

- High Density 2 Amp Multiplexer
- 8-Banks of 8-Chan, 4-Banks of 16, 2-Banks of 32 & Single 64-Chan Multiplexer
- 1-Pole Switching
- 2A Current Rating With 90W/500VA Max Power
- Hot Switch to 110VDC/250VAC
- Cold Switch to 400VDC/250VAC
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- 3 Year Warranty



The 40-657A is a high density power multiplexer modules available in a choice of configurations with up to 8 separate multiplexers with 1-pole switching. They are suitable for switching signals to 110VDC/250VAC at 2 Amps, 90W.

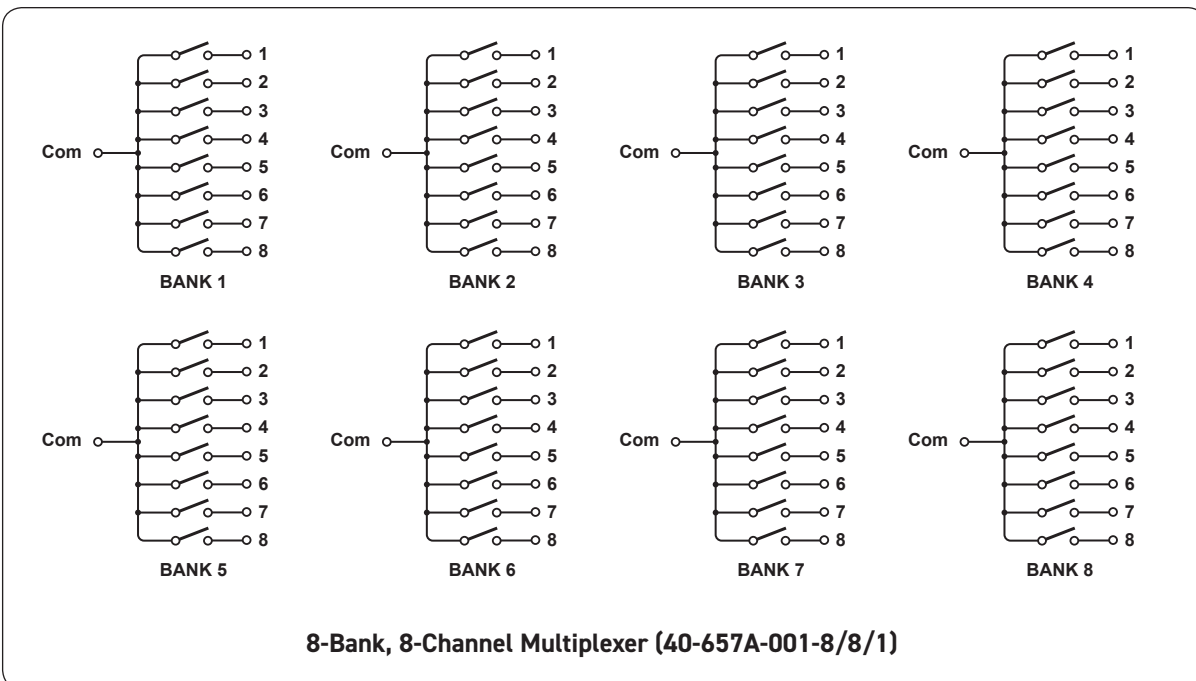
| 40-657A Multi-Banked Multiplexer Range: |
|---|
| 8-Bank, 8-Channel, 1-pole               |
| 4-Bank, 16-Channel, 1-pole              |
| 2-Bank, 32-Channel, 1-pole              |
| 1-Bank, 64-Channel, 1-pole              |

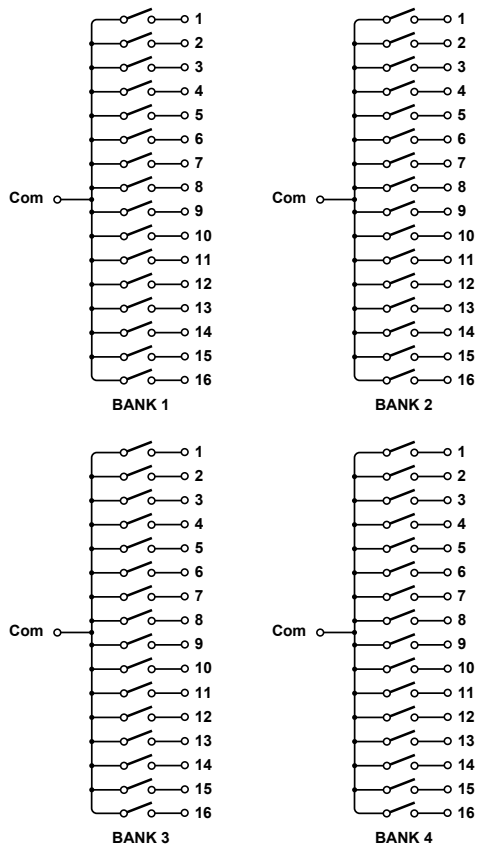
Larger multiplexers may be constructed by daisy chaining the common signals from multiple modules. For example 7 modules with 64-channels will form a 448-channel multiplexer.

