

- Switch up to 8A at 250V AC (1-Pole)
- Choice of Single 10 x 5, Single 20 x 5 or Single 10 x 10 Configurations
- Power Matrix Modules Expandable to Over 3000 Crosspoints
- Built-In Self-Test

The 20-540 range of Power Matrix Modules are suitable for switching currents to 8A with voltages up to 250V AC. The modules are available in a variety of configurations including single 10 x 5, 10 x 10 or 20 x 5 with 1 pole switching.

The Pickering Interfaces 20-540 range of power matrix modules are designed for applications where high density low power matrices are inadequate, typically for switching signals >1A or for situations where the matrix must withstand voltage spikes to 1kV.

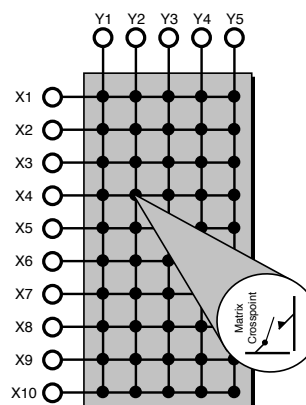
The 20-540 range has 3 variants with an 8 amp maximum current rating. The modules may be expanded to form large power matrix systems.

Self-Test is performed at power up and at any other time either manually or under program control, the front panel will indicate any detected fault. The diagnosis (including the position of the suspect relay) will be indicated using the **DIAGNOSTIC?** command.

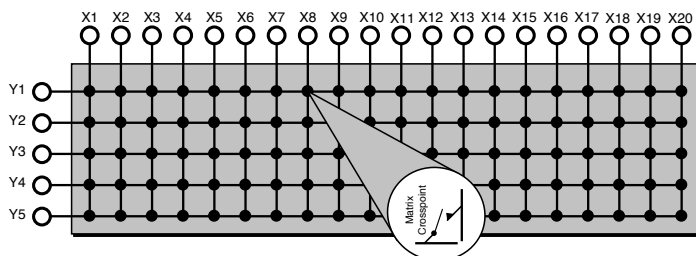
Typical applications will be to provide power switching to the device under test or for load switching.



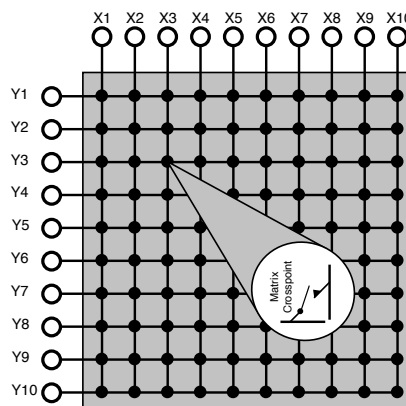
**\*Please contact Pickering for alternative PXI/LXI/USB solutions**



**Switching Diagram for a Single 10 x 5 Power Matrix**



**Switching Diagram for the 20 x 5 Power Matrix**



**Switching Diagram for the 10 x 10 Power Matrix**

## Specification

Switch Type:	Gold Over Silver Alloy
Max Standoff Voltage:	1000V DC
Max Switching Voltage:	380V AC/125V DC
Max Switch/Carry Current	
1-Pole Version:	8A
2-Pole Version:	5A
On, Contact Resistance:	<150mΩ
Off, Contact Resistance:	>10 <sup>8</sup> Ω
Bandwidth (50Ω):	5MHz
Max Operate Time: †	17ms
Max Relay Close Settling Time:	10ms
Max Relay Open Settling Time:	5ms
Expected Life (Low power):	>5x10 <sup>7</sup> operations
Expected Life (Full power):	>1x10 <sup>5</sup> operations

† This is the time taken from the start of the IEEE-488 or RS-232 message to the closure of the relay (assuming fast IEEE-488 /RS-232 communication and no pending operations).

## Creating Larger Matrices

Each System 20 IEEE-488/RS-232 interface can directly support power matrices with over 3000 crosspoints. Larger sizes are supported using multiple System 20 interface modules.

Large matrices are constructed by interconnecting two or more matrix modules using external cabling (Pickering Interfaces can provide this if required). All such matrix modules must have the same primary address. Their position within the matrix is determined by their bank address.

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 prove to be more effective in terms of both cost and performance. Please contact Pickering to discuss your application in detail.

## Mechanical Characteristics

All 20-540 model versions are housed in a shielded 6U height (262mm) Eurocard module and are 160mm deep. Panel width for all versions is 2.4 Inches.

## Connectors

The connectors used are 24 Pin CPC types with 2, 3 or 4 connectors per module, dependant upon the configuration (see Product Code list below).

Other connector types are available, e.g. BNC, Cannon, ZIF, please contact factory for further details.

## Programming

The matrix module is very easy to program using the Intelligent IEEE-488.2/RS-232-C Interface:

<b>ARESET a</b>	Open all switches on device <b>a</b>
<b>DIAGNOSTIC?</b>	Report any Self Test errors
<b>DELAY t</b>	Force a minimum delay of <b>t</b> milliseconds between two instructions
<b>MCLOSE a, x, y</b>	Close switch at coordinates <b>x, y</b> on matrix <b>a</b>
<b>MOPEN a, x, y</b>	Open switch at coordinates <b>x, y</b> on matrix <b>a</b>
<b>RESET</b>	Open all switches on all modules
<b>VIEW? a</b>	View status of device <b>a</b>

## Automatic Self-Test

**Full Self-Test** is performed at power up and at any other time either manually or under program control. **Self-Test** is of particular importance in large systems. In the unlikely event of self test failure the front panel will indicate a fault. The exact fault description is available via the IEEE-488/RS-232 bus.

## 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

## 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

Single 10x5 Matrix ( 2 CPC connectors) Single Pole (8A Current Handling)	20-540-001
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Single 10x10 Matrix ( 2 CPC connectors) Single Pole (8A Current Handling)	20-540-201
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Single 20x5 Matrix ( 3 CPC connectors) Single Pole (8A Current Handling)	20-540-301
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## Mating Connectors, Cabling & Tools

24-Pin CPC Socket with Pins	10-962-001
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Pin Extraction Tool	10-962-901
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Crimp Tool	10-962-902
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## 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.