

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

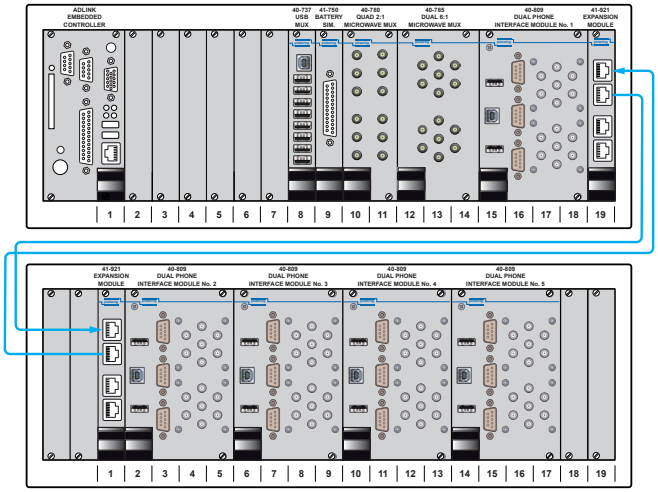
Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

SHORT FORM CATALOG

RIM PHONE TESTING SYSTEM
(MODEL No. 43-001)



Issue B August 2009

PRELIMINARY

CONTENTS

INTRODUCTION 3
10 PHONE TEST SYSTEM DIAGRAM 4
10 PHONE TEST CHASSIS DIAGRAM 5
2 PHONE TEST SYSTEM DIAGRAM 6
2 PHONE TEST CHASSIS DIAGRAM 7
MODULES REQUIRED 8
PXI CHASSIS 9
PXI EMBEDDED CONTROLLER MODULE 9
PXI BUS EXPANSION MODULE 10
40-737 USB DATA COMMS MUX MODULE 11
40-751 BATTERY SIMULATOR MODULE 12
40-780 & 40-785 MICROWAVE MUX MODULES 13
40-809 DUAL PHONE INTERFACE MODULE 14
FURTHER INFORMATION FROM PICKERING INTERFACES 15

PHONE TEST SYSTEM OVERVIEW

- **Multiplexer Designed For The Routing of The Different Signal Types Required For The Testing of Multiple Mobile Phones**
- **Expandable in Multiples of 2 Channels up to a Maximum of 12**
- **Supplies Power to Phone During Testing From a PXI Battery Simulator Module**
- **USB High Speed Data is Routed From The Embedded Controller to The Phone Under Test**
- **Microwave RF Test and Measurement Signals are Switched to the Phone Under Test From 4 different Sources**
- **PXI Compliant Switching Chassis Platform**
- **10 Phone Testing System Occupies 2 19-Slot PXI Chassis**

INTRODUCTION

The 43-001 is designed for the routing of multiple signal types to enable the testing of mobile phones in a development or support environment using a single host computer and associated test equipment. Systems are available with between 2 and 12 channels in multiples of 2, systems can also be upgraded to meet future requirements.

The system is based on PXI modules mounted in a PXI compliant chassis with an embedded controller. The size and number of chassis required depends upon the number of mobile phones to be supported. A 2-phone system could be fitted in a single 8 slot chassis, and a 12-phone system needs 2 off 19 slot chassis linked by expansion modules.

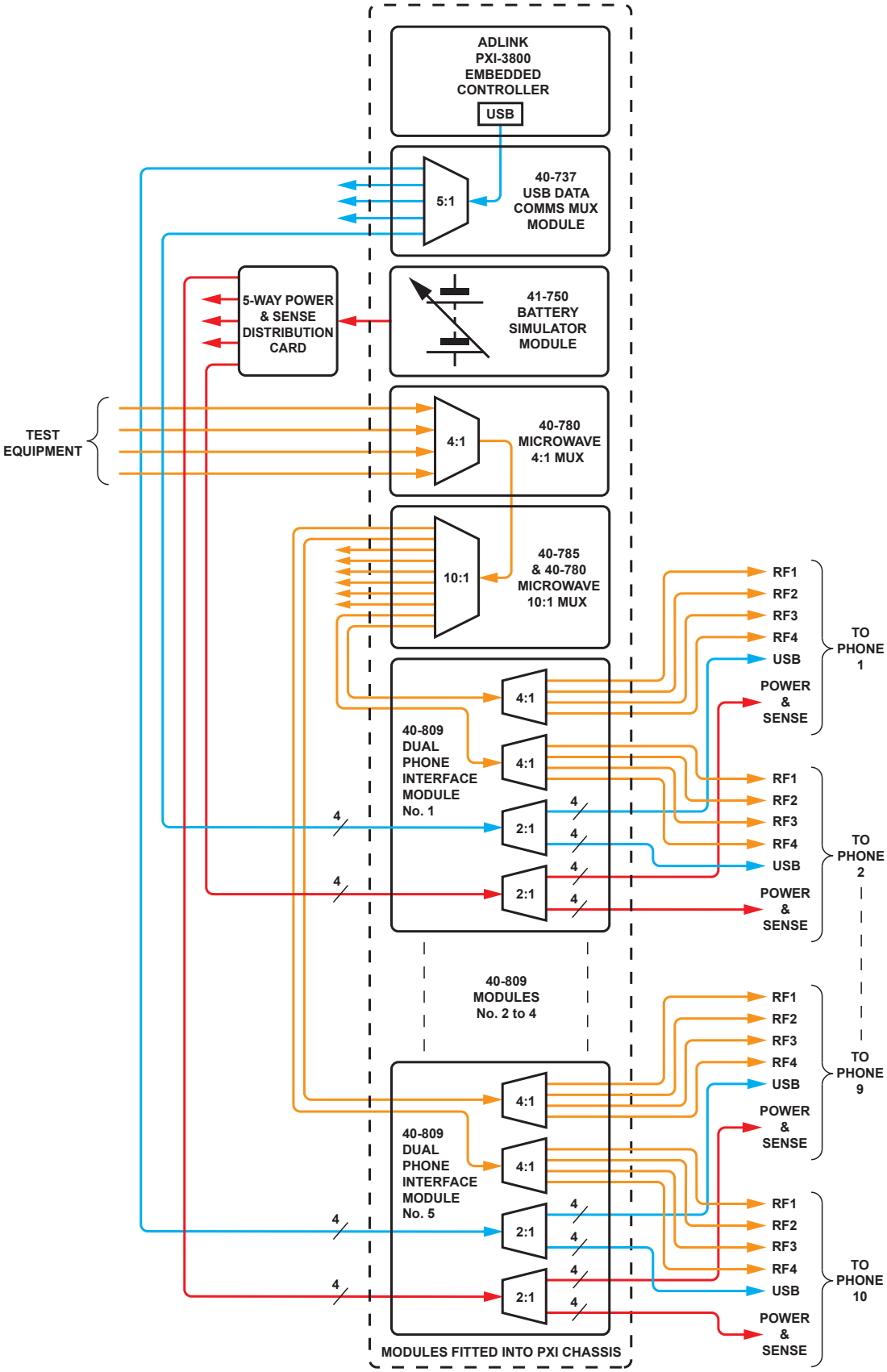
The hardware used in the system is as follows:

