

- Choice of 4, 8, 12, 16, 20 or 24 Channels of Accurate RTD Simulation
- PT100, PT500 or PT1000 Versions, Simulating -150°C to >850°C
- 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 40-263 is a cost effective method of simulating PT100, PT500 or PT1000 RTDs. It supports 4, 8, 12, 16, 20 or 24 channels in one or two PXI slots. Also, channels are able to be set as short or open circuit to simulate faulty wiring to a sensor.

The module is available with the following resistance ranges

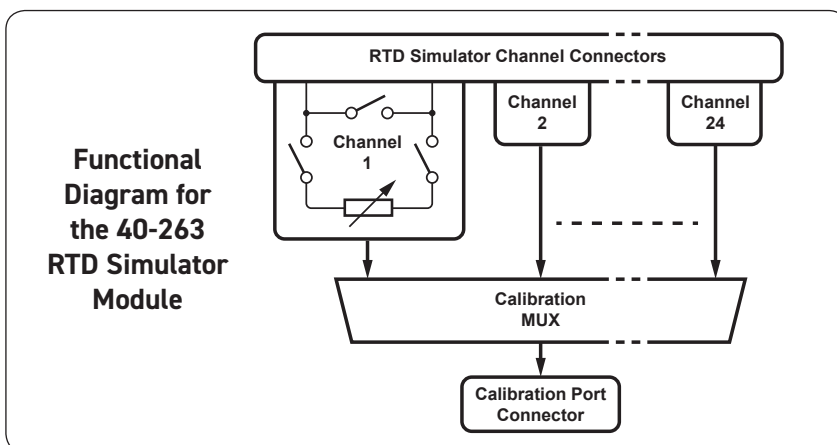
- 40Ω to 900Ω for PT100 simulation
- 200Ω to 4500Ω for PT500 simulation
- 400Ω to 9000Ω for PT1000 simulation.

All versions are suitable for simulating a temperature range of approximately -150°C to >+850°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 ±13.5V 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 40-263 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.

| 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 | 6, 12 or 18 | 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 | 3, 4, 6, 9 | Up to 22.3MΩ | 0.125Ω, 0.25Ω, 0.5Ω, 1Ω or 2Ω | 0.2% |
| 40-298 | | or 18 | | | |
| Standard Resistor Modules | | | | | |
| For applications that don't 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 your 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 | | | | | | | | | | | | | | | | | | |
|-----------------------------------|-----------------------|------|------|------|---------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|
| | 40-263 Configurations | | | | | | | | | | | | | | | | | |
| | -001 | -101 | -201 | -301 | -401 | -501 | -002 | -102 | -202 | -302 | -402 | -502 | -003 | -103 | -203 | -303 | -403 | -503 |
| Simulated Sensor Type | PT100 | | | | PT500 | | | | PT1000 | | | | | | | | | |
| Number of Channels | 24 | 20 | 16 | 12 | 8 | 4 | 24 | 20 | 16 | 12 | 8 | 4 | 24 | 20 | 16 | 12 | 8 | 4 |
| Number of PXI Slots | 2 | | 1 | | | | 2 | | 1 | | | | 2 | | 1 | | | |
| Resistance Range | 40Ω to 900Ω | | | | 200Ω to 4500Ω | | | | 400Ω to 9000Ω | | | | | | | | | |
| Resistance Resolution† | <10mΩ | | | | <50mΩ | | | | <100mΩ | | | | | | | | | |
| Simulated Temperature Range | -150°C to >+850°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 ⁹ Ω |
| Operating Voltage*: | |
| Common mode voltage | Input voltage range |
| 0V | -13.5V to +13.5V |
| +12V | -1.5V to +25.5V |
| -12V | -25.5V to +1.5V |
| External | External ±13.5V |
| 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. | |
| Exit common mode voltage: | ±50V* |
| Maximum power: | 100mW |
| Thermo-electric emf: | <3μV |
| Resistance - power off: | Open circuit |
| 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.

The 40-263 uses innovative techniques which are the subject of protected Pickering Interfaces intellectual property rights.

