

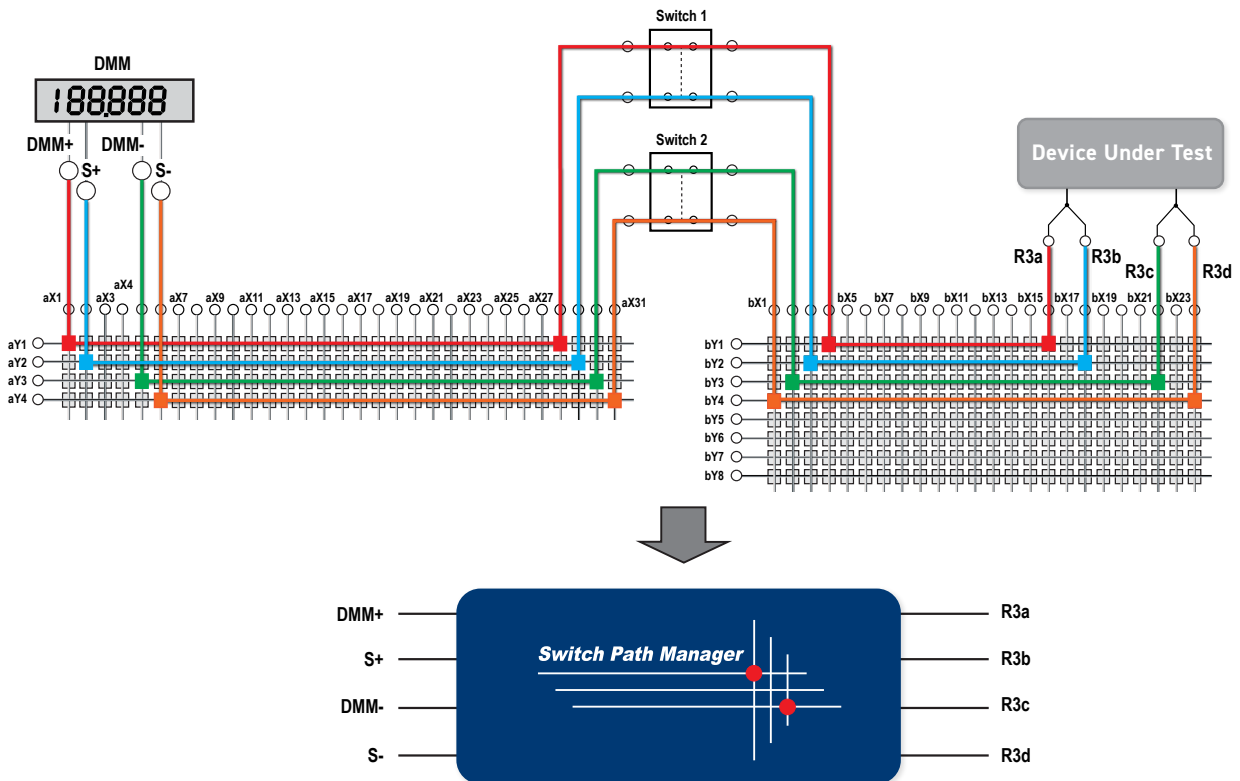
Switch Path Manager Signal Routing Software from Pickering Interfaces

When programming one of our switch modules as part of an automated test system, the software driver is typically applied within an Application Programming Interface (API) such as LabVIEW™, C or .NET. Simple CLOSE and OPEN commands operate the specific relays required to set a signal path between, for example, a Digital Multimeter (DMM) and the Device Under Test (DUT).



Selecting the correct relays to operate, however, requires a detailed understanding of the switch modules and the test system interconnections. Care must also be taken to avoid unintended short-circuits, and the switch programming becomes increasingly complicated as the system complexity rises.

