GPIB High Voltage Relay/Multiplexer Module 10-310/315

- Model 10-310: 8 High Voltage SPST Reed Relays
- Model 10-315: 8 Channel High Voltage Multiplexer
- Can Switch up to 1000Volts DC or 1000Volts AC Peak, 50W max Power
- 1500V DC/AC Peak Isolation
- Uses High Reliability Pickering Ruthenium Reed Relays For Maximum Performance
- Front Panel Status LEDs

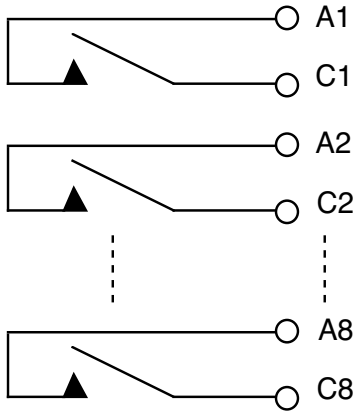
***Please contact Pickering for alternative PXI/LXI/USB solutions**

The 10-310/315 Range of High Voltage Switching Modules will Switch up to 1000V with Isolation to 1500V. Two module types are available: 8 x Normally Open Relays and an 8-Channel Multiplexer, both are fitted with Sputtered Ruthenium Reed Relays.

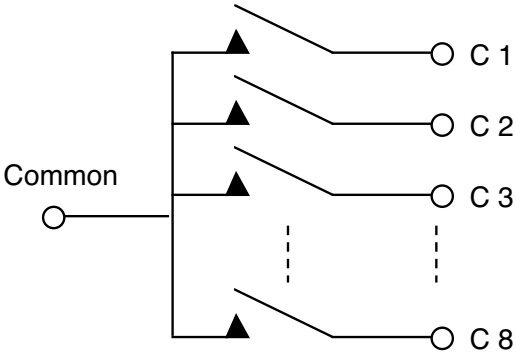
10-310/315 high voltage switching modules are available in both SPST Relay or Multiplexer versions. These units are designed for both “hot” switching (close switch after load applied) and “cold” switching (close switch before EHT load applied) high voltage applications, giving reliable switching with no disruption to internal logic.

The modules use instrument grade sputtered ruthenium dry reed switches for high reliability.

Applications for the 10-310/315 series modules include: circuit board isolation testing, relay testing, semiconductor breakdown monitoring and cable harness insulation testing.



Model 10-310: 8 x SPST High Voltage Reed Relays



Model 10-315: 8-Channel High Voltage Multiplexer

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Relay Type

The module is fitted with instrument grade reed relays (Ruthenium sputtered type).

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

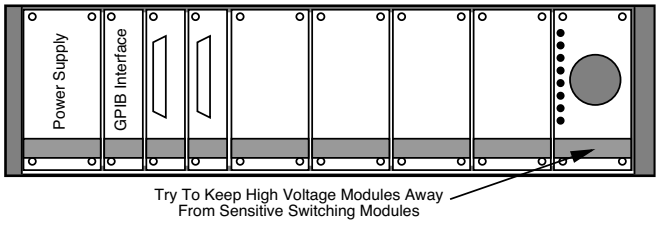
Programming

The High Voltage Reed Relay module is simple to program either by single relay or by byte pattern (8 relays simultaneously):

ARESET a	Open all switches on module **a**
CLOSE a,b	Close 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
VIEW? a[,b]	View status of module **a**, can be viewed at any time either as a byte or by switch as a logical value (1 or 0)
WRITE a,w	Send word **w** to module **a**

RFI Suppression

All 10-310/315 modules have extensive built-in RFI suppression, this will greatly increase switching life and eliminate potential problems due to high voltage transients upsetting either System 10 or more importantly your IEEE-488 Bus network. Please note, it is good practice to keep high voltage switching modules away from more sensitive switching units to minimise any crosstalk.



Switching Specification

Relay Type:	Ruthenium Dry Reed
Max Standoff Voltage:	1500V DC 1500V ACpk
Max Switching Voltage:	1000V DC 1000V ACpk
Max Power:	10W
Max Switch Current:	0.5A
Max Carry Current:	0.5A
Max Switch Current at Maximum Voltage:	<5mA
Contact Resistance On:	3Ω
Contact Resistance Off:	$>1x10^{11}\Omega$
Bandwidth:	250kHz
Max Switch Operate Time:	1.0ms
Max Switch Release Time:	1.0ms
Expected Life (operations)	
Low power load:	$>1x10^{8}$
Full power load:	$>5x10^{5}$

Mechanical Characteristics

All modules conform to the 3U height (128mm) Eurocard standard and are160mm deep. Front panel width is 2.4 inches.

Connectors

High voltage connections are made via a screw lock 24 pole connector plug.

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

High Voltage SPST Reed Relay Switching Module	
8xSPST Dry Reed Switch	10-310-001
High Voltage Multiplexer Module	
8-Channel MUX, Dry Reed Switch	10-315-001

Mating Connectors & Cabling

24-Pin CPC Socket with Pins	10-962-001

Product Customization

Pickering System 10 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.

Overview of "Hot" & "Cold" Switching Techniques

"Hot" Switching

This is when the load is switched with the high voltage source applied. Hot switching may generate considerable RFI, both within the switching module and on interconnecting wiring. Care must be taken to suppress or shield all cabling.

Note that any precaution which adds extra capacitance to a cable should be taken with great care, even a very small capacitance at high voltages can cause very large inrush current through the module resulting in possible switch weld and excessive RFI.

10-310/315 Modules are fitted with suppression components to minimise high frequency switching noise, these suppressors reduce the high energy, high frequency spikes present when "hot" switching high voltage signals.

"Cold" Switching – The Preferred Option for Reliability & Long Life.

With cold switching the relay is operated before the high voltage source is connected, the maximum carry current is then much greater, there will also be much less stress on the reed switches resulting in improved reliability and life. There is also much less likelihood of generating RFI at switch time (provided the HT source has a soft start facility).

High voltage switching modules are often used for isolation testing applications (e.g. cable, transformer or semiconductor isolation tests) here cold switching is nearly always the preferred option.