Agilent PXI General Purpose Switch Modules M9130A, M9131A, M9132A, M9133A, M9135A

Startup Guide

Agilent Technologies

Notices

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Sales and Technical Support

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www.agilent.com/find/<model number> (product-specific information and support, software and documentation updates)

www.agilent.com/find/assist (worldwide contact information for repair and service)

Information on preventing damage to your Agilent equipment can be found at www.agilent.com/find/tips.

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Declarations of Conformity for this product and for other Agilent products may be downloaded from the Web. Go to **http://regulations.corporate.agilent.com/DoC/search.htm** and click on "Declarations of Conformity." You can then search by product number to find the latest Declaration of Conformity.

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The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings or operating instructions in the product manuals violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product must not be impaired if it is used in a manner specified in the operation instructions.

Before Applying Power

Verify that all safety precautions are taken. Make all connections to the module before applying power. Note the instrument's external markings described under "Safety Symbols".

Ground the Chassis

Agilent chassis are provided with a grounding-type power plug. The instrument chassis and cover must be connected to an electrical ground to minimize shock hazard. The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the Agilent module/chassis in the presence of flammable gases or fumes.

Do Not Operate Near Flammable Liquids

Do not operate the Agilent module/chassis in the presence of flammable liquids or near containers of such liquids.

Cleaning

Clean the outside of the Agilent module, chassis, or accessory with a soft, lint-free, slightly dampened cloth. Do not use detergent or chemical solvents.

Keep away from live circuits

Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment

Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Sales and Service Office to ensure that safety features are maintained.

In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

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A WARNING notice denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Symbols

Products display the following symbols:

Refer to manual for additional safety information.

Earth Ground.

Chassis Ground.

Alternating Current (AC).

Direct Current (DC).

Indicates that antistatic precautions should be taken.

The instrument has been tested, investigated and found to comply with the requirements of the Standard(s) for Electrical Measuring & Test Equipment.

Notice for European Community: This product complies with the relevant European legal Directives: EMC Directive (2004/108/EC) and Low Voltage Directive (2006/95/EC).

ISM

This is the symbol for an Industrial, Scientific, and Medical Group 1 Class A product.

ICES/NMB-001

ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001.

The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This product complies with the WEEE Directive (2002/96/EC) marking requirement. The affixed product label (see below) indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category: With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.

Do not dispose in domestic household waste.

To return unwanted products, contact your local Agilent office, or see www.agilent.com/environment/<product> for more information.

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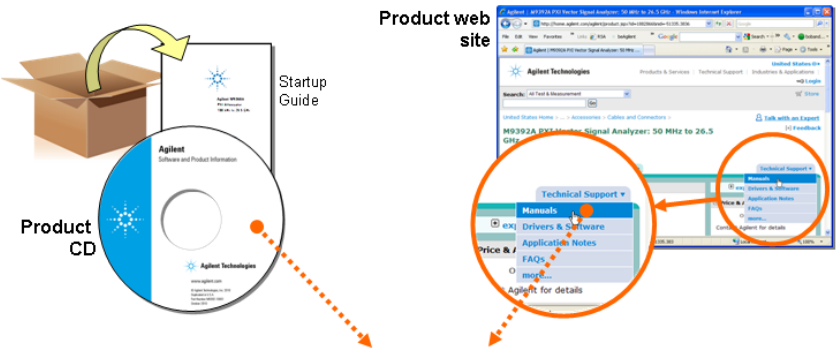


Access to all **DOCUMENTATION** noted below

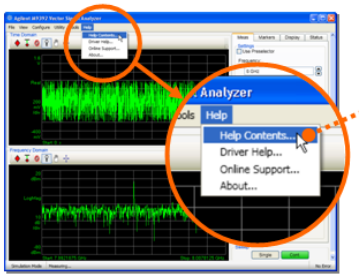
Startup Guide

- Unpack product
- Verify shipment
- Install software
- Install & connect hardware
- Verify operation

Data Sheet

- Product description
- Technical specifications

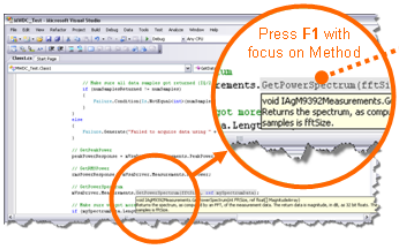
Soft Front Panel (SFP) user interface



SFP help system

- Product theory of operation
- Configuration
- Self test

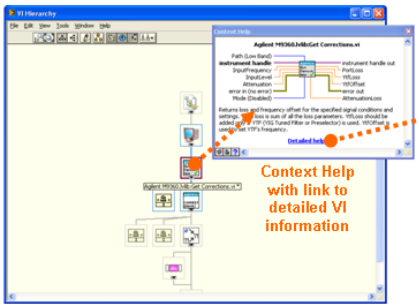
Visual Studio



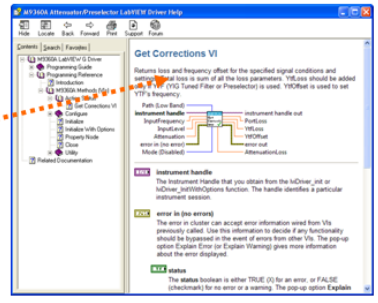
IVI Driver help system

- IVI-COM and IVI-C driver programmer's reference

LabVIEW



LabVIEW Driver help system



- LabVIEW driver programmer's reference

Agilent PXI General Purpose Switch Modules Introduction

The Agilent PXI general purpose switch modules deliver fast, reliable switching in a variety of configurations. Cycle power to products under test, control indicator and status lights, or actuate external power relays and solenoids with independent, single-pole, double-throw (Form C) or single pole single-throw, (Form A) switches in a single PXI module.

Agilent PXI Switch Modules

- M9130A PXI SPDT Switch, 26 channels, Armature Relays
- M9131A PXI SPDT Switch, 64 channels, Reed Relays
- M9132A PXI SPST Switch, 50 channels, Reed Relays
- M9133A PXI SPST Switch, 100 channels, Reed Relays
- M9135A PXI SPST Power Relay, 20 channels, Armature Relays

Agilent also supplies software drivers that allow you to support the modules in all popular PXI chassis' and programming environments. Soft Front Panel software allows you to exercise the channels for test purposes.

NOTE Agilent AgMSwitch driver version 1.1.x or later or the Agilent LabVIEW G driver version 1.1.x or later is required for programmatic control of these switch modules.

WARNING **These modules are not for connection to Mains.**

Related documentation

This Startup Guide, and the documentation listed below, are on the **Switch Module Software and Product Information CD**.

- Help file for the PXI Switch Modules Soft Front Panel
- Help file for the PXI Switch Modules IVI-C/IVI-COM device drivers
- Help file for the PXI Switch Modules LabVIEW G device drivers
- Agilent PXI General Purpose Switch Modules Data Sheet. For the latest specifications, check the Agilent web site at: www.agilent.com/find/pxiswitch.

Step 1: Unpack and Inspect the Module

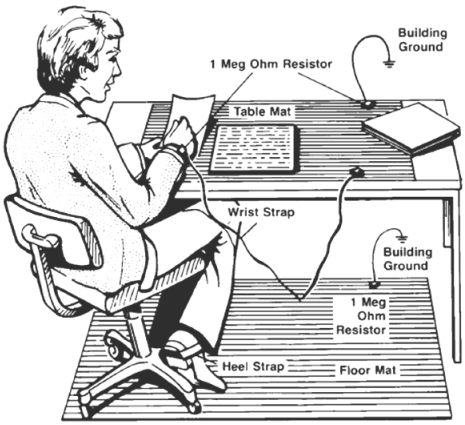
CAUTION Agilent's PXI Switch Modules are shipped in materials that prevent static electricity damage. The modules should only be removed from the packaging in an anti-static area ensuring that correct anti-static precautions are taken. Store all modules in anti-static envelopes when not in use.

ESD

Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe work station. The following figure shows an example of a static-safe work station using two types of ESD protection. Purchase acceptable ESD accessories from your local supplier.

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.

Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone. To ensure user safety, the static-safe accessories must provide at least 1 MΩ of isolation from ground.



Inspect for damage

After unpacking the switch module, carefully inspect it for any shipping damage. Report any damage to the shipping agent immediately, as such damage is not covered by the warranty.

CAUTION To avoid damage when handling a module; do not touch exposed connector pins.

NOTE Information on preventing damage to your Agilent equipment can be found at www.agilent.com/find/tips.

Return the module for service

Should it become necessary to return an Agilent switch module for repair or service, follow the steps below:

1. Review the warranty information shipped with your product.
2. Contact Agilent to obtain a return authorization and return address. If you need assistance finding Agilent contact information go to www.agilent.com/find/assist (worldwide contact information for repair and service) or refer to the **Support** information on the product web page at: *www.agilent.com/find/pxiswitch*.
3. Write the following information on a tag and attach it to the malfunctioning equipment.
   - Name and address of owner. A Post Office box is not acceptable as a return address.
   - Product model number (for example, M9135A)
   - Product serial number (for example, MYXXXXXXXX). The serial number label is located on the side of the module.
   - A description of failure or service required.
4. Carefully pack the module in its original ESD bag and carton. If the original carton is not available, use bubble wrap or packing peanuts, place the instrument in a sealed container and mark the container “FRAGILE”.
5. On the shipping label, write ATTENTION REPAIR DEPARTMENT and the service order number (if known).

NOTE If any correspondence is required, refer to the product by serial number and model number.

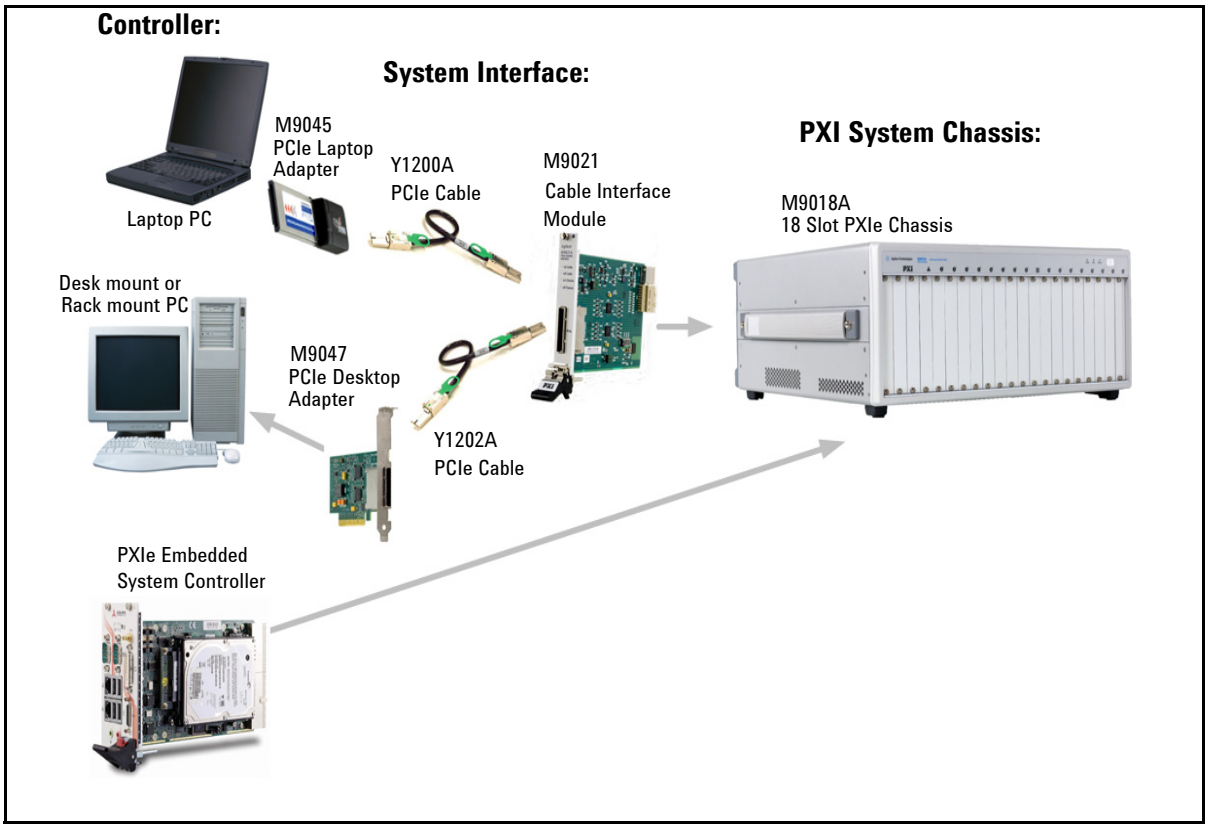
Step 2: Verify Shipment Contents

Your shipment should have included the following:

- The Agilent PXI module that you ordered.
- This document (Agilent PXI General Purpose Switch Modules Startup Guide).
- A *Switch Module Software and Product Information* CD (M9128-10001). This CD contains software, drivers and all product printed documentation in PDF format for the PXI General Purpose switch modules.
- An *Automation-Ready CD with Agilent IO Libraries Suite* (version 16.0 or later).
- Any other accessories that you ordered (cables, connectors, etc.).

Step 3: Install the Software on the System Controller

The following illustration shows typical system installations.



NOTE Do not install the PXI modules in the PXI chassis yet! You must install the software prior to installing the modules in the chassis so that Agilent IO Libraries Connection Expert finds them.

System requirements

The following table lists the minimum system requirements for Agilent IO Libraries Suite 16. In general, any x86 or x64 (except Itanium) should work but there may be a significant decrease in performance.

Operating System	Windows XP Service Pack 3 or later	Windows Vista SP1 and SP2 (32-bit and 64-bit), Business, Ultimate, Enterprise, Home Basic, and Home Premium	Windows 7 (32- and 64-bit) Starter, Home Basic, Home Premium, Professional, Ultimate, Enterprise
Processor Speed	600 MHz or higher required, 800 MHz recommended	1Ghz 32-bit (x86), 1GHz 64-bit (x64), no support for Itanium64	1Ghz 32-bit (x86), 1GHz 64-bit (x64), no support for Itanium64
Available memory	256 MB minimum (1 GB or greater recommended)	1 GB minimum	1 GB minimum
Available hard disk space*	1.5 GB available hard disk space, includes: 1GB available for Microsoft® .NET Framework 3.5 SP1† 100MB for Agilent IO Libraries Suite	1.5 GB available hard disk space, includes: 1GB available for Microsoft® .NET Framework 3.5 SP1[2] 100MB for Agilent IO Libraries Suite	1.5 GB available hard disk space, includes: 1GB available for Microsoft® .NET Framework 3.5 SP1[2] 100MB for Agilent IO Libraries Suite
Video	Super VGA (800x600) 256 colors or more	Support for DirectX 9 graphics with 128MB graphics memory recommended (Super VGA graphics is supported)	Support for DirectX 9 graphics with 128MB graphics memory recommended (Super VGA graphics is supported)
Browser	Microsoft Internet Explorer 6.0 or greater	Microsoft Internet Explorer 7 or greater	Microsoft Internet Explorer 7 or greater

* Because of the installation procedure, less memory may be required for operation than is required for installation.

