- Multiplexer Designed Specifically For Cable Test With TDR Port For Cable Impedance and Fault Finding Measurements

- Standard Short PCI Card

- Coaxial 50 Ω Section with >500 MHz Bandwidth

- Use High Reliability Pickering High Voltage Reed Relays

- Fast Operating Speed 0.5ms

- Switch up to 500 V, 1 A with 10 W Max Power

- VISA & Kernel Drivers Supplied for Windows and LabView

- 3 Year Warranty

The 50-350 is a high voltage multiplexer for use in a submarine cable testing application in a short PCI card format.

It is designed to allow the dynamic connection of various test instruments to 1 of 16 test points. The multiplexer may be operated as a conventional multiplexer with break-before-make action when a new channel is selected. In addition multiple channels may be simultaneously selected.

The coaxial ports are suitable for switching frequencies to 500 MHz (measured from Test Lead to TDR port). It may also be used with low frequency signals where very good isolation and crosstalk performance is required.

Larger multiplexers may be constructed by Daisy Chaining the common signals from multiple PCI cards.

The 50-350 also provides 3 digital output lines to control external devices.

Future Expansion

Pickering can design higher density multiplexer cards to exact customer requirements, please contact sales office to discuss.

High Voltage Safety

This card is capable of delivering a **LETHAL** Electric Shock — When connected to a High Voltage Source.

Observe safety precautions at all times.

Safety Interlock

Both J2 & J3 have 2 pins reserved for a safety interlock, this is an internal short circuit that can be used to disable high voltages if the circuit is broken. Details in operating manual.

Relay Type

The 50-350 is fitted with rhodium high voltage reed relays, these offer very long life with good switch performance and good contact resistance stability.

SPST Reed Relay Pickering Electronics Type:
106-1-A-5/487D (custom design)

Screened DPST Reed Relay Pickering Electronics Type:
102M-2-A-5/489D (custom design)

Spare Reed Relays are built onto the circuit board to allow easy maintenance with minimum downtime.

All reed relays are manufactured by our Relay Division. For more information please visit: pickeringrelay.com
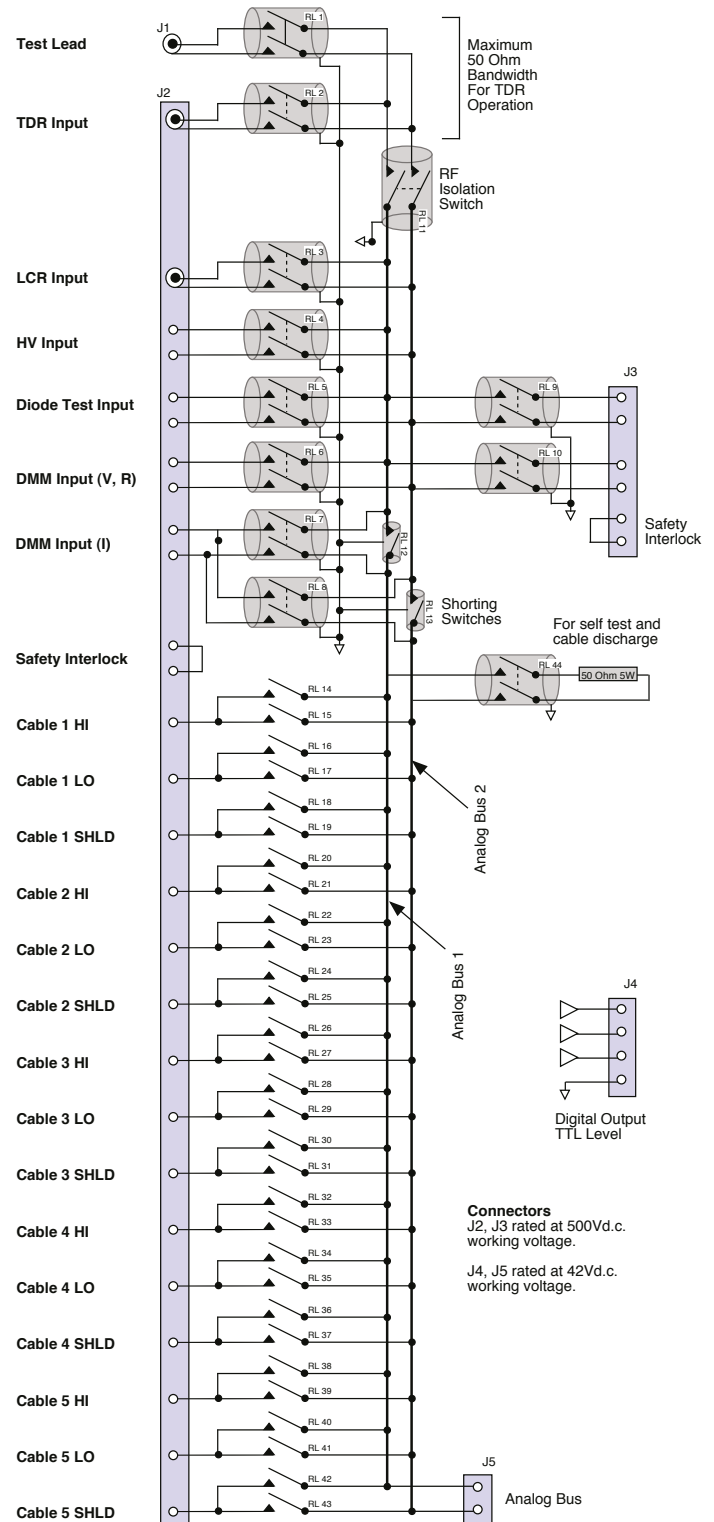
Switching Specification

