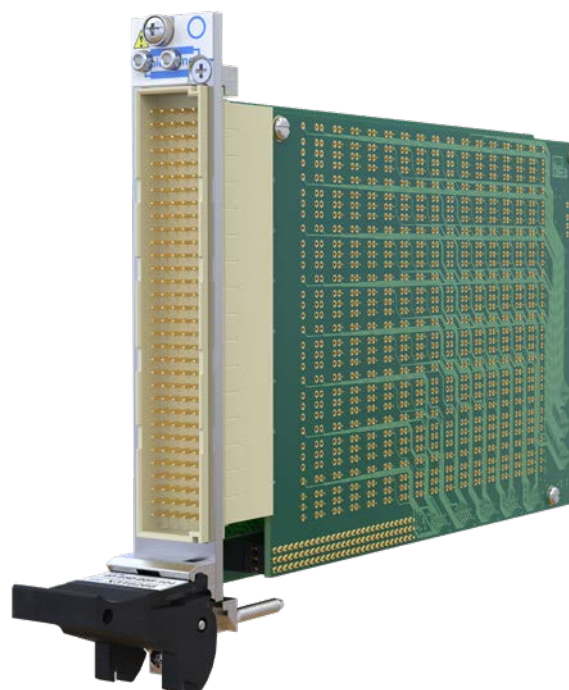


- High Density PXI Multiplexer With DMM Monitor Function
- Single, Dual or Quad Versions
- Channel Counts of 16, 25, 32, 64 or 128
- 2 A Hot or Cold Switching
- Switch up to 250 VAC/DC and up to 60 W Max Power
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI/LXI Chassis or PXIe Hybrid Slot
- Supported by *eBIRST*™
- 3 Year Warranty



40-619 Multiplexer Range:	
40-619-401	Single 128:1, 1-Pole with Monitor
40-619-301	Single 64:1, 1-Pole with Monitor
40-619-302	Dual 64:1, 1-Pole with Monitor
40-619-202	Dual 32:1, 1-Pole with Monitor
40-619-102	Dual 25:1, 1-Pole with Monitor
40-619-002	Dual 16:1, 1-Pole with Monitor
40-619-204	Quad 32:1, 1-Pole with Monitor
40-619-104	Quad 25:1, 1-Pole with Monitor
40-619-004	Quad 16:1, 1-Pole with Monitor

The 40-619 is a high density 2A multiplexer module available in single, dual and quad configurations using high quality electro-mechanical signal relays allowing each channel to switch current up to 2A and voltage up to 250 VAC/DC.

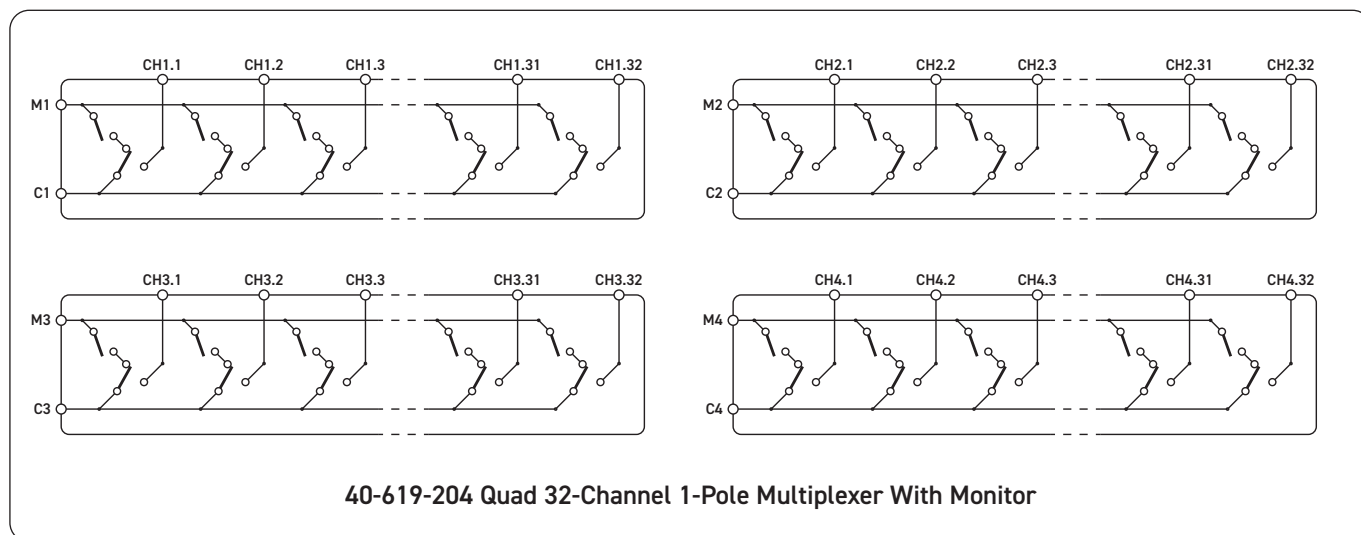
The multiplexer includes a monitor function (e.g. DMM) where the state of the channel relays can be verified via a channel monitor switch and a separate bus.

