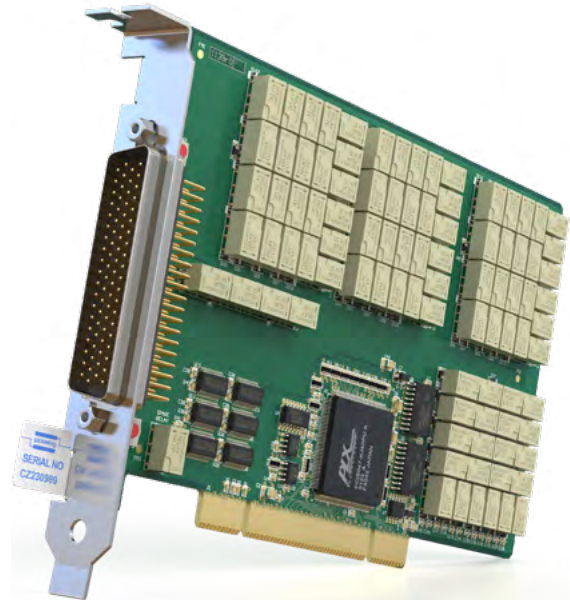- Fault Insertion on 4 or 8 Channels of 2 Wire Connections
- Suited for CAN Bus and FlexRay Fault Insertion
- Controlled Transmission Line Impedance
- Simple Insertion of Shorted Pair, Open and Battery/Ground Connection
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by eBIRST ™
- 3 Year Warranty

The 50-200 is for the simulation of common faults on two wire communication interfaces such as CAN Bus. It has 4 or 8 two wire serial channels which can be used to simulate open faults on either or both wires, shorts between wires or shorts to one of eight externally applied fault conditions – such as battery or ground - via four fault buses.
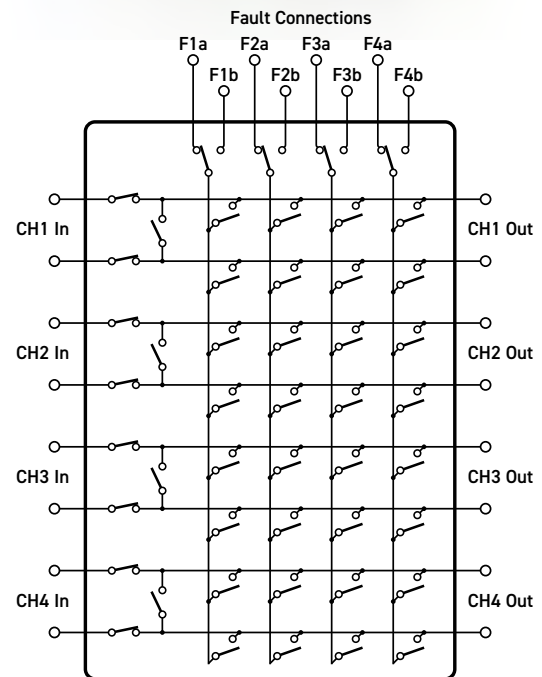
Each channel can carry 0.3 A and is rated to 100 V between pairs. The pairs have controlled transmission line impedance suited to most differential signalling systems, including fast CAN Bus and RS232.

Each fault bus can carry 2 A allowing multiple channels to be connected to the same fault condition. Additionally, fault buses have a changeover relay allowing the user to select alternative fault conditions.
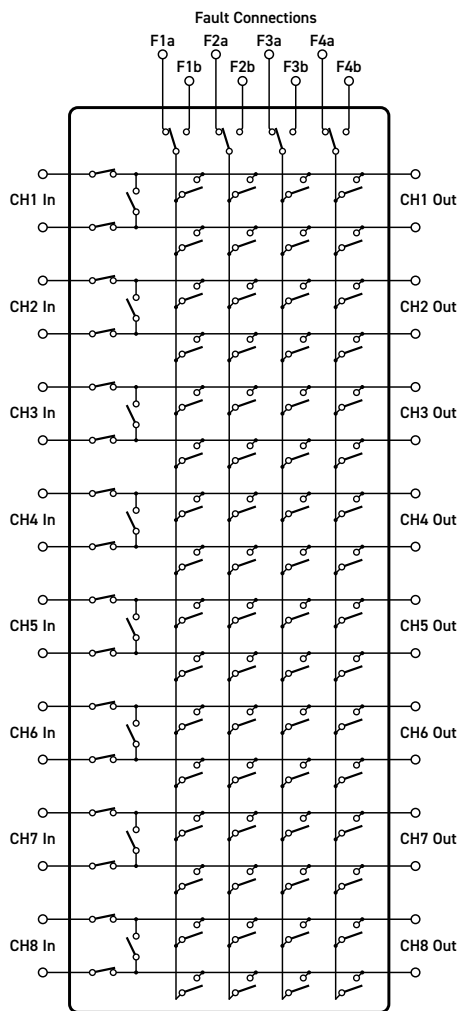
The front panel connector is an easy to use 78-pin D-type fully supported by Pickering Interfaces range of connector accessories. Relays are high quality electro-mechanical with a long service life designed for telecommunications.