† .NET Framework Runtime Components are installed by default with Windows Vista. Therefore you may not need this amount of available disk space.

PXIe System

PXI system/ host controller	A PXI or PXI Express embedded controller or PC host controller is required.

Power the controller

- If you are using a desktop, laptop, or rack mount PC as remote controller:
  1. Install any peripheral devices in the PC (e.g., PCIe Interface adapters, etc.). Follow the manufacturers instructions.
  2. Power up the controller. Do not apply power to the PXI chassis yet.
  3. Choose the default option for any “Found Hardware” dialogs.
- If you are using a PXI embedded computer as the host computer:
  1. Install the embedded computer module into the PXI chassis following the manufacturers instructions.
  2. Connect peripherals such as a mouse, keyboard, monitor, CD drive, etc.
  3. Power up the chassis.
  4. Choose the default option for any “Found Hardware” dialogs

Install Agilent IO Libraries Suite

Agilent IO Libraries Suite 16.0 (or later) is required for the PXI modules. It includes the Agilent Connection Expert, the IVI Shared Components, and the VISA Shared Components.

NOTE Agilent IO Libraries version 16.0 (or later) must be installed prior to installing and running any other software and prior to powering the chassis. The latest version can be downloaded from: **www.agilent.com/find/iosuite**.

1. Insert the *Automation-Ready CD with Agilent IO Libraries Suite* into the CD-ROM drive of your system controller. Wait a few seconds for the auto-run window to appear. If the auto-run window does not appear automatically:
   - Click **Start > Run...**
   - Type: `<drive>:Autorun\IOLibraries.hta`
     where `<drive>` is your CD drive letter.
2. Follow the installation instructions that came with the IO Libraries Suite.

NOTE If the **IVI Shared Components** and **VISA Shared Components** are not already installed on your PC, Agilent IO Libraries Suite installs them in the default locations. If they are already installed, the installer upgrades them to the latest version, using the same location used by the older version. If this is a first-time installation, you can select installation locations for these components by choosing a Custom Installation.

Install instrument drivers

1 Insert the *Switch Module Software and Product Information* CD into the CD-ROM drive of your PC.

Wait a few seconds for the auto-run window to appear. If the auto-run window does not appear automatically:

- Click **Start > Run...**
- Type: `<drive>:Autorun.exe` where `<drive>` is your CD drive letter.

2 Select the **Install Software** link. Follow the installer prompts. Accept all of the default directories specified during installation if prompted.

3 After the Welcome screen, you will be prompted three times for license agreements. The software installer installs the following drivers:

- **Agilent Modular Software License Agreement**. The installer program installs the Soft Front Panel (SFP) application and other object code to connect to the switches. Accept the license terms and click **Next**.
- **Agilent IVI Driver Source Code License Agreement.** The Interchangeable Virtual Instrument (IVI) driver is available for programming the Agilent switch modules using Microsoft® development environments (e.g., Visual Studio®, C, C++, C#, Visual Basic), Agilent VEE, MATLAB®, or National Instruments® Labview™. Accept the license terms and click **Next**.
- **Agilent Software License Agreement for drivers for use with LabVIEW Software.** The LAbVIEW driver provides access to the functionality of the switches through LabVIEW VIs. This driver works in National Instruments LabVIEW development environments. Before this driver can be installed, your computer must already have the IVI Shared Components installed. Accept the license terms and click **Next**.

NOTE Installing Agilent IO Libraries also installs the IVI Shared Components. The IVI Shared Components are required before IVI drivers (e.g., IVI-COM, IVI-C) can be installed from the product reference CD.

4 Next, the installer indicates the LabVIEW installations found on your host computer. Click **Next**

5 After accepting the licenses, the driver software is ready to be installed on your host computer. Click **Install**.

6 When the installation wizard is finished, you will be prompted to reboot your host computer. Do not reboot the host computer at this time! Select "**`No, I will restart my computer later`**." Power down the host computer. Proceed to "Step 4. Connect the PC to the PXI Chassis" on the next page.

Step 4. Connect the PC to the PXI Chassis

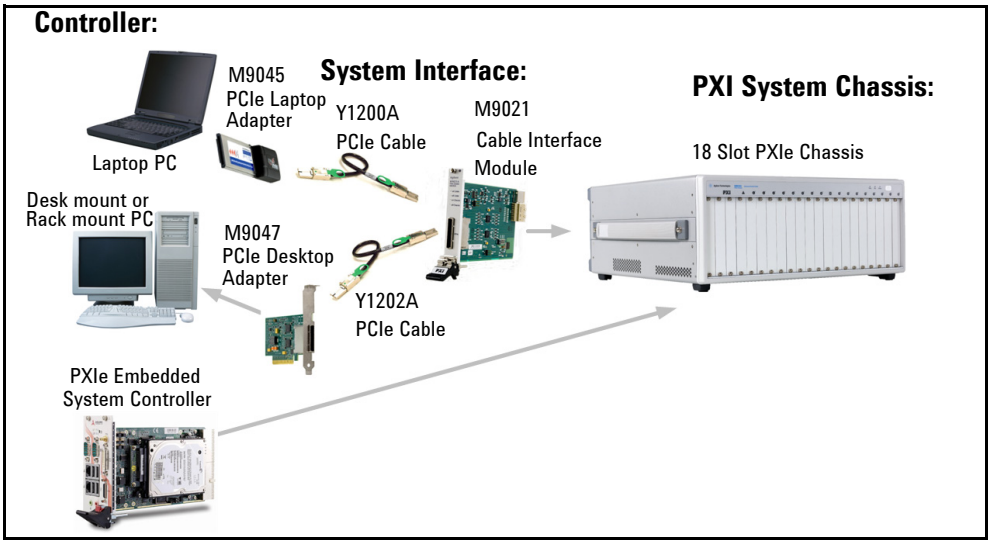
NOTE

To ensure proper system operation and the PC's ability to enumerate all of the PXI modules, you must use an approved embedded PC, desktop PC, or laptop PC along with approved PCIe adaptor and cable.

Using a remote controller:

Refer to the following figure. Make certain that both the PC and the PXI chassis are turned off. Unplug the chassis from the ac power mains. If you are using the M9018A 18 Slot PXIe chassis, install the Agilent M9021 PCIe Cable Interface module in the chassis.

- If you are using a desktop or rack mount PC, install the M9047 PCIe Desktop Adapter in the PC. With an Agilent Y1202A cable, connect the adapter to the System Interface module.
- If you are using a laptop PC, install the M9045 PCIe ExpressCard Adapter in the laptop. With an Agilent Y1200A cable, connect the adapter to the System Interface module on the PXI chassis
.



Using an embedded computer

Refer to the figure above. If you are using an embedded controller in the PXI chassis, you should have installed it prior to installing the Agilent IO Libraries and instrument drivers. No cables or other adapters are required. After installation, proceed to "Step 5: Install the Switch Modules in the PXI Chassis"

Step 5: Install the Switch Modules in the PXI Chassis

WARNING

- **PXI hardware does not support "hot-swap" capabilities (changing modules while power is applied to the chassis).**
- **Before installing Agilent PXI Modules into the chassis, the chassis must be powered off to prevent damage to the PXI module. Remove all cables/terminal blocks from the module prior to installing or removing the module.**

NOTE

These modules can be used in a chassis with a cPCI, PXI-1, or PXIh chassis peripheral slot.

The modules can be installed in any standard PXI slot marked with a peripheral slot compatibility image (a circle containing the slot number).

The modules can also be installed in any hybrid PXI slot marked with a peripheral slot compatibility image (the letter "H" and a solid circle containing the slot number).

1 Make sure the PXI chassis power is turned off.

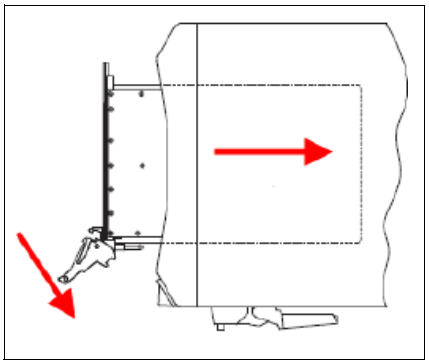
2 If the chassis has multiple fan speed settings, ensure that the fans are set to automatic. Do not set the fan speed to low or turn them off.

3 Position the chassis so that there is ample space between the chassis fan intake and exhaust vents. Blockage by walls or obstructions affects the air flow needed for cooling. (Refer to the chassis documentation for cooling information).

4 The modules are shipped with thread protectors over the mounting screws. These must be removed before installing the modules in a chassis.

5 Holding the PXI module by the injector/ejector handle, slide it into an available PXI (or hybrid) slot, as shown in the following figure.

- Install the module in the PXI slot by placing the module card edges into the front module guides (top and bottom).
- Slide the module to the rear of the chassis. Ensure that the injector/ejector handle is pushed down in the unlatched (downward) position.
- Slide the module completely into the chassis. When you begin to feel resistance, push up on the injector/ejector handle to fully seat the module into the chassis.



6 Latch the module by pulling up on the injector/ejector handle and secure the front panel to the chassis using the module mounting screws.

7 Tighten the screws on the module (or remote controller) front panel. Performance may suffer if the screws are not securely tightened.

8 Install all chassis covers, filler panels, and air inlet modules after installing the module. Missing filler panels may disrupt necessary air circulation in the chassis.

9 If you are using a remote controller, connect the System Interface Card in the chassis to the host computer.

10 Plug in and power up the PXI chassis. Verify that the chassis fans are operating and free of obstructions that may restrict airflow.

CAUTION If you are using a remote controller linked to the M9021A Cable Interface, you must power up the chassis BEFORE you power up the PC. When you power down your system, you must Shut Down the PC BEFORE you power down the chassis.

NOTE If you are using MXI-3 to connect a desktop PC to a PXI chassis or link to multiple chassis, power up the system as follows:

- For a system with a PC and one chassis, power up the chassis before powering the PC.
- For a system with more than one chassis, power on the last chassis in the system followed by the penultimate, etc. Finally, turn on the PC or chassis containing the system controller.

11 If you are using a remote host computer (rack mount, desktop, or laptop PC), power-on the computer. Choose the default option for any "Found New Hardware" dialogs.

NOTE After all of the "**Found New Hardware**" dialogs are complete, you must reboot the host computer.

Chassis Power Down Process

CAUTION If you are using a remote controller linked to the M9021A Cable Interface, you must Shut Down the PC BEFORE you power down the chassis. When you restore power, you must power up the chassis BEFORE you power up the PC.

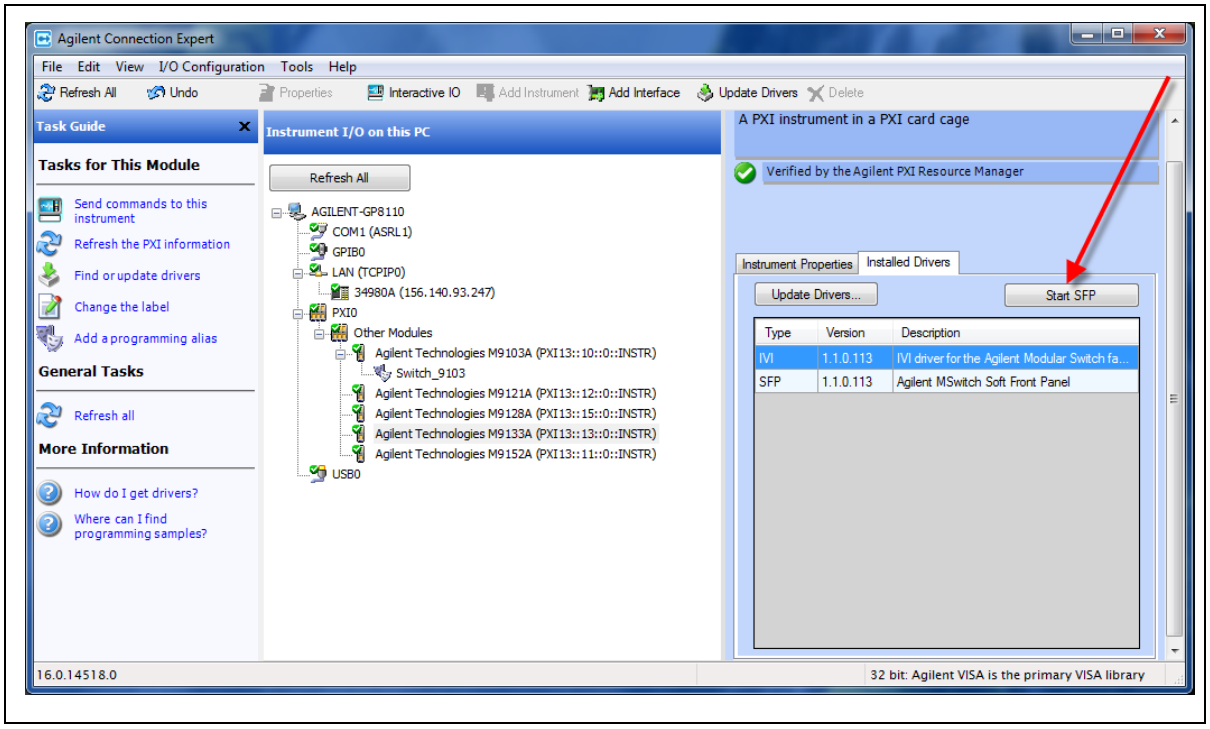
Step 6. Verify Operation of the Module

Run Agilent IO Libraries Connection Expert

If Agilent Connection Expert is already running on the system controller, click the **Refresh All** button to identify any hardware you have just installed or re-connected.

If Connection Expert is not already running, run it now to verify your I/O configuration. In the Windows Notification Area, click the **IO** icon ( ), then click **Agilent Connection Expert.**

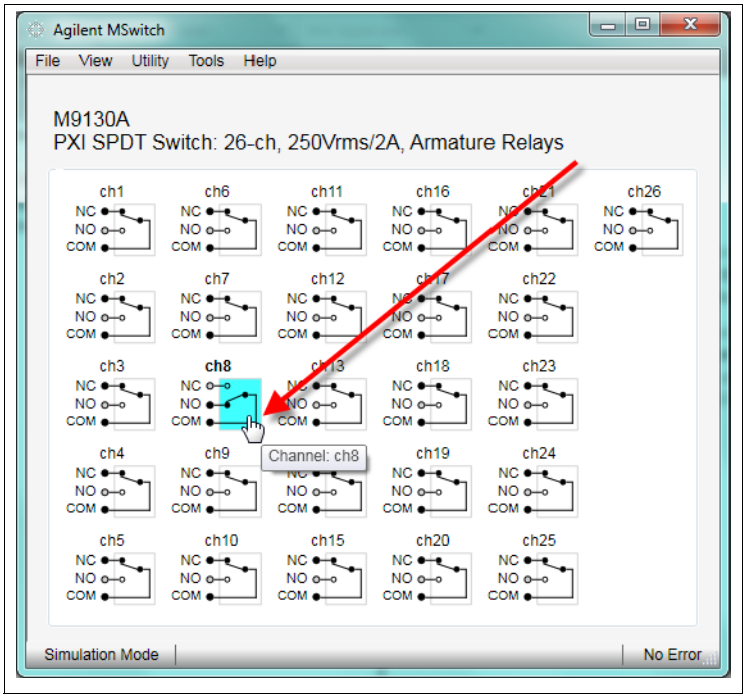
Locate your interfaces and instruments in the Agilent Connection Expert Explorer Pane. The following graphic shows the Connection Expert screen.