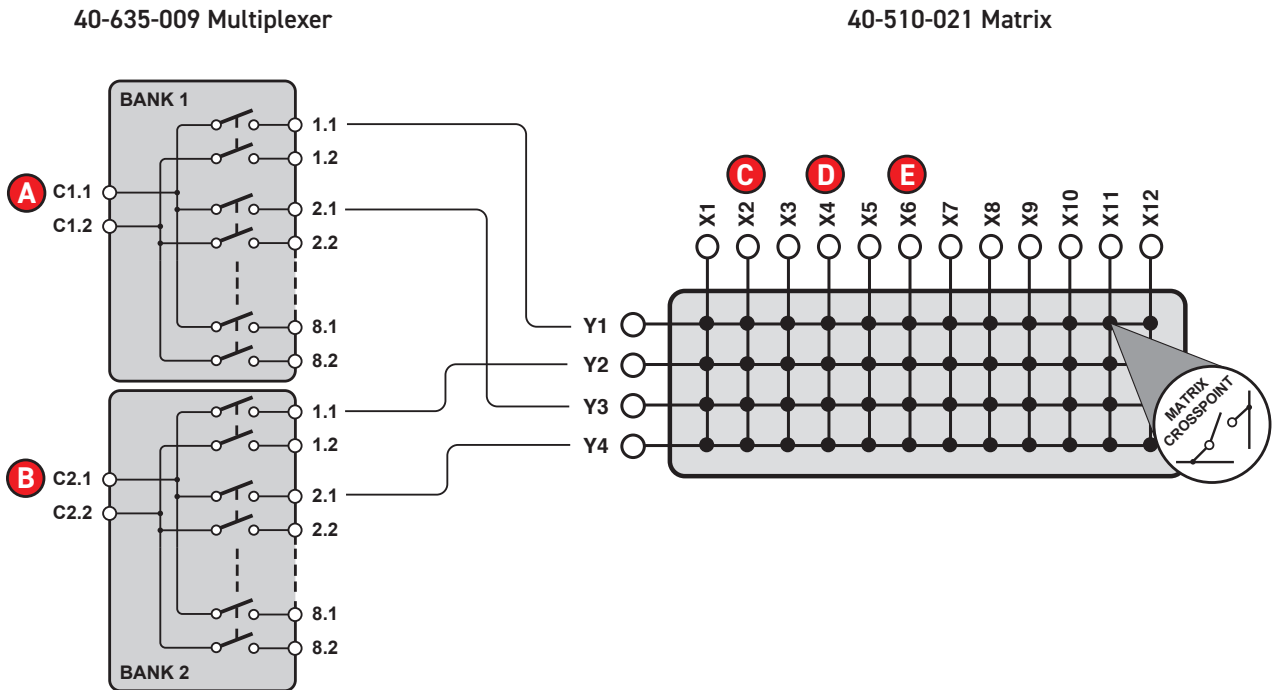
Our signal routing software, **Switch Path Manager (SPM)**, takes a different approach. SPM replaces any complexity of Pickering switching system with a “Virtual Switch Box”, as illustrated below. Simply specifying the DMM and DUT points to be connected (e.g. Connect (DMM+, R3a)) is all that is then needed to achieve the required signal routes, with no chance of any accidental short-circuits.



Switching | Simulation | Programmable Resistors | Custom Design | Connectivity & Cables

Four Steps to Simple Signal Routing using Switch Path Manager

Consider the following switching system example of two interconnected Pickering switch modules:



Step 1

List the switch modules required.

Library	Instrument Type	Device	Virtual Instrument Name	Unit	Driver Init	Interface	Address
Pickering Interfaces	PIM40-510-021	matrix->Module1	matrix	1	<input checked="" type="checkbox"/>	PXI/PCI	PXI2::9::INSTR
Pickering Interfaces	PIM40-635-009	mux->Module1	mux	1	<input checked="" type="checkbox"/>	PXI/PCI	PXI3::10::INSTR

Step 2

Detail the module interconnections.

From Pin	To Pin
mux -> Module1 :: MUX1_1.1	matrix -> Module1 :: Y1 =[bus1]
mux -> Module1 :: MUX1_2.1	matrix -> Module1 :: Y3 =[bus3]
mux -> Module1 :: MUX2_1.1	matrix -> Module1 :: Y2 =[bus2]
mux -> Module1 :: MUX2_2.1	matrix -> Module1 :: Y4 =[bus4]

Step 3

Define the required Signal Endpoints.

Connector	Endpoint Name
MUX->MODULE1::MUX1_C1	A
MUX->MODULE1::MUX2_C1	B
MATRIX->MODULE1::X2	C
MATRIX->MODULE1::X4	D
MATRIX->MODULE1::X6	E

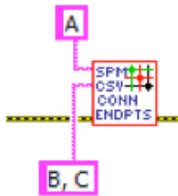
Step 4

Connect and Disconnect the Signal Endpoints as required.

