PXI Power Relay Module

40-150/151/155/156/157

- 8 or 12 x DPST Power Relays Per Module
- 8 or 16 x SPDT Power Relays Per Module
- 8 x DPDT Power Relays Per Module
- Hot Switch up to 250 VAC, 5 A
- Cold Switch up to 400 VDC/400 VAC Peak
- Maximum Power Handling 175 W/1250 VA
- Drivers Supplied for Windows & Linux, Plus Support for Real-time Systems
- Supported by PXI or LXI Chassis
- 3 Year Warranty

Pickering Interfaces range of power relay modules are suitable for applications requiring switching of either mains voltage or DC current.

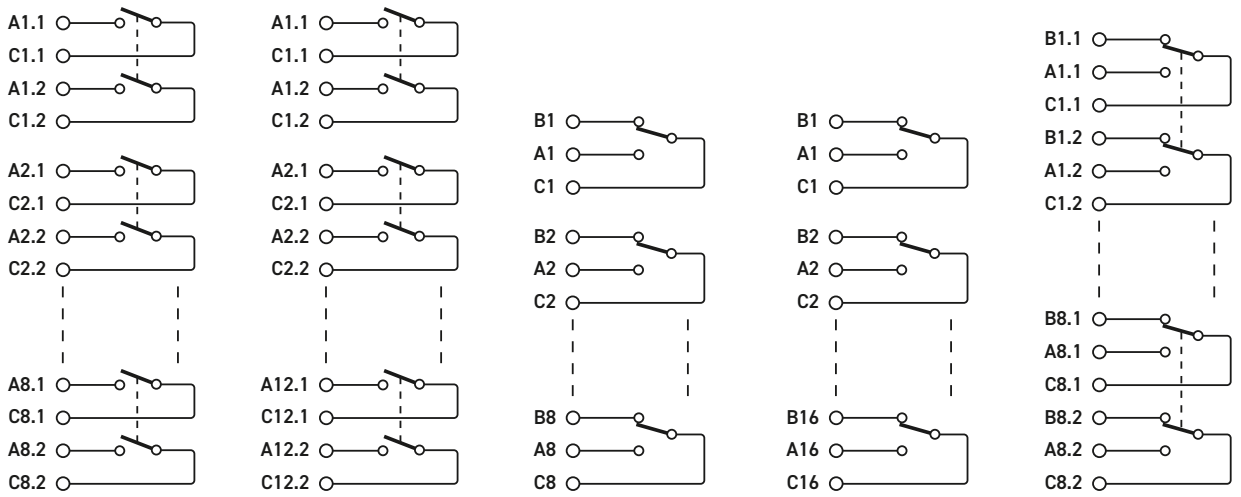
The 40-150 series of modules are suitable for switching inductive/capacitive loads up to 5 A at 250 VAC. The available configurations are as follows:

- 8 x DPST (Double Pole Single Throw)
- 12 x DPST (Double Pole Single Throw)
- 8 x SPDT (Single Pole Double Throw)
- 16 x SPDT (Single Pole Double Throw)
- 8 x DPDT (Double Pole Double Throw)

Power relay modules are intended for switching heavy AC or DC loads or for controlling large external relays, contactors and solenoids.

Relay Type

The 40-150/151/155/156/157 are fitted with electro-mechanical power relays with gold flash over silver alloy contacts. A spare relay is built onto the circuit board to facilitate easy maintenance with minimum downtime.



40-150-002 (8 x DPST) | 40-151-002 (12 x DPST) | 40-155-001 (8 x SPDT) | 40-156-001 (16 x SPDT) | 40-157-001 (8 x DPDT)

Power Relay Module Configurations

Switching Specification - DPST (40-150/151)

Contact Type:	Gold flash over silver alloy
Cold Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	400 VDC/250 VAC*
Hot Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	125 VDC/250 VAC*
Maximum Power:†	175 W/1250 VA
Min. Switching Capacity:	10 mA, 5 VDC
Initial On Path Resistance:	<250 mΩ
Off Path Resistance:	$>10^9$ Ω
Bandwidth:	>20 MHz
Operate Time:	10 ms typical
Expected Life - resistive load	
Mechanical Life:	$>5x10^7$ operations
At Max. Switch Capacity:	$>1x10^5$ operations

* 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.

