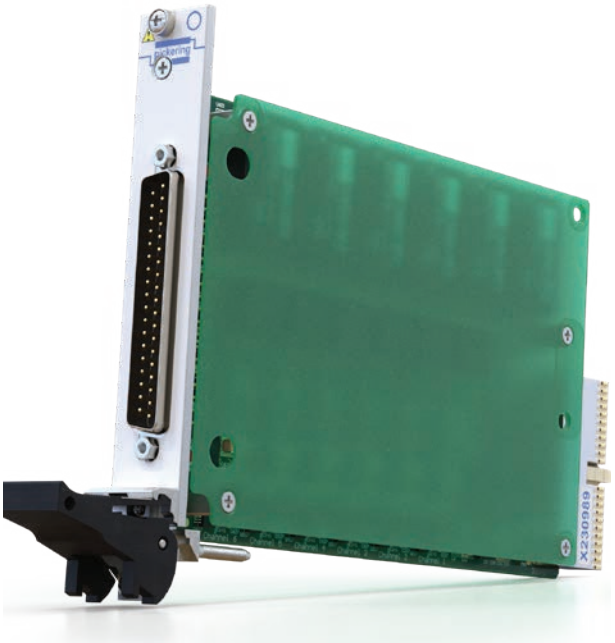
CONTACT THAILAND DISTRIBUTOR - TECHSQUARE CO., LTD.
TEL +666-5559-6050 EMAIL sales@techsquare.co.th SITE www.techsquare.co.th

PXI/PXIe Multi-Channel Battery Simulator 41/43-752A

- Available as PXI or PXIe Modules
- 6, 4 or 2 Power Supplies In A Single Slot
- Voltage & Current Readback Option
- Independent Sense Connections
- Ideal For Battery Stack Emulation
- 750 V & 1 kV Independent Isolation Barriers - Version Dependent
- Up to 300 mA Output Per Simulator
- Battery Charging Emulation To 300 mA
- Uses Backplane Power Sources
- Hardware Shutdown Control
- VISA and Kernel Drivers Supplied For Windows Plus Soft Front Panel
- 3 Year Warranty



The 41-752A (PXI) and 43-752A (PXIe) are 2, 4 or 6 channel battery simulators, capable of supplying up to 7 V and 300 mA per channel. The channels are fully isolated from ground and from each other allowing series connection to simulate batteries in a stacked architecture. The isolation barrier (750 V or 1 kV - version dependent) allows the module to be used as a lower power version of a battery stack representative of those used for vehicle propulsion.

An equally important function of each channel is the ability to simulate a battery under charge. Each channel can sink up to 300 mA which is programmed either by setting a crude charging current limit in steps with different granularity, depending on the current sink type, or more precisely by setting the required current value - also dependent upon the current sink type.

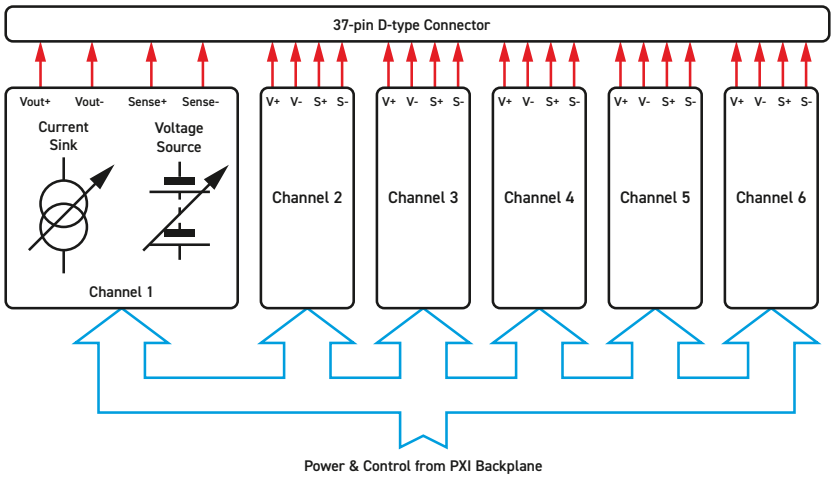
Each channel provides independent power and sense connections, allowing the simulator to sense a remote load and correct for wiring losses. The battery simulator is designed to respond to dynamic loads, minimizing the need for local decoupling capacitors at the load. The module also has the ability to independently read the voltage at the load (via sense lines) and current for each channel.