Select a module in the center pane (Instrument I/O on this PC). The right-hand Pane shows the instrument properties. Select the **`Installed Drivers`** tab then click the **`Start SFP`** button.

You can use the Soft Front Panel (SFP) software to open and close the relays and verify operation of the switch modules. The Soft Front Panel Software was installed as part of the Software installation process.

Refer to the SFP help file on the *Switch Module Software and Product Information CD* for specific detailed information on the SFP. The following graphic shows an example of the SFP for the M9130A PXI Switch module, with channel 8 selected.



Beginning with SFP Version 1.1.x, if you have another application, either your own program or another instance of the SFP interface, that has initialized the switch module, then the SFP enters it's "monitor" mode. In this mode, you cannot change relay state and the menu buttons are grayed-out. However, as the other application controls the channels, the SFP interface monitors and displays the state of the individual relays. Refer to the SFP help file for additional information.

Verify operation

There are no specific operational verification or self test procedures. However, you can use the Soft Front Panel software to open and close individual channels. Module specifications are guaranteed by design.

Characteristics

For detailed specifications, refer to the M9130A flyer on the *Switch Module Software and Product Information CD* or the Switch data sheet online at www.agilent.com/find/pxiswitch.

NOTE Switch modules are considered a "wear-out" item. It is normal for relay performance to degrade over time; life expectancy depends on the specific application and use model. Hot-switching of relays decreases useful life more rapidly than no-load switching. Refer to the product data sheet for approximate lifetimes under different loads. Premature wear-out due to application requirements and damage due to accidental over-current or over-voltage conditions are not covered by product warranty.

Default Path Settings

The table below lists the default signal path for the Switch modules. This default switch path is also shown in the following diagrams.

Switch Model	Default Path
M9130A SPDT Switch, 26 channels	All relays open (COM to NC terminal)
M9131A SPDT Switch, 64 channels	All relays open (COM to NC terminal)
M9132A SPST Switch, 50 channels	All relays open
M9133A SPST Switch, 100 channels	All relays open
M9135A SPST Power Relay, 20 channels	All relays open

Module Functional Description

The Agilent PXI General Purpose switch modules conform to the single slot, 3U form factor (100mm by 160mm / 3.94 in. by 6.3 in.) Eurocard standard. These modules meet PXI Specification 2.2. Local bus, trigger bus, and star trigger are not included. The modules also include:

- CPCI Ejector Handle
- Front panel connectors (either 78 pin D connector, 200 pin female LFH, or dual 20 pin connectors)
- The front panel secures to the chassis by two M2.5 x 6mm pan-head Posi-drive screws.

Figure 1 shows a functional block diagram for the modules. The PCI connector (J1) provides +3.3Vdc (not all modules use this supply), +5Vdc, +12Vdc, ground, as well as the control signals from the chassis backplane. The relay drivers are activated by the PCI Bridge (U1) via output registers.

There are no user serviceable or field replaceable components on these modules.

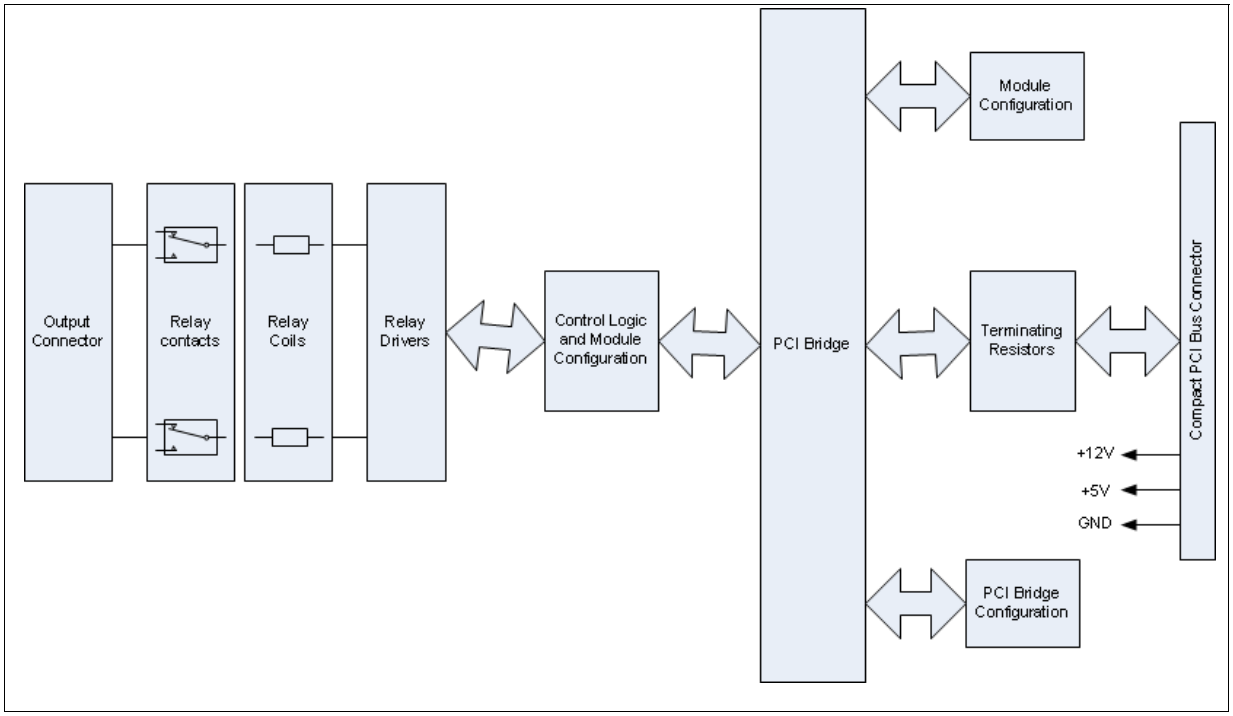


Figure 1 Agilent PXI Switch Functional Block Diagram

Module Programming

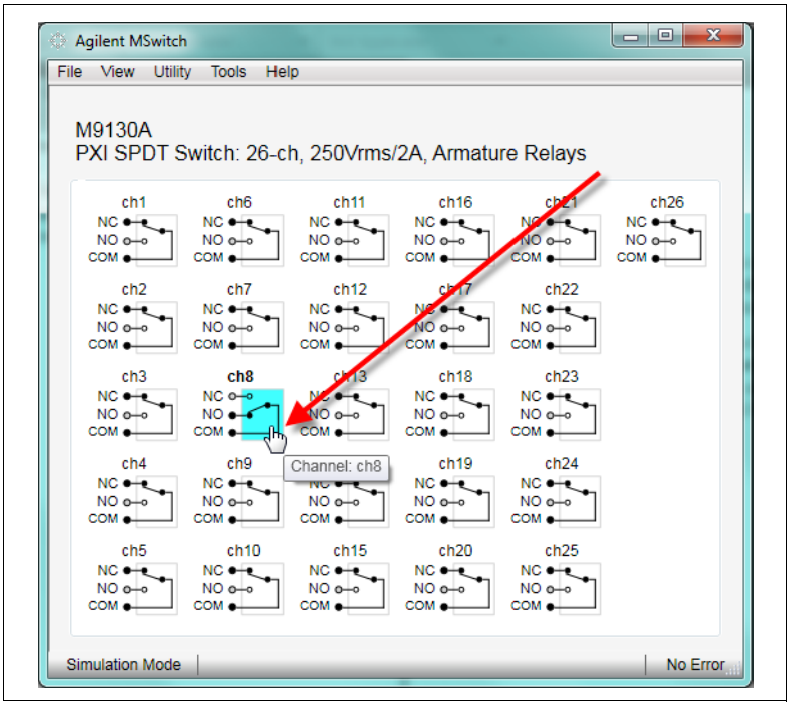
Refer to the Soft Front Panel help file for detailed operation of the module. For programming information, refer to the IVI C and LabVIEW driver help files. These help files are located on the Switch *Module Software and Product Information* CD.

Many methods in the IviSwtch interfaces accept a channel string parameter. The channel names supported by the AgMSwitch driver depend upon the specific switch module to which the driver is connected.

In the Soft Front Panel interface, when you mouse over a specific channel the cursor changes to a hand cursor, and a popup tool tip shows the Instrument Specific Syntax for the channel number. The Instrument Specific Syntax for channel numbers is used by the IVI and Labview driver open/close commands.

Identifying Channel Numbers

Channel number Instrument Specific Syntax for the Agilent PXI General Purpose Switch Modules is in the form: **ch***n* where **ch***n* is the actual channel number. For example, **RouteCloseChannel("ch8")** will close the relay that connects channel 8 COM (common) to it's NO (Normally Open) terminal. The following graphic shows the Soft Front Panel interface for the M9130A and illustrates the channel numbering scheme:



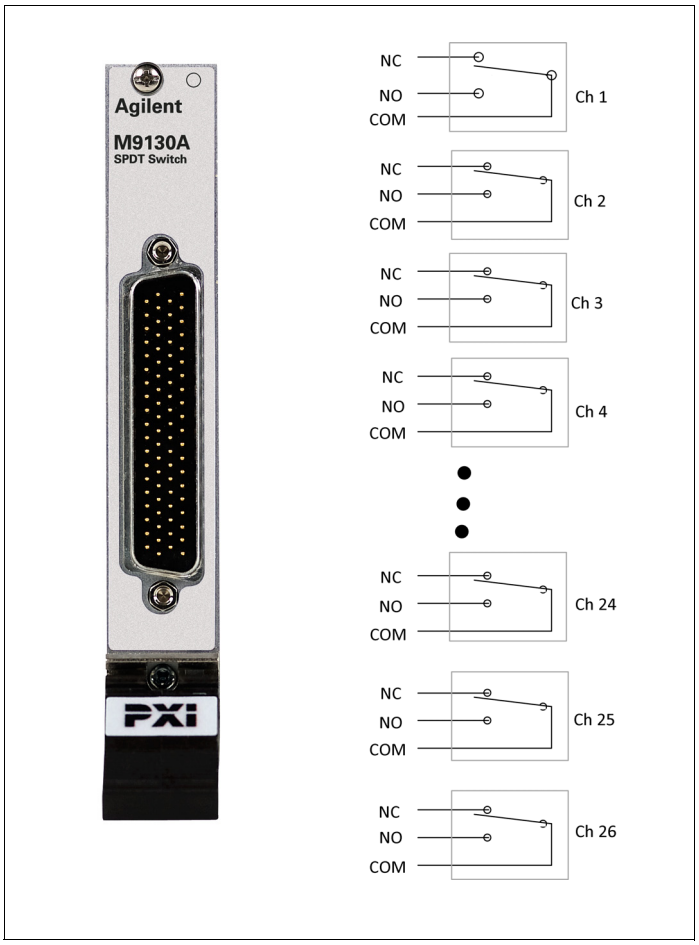
Module Front Panel Connectors And System Connections

The following pages show the topology diagrams and front panels for the individual PXI General Purpose Switch Modules.

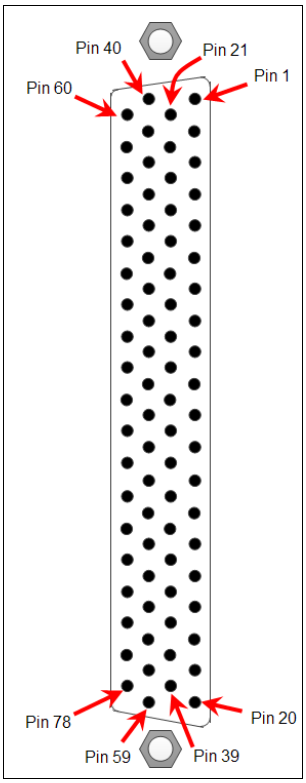
M9130A PXI SPDT Switch: 26 channels

The M9130A is an array of 26 single pole, double throw (Form C) relays. In the default (not energized) state, all signal paths are between the COM terminal and the corresponding Normally Closed (NC) terminal. Energizing a relay disconnects the NC terminal and creates a signal path between the COM and NO terminals.

The module is a general purpose armature relay module. They are suitable for use where reed relay based switching modules do not have sufficient voltage or current carrying capability. Applications include the switching of medium power AC and DC loads, or slave switching larger relays or solenoids. Connections are made to the module via a front panel mounted 78 pin D-Type connector plug.



M9130A Connector Pinout Figure 2 and the associated table lists the front panel 78 pin D male connector (viewed from the module front panel) and pin connections. Table 1 lists the pin out by channel number.



Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel
60	Ch 1 COM	40	Ch 1 NO	21	Ch 14 COM	1	Ch 14 NO
61	Ch 2 NO	41	Ch 1 NC	22	Ch 15 NO	2	Ch 14 NC
62	Ch 2 NC	42	Ch 2 COM	23	Ch 15 NC	3	Ch 15 COM
63	Ch 3 COM	43	Ch 3 NO	24	Ch 16 COM	4	Ch 16 NO
64	Ch 4 NO	44	Ch 3 NC	25	Ch 17 NO	5	Ch 16 NC
65	Ch 4 NC	45	Ch 4 COM	26	Ch 17 NC	6	Ch 17 COM
66	Ch 5 COM	46	Ch 5 NO	27	Ch 18 COM	7	Ch 18 NO
67	Ch 6 NO	47	Ch 5 NC	28	Ch 19 NO	8	Ch 18 NC
68	Ch 6 NC	48	Ch 6 COM	29	Ch 19 NC	9	Ch 19 COM
69	Ch 7 COM	49	Ch 7 NO	30	Ch 20 COM	10	Ch 20 NO
70	Ch 8 NO	50	Ch 7 NC	31	Ch 21 NO	11	Ch 20 NC
71	Ch 8 NC	51	Ch 8 COM	32	Ch 21 NC	12	Ch 21 COM
72	Ch 9 COM	52	Ch 9 NO	33	Ch 22 COM	13	Ch 22 NO
73	Ch 10 NO	53	Ch 9 NC	34	Ch 23 NO	14	Ch 22 NC
74	Ch 10 NC	54	Ch 10 COM	35	Ch 23 NC	15	Ch 23 COM
75	Ch 11 COM	55	Ch 11 NO	36	Ch 24 COM	16	Ch 24 NO
76	Ch 12 NO	56	Ch 11 NC	37	Ch 25 NO	17	Ch 24 NC
77	Ch 12 NC	57	Ch 12 COM	38	Ch 25 NC	18	Ch 25 COM
78	Ch 13 COM	58	Ch 13 NO	39	Ch 26 COM	19	Ch 26 NO
		59	Ch 13 NC			20	Ch 26 NC

Figure 2 M9130A Front Panel Connector (viewed from the front panel) and Pinout

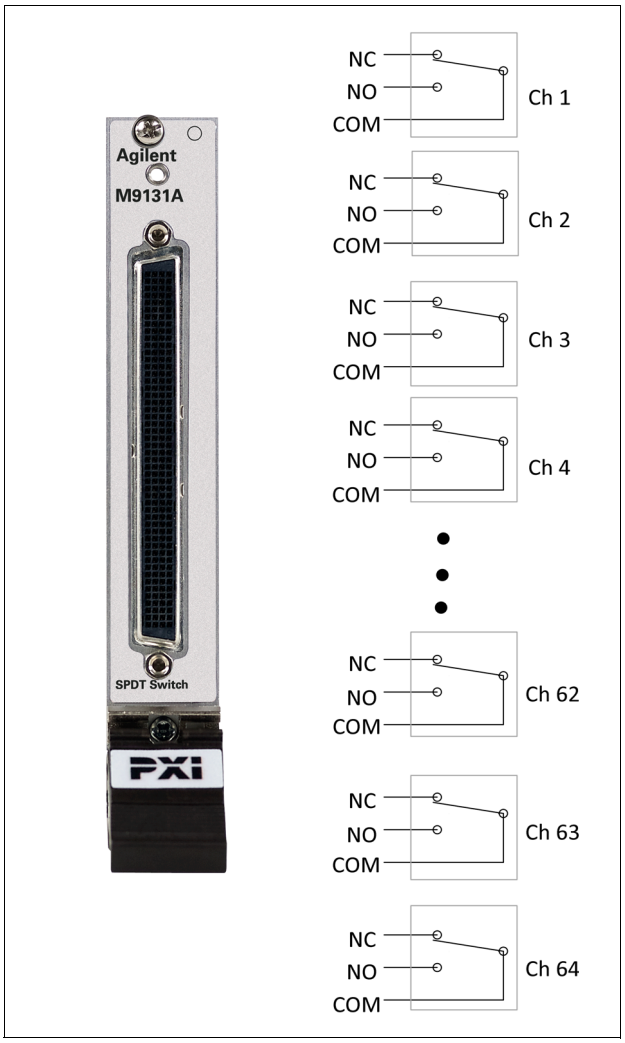
Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.
Ch 1 COM	60	Ch 8 COM	51	Ch 15 COM	3	Ch 21 COM	12
CH 1 NO	40	CH 8 NO	70	CH 15 NO	22	CH 21 NO	31
Ch 1 NC	41	Ch 8 NC	71	Ch 15 NC	23	Ch 21 NC	32
Ch 2 COM	42	Ch 9 COM	72	Ch 16 COM	24	Ch 22 COM	33
CH 2 NO	61	CH 9 NO	52	CH 16 NO	4	CH 22 NO	13
Ch 2 NC	62	Ch 9 NC	53	Ch 16 NC	5	Ch 22 NC	14
Ch 3 COM	63	Ch 10 COM	54	Ch 17 COM	6	Ch 23 COM	15
CH 3 NO	43	CH 10 NO	73	CH 17 NO	25	CH 23 NO	34
Ch 3 NC	44	Ch 10 NC	74	Ch 17 NC	26	Ch 23 NC	35
Ch 4 COM	45	Ch 11 COM	75	Ch 18 COM	27	Ch 24 COM	36
CH 4 NO	64	CH 11 NO	55	CH 18 NO	7	CH 24 NO	16
Ch 4 NC	65	Ch 11 NC	56	Ch 18 NC	8	Ch 24 NC	17
Ch 5 COM	66	Ch 12 COM	57	Ch 19 COM	9	Ch 25 COM	18
CH 5 NO	46	CH 12 NO	76	CH 19 NO	28	CH 25 NO	37
Ch 5 NC	47	Ch 12 NC	77	Ch 19 NC	29	Ch 25 NC	38
Ch 6 COM	48	Ch 13 COM	78	Ch 20 COM	30	Ch 26 COM	39
CH 6 NO	67	CH 13 NO	58	CH 20 NO	10	CH 26 NO	19
Ch 6 NC	68	Ch 13 NC	59	Ch 20 NC	11	Ch 26 NC	20
Ch 7 COM	69	Ch 14 COM	21				
CH 7 NO	49	CH 14 NO	1	All pins are used			
Ch 7 NC	50	Ch 14 NC	2				

Table 1 M9130A Channel Number to Connector Pinout

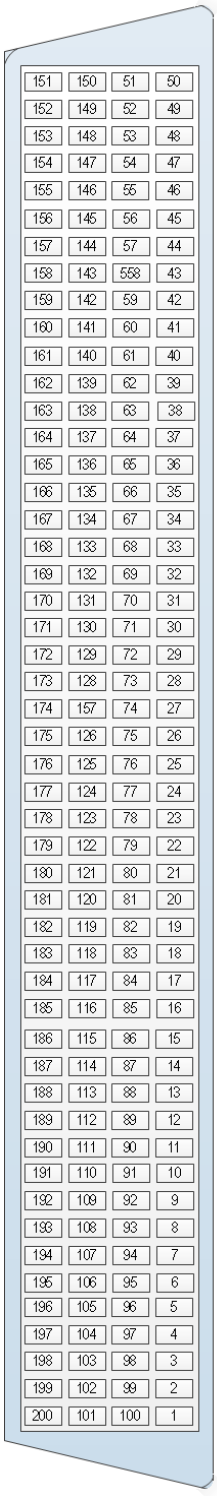
M9131A PXI SPDT Switch: 64 channels

Agilent's M9131A switch module is an array of 64 single pole, double throw (Form C) relays. In the default (not energized) state, all signal paths are between the COM terminal and the corresponding Normally Closed (NC) terminal. Energizing a relay disconnects the NC terminal and creates a signal path between the COM and NO terminals. The modules uses reed relays (Ruthenium sputtered type), that offer very long life with good low level switching performance and excellent contact resistance stability.

Connections to the modules are through a high density 200 pin Low Force Helix (LFH) connector.



M9131A Connector Pinout Figure 3 and the associated table lists the front panel 200 pin D female connector (viewed from the module front) and pin connections. Table 2 lists the pin out by channel number.



Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel
151	Ch 1 NO	150	Ch 2 NO	51	Ch 3 NO	50	Ch 4 NO
152	Ch 1 COM	149	Ch 2 COM	52	Ch 3 COM	49	Ch 4 COM
153	Ch 1 NC	148	Ch 2 NC	53	Ch 3 NC	48	Ch 4 NC
154	Ch 5 NO	147	Ch 6 NO	54	Ch 7 NO	47	Ch 8 NO
155	Ch 5 COM	146	Ch 6 COM	55	Ch 7 COM	46	Ch 8 COM
156	Ch 5 NC	145	Ch 6 NC	56	Ch 7 NC	45	Ch 8 NC
157	Ch 9 NO	144	Ch 10 NO	57	Ch 11 NO	44	Ch 12 NO
158	Ch 9 COM	143	Ch 10 COM	58	Ch 11 COM	43	Ch 12 COM
159	Ch 9 NC	142	Ch 10 NC	59	Ch 11NC	42	Ch 12 NC
160	Ch 13 NO	141	Ch 14 NO	60	Ch 15 NO	41	Ch 16 NO
161	Ch 13 COM	140	Ch 14 COM	61	Ch 15 COM	40	Ch 16 COM
162	Ch 13 NC	139	Ch 14 NC	62	Ch 15 NC	39	Ch 16 NC
163	Ch 17 NO	138	Ch 18 NO	63	Ch 19 NO	38	Ch 20 NO
164	Ch 17 COM	137	Ch 18 COM	64	Ch 19 COM	37	Ch 20 COM
165	Ch 17 NC	136	Ch 18 NC	65	Ch 19 NC	36	Ch 20 NC
166	Ch 21 NO	135	Ch 22 NO	66	Ch 23 NO	35	Ch 24 NO
167	Ch 21COM	134	Ch 22 COM	67	Ch 23 COM	34	Ch 24 COM
168	Ch 21 NC	133	Ch 22 NC	68	Ch 23 NC	33	Ch 24 NC
169	Ch 25 NO	132	Ch 26 NO	69	Ch 27 NO	32	Ch 28 NO
170	Ch 25 COM	131	Ch 26 COM	70	Ch 27 COM	31	Ch 28 COM
171	Ch 25 NC	130	Ch 26 NC	71	Ch 27 NC	30	Ch 28 NC
172	Ch 29 NO	129	Ch 30 NO	72	Ch 31 NO	29	Ch 32 NO
173	Ch 29 COM	128	Ch 30 COM	73	Ch 31 COM	28	Ch 32 COM
174	Ch 29 NC	127	Ch 30 NC	74	Ch 31 NC	27	Ch 32 NC
175	Ch 33 NO	126	Ch 34 NO	75	Ch 35 NO	26	Ch 36 NO
176	Ch 33 COM	125	Ch 34 COM	76	Ch 35 COM	25	Ch 36 COM
177	Ch 33 NC	124	Ch 34 NC	77	Ch 35 NC	24	Ch 36 NC
178	Ch 37 NO	123	Ch 38 NO	78	Ch 39 NO	23	Ch 40 NO
179	Ch 37 COM	122	Ch 38 COM	79	Ch 39 COM	22	Ch 40 COM
180	Ch 37 NC	121	Ch 38 NC	80	Ch 39 NC	21	Ch 40 NC
181	Ch 41 NO	120	Ch 42 NO	81	Ch 43 NO	20	Ch 44 NO
182	Ch 41 COM	119	Ch 42 COM	82	Ch 43 COM	19	Ch 44 COM
183	Ch 41 NC	118	Ch 42 NC	83	Ch 43 NC	18	Ch 44 NC
184	Ch 45 NO	117	Ch 46 NO	84	Ch 47 NO	17	Ch 48 NO
185	Ch 45 COM	116	Ch 46 COM	85	Ch 47 COM	16	Ch 48 COM
186	Ch 45 NC	115	Ch 46 NC	86	Ch 47 NC	15	Ch 48 NC
187	Ch 49 NO	114	Ch 50 NO	87	Ch 51 NO	14	Ch 52 NO
188	Ch 49 COM	113	Ch 50 COM	88	Ch 51 COM	13	Ch 52 COM
189	Ch 49 NC	112	Ch 50 NC	89	Ch 51 NC	12	Ch 52 NC
190	Ch 53 NO	111	Ch 54 NO	90	Ch 55 NO	11	Ch 56 NO
191	Ch 53 COM	110	Ch 54 COM	91	Ch 55 COM	10	Ch 56 COM
192	Ch 53 NC	109	Ch 54 NC	92	Ch 55 NC	9	Ch 56 NC
193	Ch 57 NO	108	Ch 58 NO	93	Ch 59 NO	8	Ch 60 NO
194	Ch 57 COM	107	Ch 58 COM	94	Ch 59 COM	7	Ch 60 COM
195	Ch 57 NC	106	Ch 58 NC	95	Ch 59 NC	6	Ch 60 NC
196	Ch 61 NO	105	Ch 62 NO	96	Ch 63 NO	5	Ch 64 NO
197	Ch 61 COM	104	Ch 62 COM	97	Ch 63 COM	4	Ch 64 COM
198	Ch 61 NC	103	Ch 62 NC	98	Ch 63 NC	3	Ch 64 NC
199	--	102	--	99	--	2	--
200	--	101	--	100	--	1	--

