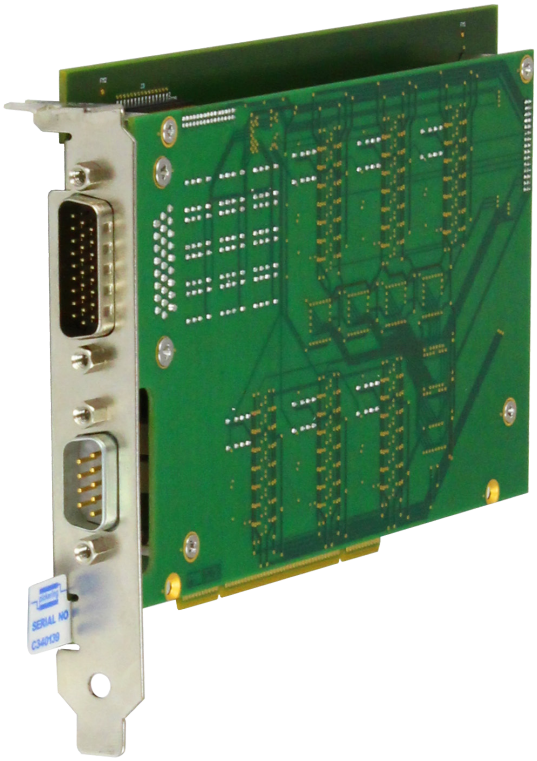
50-265
Strain Gauge Simulator Card

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



The 50-265 is a 6, 4 or 2 channel strain gauge simulator 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 50-265 uses the same resistor bridge techniques that real life strain gauges are based on, ensuring accurate emulation of the strain gauge operation under all conditions.

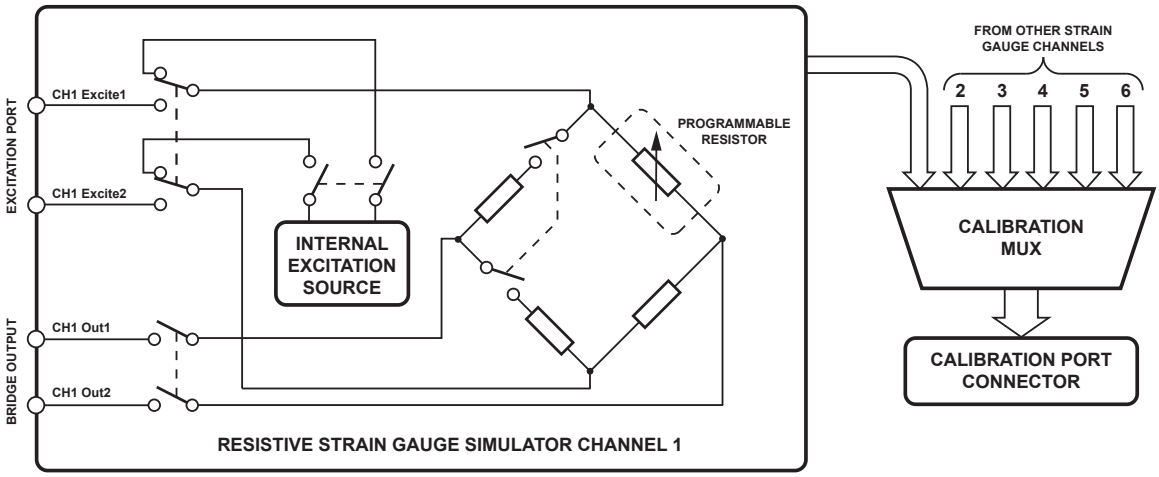
Each strain gauge simulator channel includes an independent input for the Excitation Voltage and a bridge output to simulate a strain gauge. The Excitation Voltage port can be driven by an AC or a DC source. The bridge circuit includes three fixed resistors and a fourth programmable resistor that can 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 strain gauge simulator is extremely simple to use, for each simulator the variable resistor element can be programmed using a simple resistance call. The card 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 50-265 provides a simple means of user verification using an external DMM via the calibration port where users can select any of the strain gauges to check their functionality without mechanically disconnecting the card 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 the factory calibration information and the excellent long term stability of the bridge system.

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.



Functional Diagram for a single channel of the 50-265 Strain Gauge Simulator Card

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Specifications

Strain Gauge Channels

	50-265 -01x	50-265 -20x	50-265 -40x	50-265 -30x	50-265 -10x
Number of channels:	6, 4 or 2 per card				
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%			
Exitation 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 card verification procedures.

