GPIB Switching Matrix Module 10-510/520/530

- 8x4, 16x4 and 8x8 Matrix Formats
- 1 or 2 Pole Switching
- Modules Expandable up to 2000 Crosspoints
- Switch up to 100 Volts DC, 0.5 Amps (1A Carry Current)
- 50W Max Power
- Uses High Reliability Pickering Ruthenium Reed Relays For Maximum Performance

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

The 10-510, 10-520 and 10-530 are a range of matrix modules arranged in 8x4, 16x4 and 8x8 configurations respectively, available with either 1 or 2 pole switching to suit many switching requirements. They are Intended for construction of small to medium matrix switching systems.

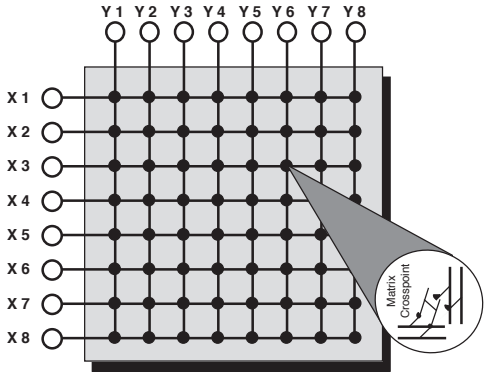
Typical applications include signal routing in ATE systems, dynamically interconnecting the Device Under Test (DUT) to all the stimulus and measurement instruments and for high accuracy data acquisition.

Connections are made via two front panel mounted D-Type connectors. Larger matrices may be constructed by interconnecting matrix modules, see diagram.

If your switching application requires any of the following:

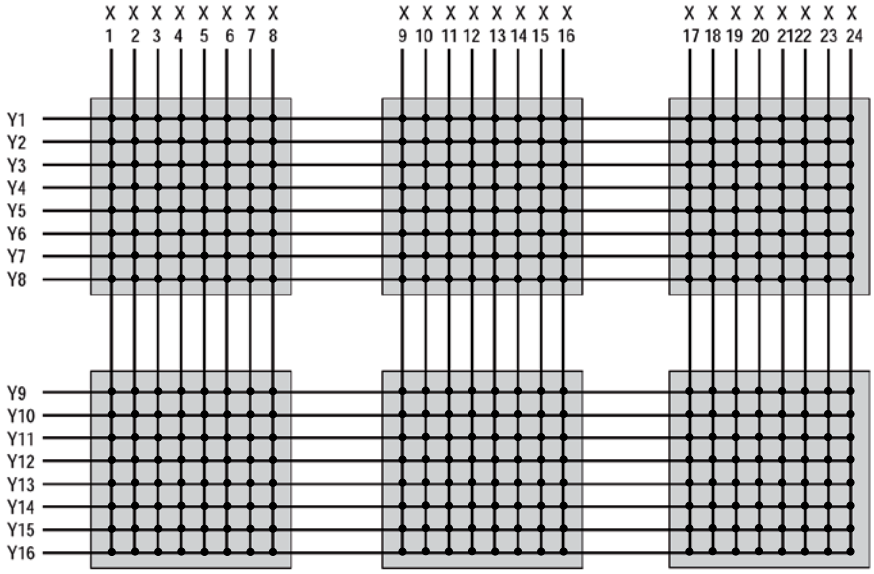
- High density matrix with hundreds of crosspoints
- Extensive self test with relay fault diagnosis
- Isolation switching to reduce stray capacitance and DC leakage
- Internal analogue bus expansion to simplify cabling

Then look at our System 20 range of matrix modules.



8x8 Double Pole Matrix (10-530)

Typical Matrix: 24x16 Constructed Using Six 8x8 Modules



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Relay Type

The module uses instrument grade sputtered Ruthenium Reed Switches which are suitable for switching very low level signals with a low and stable contact resistance. Mercury Wetted Reed Switches may be available to special order. All Pickering matrix modules allow any combination of crosspoints to be selected. **Spare Reed Relays** are built onto the circuit board to facilitate easy maintenance with minimum downtime.

