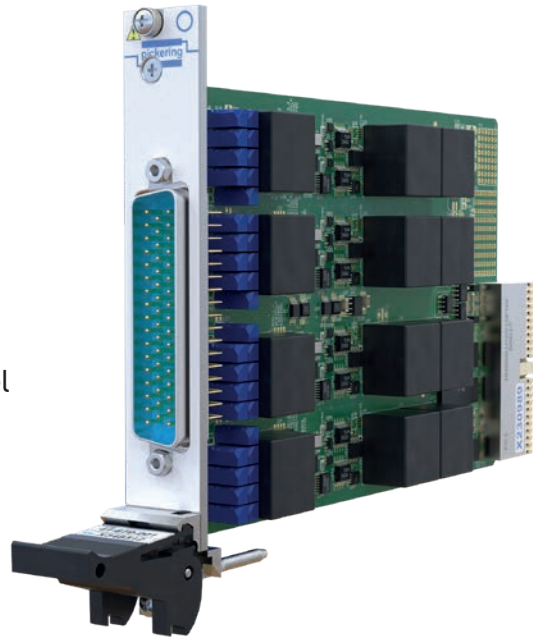


- Available as PXI or PXIe Modules
- Up to 4 Channels of 5/6-Wire LVDT/RVDT or Resolver, or 8 Channels of 4-Wire LVDT/RVDT Simulation
- Input & Output Isolation Transformers
- Measurement & Display of Each Input Frequency & Amplitude
- Wide Operational Frequency Band
- External or Internal Excitation
- Independent or Shared Excitation Signal to Each Channel
- Programmable phase delay
- Open & Short Circuit Simulation on Inputs & Outputs
- VISA, IVI & Kernel Drivers Supplied for Windows Including Soft Front Panel
- PXI Version Supported by PXI or LXI Ethernet Chassis
- Customization Available
- 3 Year Warranty



The 41-670 (PXI) and 43-670 (PXIe) are ideal for the simulation of variable differential transformers (VDT), both linear (LVDT) and rotary (RVDT) types as well as resolvers. Available with up to four banks, each bank is capable of simulating the output of a single 5 or 6-wire VDT or resolver, or dual 4-wire utilising a shared excitation signal. This allows the module to simulate up to 4 channels of 5 or 6-wire, or 8 channels of 4-wire.

Each VDT bank has an independent excitation input, as well as the ability to use an internally generated excitation signal. The module also has the ability to take a single input and distribute to all banks, reducing the load on the source and easing cabling. Due to the use of transformers, each input and output is galvanically isolated.

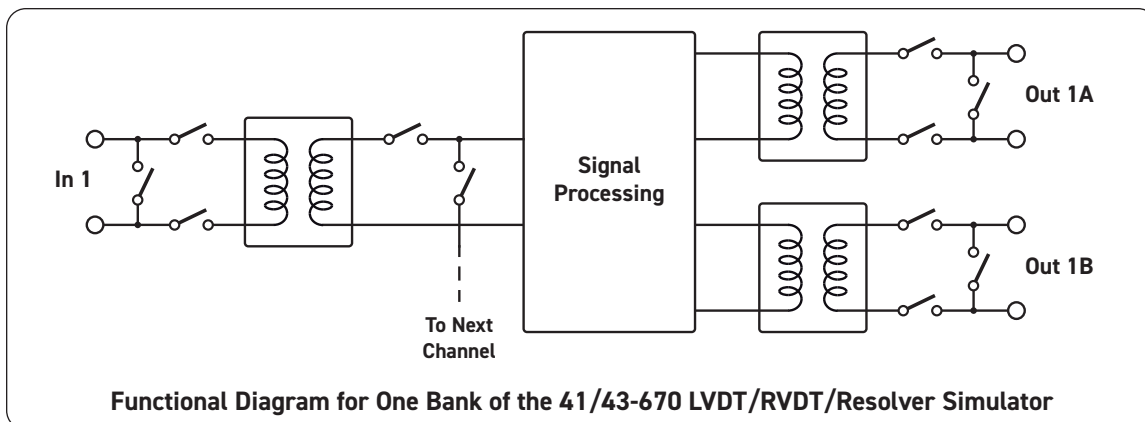
The 41/43-670 is designed for a wide band of excitation frequencies, with 300 Hz to 20 kHz as standard, while also offering input voltages up to 38 V and output voltages up to 31 V. Each excitation input frequency and amplitude can also be independently read back.

