

- Long Life Solid State Design
- 100 V, 5 A Hot Switch Capacity
- Surge Current of 30 A for 300 μ s
- Single, Dual, 1-Pole & 2-Pole Configurations
- Fast Operating Time
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by *eBIRST*™
- 3 Year Warranty

The 40-652A range of multiplexers uses solid state relays with high tolerance to surge currents and hot switching events. The multiplexer has an isolation relay in the common connection to minimize capacitive loading when expanding across multiple modules. The 40-652A can sustain 30 A for 300 μ s on hot or cold switching.

The multiplexer is available in single pole 48:1, two pole 24:1, single pole dual 24:1 or single pole 24:1 configurations.

The 40-652A can be operated as a conventional multiplexer with break-before-make action when a new channel is selected. Alternatively, product variants can be supplied that allow multiple channels to be simultaneously selected.

The 40-652A channel selection configurations have been revised from the 40-652. The 40-652A module defaults to single channel selection with multiple channel selection variants defined by use of a suffix.

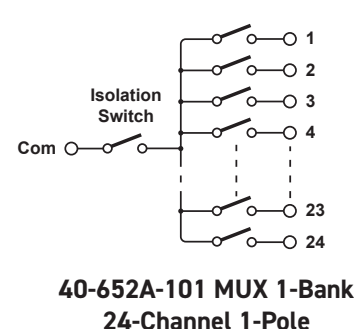
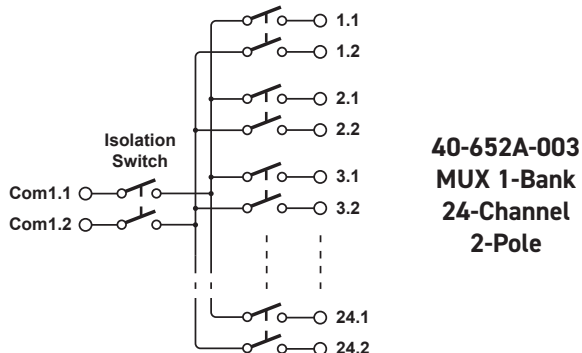
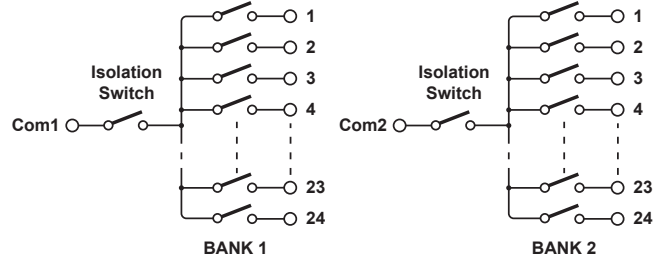
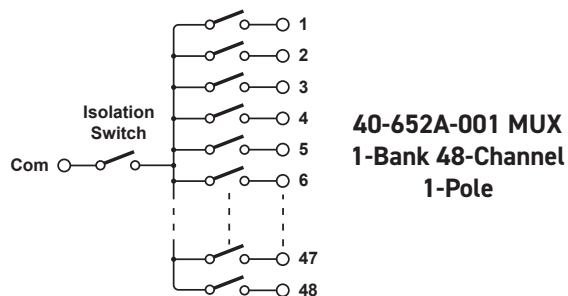


User connections are via a male 50-pin D-type connector which is supported by a full range of connector and cable accessories.

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



Relay Type

The 40-652A is fitted with MOSFET Solid State Relays.

Switching Specification

Relay Type:	Isolated MOSFET
Switching Capacity:	5 A at 100 V
Maximum Switching Power:	500 W
Maximum Switching Voltage:	$\pm 100\text{ V}^* \dagger$
Maximum Continuous Current:	5 A
Maximum Pulse Capacity:	30 A for 300 μs
Maximum Switched Inductive Energy:	20 mJ
Path Resistance:	$<0.18\ \Omega$, 0.14 Ω typical
Off Path Leakage:	$<1\ \mu\text{A}$ at 25 °C
Bandwidth:	1 MHz typical
Isolation:	$<20\text{ dB}$ at 1 MHz
Typical Operate Time:	85 μs
Rise/Fall Time:	$<10\ \mu\text{s}$
Expected Life (operations):	Indefinite when used within ratings

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

\dagger Differential voltage between channels must not exceed rated voltage, additional caution should be used when applying AC voltages as multiple asynchronous supplies can create high differential voltages between channels.

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
0.12 A	0.82 A	0	0

Mechanical Characteristics

Single slot 3 U PXI (CompactPCI card).

Module weight: 250 g.

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 50-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

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.

Product Order Codes - Solid State Multiplexer

Channel Selection	Model Variant	Order Code
Single	1-Bank, 48-Chan, 1-Pole	40-652A-001
Single	2-Bank, 24-Chan, 1-Pole	40-652A-002
Single	1-Bank, 24-Chan, 2-Pole	40-652A-003
Single	1-Bank, 24-Chan, 1-Pole	40-652A-101

Note: The above modules are available in multiple channel selection mode by adding the "-M" suffix to the part number.

For example, the 1-bank, 48-channel 1-pole MUX with multiple channel capability would be: **40-652A-001-M**

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.

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	Termination
40-652A	93-005-001	None	None

Mating Connectors & Cabling

For connection accessories for the 40-652A module please refer to the [90-005D](#) 50-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

It should be noted that on this module pin1 is at the bottom of the connector when making accessory choices on cable exit directions.

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

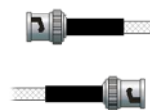
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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

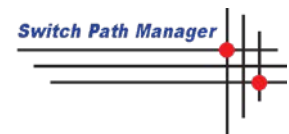
- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C++)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **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