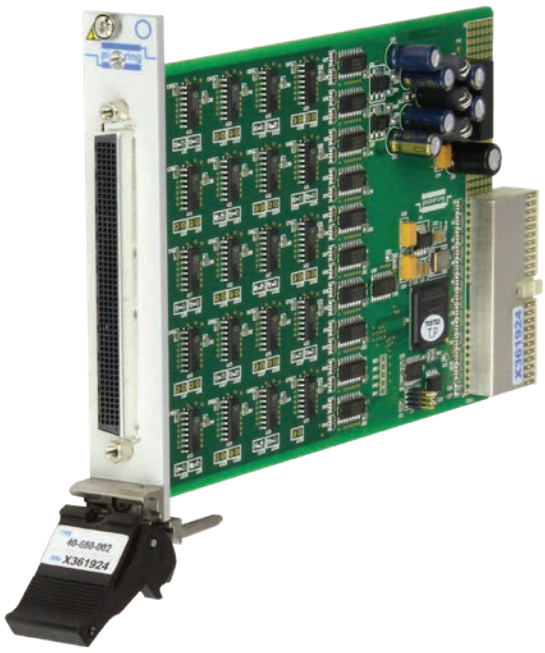
- Choice of Multiplexer Configurations
- Up to 160-Way Multiplexer
- Up to 20-Banks of 8-Way Multiplexer
- Fast Operation
- Long Service Life
- Fault Protection to Greater Than 40 V
- Ideal for Low Current and Low Voltage Applications
- Drivers Supplied for Windows & Linux, Plus Support for Real-time Systems
- Supported by PXI or LXI Chassis
- Supported by *eBIRST* ™
- 3 Year Warranty



The 40-680 is ideal for applications requiring high speed, long service life and frequent switch operation. Based on FET switches the multiplexers have no wear out mechanism and include fault protection that ensures they are automatically disconnected when PXI power is not applied.

40-680 Solid State Multiplexer Range:
20-Bank, 8-Channel
10-Bank, 16-Channel
5-Bank, 32-Channel
4-Bank, 40-Channel
2-Bank, 80-Channel
1-Bank, 160-Channel
4-Pole, 40-Channel
2-Pole, 80-Channel

The 40-680 operates with break-before-make action when a new channel is selected. Multiple channels cannot be simultaneously selected.

Applications include supporting DMM measurements of resistance and voltage or data acquisition systems. It is suitable for low current low voltage applications where cost, speed, zero contact bounce and the ability to withstand frequent operation is essential.

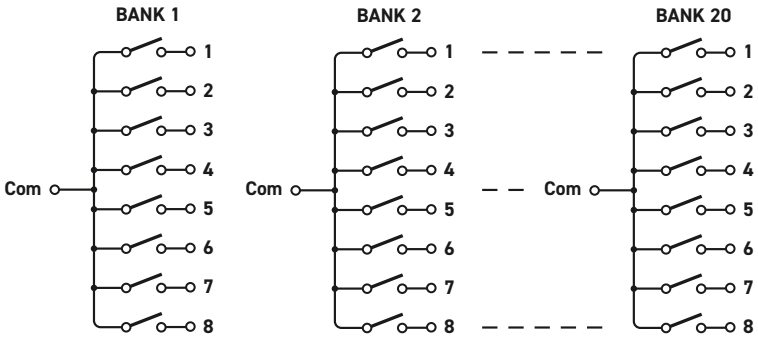
Pickering Interfaces is able to offer PXI solid state switching solutions in a variety of configurations. If you have a different requirement for solid state switching, contact your local sales office for a quotation.

Supported by *eBIRST*

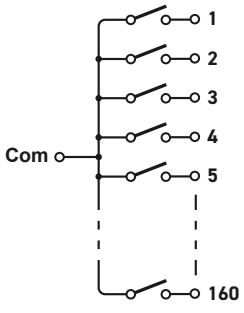
These test tools simplify fault-finding by quickly testing the system and graphically identifying the faulty relay.
For more information go to: pickeringtest.com/ebirst

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.



40-680 Multiplexer Module (20-bank, 1 to 8 configuration)



40-680 Multiplexer Module (1-bank, 1 to 160 configuration)

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Relay Type

The 40-680 is fitted with Solid State Switches.