● **PXI Chassis**	This hosts the PXI modules and allows control of the system from the embedded controller module. The chassis can be single 8 slot, single 19 slot or dual 19 slot depending upon the number of phones that are required for testing.
● **Embedded Controller**	Provides overall control of the switching modules via the PXI backplane.
● **Expansion Modules**	These are required for systems that support 6 phones and above and allow backplane signals to be transferred between two separate PXI chassis.
● **40-737 USB Data Comms MUX**	Routes data from the USB port of the Embedded controller to the Dual Phone Interface Modules. Uses standard USB type A and type B cables.
● **41-750 Battery Simulator & Distribution Card**	Provides power to the phones during testing. The Distribution Card fits on the font of the module and allows power & sense cabling to the Dual Phone Interface Modules to be attached.
● **40-780 & 40-785 Microwave MUX**	These are RF switches that select one of four signals from the test equipment and distribute it to one of the possible 12 RF Common connections of the Dual Phone Interface Modules.
● **40-809 Dual Phone Interface**	These allow Power, Sense and USB signals to be switched to one of two phones under test. Also an RF signal from the Microwave MUX is routed to the phone under test via one of four coaxial connections.
● **Interconnection Cables**	Various cable assemblies are used to interconnect the modules, and to connect to the phones under test.

There are three different signal types managed by the system:

● **USB High Speed Data**	Signals used for transfer of data between the Embedded Controller and the phone under test.
● **Power & Sense**	Provides the supply and ground for powering the phones during test. The sense lines are used to sense the voltage delivered to the phone at the end of the cable, allows the battery simulator to closely regulate the voltage delivered to the phone under all conditions.
● **Microwave**	For the transfer RF signals between the phone under test and the various pieces of test equipment.

10 PHONE TEST SYSTEM



Block Diagram for the Flash Multiplexer System 43-001 Capable of Testing 20 Phones

