60-901 User Manual

LXI Simulation Tool



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ISO 9001
Reg No. FM38792

TECHNICAL SUPPORT

For Technical Support please contact Pickering Interfaces either by phone, the website or via e-mail.

WARRANTY

All products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for a period of three years, excluding programmable power supplies, from the date of delivery to the original purchaser. Any product found to be defective within this period will, at the discretion of Pickering Interfaces be repaired or replaced.

Products serviced and repaired outside of the warranty period are warranted for ninety days.

Extended warranty and service are available. Please contact Pickering Interfaces by phone, the website or via e-mail.

ENVIRONMENTAL POLICY

Pickering Interfaces operates under an environmental management system similar to ISO 14001.

Pickering Interfaces strives to fulfil all relevant environmental laws and regulations and reduce wastes and releases to the environment. Pickering Interfaces aims to design and operate products in a way that protects the environment and the health and safety of its employees, customers and the public. Pickering Interfaces endeavours to develop and manufacture products that can be produced, distributed, used and recycled, or disposed of, in a safe and environmentally friendly manner.

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PRODUCT SAFETY

SAFETY SYMBOLS

The following safety symbols may be used on the product and throughout the product documentation.

MEANING / DESCRIPTION	SYMBOL
PROTECTIVE EARTH (GROUND) To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode.	
DANGEROUS VOLTAGE To indicate hazards arising from dangerous voltages.	
WARNING / CAUTION An appropriate safety instruction should be followed or caution to a potential hazard exists. Refer to the relevant instructions detailed within the product manual.	
HEAVY If this product is heavy reference should be made to the safety instructions for provisions of lifting and moving.	
STATIC SENSITIVE To indicate that static sensitive devices are present and handling precautions should be followed.	

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WARNINGS AND CAUTIONS

WARNING - HAZARDOUS ENVIRONMENTS	SYMBOL
This product is not specifically designed for use in hazardous environments, for example in explosive atmospheres. If the product is to be used in hazardous environments we recommend that the user ensures suitable protective measures are taken.	

CAUTION - HANDLING OF ELECTROSTATIC-SENSITIVE DEVICES	SYMBOL
Certain semiconductor devices used in this equipment are liable to damage due to static voltage. Observe the following precautions when handling these devices in their unterminated state, or sub-assemblies containing these devices: 1. Persons removing sub-assemblies from equipment using these devices must be earthed by a wrist strap and a resistor at the point provided on the equipment. 2. Soldering irons used during the repair operations must be low voltage types with earthed tips and isolated from the mains voltage by a double insulated transformer. 3. Outer clothing worn must be unable to generate static charges. 4. Printed Circuit Boards (PCBs) fitted with these devices must be stored and transported in anti-static bags.	

CAUTION - PRODUCT DOCUMENTATION	SYMBOL
Suitably qualified & trained users should ensure that the accompanying documentation is fully read and understood before attempting to install or operate the product.	

SAFETY INSTRUCTIONS

SAFETY INSTRUCTIONS
All cleaning and servicing requires the equipment to be isolated and disconnected from the power source and user I/O signals (refer to the Maintenance Section). • Appropriate manual handling procedures should be followed as dictated by the weight of the device. • Should a fault occur with the device, immediately isolate and disconnect it from the incoming power. • Ensure the equipment is installed, operated and maintained by trained and authorised personnel. • For suitably equipped products in the event of an emergency press the red “emergency stop” button situated on the front of the unit.

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SECTION 1 - TECHNICAL SPECIFICATION

- Simulates All Pickering PXI & LXI Switching Products
- More Than 1000 Switching Product Configurations Available
- Supports Over 18 Simulated PXI Slots
- Allows Code Development Independently From The Application Hardware
- Ethernet 100base T Interface
- Powered From Standard 5V Inline Power Supply
- Highly Portable
- 3 Year Warranty



The 60-901 simulates of all Pickering's PXI and LXI switching products, and most of the simulation and instrumentation range in one highly portable package. Each product is supported as a virtual LXI device allowing code development with minimal hardware, it also has the ability to show real-time switching and debug information and comes complete with a driverless soft front panel that provides complete control of the module's functions. The 60-901 provides the user with a simple and highly portable platform for application development.

Supported Products

The 60-901 allows the user to simulate any of Pickering Interface's PXI switching modules fitted into a virtual Modular LXI Chassis, over 18 virtual PXI card slots can be supported. There is also partial support for Pickering's simulation and instrumentation modules including programmable resistors. All Pickering's LXI switching products are also supported.

Software

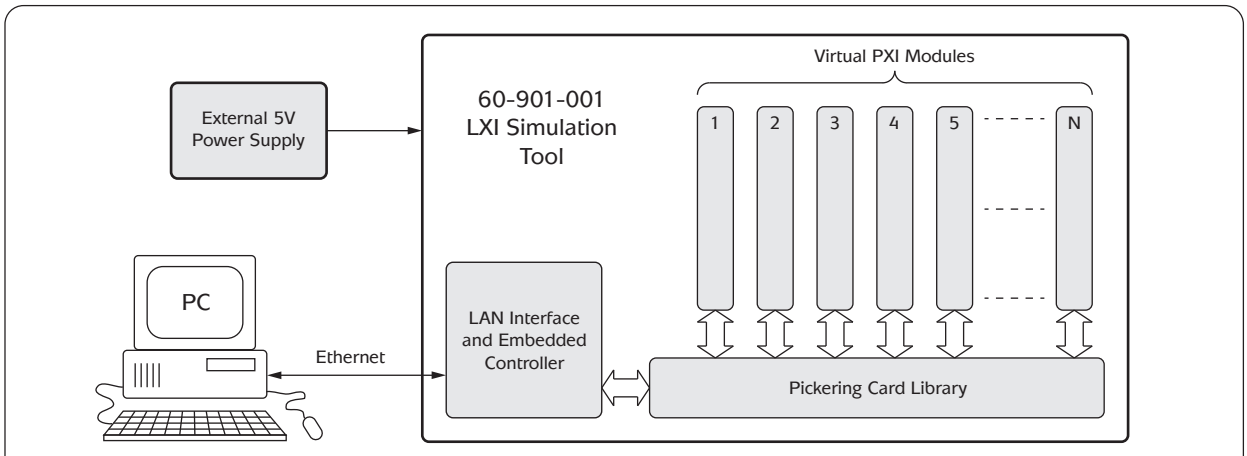
The tool provides a link to a downloadable generic IVI driver to control the PXI and LXI products in accordance with the LXI specification, but can also be controlled through a kernel driver. A library of PXI and LXI products and firmware is installed on the Simulation Tool on a removable memory card, allowing easy upgrades.

