

- Chassis Mounting Frame for Modular Breakout System
- Supports Modular Patch Panels Optimised for Fault Insertion
- Designed for Pickering PXI, Hybrid Chassis & LXI Modular Chassis
- Supports Breakouts for Specific Pickering FIU & Resistor Modules
- Many Breakout Options for Different Current and/or Voltage Requirements
- Customized Breakout Versions Available to Match Specific Requirements
- 3 Year Warranty



Modular Breakout System: MBoS Chassis fitted with an 18-Slot PXI Chassis and Breakout Modules

Designed to Simplify HILS Applications

Traditional HILS (Hardware In the Loop Simulation) features signal switching for the purpose of injecting faults into a UUT (Unit Under Test). In addition, a Breakout Box (BoB) is used to make manual measurements as well as induce faults manually prior to writing test code. The majority of the BoBs and FIU systems available today are not modular and are fixed in configuration, creating test solutions that are limited in scope. In addition, they have cable configurations that are cumbersome and in many cases expensive.

Modular in a Single Unit

The low-cost Modular Breakout System combines a BoB feature set with the added flexibility of an FIU. By mating the FIU chassis directly to the BoB, cabling is minimized, creating a more compact reliable design and improving signal integrity. In addition, all cables to the simulation system and the UUT are located behind the front panel of the BoB. This creates a simpler front panel that is less prone to damage.

MBoS System Definition

The MBoS system is based on two common mechanical frameworks that, with an adaptor plate, can be configured to suit different chassis types. To aid with selection, part numbers are defined that include both the framework and adaptor plate. Once the framework has been selected (based on the required chassis) the user selects the number and type of breakout module(s) required. To ensure suitability of the MBoS configuration it is recommended that the local Pickering sales office is contacted to review the requirements.

Note, due to the physical size of the 18/19-slot chassis the final right hand side slot in each chassis is not accessible when used with the MBoS frame. This limitation is not present on the 7, 8 or 14-slot chassis.

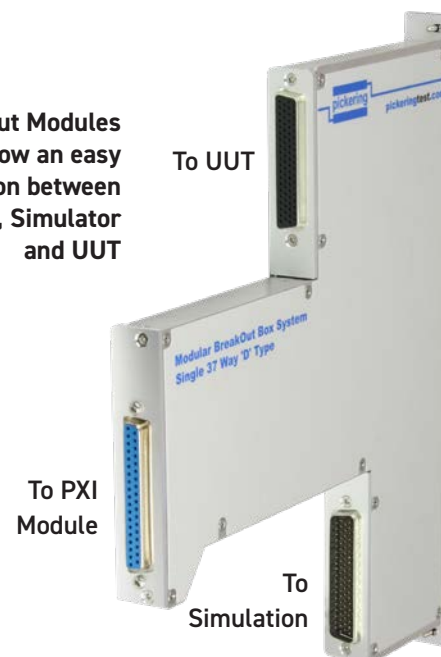
The breakout modules are designed for all versions of the associated module irrespective, for example, of the number of channels. This commonality reduces spares inventory and assists with product selection.

Choices for FIU and Breakout System Requirements

As the modular design uses PXI, users can take advantage of Pickering's large range of FIU modules - the largest in the industry. This range of FIU modules is available in different choices for channel count, fault buses, voltage and current. Multiple FIU module types can be installed in a chassis. Go to: pickeringtest.com/products/pxi-switching/fault-signal-insertion to see the broad range of choices.

In addition, the Breakout modules are optimized for each FIU module, so it is as customizable as the FIU system.