10 PHONE TEST SYSTEM

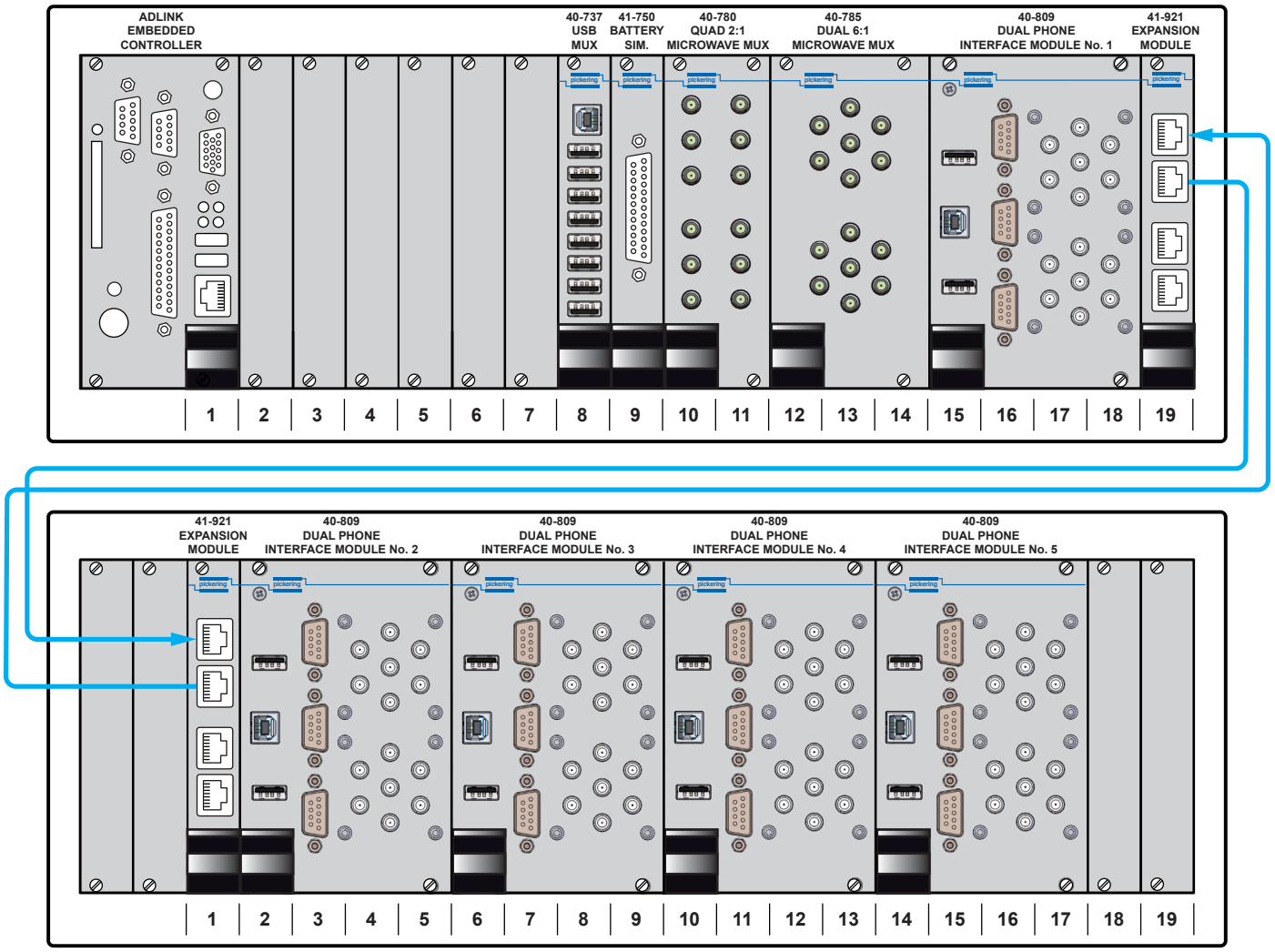
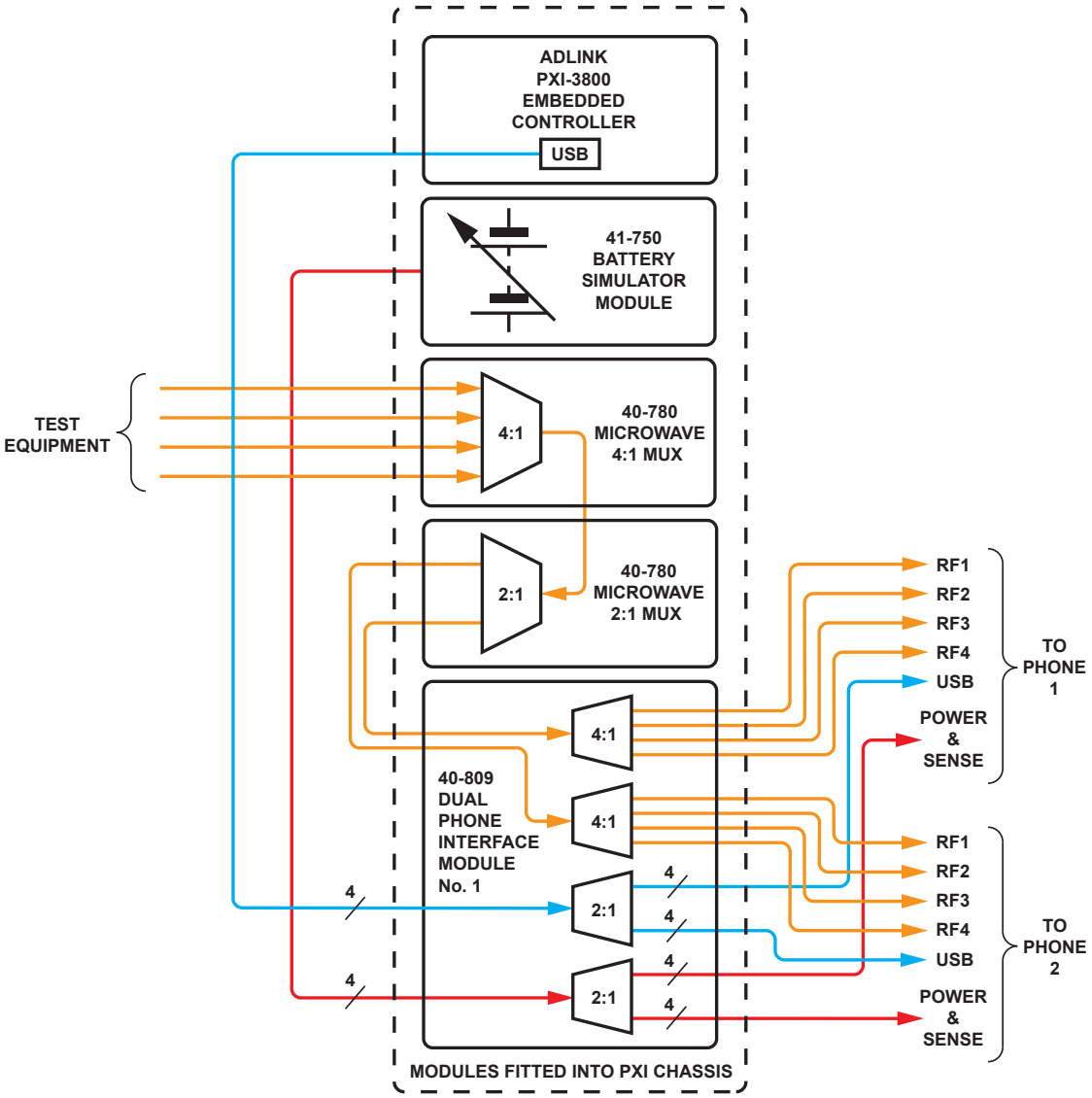


