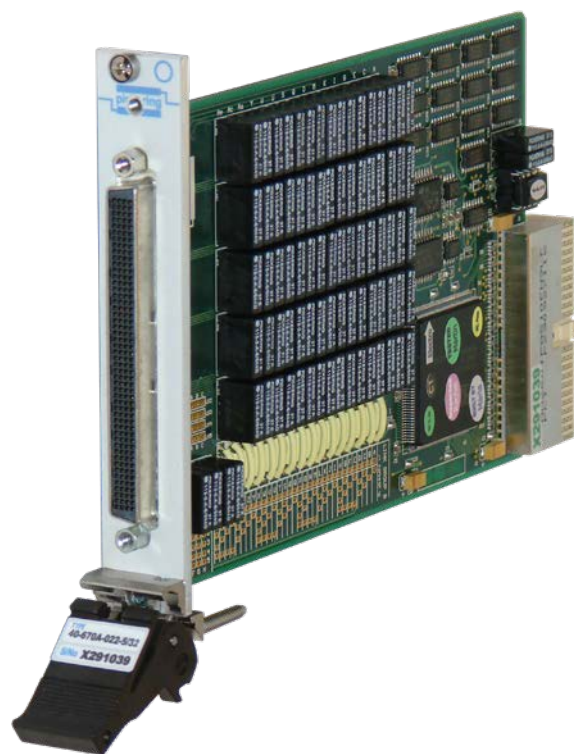


- Very High Density Multiplexer
- Up to 198 Switch Pins Available with 1, 2, 4, 8, 16 or 32-Pole Switching Formats
- All Versions Use High Reliability Pickering Reed Relays
- Fast Operating Speed 500µs Typical per Relay
- Switch up to 150VDC/100VAC, 0.5A with 10W Max Power
- Automatic Isolation Switches Reduce Capacitive Loading in Large Systems
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by *eBIRST*™
- 3 Year Warranty



The 40-670C module features a wide range of multiplexer configurations based on high performance ruthenium reed relays. Typical applications include signal routing in ATE and data acquisition systems. User connections are via a front panel 200-pin socket.

40-670C Very High Density Multiplexer Range:
198-Channel, 1-Pole (with isolation switching)
99-Channel, 2-Pole (with isolation switching)
99-Channel, 1-Pole (with isolation switching)
49-Channel, 4-Pole (with isolation switching)
49-Channel, 2-Pole (with isolation switching)
24-Channel, 8-Pole (with isolation switching)
24-Channel, 4-Pole (with isolation switching)
10-Channel, 16-Pole (no isolation switching)
10-Channel, 8-Pole (no isolation switching)
5-Channel, 32-Pole (no isolation switching)
5-Channel, 16-Pole (no isolation switching)

The 40-670C 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.

Note: The multiple channel selection option is not available for the 40-670C-022-198/1 multiplexer.

Model 40-670C channel selection configurations have been revised from model 40-670A. The 40-670C family defaults to single channel selection with multiple channel selection variants defined by use of a suffix.

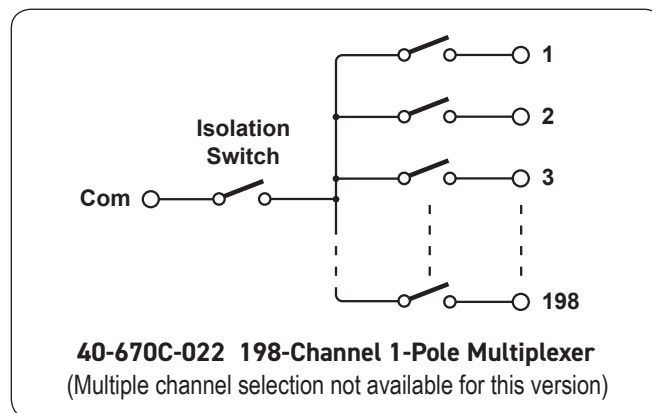
Versions with built in automatic isolation switching (see range table) connect only the currently active multiplexer bank to the common terminal, thereby keeping capacitive loading and leakage currents in large multiplexer systems to a minimum. Larger multiplexers may be constructed by daisy chaining the common signals from multiple PXI modules.