A control line on the user connector allows the user to shutdown all battery simulator channels with one signal. Multiple control lines may be linked together to provide an easy way of inhibiting the output when using many series connected modules. This also provides a means of automatic shutdown when connectors are removed.

When supplied with I/V readback the driver can automatically adjust the output voltage of the module through a feedback system, allowing greater output accuracy. Alternatively, if the load is known this can be defined when setting a voltage, allowing stored calibration data to be used to improve the output accuracy.

The 41/43-752A can be used as a 6 channel fully isolated power supply with independent sense lines on each channel.

The user connector is a 37-pin high voltage D-type which is fully supported by our wide range of connector accessories.



41/43-752A 6-Channel Battery Simulator - Functional Block Diagram

Issue 2.3 November 2025

Specification

Number of Channels:	6, 4 or 2 independent isolated channels.
Output Voltage Range:	0 to 7 V, settable with 14-bit resolution (approximately 0.43 mV).
Output Voltage Accuracy:	±5 mV from 1 V to 7 V, degrading 1 mV per 10 mA load change from given load. Over ambient temperature range +11 °C to +31 °C.
Isolation Voltage:	±750 V, up to 1k V, module dependent
Output Current:	Up to 300 mA per channel for voltages from 2.5 V to 7 V. Linearly de-rate to 200 mA into a short circuit below 2.5 V without thermal shutdown.
Current Sink:	Variable current sink permits the output to be loaded so the battery simulator can sink current from a charger. The design of the sink limits the current of a channel to 300 mA. Depending upon the type of sink, it can be set in steps with differing granularity, spanning between 16 linear steps, down to single milliamp steps across the range. Please see the manual for more information. Current sink setting should be used for limiting the current available at the output and may not represent precisely the current set by user.
Output Connections:	Vout+, Vout- and two sense inputs for each simulator channel. Sense inputs detect output voltage at front panel connector if no remote sense lines are connected.
Current Readback:	Resolution: <100 µA Accuracy: ±1 % of Reading, +0.05 % of Full Scale
Voltage Readback:	Resolution: <1 mV Accuracy: ±0.1 % of Full Scale (Typical), ±0.6 % of Full Scale (Max.)
Load Response Time:	250 µs
Power Source:	PXI backplane: +12 V, +5 V, +3.3 V & -12 V PXIe backplane: +12 V, & +3.3 V

Power Requirements - 41-752A

+3.3 V	+5 V	+12 V	-12 V
0.8 A	2.0 A	0.6 A	0.3 A

Power Requirements - 43-752A

+3.3 V	+12 V
1.12 A	2.14 A

At maximum load for all channels.

Recommended Chassis

For PXI versions, the recommended chassis are 60-103 and 60-103A or 40-923 and 40-923A for applications requiring many modules (up to 18 off) in a single chassis to avoid chassis limitations.
For PXIe versions the recommended chassis are the 42-924 (8-slot) and 42-925 (18-slot).

Mechanical Characteristics

41-752A - Single slot 3 U PXI (CompactPCI card).
43-752A - 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

41-752A - PXI bus via 32-bit P1/J1 backplane connector.
43-752A - PXIe bus via XJ3 and XJ4 backplane connectors.
Signals via front panel 37-pin male high voltage D-type connector, for pin outs please refer to the operating manual.

PXI & CompactPCI Compliance - 41-752A

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 - 43-752A

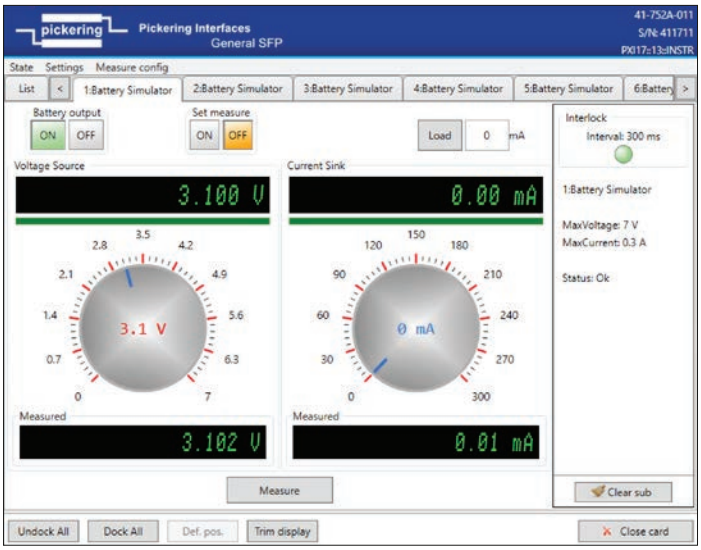
The module is compliant with the PXIe Specification 1.0.
Local Bus, Trigger Bus & Star Trigger are not implemented.