The 40-657A 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.

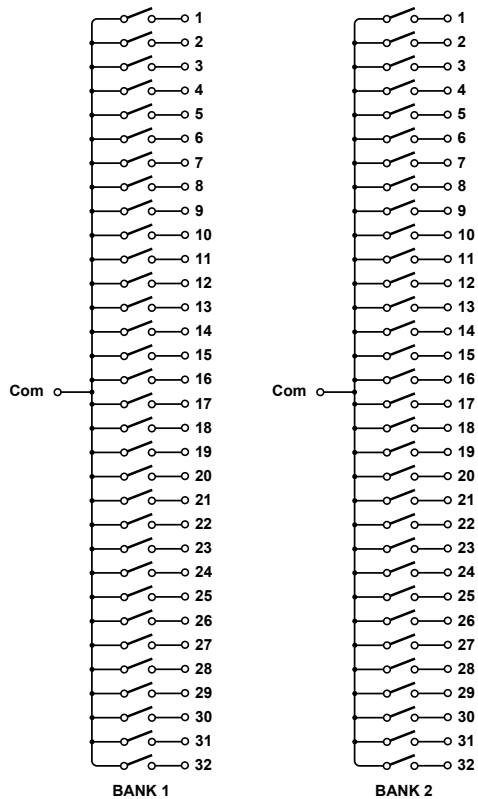
The 40-657A channel selection configurations have been revised from the 40-657. The 40-657A modules default to single channel selection with multiple channel selection variants defined by use of a suffix.

We can construct custom cable assemblies for all of our PXI modules, please contact sales office for further assistance.

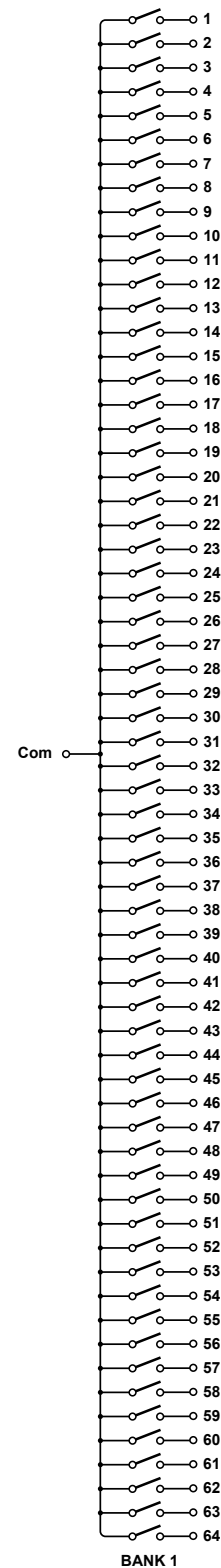




**4-Bank, 16-Channel Multiplexer (40-657A-001-4/16/1)**



**2-Bank, 32-Channel Multiplexer (40-657A-001-2/32/1)**



**1-Bank, 64-Channel Multiplexer (40-657A-001-1/64/1)**

## Relay Type

The 40-657A modules are fitted with electro-mechanical power relays, gold clad silver alloy. A spare relay is built onto the circuit board to allow easy maintenance with minimum downtime.

## Switching Specification

|                             |   |
|-----------------------------|---|
| Contact Type:               | Gold clad silver alloy                        |
| Cold Switching Capacity     |   |
| Maximum Current:            | 2A  |
| Maximum Voltage:            | 400VDC/250VAC*                                |
| Hot Switching Capacity      |   |
| Maximum Current:            | 2A  |
| Maximum Voltage:            | 110VDC/250VAC*                                |
| Maximum Power: †            | 90W/500VA                                     |
| Minimum Switching Capacity: | 10mA, 5VDC                                    |
| Initial On Path Resistance: | <250mΩ  |
| Off Path Resistance:        | >10 <sup>9</sup> Ω                            |
| Thermal Offset:             | <20μV   |
| Bandwidth:                  | >20MHz  |
| Operate Time:               | 21ms typical,<br>10.5ms for multichannel mode |
| Expected Life               |   |
| Mechanical Life:            | >2x10 <sup>7</sup> operations                 |
| At Max. Switch Capacity:    | >1x10 <sup>5</sup> operations                 |

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

† For variation of maximum hot switching capacity of voltage with current refer to plot.

## Power Requirements

| +3.3V | +5V               | +12V | -12V |
|-------|-------------------|------|------|
| 0     | 1.7A† (typ 400mA) | 0    | 0    |

