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with experienced engineers and technicians on staff.

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so your equipment works exactly as you specify.

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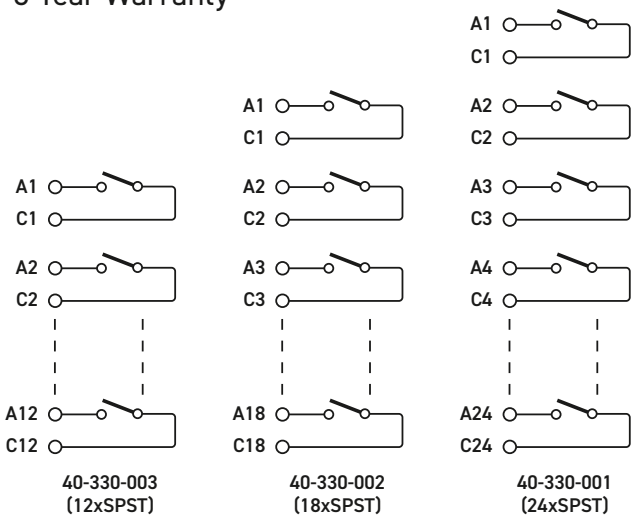
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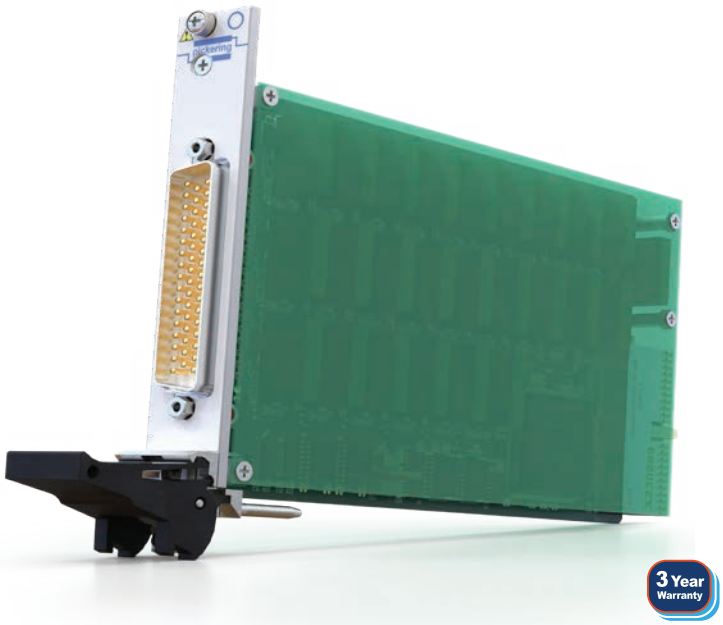
Visit our website - *Click HERE*

PXI SPST High Voltage Power Relay 40-330

- 12, 18 or 24 SPST Relays per Module
- Cold Switch up to 750 VDC/750 VAC peak Working Voltage (1000 VDC/1000 VAC peak Typical)
- Hot Switch up to 110 VDC/250 VAC
- 5 A Hot Switching Current
- Maximum Power 150 W/1250 VA
- Drivers Supplied for Windows & Linux, Plus Support for Real-time Systems
- Supported by PXI or LXI Chassis
- 3 Year Warranty



Switching Diagrams for the 40-330 High Voltage Power Relay Module



The 40-330 relay module is suitable for applications requiring high voltage power switching with high density.

It features current handling up to 5 A, 1000 VDC/1000 VAC peak cold switching and 110 VDC/250 VAC hot switching. It is available with 12, 18 or 24 separate single pole single throw (SPST) relays. Connections are made via a front panel mounted 50-pin (24xSPST) or 37-pin (18 and 12xSPST) high voltage D-Type connector.

Typical applications will be found in automotive, aerospace and power cell testing.

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.

The 40-330 modules include extensive built-in RFI suppression circuits that minimize RFI and surge problems.

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

With cold switching, the relay is operated before the high voltage source is applied. In this case the maximum carry current is much greater, also there will be much less stress on the reed relays, resulting in improved reliability and life.

Most high voltage sources include a soft start facility which reduces the likelihood of generating RFI or temporary over-voltage.

High voltage switching modules are often used for isolation testing applications (e.g. cable, transformer or semiconductor isolation tests), in these cases, cold switching is nearly always the preferred option to reduce the risk of high voltage transients that may cause premature breakdown.