Breakout Modules allow an easy connection between the FIU, Simulator and UUT

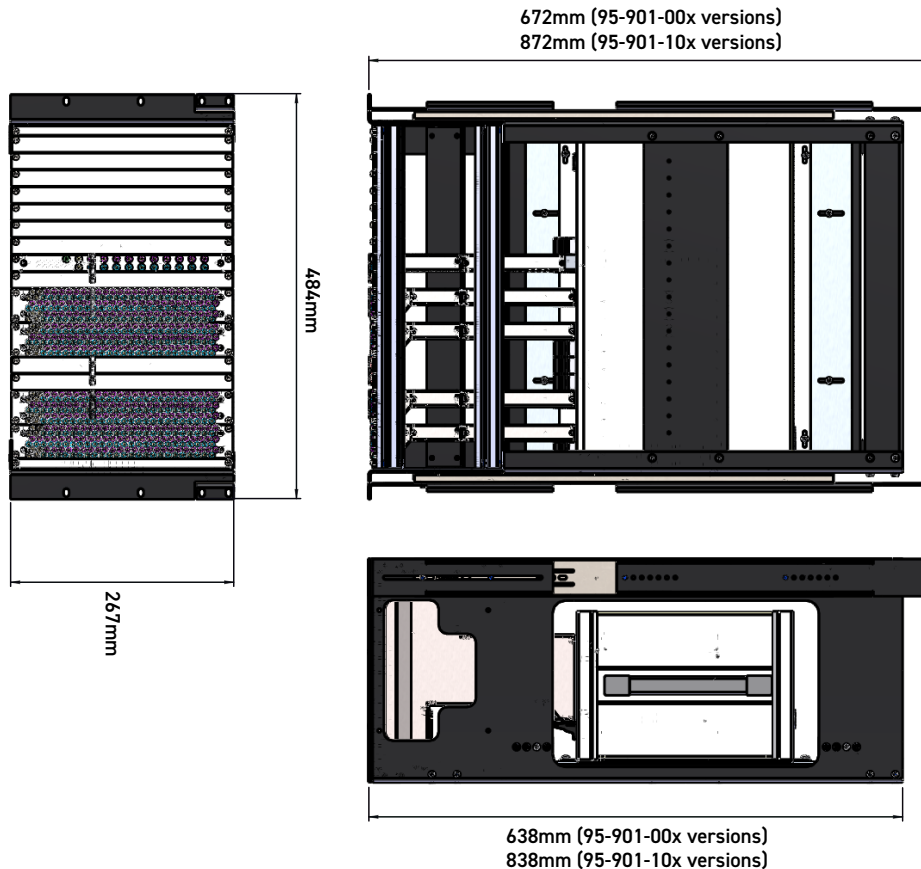




Breakout Modules are available for specific PXI Fault Insertion Switches & Programmable Resistors - see individual Breakout data sheets for details

Specification

MBoS Frame Dimensions:	Full width 19 inch rack, 6 U high, 638 mm depth (95-901-00x versions), 838 mm depth (95-901-10x versions).
Chassis Compatibility:	PXI Chassis: 40-908-x01, 40-914-x01, 40-924-001 & 40-923A-001, LXI Modular Chassis: 60-102C-001 & 60-103D-001. Hybrid chassis: 42-924-001, 42-925-001, 42-926-001, NI PXIe-1084 & NI PXIe-1092
PXI Module Compatibility:	Breakout modules are available for specific 1 or 2 slot fault insertion switch modules and selected programmable resistor modules.
Breakout Module Front Panel Connectors:	2 mm female terminals rated at 30 VAC, 60 VDC, 10 A. 4 mm female terminals rated at 1000 V, 32 A. See individual Breakout Module data sheets for more information.



MBoS Chassis Mounting Frame Dimensions

Programmable Resistance

Traditional BoB designs feature a manual potentiometer for creating resistive faults. Pickering can automate this process using one of our programmable resistance modules for which a Breakout System module is available. The module can be controlled manually through a soft front panel as well as programmatically. This can speed up a test process and ensure repeatability.

Field Upgradable

If testing needs to change, both Breakout System modules and FIU modules can be added and/or replaced by the user. The software driver from Pickering supports our entire FIU range, so no new software is needed to integrate the new modules.

New Designs

Pickering is always looking to expand our catalog of FIU and Breakout System options. If you don't see what you need, contact us and we will see if we can accommodate your test requirements.

Breakout Module Capability

The voltage and current specifications of the Breakout System module's UUT and simulation ports are matched to the FIU module for which they are designed, but the front panel 2 mm terminals are for low voltage (30 VAC/60 VDC) monitoring purposes only.

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

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 - MBoS Support Frame

Small for 40-908-x01, 8-slot chassis or 40-914-x01, 14-slot chassis	95-901-001
Small for 42-924-001, 8-slot chassis	95-901-004
Small for 40-924-001, 8-slot or 60-102C-001, 7-slot chassis	95-901-005
Large for 40-923A-001, 19-slot or 60-103D-001, 18-slot chassis	95-901-101
Large for NI PXIe-1084, 18-slot chassis	95-901-103
Large for 42-925-001, 18-slot chassis or 42-926-001, 18-slot chassis	95-901-104
Large for NI PXIe-1092, 10-slot chassis	95-901-105
Obsolete:	
Small for 40-922-001, 8-slot or 60-102B-001, 7-slot chassis	95-901-003

Connectivity Solutions

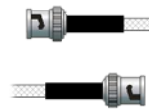
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed 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 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
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

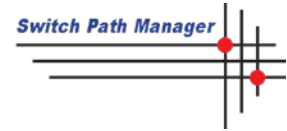
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

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