Switching Specification

Switch Type:	Solid State
Recommended voltage switching range:	±15 V* †
Maximum Continuous Current:	20 mA
Maximum Peak Current:	40 mA
Typical Leakage Current (off state):	1 nA
Path Resistance:	150 Ω typical, 350 Ω maximum.
Fault Protection:	Turns MUX off if the applied voltage exceeds ±18 V with module power on. Maximum voltage range -43 V to +55 V.
Switch Operation Speed:	200 ns, no bounce, excluding driver.
Useable Bandwidth:	5 MHz
Isolation:	40 dB at 5 MHz
Thermal EMF:	<2 µV

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

† 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	60 mA	35 mA	0

Mechanical Characteristics

Single slot 3 U 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 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.

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

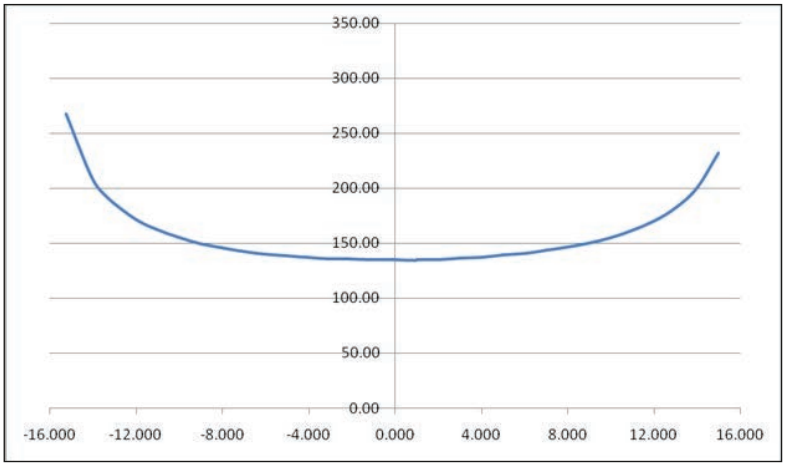
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

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.



Typical channel on resistance (Ω vertical) versus applied Voltage (horizontal) for 40-680

Product Order Codes - Solid State Multiplexer

Channel Selection	Model Variant	Order Code
Single	**20-Bank, 8-Channel MUX**	**40-680-001**
Single	**10-Bank, 16-Channel MUX**	**40-680-002**
Single	**5-Bank, 32-Channel MUX**	**40-680-003**
Single	**4-Bank, 40-Channel MUX**	**40-680-004**
Single	**2-Bank, 80-Channel MUX**	**40-680-005**
Single	**1-Bank, 160-Channel MUX**	**40-680-006**
Single	**4-Pole, 40-Channel MUX**	**40-680-404**
Single	**2-Pole, 80-Channel MUX**	**40-680-405**

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

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
40-680	**93-002-001**	**Not Required**

Mating Connectors & Cabling

For connection accessories for the 40-680 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 40-680 series of multiplexer modules

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:

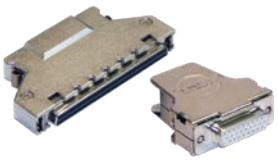
- Mix our 1000+ PXI switching & simulation modules with any vendor's PXI instrumentation
- Embedded or remote Windows PC control
- Real-time Operating System Support
- High data bandwidths, especially with PXI Express
- Integrated module timing and synchronization

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

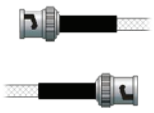
Connectivity Solutions

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

Multiway Cable Assemblies



RF Cable Assemblies

Connector Blocks

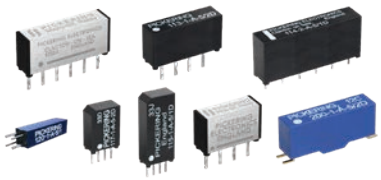
We also offer customized cabling and have a free online **Cable Design Tool** that can be used to create custom cable solutions for many applications. Visit: pickeringtest.com/cdt to start your design.

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



Programming

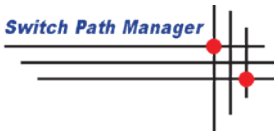
Pickering provide kernel, IVI and VISA (NI & Keysight) drivers which are compatible with all Microsoft supported versions of Windows and popular older versions. For a list of all supporting operating systems, please see: pickeringtest.com/os

The VISA driver 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
- **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

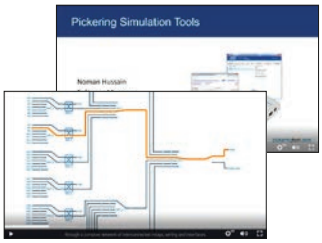
eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
To learn more, please go to: pickeringtest.com/ebirst

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 also have 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