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.

Operating/Storage Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m
Storage/Transport Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m



Soft Front Panel for Battery Simulator Modules



43-752A-001 PXIe 6-Channel Battery Simulator Module

Product Order Codes

PXI Battery Simulator Without I/V Readback, 750 V isolation	
6-Channel, Standard Current Sink	41-752A-001
4-Channel, Standard Current Sink	41-752A-002
2-Channel, Standard Current Sink	41-752A-003
PXI Battery Simulator With I/V Readback, 750 V isolation	
6-Channel, Standard Current Sink	41-752A-011
4-Channel, Standard Current Sink	41-752A-012
2-Channel, Standard Current Sink	41-752A-013
PXIe Battery Simulator Without I/V Readback, 750 V isolation	
6-Channel, Standard Current Sink	43-752A-001
4-Channel, Standard Current Sink	43-752A-002
2-Channel, Standard Current Sink	43-752A-003
PXIe Battery Simulator With I/V Readback, 750 V isolation	
6-Channel, Standard Current Sink	43-752A-011
4-Channel, Standard Current Sink	43-752A-012
2-Channel, Standard Current Sink	43-752A-013
PXI Battery Simulator Without I/V Readback, 1 kV isolation	
6-Channel, Precise Current Sink	41-752A-101
4-Channel, Precise Current Sink	41-752A-102
2-Channel, Precise Current Sink	41-752A-103
PXI Battery Simulator With I/V Readback, 1 kV isolation	
6-Channel, Precise Current Sink	41-752A-111
4-Channel, Precise Current Sink	41-752A-112
2-Channel, Precise Current Sink	41-752A-113
PXIe Battery Simulator Without I/V Readback, 1 kV isolation	
6-Channel, Precise Current Sink	43-752A-101
4-Channel, Precise Current Sink	43-752A-102
2-Channel, Precise Current Sink	43-752A-103
PXIe Battery Simulator With I/V Readback, 1 kV isolation	
6-Channel, Precise Current Sink	43-752A-111
4-Channel, Precise Current Sink	43-752A-112
2-Channel, Precise Current Sink	43-752A-113

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.

Special Builds

PXI Battery Simulator Without I/V Readback, 750 V isolation	
6-Channel, Simplified Current Sink	41-752A-901
4-Channel, Simplified Current Sink	41-752A-902
2-Channel, Simplified Current Sink	41-752A-903
PXI Battery Simulator With I/V Readback, 750 V isolation	
6-Channel, Simplified Current Sink	41-752A-911
4-Channel, Simplified Current Sink	41-752A-912
2-Channel, Simplified Current Sink	41-752A-913
PXIe Battery Simulator Without I/V Readback, 750 V isolation	
6-Channel, Simplified Current Sink	43-752A-901
4-Channel, Simplified Current Sink	43-752A-902
2-Channel, Simplified Current Sink	43-752A-903
PXIe Battery Simulator With I/V Readback, 750 V isolation	
6-Channel, Simplified Current Sink	43-752A-911
4-Channel, Simplified Current Sink	43-752A-912
2-Channel, Simplified Current Sink	43-752A-913

Support Products

Mating Connectors & Cabling

For connection accessories for the 41/43-752A modules please refer to the 90-007HVD 37-pin High Voltage D-type Connector data sheet where a complete list and documentation can be found for accessories.