Also used by Pickering Interfaces for card adjustment.

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

Power Requirements

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

Physical Parameters

Physical characteristics: Single slot short PCI format

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

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 PCI 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.

Product Order Codes

6 Channel Strain Gauge Simulator 350Ω	**50-265-016**
6 Channel Strain Gauge Simulator 1kΩ	**50-265-206**
6 Channel Strain Gauge Simulator 1.5kΩ	**50-265-406**
6 Channel Strain Gauge Simulator 2kΩ	**50-265-306**
6 Channel Strain Gauge Simulator 3kΩ	**50-265-106**
4 Channel Strain Gauge Simulator 350Ω	**50-265-014**
4 Channel Strain Gauge Simulator 1kΩ	**50-265-204**
4 Channel Strain Gauge Simulator 1.5kΩ	**50-265-404**
4 Channel Strain Gauge Simulator 2kΩ	**50-265-304**
4 Channel Strain Gauge Simulator 3kΩ	**50-265-104**
2 Channel Strain Gauge Simulator 350Ω	**50-265-012**
2 Channel Strain Gauge Simulator 1kΩ	**50-265-202**
2 Channel Strain Gauge Simulator 1.5kΩ	**50-265-402**
2 Channel Strain Gauge Simulator 2kΩ	**50-265-302**
2 Channel Strain Gauge Simulator 3kΩ	**50-265-102**

Accessories:

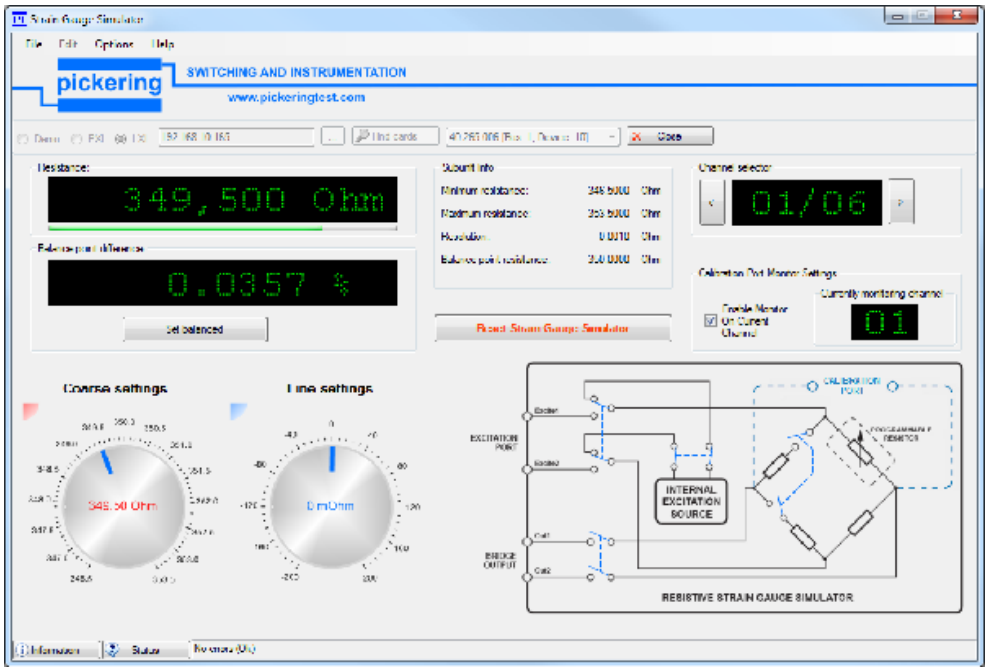
Calibration port to DMM lead (shrouded 4mm bayonet plug)	
for single module (1x9-pin D-type)	**40-975-009-SL1**
for two modules (2x9-pin D-types)	**40-975-009-SL2**
for three modules (3x9-pin D-types)	**40-975-009-SL3**

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

Mating Connectors & Cabling

For connection accessories for the 50-265 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 50-265 uses innovative techniques which are the subject of protected Pickering Interfaces intellectual property rights.



Soft Front Panel for the 50-265 Strain Gauge Simulator Module

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**
- **MTQ 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.

Please refer to the Pickering Interfaces "**Connection Solutions**" catalog for the full list of connector/cabling options, including drawings, photos and specifications. This is available in either print or as a download. Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering PCI modules.

PCI Compliance

The 50-265 complies with the PCI Specification 2.0 (issued Feb 2004).

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

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

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