

- Very High Density Multiplexer
- Up to 198 Switch Pins Available with 1, 2, 4, 8, 16 or 32-Pole Switching Formats
- Uses High Reliability Pickering Reed Relays
- Fast Operating Speed 500 μ s Typical per Relay
- Hot Switch up to 100 VDC/70 VAC, Cold Switch up to 150 VDC/100 VAC
- Carry Current 1.2 A With 20 W Max Power
- Automatic Isolation Switches Reduce Capacitive Loading in Large Systems
- Drivers Supplied for Windows & Linux, Plus Support for Real-time Systems
- Shares Same Architecture As PXI 40-670C Module
- Supported by *eBIRST*™
- 3 Year Warranty

The 50-670C series of very high density multiplexer cards feature a wide range of switching configurations. Typical applications include signal routing in ATE and data acquisition systems. The 50-670C shares the same architecture as the established PXI 40-670A.

The card is factory set into one of the multiplexer configurations shown in the table below. Connections are made via a front panel 200-pin socket.

50-670C Very High Density Multiplexer Range

- 1-Bank, 198 Channels, 1-Pole
- 1-Bank, 99 Channels, 1-Pole or 2-Pole
- 1-Bank, 49 Channels, 2-Pole or 4-Pole
- 1-Bank, 24 Channels, 4-Pole or 8-Pole
- 1-Bank, 10 Channels, 8-Pole or 16-Pole
- 1-Bank, 5 Channels, 16-Pole

The 50-670C 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 50-670C-022-198/1 multiplexer.



Model 50-670C channel selection configurations have been revised from model 50-670A. The 50-670C family defaults to single channel selection with multiple channel selection variants defined by use of a suffix.

Built in automatic isolation switching (available in 1, 2 and 4-pole configurations) connects only the currently active multiplexer bank on to the analogue common, keeping capacitive loading and leakage current in large multiplexer systems to a minimum. Larger multiplexers may be constructed by daisy chaining the common signals from multiple cards.

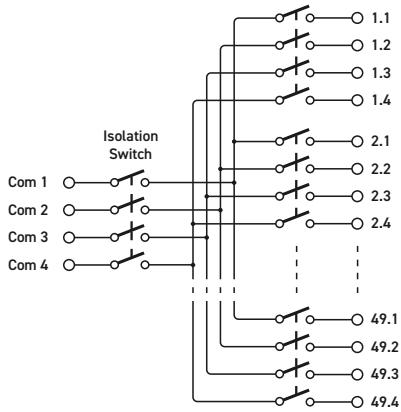
Automatic isolation switching only applies to single channel selection mode, for versions with multi channel selection, the isolation relays are controlled separately from the channel relays. To prolong contact life of the isolation relays it is strongly advised that they are cold switched.

Supported by *eBIRST*

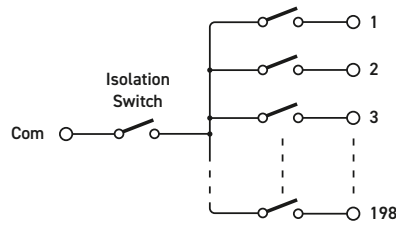
eBIRST test tools simplify switching fault-finding by quickly testing the system and graphically identifying the faulty relay. For more information go to: pickeringtest.com/ebirst

Front Panel Connector

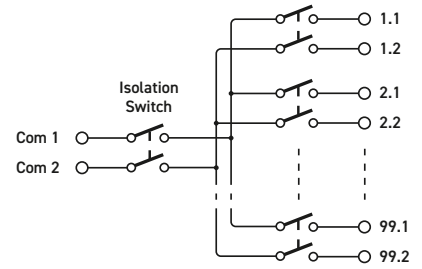
This product is based on the obsolete Molex LFH series connector that has been superseded by a Pickering commissioned form, fit, function equivalent. The new connector series is 100% compatible with the Molex connectors allowing either gender of Pickering connector to mate with the corresponding Molex part without issue.



