

- Voltage Switching to 7.5kV
- Model 20-310 Uncommitted High Voltage Relays, Available as 16 x Normally Open or 8 x Changeover
- Model 20-320 is a Dual 8 to 1 High Voltage Multiplexer, also Configurable as a 16 to 1 Multiplexer
- Optically Isolated Relays for Improved Isolation and Proximity to EHT Load
- Reed Switch Contacts for Reliable Switching with Long Life
- Manual Control Available

High voltage reed relay switching modules suitable for use right up to 7500 Volts. Model 20-310 contains 16 uncommitted reed relays, available as Normally Open or Changeover. Model 20-320 is a versatile dual 8 to 1 channel multiplexer.

These units are designed for both "hot" switching (close switch after load applied) and "cold" switching (close switch before EHT load applied) high voltage applications giving reliable switching with no disruption to internal logic.

To ensure maximum high voltage isolation, all modules are driven by a separate optically isolated driver module (Model 10-410B-004).

The driver module is connected to the high voltage unit via a dedicated interconnection cable. All relay coils are sensed to guarantee correct operation.

High Voltage Switching Modules may be housed in a separate case, suitable for mounting as close as possible to the high voltages being switched, reducing cable lengths and minimizing RFI.

Applications for the 20-310/320 series modules include: Transformer isolation testing, semiconductor breakdown monitoring and cable insulation testing.

20-310 Uncommitted Relay Module

This module contains 16 individual high voltage relays available in the following formats:-

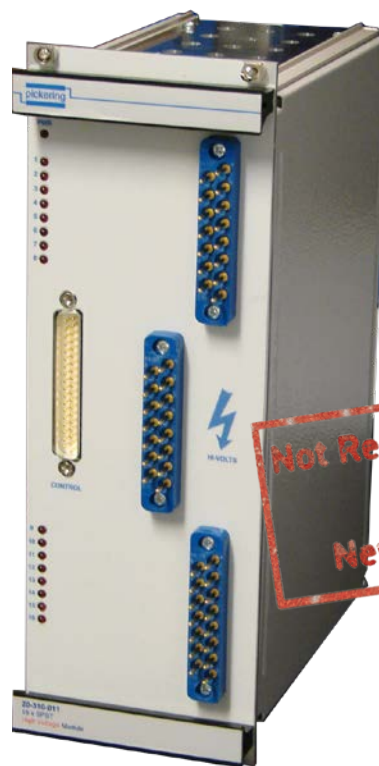
- 16 x Normally Open Relays
- 8 x Changeover Relays (Constructed using 8 x Normally Open + 8 x Normally Closed, connected externally)
- Specified combination of the above, to special order

Note: Normally closed relays are energise to break type, these relays are closed without any power applied (important for safety).

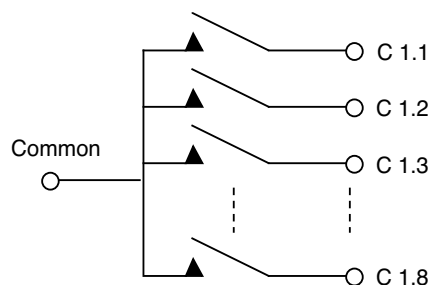
20-320 Multiplexer Module

A dual 8 to 1 multiplexer giving maximum flexibility, it may be configured in any one of the following ways:-

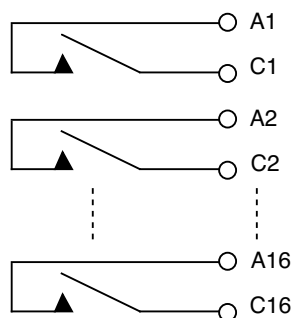
- Dual 8 to 1 Multiplexer (Single Pole)
- Single 16 to 1 Multiplexer (Single Pole)
- Single 8 to 1 Multiplexer (Double Pole)



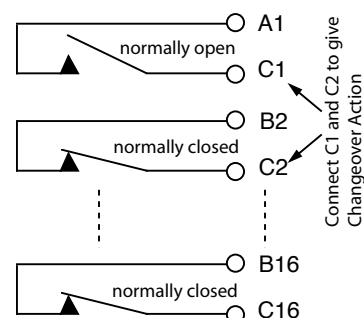
***Please contact Pickering for alternative PXI/LXI/USB solutions**



20-320-011 Schematic: 8 Channel Multiplexer (2 per Module)



20-310-011 Schematic: 16 x Normally Open Relays



20-310-211 Schematic: 8 x Changeover Relays

Relay Type

The modules are fitted with Pickering Series 60 High Voltage Reed Relays.

