- **Choice of 6, 12 or 18 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, IVI & Kernel Drivers Supplied for Windows**
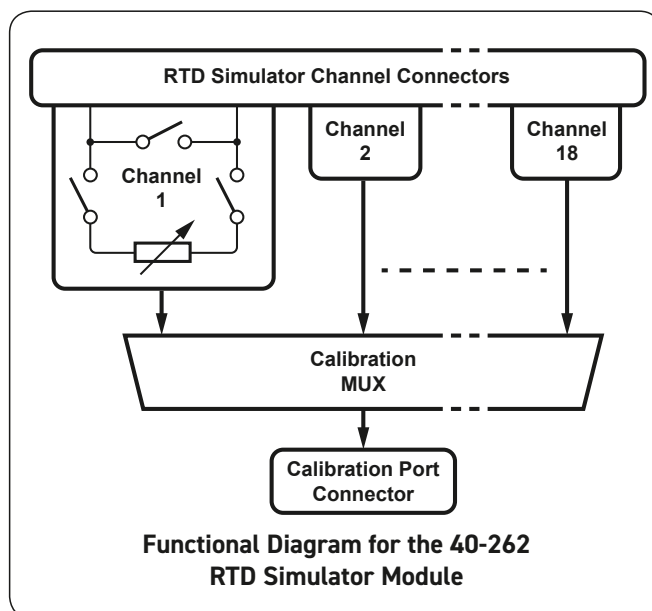- **Supported by PXI or LXI Chassis**
- **3 Year Warranty**

The 40-262 is a PXI module with 6, 12 or 18 channels providing a. cost effective method of simulating PT100 or PT1000 RTDs. The channels also have a short and open circuit setting to simulate faulty wiring to a sensor. The range is as follows:

- 6 Channels, 90Ω - 250Ω for PT100 RTDs (1 PXI Slot)
- 6 Channels, 900Ω - 2500Ω for PT1000 RTDs (1 PXI Slot)
- 12 Channels, 90Ω - 250Ω for PT100 RTDs (2 PXI Slots)
- 12 Channels, 900Ω - 2500Ω for PT1000 RTDs (2 PXI Slots)
- 18 Channels, 90Ω - 250Ω for PT100 RTDs (2 PXI Slots)
- 18 Channels, 900Ω - 2500Ω for PT1000 RTDs (2 PXI Slots)

All versions are suitable for simulating a temperature range of -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 used is also available.

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

The 40-262 provides a convenient system for verifying channel resistance using an external DMM connected to the calibration port. The system allows cascading so one DMM can be used for the verification of multiple modules. Verification can be performed while the UUT is connected to the module.

Functional Diagram for the 40-262 RTD Simulator Module

Pickering's Range of PXI Precision Resistor Modules					
Model	**Description**	**Chan.**	**Range**	**Resolution**	**Accuracy**
40-260	Precision Programmable Resistor	3	90Ω to 8kΩ	<10mΩ	0.1%
40-261		2	1.5Ω to 2.9kΩ or 10Ω to 36kΩ	<2mΩ or <15mΩ	0.08%
40-262	RTD Simulator	18, 12 or 6	90Ω to 250Ω or 900Ω to 2.5kΩ	<8mΩ or <90mΩ	0.1%
40-263	RTD Simulator	4, 8, 12, 16, 20 or 24	40Ω to 900Ω, 200Ω to 4.5kΩ or 400Ω to 9kΩ	<10mΩ, <50mΩ or <100mΩ	0.1%
40-265	Strain Gauge Simulator	6, 4 or 2	350Ω, 1kΩ, 1.5kΩ, 2kΩ or 3kΩ	<2mΩ, <10mΩ, <12.5mΩ, <20mΩ or <25mΩ	0.03% or 0.06%
40-297	High Density Precision Resistor	18, 9, 6, 4 or 3	Up to 22.3MΩ	0.125Ω, 0.25Ω, 0.5Ω, 1Ω or 2Ω	0.2%
40-298					
Standard Resistor Modules					
For applications that do not require the precision or accuracy of our precision range, look to our Standard Resistor range which includes models 40-280/1/2, 40-290/1, 40-292, 40-293, 40-294 and 40-295/6					
Custom Resistor Modules					
If our range of Resistor Modules does not meet your specific requirements, please contact you local sales office to discuss your application. Customizations include: different start and stop values, current, power, voltage, precision, accuracy, number of channels, connector etc.					

Specification

Simulation Channels

|	40-262 Builds					
	-001	-201	-101	-002	-202	-102
Simulated Sensor Type	PT100			PT1000		
Number of Channels	18	12	6	18	12	6
Number of PXI Slots	2		1	2		1
Resistance Range	90Ω to 250Ω			900Ω to 2500Ω		
Resistance Resolution†	<8mΩ			<90mΩ		
Simulated Temperature Range	-25°C to +410°C					
Simulated Temperature Resolution†	<0.03°C					
Accuracy‡	0.1%					

† Continuous resolution, no missing setting.
‡ @ ±10°C from calibration temperature
　　　　(factory calibration @ 21°C).

