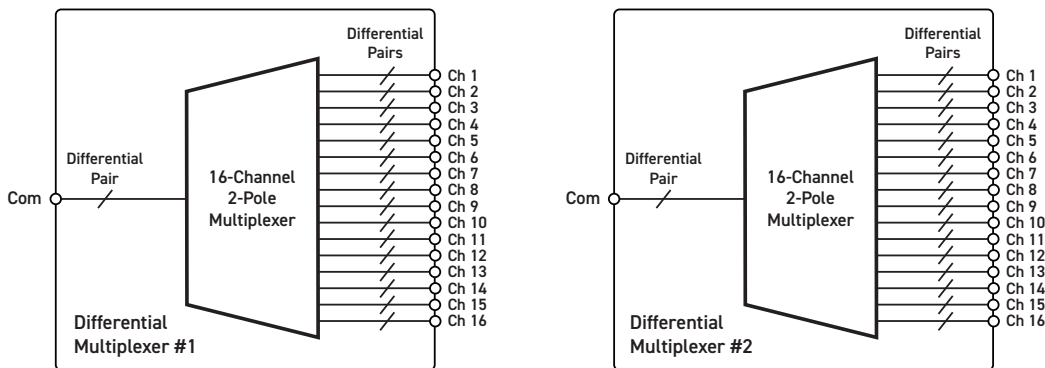
Functional diagram of the 40/42-739 MIL-STD-1553 Multiplexer
- 16-Channel Version Available in Single or Dual Configurations

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pickeringtest.com

40/42-739 - 8-Channel Version Available in Single or Dual Configurations

40/42-739 - 4-Channel Version Available in Single or Dual Configurations
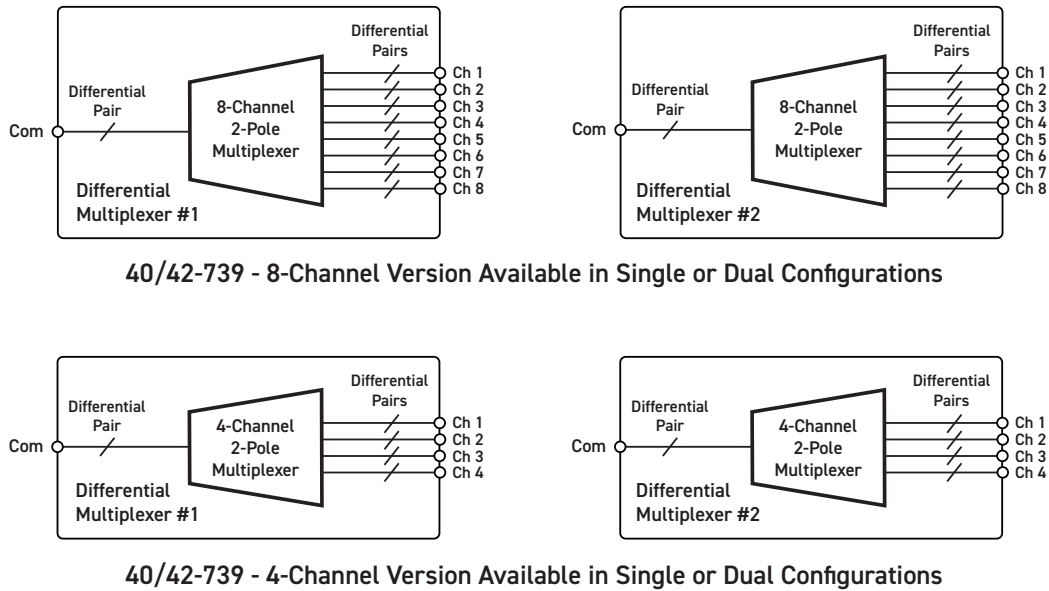
Relay Type

The 40/42-739 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: Full Power Load:	>10^8 operations >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.

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 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

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 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

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.

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.

PXI & CompactPCI Compliance - 40-739

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 - 42-739

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.

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. For more information go to: pickeringtest.com/ebirst

Product	Test Tool	Adaptor
40/42-739	93-006-001	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
40/42-739	91-100-001

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

Mating Connectors & Cabling

Note: To use the 40/42-739 up to its full operating frequency, cables with twisted pairs must be used.

For general purpose (non-differential) connection accessories for the 40/42-739 module please refer to the 90-006D 78-pin male D-type connector data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

42-739-001 MIL-STD-1553 Single 16-Channel, 2-Pole Multiplexer (PXIe Version)

Chassis Compatibility

The PXI versions of this module must be used in a suitable chassis. They 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

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
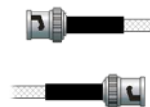
Connectivity Solutions

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

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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
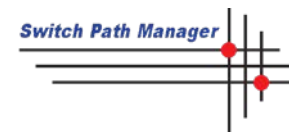
Diagnostic Relay Test Tools

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

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