All reed relays are manufactured by our sister company Pickering Electronics: pickeringrelay.com

Very High Voltage Switch Specification

Max Standoff Voltage:	7500V DC (7500V ACpk)
Max Switching Voltage:	7500V DC (7500V ACpk)
Max Power:	10W (at max voltage) 50W (at low voltage)
Max Switch Current:	0.25A <5mA (at max voltage)
Max Carry Current:	0.25A
Contact Resistance, On:	2Ω
Contact Resistance, Off:	>10 ¹¹ Ω
Bandwidth:	250kHz
Max Switch Operate Time:	7ms
Max Switch Release Time:	6ms
Expected Life Low power load:	>1x10 ⁸ operations
Expected Life Full power load:	>1x10 ⁶ operations

Manual Control

This module is also suitable for manual control.

Mechanical Characteristics

Both modules conform to the 6U height (262mm) Eurocard standard and are 160mm deep. Front panel width is 3.6 Inches.

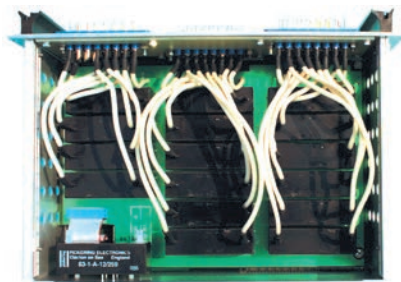
Safety – Interlock Facility

All three high voltage connectors have an interlock facility, which should be used with external circuitry to disable any high voltage sources whenever any of the three connectors is not firmly secured.

High Voltage & Control Connections

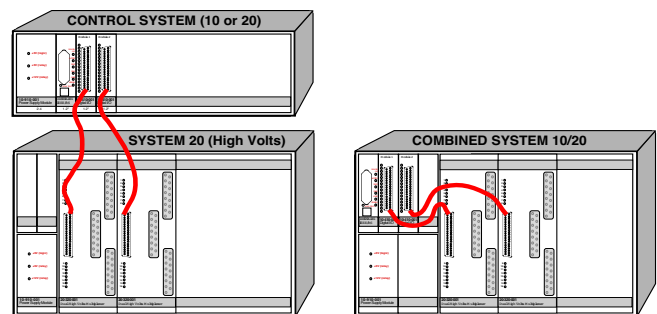
High voltage connections are made via three 15-pin high voltage connector plugs each with an earthed shield and including interlock pins. Connection from the 10-410B-004 driver module is via a front panel mounted 37-Pin D-type using the 40-970 interconnection cable (specify length required).

Internal Construction of 20-310/320 Module
(contains 17 Pickering Series 60 high voltage reed relays)



Remote Mounting - The Preferred Method

20-310/320 Series modules are suitable for remote mounting, away from the main System 20 case. They may be mounted in a separate switching system expansion case, this enables them to be located as close as possible to the high voltage source, thus keeping EHT cabling to a minimum. If remote mounting is not chosen then the high voltage modules may be mounted in a "Combined" System 10/20 case, however this will result in an increase in switching noise within the system case.



Programming

The high voltage module is operated via a digital I/O module. All modules contain 16 individual switches, programmable either by single relay, byte or word (16 relays simultaneously):

- ARESET a** Clear all switches on module **a**
- CLOSE a, b** Set switch number **b** on module **a**
- DELAY t** Force a minimum delay of **t** milliseconds between two instructions
- OPEN a, b** Open switch number **b** on module **a**
- RESET** Open all switches on all modules
- READ? a** Read status of relay drives, confirms correct connection to 20-310/320 unit.
- WRITE a, w** Send word **w** to module **a**
- VIEW? a [, b]** View status of module **a**, can be viewed at any time either as a word/byte or by switch logical value (1 or 0)

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

16 x Normally Open (NO)	20-310-011
8 x Changeover (NO + NC)	20-310-211
Dual 8 to 1 Channel MUX	20-320-011

Ancillaries:

Each High Voltage Module requires a separate Driver Module to control it, together with interconnection cable (state length when ordering):

Driver Module	10-410B-004
Interconnection Cable (1m Length)	40-970-037

Further options are available including different combinations of normally open & normally closed switches. Pickering Interfaces construct custom high voltage switching units built to customers exact specifications.

Further Information on High Voltage Switching

If you require more detailed information, please contact the Sales office for a free copy of the 20-310/320 Operating Manual. **High voltage switching can be a difficult area to work in, each application is different. If you require any further assistance please contact Pickering to discuss your requirement.**

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.