- Very High Density 352 Pin Multiplexer
- Dual or Quad Multiplexer Operation, Switching 1 or 2 Poles
- Expandable to 10,000 Channels Using Internal Analogue Bus
- Automatic Isolation Switches Reduce Capacitive Loading in Large Systems
- High Quality Ruthenium Reed Relays For Maximum Reliability
- Built-In Self Test
- Suitable for Ribbon Cable Connection
- Versatile Configuration Options: "One Module for ALL Your General Purpose Multiplexer Applications"
- Built-In RS-232 Port

Not Recommended for New Designs*

*Please contact Pickering for alternative PXI/LXI/USB solutions

The 20-610 Universal 352 Pin Multiplexer Module was the first in a new generation of very high density multiplexers from Pickering Interfaces. One standard module offers a very large range of switching possibilities plus extensive built in self-test.

Model 20-610 offers the very highest density multiplexing with 352 switch pins.

### Universal Multiplexer - For Now & The Future

The 20-610 may be used for most general purpose multiplexer requirements. The analogue common/s may be routed to the front panel or, for large system implementation, to one of the internal analogue buses. This versatility means that one multiplexer module is suitable for many different applications.

### Simple Internal Expansion to 10,000 Channels

Up to 2816 input channels can be accommodated in one System 20 Case, over 10,000 with multiple expansion cases.

Built-in Automatic Isolation Switching connects only the currently active multiplexer switch bank, thereby keeping capacitive loading and leakage currents in large multiplexer systems to a minimum.

Dual MUX Mode: 88 Channels

Quad MUX Mode: 44 Channels
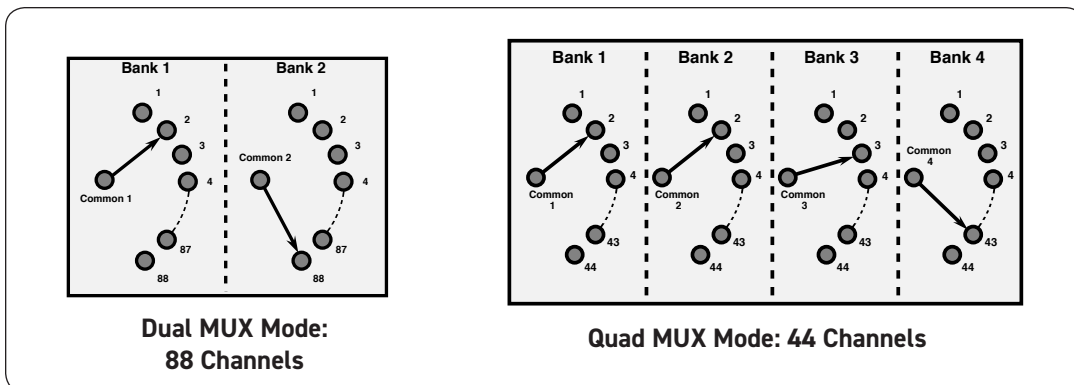
Creating Larger Multiplexers

When more than one module is used to make up a multiplexer – see diagram below, where seven modules are used to make up a 1232 channel 2-pole multiplexer – then all multiplexer units must have the same internal address, the location of each module within the multiplexer is given by its own bank address. Bank addresses must start at 0 and should be contiguous.
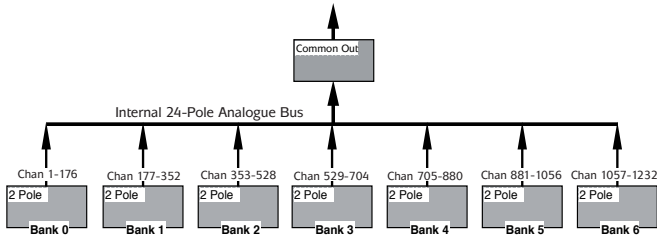
If there is a problem with any of the modules used to make up a large multiplexer then an error will be detected (use the **REPORT?** query to discover the cause).
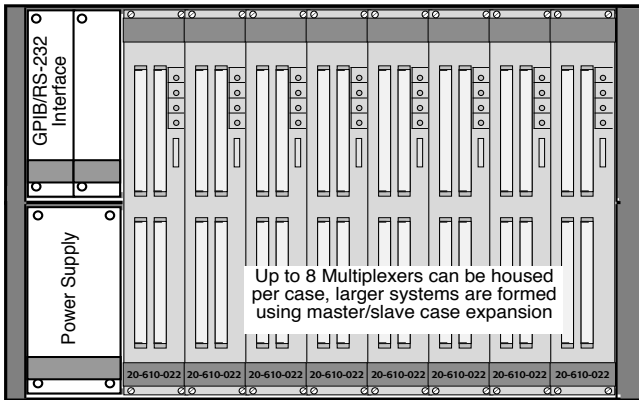