Diagram Showing The 10 Phone Test System Occupying Two 19-Slot Chassis Linked With Expansion Modules



Block Diagram for the Flash Multiplexer System 43-001 Capable of Testing 20 Phones

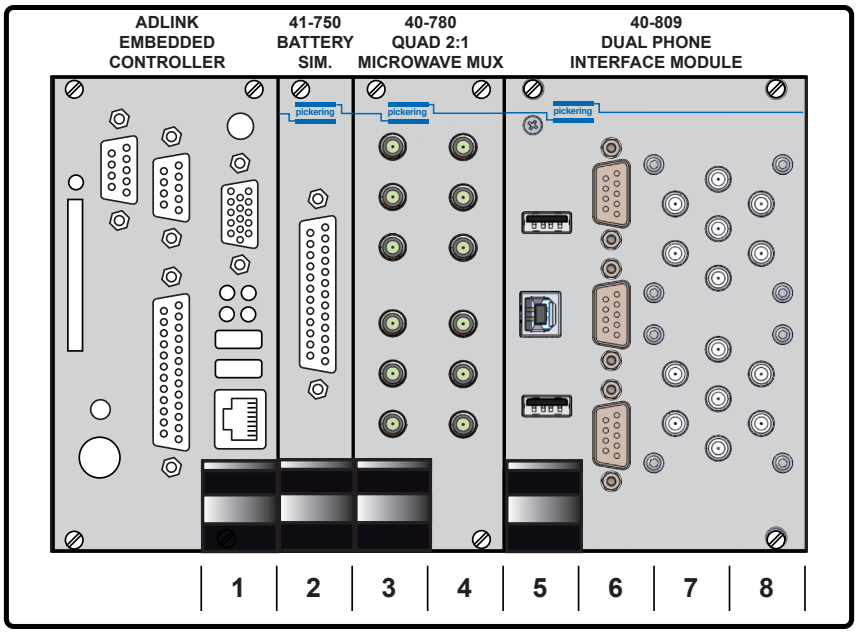


Diagram Showing The 2 Phone Test System Occupying One 8-Slot Chassis

MODULES REQUIRED

PXI CHASSIS SUPPORT & PART NUMBERS			
System Phone Capacity	**1 off 8-slot PXI Chassis**	**1 off 19-slot PXI Chassis**	**2 off 19-slot PXI Chassis**
2	43-001-001	—	—
4	—	43-001-002	—
6	—	—	43-001-003
8	—	—	43-001-004
10	—	—	43-001-005
12	—	—	43-001-006

Modules Required for 10 Phone Test System		
Quantity	**Part Description**	**Part Number**
2	19-slot PXI Chassis	40-923-001
1	Adlink Embedded Controller Module	PXI-3800 (not supplied by Pickering)
2	PXI Expansion Module	41-921-001
1	USB Data Comms Multiplexer Module	40-737-901
1	Battery Simulator Module	41-751-001
1	Power & Sense Distribution Card For Battery Simulator	40-965-904
1	Quad 2:1 Microwave Multiplexer Module	40-780-542
1	Dual 6:1 Microwave Multiplexer Module	40-785-522
5	Dual Phone Interface Module	40-809-901
1	Battery Simulator Module	41-751-001

Cables Required for 10 Phone Test System		
Quantity	**Part Description**	**Part Number**
1	USB type A to type B cable between Embedded Controller and Data Comms MUX	40-976-501-0.5M
2	CAT5e RJ45 Cable between PXI Expansion Modules for inter-chassis communications	1 off C/MS/191 & 1 off C/MS/192
5	USB type A to type B Cable between Data Comms MUX and Dual Phone Interface Module	40-976-501-0.5M
1	Cable harness between Battery Simulator Module and 5 D-type connectors on Dual Phone Interface Modules	40-965-904
5	50Ω SMA to SMA coaxial cable for interconnecting the compnents of Microwave Multiplexer	40-977-541-0.25M
10	50Ω SMA to SMA coaxial cable between Microwave MUX and Dual Phone Interface Module	40-977-541-0.5M
10	USB type A to type B cable between Dual Phone Interface Module and DUT	40-976-501-2M
2	Cable harness between D-type connectors on Dual Phone Interface Module and 5xDUT (-50ºC to 100ºC)	40-965-009-582

- PXI Chassis Used To Host The Phone Testing System
- High Performance 8 and 16 Slot Backplanes
- High Power Industrial Grade Power Supplies
- Compact Benchtop Footprint
- Rack Mounting Hardware Available
- Power, Temperature and Fan Monitoring LEDs
- Remote Chassis Monitoring System
- Low Audible Operating Noise



The 40-922 8-Slot PXI Chassis

The switching modules that make up the Phone Testing system are hosted by a chassis conforming to the PXI specification. In the case of a 2 phone system, a single 8-Slot chassis can be used, and for a 10 phone system, two 19 slot chassis are used. An Embedded Controller module fitted to slot 1 of the chassis performs control of the test system, and Expansion modules are used to link the PXI backplanes of dual chassis test systems.

The chassis include a management system that monitors the power supply voltage, internal temperature and the cooling fan speed. The current condition of the chassis is displayed on front panel status LEDs and can also be monitored remotely via an RS232 port

The 40-922 and 40-923 chassis can be mounted in a standard 19 inch rack using hardware available as an option.