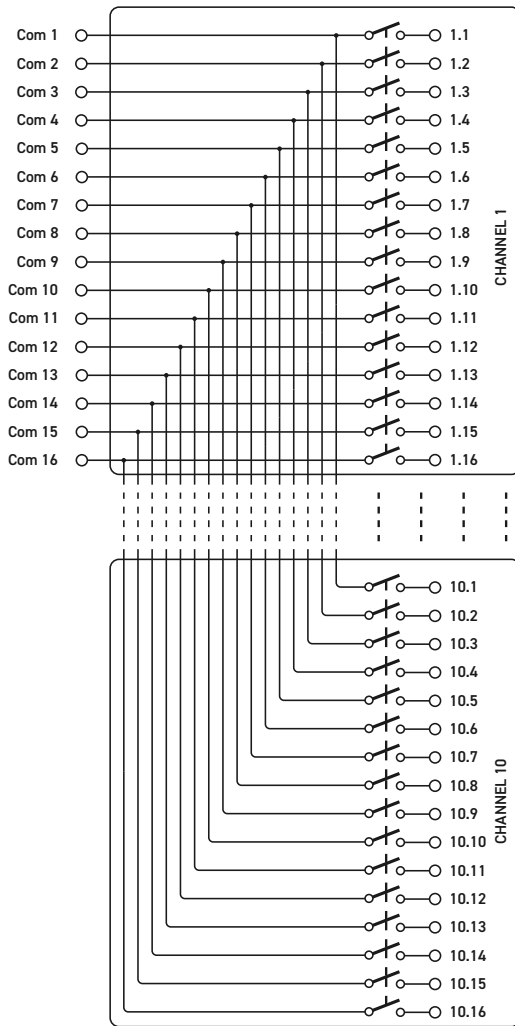
**50-670C-022 49-Channel
4-Pole Multiplexer**



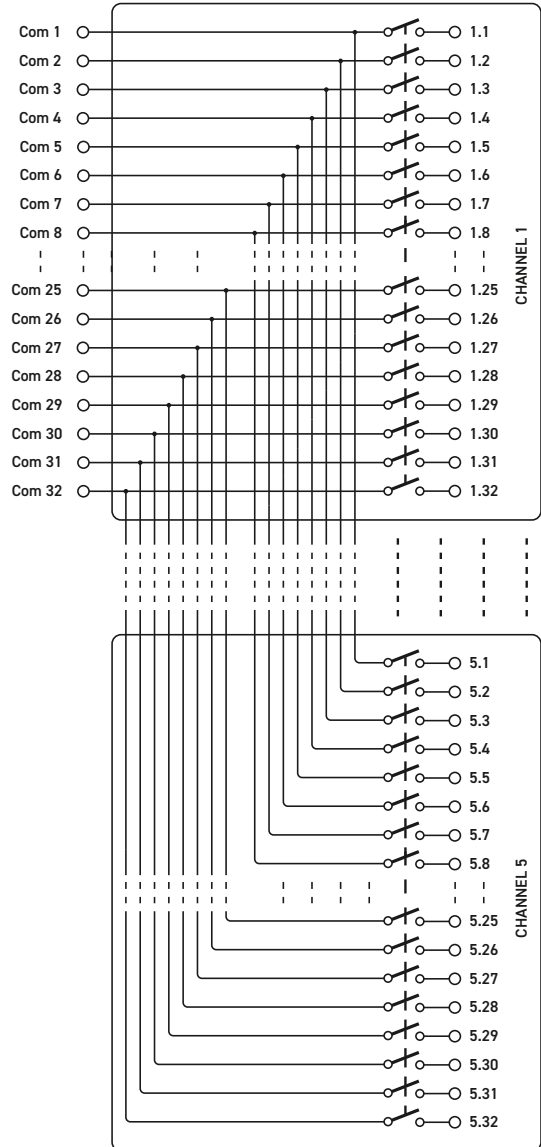
**50-670C-022 198-Channel
1-Pole Multiplexer
(multiple channel selection not
available)**