Short Circuit Resistance:	0.1Ω typical
Open Circuit Setting:	>10^9Ω
Operating Voltage*:	

Common mode voltage	Input voltage range
0V	-15V to +15V
+12V	-3V to +27V
-12V	-27V to +3V
External	External ±15V

Common mode voltage can be selected by software control. Default value is 0 Volts. Damage level is a differential voltage level of ±18V wrt common or the maximum power rating, whichever is lower.

Ext. common mode voltage:	±50V*
Maximum power:	100mW
Thermo-electric emf:	<3µV
Resistance - power off:	Open circuit
Number of operations:	100 million (10mA)
Operating time:	3ms typical †

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

† The total operate time when setting a resistance may vary depending upon the change requested due to relay sequencing.
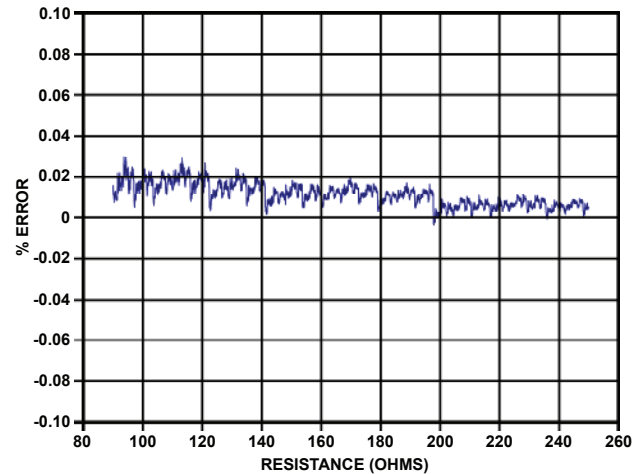
Typical accuracy of 40-262 over the entire resistance range measured at 21˚C

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

Calibration Port

Function:	Supports 4 terminal measurements of all the channels in the module. Modules can be cascaded together to permit single DMM to support multiple modules with simulation channel connected to UUT.

Software Support

Supplied with software that accepts a resistance instruction.

Power Requirements

+3.3V	+5V	+12V	-12V
0	0.6A (40-262-1xx) 1.0A (40-262-2xx) 1.4A (40-262-0xx)	10mA	10mA

Mechanical Characteristics

3U PXI (CompactPCI card):

- 2 slots for 12 & 18 channel versions.
- 1 slot for 6 channel versions.

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

Connectors

PCI Interface:　　33MHz, 32-bit address, 16 bit data. Simulation channel signals via front panel 15-pin male D-Type connector (1 per 6 channels). Calibration connection via front panel 9-pin male D-Type connector. For pin outs please refer to the operating manual.

The 40-262 uses innovative techniques which are the subject of protected Pickering Interfaces intellectual property rights.

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

18ch 90Ω to 250Ω PT100 RTD Simulator	40-262-001
18ch 900Ω to 2500Ω PT1000 RTD Simulator	40-262-002
12ch 90Ω to 250Ω PT100 RTD Simulator	40-262-201
12ch 900Ω to 2500Ω PT1000 RTD Simulator	40-262-202
6ch 90Ω to 250Ω PT100 RTD Simulator	40-262-101
6ch 900Ω to 2500Ω PT1000 RTD Simulator	40-262-102

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

For a single module (1x9 pin D-type)	40-975-009-SL1
For two modules (2x9 pin D-types)	40-975-009-SL2
For three modules (3x9 pin D-types)	40-975-009-SL3

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

Mating Connectors & Cabling

For connection accessories for the 40-262 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, or refer to the Connection Solutions catalog.

Other Resistor Modules

Pickering Interfaces manufacture a range of variable resistor modules in the PXI format. If you have a requirement for a variable resistor module 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 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 resistance range
* Alternative resolution
* Different number of channels
* 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.

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 1000+ PXI Switching & Simulation 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
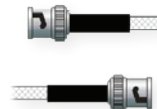- Independence from Windows operating system

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.
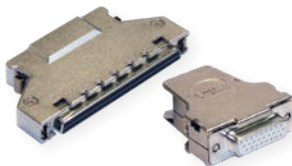
Connectors & Backshells   **Multiway Cable Assemblies**   **RF Cable Assemblies**   **Connector Blocks**

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.

Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for a PXI or LXI based test system. Our modules are fully supported by both Virginia Panel and MacPanel.

Pickering Reed Relays

We are the only switch provider with in-house reed relay manufacturing capability via our sister company, Pickering Electronics. These instrument grade reed relays feature *SoftCenter*® technology, ensuring long service life and repeatable contact

Programming

Pickering provide kernel, IVI and VISA (NI & Keysight) drivers which are compatible with all Microsoft supported versions of Windows and popular older versions.

The VISA driver is also compatible with Real-Time Operating Systems such as LabVIEW 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+)
- **Keysight** VEE
- **Mathworks** Matlab
- **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.

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.

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.

Three Year Warranty & Guaranteed Long-Term Support

All standard products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for a period of three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available for all our modules and systems with various levels to suit 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

Available Product Resources

We have a large library of product resources including success stories, product and support videos, articles, as well as complete product catalogs and product reference maps to assist when looking for the switching, simulation and cable and connector solutions you need. We have also published handy reference books for the PXI and LXI standards.