The 40-923 19-Slot PXI Chassis





40-922 and 40-923 Chassis With Rack Mounting Hardware Fitted

Software Support

The PXI switch modules used in the Phone Testing System are supplied with Windows 2000/XP/Vista drivers that can also be downloaded from the software download page on the Pickering website. Code examples are also available for LabWindows/CVI, Visual Basic, Visual C++ and Borland C++.

All Modules have comprehensive VISA and DLL (Direct I/O) support together with Soft Front Panels, source code for LabVIEW VIs, diagnostic utilities and HTML Help, all of which may also be downloaded directly from the web site.

Pickering have just one driver set that supports all of our PXI switch cards, greatly simplifying software development, especially in systems with a large number of switch cards. Also provide is an IVI driver supporting most of the PXI switching modules. All PXI Modules are compatible with NI's Measurement & Automation Explorer.

PXI EMBEDDED CONTROLLER MODULE

- Performs The Control Functions For The Phone Testing System
- Pentium Based Controller Module
- Up To 2GB of RAM
- Built In Hard Drive
- Compact Flash Interface
- VGA Graphics Support
- Gigabit Ethernet Interface
- Dual USB 2.0 Ports



NOT SUPPLIED BY PICKERING

The PXI-3800 Embedded Controller module is fitted to slot-1 of the PXI chassis and is used to control the switching functions of the Phone Testing System. It supports operating systems such as Windows 2000/XP/ Vista and Linux.

PXI BUS EXPANSION MODULE

- Allows The Phone Testing System To Be Expanded to Occupy Two PXI Chassis
- Enables a Seamless Interface Between PXI Backplanes
- Operating System Independent
- High Speed Module to Module Interface
- Modules Communicate Via RJ45 Cables

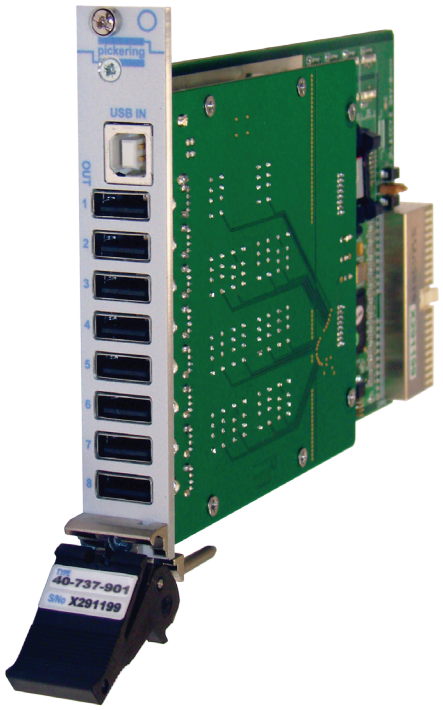


The 41-921 Expansion Modules are used in pairs and enable a PXI backplane to be expanded between different chassis.

The first module is fitted in a spare peripheral slot of the first chassis (the chassis with the embedded controller module in slot 1), and the second module is fitted to slot 1 of the second chassis, taking the place of a controller module. The modules are interconnected with two RJ45 cables and communication takes place using a high speed serial protocol. This creates two PXI chassis that are seen as a single large backplane by the controller's operating system.

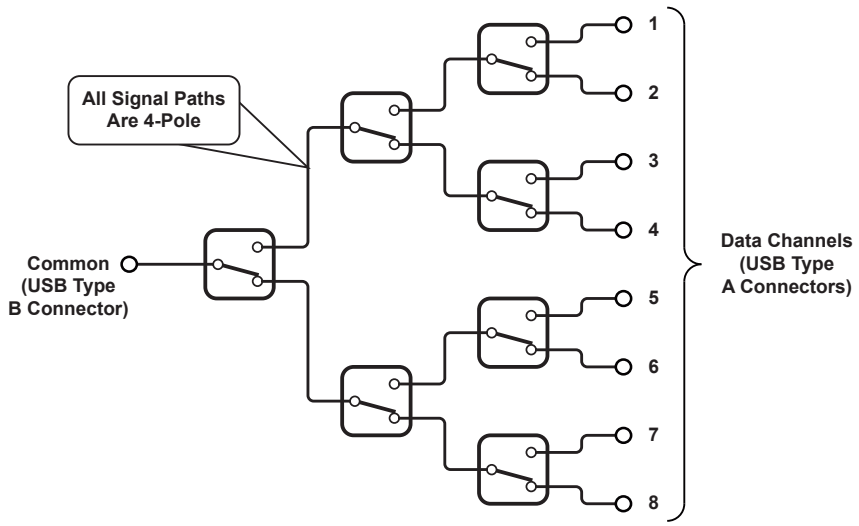
40-736 DATA COMMS MUX MODULE

- USB Data Communications Multiplexer
- Cascades USB Signals to Multiple 40-809 Dual Phone Interface Modules
- Common Input Connects to Embedded Controller
- Switches Signals as Differential Pairs
- Uses Standard USB Type a and Type B Cables



The 40-737 is an 8 to 1 multiplexer for switching datacomms signals and has been specifically designed for routing USB. All signal paths are 4-pole arranged as two differential pairs corresponding to the data and power pairs of the USB standard. The signal pairs have a controlled 100Ω differential impedance and the multiplexer has been designed for minimum insertion loss.