Supported by *eBIRST*

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

50-200-004 2-Wire, 4-Channel Fault Insertion Switch

**50-200-008 2-Wire, 8-Channel
Fault Insertion Switch**

Relay Type

The 50-200 is fitted with high quality electro-mechanical relays, palladium-ruthenium gold covered contacts. A spare relay is built onto the circuit board to allow easy maintenance with minimum downtime.

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

Data Path Specification

Configuration:	4 or 8 pairs of two wire connections designed for use on differential serial interfaces.
Faults Simulated:	Open on either wire or both, short between wires, short to one of eight fault connections via four fault buses.
Differential Line Impedance:	120 Ω
Voltage Rating:	100 V*
Current Rating:	0.3 A
Max Hot Switch Power:	30 W
Path Resistance:	<2.5 Ω
Typical Bandwidth:	50 MHz Differential
Operate Time:	4 ms (typical)†

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

† Including Mode A restricted usage feature overhead - see user manual for further information.

Fault Bus Specification

Configuration:	Four fault buses each with a changeover relay for selecting one of two fault conditions.
Voltage Rating:	100 V*
Current Rating:	2 A
Max Hot Switch Power:	60 W

* 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
150 mA	1 A	0	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.

PCI Compliance

The 50-200 complies with the PCI Specification 2.0 (issued Feb 2004).

Signalling Environment: 33 MHz, 32-bit Universal (+3.3 V or +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.

Product Order Codes

PCI 4-Channel Differential Pair Fault Insertion Switch Card	50-200-004
PCI 8-Channel Differential Pair Fault Insertion Switch Card	50-200-008

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.

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
50-200	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
50-200	91-100-001

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

Mating Connectors & Cabling

For general purpose (non-differential) connection accessories for the 50-200 card please refer to the 90-006D 78-pin D-type connector data sheet where a complete list and documentation can be found for accessories.

Note: To use the 50-200 up to its full operating frequency, cables with twisted pairs must be used.

Pickering can supply mating 78-pin connectors and cable assemblies to enable easy integration of the 50-200 series of Fault Insertion Switches

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.

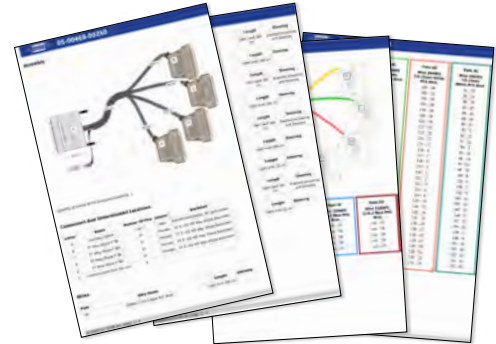| Connectors & Backshells | Multi-way Cable Assemblies | RF Cable Assemblies | Breakouts | Connector Blocks |

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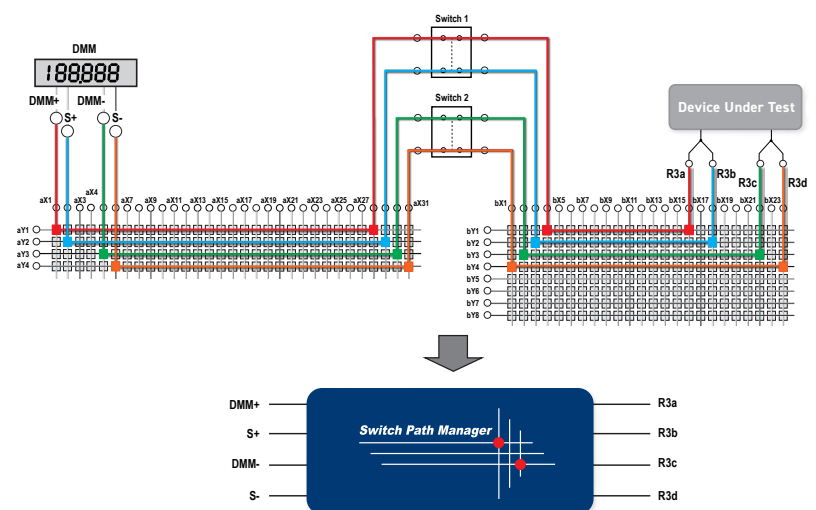- **MTQ Testsolutions** Tecap Test & Measurement Suite

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