

- **Highest Density 2A Multiplexers in PXI**
- Available as a 158-Channel 1-Pole or a 79-Channel 2-Pole Multiplexer
- Low Cost per Channel
- Maximum Current 2A Hot or Cold Switching
- Switch up to 300VDC/250VAC and up to 60W Max Power
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by *eBIRST*™
- 3 Year Warranty



The 40-611A Very High Density multiplexer module is available in 158-Channel 1-Pole or 79-Channel 2-Pole configurations. It uses high quality electro-mechanical signal relays allowing the switching of current up to 2A and voltage up to 300VDC/250VAC.

The module is suitable for signal routing in high channel count ATE and data acquisition systems. Connections are made via a front panel 160-pin DIN 41612 connector.

The 40-611A can be operated as a conventional multiplexer with break-before-make action when a new channel is selected. Alternatively, the 40-611A-002 can be supplied as a variant that allow multiple channels to be simultaneously selected.

**Note:** Multiple channel selection is not available for the 40-611A-001 multiplexer.

Model 40-611A channel selection configurations have been revised from model 40-611. The 40-611A defaults to single channel selection with the 40-611A-002 multiple channel selection variant defined by use of a suffix.

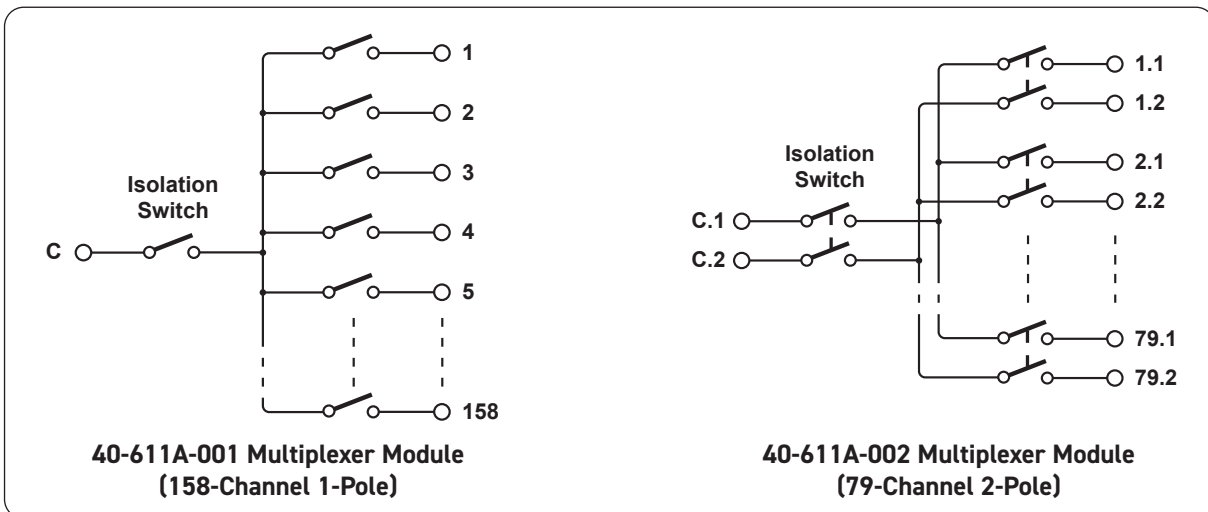
It should be noted that the isolation relays operate automatically when a multiplexer channel is energized.