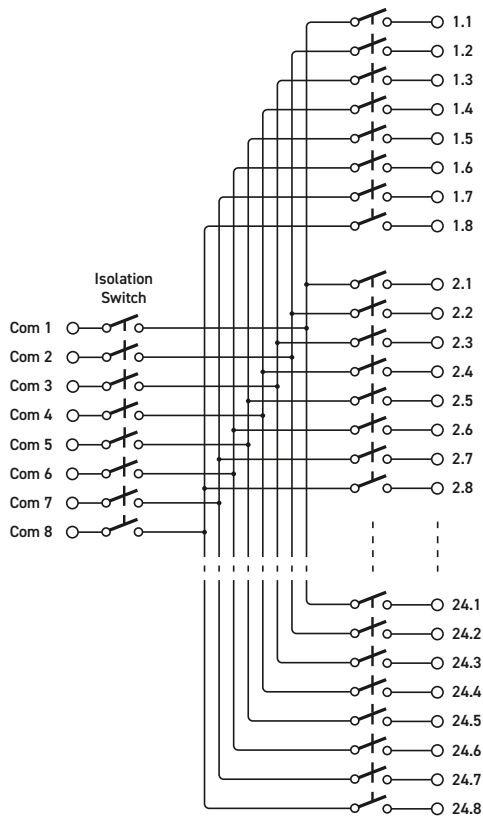
**50-670C-022 99-Channel
2-Pole Multiplexer**



50-670C-022 10-Channel 16-Pole Multiplexer



50-670C-022 5-Channel 32-Pole Multiplexer



50-670C-022 24-Channel 8-Pole Multiplexer

Relay Type

The 50-670C is fitted with ruthenium sputtered reed relays, 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 allow easy maintenance with minimum downtime.

All reed relays are manufactured by our Relay Division, for more information please visit: pickeringrelay.com

PCI Compliance

The 50-670C card complies with the PCI Specification 2.0 (issued Feb 2004).

Signalling Environment:

33 MHz, 32-bit Universal (+3.3 V & +5 V).

Safety & CE Compliance

All cards 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.

Switching Specification

Switch Type:	Ruthenium Reed
Max Hot Switching Voltage:	100 VDC/70 VAC*
Max Cold Switching Voltage:	150 VDC/100 VAC*
Max Power:	20 W
Max Switch Current:	1 A
Max Carry Current:	1.2 A
Initial Path Resistance On (Single Card):	<1 Ω
Initial Path Resistance Off (Single Card):	>10 ⁹ Ω
Thermal Offset:	<20 μV
Bandwidth (3dB, 1 card):	>4.5 MHz (5 MHz typical)†
Operate Time:	1 ms typical, 500 μs for multi-channel mode
Expected Life (operations)	
Low power load:	>1x10 ⁹
Full power load:	>1x10 ⁶

* 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

+3.3 V	+5 V	+12 V	-12 V
200 mA	100 mA	0	0

Mechanical Characteristics

Single slot short PCI format.

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

Connections

User signals via a 200-pin female LFH* connector, for pin outs please refer to the operating manual.

* LFH relates to the obsolete Molex connector series and is retained for continuity, products will be fitted with a form, fit, function Pickering equivalent connector that is intermateable with the original Molex parts.