The phase relationship between the input and output signals is automatically adjusted to lag one cycle, the result of which means the phase delay can be negated. In applications where this is not acceptable, one of the outputs can be used to propagate the input signal resulting in an in phase signal with the output which can then be used for demodulation.

With the addition of built in relays, the 41/43-670 can also provide short or open circuits for each channel's inputs and outputs, reducing the need for external switching for fault insertion requirements. The programmable phase delay can also be used for simulating imperfect sensors and cabling, artificially offsetting a single or multiple outputs.

The output amplitude is programmed using a number of options, these include V_{sum} and V_{diff} when operating in 5/6 wire, percentage displacement and independent voltage outputs. V_{sum} can be set as an absolute value or relative to the input amplitude. Phase relationship is controlled via a programmable propagation delay.

Additionally, the module can be programmed with an actuator response, meaning rather than going from one position to the next directly, it can change at a constant rate defined by the user.



Specification

Number of Channels	Up to 8 channels for 4-wire LVDT/RVDT, 4 channels for 5/6-wire LVDT/RVDT/ Resolver
--------------------	--

Applied Excite Readback Accuracy	Frequency <0.05% (0.02% typical)
	Voltage (typical 3%)

		Module Version's Part Number Suffix				
Excitation Input Characteristics		-01xxxx	-02xxxx	-03xxxx	-04xxxx	-05xxxx
Voltage	Min	0.25 V rms	0.5 V rms	1 V rms	2.7 V rms	5.2 V rms
	Max	1.8 V rms	3.6 V rms	7.2 V rms	19 V rms	38 V rms
Frequency	Min	300 Hz				
	Max	20k Hz				

Voltage readback is reverse calculated through the input stage, from an average of peak sampled values, pure sinewave assumed.

Power Requirements - 41-670

+3.3V	+5V	+12V	-12V
0.15 A	1.5 A	0.15 A	0.15 A

Power Requirements - 43-670

+3.3V	+12V
TBC	TBC

		Module Version's Part Number Suffix				
Output Characteristics		-xxxx01	-xxxx02	-xxxx03	-xxxx04	-xxxx05
Voltage	Min	0.45 V rms	0.9 V rms	1.8 V rms	3.5 V rms	7 V rms
	Max	1.8 V rms	3.8 V rms	7.7 V rms	15.5 V rms	31 V rms
Update Rate		50 kHz (single channel)*				
Precision Setting Resolution		16 bit (degrading to 1% @20 kHz)				
Voltage Accuracy		<0.2% (0.1% typical)				
Vdiff/Vsum Accuracy		<0.1% (0.05% typical)				
In-Out Delay		<20 μs				
Programmable Delay Offset		555 ns (3.5 ms max)				

Mechanical Characteristics

41-670 - Single slot 3 U PXI (CompactPCI card).

43-670 - Single slot 3 U PXIe, compatible with PXIe hybrid slot.