Figure 3 M9131A Connector (viewed from the front panel) and Pinout

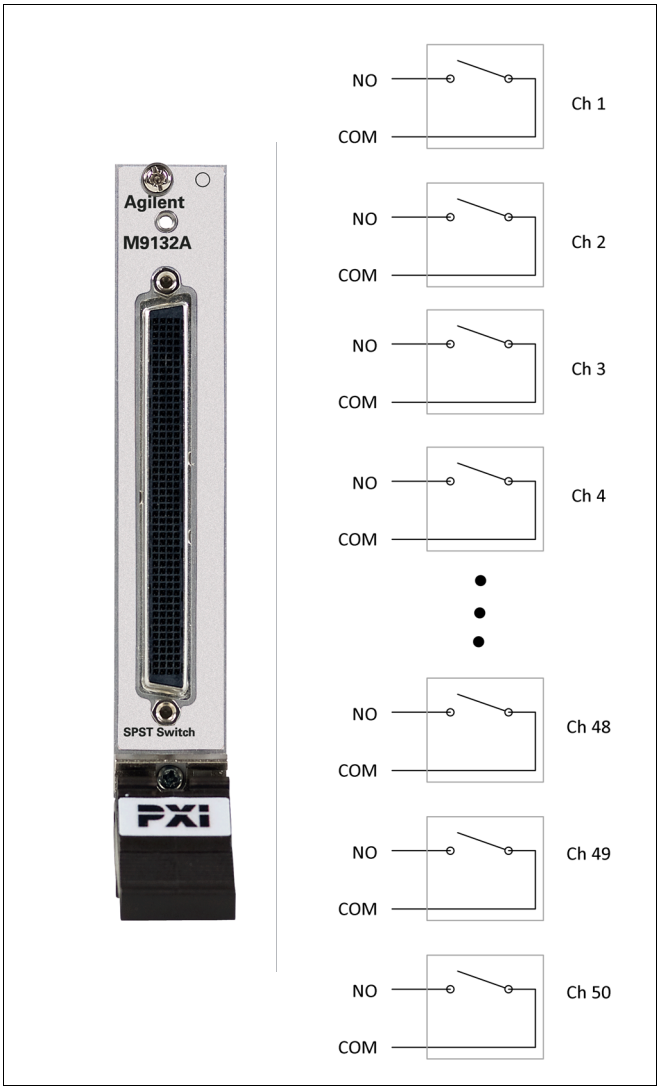
Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.
Ch 1 COM	152	Ch 17 COM	164	Ch 33 COM	176	Ch 49 COM	188
Ch 1 NO	151	Ch 17 NO	163	Ch 33 NO	175	Ch 49 NO	187
Ch 1 NC	153	Ch 17 NC	165	Ch 33 NC	177	Ch 49 NC	189
Ch 2 COM	149	Ch 18 COM	137	Ch 34 COM	125	Ch 50 COM	113
Ch 2 NO	150	Ch 18 NO	138	Ch 34 NO	126	Ch 50 NO	114
Ch 2 NC	148	Ch 18 NC	136	Ch 34 NC	124	Ch 50 NC	112
Ch 3 COM	52	Ch 19 COM	64	Ch 35 COM	76	Ch 51 COM	88
Ch 3 NO	51	Ch 19 NO	63	Ch 35 NO	75	Ch 51 NO	87
Ch 3 NC	53	Ch 19 NC	65	Ch 35 NC	77	Ch 51 NC	89
Ch 4 COM	49	Ch 20 COM	37	Ch 36 COM	25	Ch 52 COM	13
Ch 4 NO	50	Ch 20 NO	38	Ch 36 NO	26	Ch 52 NO	14
Ch 4 NC	48	Ch 20 NC	36	Ch 36 NC	24	Ch 52 NC	12
Ch 5 COM	155	Ch 21 COM	167	Ch 37 COM	179	Ch 53 COM	191
Ch 5 NO	154	Ch 21 NO	166	Ch 37 NO	178	Ch 53 NO	190
Ch 5 NC	156	Ch 21 NC	168	Ch 37 NC	180	Ch 53 NC	192
Ch 6 COM	146	Ch 22 COM	134	Ch 38 COM	122	Ch 54 COM	110
Ch 6 NO	147	Ch 22 NO	135	Ch 38 NO	123	Ch 54 NO	111
Ch 6 NC	145	Ch 22 NC	133	Ch 38 NC	121	Ch 54 NC	109
Ch 7 COM	55	Ch 23 COM	67	Ch 39 COM	79	Ch 55 COM	91
Ch 7 NO	54	Ch 23 NO	66	Ch 39 NO	78	Ch 55 NO	90
Ch 7 NC	56	Ch 23 NC	68	Ch 39 NC	80	Ch 55 NC	92
Ch 8 COM	46	Ch 24 COM	34	Ch 40 COM	22	Ch 56 COM	10
Ch 8 NO	47	Ch 24 NO	35	Ch 40 NO	23	Ch 56 NO	11
Ch 8 NC	45	Ch 24 NC	33	Ch 40 NC	21	Ch 56 NC	9
Ch 9 COM	158	Ch 25 COM	170	Ch 41 COM	182	Ch 57 COM	194
Ch 9 NO	157	Ch 25 NO	169	Ch 41 NO	181	Ch 57 NO	193
Ch 9 NC	159	Ch 25 NC	171	Ch 41 NC	183	Ch 57 NC	195
Ch 10 COM	143	Ch 26 COM	131	Ch 42 COM	119	Ch 58 COM	107
Ch 10 NO	144	Ch 26 NO	132	Ch 42 NO	120	Ch 58 NO	108
Ch 10 NC	142	Ch 26 NC	130	Ch 42 NC	118	Ch 58 NC	106
Ch 11 COM	58	Ch 27 COM	70	Ch 43 COM	82	Ch 59 COM	94
Ch 11 NO	57	Ch 27 NO	69	Ch 43 NO	81	Ch 59 NO	93
Ch 11 NC	59	Ch 27 NC	71	Ch 43 NC	83	Ch 59 NC	95
Ch 12 COM	43	Ch 28 COM	31	Ch 44 COM	19	Ch 60 COM	7
Ch 12 NO	44	Ch 28 NO	32	Ch 44 NO	20	Ch 60 NO	8
Ch 12 NC	42	Ch 28 NC	30	Ch 44 NC	18	Ch 60 NC	6
Ch 13 COM	161	Ch 29 COM	173	Ch 45 COM	185	Ch 61 COM	197
Ch 13 NO	160	Ch 29 NO	172	Ch 45 NO	184	Ch 61 NO	196
Ch 13 NC	162	Ch 29 NC	174	Ch 45 NC	186	Ch 61 NC	198
Ch 14 COM	140	Ch 30 COM	128	Ch 46 COM	116	Ch 62 COM	104
Ch 14 NO	141	Ch 30 NO	129	Ch 46 NO	117	Ch 62 NO	105
Ch 14 NC	139	Ch 30 NC	127	Ch 46 NC	115	Ch 62 NC	103
Ch 15 COM	61	Ch 31 COM	73	Ch 47 COM	85	Ch 63 COM	97
Ch 15 NO	60	Ch 31 NO	72	Ch 47 NO	84	Ch 63 NO	96
Ch 15NC	62	Ch 31 NC	74	Ch 47 NC	86	Ch 63 NC	98
Ch 16 COM	40	Ch 32 COM	28	Ch 48 COM	16	Ch 64 COM	4
Ch 16 NO	41	Ch 32 NO	29	Ch 48 NO	17	Ch 64 NO	5
Ch 16NC	39	Ch 32 NC	27	Ch 48 NC	15	Ch 64 NC	3
Pins Not used: 1, 2, 99, 100-102, 199, 200							

Table 2 M9131A Channel Number to Connector Pinout

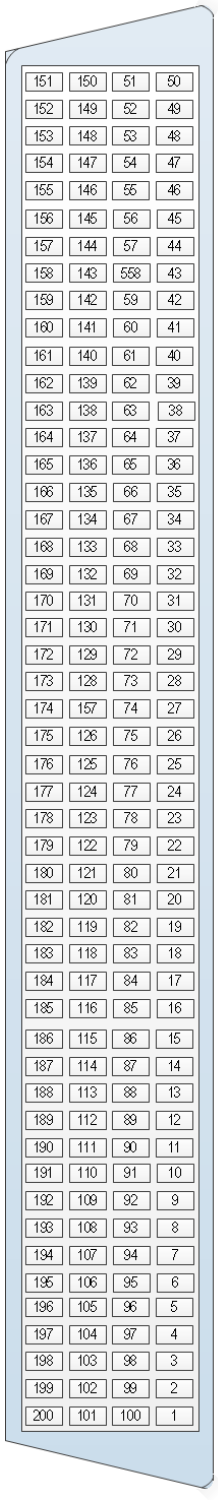
M9132A PXI SPST Switch: 50 channels

Agilent's M9132A switch module is an array of 50 single pole, single throw (Form A) relays. In the default (not energized) state, all relays are open (no connection to the COM terminal). Energizing a relay connects the NO terminal to the COM terminal. The module uses reed relays (Ruthenium sputtered type), that offer very long life with good low level switching performance and excellent contact resistance stability.

User connections to the modules are through a high density 200 pin Low Force Helix (LFH) connector.



M9132A Connector Pinout The following figure and table lists the front panel 200 pin D female connector (as viewed from the module front) and pin connections. Table 3 lists the pin out by channel number.



Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel
151	Ch 1 NO	150	Ch 2 NO	51	Ch 3 NO	50	Ch 4 NO
152	Ch 1 COM	149	Ch 2 COM	52	Ch 3 COM	49	Ch 4 COM
153	Ch 5 NO	148	Ch 6 NO	53	Ch 7 NO	48	Ch 8 NO
154	Ch 5 COM	147	Ch 6 COM	54	Ch 7 COM	47	Ch 8 COM
155	Ch 9 NO	146	Ch 10 NO	55	Ch 11 NO	46	Ch 12 NO
156	Ch 9 COM	145	Ch 10 COM	56	Ch 11 COM	45	Ch 12 COM
157	Ch 13 NO	144	Ch 14 NO	57	Ch 15 NO	44	Ch 16 NO
158	Ch 13 COM	143	Ch 14 COM	58	Ch 15C OM	43	Ch 16 COM
159	Ch 17 NO	142	Ch 18 NO	59	Ch 19 NO	42	Ch 20 NO
160	Ch 17 COM	141	Ch 18 COM	60	Ch 19 COM	41	Ch 20 COM
161	Ch 21 NO	140	Ch 22 NO	61	Ch 23 NO	40	Ch 24 NO
162	Ch 21 COM	139	Ch 22 COM	62	Ch 23 COM	39	Ch 24 COM
163	Ch 25 NO	138	Ch 26 NO	63	Ch 27 NO	38	Ch 28 NO
164	Ch 25 COM	137	Ch 26 COM	64	Ch 27 COM	37	Ch 28 COM
165	Ch 29 NO	136	Ch 30 NO	65	Ch 31 NO	36	Ch 32 NO
166	Ch 29 COM	135	Ch 30 COM	66	Ch 31 COM	35	Ch 32 COM
167	Ch 33 NO	134	Ch 34 NO	67	Ch 35 NO	34	Ch 36 NO
168	Ch 33 COM	133	Ch 34 COM	68	Ch 35 COM	33	Ch 36 COM
169	Ch 37 NO	132	Ch 38 NO	69	Ch 39 NO	32	Ch 40 NO
170	Ch 37 COM	131	Ch 38 COM	70	Ch 39 COM	31	Ch 40 COM
171	Ch 41 NO	130	Ch 42 NO	71	Ch 43 NO	30	Ch 44 NO
172	Ch 41 COM	129	Ch 42 COM	72	Ch 43 COM	29	Ch 44 COM
173	Ch 45 NO	128	Ch 46 NO	73	Ch 47 NO	28	Ch 48 NO
174	Ch 45 COM	127	Ch 46 COM	74	Ch 47 COM	27	Ch 48 COM
175	Ch 49 NO	126	Ch 50 NO	75	--	26	--
176	Ch 49 COM	125	Ch 50 COM	76	--	25	--
177	--	124	--	77	--	24	--
178	--	123	--	78	--	23	--
179	--	122	--	79	--	22	--
180	--	121	--	80	--	21	--
181	--	120	--	81	--	20	--
182	--	119	--	82	--	19	--
183	--	118	--	83	--	18	--
184	--	117	--	84	--	17	--
185	--	116	--	85	--	16	--
186	--	115	--	86	--	15	--
187	--	114	--	87	--	14	--
188	--	113	--	88	--	13	--
189	--	112	--	89	--	12	--
190	--	111	--	90	--	11	--
191	--	110	--	91	--	10	--
192	--	109	--	92	--	9	--
193	--	108	--	93	--	8	--
194	--	107	--	94	--	7	--
195	--	106	--	95	--	6	--
196	--	105	--	96	--	5	--
197	--	104	--	97	--	4	--
198	--	103	--	98	--	3	--
199	--	102	--	99	--	2	--
200	--	101	--	100	--	1	--

Figure 4 M9132A Connector (viewed from the front panel) and Pinout

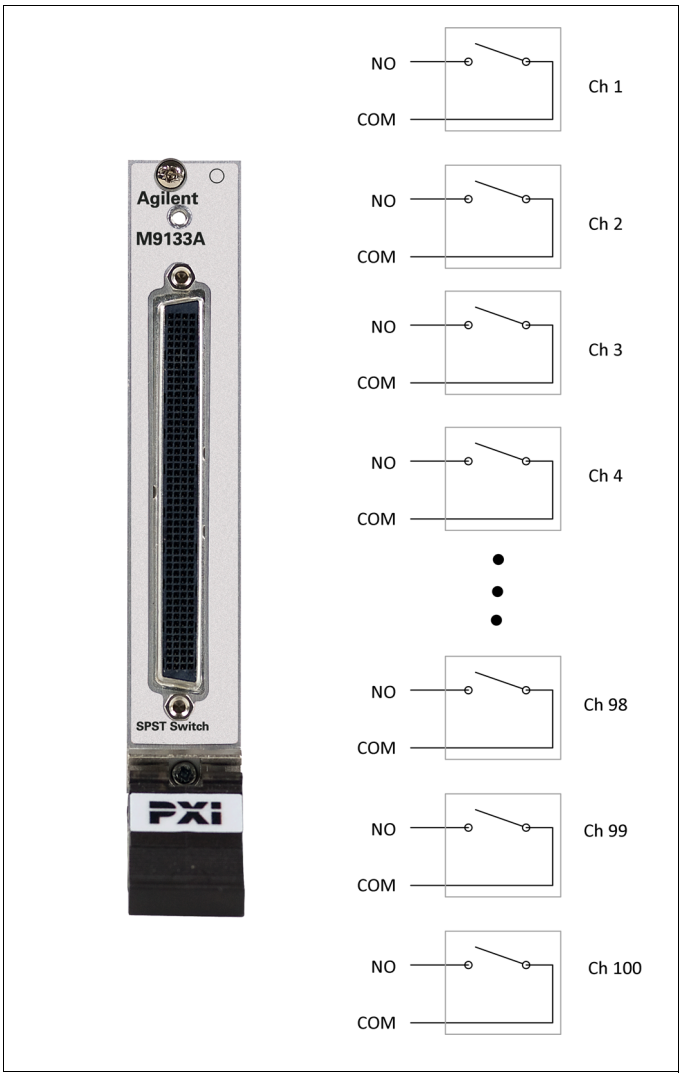
Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.
Ch 1 NO	151	Ch 14 NO	144	Ch 27 NO	63	Ch 39 NO	69
Ch 1 COM	152	Ch 14 COM	143	Ch 27 COM	64	Ch 39 COM	70
Ch 2 NO	150	Ch 15 NO	57	Ch 28 NO	38	Ch 40 NO	32
Ch 2 COM	149	Ch 15 COM	58	Ch 28 COM	37	Ch 40 COM	31
Ch 3 NO	51	Ch 16 NO	44	Ch 29 NO	165	Ch 41 NO	171
Ch 3 COM	52	Ch 16 COM	43	Ch 29 COM	166	Ch 41 COM	172
Ch 4 NO	50	Ch 17 NO	159	Ch 30 NO	136	Ch 42 NO	130
Ch 4 COM	49	Ch 17 COM	160	Ch 30 COM	135	Ch 42 COM	129
Ch 5 NO	153	Ch 18 NO	142	Ch 31 NO	65	Ch 43 NO	71
Ch 5 COM	154	Ch 18 COM	141	Ch 31 COM	66	Ch 43 COM	72
Ch 6 NO	148	Ch 19 NO	59	Ch 32 NO	36	Ch 44 NO	30
Ch 6 COM	147	Ch 19 COM	60	Ch 32 COM	35	Ch 44 COM	29
Ch 7 NO	53	Ch 20 NO	42	Ch 33 NO	167	Ch 45 NO	173
Ch 7 COM	54	Ch 20 COM	41	Ch 33 COM	168	Ch 45 COM	174
Ch 8 NO	48	Ch 21 NO	161	Ch 34 NO	134	Ch 46 NO	128
Ch 8 COM	47	Ch 21 COM	162	Ch 34 COM	133	Ch 46 COM	127
Ch 9 NO	155	Ch 22 NO	140	Ch 35 NO	67	Ch 47 NO	73
Ch 9 COM	156	Ch 22 COM	139	Ch 35 COM	68	Ch 47 COM	74
Ch 10 NO	146	Ch 23 NO	61	Ch 36 NO	34	Ch 48 NO	28
Ch 10 COM	145	Ch 23 COM	62	Ch 36 COM	33	Ch 48 COM	27
Ch 11 NO	55	Ch 24 NO	40	Ch 37 NO	169	Ch 49 NO	175
Ch 11 COM	56	Ch 24 COM	39	Ch 37 COM	170	Ch 49 COM	176
Ch 12 NO	46	Ch 25 NO	163	Ch 38 NO	132	Ch 50 NO	126
Ch 12 COM	45	Ch 25 COM	164	Ch 38 COM	131	Ch 50 COM	125
Ch 13 NO	157	Ch 26 NO	138				
Ch 13 COM	158	Ch 26 COM	137	Pins not used: 1-26, 75-100, 101-124, 177-200			

Table 3 M9132A Channel Number to Connector Pinout

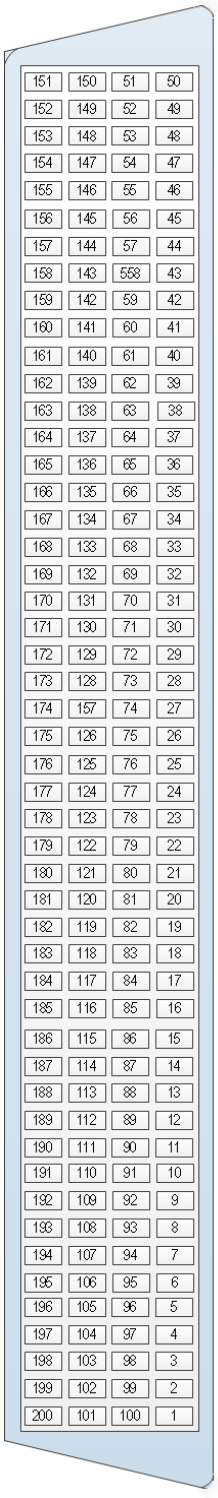
M9133A PXI SPST Switch: 100 channels

Agilent's M9133A switch module is an array of 100 single pole, single throw (Form A) relays. In the default (not energized) state, all relays are open (no connection to the COM terminal). Energizing a relay connects the NO terminal to the COM terminal. The modules use reed relays (Ruthenium sputtered type), that offer very long life with good low level switching performance and excellent contact resistance stability.