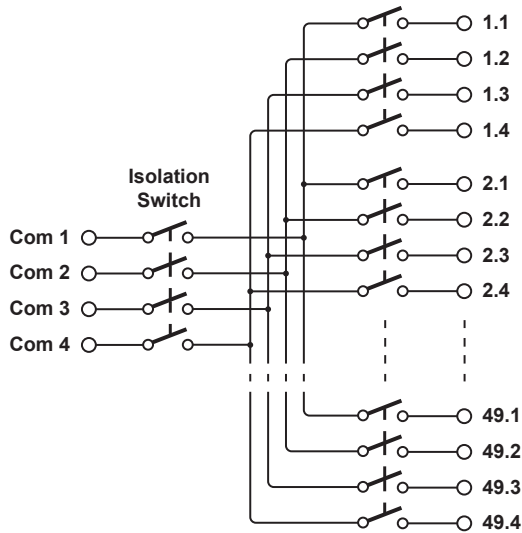
Automatic isolation switching only applies to single channel selection mode, for versions with multi channel selection, the isolation relays are controlled separately from the channel relays. To prolong contact life of the isolation relays it is strongly advised that they are cold switched.

Supported by *eBIRST*

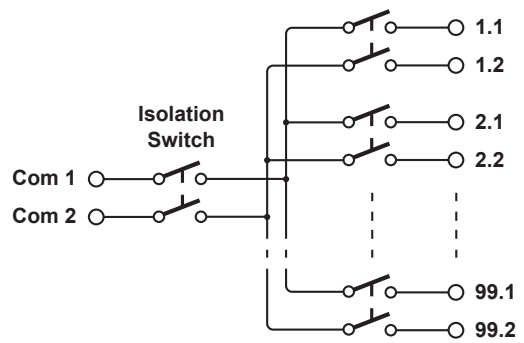
eBIRST switching system test tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.

