- Low Cost Relay Module For Medium Power Switching Applications
- Up to 32 Electro-mechanical Relays Per Module
- Choice of SPST, SPDT or DPST Contact Configurations
- Maximum Current 2A Hot or Cold Switching
- Switch up to 300VDC/250VAC and up to 60W Max Power
- Operating Speed <3ms
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- Supported by *eBIRST™*
- 3 Year Warranty

Pickering Interfaces 40-131/132 is a range of low cost, general purpose electro-mechanical relay modules. They are capable of switching voltages up to 300VDC/250VAC and current up to 2A.

They are suitable for use where reed relay based switching modules do not have sufficient voltage or current carrying capability. Applications include the switching of medium power AC and DC loads, or slave switching larger relays, contactors or solenoids.

For all versions except the 40-131-001, connections are made to the module via a front panel mounted 78-pin male D-Type connector. The 40-131-001 uses a 50-pin male D-Type connector.
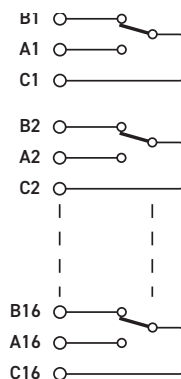
Range Description:

The 40-131/132 modules are available with three different contact configurations and up to 32 relays per module. The range is as follows:

- 40-131-001/101   16 x SPDT Electro-mechanical Relays
- 40-131-201   26 x SPDT Electro-mechanical Relays
- 40-132-101   16 x SPST Electro-mechanical Relays
- 40-132-201   32 x SPST Electro-mechanical Relays
- 40-132-102   16 x DPST Electro-mechanical Relays
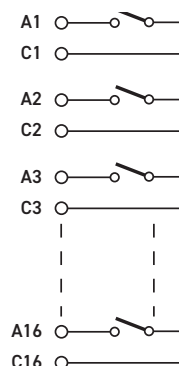- 40-132-202   19 x DPST Electro-mechanical Relays

Supported by *eBIRST*

eBIRST switching system test tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.
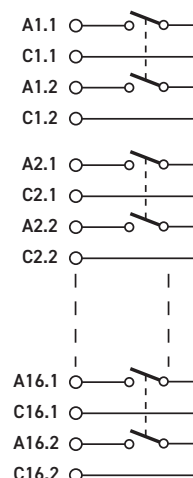
For more information go to: pickeringtest.com/ebirst

Schematic of 40-131-001/101
16xSPDT Relay Module

Schematic of 40-132-101
16xSPST Relay Module

Schematic of 40-132-102
16xDPST Relay Module

Power Relay Type

The 40-131 and 40-132 are fitted with electro-mechanical 2A relays, gold clad silver alloy.

Switching Specification

Switch Type:	Electro-mechanical
Contact Type:	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage:	300VDC/250VAC*
Max Switch Current:	2A
Max Continuous Carry Current:	2A
Max Pulsed Carry Current Example (for a single switch path): Max Power:	6A for 100ms (up to 10% duty cycle) 62.5VA, 60W from 30V to 220VDC, 30W to 300VDC (resistive load)
Initial On Path Resistance:	<500mΩ
Off Path Resistance:	>10^9Ω
Thermal Offset:	<10µV
Bandwidth:	25MHz nominal
Operate Time:	<3ms
Expected Life (operations) Very low power signal load:	>$1x10^8$
Low power load (2W):	>$1.5x10^7$ (0.1A, 20VDC)
Medium power load (30W):	>$5x10^6$ (1A, 30VDC)
Full power load (60W):	>$1x10^5$ (2A, 30VDC)
	>$1x10^5$ (0.1A, 300VDC)

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

Power Requirements

+3.3V	+5V	+12V	-12V
0	520mA (typ 400mA)	0	0

Mechanical Characteristics

Single slot 3U PXI (CompactPCI card).
Module weight: 160g (40-131-101/201).
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.