For example, to connect Endpoints A, B and C together would simply require the following commands:

C Function: `SPM_Switch_ConnectEndpointsCsv ("A", "B, C");`

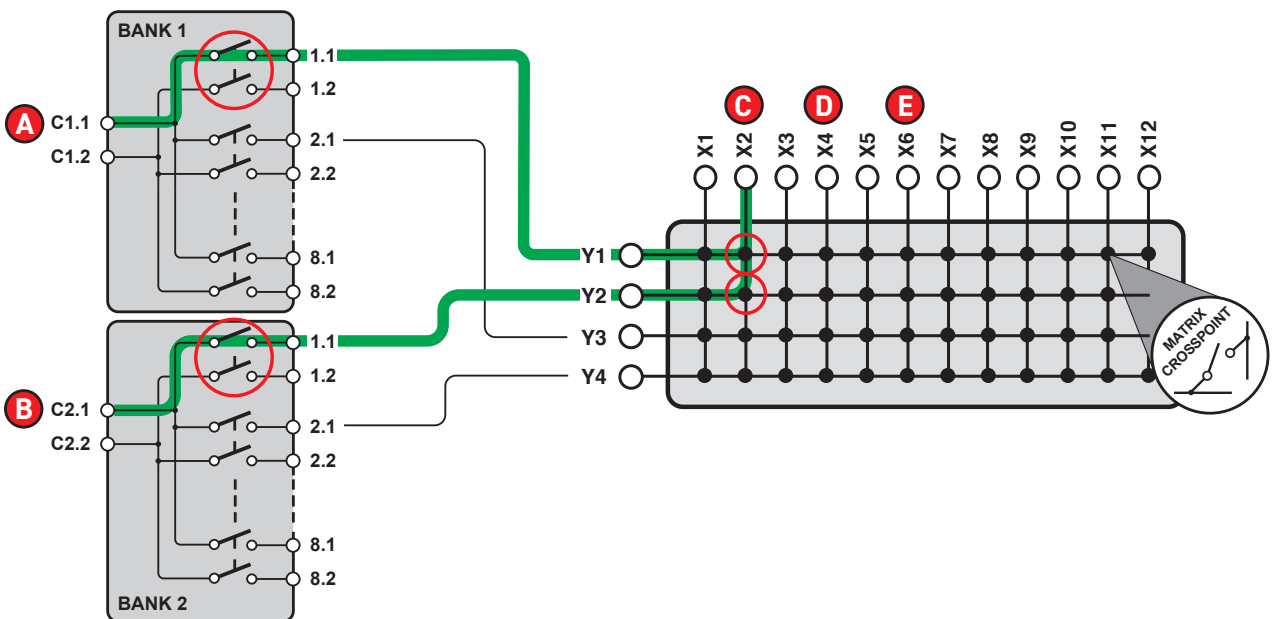
LabVIEW VI



The result is as follows:

40-635-009 Multiplexer

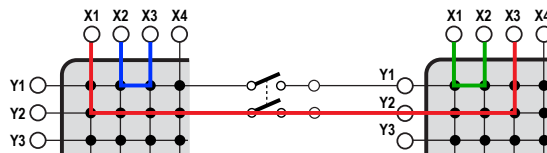
40-510-021 Matrix



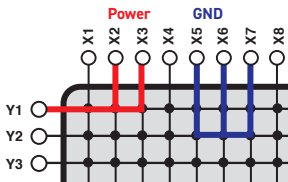
One simple SPM statement controls four relays automatically with no software driver or detailed switch module knowledge required.

Switch Path Manager Signal Routing Software

- Manages Complex Switching Systems
- Reduces Switching Software Development Effort
- Debug Monitor and Manual Control Capability
- Supports all Pickering PXI, LXI and PCI Switching
- APIs available for C, C++, .NET, LabWindows™/CVI™ and LabVIEW™
- Windows 32-bit or 64-bit Compatible
- Free 90-Day Evaluation License
- Provides Switching Safety Features, including Short Circuit Detection and Endpoint Protection:
 - **Short Circuit Detection** avoids shorting the blue path with the green path when trying to apply the red path via the 2-pole relay.



- **Endpoint Protection** prevents accidental connection of critical nodes such as Power and Ground.



(Y1, X2, X3) and (X5, X6, X7) are attributed to different Protection Groups in SPM. The software will not allow pins in different groups to be connected together.



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