Product Order Codes - Very High Density Multiplexer

Channel Selection	Model Variant	Order Code
Single	198-Channel, 1-Pole	50-670C-022-198/1

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

Channel Selection	Model Variant	Order Code
Single	99-Channel, 1-Pole	50-670C-021-99/1
Single	49-Channel, 2-Pole	50-670C-021-49/2
Single	24-Channel, 4-Pole	50-670C-021-24/4
Single	10-Channel, 8-Pole	50-670C-021-10/8
Single	5-Channel, 16-Pole	50-670C-021-5/16
Single	99-Channel, 2-Pole	50-670C-022-99/2
Single	49-Channel, 4-Pole	50-670C-022-49/4
Single	24-Channel, 8-Pole	50-670C-022-24/8
Single	10-Channel, 16-Pole	50-670C-022-10/16
Single	5-Channel, 32-Pole	50-670C-022-5/32

Note: The above cards 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: **50-670C-021-99/1-M**

Product Customization

Pickering PCI cards 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
50-670C	93-002-001	Not Required

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's PCI switching products, simplifying servicing and reducing down-time.

Product	Relay Kit
50-670C-021	91-100-003
50-670C-022	91-100-008

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

Mating Connectors & Cabling

For connection accessories for the 50-670C card 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.



Pickering can supply mating 200-pin connectors and cable assemblies to enable easy integration of the 50-670C series of multiplexers

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

Connectivity Solutions

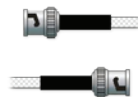
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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



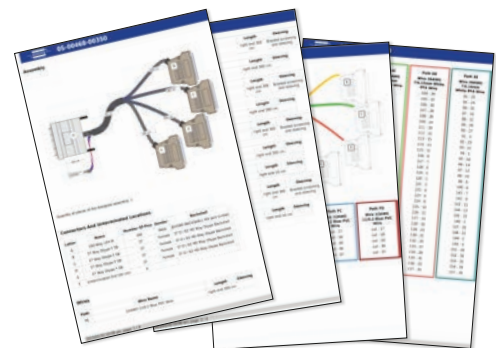
Breakouts



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

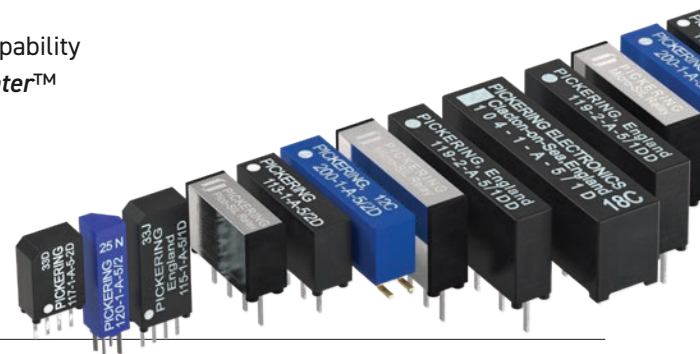
Mass Interconnect

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**

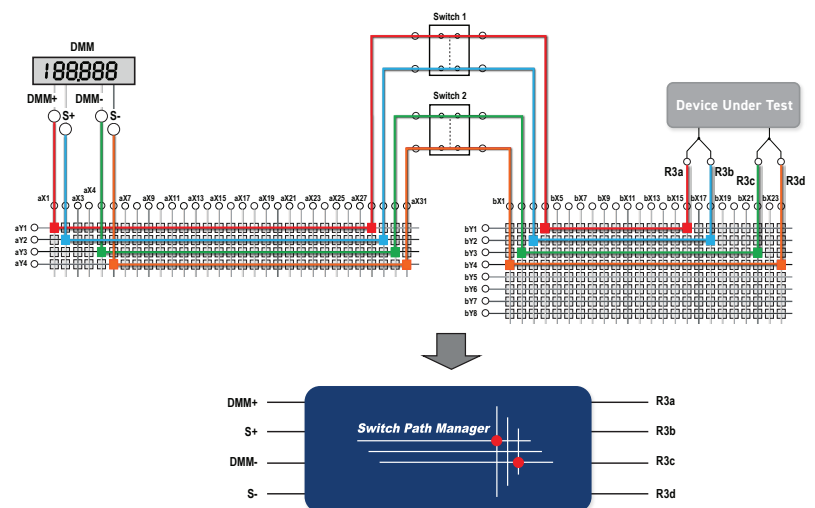
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