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 |
| 300mA | 3.5A Max (40-263-x01) | 10mA | 10mA |

Mechanical Characteristics

3U PXI (CompactPCI card):

2 slots for 12, 16, 20 and 24 channel versions.

1 slot for 4 and 8 channel versions.

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

Connectors

PXI bus via 32-bit P1/J1 backplane connector.

Simulation channel signals via front panel 26-pin male high density D-Type connector (1 per 8 channels).

Calibration connection via front panel 9-pin male D-Type connector. For pin outs please refer to the operating manual.

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

| | |
|---|------------|
| 24ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-001 |
| 24ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-002 |
| 24ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-003 |
| 20ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-101 |
| 20ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-102 |
| 20ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-103 |
| 16ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-201 |
| 16ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-202 |
| 16ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-203 |
| 12ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-301 |
| 12ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-302 |
| 12ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-303 |
| 8ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-401 |
| 8ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-402 |
| 8ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-403 |
| 4ch 40Ω to 900Ω PT100 RTD Simulator | 40-263-501 |
| 4ch 200Ω to 4500Ω PT500 RTD Simulator | 40-263-502 |
| 4ch 400Ω to 9000Ω PT1000 RTD Simulator | 40-263-503 |

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 40-263 please refer to the [90-009D](#) 26-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 † | <input type="text"/> |
| Highest Resistance | <input type="text"/> |
| Resistance Resolution | <input type="text"/> |
| Overall Accuracy | <input type="text"/> |
| Maximum Power/Current | <input type="text"/> |
| Number of Channels (variable resistors) | <input type="text"/> |

† 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



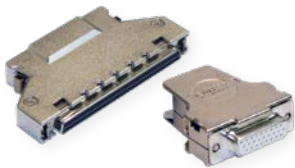
Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- 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

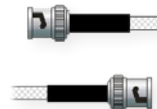
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed to mechanically and electrically mate to our modules.



Connectors & Backshells



Multiwire 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.

Visit: pickeringtest.com/cdt to start your design.

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 performance

To learn more, please 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 a list of all supporting operating systems, please see: pickeringtest.com/os

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.

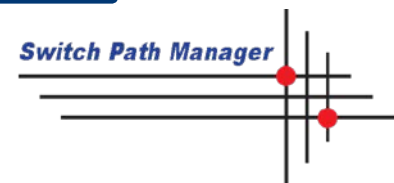
We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments, please 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, please 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, please go to: pickeringtest.com/ebirst

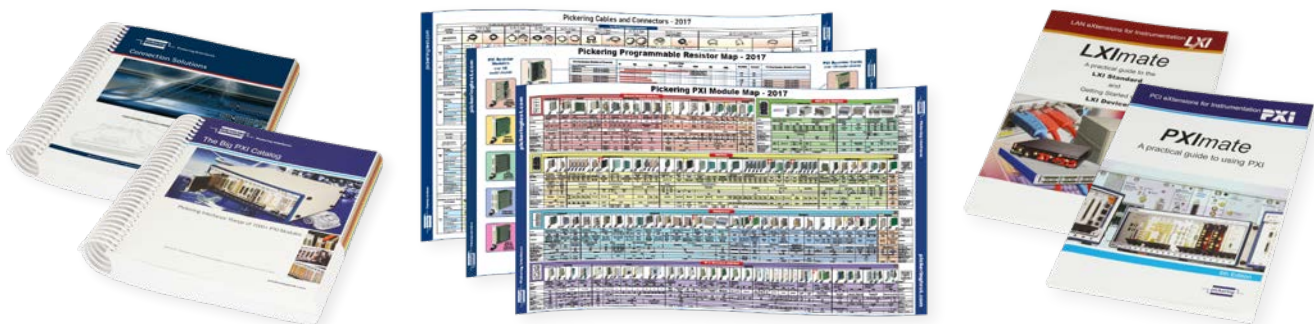


Three Year Warranty & Guaranteed Long-Term Support

All standard products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for 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. To learn more, please go to: pickeringtest.com/support

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.



To view, download or request any of our product resources, please visit: pickeringtest.com/resources