Code Development

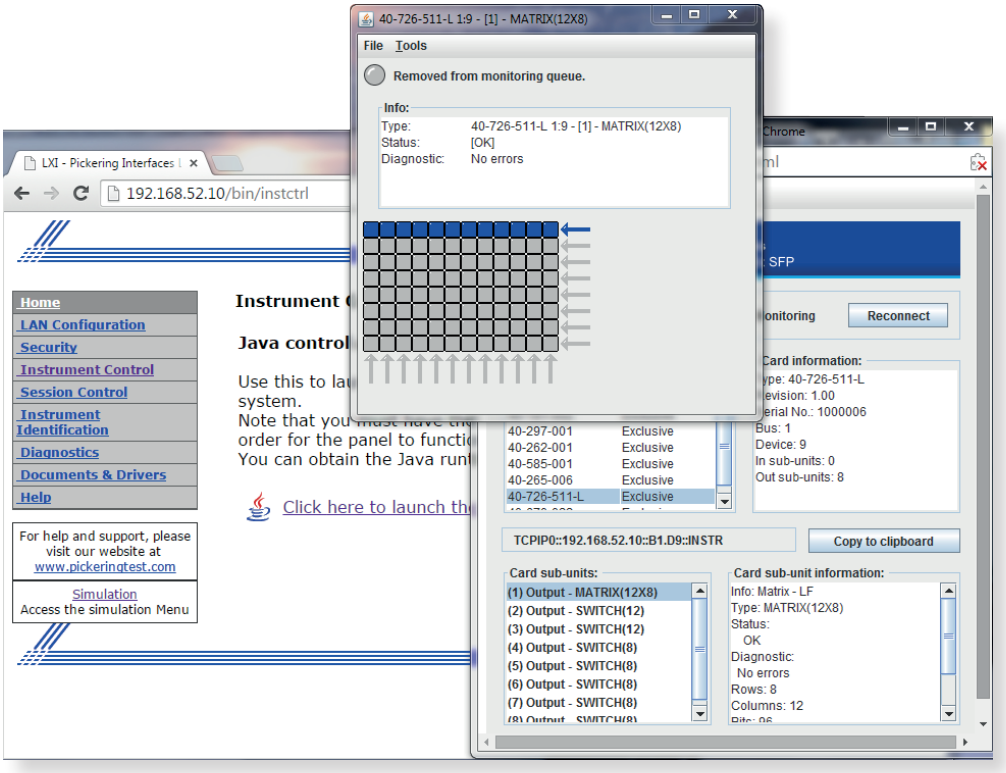
Our standard LXI driver and debug panel are provided to assist application development. An 8x8 LED matrix on the tool along with a web panel displays the switch status of the simulated module for debug purposes. With the 60-901 you can code and test your LXI control application before purchasing or connecting to your Pickering LXI test system.

Ethernet Control

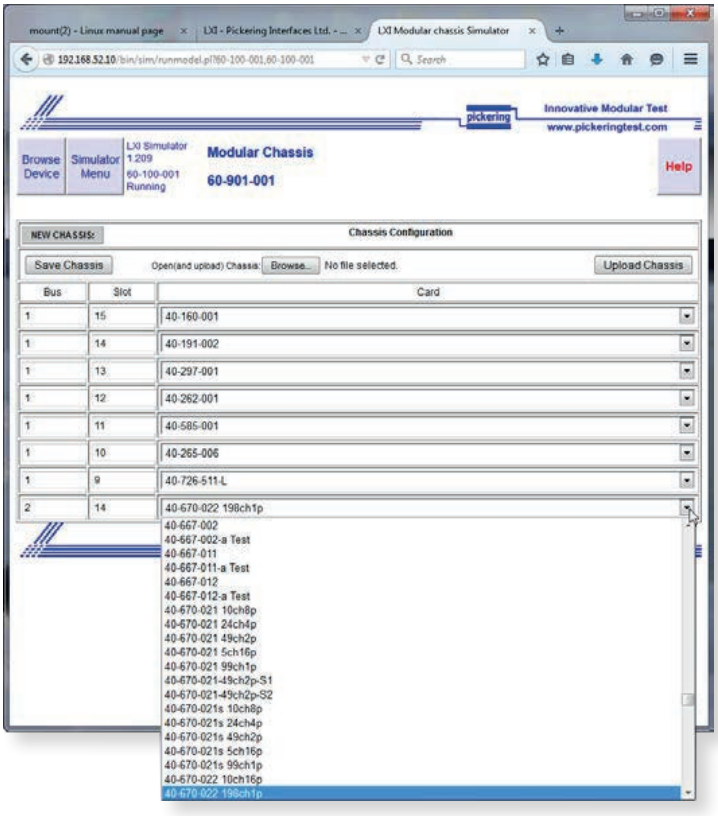
The Ethernet interface enables control through standard LAN interfaces found on all system PC/host controllers. The 60-901 can be easily configured using any standard web browser. The interface can be used to load a Java based soft front panel for any of the products simulated by the tool, permitting users to access products without the need for drivers on the PC/host.



Simulation of Pickering Interfaces PXI modules using the 60-901 LXI Simulation Tool provides an application development platform. A simple Ethernet lead is the only physical control connection required.



The 60-901 selected chassis provides soft front panels to enable manual operation through the web interface, in this example for a 40-726 matrix module.



Configuration page for a modular chassis which allows a choice of virtual PXI modules

Specification

Capacity:	Over 18 simulated user slots available.
Power Supply:	Supplied with a 5V 1A DC in line power supply.
Monitoring	
Top Panel Display:	Dual function LED matrix shows IP address and switch status.
LAN Interface	
Connector:	RJ45 Connector.
Connection Speed:	100baseT interface.
Supporting Documentation:	
Manuals, drivers and product catalogs can be downloaded from the Pickering Interfaces website.	
Mechanical Characteristics	
Dimensions:	Width: 94mm (3.70") Height: 76mm (3.00") Depth: 32mm (1.26")
Weight:	100g

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	10% to 95% non-condensing

Storage and Transport Conditions

Storage Temperature:	-20°C to +70°C
Humidity:	10% to 90% non-condensing

Safety & CE Compliance

All products 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.

The 60-901 LXI Simulator also complies with the European Restriction of Hazardous Substances directive (RoHS).

Product Compatibility

The LXI Simulator is supplied with links to drivers for the majority of Pickering's PXI and LXI products.	
Switching Support	All of Pickering Interface's PXI and LXI switching products.
Instrumentation support:	Partial support: PXI programmable resistor/ potentiometer modules and RF attenuators.
Soft Front Panel:	All supported products can be controlled through a standard W3C compliant web browser.
For a selection guide on the range of PXI modules capable of being simulated by the 60-901 tool, please see the PXI Module Selection Guide in the LXI Product Guide. This is available as a download from the On-Line Catalogs section of our website: pickeringtest.com	

Product Order Codes

LXI Simulation Tool	**60-901-001**

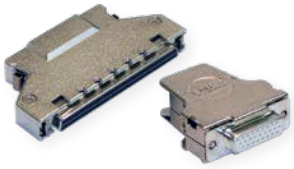
Product Customization

Pickering PXI 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.