Pickering can supply mating connectors and cable assemblies to enable easy integration of the 41/43-752A battery simulator modules

Chassis Compatibility

The PXI versions of this module 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

PXI and PXIe (with PXIe and/or Hybrid slots) Chassis from any Vendor:

- Mix our 1000+ PXI/PXIe switching & simulation modules with any vendor's PXI/PXIe 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 PXI Switching & Simulation Modules:

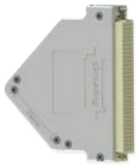
- Choose from 1000+ Pickering PXI Modules
- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- 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. These accessories are detailed in Connector Accessories data sheets, where a complete list and documentation can be found for each accessory.



Connectors & Backshells



Multi-way Cable Assemblies



RF Cable Assemblies



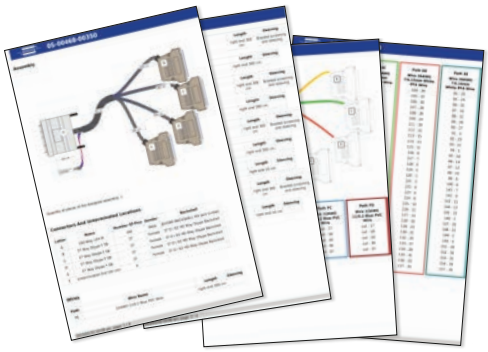
Breakouts



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.

- Fully supported on modern browsers and tablet operating systems.
- Built-in tutorials and videos allow you to get quickly up to speed.
- Store cable assemblies in the Cloud and develop over time.
- Each cable design has a downloadable PDF documentation file detailing all specifications



Start designing your custom cabling, go to pickeringtest.com/cdt

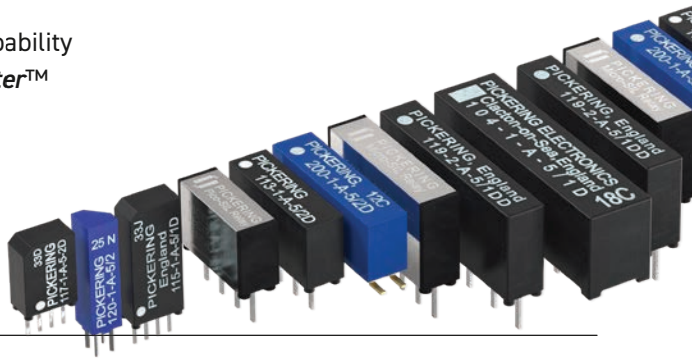
Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for PXI/LXI based test systems. Our modules are fully supported by 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 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 more information go to pickeringtest.com/os

The VISA driver support is provided for LabVIEW Real Time Operating Systems (Pharlap and Linux-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++)
- **Programming Languages** C, C++, C#, Python
- **Keysight** VEE and OpenTAP
- **Mathworks MATLAB, Simulink**
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

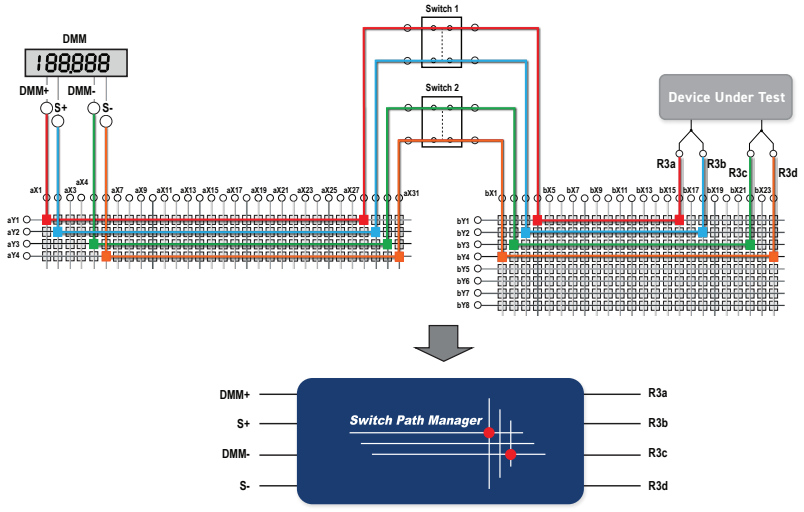
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments 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 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 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 three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available with various levels for 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 go to pickeringtest.com/support

Available Product Resources

We have a library of resources including success stories, product and support videos, articles and white papers as well as application-specific brochures to assist you. We have also published reference books on switching technology and the PXI and LXI standards.

To view, download or request any of our product resources go to pickeringtest.com/resources



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