User connections to the module are through a high density, 200 pin Low Force Helix (LFH) connector.



M9133 A Connector Pinout Figure 5 and the associated table lists the front panel 200 pin D female connector (as viewed from the module front) and pin connections. Table 4 lists the pin out by channel number.



Pin No.	Channel		Pin No.	Channel		Pin No.	Channel		Pin No.	Channel
151	Ch 1 NO		150	Ch 2 NO		51	Ch 3 NO		50	Ch 4 NO
152	Ch 1 COM		149	Ch 2 COM		52	Ch 3 COM		49	Ch 4 COM
153	Ch 5 NO		148	Ch 6 NO		53	Ch 7 NO		48	Ch 8 NO
154	Ch 5 COM		147	Ch 6 COM		54	Ch 7 COM		47	Ch 8 COM
155	Ch 9 NO		146	Ch 10 NO		55	Ch 11 NO		46	Ch 12 NO
156	Ch 9 COM		145	Ch 10 COM		56	Ch 11 COM		45	Ch 12 COM
157	Ch 13 NO		144	Ch 14 NO		57	Ch 15 NO		44	Ch 16 NO
158	Ch 13 COM		143	Ch 14 COM		58	Ch 15 COM		43	Ch 16 COM
159	Ch 17 NO		142	Ch 18 NO		59	Ch 19 NO		42	Ch 20 NO
160	Ch 17 COM		141	Ch 18 COM		60	Ch 19 COM		41	Ch 20 COM
161	Ch 21 NO		140	Ch 22 NO		61	Ch 23 NO		40	Ch 24 NO
162	Ch 21 COM		139	Ch 22 COM		62	Ch 23 COM		39	Ch 24 COM
163	Ch 25 NO		138	Ch 26 NO		63	Ch 27 NO		38	Ch 28 NO
164	Ch 25 COM		137	Ch 26 COM		64	Ch 27 COM		37	Ch 28 COM
165	Ch 29 NO		136	Ch 30 NO		65	Ch 31 NO		36	Ch 32 NO
166	Ch 29 COM		135	Ch 30 COM		66	Ch 31 COM		35	Ch 32 COM
167	Ch 33 NO		134	Ch 34 NO		67	Ch 35 NO		34	Ch 36 NO
168	Ch 33 COM		133	Ch 34 COM		68	Ch 35 COM		33	Ch 36 COM
169	Ch 37 NO		132	Ch 38 NO		69	Ch 39 NO		32	Ch 40 NO
170	Ch 37 COM		131	Ch 38 COM		70	Ch 39 COM		31	Ch 40 COM
171	Ch 41 NO		130	Ch 42 NO		71	Ch 43 NO		30	Ch 44 NO
172	Ch 41 COM		129	Ch 42 COM		72	Ch 43 COM		29	Ch 44 COM
173	Ch 45 NO		128	Ch 46 NO		73	Ch 47 NO		28	Ch 48 NO
174	Ch 45 COM		127	Ch 46 COM		74	Ch 47 COM		27	Ch 48 COM
175	Ch 49 NO		126	Ch 50 NO		75	Ch 51 NO		26	Ch 52 NO
176	Ch 49 COM		125	Ch 50 COM		76	Ch 51 COM		25	Ch 52 COM
177	Ch 53 NO		124	Ch 54 NO		77	Ch 55 NO		24	Ch 56 NO
178	Ch 53 COM		123	Ch 54 COM		78	Ch 55 COM		23	Ch 56 COM
179	Ch 57 NO		122	Ch 58 NO		79	Ch 59 NO		22	Ch 60 NO
180	Ch 57 COM		121	Ch 58 COM		80	Ch 59 COM		21	Ch 60 COM
181	Ch 61 NO		120	Ch 62 NO		81	Ch 63 NO		20	Ch 64 NO
182	Ch 61 COM		119	Ch 62 COM		82	Ch 63 COM		19	Ch 64 COM
183	Ch 65 NO		118	Ch 66 NO		83	Ch 67 NO		18	Ch 68 NO
184	Ch 65 COM		117	Ch 66 COM		84	Ch 67 COM		17	Ch 68 COM
185	Ch 69 NO		116	Ch 70 NO		85	Ch 71 NO		16	Ch 72 NO
186	Ch 69 COM		115	Ch 70 COM		86	Ch 71 COM		15	Ch 72 COM
187	Ch 73 NO		114	Ch 74 NO		87	Ch 75 NO		14	Ch 76 NO
188	Ch 73 COM		113	Ch 74 COM		88	Ch 75 COM		13	Ch 76 COM
189	Ch 77 NO		112	Ch 78 NO		89	Ch 79 NO		12	Ch 80 NO
190	Ch 77 COM		111	Ch 78 COM		90	Ch 79 COM		11	Ch 80 COM
191	Ch 81 NO		110	Ch 82 NO		91	Ch 83 NO		10	Ch 84 NO
192	Ch 81 COM		109	Ch 82 COM		92	Ch 83 COM		9	Ch 84 COM
193	Ch 85 NO		108	Ch 86 NO		93	Ch 87 NO		8	Ch 88 NO
194	Ch 85 COM		107	Ch 86 COM		94	Ch 87 COM		7	Ch 88 COM
195	Ch 89 NO		106	Ch 90 NO		95	Ch 91 NO		6	Ch 92 NO
196	Ch 89 COM		105	Ch 90 COM		96	Ch 91 COM		5	Ch 92 COM
197	Ch 93 NO		104	Ch 94 NO		97	Ch 95 NO		4	Ch 96 NO
198	Ch 93 COM		103	Ch 94 COM		98	Ch 95 COM		3	Ch 96 COM
199	Ch 97 NO		102	Ch 98 NO		99	Ch 99 NO		2	Ch 100 NO
200	Ch 97 COM		101	Ch 98 COM		100	Ch 99 COM		1	Ch 100 COM

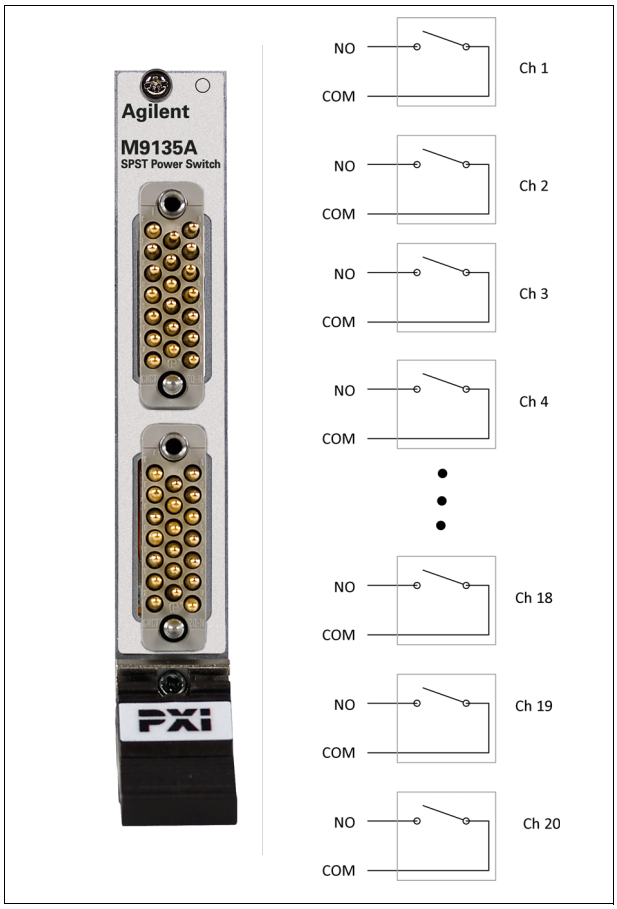
Figure 5 M9133A Connector (viewed from the front panel) and Pinout

Channel	Pin No.	Channel	Pin No.	Channel	Pin No.	Channel	Pin No.
Ch 1 NO	151	Ch 26 NO	138	Ch 51 NO	75	Ch 76 NO	14
Ch 1 COM	152	Ch 26 COM	137	Ch 51 COM	76	Ch 76 COM	13
Ch 2 NO	150	Ch 27 NO	63	Ch 52 NO	26	Ch 77 NO	189
Ch 2 COM	149	Ch 27 COM	64	Ch 52 COM	25	Ch 77 COM	190
Ch 3 NO	51	Ch 28 NO	38	Ch 53 NO	177	Ch 78 NO	112
Ch 3 COM	52	Ch 28 COM	37	Ch 53 COM	178	Ch 78 COM	111
Ch 4 NO	50	Ch 29 NO	165	Ch 54 NO	124	Ch 79 NO	89
Ch 4 COM	49	Ch 29 COM	166	Ch 54 COM	123	Ch 79 COM	90
Ch 5 NO	153	Ch 30 NO	136	Ch 55 NO	77	Ch 80 NO	12
Ch 5 COM	154	Ch 30 COM	135	Ch 55 COM	78	Ch 80 COM	11
Ch 6 NO	148	Ch 31 NO	65	Ch 56 NO	24	Ch 81 NO	191
Ch 6 COM	147	Ch 31 COM	66	Ch 56 COM	23	Ch 81 COM	192
Ch 7 NO	53	Ch 32 NO	36	Ch 57 NO	179	Ch 82 NO	110
Ch 7 COM	54	Ch 32 COM	35	Ch 57 COM	180	Ch 82 COM	109
Ch 8 NO	48	Ch 33 NO	167	Ch 58 NO	122	Ch 83 NO	91
Ch 8 COM	47	Ch 33 COM	168	Ch 58 COM	121	Ch 83 COM	92
Ch 9 NO	155	Ch 34 NO	134	Ch 59 NO	79	Ch 84 NO	10
Ch 9 COM	156	Ch 34 COM	133	Ch 59 COM	80	Ch 84 COM	9
Ch 10 NO	146	Ch 35 NO	67	Ch 60 NO	22	Ch 85 NO	193
Ch 10 COM	145	Ch 35 COM	68	Ch 60 COM	21	Ch 85 COM	194
Ch 11 NO	55	Ch 36 NO	34	Ch 61 NO	181	Ch 86 NO	108
Ch 11 COM	56	Ch 36 COM	33	Ch 61 COM	182	Ch 86 COM	107
Ch 12 NO	46	Ch 37 NO	169	Ch 62 NO	120	Ch 87 NO	93
Ch 12 COM	45	Ch 37 COM	170	Ch 62 COM	119	Ch 87 COM	94
Ch 13 NO	157	Ch 38 NO	132	Ch 63 NO	81	Ch 88 NO	8
Ch 13 COM	158	Ch 38 COM	131	Ch 63 COM	82	Ch 88 COM	7
Ch 14 NO	144	Ch 39 NO	69	Ch 64 NO	20	Ch 89 NO	195
Ch 14 COM	143	Ch 39 COM	70	Ch 64 COM	19	Ch 89 COM	196
Ch 15 NO	57	Ch 40 NO	32	Ch 65 NO	183	Ch 90 NO	106
Ch 15 COM	58	Ch 40 COM	31	Ch 65 COM	184	Ch 90 COM	105
Ch 16 NO	44	Ch 41 NO	171	Ch 66 NO	118	Ch 91 NO	95
Ch 16 COM	43	Ch 41 COM	172	Ch 66 COM	117	Ch 91 COM	96
Ch 17 NO	159	Ch 42 NO	130	Ch 67 NO	83	Ch 92 NO	6
Ch 17 COM	160	Ch 42 COM	129	Ch 67 COM	84	Ch 92 COM	5
Ch 18 NO	142	Ch 43 NO	71	Ch 68 NO	18	Ch 93 NO	197
Ch 18 COM	141	Ch 43 COM	72	Ch 68 COM	17	Ch 93 COM	198
Ch 19 NO	59	Ch 44 NO	30	Ch 69 NO	185	Ch 94 NO	104
Ch 19 COM	60	Ch 44 COM	29	Ch 69 COM	186	Ch 94 COM	103
Ch 20 NO	42	Ch 45 NO	173	Ch 70 NO	116	Ch 95 NO	97
Ch 20 COM	41	Ch 45 COM	174	Ch 70 COM	115	Ch 95 COM	98
Ch 21 NO	161	Ch 46 NO	128	Ch 71 NO	85	Ch 96 NO	4
Ch 21 COM	162	Ch 46 COM	127	Ch 71 COM	86	Ch 96 COM	3
Ch 22 NO	140	Ch 47 NO	73	Ch 72 NO	16	Ch 97 NO	199
Ch 22 COM	139	Ch 47 COM	74	Ch 72 COM	15	Ch 97 COM	200
Ch 23 NO	61	Ch 48 NO	28	Ch 73 NO	187	Ch 98 NO	102
Ch 23 COM	62	Ch 48 COM	27	Ch 73 COM	188	Ch 98 COM	101
Ch 24 NO	40	Ch 49 NO	175	Ch 74 NO	114	Ch 99 NO	99
Ch 24 COM	39	Ch 49 COM	176	Ch 74 COM	113	Ch 99 COM	100
Ch 25 NO	163	Ch 50 NO	126	Ch 75 NO	87	Ch 100 NO	1
Ch 25 COM	164	Ch 50 COM	125	Ch 75 COM	88	Ch 100 COM	2

Table 4 M9133A Channel Number to Connector Pinout

M9135A PXI SPST Power Relay: 20 channels

The M9135A module has 20, single pole, single throw (Form A) relays suitable for switching inductive or capacitive loads. This type of relay module is intended for switching heavy AC or DC loads or for slaving up large external relays and solenoids. It uses armature power relays, gold-flash over silver alloy. The module has two 20-pin male MS-M connectors on the front panel.



