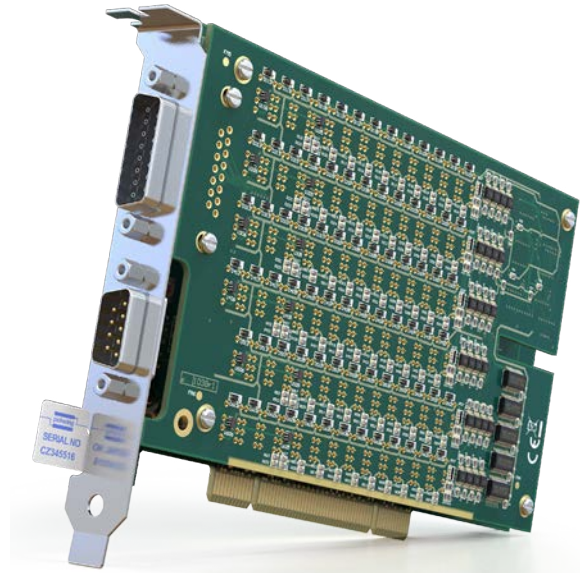- 6 Channels of Accurate RTD Simulation
- PT100 or PT1000 Versions
- Simple Control By Resistance Calls
- High Accuracy and Fine Resistance Control
- Short and Open Circuit Simulation
- Simple Calibration With External DMM
- VISA & Kernel Drivers Supplied for Windows
- 3 Year Warranty

The 50-262 is a PCI card with 6 channels of RTD simulation. Each channel can also be set as short or open circuit to simulate faulty wiring connections to a sensor. The card is a cost effective method of simulating either PT100 or PT1000 RTDs.

The card can be specified with a range of either 90 Ω to 250 Ω suitable for PT100 simulation (50-262-101), or 900 Ω to 2500 Ω suitable for PT1000 simulation (50-262-102). Both versions are suitable for simulating a temperature range of approximately -25 °C to 410 °C for their given sensor type. The use of resistance value calls makes programming simple, an API to convert temperature requests to resistance calls using a model of the sensor being simulated is also available.

The channels can operate with a differential input voltage range of greater than ±15 V relative to a defined common mode voltage. The common mode voltage can be set to 0 V, +12 V, -12 V or an external source of up to ±50 V.

The 50-262 includes a convenient system for verification of channel resistance using an external DMM connected to the Calibration port. This system allows cards to be cascaded so one DMM can verify multiple devices and resistor channels in-situ. Verification can be performed while the UUT is connected to the resistor channel connector.
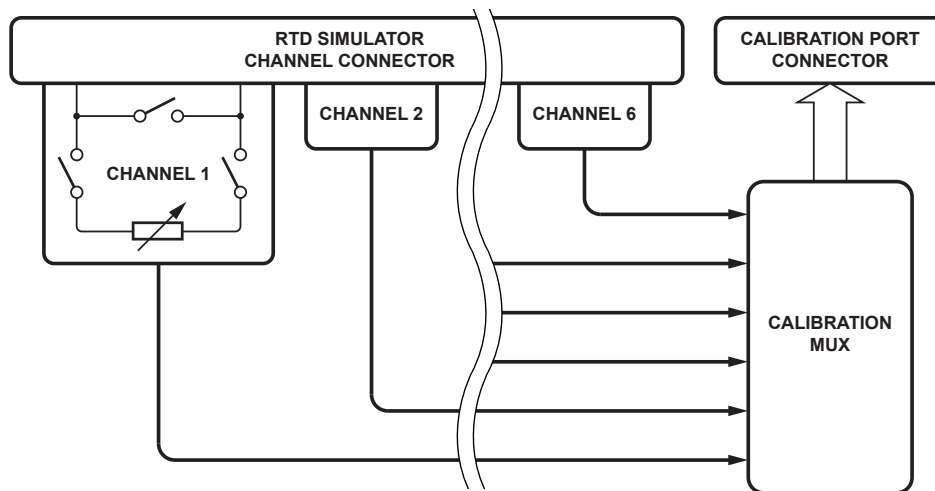
Functional Diagram for the 50-262 RTD Simulator Card

Switching Specification

Simulation Channels:	
Configuration:	6 channels.
Resistance Range	90 Ω to 250 Ω (50-262-101) 900 Ω to 2500 Ω (50-262-102)
Resolution:	<8 mΩ (50-262-101) <90 mΩ (50-262-102) continuous resolution, no missing settings.
Accuracy:	0.1 % @ ±10 °C from calibration temperature (factory calibration @ 21 °C)
Short Circuit Resistance:	0.1 Ω typical
Open Circuit Setting:	>10^9 Ω
Operating Voltage*:	
Common mode voltage	Input voltage range
0 V	-15 V to +15 V
+12 V	-3 V to +27 V
-12 V	-27 V to +3 V
Common mode voltage can be selected by software control. Default value is 0 V.	
Damage level is a differential voltage level of ±18 V wrt common or the maximum power rating, whichever is lower.	
Ext common mode voltage:	±50 V*
Maximum power:	100 mW
Thermo-electric emf:	<3µ V
Resistance - power off:	Open circuit
Number of Operations:	100 million (10 mA)
Operating time:	3 ms typical

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

Calibration Port	
Function:	Supports 4 terminal measurements of all the channels in the card. Cards can be cascaded together to permit single DMM to support multiple cards with simulation channel connected to UUT.

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
250 mA	600 mA	10 mA	10 mA

Mechanical Characteristics

Single slot short PCI format.

3D models for all versions in a variety of popular file formats are available on request.