† with all 64 relays operated

## Mechanical Characteristics

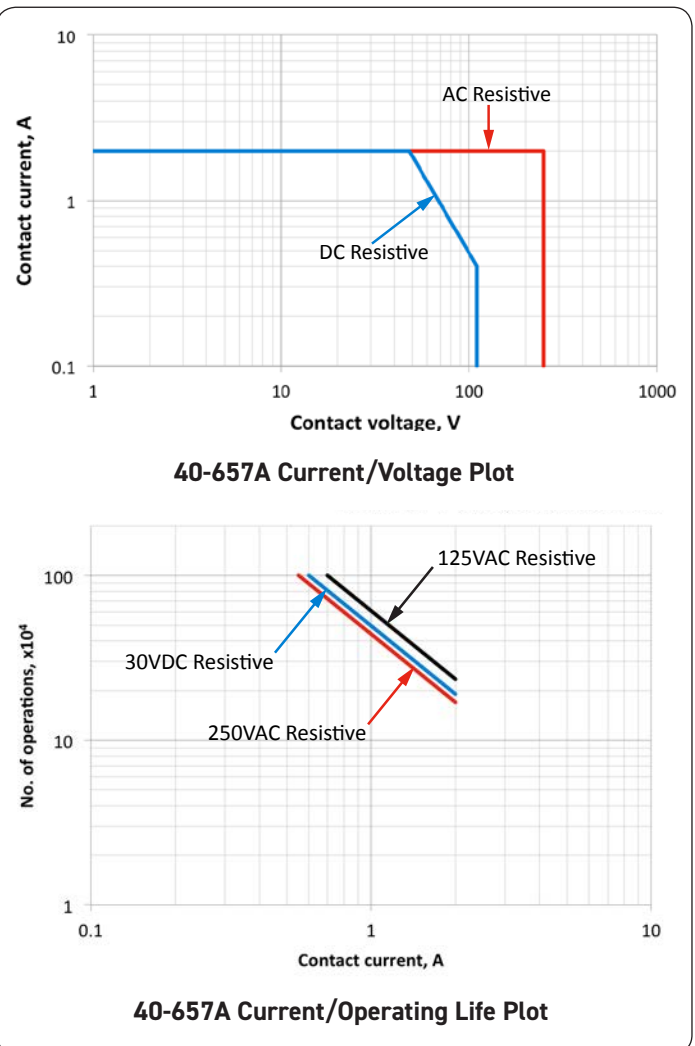
Single slot 3U PXI (CompactPCI card).

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 78-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: 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 - Multiplexer

| Channel Selection | Model Variant            | Order Code         |
|-------------------|--------------------------|--------------------|
| Single            | 8-Bank 8-Channel 1-Pole  | 40-657A-001-8/8/1  |
| Single            | 4-Bank 16-Channel 1-Pole | 40-657A-001-4/16/1 |
| Single            | 2-Bank 32-Channel 1-Pole | 40-657A-001-2/32/1 |
| Single            | 1-Bank 64-Channel 1-Pole | 40-657A-001-1/64/1 |

**Note:** The above modules are available in multiple channel selection mode by adding the “-M” suffix to the part number. For example, the 8-bank, 8-channel 1-pole MUX with multiple channel capability would be: **40-657A-001-8/8/1-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 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

### 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                 |
|-------------|---------------------------|
| 40-657A-001 | 91-100-020 (Relay Kit 20) |

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

## Mating Connectors & Cabling

For connection accessories for the 40-657A modules please refer to the [90-006D](#) 78-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.

## 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



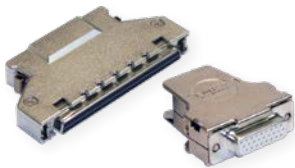
### Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- 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

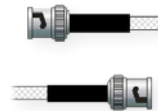
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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

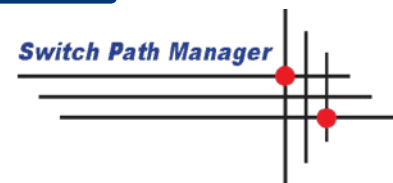
We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments, please go to: [pickeringtest.com/software](http://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](http://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](http://pickeringtest.com/ebirst)

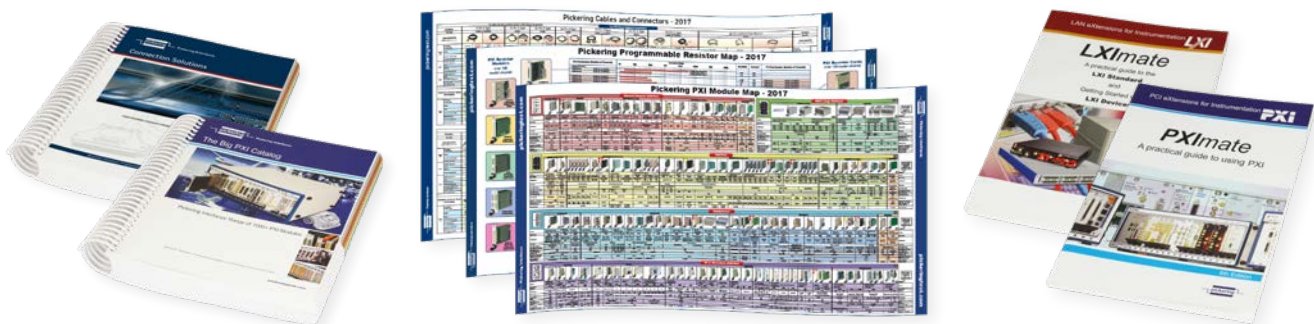


## Three Year Warranty & Guaranteed Long-Term Support

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](http://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](http://pickeringtest.com/resources)

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