M9135A Connector Pinout Figure 6 on the next page lists the dual front panel 20 pin connectors (as viewed from the module front panel) with the pin connections.

WARNING **Not for connection to mains. Do not connect this module or it's accessories to mains.**

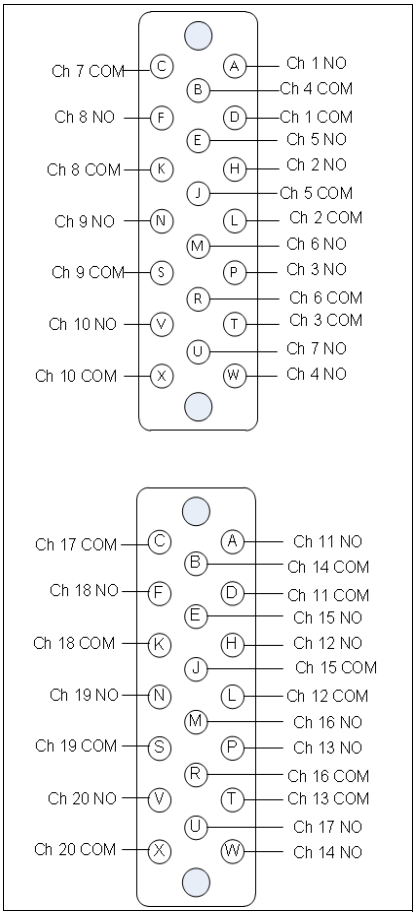


Figure 6 M9135A Front Panel Connector (viewed from the front panel) Pinout

The following graphs represent the voltage/current derating and relay life expectancy.

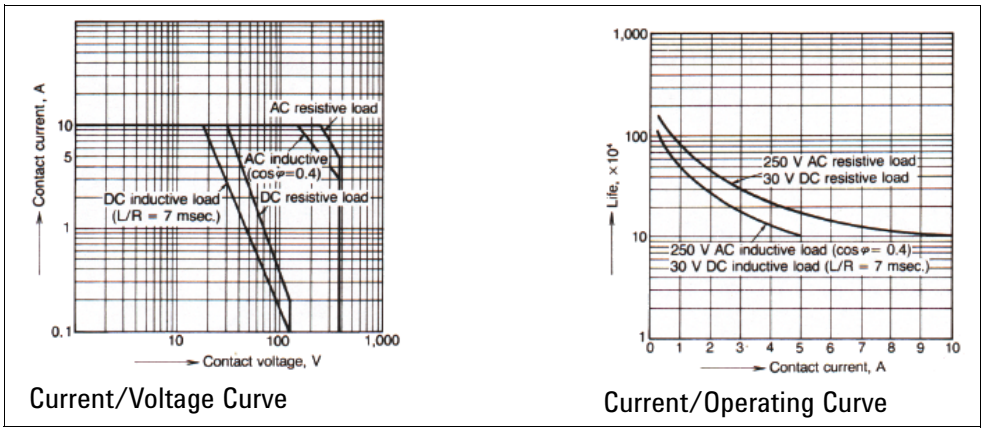


Figure 7 M9135A Operating Curves -- Do not exceed 5A per channel

WARNING **Do not exceed the 5A at 55°C rating of the module. Refer to the specifications on the M9135A Data Sheet (GP Module Data Sheet).**

General Purpose Module Accessories

M9130A Accessories	
Model	Description
Y1181A	Connector Block: 78 pin, shielded, female D Sub
Y1187A	Connector Cable: 78 pin, male to female, 1 Meter
Y1188A	Connector Cable: 78 pin, male to female, 2 Meter

M9131A, M9132A, and M9133A Accessories	
Model	Description
Y1182A	Connector Block: 200 pin, shielded, male
Y1189A	Connector Cable: 200 pin male to four 50 pin female, 1 Meter
Y1190A	Connector Cable: 200 pin male to four 50 pin female, 2 Meter

M9135A Accessories	
Model	Description
Y1191A	Power Cable: 20 pin, female to unterminated, 1 Meter
Y1192A	Power Cable: 20 pin, female to unterminated, 2 Meter
Y1193A	Power Connector: 20 pin, female (universal), solder pin

The following pages describe the various option cables and terminal blocks.

Y1181A 78 Pin Shielded Connector Block

This shielded connector block provides a simple method of connecting wires to an Agilent M9130A PXI switch module with a 78 pin D-Type front panel connector. The screw terminals accept wires up to 20AWG and the connector block has simple screw clamp for strain relief. The recommended torque for the screw terminal is 0.12 - 0.15 Nm. PTFE insulated cables are recommended. The following diagram shows the pinout of the connector block. The pin numbers match the pin numbers on the switch module's front panel connector.

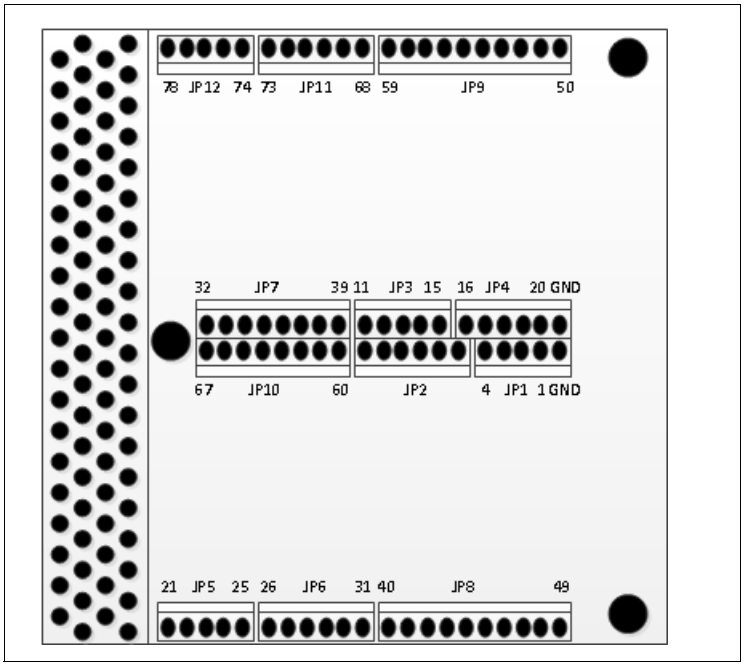


Figure 8 Y1181A 78 Pin Terminal Block Wiring Diagram

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Y1182A 200 Pin Shielded Connector Block

This shielded connector block provides a simple method of connecting wires to Agilent M9131A, M9132A, M9133A PXI switch modules with 200 pin D-Type front panel connectors. The screw terminals accept wires up to 26AWG and the connector block has a simple screw clamp for strain relief. The recommended torque for the screw terminal is 0.12 - 0.15 Nm. PTFE insulated cables are recommended. The following diagram shows the pinout of the connector block. The pin numbers match the pin numbers on the switch module's front panel connector.

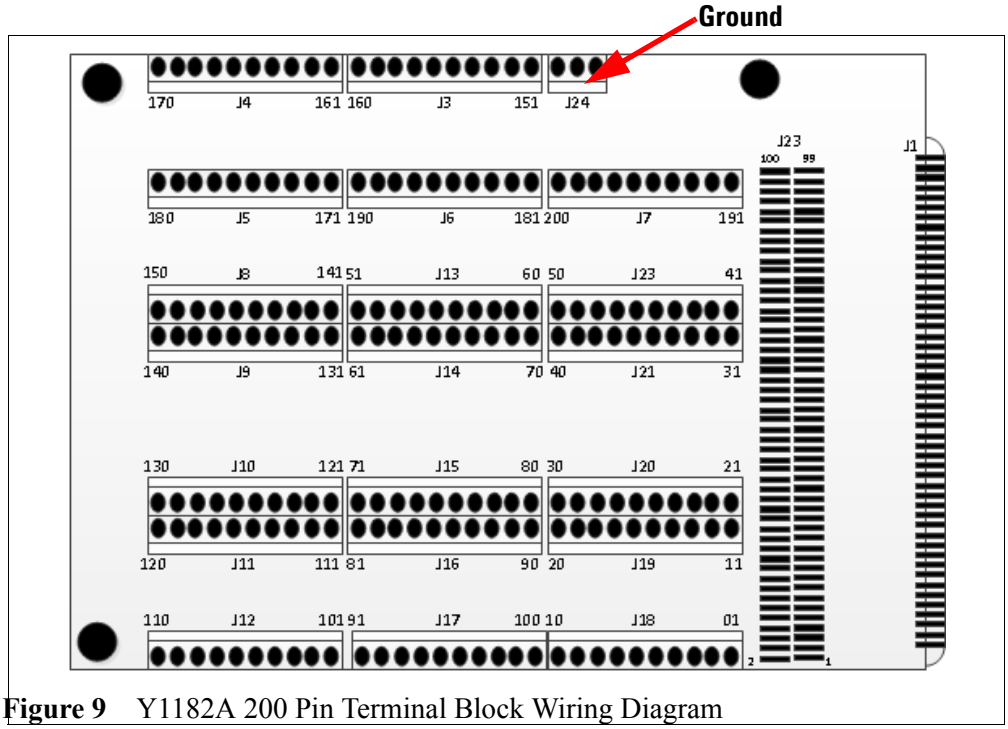


Figure 9 Y1182A 200 Pin Terminal Block Wiring Diagram

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Y1187A, Y1188A 78 Pin Male to Female Connector Cable

These cable assemblies are used to extend the front panel connections of the M9120A PXI switch modules. The cable is PFA copper/tin, 26AWG with a 3A current rating. Nominal resistance is 0.2Ω/m.

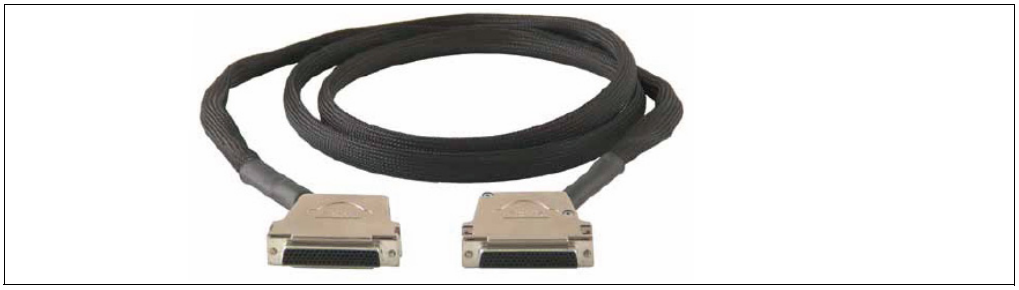


Figure 10 Y1187A, Y1188A 78 Pin Male to Female Connector Cable

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Y1189A, Y1190A 200 Pin Male to Female Connector Cable

These cable assemblies are used to extend the front panel connections of the Agilent M9131A, M9132A, and M9133A PXI switch modules with the 200 pin D-Type connector. It is built from four bundles of 50 wire 28AWG ribbon cable. A braided sleeve covers each of the four bundles. The Y1189A is 1m long and the Y1190A is 2m long.

Figure 11 Y1189A, Y1190A 200 Pin Male to Female Connector Cable

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Figure 12 shows the pin outs of the four individual 50 pin connectors and where they connect to the 200 pin connector that mates to the module front panel For the pinout of the 200 pin module connector, refer to the specific module: M9131A (page 18), M9132A (page 21), and M9133A (page 24).

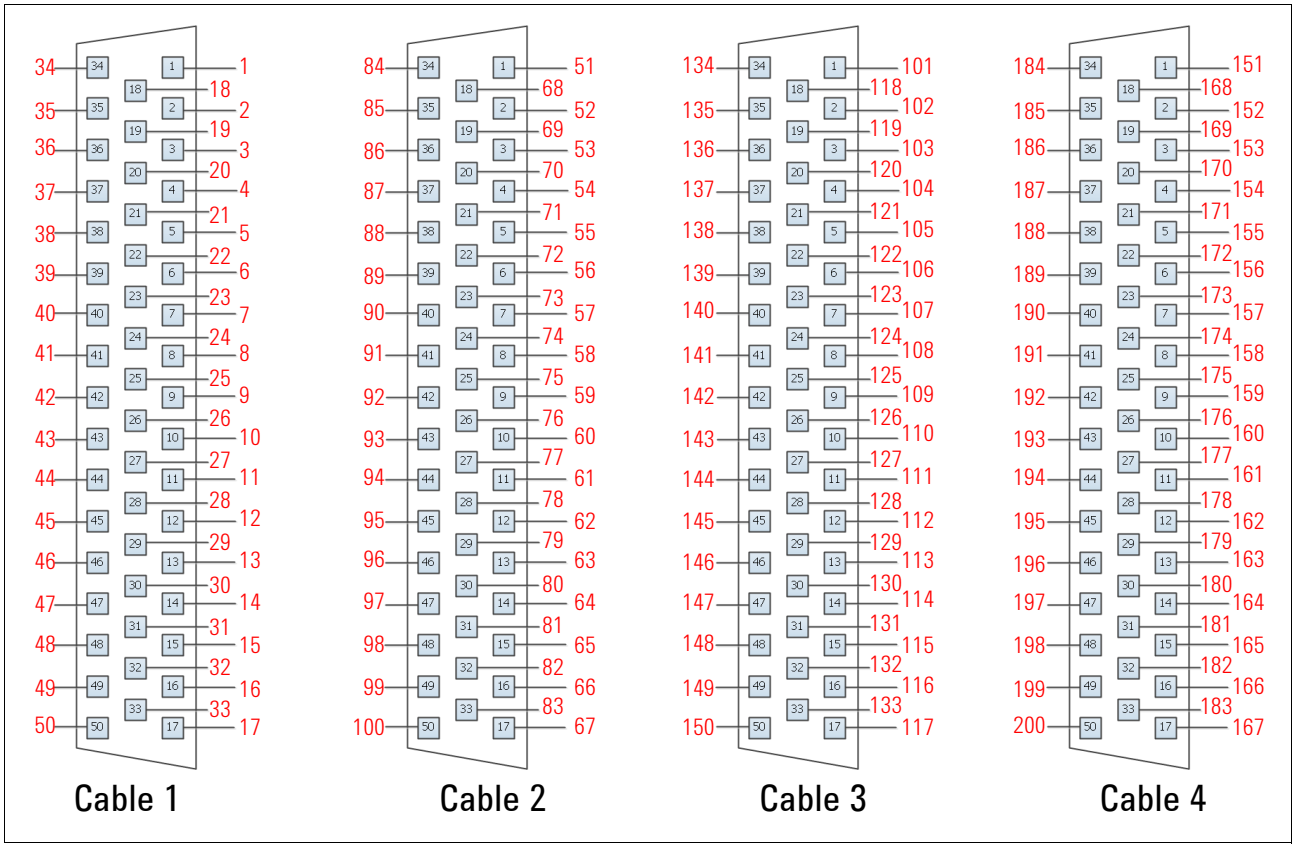


Figure 12 Y1189A, Y1190A 50 pin connectors pinouts

Y1191A, Y1192A 20 Pin Female to Unterminated Power Cable

This cable is designed for connecting the Agilent M9135A 20-pin male MS-M connectors to your device under test. The unterminated end are color coded (standard resistor color codes) and numbered and are provided with crimped-on ferrules to prevent splaying of the wire strands. The cable is constructed from PTFE Cable Type A. Individual witres are 20AWG, Teflon® insulation; nominal resistance is 20mΩ/m. The connector assembly attaches to the module by attached 6-32 screw locks. The assembly is available in two lengths -- 1meter (Y1191A) and 2 meters (Y1192A). Two cable assemblies are required for the M9135A module.