Power Relay Type

The 40-330 is fitted with electro-mechanical power relays with gold clad silver alloy contacts. A **Spare Relay is** built onto the circuit board to allow easy maintenance with minimum downtime.

High Voltage Switching Specification

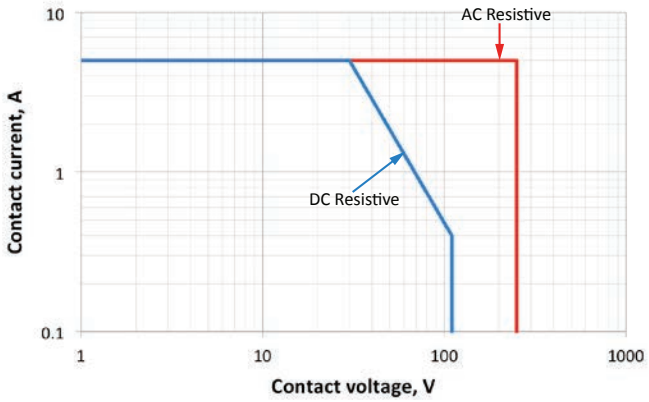
Contact Type:	Gold clad silver alloy
Cold Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	750 VDC/750 VAC peak working* (1000 VDC/1000 VAC peak typical*)
Hot Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	110 VDC/250 VAC*
Maximum Power:†	150 W/1250 VA
Min. Switching Capacity:	10 mA, 5 VDC
Initial Path Resistance, On:	<50 mΩ (30 mΩ typical)
Path Resistance, Off:	$>10^9$ Ω
Bandwidth:	5 MHz
Operate Time:	10 ms typical
Expected Life (operations) - resistive load	
Mechanical Life:	$>2x10^7$
At Max. Switch Capacity:	$>5x10^4$ (5 A 250 VAC, 5 A 30 VDC) $>1x10^5$ (3 A 250 VAC, 3 A 30 VDC)

* For full voltage rating, signal sources to be switched must be fully isolated from mains supply and safety earth.

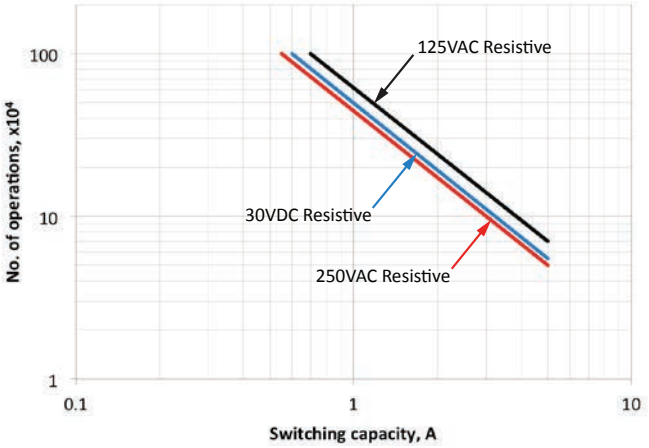
† For variation of maximum hot switching capacity of voltage with current refer to plot.

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
0	0.75 A	0	0



Current/Voltage Curve



Current/Operating Life Curve

Mechanical Characteristics

Single slot 3U PXI (CompactPCI card).
3D models for all versions in a variety of popular file formats are available on request.

Connectors

PXI bus via 32-bit P1/J1 backplane connector.
Signals via front panel connector:

- 50-pin male D-type, high voltage (40-330-001)
- 37-pin male D-type, high voltage (40-330-002)
- 37-pin male D-type, high voltage (40-330-003)

for pin outs please refer to the operating manual.

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m

Storage and Transport Conditions

Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

PXI & CompactPCI Compliance

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus and Star Trigger are not implemented.

Uses a 33 MHz 32-bit backplane interface.

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

24xSPST High Voltage Power Relay Module	40-330-001
18xSPST High Voltage Power Relay Module	40-330-002
12xSPST High Voltage Power Relay Module	40-330-003

Product Customization

Pickering PXI 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.

Support Products

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's PXI switching products, simplifying servicing and reducing down-time.