Connectivity Solutions

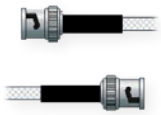
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed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



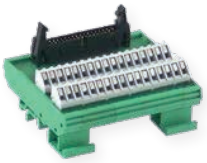
Connectors & Backshells



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.



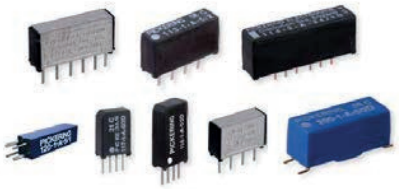
Mass Interconnect

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 sister company, Pickering Electronics. 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

All LXI devices are supplied with built-in software drivers, web pages for configuration and soft front panels as required by the LXI specification. A variety of drivers are provided (C, .NET, IVI, SOAP) 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 drivers may be used in many commonly used 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++, Visual C#)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

As well as various open source environments such as:

- **Sharp Develop**
- **Dev-C++**

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.

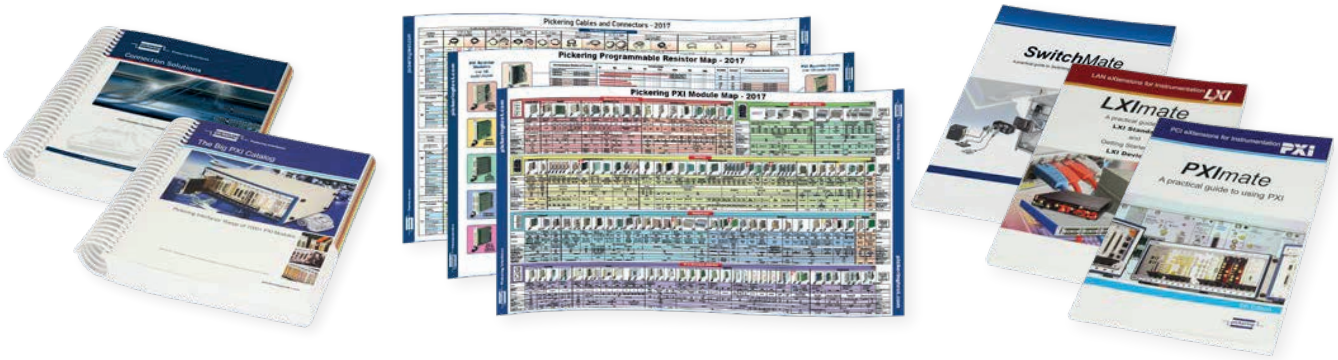
To learn more, please go to: pickeringtest.com/ebirst

Three Year Warranty

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, as well as complete product catalogs and product reference maps to assist when looking for the switching, simulation and cable and connector 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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SECTION 2 - TECHNICAL DESCRIPTION

FUNCTIONAL DESCRIPTION

The 60-901 LXI Simulation Tool is a self-contained unit capable of emulating all of Pickering's PXI and LXI switching products, the only connections required are power and an Ethernet lead. The tool consists of an embedded controller powered from an external 5V mains power unit. Control and programming information for Pickering's switching products is stored in the controller's memory enabling it to emulate any LXI device or any PXI switching module installed in an LXI Modular Switching Chassis. Over 18 PXI slots can be supported on a virtual PXI backplane. Control information for the tool is sent via the LAN interface from a remote computer using the tool's unique Ethernet address. An 8x8 LED matrix on the top panel of the tool can be used to display information such as the tool's Ethernet address or the switch status of the module being simulated.

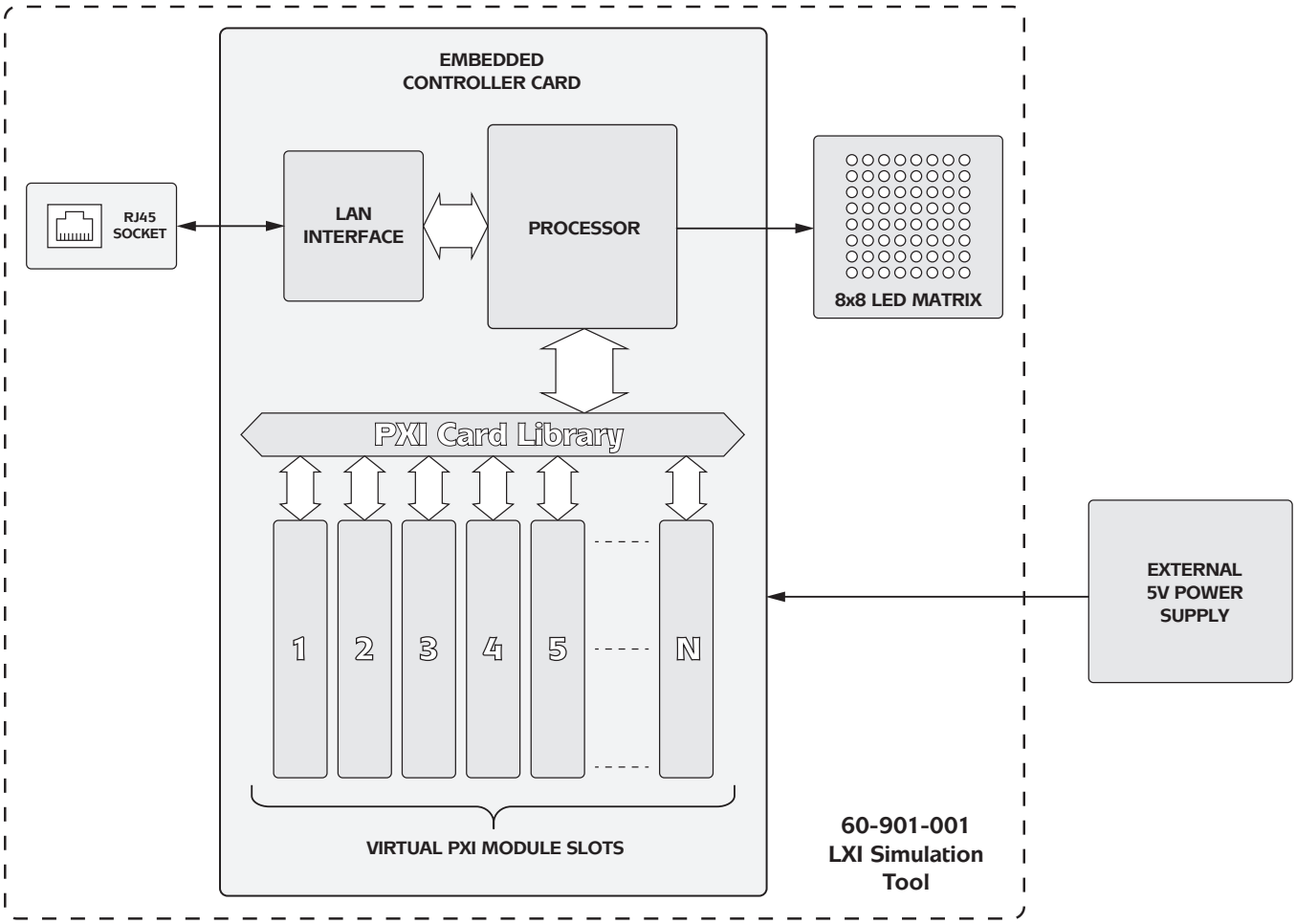


Figure 2.1 - Block Diagram for the 60-901 LXI Simulation Tool

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SECTION 3 - INSTALLATION

Refer to the Warnings and Cautions at the front of this manual

This unit is designed for indoor use only



INSTALLING THE SIMULATION TOOL

Site Considerations

The 60-901 is designed to be highly portable and operate on a desk top or any location near a power socket and LAN cable socket.