WARNING **Not for connection to mains. Do not exceed the current and voltage rating of the M9135A module.**

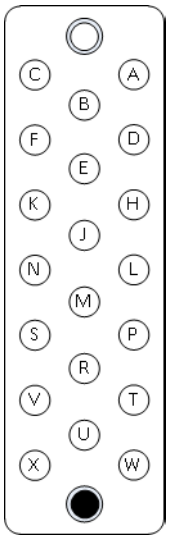
Notes on unterminated end:

- White wires are odd pin numbers (01, 03, 05, ... 17, 19), Orange wires are even pin numbers (02, 04, 06, ... 18, 20)
- Colored beads indicate the pin number
- The white wire with black stripes connects to the metal shell housing

Figure 13 Y1191A, Y91192A Cable Assembly

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Figure 14 on the next page shows the connector-to-unterminated pin numbers. Refer to "M9135A PXI SPST Power Relay: 20 channels" on page 27 for details on module channel pinouts.



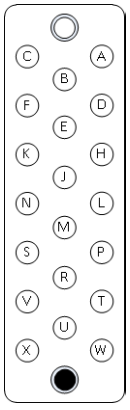
Connector Pin	Unterminated Wire Number / Color Code	Wire Color		Connector Pin	Unterminated Wire Number / Color Code	Wire Color
A	01 - black/brown	White		M	11 - brown/brown	White
B	02 - black/red	Orange		N	12 - brown/red	Orange
C	03 - black/orange	White		P	13 - brown/orange	White
D	04 - black/yellow	Orange		R	14 - brown/yellow	Orange
E	05 - black/green	White		S	15 - brown/green	White
F	06 - black/blue	Orange		T	16 - brown/blue	Orange
H	07 - black/violet	White		U	17 - brown/violet	White
J	08 - black/grey	Orange		V	18 - brown/grey	Orange
K	09 - black/white	White		W	19 - brown/white	White
L	10 - brown/black	Orange		X	20 - red/black	Orange

Figure 14 Connector viewed from the front of the M9135A module, not the housing connector

Y1193A 20pin Female, Solder Pin Connector

This connector kit allows you to create your own custom cable for use with the M9135A module. The kit comes with 20 female solder cup contacts. The connector assembly attaches to the module by attached 6-32 screw locks.

WARNING **Not for connection to mains. Do not exceed the current and voltage rating of the M9135A module.**



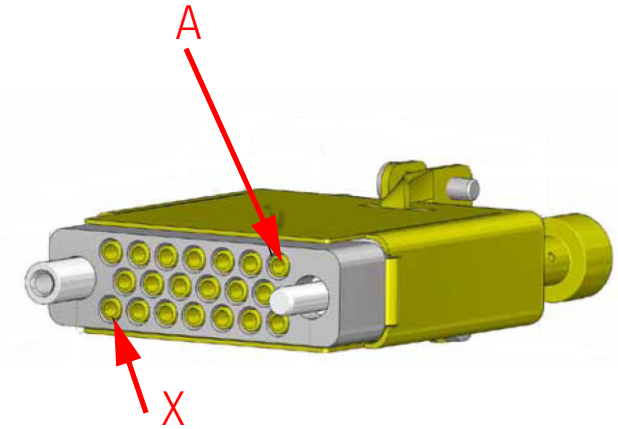


Figure 15 Connector diagram on left viewed from the solder cup contact side, not the front of the connector

WARNING **Voltages greater than 30 Vrms, 42Vpk or 60 Vdc present an electric shock hazard. Disconnect all source voltages before connecting or removing the source-to-modules I/O connector or wiring the connector block. All field wiring must be rated for the highest voltage applied to any single channel.**

Figure 16 below shows the assembly of the connector. Note that the screw locks hold the assembly together.

1 Strip off 1/4” of insulation from each wire. Take care not to damage or remove strands of wire, untwist or over twist wire strands, etc.

1 Solder your wires into the solder cup contacts and insert the contacts into the contact insulator.

2 Thread the wires through the connector housing and slide the insulator into the housing. Attach but do not tighten the cable strain relief.

3 Insert the screw locks into the assembly. Be careful to note the polarity and how they will match the screw lock nuts on the module connector.

4 Insert the roll pins into the screw lock thumbscrews to secure them to the screw locks.

5 Tighten the cable strain relief.

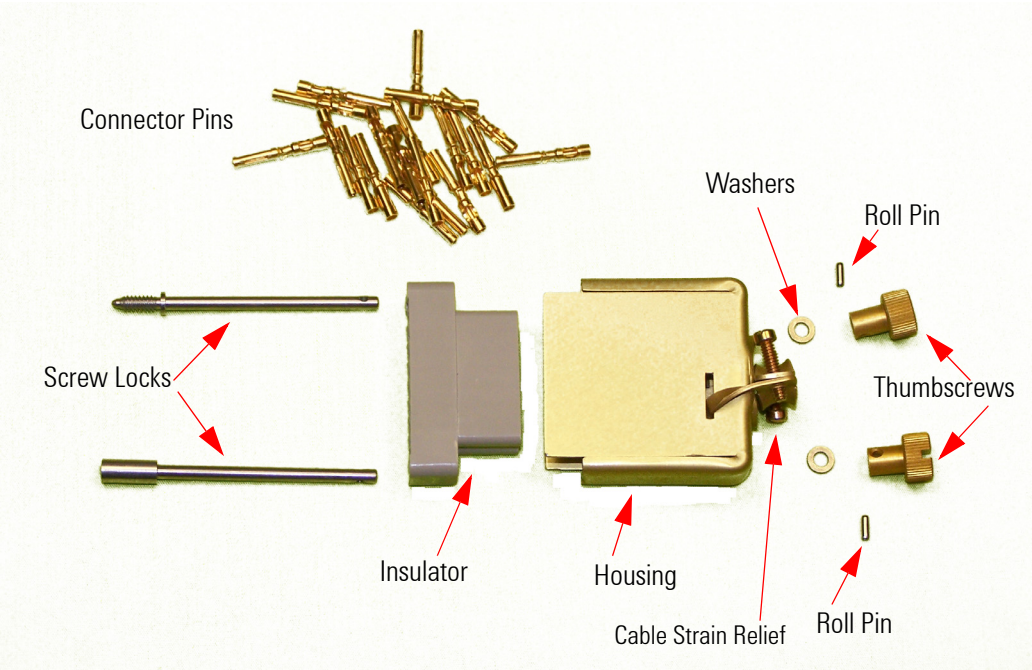


Figure 16 Y1193A Assembly

Although not required, we suggest you purchase the Positronic Industries 9099-0-0 Terminal Insertion Tool and the 9081-0-0 Terminal Removal Tool.

Disassembling the Terminal Block Clam Shells

1 Loosen the two screws indicated in Figure 17. These screws are captive to the bottom half of the clam shell. Note: the other two screws are for the strain relief.

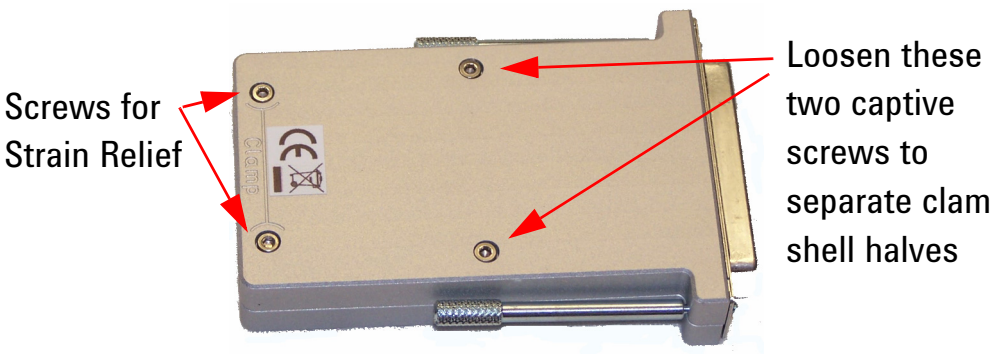


Figure 17 Disassembling the Terminal Block Clam Shell

2 Separate the two clam shell halves. Be careful not to lose the long screw locks used to secure the terminal block to the PXI switch module.

3 To use the strain relief, loosen the two strain relief screws and lift up on the strain relief bar. Refer to Figure 18.

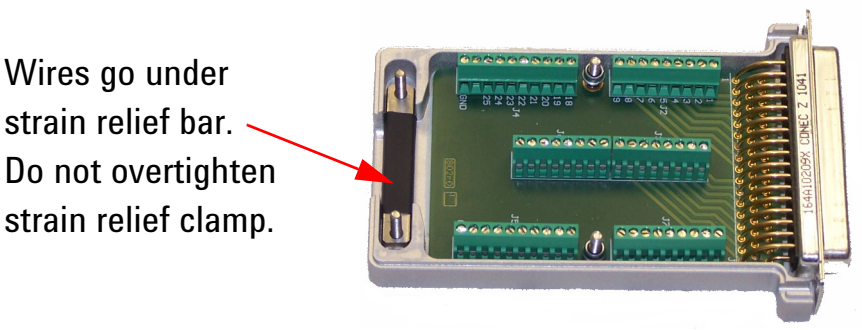


Figure 18 Using the Strain Relief Clamp

4 Insert your cable under the strain relief bar and retighten the two strain relief screws.

CAUTION Do not overtighten the strain relief screws. Possible damage to the cable(s) may occur if overtightened. Use only sufficient tension to secure the cable in place.

5 To reassemble the clamshell, make certain the screw locks are in place. Place the calm shell halves together. Tighten the two clam shell screws.

Electrical Operating Conditions

WARNING **To avoid electric shock, Turn off the chassis and disconnect or de-energize all field wiring to the modules before installing or removing any module or chassis slot cover.**

Transients

The general purpose switch modules described in this manual are designed to safely withstand occasional transient voltages up to 1500 Vpeak. Typically, these transient overvoltages result from switching inductive loads or from nearby lighting strikes.

WARNING **Not for connection to mains. Do not connect any of the modules directly to a mains power outlet. If it is necessary to switch a large inductive load, you must add signal conditioning elements to reduce the potential transients before they reach the modules.**

High Energy Sources

These modules are designed to handle inputs up to their rated currents or their rated powers, whichever is less. Under certain fault conditions, high energy sources could provide substantially more current or power than a module can handle. It is important to provide external current limiting, such as fuses, if the module inputs are connected to high energy sources.

CAUTION Install current limiting devices between high energy sources and the module inputs.

For the latest specifications, check the Agilent web site at: www.agilent.com/find/pxiswitch.

Environmental Operating Conditions

These modules are designed to operate in a temperature range of 0 °C to +55 °C with non-condensing humidity. The maximum humidity is 95% at 40 °C. Do not use in locations where conductive dust or electrolytic salt dust may be present.

These modules should be operated in an indoor environment where temperature and humidity are controlled. Condensation can pose a potential shock hazard. Condensation can occur when the modules are moved from a cold to a warm environment, or if the temperature and/or humidity of the environment changes quickly.

WARNING **These modules are not for connection to Mains.**

Refer to the data sheet for maximum voltage, current, and power dissipation ratings for each module. If conditions change, ensure that condensation has evaporated and the modules have thermally stabilized until Pollution Degree 1 conditions are restored before turning on power to the equipment.

NOTE *Pollution Degree 1:* No pollution or only dry, non-conductive pollution occurs. The pollution has no influence (on insulation) (IEC 610101-1 2nd Edition).

NOTE *Pollution Degree 2:* Normally only non-conductive pollution occurs. Occasionally, a temporary conductivity (leakage current between isolated conductors) caused by condensation can be expected (IEC 610101-1 2nd Edition).

Table 5 Environmental Operating Limits (current and power dissipation)

Module	Pollution Degree 1 Specification	Pollution Degree 2 Specification
M9130A	26 channels, 250Vrms or Vdc, 2A, 60VA per channel	26 channels, 100Vrms or Vdc, 2A, 60VA per channel
M9131A	64 channels, 100Vrms or Vdc, 1A, 3VA per channel	64 channels, 40Vrms or Vdc, 1A, 3VA per channel
M9132A	50 channels, 100Vrms or Vdc, 1A, 25VA per channel	50 channels, 40Vrms or Vdc, 1A, 25VA per channel
M9133A	100 channels, 100Vrms or Vdc, 1A, 25VA per channel	100 channels, 40Vrms or Vdc, 1A, 25VA per channel
M9135A	20 channels, 125Vdc/250Vrms, 5A, 300VA per channel	20 channels, 100Vrms/100Vdc, 5A, 300VA per channel

电缆 Cables

部件名称 Part Name	有毒有害物质或元素 Toxic or Hazardous Substances and Elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 CrVI	多溴联苯 PBB	多溴二苯醚 PBDE
接口电缆 Interface Cables	X	O	O	X	O	O
电缆附件 Cable accessories	X	O	O	X	O	O
半刚性电缆 Semi Rigid Cables	X	O	O	O	O	O
电源线 Power cords	X	O	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X：表示该有毒有害物质至少在该部件某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

如果上述表单多于一个，请参考您的订单或者装箱单从上述表格中找到适合您的产品的列表。

If more than one table is shown above, reference your order or packing list to determine which is applicable to your product.

若您需要了解有关本产品的生产日期信息，请联系您的安捷伦销售代表。

If you have a question about the manufacturing date for your product, ask your Agilent representative

有关如何与安捷伦联系的信息，请参考产品使用手册。

For Agilent contact information, please reference your product manual.

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