Product	Relay Kit
40-330-001/002/003	91-100-020

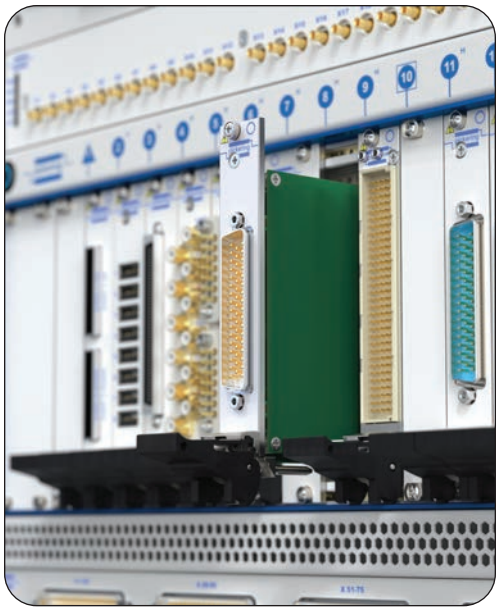
For further assistance, please contact your local Pickering sales office.

Mating Connectors & Cabling

For connection accessories for the 40-330 please refer to the 90-005HVD High Voltage 50-pin D-type and 90-007HVD High Voltage 37-pin D-type Connector Accessories data sheets where a complete list and documentation can be found for accessories, or refer to the website.

The 40-330 is part of a range of switching modules suitable for high voltage applications.

Pickering's Range of PXI & PXIe High Voltage Switch Modules			
Switch Type	Max Voltage	Max Current	Model No.
8 or 16xSPST Relays	Hot Switch 750 V Cold Switch 1 kV	Hot Switch 0.5 A Cold Switch 0.5 A	40-310
12 or 24 Channel 1-Pole Multiplexer			40-320A
4 to 48 Channel Multiplexer, 1 or 2-Pole, 1, 2, 3, 4 or 6 Banks	Hot Switch 1 kV Cold Switch 1 kV	Hot Switch 0.7 A Cold Switch 1.25 A	40/42-321
7xSPST Relays	Hot Switch 7.5 kV Cold Switch 9 kV	Hot Switch 0.25 A Cold Switch 0.25 A	40/42-323-900
14xSPST Relays			40/42-323-901
12, 18 or 24xSPST Relays	Hot Switch 110 VDC/250 VAC Cold Switch 1 kV	5 A	40-330
1x24:1, 2x12:1, 4x6:1 6x4:1, 8x3:1 or 12x3:1 Multiplexer			40-331A
12x2 or 6x4 Matrix			40-332





Chassis Compatibility

This PXI module must be used in a suitable chassis. It is compatible with the following chassis types:

- All chassis conforming to the 3U PXI and 3U Compact PCI (cPCI) specification
- Legacy and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis
- Pickering Interfaces LXI or LXI/USB Modular Chassis

Chassis Selection Guide

Standard PXI or hybrid PXIe Chassis From Any Vendor:

- Mix our 1000+ PXI switching & simulation modules with any vendor's PXI instrumentation
- Embedded or remote Windows PC control
- Real-time Operating System Support
- High data bandwidths, especially with PXI Express
- Integrated module timing and synchronization



Pickering LXI or LXI/USB Modular Chassis
Only accept our PXI Switching & Simulation Modules:

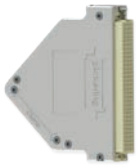
- Choose from 1000+ Pickering PXI Modules
- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- Independence from Windows operating system



Connectivity Solutions

We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with **1200+** products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed to mechanically and electrically mate to our modules. These accessories are detailed in Connector Accessories data sheets, where a complete list and documentation can be found for each accessory.





Connectors & Backshells



Multi-way Cable Assemblies



RF Cable Assemblies



Breakouts

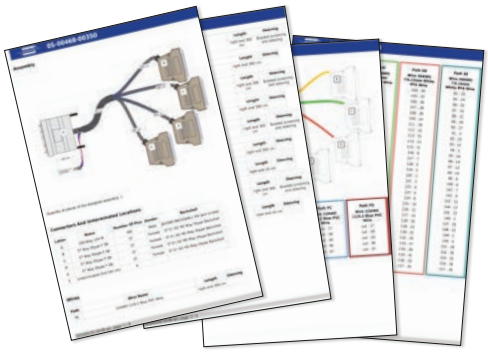


Connector Blocks

We also offer customized cabling and have a free online **Cable Design Tool** that can be used to create custom cable solutions for many applications.