Analogue Bus

The analogue common can be routed (using internal jumpers) out to either the front panel connectors or the internal analogue bus. Routing to the front panel allows the user complete flexibility, routing to the internal analogue bus simplifies large system construction and ensures good signal isolation from external interference.

The System 10/20 backplane features a shielded 24 pole analogue bus. This would be used with a multiplexer constructed using more than one module where the selected channel will be carried along the backplane analogue bus.

Built-In RS-232 Port

The 20-610 also has a built in RS-232 port (9600 baud, XON/XOFF, 8 bit, no parity). This is provided on a 4 pin Molex type connector on the front panel. A separate adapter lead to allow use with a standard 9 pin D-type is available. The RS-232 port allows the module to be configured, controlled and monitored from any RS-232 terminal. This can be a very versatile debugging aid.

20-610-021
Dual 88 Channel 1-Pole

20-610-022
Quad 44 Channel 2-Pole
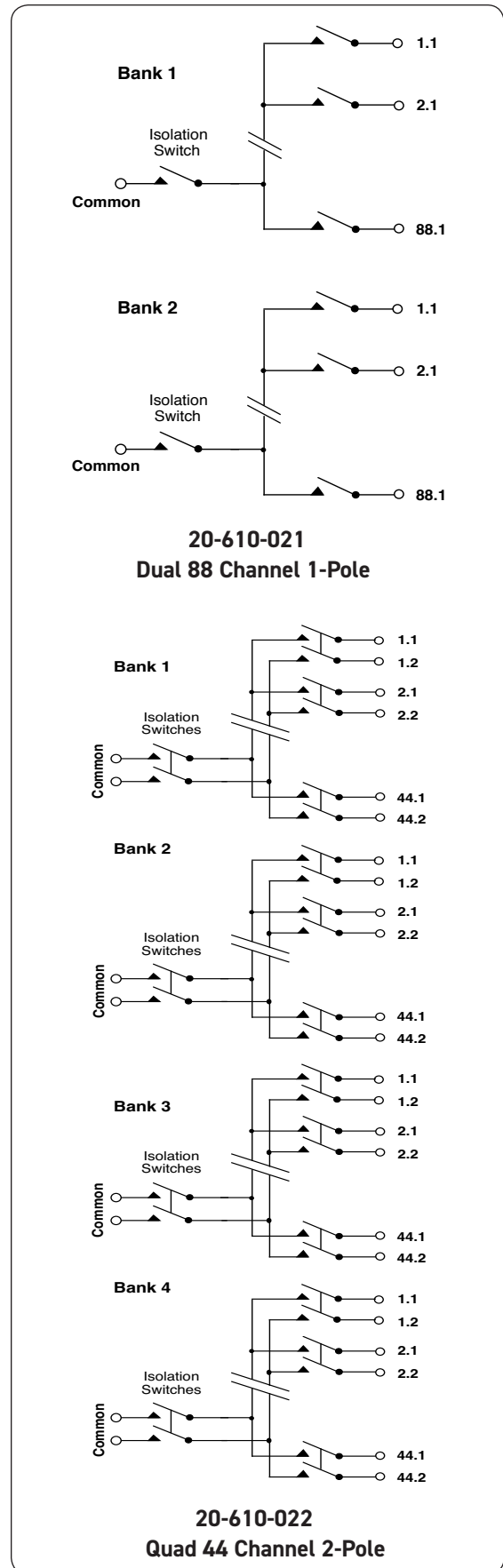
Specifications