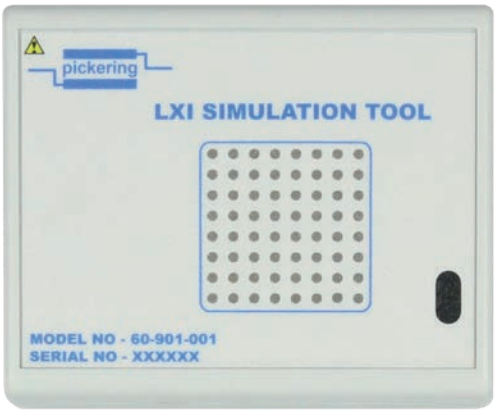


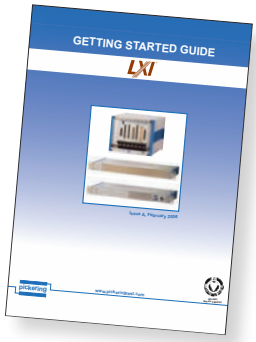
Figure 3.1 - Top view of the 60-901-001 LXI Simulation Tool

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SECTION 4 - CONFIGURATION & SET-UP

HARDWARE SET-UP

Before you begin, take a moment to check your box contents to ensure you have the necessary components present. Contact your local sales office if you find that any part or component is missing.







Your box will contain:

1. A 60-901-001 LXI Simulation Tool
2. The document entitled ‘Getting started with your LXI device’.
3. Two 2 metre ethernet patch leads:
   One labelled “Crossover” (grey) and the other “Straight-Through” (blue)
4. A power supply with pin adapters suitable for international usage
5. A micro SD card (may already be inserted into the Simulation Tool)

Remove your 60-901-001 Simulation Tool from its protective packaging.

Next, if it has not already been fitted, insert the supplied micro SD card into the slot on the left hand side of the Simulation Tool as shown below:



If you are using an ethernet hub or switch, use the Ethernet cable marked “Straight-Through”. Connect one end to the RJ45 socket on the right hand side of your 60-901-001 Simulation Tool, and the other to a free socket on your hub or switch. If you are connecting directly from your computer to the LXI device, use the Ethernet lead marked “Crossover”.

Note: When connecting directly to a computer with a Gigabit compliant Ethernet port the crossover cable may not be required, communication can be carried out using the straight-through cable.





The Simulation Tool is supplied with an international power adapter which includes four types of mains connector. First clip the correct pin format of connector for your country into the power adapter, then connect the flying lead from the adapter into the power socket on the right hand side of the Simulation Tool.

Insert the power adapter into a mains electricity socket. As the Simulation Tool has no power switch, it will start up as soon as power is applied.

Your Simulation Tool will now start going through its boot up procedure which can take up to 40 seconds to complete.



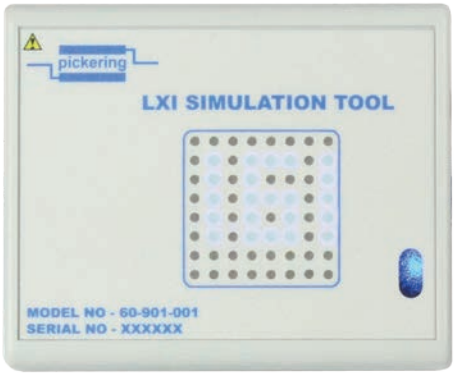
When the controller has successfully booted it will indicate its IP address by scrolling characters on its LED matrix display. If an IP address is not displayed, check your Ethernet connection.



CONNECTING THE 60-901-001 SIMULATION TOOL

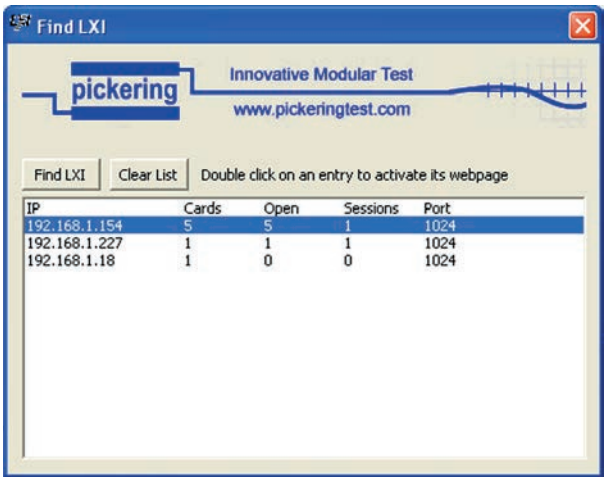
Control of the 60-901-001 Simulation Tool is through a web server at the devices IP address. From the web server the user can also access drivers, utility programs and documentation. So, it is important to first establish the IP address that your LXI device is using.

By default, Pickering LXI devices are configured using DHCP to acquire a TCP/IP address. When you have determined your LXI device's address you can proceed to configuring your 60-901-001 Simulation Tool's settings.



You can also establish your LXI Simulation Tool's TCP/IP address using one of three Discovery Tools.

The Pickering Discovery tools located on the CD included in your box can tell you the TCP/IP address your chassis is using. To use the CD, insert it into your computer's drive and wait for it to auto-run. On the first screen select *LXI PRODUCTS*.



1) Find LXI – a simple Windows application which will list all Pickering LXI devices. The home page of an LXI device is displayed when the corresponding IP address is highlighted and *Open Browser* selected.

2) VXI-11 Discovery protocol
Some tools, for example Agilent IO Library, provide a VXI-11 protocol discovery tool. This may be used to establish the address of any connected LXI compliant device.

A VXI-11 Discovery browser is supplied on the distribution CD and may be used to locate any LXI device, Pickering or otherwise. To run this, select the *VXI-11 Discovery* application.

3) Bonjour or Rendezvous discovery protocol (recommended)
By default, Pickering LXI devices have the Bonjour or Rendezvous service switched on, by using a suitable Bonjour client on your computer, you can search for and configure an LXI device without knowing its TCP/IP address beforehand. Use the MAC address printed on the top panel of the Simulation Tool and that present on the LXI devices homepage to confirm you are configuring the correct device if you have more than one LXI device running.