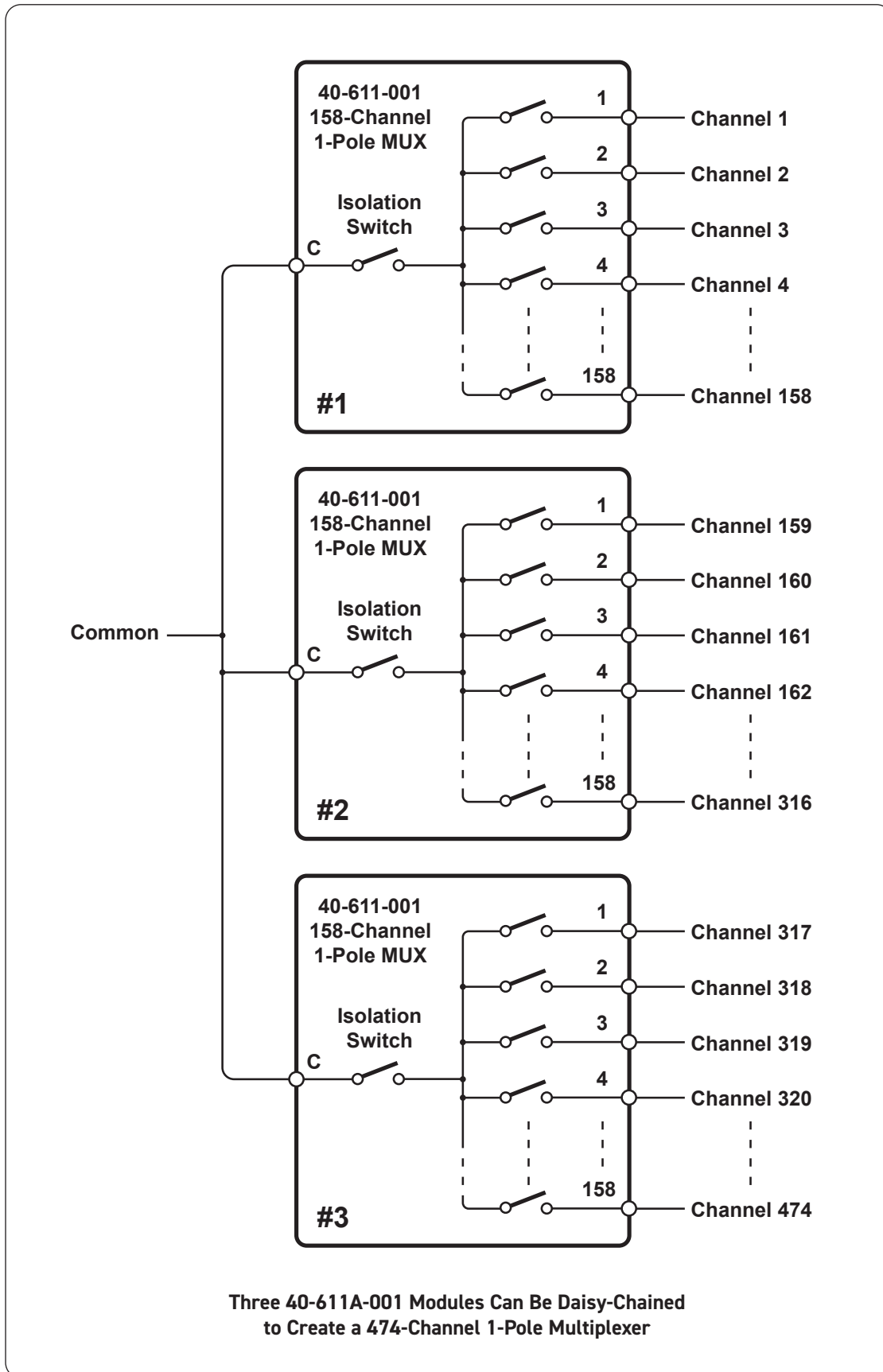
Larger multiplexers may be constructed by daisy chaining the common signals from multiple modules (see example diagram overleaf). Built in automatic isolation switching connects only the currently active multiplexer to the analogue common, this minimizes capacitive loading and leakage currents in large multiplexer systems. Automatic isolation switching only applies to single channel selection mode, for versions with multi channel selection, the isolation relays are controlled separately from the channel relays. To prolong contact life of the isolation relays it is strongly advised that they are cold switched.

### Supported by *eBIRST*

*eBIRST* switching system test tools simplify fault-finding by quickly testing the system and graphically identifying the faulty relay.

For more information go to: [pickeringtest.com/ebirst](http://pickeringtest.com/ebirst)





## Relay Type

The 40-611A is fitted with electro-mechanical relays with palladium-ruthenium gold covered contacts. A spare relay is built onto the circuit board to allow easy maintenance with minimum downtime.

## Switching Specification

Switch Type	Electro-mechanical
Contact Type:	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage:	300VDC/250VAC*
Max Power:	62.5VA, 60W from 30V to 220VDC, 30W to 300VDC (resistive load)
Max Switch Current:	2A
Max Continuous Carry Current:	2A
Max Pulsed Carry Current Example (for a single switch path):	6A for 100ms (up to 10% duty cycle)
Initial Path Resistance - On:	<500mΩ
Path Resistance - Off:	>10 <sup>9</sup> Ω
Thermal Offset:	<30μV (40-611A-001)
Differential Thermal Offset:	<10μV (40-611A-002)
Operate Time:	6ms typical, 3ms typical for 40-611A-002 when used in multi-channel mode & isolation switch does not change state.
Expected Life (operations)	
Very low power signal load:	>1x10 <sup>8</sup>
Low power load (2W):	>1.5x10 <sup>7</sup> (0.1A 20VDC)
Medium power load (30W):	>5x10 <sup>6</sup> (1A 30VDC)
	>1x10 <sup>5</sup> (0.1A 300VDC)
Full power load (60W):	>1x10 <sup>5</sup> (2A 30VDC)

