

40-265 Strain Gauge Simulator Module

- Simulates Resistive Strain Gauge Bridge Circuits
- 6, 4 or 2 Simulators Per Module
- Simple Software Operation
- Fine Resistance Adjustment Over Full Operating Range
- VISA & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- 3 Year Warranty

The 40-265 is a 6, 4 or 2 channel module that simulates the operation of a range of strain gauges making it ideal for testing strain gauge meters and a wide variety of industrial control systems. It provides a simple way of replacing in house developed sensors with a low cost simulator having excellent performance. The 40-265 uses the same resistor bridge techniques that real life strain gauges are based on, ensuring accurate emulation under all conditions.

Each simulator channel includes an independent input for the Excitation Voltage and a bridge output. The Excitation Voltage port can be driven by an AC or a DC source. The bridge circuit includes three fixed resistors and a fourth programmable resistor that can be adjusted over a narrow resistance range with fine adjustment capability and excellent accuracy. The adjustment range provided is sufficient to simulate quarter, half or full bridge circuits. The standard bridge impedances are 350Ω, 1kΩ, 1.5kΩ, 2kΩ and 3kΩ.

The simulator is extremely simple to use, the variable resistor element can be programmed using a simple resistance call. The module supplies the user with the resistance value required to balance the bridge, and the resistance call to the simulator can be varied above and below this value to simulate extension and compression of the strain gauge resistor.

The 40-265 provides a simple means of user verification using an external DMM via the calibration port where users can select any of the channels to check their functionality without mechanically disconnecting the module from the test system. The calibration port can also be used to find the bridge balance setting using the internal DC excitation source.

Adjustment is not routinely required thanks to factory calibration information and the excellent long term stability of the bridge.

Pickering Interfaces can offer other resistance models of the strain gauge simulator and has a wide range of precision resistance modules that are suitable for simulating individual strain gauges. Please contact your local sales office for more information.



Pickering's Range of PXI Precision Resistor Modules					
Model	Description	Chan.	Range	Resolution	Accuracy
40-260	Precision	3	90Ω - 8kΩ	<10mΩ	0.1%
40-261	Programmable Resistor	2	1.5Ω - 2.9kΩ or 10Ω - 36kΩ	<2mΩ or <15mΩ	0.08%
40-262	RTD Simulator	18, 12 or 6	90Ω - 250Ω or 900Ω - 2500Ω	<8mΩ or <90mΩ	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%
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.					

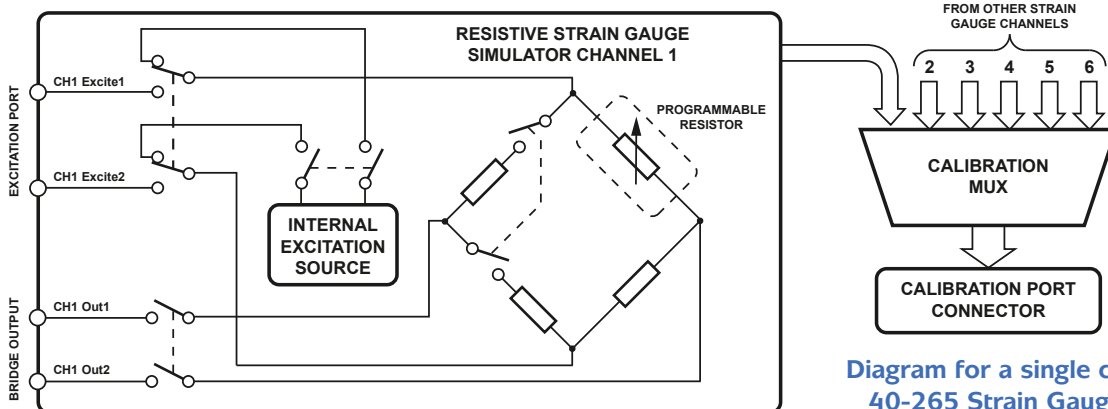


Diagram for a single channel of the 40-265 Strain Gauge Simulator



Specifications

Strain Gauge Channels

	40-265 -01x	40-265 -20x	40-265 -40x	40-265 -30x	40-265 -10x
Number of channels:	6, 4 or 2 per module				
Channel Configuration:	Independent excitation ports and bridge output.				
Resistor Values:	350Ω	1kΩ	1.5kΩ	2kΩ	3kΩ
Variable Resistor:	±2%	±5.3%			
Resolution:	<2mΩ	<10mΩ	<12.5 mΩ	<20mΩ	<25mΩ
Variable Resistor Accuracy:	0.03%	0.06%			
Excitation Voltage:	Up to ±10V peak (relative to ground) 20V peak-to-peak, DC or AC †		Up to ±12V peak (relative to ground) 24V peak-to-peak, DC or AC †		
Bridge Output:	> ±0.45% of excitation voltage ‡		> ±1.25% of excitation voltage ‡		

† Internal ±5V DC source can be used. Excitation port is disconnected when card power is off.

‡ Bridge Output disconnected when card power is off.

Calibration Port

Function: Allows connection to any of the strain gauge bridges. Provides a simple means of checking the operation of any of the strain gauges and finding bridge balance points when internal excitation source is selected. Can be used for module verification procedures.

Also used by Pickering Interfaces for module adjustment.

Software support: Supplied with software that accepts a simple resistance instruction

Power

+3.3V	+5V	+12V	-12V
0	0.2A (0.55A max)	0.1A (0.2A max)	0.1A

Physical Parameters

Physical characteristics: One slot, 3U PXI.
Weight: 240g (40-265-016)
3D models in a variety of popular file formats are available on request.

PCI Interface: 33MHz, 32-bit address, 16-bit data.

Connectors: 26-pin male High Density D-type for strain gauge channels,
9-pin male D-type for calibration connection.

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.

Product Order Codes

6 Channel Strain Gauge Simulator 350Ω 40-265-016
6 Channel Strain Gauge Simulator 1kΩ 40-265-206
6 Channel Strain Gauge Simulator 1.5kΩ 40-265-406
6 Channel Strain Gauge Simulator 2kΩ 40-265-306
6 Channel Strain Gauge Simulator 3kΩ 40-265-106

4 Channel Strain Gauge Simulator 350Ω 40-265-014
4 Channel Strain Gauge Simulator 1kΩ 40-265-204
4 Channel Strain Gauge Simulator 1.5kΩ 40-265-404
4 Channel Strain Gauge Simulator 2kΩ 40-265-304
4 Channel Strain Gauge Simulator 3kΩ 40-265-104

2 Channel Strain Gauge Simulator 350Ω 40-265-012
2 Channel Strain Gauge Simulator 1kΩ 40-265-202
2 Channel Strain Gauge Simulator 1.5kΩ 40-265-402
2 Channel Strain Gauge Simulator 2kΩ 40-265-302
2 Channel Strain Gauge Simulator 3kΩ 40-265-102

Note: The 40-265-016 supersedes the 40-265-006. Both modules have the same functionality but the -016 has a resistor variation of ±2% whereas the -006 has a resistor variation of ±1%.

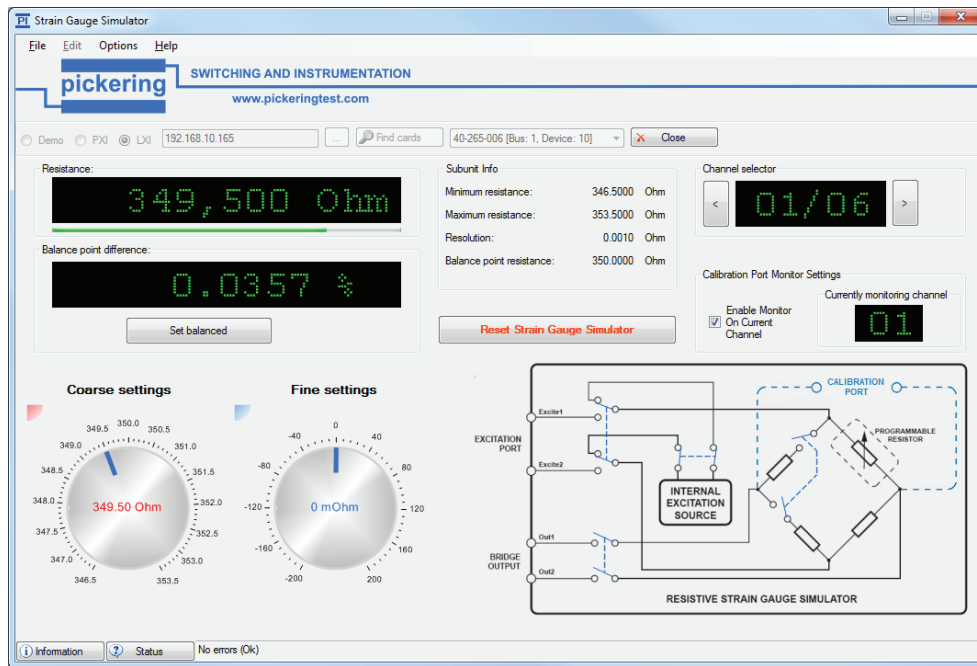
Accessories:

Calibration port to DMM lead (shrouded 4mm bayonet plug) for 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
 (leads capable of supporting a greater number of modules are available, please contact sales office)

Mating Connectors & Cabling

For connection accessories for the 40-265 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.

The 40-265 uses innovative techniques which are the subject of protected Pickering Interfaces intellectual property rights.



Soft Front Panel for the 40-265 Strain Gauge Simulator Module

广州虹科电子科技有限公司（总部）

广州科学城科学大道99号科汇三街2-701 邮编 510663

电话：020-3874 3030；135 3349 1614

传真：020-3874 3233

sales@hkaco.com | support@hkaco.com

上海 021-6728 2707；136 7167 1424 | 北京 010-5781 5040；187 1014 9603

西安 029-8187 3816；152 9185 3139 | 成都 028-6138 2617；136 8841 6951

沈阳 024-8376 9335；157 1053 7541 | 深圳 0755-22677441 | 武汉 027-8193 9100



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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: www.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**
- **MTO Testsolutions** Tecap Test & Measurement Suite
- **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**

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries.

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 EN61010-1:2001, EMC Immunity EN61000-6-1:2001, Emissions EN55011:1998.

PXI & LXI Chassis Compatibility

Compatible with all chassis conforming to the 3U PXI and 3U cPCI specification. Compatible with Legacy and Hybrid peripheral slots in a 3U PXI Express chassis.

Compatible with Pickering Interfaces LXI Modular Chassis. For information on driving your switching solution in an LXI environment refer to the LXI Product Guide.



Latest Details

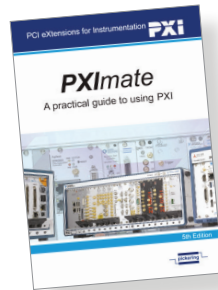
Please refer to our Web Site for Latest Product Details.
www.pickeringtest.com



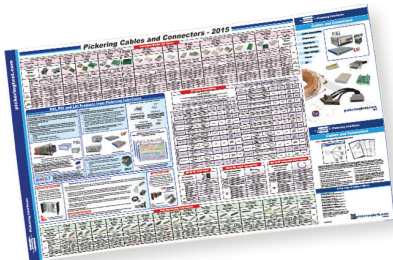
Please refer to the 200 page Pickering Interfaces **“Connection Solutions”** catalog for the full list of connector/cabling options, including drawings, photos and specifications. Available in either print or as a download. Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering PXI modules.



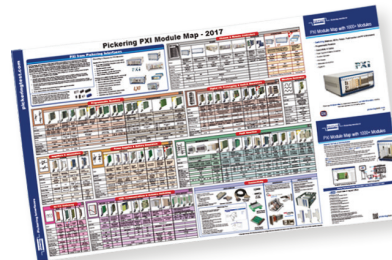
“The Big PXI Catalog” gives full details of Pickering’s entire range of PXI switch modules, instrument modules and support products. At over 500 pages, the Big PXI Catalog is available on request or can be downloaded from the Pickering website.



Ever wondered what PXI is all about? Pickering Interfaces’ **“PXImate”** explains the basics of PXI and provides useful data for engineers working on switch based test systems. The PXImate is available free on request from the Pickering website.



The **“Cables & Connectors Map”** - outlines the cable and connector options available for all PXI Modules.



The **“PXI Module Map”** - a simple fold-out selection guide to all Pickering’s 1000+ PXI Modules.