- 40-131-001   50-pin D-Type male connector
- 40-131-101   78-pin D-Type male connector
- 40-131-201   78-pin D-Type male connector
- 40-132-101   78-pin D-Type male connector
- 40-132-201   78-pin D-Type male connector
- 40-132-102   78-pin D-Type male connector
- 40-132-202   78-pin D-Type male connector

Operating/Storage Conditions

Operating Conditions

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

Storage and Transport Conditions

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

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 33MHz 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

16 x SPDT, Relay Module, 50-pin D-Type	40-131-001
16 x SPDT, Relay Module, 78-pin D-Type	40-131-101
26 x SPDT, Relay Module, 78-pin D-Type	40-131-201
16 x SPST, Relay Module, 78-pin D-Type	40-132-101
32 x SPST, Relay Module, 78-pin D-Type	40-132-201
16 x DPST, Relay Module, 78-pin D-Type	40-132-102
19 x DPST, Relay Module, 78-pin D-Type	40-132-202

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

eBIRST Switching System Test Tool

This product is supported by the *eBIRST* test tools which simplify the identification of failed relays, the required *eBIRST* tools are below. For more information go to: pickeringtest.com/ebirst

Product	Test Tool	Adaptor
40-131-001	93-005-001	Not Required
40-131-101	93-006-001	Not Required
40-131-201	93-006-001	Not Required
40-132	93-006-001	Not Required

Spare Relay Kits

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

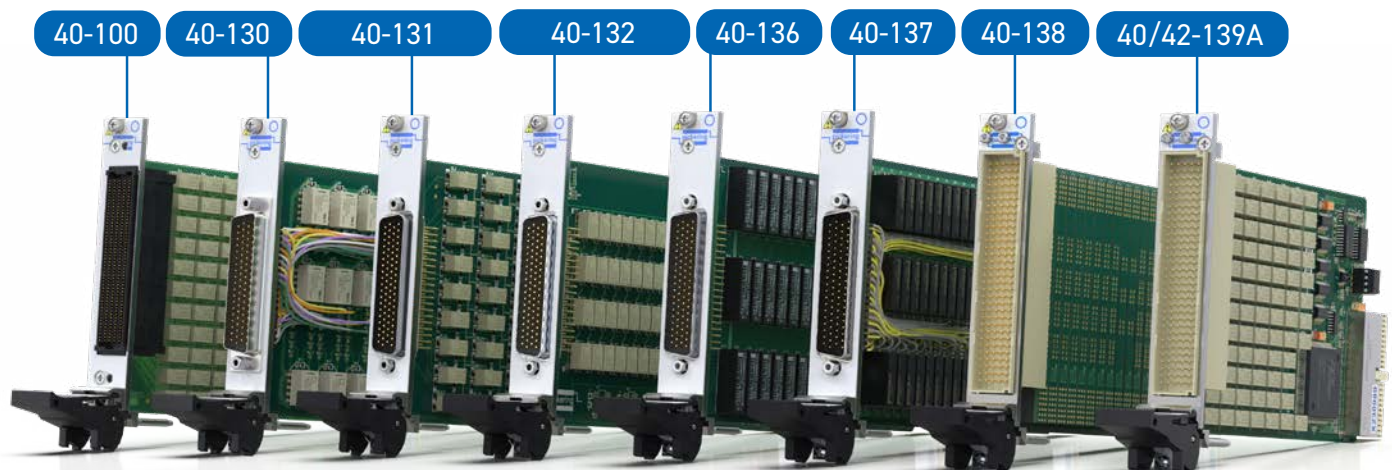| Product	Relay Kit
All Types	91-100-001

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

Mating Connectors & Cabling

For connection accessories for the 40-131/132 series please refer to the 90-006D 78-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 40-131/132 are part of a range of relay modules suitable for medium power switching applications.

Pickering's Range of PXI & PXIe Medium Power General Purpose Switching Modules			
Switch Type	Max Switch Voltage	Max Switch/ Carry Current	Model No.
83 x SPDT	200 VDC/140 VAC	2A	40-100
8 or 13 x DPDT	220 VDC/125 VAC	2A	40-130
16 or 26 x SPDT	300 VDC/250 VAC	2A	40-131
16 or 32 x SPST 16 or 19 x DPST	300 VDC/250 VAC	2A	40-132
16, 25 or 32 x SPST 12, 16 or 19 x DPST	200 V	1A/2.5A or 1A/2A	40-136
16 x SPST 32 or 39 x SPST	110 VDC/250 VAC	5A or 2A	40-137
Mix of SPST, DPST, SPDT & DPDT	300 VDC/250 VAC	2A	40-138
Up to 80 x SPST, 40 x DPST, 52 x SPDT or 26 x DPDT	150 VDC/100 VAC	1A	40/42-139A

40-100 40-130 40-131 40-132 40-136 40-137 40-138 40/42-139A

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
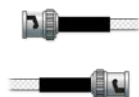
Connectivity Solutions

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.

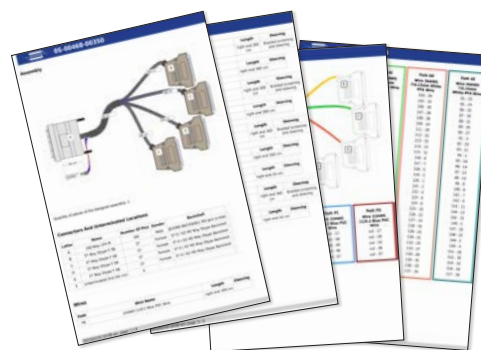| Connectors & Backshells | Multi-way Cable Assemblies | RF Cable Assemblies | Breakouts | Connector Blocks |

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

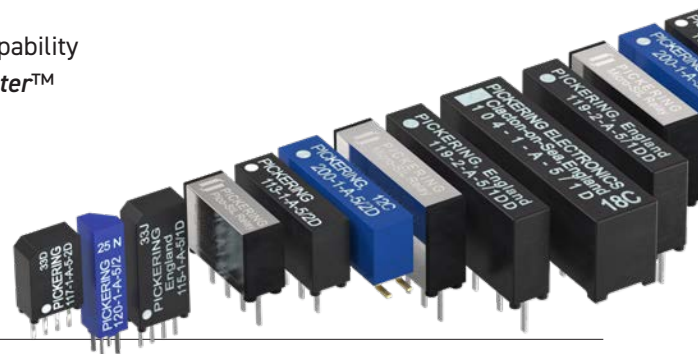Start designing your custom cabling, go to pickeringtest.com/cdt

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
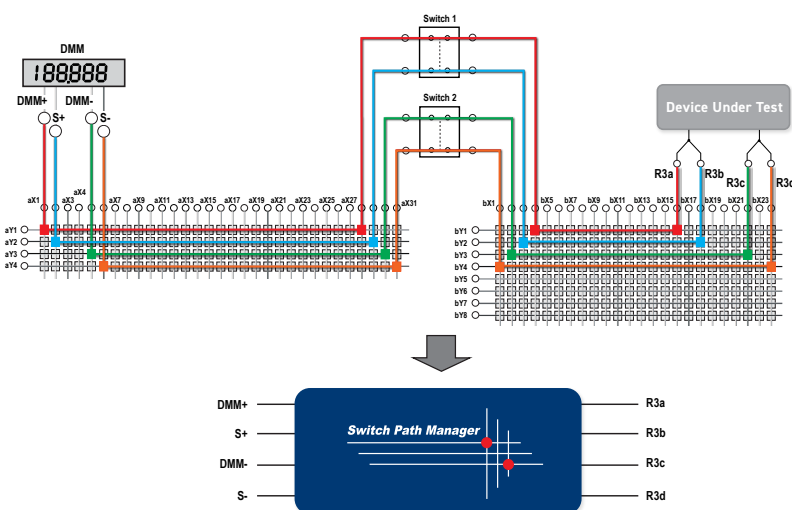- **MTQ Testsolutions** Tecap Test & Measurement Suite

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