Switching Specification - SPDT & DPDT (40-155/156/157)

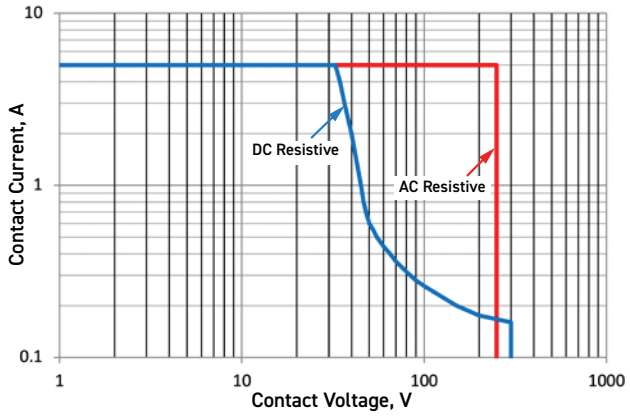
Contact Type:	Gold flash over silver alloy
Cold Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	400 VDC/250 VAC*
Hot Switching Capacity	
Maximum Current:	5 A
Maximum Voltage:	300 VDC/250 VAC*
Maximum Power:†	175 W/1250 VA
Min. Switching Capacity:	10 mA, 5 VDC
Initial On Path Resistance:	<250 mΩ
Off Path Resistance:	$>10^9$ Ω
Bandwidth:	>20 MHz
Operate Time:	8 ms typical
Expected Life - resistive load	
Mechanical Life:	$>5x10^6$ operations
At Max. Switch Capacity:	$>5x10^4$ operations

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

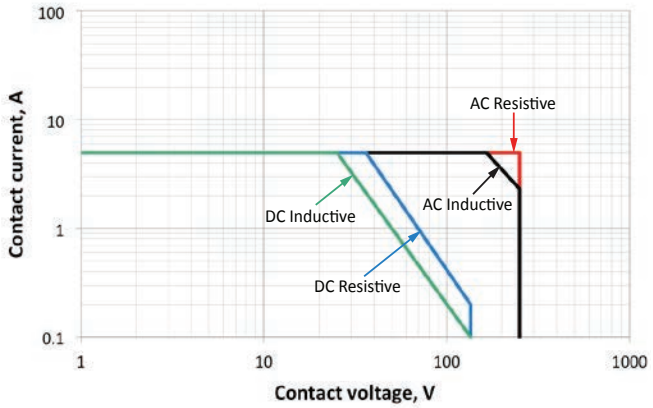
† For variation of maximum hot switching capacity of voltage with current refer to plot.

Power Requirements

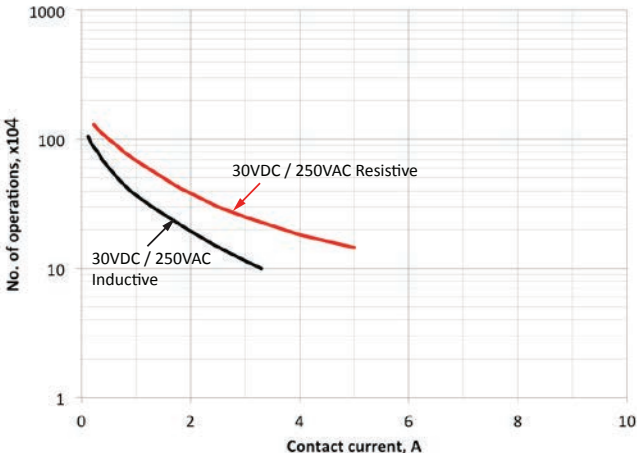
+3.3 V	+5 V	+12 V	-12 V
0	360 mA (typ 280 mA)	0	0



40-155/156/157 (SPDT & DPDT) Current/Voltage Curve



40-150/151 (DPST) Current/Voltage Curve



40-150/151 (DPST) Current/Operating Life Curve

Mechanical Characteristics

Single slot 3U PXI (CompactPCI card).
Module weight: 220g (40-151-002).
240g (40-156-001)
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 D-Type connector, for pin outs please refer to the operating manual.