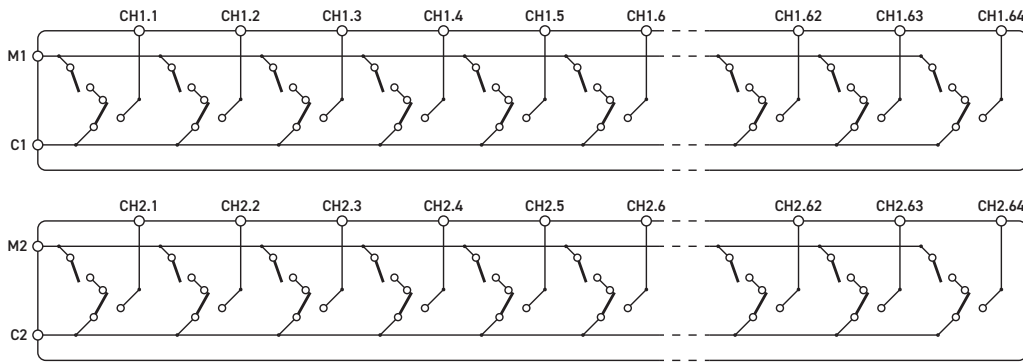
The module is suitable for signal routing in ATE and data acquisition systems. Connections are made via a front panel 160-pin DIN 41612 connector. The channel and monitor buses can be cascaded allowing the daisy chaining of multiple modules to create larger multiplexers.

Supported by *eBIRST*

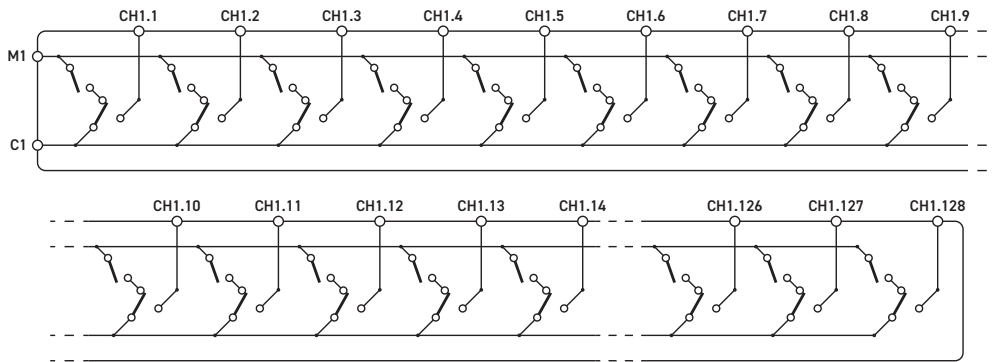
eBIRST switching system test tools simplify fault-finding by quickly testing the system and graphically identifying the faulty relay.