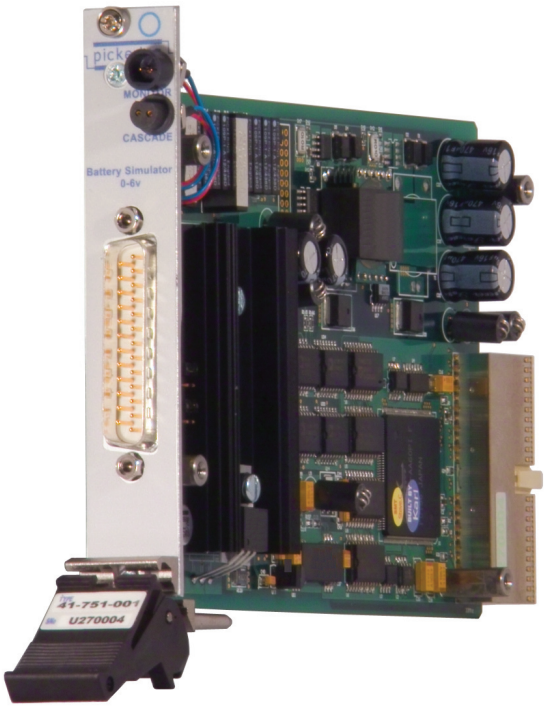
In the 43-001 Phone Testing application the 40-737 is used for the switching of the USB signal sent from the Embedded Controller Module. The output connectors on the 40-737 front panel allowing standard USB cables to be attached for routing data to the USB common connectors of the 40-809 Dual Phone Interface modules.



Block Diagram for the 40-737 USB Data Comms Multiplexer

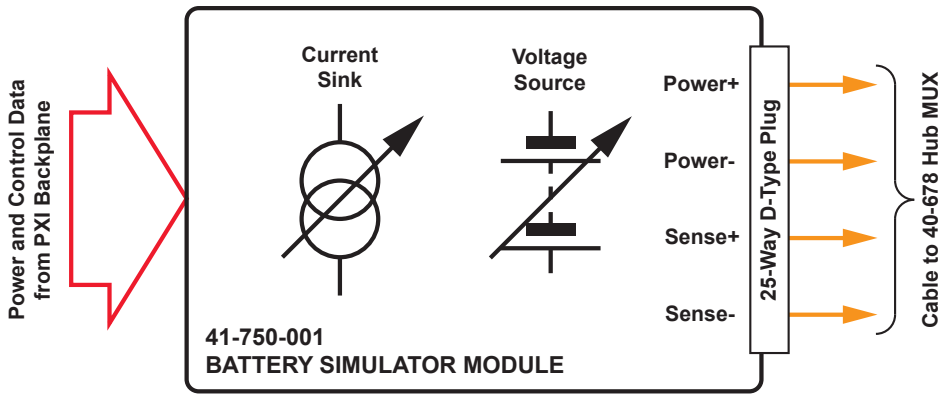
41-750 BATTERY SIMULATOR MODULE

- PXI Battery Simulator Module
- Supplies Power to the Mobile Phones During Testing
- Output Voltage Up To 6V With Maximum Current of 2.8A
- Isolated Outputs With Remote Voltage Sensing
- Current Flow Sensing Facility
- Power Supplied From PXI Backplane
- Pickering Interfaces Monitor System For Current and Voltage



The 40-750 is a module designed to simulate the power supplies of mobile phones. The 41-750 can be programmed to deliver up to 6 Volts with a maximum current of 2.8 Amps. The output is fully floating and features fast acting remote sense connections to regulate the voltage at the load. A load sense feature is included that enables a flag when the current drawn exceeds 10mA, this can be used to indicate that a phone is connected and drawing current. The module is also capable of sinking current to simulate a mobile phone battery under charge. - this feature is not required in this application.

The module derives its power from the PXI backplane. Connections to the supply output and remote sense signals are made via a 25-way D-type plug on the front panel. In the Phone Testing system the 41-750's connector is connected directly to a power and sense distribution board. This board enables the power common connectors of the Dual Phone Interface modules to be linked to the Battery Simulator via 9-way D-type cables.



Block Diagram for the 41-750-001 Battery Simulator Module (The Current Sink Feature is not used in this application)

40-780 & 40-785 MICROWAVE MUX MODULES

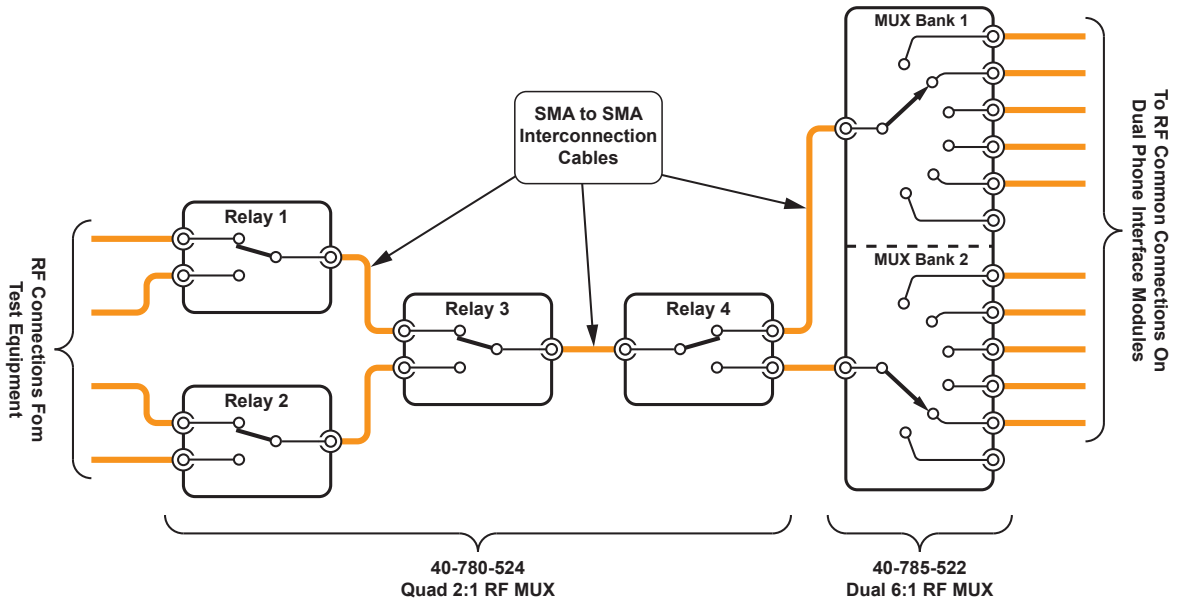
- Microwave Multiplexer For The Switching of RF Signals
- Switches One of Four RF Signals to One Common RF Signal of a Dual Phone Interface Module
- Allows RF Test Equipment To Be Routed To The Phones Under Test
- Comprise Two Separate Modules, A Quad 2:1 MUX And A Dual 6:1 MUX
- Uses 50Ω SMA Connectors
- 20GHz Bandwidth