- 40-150-002 37-pin D-Type male connector
- 40-151-002 50-pin D-Type male connector
- 40-155-001 37-pin D-Type male connector
- 40-156-001 50-pin D-Type male connector
- 40-157-001 50-pin D-Type male connector

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

8 x DPST Power Relay Module	40-150-002
12 x DPST Power Relay Module	40-151-002
8 x SPDT Power Relay Module	40-155-001
16 x SPDT Power Relay Module	40-156-001
8 x DPDT Power Relay Module	40-157-001

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
40-150-002	91-100-052
40-151-002	91-100-052
40-155-001	91-100-049
40-156-001	91-100-049
40-157-001	91-100-049

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

Mating Connectors & Cabling

For connection accessories for the 40-150 series please refer to the 90-007D 37-pin D-Type and 90-005D 50-pin D-Type Connector Accessories data sheets where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

The 40-150/151 is part of a range of relay modules suitable for high power switching applications.

Pickering's Range of PXI & PXIe High Power General Purpose Relay Modules with Switching up to 10 A			
Switch Type	Max Switch Voltage	Max Switch/ Carry Current	Model No.
8 or 12 x DPST	125 VDC/250 VAC	5 A	40-150/151
Up to 50 x SPST	110 VDC/250 VAC	5 A	40/42-153
8 or 16 x SPDT, or 8 x DPDT	300 VDC/250 VAC	5 A	40-155/156/157
Up to 32 x SPDT	300 VDC/250 VAC	5 A	40/42-158
10 or 20 x SPST or 10 x DPST	125 VDC/250 VAC	10 A or 8 A	40-160
3 or 6 x SPST (Solid State)	200 VDC/AC peak	10 A	40-182A
3 or 6 x SPST (Solid State)	400 VDC/AC peak	1.5 A	40-185A

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

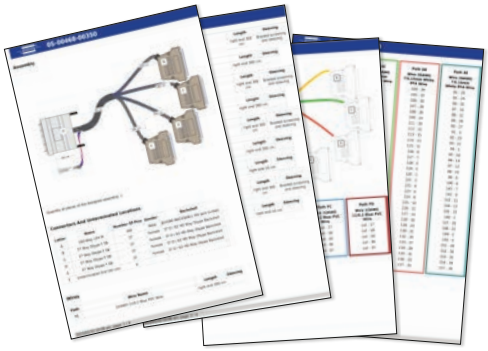
RF Cable Assemblies

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

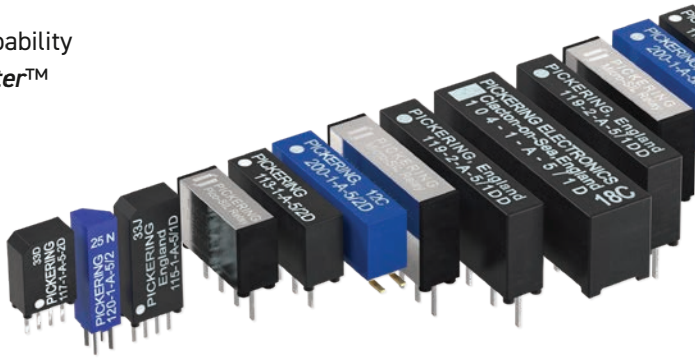
Mass Interconnect

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

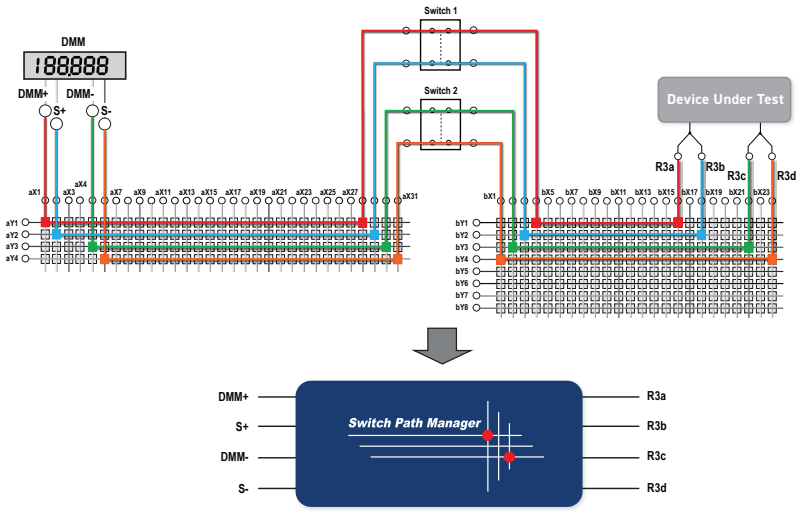
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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