For more information go to: pickeringtest.com/ebirst

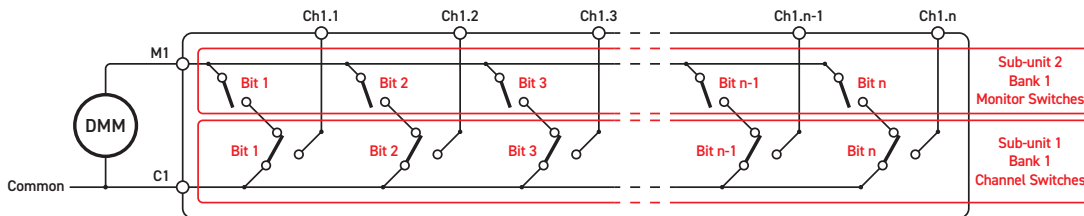




40-619-302 Dual 64-Channel 1-Pole Multiplexer With Monitor



40-619-401 Single 128-Channel 1-Pole Multiplexer With Monitor



40-619 1-Pole Multiplexer With Monitor - Architecture Showing Monitor Bus Usage

40-619 Architecture

This diagram shows one multi-channel, one pole multiplexer bank with monitoring capabilities (Default position of the relays is shown). The lower relays (Sub-unit 1 - Channel Switches) are the multiplexer connections to the common (in this case, C1). The top relays (Sub-unit 2 - Monitor Switches) are the monitor relays. All monitor relays are connected to a common monitoring bus (in this case, M1). It operates as a conventional multiplexer routing signals on the channel terminals to the common "C" terminal when the corresponding relay is energized. Each channel includes an additional relay which can be used to monitor the state of the channel relay by routing the "C" signal to the "M" bus if the channel is in the open condition. In the default state seen above, all multiplexer channel relays

and all monitor relays are open circuit. As each bank has a common monitor channel, only one channel per bank can be tested at any time.

To verify that the channel relays are in the open-circuit position and that the monitor relays are operating correctly, each monitor relay should be operated, and the continuity measured between M and C one monitor relay at a time. Operating the 1-form-A monitor relay will result in a low resistance path between the monitor and common signals; de-selecting the monitor relay will return to the open-circuit state.

During the verification testing, if a monitor relay is operated, but an open-circuit condition remains, it reveals that the associated channel relay is incorrectly positioned, which indicates a fault condition, potentially a welded channel relay or improper test code.

Relay Type

The 40-619 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:	250 VAC\DC*
Max Power:	62.5 VA, 60 W from 30 V to 200 VDC (resistive load)
Max Switch Current:	2 A
Max Continuous Carry Current:	2 A
Max Pulsed Carry Current	
Example (for single switch path):	6 A for 100 ms (up to 10 % duty cycle)
Initial Path Resistance - On:	<500 mΩ (typical)
Path Resistance - Off:	>10 ⁹ Ω
Thermal Offset:	<150 μV
Operate Time:	6 ms (typical)
Expected Life (operations)	
Very low power signal load:	>1x10 ⁸
Low power load (2 W):	>1.5x10 ⁷ (0.1 A 20 VDC)
Medium power load (30 W):	>5x10 ⁶ (1 A 30 VDC)
Full power load (60 W):	>1x10 ⁵ (2 A 30 VDC)

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

RF Specification - In a 50 Ω System

Bandwidth (-3 dB):	10 MHz (typical)	
Crosstalk (typical):	10 kHz:	-75 dB
	100 kHz:	-70 dB
	1 MHz:	-55 dB
	10 MHz:	-25 dB
Isolation (typical):	10 kHz:	85 dB
	100 kHz:	85 dB
	1 MHz:	85 dB
	10 MHz:	40 dB

Power Requirements

+3.3V	+5V	+12V	-12V
270 mA	90 mA (8 relay closures)	0	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.

Module Weight: 400 g

Connectors

PXI bus via 32-bit P1/J1 backplane connector.
Signals via a front panel 160-pin male DIN 41612 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 & 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

PXI Monitored Multiplexer:	
Single 128-Channel 1-Pole	40-619-401
Single 64-Channel 1-Pole	40-619-301
Dual 64-Channel 1-Pole	40-619-302
Dual 32-Channel 1-Pole	40-619-202
Dual 25-Channel 1-Pole	40-619-102
Dual 16-Channel 1-Pole	40-619-002
Quad 32-Channel 1-Pole	40-619-204
Quad 25-Channel 1-Pole	40-619-104
Quad 16-Channel 1-Pole	40-619-004

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
40-619-x0x	93-002-001	93-002-410

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
40-619-x0x	91-100-001

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

Mating Connectors & Cabling

For connection accessories for the 40-619 range 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 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:

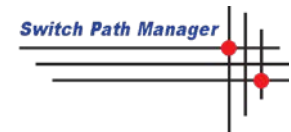
- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
-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