The Microwave Multiplexer used in the Phone Testing system is used to select one of four signals from RF test equipment and distribute it to one of up to 12 RF common connections of the Dual Phone Interface modules.

The initial 4 to 1 multiplexer for selecting a signal from the test equipment is made up from three RF relays of a 40-780-524 Quad 2 to 1 RF MUX. The 1 to 12 multiplexer for routing the signal to the Dual Phone Interface modules is made from the remaining relay of the 40-780-524 which is used to select the common of either one of the multiplexers of a 40-785-522 Dual 6 to 1 MUX.

All connections to the Microwave Multiplexer, including interconnections between the switching elements, are made using 50Ω SMA to SMA coaxial leads. The diagram for the Microwave Multiplexer for the 10 phone testing system is shown below:

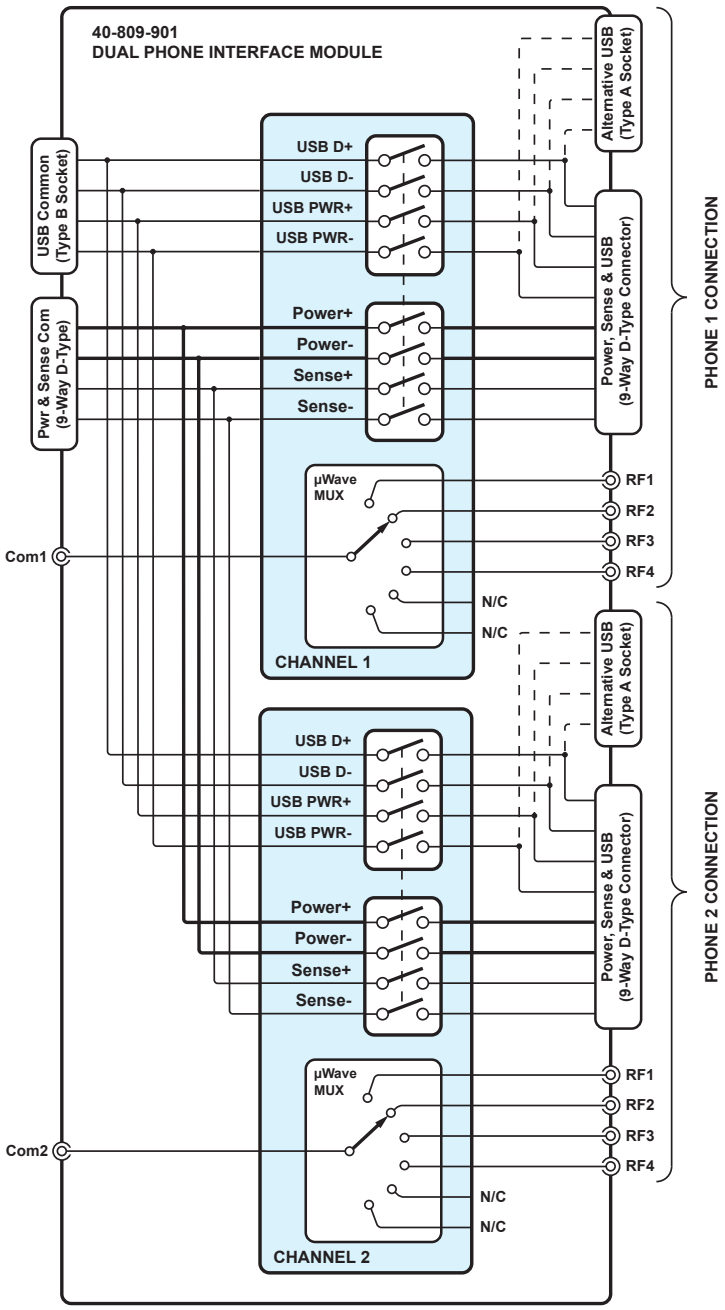


Microwave Multiplexer Used For the 43-001 Phone Testing System

40-809 DUAL PHONE INTERFACE MODULE

- Custom Multiplexer For Routing Signals to Phones Under Test
- 2 to 1 Multiplexer For USB Data Signals
- 2 to 1 Multiplexer For Power & Sense Signals
- Dual 6 to 1 Microwave Multiplexers For RF Test & Measurement Signals
- Occupies 4 PXI 3U Slots





Block Diagram for the 40-809 Dual Phone Interface Module

The 40-809 is a specialised multiplexer module specifically designed for the phone testing system. It has the capability of switching three different signal types: Data over USB, Power & Sense, and RF.