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

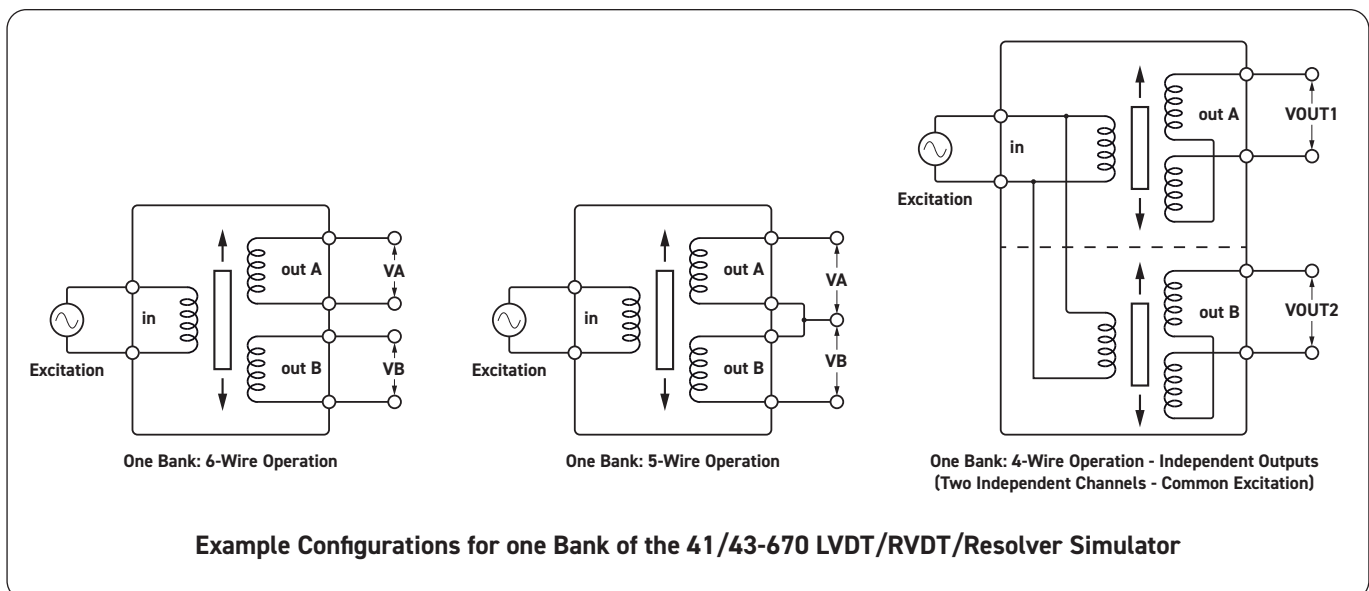
Connectors

41-670 - PXI bus via 32-bit P1/J1 backplane connector.

43-670 - PXIe bus via XJ3 and XJ4 backplane connectors.

Signals via front panel 50-pin male D-type connector, for pin outs please refer to the operating manual.

*The output sample rate is 360 kHz, the rate at which successive commands can be sent is dependent on the host system.



Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90% non-condensing
Altitude:	5000 m

Storage and Transport Conditions

Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90% non-condensing
Altitude:	15000 m

PXI & CompactPCI Compliance - 41-670

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus & Star Trigger are not implemented. Uses a 33 MHz 32-bit backplane interface.

PXIe Compliance - 43-670

The module is compliant with the PXIe Specification 1.0. Local Bus, Trigger Bus & Star Trigger are not implemented.

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

PXI LVDT/RVDT/Resolver Simulator Module	41-670-XYZ-AABBCC
PXIe LVDT/RVDT/Resolver Simulator Module	43-670-XYZ-AABBCC

Product Order Code - Key

X = Functionality	0 = LVDT/RVDT/Resolver 1 = LVDT/RVDT only 2 = Resolver only
Y = Reserved	0
Z = Density	1 = 4 banks 3 = 2 banks
AA = Input Voltage Range	01 = 1.8 V 02 = 3.6 V 03 = 7.2 V 04 = 19 V 05 = 38 V
BB = Reserved	00
CC = Output Voltage Range	01 = 1.8 V 02 = 3.8 V 03 = 7.7 V 04 = 15.5 V 05 = 31 V

Example Part Numbers:

41-670-001-020002

(PXI LVDT/RVDT/Resolver Simulator with 4-Banks, 3.6 V Input, 3.8 V Output)

41-670-001-030003

(PXI LVDT/RVDT/Resolver Simulator with 4-Banks, 7.2 V Input, 7.7 V Output)

43-670-001-040004

(PXIe LVDT/RVDT/Resolver Simulator with 4-Banks, 19 V Input, 15.5 V Output)

Mating Connectors & Cabling

For connection accessories for the 41/43-670 module please refer to the [90-005D](#) 50-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

Product Customization

Pickering modules 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.

Chassis Compatibility

The PXI versions of this module must be used in a suitable chassis. They are 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

The PXIe versions of this module are compatible with the following chassis types:

- All chassis conforming to the 3U PXIe specification
- PXIe and Hybrid Peripheral slots in a 3U PXI Express (PXIe) 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

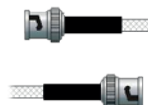
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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

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 Relay Division. 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:

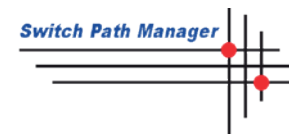
- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **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 and white papers as well as application specific product brochures to assist when looking for the switching, simulation and connection solutions you need. We have also published handy reference books on Switching Technology and for the PXI and LXI standards.



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