- Fully supported on modern browsers and tablet operating systems.
- Built-in tutorials and videos allow you to get quickly up to speed.
- Store cable assemblies in the Cloud and develop over time.
- Each cable design has a downloadable PDF documentation file detailing all specifications

Start designing your custom cabling, go to pickeringtest.com/cdt



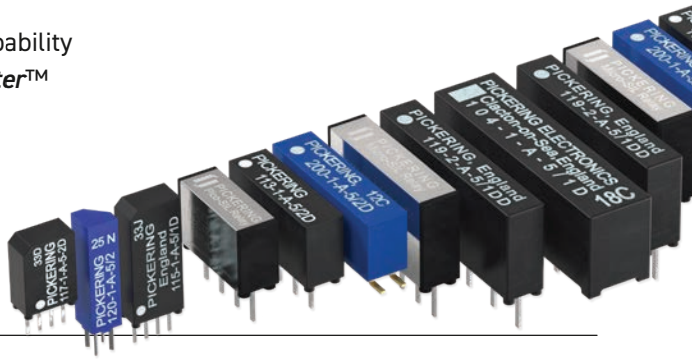
Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for PXI/LXI based test systems. Our modules are fully supported by Virginia Panel and MacPanel.

Pickering Reed Relays

We are the only switch provider with in-house reed relay manufacturing capability via our Relay Division. These instrument grade reed relays feature ***SoftCenter***™ technology, ensuring long service life and repeatable contact performance.

To learn more go to pickeringrelay.com



Programming

Pickering provide kernel, IVI and VISA (NI & Keysight) drivers which are compatible with all Microsoft supported versions of Windows and popular older versions.

For more information go to pickeringtest.com/os

The VISA driver support is provided for LabVIEW Real Time Operating Systems (Pharlap and Linux-RT). For other RTOS support contact Pickering. These drivers may be used with a variety of programming environments and applications including:

- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C++)
- **Programming Languages** C, C++, C#, Python
- **Keysight** VEE and OpenTAP
- **Mathworks MATLAB, Simulink**
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

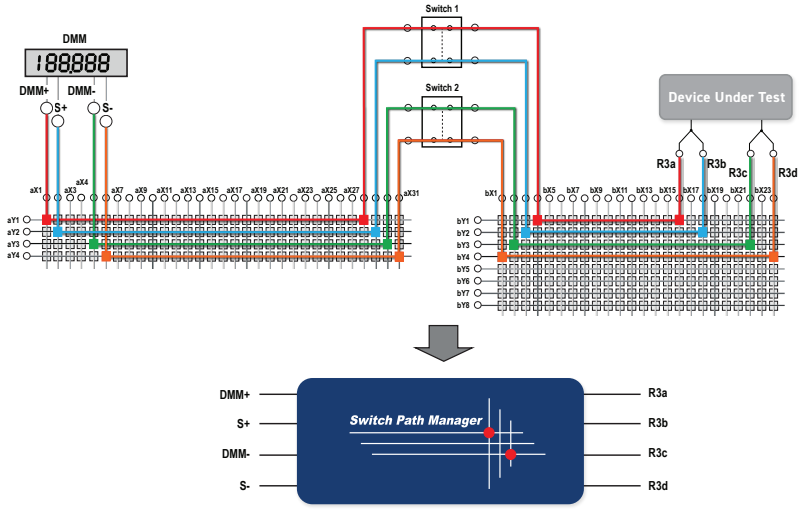
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments go to pickeringtest.com/software

Signal Routing Software

Our signal routing software, Switch Path Manager, automatically selects and energizes switch paths through Pickering switching systems. Signal routing is performed by simply defining test system endpoints to be connected together, greatly accelerating Test System software development.

To learn more go to pickeringtest.com/spm



Diagnostic Relay Test Tools

eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.

To learn more go to pickeringtest.com/ebirst



Three Year Warranty & Guaranteed Long-Term Support

All standard products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available with various levels for your requirements. Although we offer a 3-year warranty as standard, we also include guaranteed long-term support—with a history of supporting our products for typically 15-20 years.

To learn more go to pickeringtest.com/support

Available Product Resources

We have a library of resources including success stories, product and support videos, articles and white papers as well as application-specific brochures to assist you. We have also published reference books on switching technology and the PXI and LXI standards.

To view, download or request any of our product resources go to pickeringtest.com/resources



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Pickering Interfaces maintains a commitment to continuous product development, consequently we reserve the right to vary from the description given in this data sheet.

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Gold-standard solutions

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We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

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Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

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