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

Switching Specification

Switch Type:	Ruthenium	Mercury wet †
Max Standoff Voltage:	100V	100V
Max Power:	20W	50W
Max Switch Current:	0.5A	2.0A
Max Carry Current:	1.0A	3.0A
Contact Resistance		
On:	200mΩ	200mΩ
Off:	$>10^9$Ω	$>10^9$Ω
Differential Thermal Offset:	<5µV	<10µV
Capacitance:		
Open Channel;	<6pF	<6pF
Channel-Channel;	<20pF	<20pF
Bandwidth (50Ω):	10MHz	10MHz
Max Operate Time:	7ms	9ms
Max Release Time:	6ms	8ms
Expected Life (operations)		
Low power load:	$>1x10^8$	$>1x10^9$
Full power load:	$>1x10^6$	$>1x10^8$

† Mercury wet versions may be available to special order.

Mechanical Characteristics

The modules conform to the 3U height (128mm) Eurocard standard and are 160mm deep. Panel width for all versions is 2.4 Inches.

Connectors

Matrix connection is via two 37-pin D-Type male connectors (one connector for each of the X and Y axes). Please note that these connectors are spaced closely together so care must be taken to use mating connectors that will fit on to the front panel together.

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.

Creating Larger Matrices

Each System 10 interface can directly support matrices to over 2000 crosspoints. Larger sizes are supported using multiple System 20 matrix modules.

Large matrices are constructed by interconnecting two or more matrix modules. All such matrix modules must have the same primary address (up to 30 modules may have the same primary address). Their position within the matrix is determined by their bank address, this is set on an additional 5 way dip switch.

Pickering can build large Matrix systems constructed and tested to your exact requirements, please contact sales office for further details.

Mixed Matrix/Multiplexers Configurations

For some users requiring very large matrix systems the cost of a "full" matrix may prove prohibitive, in many instances a combination of multiplexer input/output and partially filled matrix may prove quite acceptable and could be more effective in terms of both cost and performance. Please contact Pickering to discuss your application in detail.

Programming

The Matrix module is very easy to program using the Intelligent IEEE-488.2 Interface:

`ARESET a`	Open all switches on device **`a`**
`DIAGNOSTIC?`	Report any Self Test Errors
`DELAY t`	Force a minimum delay of **`t`** milliseconds between two instructions
`MCLOSE a,x,y`	Close switch at coordinates **`x,y`** on module **`a`**
`MOPEN a,x,y`	Open switch at coordinates **`x,y`** on module **`a`**
`RESET`	Open all switches on all modules
`VIEW? a`	View status of device **`a`**

Further matrix control may be achieved using the IEEE-488.2 stored settings commands, these permit the storage and later recall of complex matrix configurations.

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

Product Order Codes

8x4, 1-Pole Matrix, Ruthenium Reed	10-510-021
8x4, 2-Pole Matrix, Ruthenium Reed	10-510-022
16x4, 1-Pole Matrix, Ruthenium Reed	10-520-021
16x4, 2-Pole Matrix, Ruthenium Reed	10-520-022
8x8, 1-Pole Matrix, Ruthenium Reed	10-530-021
8x8, 2-Pole Matrix, Ruthenium Reed	10-530-022

Limiting Resistors

Built in limiting resistors on each row and column may be fitted, useful in preventing high current in-rushes which may damage the reed switch, please specify option **-R**.

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

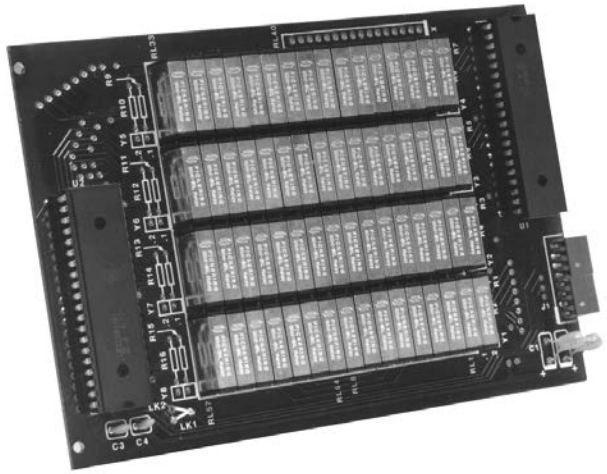
All customized products are given a unique part number, fully documented and may be ordered at any time in the future. Please contact your local sales office to discuss.

Mating Connectors & Cabling

37-Pin D-type Socket with Crimp Pins	10-962-001

For other 37-pin connection accessories for the 10-510 series modules please refer to the 90-007D 37-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.

Please note that the module connectors are spaced closely together so care must be taken to use mating connectors that will fit on to the front panel together.



Internal Matrix PCB Showing 64 Pickering Reed Relays