A Rendezvous browser is shipped on the CD, to use it click on the Rendezvous icon.

Then click on *Web Server (HTTP)*.

A list of devices and MAC addresses should be displayed. Double click on the device with the same model number and MAC address as the 60-901-001 Simulation Tool you are using (the MAC address is printed on the top panel of the simulation tool next to the serial number).

The IP address of the device will be displayed in the browser's address field in the format:

http://169.254.59.99/path=/

delete the /path=/ section of the address and press Return to display the 60-901-001 Home Page.

All the discovery tools are located on the Pickering distribution CD in the LXI Products/Tools directory.

Once you have a valid IP address, you can move on to configuring your LXI Simulation Tool's settings.

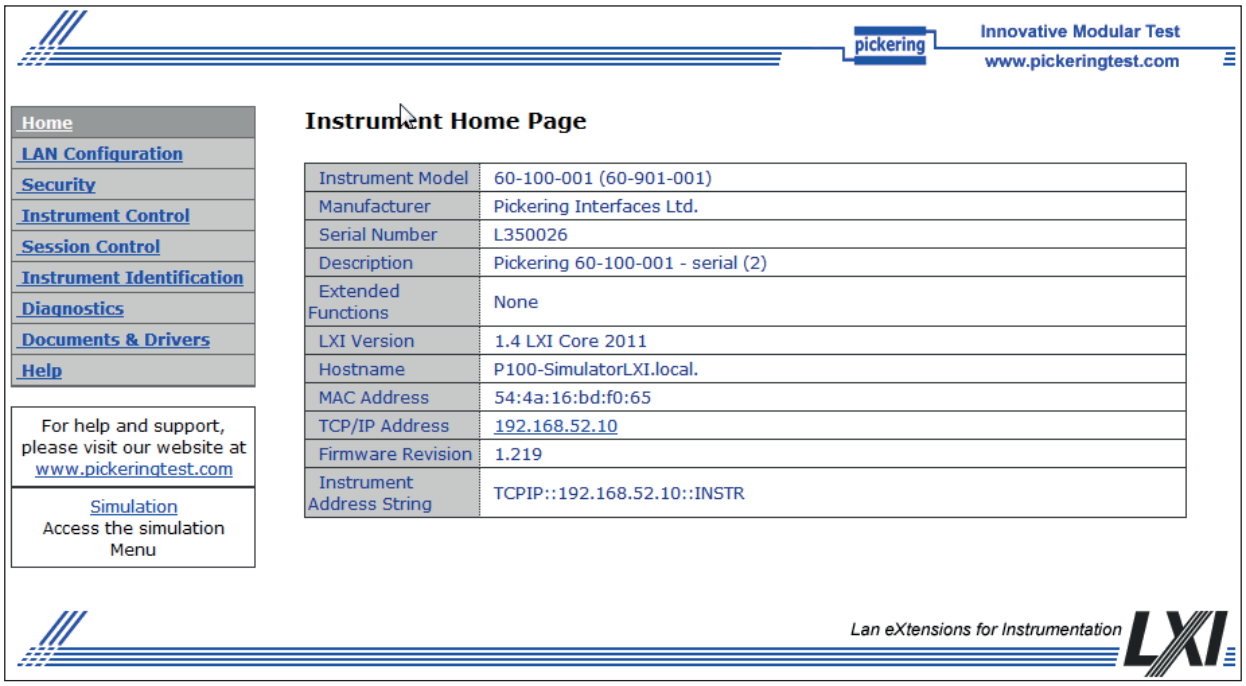
CONFIGURING THE 60-901-001 SIMULATION TOOL SETTINGS

When the 60-901 Simulation Tool is switched on it should display its IP address on the integral LED Matrix display, use your web browser to navigate to this IP address.

The simulation tool will arrive configured as a 60-100 chassis containing a small number of Pickering PXI cards by way of example. Use the 60-901's web configuration pages (described below) to configure the simulation tool for your own use.

Home page

The home page presented by the simulation tool is essentially the same as a real Pickering LXI Chassis with one additional link "Simulation" in the bottom left of the page. Select this link to configure the tool and use the simulation facilities plus device shut down.



Main Simulation page

Contains the following controls:

Browse Device button - To return to the 60-901's "Home page".

Status display - Shows the 60-901 firmware release, current LXI model being simulated and it's status which should be "running". If it is "stopped" try removing the last changes you applied to your simulated chassis.

Use the menu links to select the following:

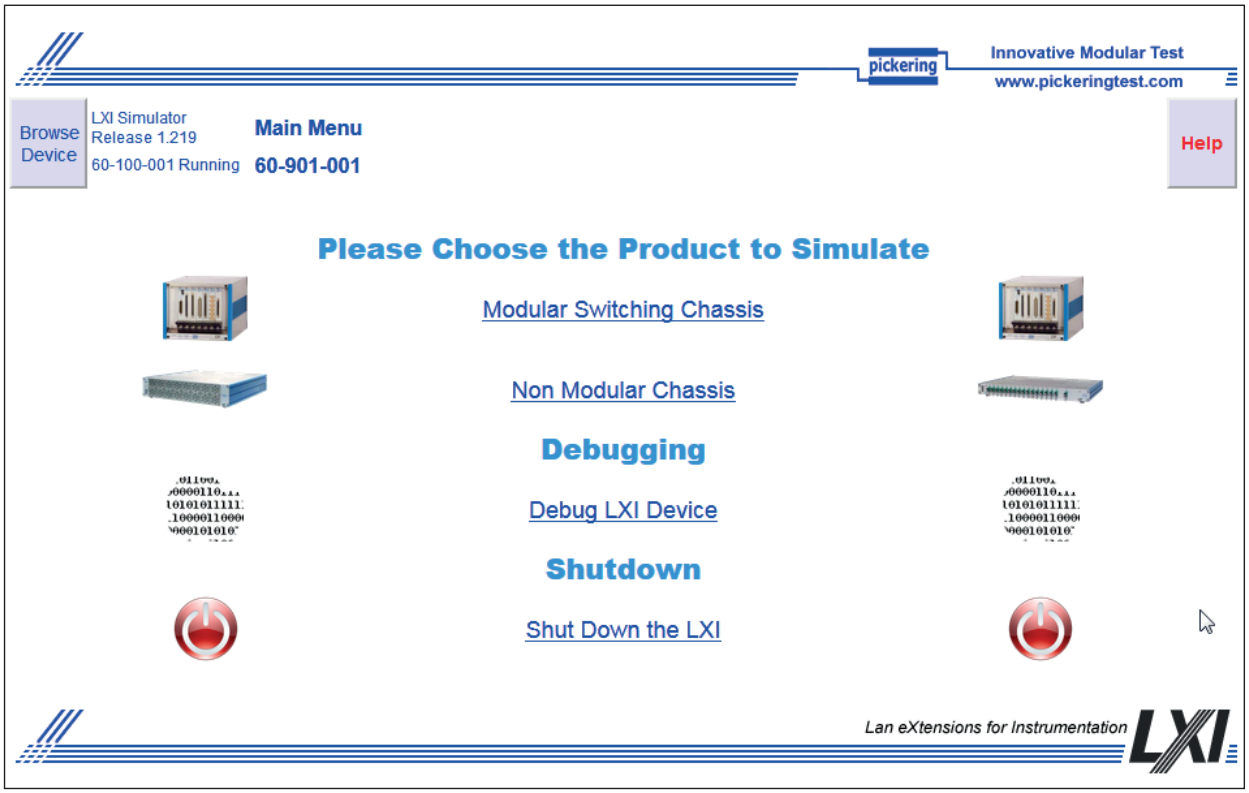
Modular Switching Chassis - This allows you to select a generic modular type chassis (e.g. similar to 60-100, 60-102B etc.) and populate it with a selection of Pickering PXI cards.*