RF switching is carried out using two 6 to 1 microwave multiplexer modules. Four of the six channels of each multiplexer are used for routing RF test and measurement signals to the phone under test. The common of each multiplexer is linked to an output channel of the 40-785-522 Microwave MUX module shown on the previous page.

Power & Sense signals from the Battery Simulator are fed to the module via a 9-way D-type and a 2 to 1 multiplexer routes them to one of two 9-way D-type output connectors. These connectors deliver power and data to the phone under test.

USB data signals from the Data Comms MUX are fed to the module via a USB “Type B” connector. These signals are routed to the phone under test by a 2 to 1 multiplexer and occupy pins on the same connector used for the power and sense signals. Alternatively, the USB signals can be routed to one of two “Type A” connectors (selected by internal hard-wired links).

FURTHER INFORMATION FROM PICKERING INTERFACES

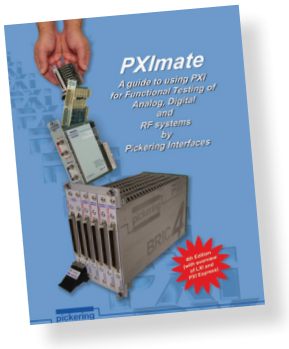
LXI is the new standard for Ethernet control of instrumentation. It is the natural successor to GPIB (IEEE-488) incorporating LAN connectivity, full web browser support, IVI drivers and advanced triggering capability.



Pickering Interfaces is a Board level member of the LXI Consortium (www.lxistandard.org) and together with Agilent Technologies was the first company to release a fully compliant LXI device. Pickering is developing a large range of products conforming to the LXI standard and is constantly introducing new products in response to specific user demand. For further information go to www.pickeringtest.com/lxi

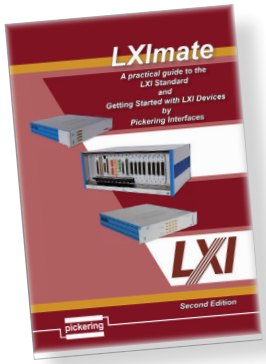
Ever Wondered What PXI Is All About?

Pickering has published a 160 page book explaining PXI basics and provides useful data for engineers working on Functional Test Systems. Now in its 4th edition, the book contains examples of test systems based on the PXI standard, useful contact information and engineering data.



Copies can be obtained free of charge by contacting your local Pickering Interfaces sales office or by filling in the enquiry form on our web site: www.pickeringtest.com/pximate

Pickering Interfaces has published a book, LXImate, which provides an easy to read overview of the LXI Standard. To order your free copy simply go to www.pickeringtest.com/lximate and request your copy.



Please refer to the Pickering Interfaces "**Interconnection Solutions**" catalog for the full list of connector/cabling options for Pickering products, 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 PXI modules.



Pickering have been manufacturing Modular Switching & Instrumentation systems since 1988. Our sister company Pickering Electronics have manufactured instrumentation quality reed relays since the late 1960's. Pickering Interfaces design & manufacture solutions for all major modular Test platforms including PXI, GPIB, PCI, VXI and now LXI, we also manufacture many customer solutions and have a wide range of connector/cabling designed for the demanding Functional Test Developer.

Custom Switching Solutions

Pickering Interfaces are able to meet your exact custom switching needs. With extensive experience in PXI, PCI, VXI, IEEE-488, and Ethernet architectures, we can develop a switching solution that matches your exact needs. For further information please visit the Custom Design area of the "Sales" section of our web site or call your local Pickering Sales office.

Worldwide Technical Support and Product Information
http://www.pickeringtest.com

Pickering Interfaces Headquarters

Stephenson Road Clacton-on-Sea CO15 4NL United Kingdom
Tel: +44 (0)1255-687900
Fax: +44 (0)1255-475058
E-Mail: sales@pickeringtest.com

Pickering Interfaces Inc.
2900 Northwest Vine Street
Grants Pass
Oregon 97526
USA

Tel: +1 541 471 0700
Fax: +1 541 471 8828
E-Mail: ussales@pickeringtest.com

Pickering Interfaces GmbH
Johann-Karg-Straße 30
D-85540
Haar-Salmdorf
Germany

Tel: +49 89 125 953 160
Fax: +49 89 125 953 189
E-Mail: desales@pickeringtest.com

Pickering Interfaces AB
Karl Nordströmsväg 31
432 53
Varberg
Sweden

Tel: +46 340-69 06 69
Fax: +46 340-69 06 68
E-Mail: ndsales@pickeringtest.com

Pickering Interfaces Inc.
(East Coast Regional Office)
12 Alfred Street Suite 300-3
Woburn Massachusetts 01801
USA

Tel: +1 781 897 1710
Fax: +1 781 897 1701
E-mail: useastsales@pickeringtest.com

Pickering Interfaces s.r.o.
Smetanova 525
Třinec
739 61
Czech Republic

Tel: +42 0558 339 168
Fax: +42 0558 340 888
E-mail: cesales@pickeringtest.com

Pickering Interfaces SARL
6 Rue De La Mare Blanche
77186 Noisiel
Marne Le Vallee
France

Tel +33 1 60 53 55 50
Fax +33 1 60 53 55 99
email frsales@pickeringtest.com

© COPYRIGHT (2009) PICKERING INTERFACES. ALL RIGHTS RESERVED.

No part of this publication may be reproduced, transmitted, transcribed, translated or stored in any form, or by any means without the written permission of Pickering Interfaces.

Technical details contained within this publication are subject to change without notice.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP