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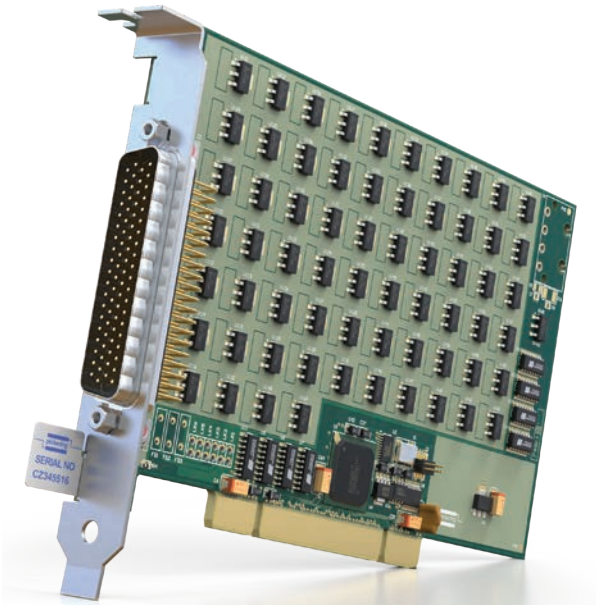
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PCI Relay Driver Card

50-411

- 64-Channel Relay Driver
- 60 V Drive Capability, Up to 1 A Per Channel
- Short Circuit and Thermal Protection
- Over Voltage Clamp
- High Current Capacity
- Switch With External Relay Power
- VISA & Kernel Drivers Supplied for Windows
- 3 Year Warranty

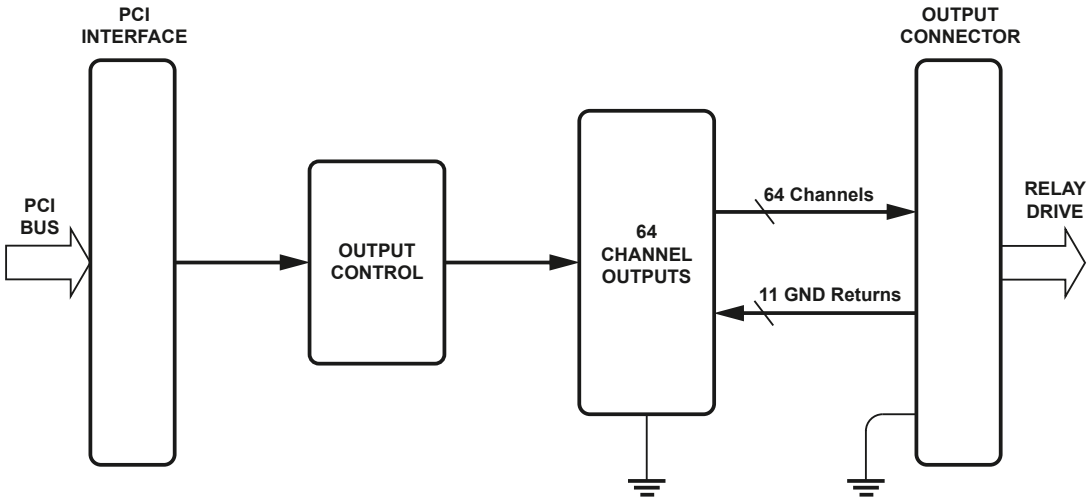


The 50-411 is the perfect solution for driving external relays from a PCI slot.

The card provides 64 channels of low side switching for external relays. Users need to simply connect a positive voltage source to one terminal of a relay coil and the other terminal to an output of the 50-411. Each output is capable of sinking up to 1 A of continuous current.

Outputs have current, thermal and overvoltage protection. The thermal and current limit circuits protect the output from failure even when directly connected to voltages up to 30 V. When switching relays, spikes from the inductive load are clamped at 80 V and relay coil energy of up to 550 mJ can be dumped without the use of additional diode clamps.

Relay coil current is prevented from flowing back into the PCI slot by the use of an isolation barrier.



50-411 Relay Driver Functional Diagram

Issue 3.1 Dec 2023

Specification

Number of Channels:	64 Outputs
Typical Output Resistance:	0.6 Ω (on state)
Off State Leakage Current:	3 µA maximum at 12 V (start up condition is open circuit).
Maximum Output Current:	1 A on any channel, up to 12 channels (Please refer to de-rating curve for lower channel currents). Note: for full load conditions, adequate cooling is assumed.
Maximum Output Voltage:	60 V* (recommended max continuous voltage).
Output Protection:	Limits at 1.3 A nominal. Thermal limit activates at typically 1.5 W in o/p device. Overvoltage clamp operates at 80 V.

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

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
0.1 A	0	0.1 A	0

Mechanical Characteristics

Single slot short PCI format. 3D models for all versions in a variety of popular file formats are available on request.

Connectors

Signals via a 78-pin male D-type connector, for pin outs please refer to the operating manual.

Operating/Storage Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

PXI & CompactPCI Compliance

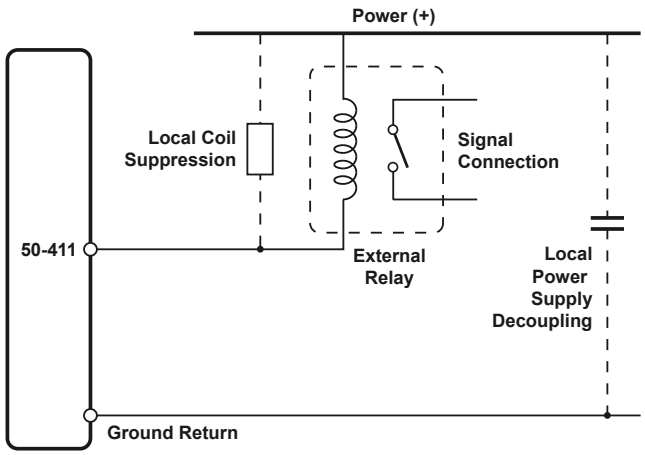
The 50-411 card complies with the PCI Specification 2.0 (issued Feb 2004).

Signalling Environment: 33 MHz, 32-bit Universal (+3.3 V & +5 V).

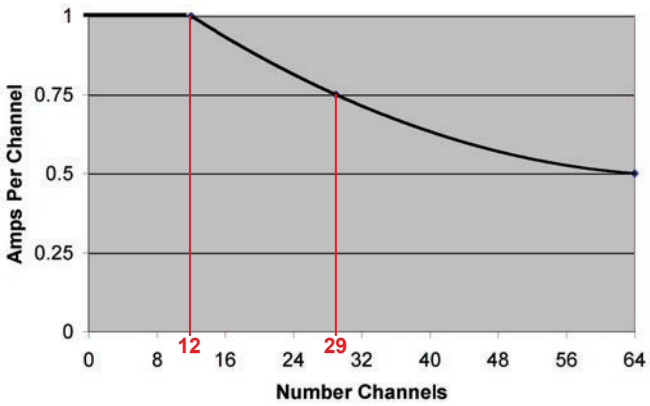
Safety & CE Compliance

All cards 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.



Using the 50-411 to drive an external relay. Local power supply decoupling for the relay and coil suppression circuits are recommended for best EMC characteristics with high current relays, but are not essential for safe operation due to the built in protection system.



50-411 Derating Curve - Current per Channel

Product Order Codes

64-Channel Relay Driver Card	50-411-001

Product Customization

Pickering PCI cards are designed and manufactured on our own flexible manufacturing lines, giving complete product control and enabling simple customization to meet very specific requirements.

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.

Mating Connectors & Cabling

For connection accessories for the 50-411 card please refer to the 90-006D 78-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories.



Pickering can supply mating connectors and cable assemblies to enable easy integration of the 50-411 series of PCI cards

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



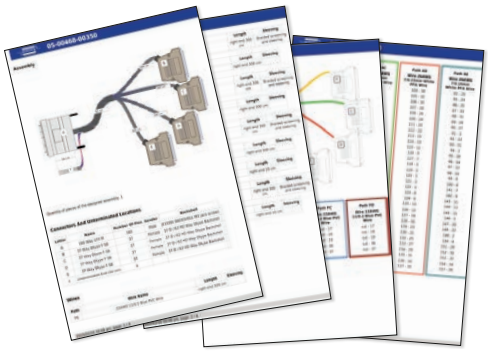
Breakouts



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

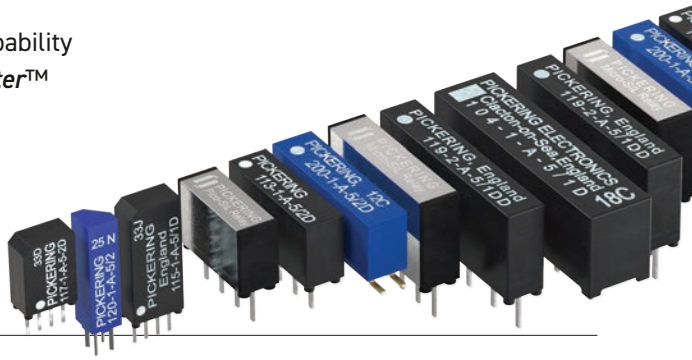
Mass Interconnect

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

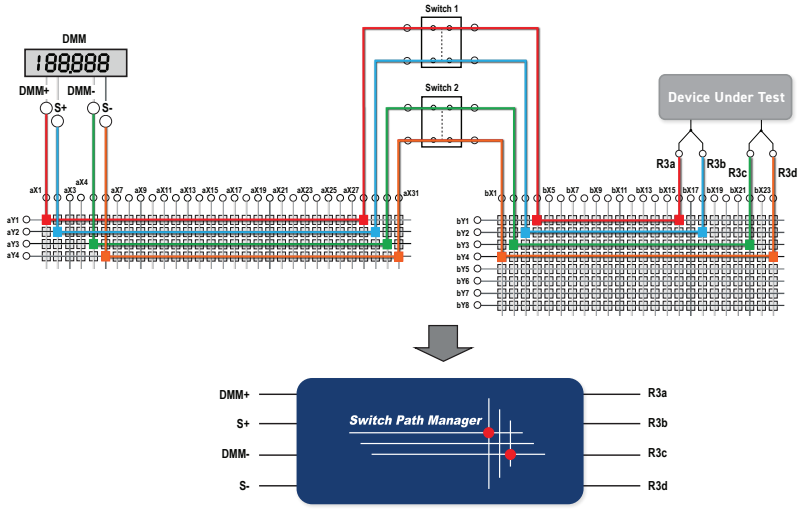
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

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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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