Non Modular Chassis - Use this to select a chassis with integral card/switching capability.*

Debug LXI Device - This provides a valuable debugging aid to the development of your own programs using Pickering LXI products.

Shut Down the LXI - This is the preferred method of shutting the 60-901 down to prevent any data loss.

* **Warning:** The bus and slot addresses used in a simulated chassis will not exactly match those in a real chassis. Once you have developed an application using the simulator, you may need to alter its bus and slot addresses for use with a real chassis.



Modular Switching Chassis

This panel allows you to configure the 60-901 to simulate an LXI modular chassis with a variety of Pickering PXI cards (selected from the integral firmware database) mounted in it. Use the following controls:

Browse Device button - To return to the 60-901's "Home page".

Simulator Menu button - To return to the "Main Simulation page".

Status display - Shows the 60-901 firmware release, current LXI model being simulated and it's status which should be "running". If it is "stopped" try removing the last changes (cards added) and re-upload chassis.

Help button - Press this to display a help panel of useful information.

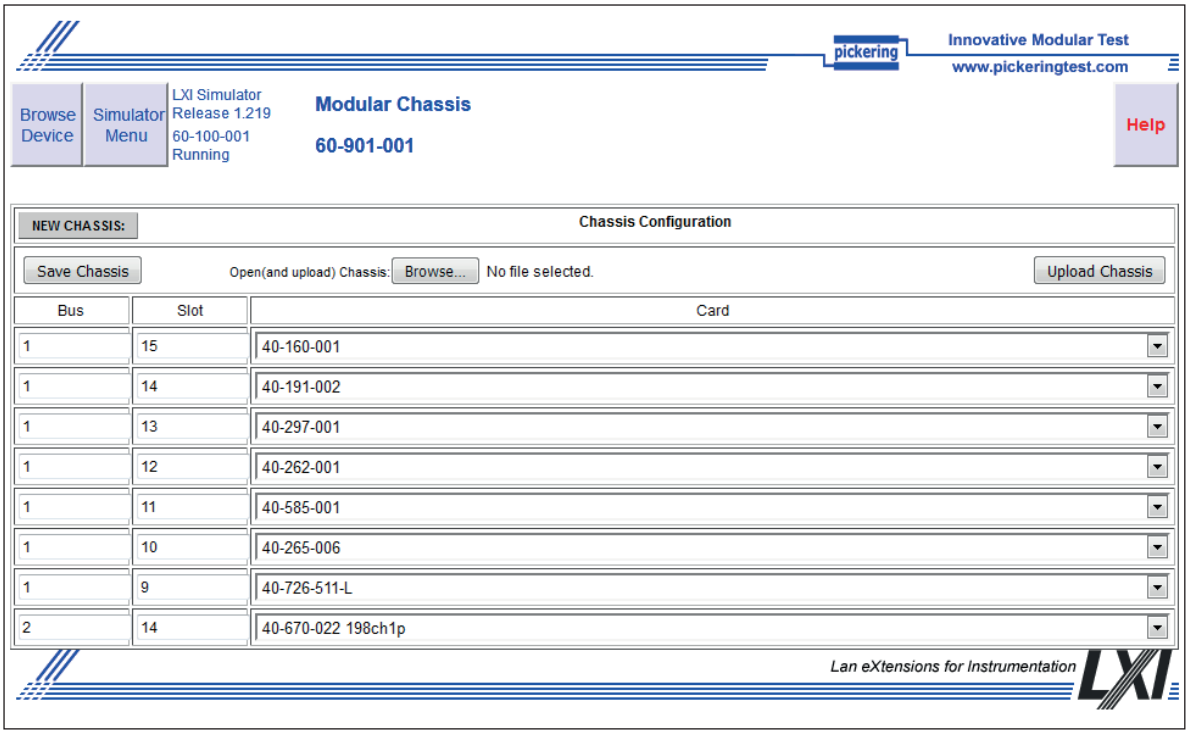
NEW CHASSIS - When you hover your mouse over this a drop down menu allows you to drop the existing chassis and select an empty chassis ready to add your chosen PXI cards.

Save Chassis button - This will save the current card/chassis settings (held within the web page) to your local disk for later recall.

Browse button - Load a previously saved card/chassis configuration into the web page and upload/save it to the 60-901.

Upload Chassis - Save the current card/chassis configuration (held in the web page) to the 60-901. This enables your configuration settings.

A table of one or more rows (depending on the chassis selected) should be displayed. Each row contains a bus and slot/device address (simulated PCI address) into which virtual Pickering cards can be loaded. Use the drop down list in each row to select your chosen cards. You can alter the bus and slot addresses to your own specification, but be careful not to enter duplicate addresses.



Non Modular Chassis

This panel allows you to select and simulate a non modular LXI chassis from the 60-901's integral database of Pickering chassis. Use the following controls:

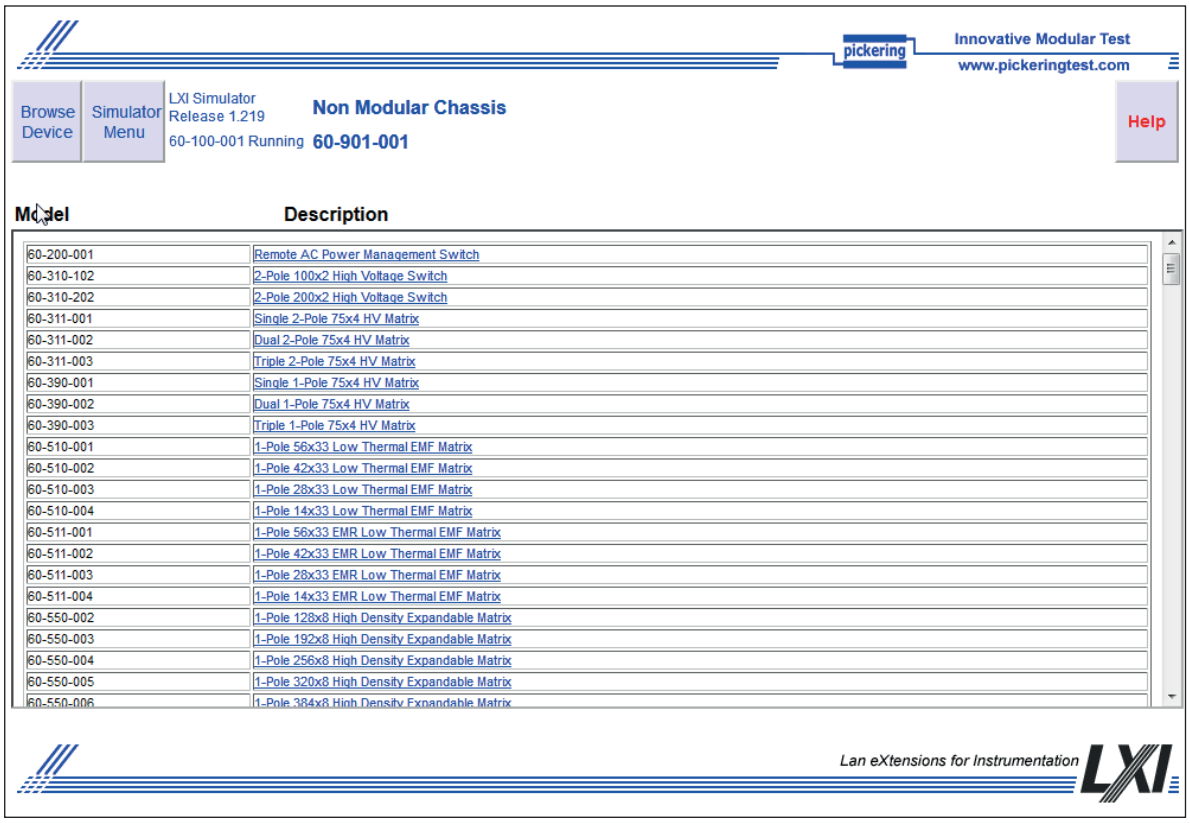
Browse Device button - To return to the 60-901's "Home page".

Simulator Menu button - To return to the "Main Simulation page".

Status display - Shows the 60-901 firmware release, current LXI model being simulated and its status which should be "running". If it is "stopped" try re-selecting the chassis from the model list.

Help button - Press this to display a help panel of useful information.

A table/list of all the available Pickering chassis's is provided, simply click on the description of the LXI model you wish to simulate.



Debug LXI Device

This panel is designed to assist with the development of applications using Pickering LXI products by providing status information about the devices being controlled.

The controls at the top of the panel “Browse Device”, “Simulator Menu”, status and “Help” have already been described in the preceding chassis configuration sections. Only the main debugging controls are described here as follows:

Card and Sub Unit selection section

Debug ON/OFF button - For Pickering support purposes only. This will toggle on and off a display which shows the status of the API calls being used by this panel.

Version Numbers - These are useful if you need to report a problem with the simulator to Pickering.

Status - Operation status messages will briefly display here. If an error message is permanently displayed the simulator may have crashed and you will need to try the following:

1. Close any applications using the simulator which may be holding the current card/sub unit open.
2. Select another card or subunit.
3. Reboot your 60-901.
4. Re-configure the 60-901.

Cards - Drop down list of cards currently in the chassis, select the card you wish to display or control in this panel.

SubUnits - Drop down list of the sub units within the currently selected card, Select the sub unit you wish to display or control in this panel.

Apply button - Display the status of the switches for the currently selected card/sub unit on the LED matrix.

IP display button - Display/scroll the 60-901’s IP address on the LED matrix.

LED Offset Row - Sets the top row of the LED 8x8 matrix to the specified row in the matrix sub unit. You must press the “Set LED to Sub Unit” button to activate this.

LED Offset Column - Sets the left column of the LED 8x8 matrix to the specified column in the sub unit. Single row switch sub units will wrap on to each row of the LED matrix enabling up to 64 switches to be displayed. You must press the “Set LED to Sub Unit” button to activate this.

Sub Unit display and control section

The sub unit's main attributes are displayed at the top of this section followed by the controls:

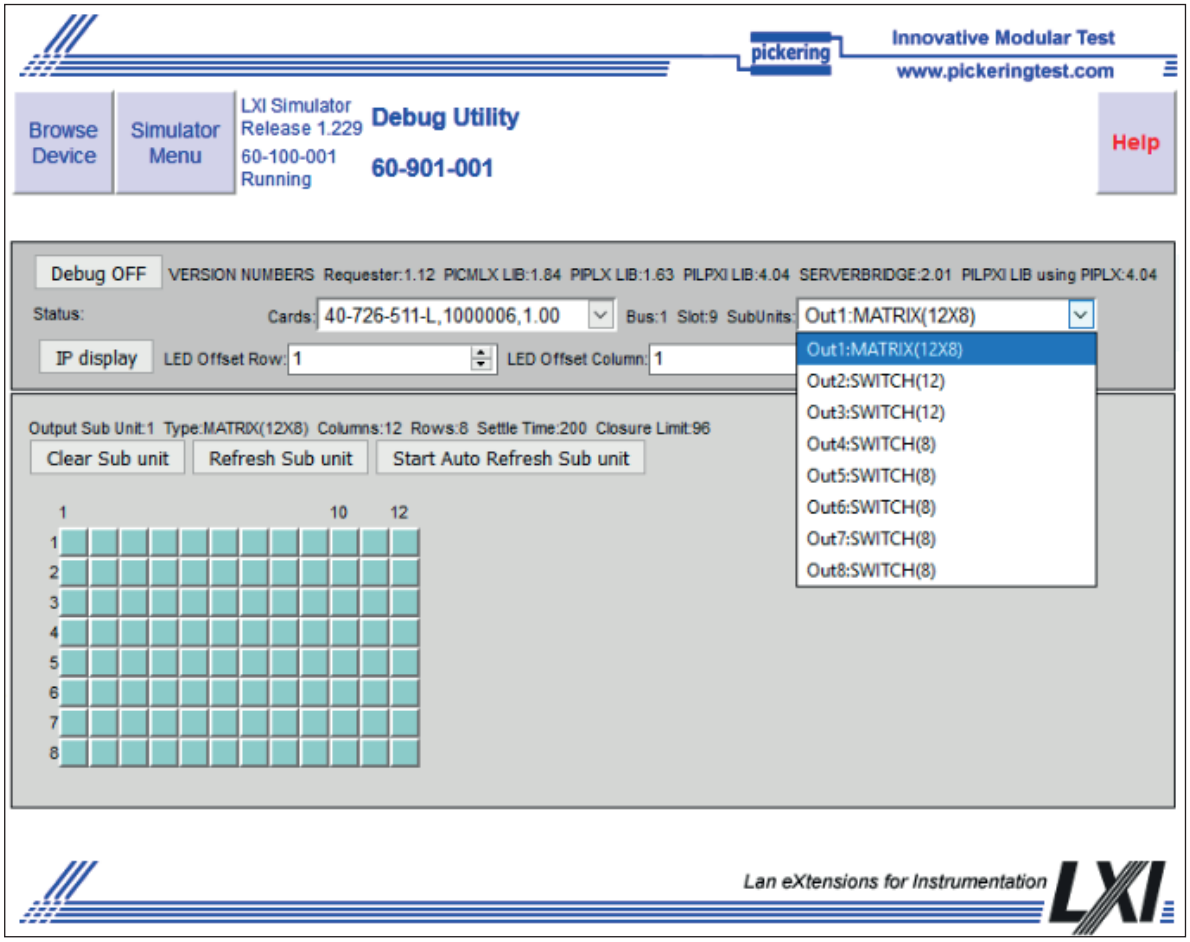
Clear Sub unit button - This will clear all the switches in the sub unit.