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

## RF Specification

Bandwidth (-3dB):	5MHz
Crosstalk (typical):	10kHz: -70dB 100kHz: -55dB 1MHz: -35dB 10MHz: -15dB
Isolation (typical):	10kHz: 95dB 100kHz: 80dB 1MHz: 65dB 10MHz: 45dB

## Power Requirements

+3.3V	+5V	+12V	-12V
0	777mA(max)	30mA	0

## 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 160-pin male DIN 41612 connector, for pin outs please refer to the operating manual.

We recommend that Pickering mating connectors are used with this module which are designed to ensure there are no mechanical interference problems when used in a PXI chassis.

## 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 - Very High Density Multiplexer

Channel Selection	Model Variant	Order Code
Single	<b>2A MUX, 158-Channel, 1-Pole</b>	<b>40-611A-001</b>

**Note:** The above module can only select a single channel.

Channel Selection	Model Variant	Order Code
Single	<b>2A MUX, 79-Channel, 2-Pole</b>	<b>40-611A-002</b>

**Note:** The above module is available in multiple channel selection mode by adding the “-M” suffix to the part number.

The MUX with multiple channel capability would be:

**40-611A-002-M**

## 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

### 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](http://pickeringtest.com/ebirst)

Product	Test Tool	Adaptor
<b>40-611A</b>	<b>93-002-001</b>	<b>93-002-410</b>

### 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
<b>40-611A</b>	<b>91-100-001</b>

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

## Mating Connectors & Cabling

For connection accessories for the 40-611A modules please refer to the [90-001D](#) 160-pin DIN 41612 Connector Accessories data sheet 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

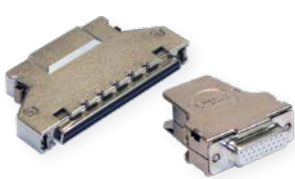
### Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- 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

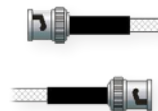
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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



Connectors & Backshells



Multiwire 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](http://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](http://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](http://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

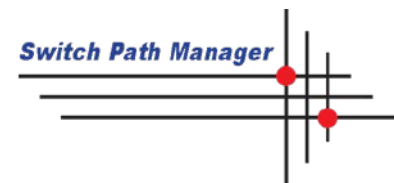
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

To learn more about software drivers and development environments, please go to:

[pickeringtest.com/software](http://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](http://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](http://pickeringtest.com/ebirst)

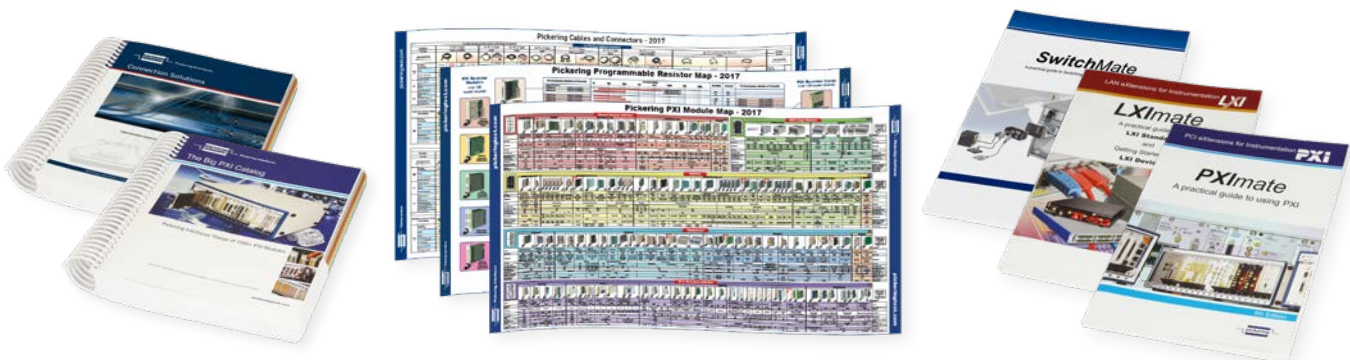


## Three Year Warranty & Guaranteed Long-Term Support

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](http://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](http://pickeringtest.com/resources)