Switch Type:	Rhodium Reed
Max Standoff Voltage:	500 VDC*
Max Switching Voltage:	500 VDC*
Max Power:	10 W
Max Switch Current:	0.5 A
Max Carry Current:	1.2 A
Path Resistance (passing thru 3 relays)	
On (Single Card):	<250 mΩ
Off (Single Card):	>10^9 Ω
Differential Thermal Offset:	<10 µV
Operate Time:	0.5 ms
Release Time:	0.5 ms
Expected Life	
Low power load:	>1×10^8 operations
Full power load:	>1×10^6 operations

* 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	Min: Typical: Max:	0.8 W 1.1 W 3 W	0	0

50-530
High Voltage Multiplexer Schematic

TTL Digital Output Specification

Max Voltage:	7 VDC*
Max Current Drive:	10 mA
Nominal True Voltage:	>2.0 V
Nominal False Voltage:	<0.8 V
Operate Time:	<0.5 ms
Release Time:	<0.5 ms

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

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 mixed contact D-type and SMA, for pin outs please refer to the operating manual. The mixed contact connector consists of 25 signal pins and two coaxial inserts. Also a 6-pin internal header has been provided for routing the analog buses. A second internal 4-pin header is provided with 3 TTL lines and ground.

LabView Driver

The 50-350 is also supplied with a LabView Driver. This gives a schematic representation of the switch card, allowing each relay to be "clicked" to turn on/off, in addition buttons are added to: do TDR measurement, clear all relays, close all but one relay to analog bus 1 or 2, etc..

PXI & CompactPCI Compliance

The 50-530 complies with the PCI Specification 2.0 (issued Feb 2004).

Signalling Environment: 33 MHz, 32-bit (+5 V only).

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.

WARNING

This card is capable of delivering a LETHAL Electric Shock

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

Product Order Codes

High Voltage PCI Multiplexer	
500 V Switching and 500 V Withstand	50-350-001

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.

Customization can include:

- Alternative reed relay types
- Mixture of reed 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
50-350	91-100-072 & 91-100-066

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

Mating Connectors & Cabling

The 50-350-001 is shipped with a mating mixed contact D-type connector (with 25 pins and 2 coaxial inserts).
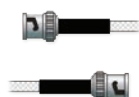
Connectivity Solutions

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.

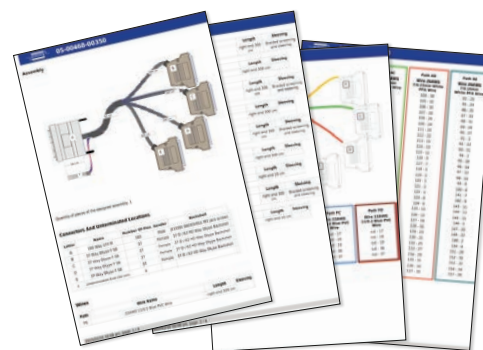| Connectors & Backshells	Multi-way Cable Assemblies	RF Cable Assemblies	Breakouts	Connector Blocks

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

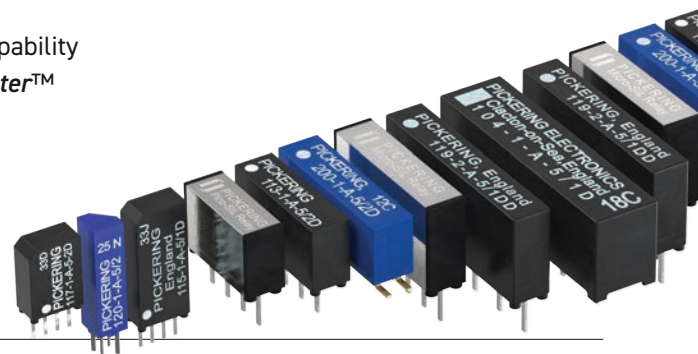Start designing your custom cabling, go to pickeringtest.com/cdt

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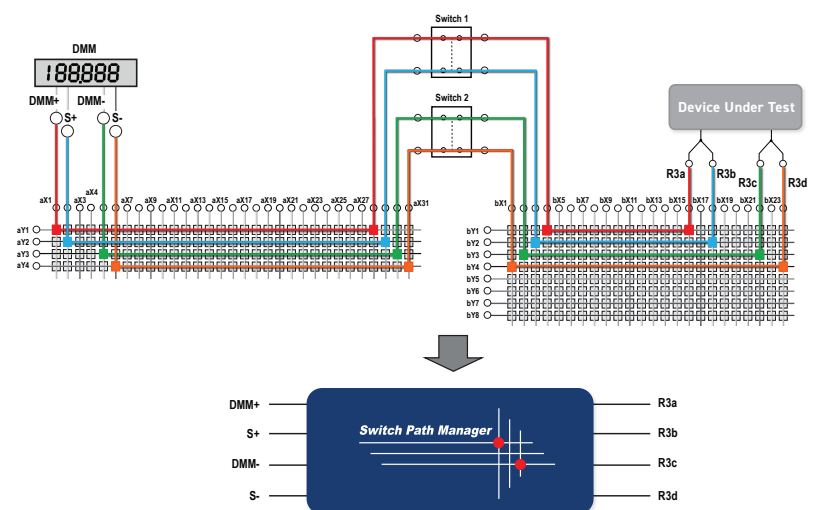- **MTQ Testsolutions** Tecap Test & Measurement Suite

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