Refresh Sub unit button - This will display the current state of all the switches in the sub unit, useful for program debugging.

Start/Stop Auto Refresh Sub unit button - This will repeatedly refresh (at approximately 1 second intervals) the sub unit displaying the state of all the switches in the sub unit, useful for program debugging.

Sub unit map of buttons - Each button displays a switch state, press the button to change the switch state.

If the current sub unit is type is "resistor", the resistance attributes will be displayed together with a button and input control allowing you to set the resistance to a given value.



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SECTION 5 - PROGRAMMING GUIDE

PROGRAMMING OPTIONS FOR PICKERING INTERFACES LXI UNITS

For information on the installation and use of drivers and the programming of Pickering's products in various software environments, please refer to the Software User Manual.

This is available as a download from:
https://www.pickeringtest.com/support/software-drivers-and-downloads

Also, it can be accessed from the DVD supplied with the product:
<DVD_DRIVE>\downloads\Documentation\Software-Manual.pdf

UNIT ARCHITECTURE

Before discussing individual drivers it is important to understand the basic architecture of Pickering LXI units.

IP Address, Bus and Device

Each LXI unit has a unique IP address on your network. This address will depend on how you have configured your LXI unit and on network configuration. As delivered most LXI units are configured for dynamic address allocation, that is your network is expected to provide the IP address for the unit as part of its power-up sequence. This address may be configured as a fixed address, but there are possible problems, refer to the Getting Started guide for details on how to discover and configure your LXI unit.

Within an LXI unit, each switch card occupies a PCI slot, and so has a unique bus/device location with the embedded computer. It is vital to know that location in order to specify the address of the switch to be controlled.

Pickering provide software tools to help you discover the bus and device number of the cards in your LXI unit. Refer to the distribution disk that came with your unit in the folder LXI Products/Tools.

Sub-units

Pickering PXI cards contain one or more independently addressable functional blocks, or sub-units. Sub-unit numbers begin at 1, and separate sequences are used for input and output functions. This number is used in function calls to access the appropriate block. Generally, sub-unit numbers correspond directly to the bank numbers specified in hardware documentation.

Sub-unit examples:

Model	Configuration	INPUT sub-unit #1	OUTPUT sub-unit #1	OUTPUT sub-unit #2	OUTPUT sub-unit #3
40-110-021	16 SPDT switches	None	16 SPDT switches	None	None
40-290-121	Dual Programmable resistors + 16 SPDT switches	None	Resistor #1	Resistor #2	16 SPDT switches
40-490-001	Digital I/O	16-channel inputs	32-channel outputs	None	None
40-511-021	Dual 12 x 4 matrix	None	12 x 4 matrix #1	12 x 4 matrix #2	None

Sub-unit characteristics

The numbers of input and output sub-units in a card can be obtained using functions from the library:

For example, in the basic piplx library:

```
PIPLX_EnumerateSubs
PIPLX_SubType, PIPLX_SubInfo
```

Are used to identify the individual sub-units on a card.

Controlling a Switch

To control a Pickering switch the command must contain the full location of the sub-unit being controlled; the IP address of the LXI unit, the bus/device location of the particular card in that LXI unit, and the sub-unit which contains the switch to be controlled.

A number of tools are available to locate the IP address of an LXI unit. Refer to the “Getting Started” guide delivered with your unit, also available on the distribution disk in the “LXI Products” folder. Only Pickering tools such as “Find LXI” will identify the switch card bus/device location. Pickering Direct I/O driver includes functions to allow a Pickering LXI unit to be found programmatically

To control a card there are a number of steps required. For example using PIPLX it is necessary to first open a session on a specified LXI unit, then to obtain a handle to a particular card in the LXI unit and finally to issue commands to a particular sub-unit on that card.

For example, to access the card at bus 0, device 20, on the LXI unit at 192.168.1.100 :

```
PICMLX_Connect(0, “192.168.1.100”, 1024, 2000, &session)
PIPLX_OpenSpecifiedCard(session, 0, 20, &card_num)
PIPLX_OpBit(session, card_num, sub-unit, bit, state)
```

Using the IVI driver, the connect and open functions are combined in the pi40iv_InitWithOptions function where the VISA resource string will specify the IP address and the card bus,device location, for example:

```
pi40iv_InitWithOptions(“TCPIP::192.168.1.100::0.20::INSTR”,….)
```

Here the resource string identifies an IP address of 192.168.1.100 and then the bus, device location as 0.20, that is bus 0, device 20.

For full details of how to access and use Pickering drivers the user is advised to refer to the individual documentation packs provided with the installed drivers, this can be found on the distribution disk that came with your unit.

Installing the Drivers

Once you have discovered your LXI device, follow the links on its web pages to download and install the device driver. Once installed, you will have access to the basic Direct IO driver, piplx. Instructions, help and examples may be found in the installation folder.

Further drivers are available but may need further steps for installation, for example the IVI driver, pi40iv, requires the prior installation of VISA and the IVI Compliance Package from National Instruments (NB a license may be required from NI for use of these drivers).

COMMAND LINE CONTROL OF PICKERING LXI INSTRUMENTS

Overview

The utility provided was ported to the LXI instrument from the Windows utility PILMon and provides identical functionality.

For more information see the “Command Line Control of Pickering LXI Instruments” manual.

Detailed Device Programming Information

For more specific guidelines on programming the Pickering card or device you are simulating, please download the manual for that product from the Pickering website: www.pickeringtest.com

SECTION 6 - TROUBLE SHOOTING

Refer to the Warnings and Cautions at the front of this manual 

Please contact your local Pickering Interfaces sales office for any further support or email:
Lxisupport@pickeringtest.com

You can also visit our website for product updates, help and downloadable materials at:
http://www.pickeringtest.com

UNIT RESET

If the simulation tool's operation is inconsistent, the user should try to power cycle the simulation tool by unplugging the lead to the power supply for a few seconds then re-attaching.

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