For more information go to: pickeringtest.com/ebirst

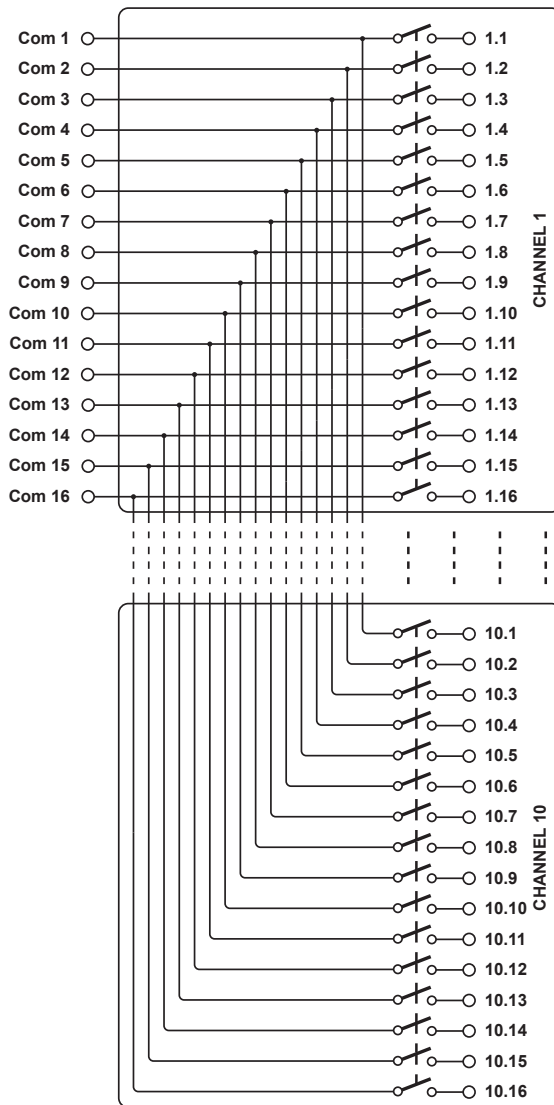




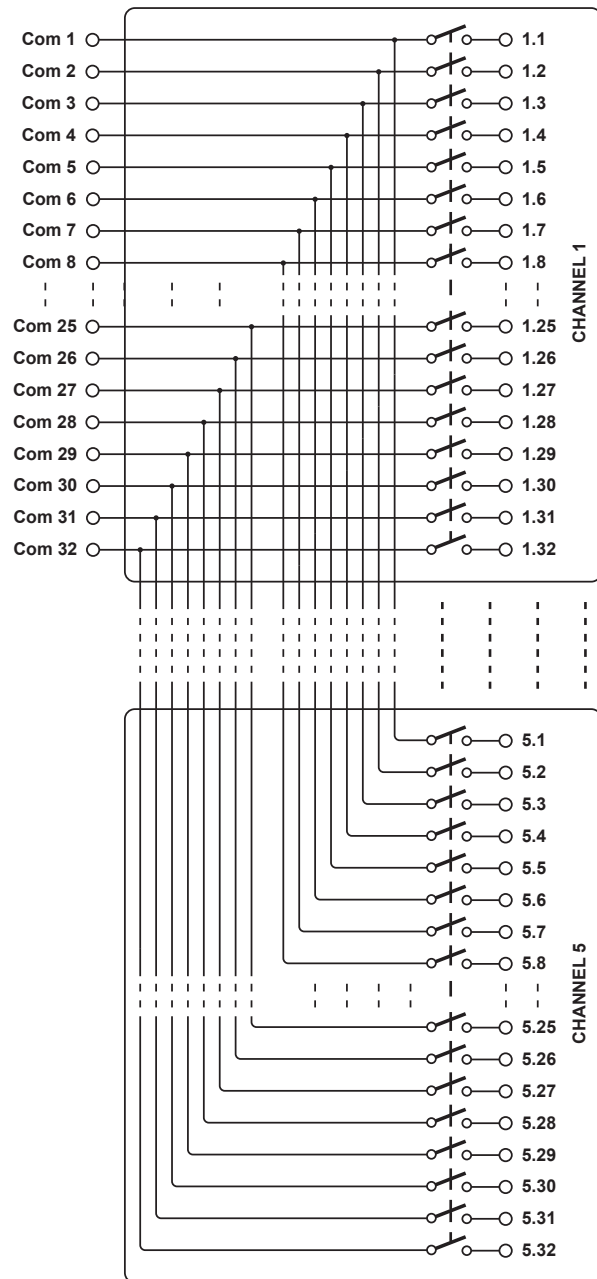
40-670C-022 49-Channel 4-Pole Multiplexer



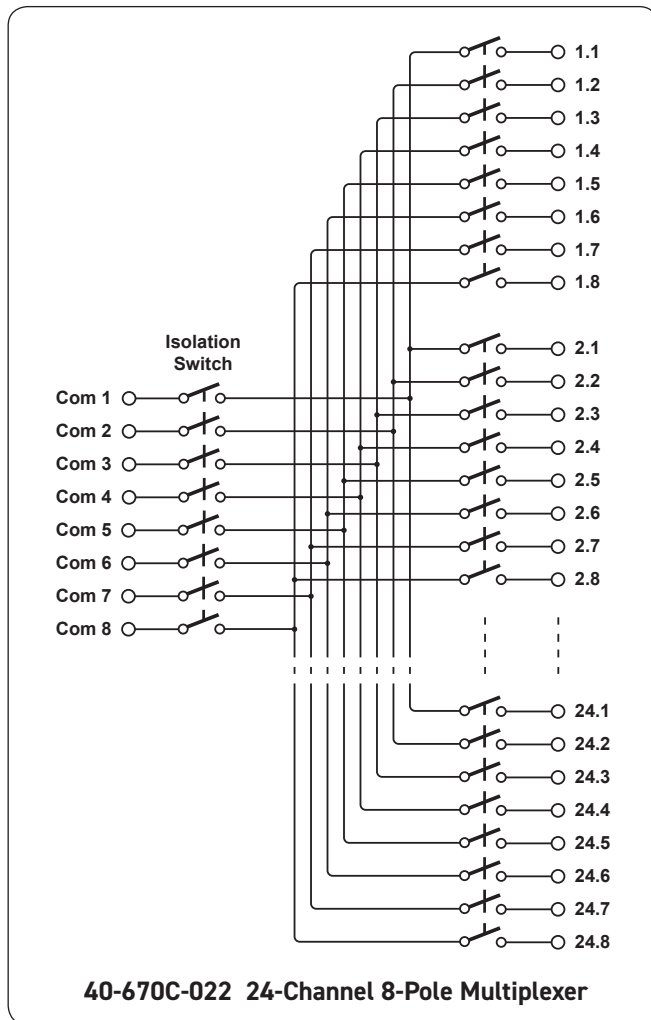
40-670C-022 99-Channel 2-Pole Multiplexer



40-670C-022 10-Channel 16-Pole Multiplexer



40-670C-022 5-Channel 32-Pole Multiplexer



Relay Type

The 40-670C is fitted with Reed Relays (Ruthenium sputtered type), these offer very long life with good low level switching performance and excellent contact resistance stability. Spare Reed Relays are built onto the circuit board to facilitate easy maintenance with minimum downtime.