Specification - 20-610 MUX System

Switch Type:	Ruthenium Reed
Max Standoff Voltage:	100V
Max Power:	10W
Max Switch Current:	0.5A
Max Carry Current:	1.2A
Path Resistance	
On (Single Module):	500mΩ (typical)
Off (Single Module):	$>10^9\Omega$
Capacitance Open Channel:	<6pF
Capacitance Channel to Channel:	<30pF
Crosstalk (Single Channel 50Ω)	
Channel to Channel - 10kHz:	>80dB
Channel to Channel - 100kHz:	>65dB
Channel to Channel - 1MHz:	>45dB
Bank to Bank - 100kHz:	>80dB
Bank to Bank - 1MHz:	>65dB
Bandwidth (3dB, 1 module):	5MHz
Noise Level (0 to 1MHz in 50Ω system):	<-80dBm
Operate Time:	7ms
Release Time:	6ms
Expected Life (Low power):	$>1\times10^8$ ops
Expected Life (Full power):	$>5\times10^6$ ops

Multiplexer Operating System

The 20-610-022 very high density multiplexer operates in the following mode:		
Quad	44-Channel	2-Pole Switching

The 20-610-021 high density multiplexer operates in the following mode:		
Dual	88-Channel	1-Pole Switching

Multi channel selection: Care must be taken when selecting many channels simultaneously not to overrate the power supply. A 10-910 power supply will allow the simultaneous selection of up to 300 channels in a large multiplexer system.

Programming

The 20-610 Multiplexer module is simple to program:

ARESET a	Open all channels on device **a**
CHAN a,c	Select channel **c** on multiplexer **a** When in dual mode the address is prefixed by 1 or 2 (in quad mode by 1, 2, 3 or 4).
CHAN a,c,s	Multi-channel selection argument **s** allows opening/closing of any combination of channels. Also allows selection of all channels except c (not available in 1 pole mode on very high density 20-610-022).
DELAY t	Force a minimum delay of **t** milliseconds between two instructions
DIAGNOSTIC?	Report any Self Test errors
RESET	Open all switches on all modules
VIEW? a	View status of device **a**

Self Test Details

Self-Test is invoked at power on and may also be operated under software (***TST?**) or via a recessed push button. Self-Test pass is indicated on a front panel LED with a full pass/fail description available using the **DIAGNOSTIC?** command. Self-Test comprises 2 levels:

1. **Logic Test**
2. **Relay Coil Test**

In the unlikely event of a relay needing replacement spare relays are built into 20-610 module.

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	Up to 95% non-condensing
Altitude:	5000m

Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 95% non-condensing
Altitude:	15000m

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

352-Pin Multiplexer, Very High Density	
Quad 44 Channel 2 Pole	20-610-022-Q/44/2
176-Pin Multiplexer, High Density	
Dual 88 Channel 1 Pole	20-610-021-D/88/1

Mating Connectors & Cabling

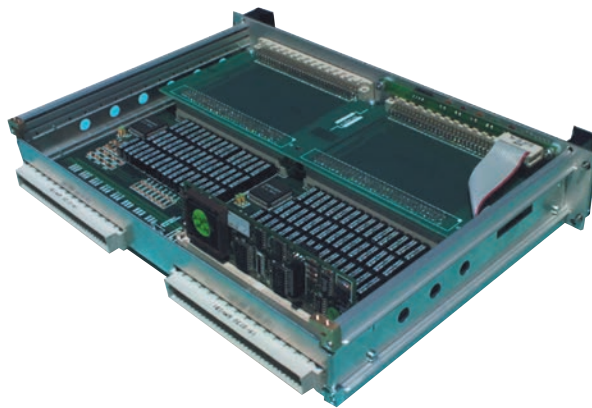|	
96-Pin DIN 41612 Socket, Crimp Pin	10-967-001
96-Pin DIN 41612 Socket, IDC	10-967-101
96-Pin IDC Cable, 1m Length (Other lengths to order)	10-967-201

Product Customization

Pickering System 20 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.

20-610 Shown WIth Cover Removed

pickering Pickering Interfaces

pickering**test**.com