Connectors

Simulation channel signals via a 15-pin male D-Type connector (1 per 6 channels). Calibration connection via a 9-pin male D-Type connector. For pin outs please refer to the operating manual.

Software Support

Supplied with software that accepts a resistance instruction.

PCI Compliance

The 50-262 complies with the PCI Specification 2.0 (issued Feb 2004).

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

For advance information about a PCI Express version of this card please contact your local Pickering sales office

Supplied soft front panels and driver software are fully compatible with Windows operating systems.

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.

The 50-262 uses innovative techniques which are the subject of protected Pickering Interfaces intellectual property rights.
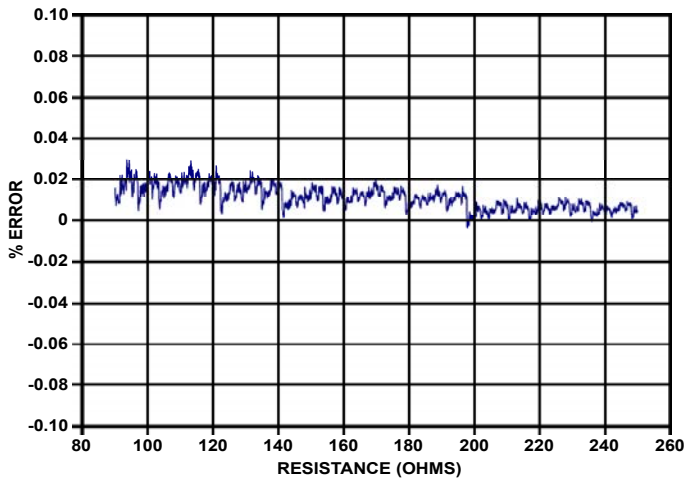
Typical accuracy of 50-262 over the entire resistance range measured at 21˚C

Performance is measured in 10 mΩ increments by making a resistance call (in Ω) to the card and then measuring the actual resistance with a DMM. Vertical axis shows the reading error as % of the requested value.

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: PCI RTD Simulator

6-Ch 90 Ω to 250 Ω PT100	50-262-101
6-Ch 900 Ω to 2500 Ω PT1000	50-262-102

Accessories:

Calibration port to DMM lead (shrouded 4mm bayonet plug):

for single card (1x9 pin D-type)	40-975-009-SL1
for two card (2x9 pin D-types)	40-975-009-SL2
for three card (3x9 pin D-types)	40-975-009-SL3

(calibration leads capable of supporting a greater number of cards are available, please contact sales office)

Mating Connectors & Cabling

For connection accessories for the 50-262 please refer to the 90-010D 15-pin D-type and 90-003D 9-pin D-type Connector Accessories data sheets 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 50-262 series of RTD Simulator cards

Other Resistor Cards

Pickering Interfaces manufacture a range of variable resistor cards in the PCI format. If you have a requirement for a variable resistor card please contact your local sales office with the information below and we will advise you on the best solution for your application.

Lowest Resistance †	
Highest Resistance	
Resistance Resolution	
Overall Accuracy	
Maximum Power/Current	
Number of Channels (variable resistors)	

† Resistance is as measured across the user connector terminals, minimum resistance must have a non-zero value.

Other RTD Sensors

If you need to simulate other RTD devices please contact the local sales office or Pickering Interfaces direct with information on the RTD type and resistance or temperature range you need to cover.

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.

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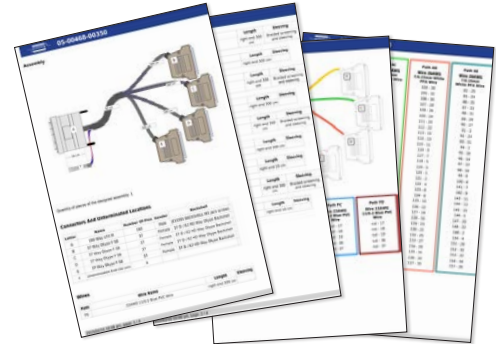
Start designing your custom cabling, go to pickeringtest.com/cdt

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
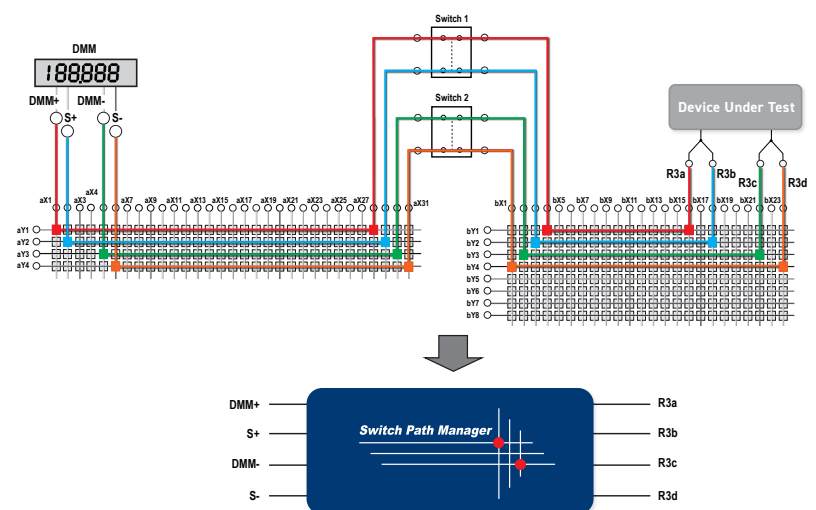
Diagnostic Relay Test Tools

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