All reed relays are manufactured by our sister company Pickering Electronics: pickeringrelay.com

Mechanical Characteristics

Single slot 3U PXI (CompactPCI card).
 Module weight: 200g (40-670C-022-99/2).
 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 200-pin female LFH connector, for pin outs please refer to the operating manual.

Switching Specification

Switch Type:	Ruthenium Reed
Max Switching Voltage:	150VDC/100VAC*
Max Power:	10W
Max Switch Current:	0.5A
Max Carry Current:	0.5A
Initial Path Resistance - On (Single Module):	<1200mΩ
Path Resistance - Off (Single Module):	>10 ⁹ Ω
Differential Thermal Offset:	<10μV
Bandwidth (3dB, 1 module)	>5MHz †
Operate Time:	1ms typical; 500μs for multi-channel mode
Expected Life, low power load:	1x10 ⁹ operations
Expected Life, full power load:	>1x10 ⁶ operations

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

† Bandwidth is configuration dependent (please consult sales office for further information).

Power Requirements

+3.3V	+5V	+12V	-12V
0	1340mA (typ 300mA)	0	0

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	198-Channel, 1-Pole	40-670C-022-198/1

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

Channel Selection	Model Variant	Order Code
Single	99-Channel, 1-Pole	40-670C-021-99/1
Single	49-Channel, 2-Pole	40-670C-021-49/2
Single	24-Channel, 4-Pole	40-670C-021-24/4
Single	10-Channel, 8-Pole	40-670C-021-10/8
Single	5-Channel, 16-Pole	40-670C-021-5/16
Single	99-Channel, 2-Pole	40-670C-022-99/2
Single	49-Channel, 4-Pole	40-670C-022-49/4
Single	24-Channel, 8-Pole	40-670C-022-24/8
Single	10-Channel, 16-Pole	40-670C-022-10/16
Single	5-Channel, 32-Pole	40-670C-022-5/32

Note: The above modules are available in multiple channel selection mode by adding the “-M” suffix to the part number. For example, the 99-channel 1-pole MUX with multiple channel capability would be: **40-670C-021-99/1-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 reed relay types
- Mixture of reed 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
All Types	93-002-001	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
40-670C-021	91-100-018
40-670C-022	91-100-013

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

Mating Connectors & Cabling

For connection accessories for the 40-670C range please refer to the [90-002D](#) 200-pin LFH 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

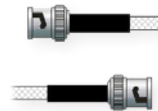
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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



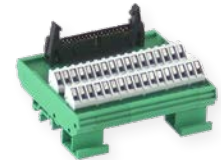
Connectors & Backshells



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 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



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
- **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

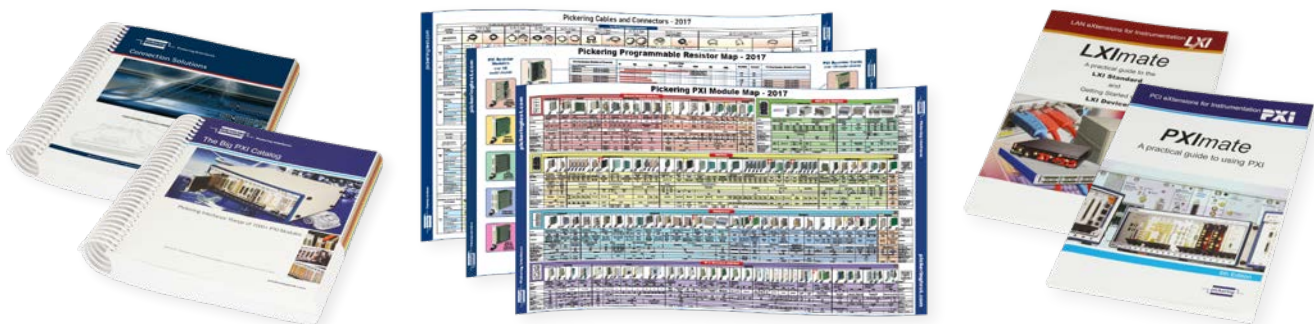


Three Year Warranty & Guaranteed Long-Term Support

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, 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 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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