**40-612**

*Very High Density Versatile Multiplexer*

- **VERSATILE MULTIPLEXER - FOR NOW AND THE FUTURE**
- Flexible Software Configured Architecture Can be Set To Different Configurations As Needs Change
- 8-Bank 8-Channel 2-Pole Multiplexers, 1-Pole Selection, Inter-bank Connection & Isolation Switching
- Many Different Configurations up to a Single 128-Channel 1-Pole Multiplexer, Including Mixed Channel Count & Custom Configurations
- Maximum Current 2A Hot or Cold Switching
- Switch up to 300VDC/250VAC and up to 60W Max Power
- Isolation Switches Reduce Capacitive Loading in Large Systems
- VISA, IVI and Kernel Drivers Supplied for Windows XP/Vista/7/8
- Supported by PXI or LXI Chassis
- 3 Year Warranty

The 40-612 Very High Density Versatile Multiplexer module features a wide range of software selectable switching configurations. The 40-612 is especially useful where a high density MUX array is required that can adapt to different test configurations for different test targets, or where a test system may have to be reconfigured in the future. Typical applications include signal routing in ATE and data acquisition systems. The 40-612 module uses high quality electro-mechanical relays, connections are made via a front panel 160-pin DIN 41612 connector.

**MUX Configurations**

The module can be software configured into one of a large number of different multiplexer modes. Relays allow the multiplexer banks to be set in 1 or 2-pole mode and inter-bank switching enables the channel count to be increased up to a maximum of 128 (refer to schematic diagram overleaf).

<table>
<thead>
<tr>
<th>Some possible multiplexer formats are:-</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Banks, 16 Channels, 1-Pole</td>
</tr>
<tr>
<td>8 Banks, 8 Channels, 2-Pole</td>
</tr>
<tr>
<td>4 Banks, 32 Channels, 1-Pole</td>
</tr>
<tr>
<td>4 Banks, 16 Channels, 2-Pole</td>
</tr>
<tr>
<td>2 Banks, 64 Channels, 1-Pole</td>
</tr>
<tr>
<td>2 Banks, 32 Channels, 2-Pole</td>
</tr>
<tr>
<td>1 Bank, 128 Channels, 1-Pole</td>
</tr>
<tr>
<td>1 Bank, 64 Channels, 2-Pole</td>
</tr>
</tbody>
</table>

The versatility of the 40-612’s architecture allows all multiplexer banks to be inter-linked and common connections used as extra signal inputs, creating a 71-channel 2-pole multiplexer.

The 40-612 multiplexer may be operated as a conventional multiplexer with break-before-make action when a new channel is selected. For 2-pole configurations multiple channels can be simultaneously selected without restriction, for 1-pole configurations the channels that can be simultaneously selected are limited by the use of 2-pole relays.

Isolation Switching connects only the currently active multiplexer bank to the analog common, 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.
Switching Diagram for the 40-612-002 Very High Density 8 Bank, 8 Channel, 2 Pole Versatile Multiplexer
Relay Type
The 40-612 is fitted with electro-mechanical double pole relays, Palladium-Ruthenium Gold covered contacts. A Spare Relay is built onto the circuit board to facilitate easy maintenance with minimum downtime.

Power Requirements

<table>
<thead>
<tr>
<th>Voltage</th>
<th>5mA</th>
<th>2A max (typ 280mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.3V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+5V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+12V</td>
<td>0</td>
<td>2A</td>
</tr>
<tr>
<td>-12V</td>
<td>0</td>
<td>2A</td>
</tr>
</tbody>
</table>

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

Signals via front panel 160 way male DIN 41612 connector, for pin outs please refer to the operating manual.

We recommend that Pickering mating connectors are used with this module which are designed to ensure there are no mechanical interference problems when used in a PXI chassis.

Soft Front Panel For The Versatile MUX

The Versatile Multiplexer Soft Front Panel for the 40-612-002 and 40-682-002 allows easy setting of various configurations from 8-bank 8-channels 2-pole multiplexers, up to 1-bank 128-channels 1-pole multiplexers as well as individual relay control for custom configurations. The schematic in the background of the SFP simplifies understanding of the selected topology. During configuration setting, all relay control information is logged in a text file which can be re-used in a programming environment.

Switching Specification

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>Electro-mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Type:</td>
<td>Palladium-Ruthenium, Gold Covered Bifurcated</td>
</tr>
<tr>
<td>Max Switch Voltage:</td>
<td>300VDC/250VAC</td>
</tr>
<tr>
<td>Max Power:</td>
<td>62.5VA, 60W from 30V to 220VDC, 30W to 300VDC (resistive load)</td>
</tr>
<tr>
<td>Max Switch Current:</td>
<td>2A</td>
</tr>
<tr>
<td>Max Continuous Carry Current:</td>
<td>2A</td>
</tr>
<tr>
<td>Max Pulsed Carry Current Example (for a single switch path):</td>
<td>6A for 100ms (up to 10% duty cycle)</td>
</tr>
<tr>
<td>Initial Path Resistance - On:</td>
<td>500m &amp; 300m typ†</td>
</tr>
<tr>
<td>Path Resistance - Off:</td>
<td>&gt;10Ω</td>
</tr>
<tr>
<td>Minimum Voltage:</td>
<td>100μV</td>
</tr>
<tr>
<td>Thermal Offset:</td>
<td>&lt;10μV †</td>
</tr>
</tbody>
</table>

† Path resistance & thermal offset are dependent upon the signal route selected.

Product Order Codes

8-Bank, 8-Channel, 2-Pole Versatile Multiplexer Module 40-612-002

Support Products

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering’s PXI switching modules, simplifying servicing and reducing down-time.

The relay kit for the 40-612 module is as follows: 91-100-001 kit for 40-612-002

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

Mating Connectors & Cabling

For connection accessories for the 40-612 module please refer to the 90-001D 160 way DIN 41612 Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.
Programming

Pickering provide kernel, IVI and VISA (NI and Agilent) drivers which are compatible with 32/64-bit versions of Windows including XP, Vista, 7 and 8 operating systems. 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:

- National Instruments products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, etc.)
- Microsoft Visual Studio products (Visual Basic, Visual C+)
- Agilent VEE
- Mathworks Matlab
- Geotest ATE Easy
- MTQ Testsolutions Tecap

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries.

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 33MHz 32-bit backplane interface.

Safety & CE Compliance


PXI & LXI Chassis Compatibility

Compatible with all chassis conforming to the 3U PXI and 3U cPCI specification. Compatible with Legacy and Hybrid peripheral slots in a 3U PXI Express chassis.

Compatible with Pickering Interfaces LXI Modular Switching chassis. For information on driving your switching solution in an LXI environment refer to the LXI Product Guide.

Latest Details

Please refer to our Web Site for Latest Product Details.
www.pickeringtest.com

Please refer to the Pickering Interfaces “Connection Solutions” catalog for the full list of connector/cabling options, including drawings, photos and specifications. This is available in either print or as a download. Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering PXI modules.

“The Big PXI Catalog” gives full details of Pickering’s entire range of PXI switch modules, instrument modules and support products. At over 500 pages, the Big PXI Catalog is available on request or can be downloaded from the Pickering website.

Ever wondered what PXI is all about?

Pickering Interfaces’ “PXimate” explains the basics of PXI and provides useful data for engineers working on switch based test systems.

The PXimate is available free on request from the Pickering website.

The “PXI Module Map” - a simple fold-out selection guide to all Pickering’s 600+ PXI Modules.