

Agilent M9018A PXIe Chassis



Startup Guide



Agilent Technologies

Notices

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

Ground the Instrument

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.

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

Do Not Remove Instrument Cover

Only qualified, service-trained personnel who are aware of the hazards involved should remove instrument covers. Always disconnect the power cord and any external circuits before removing the instrument cover.

Cleaning

To prevent electrical shock, disconnect the chassis from mains supply before cleaning. Do not attempt to clean internally. Clean the outside of the Agilent chassis 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.

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DO NOT block the primary disconnect

The primary disconnect device is the power cord when a chassis is used by itself, but when installed into a rack or system the disconnect may be impaired and must be considered part of the installation.

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.

Cautions

Do NOT block vent holes: To ensure adequate cooling and ventilation, leave a gap of at least 50 mm (2 inches) around vent holes.

Do NOT operate with open slots: To ensure proper cooling and avoid damaging equipment, cover any empty slots with a filler panel.

Do NOT stack free-standing chassis: Never stack free-standing chassis; use rack mounting for vertical mounting of chassis.

Do NOT stand the chassis on its sides: The side handles may cause the chassis to tip over.

All RFI gaskets must remain in place: Any damaged gaskets must be replaced.

All modules are grounded through the chassis: During installation, tighten the module's retaining screws to secure the module to the chassis and to make the ground connection.

CAUTION








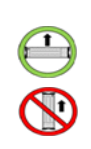
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-  Refer to manual.
-  Protective Earth Ground.
-  Chassis Ground.
-  Alternating Current (AC).
-  Direct Current (DC).
-  ON/Standby Power. Unit is not completely disconnected from AC mains when power switch is in standby position
-  Indicates that antistatic precautions should be taken.
-  Operate the PXIe chassis in the horizontal orientation. Do NOT operate this chassis in the vertical orientation.



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Introduction

The 18-slot Agilent M9018A PXIe Chassis contains an advanced PCIe switch fabric that operates at PCI Express Generation 2 (“Gen 2”) speeds, and provides a mix of x4 and x8 links to the module slots. At Gen 2 speeds, the x8 links can deliver data to modules at 4 GB/s when connected to an x8-capable computer. Module-to-module communications are also supported at 4 GB/s for modules installed in x8 capable slots. A system timing module can be installed in the chassis to provide advanced trigger signals to all slots.

Figure 1 shows a front view of the M9018A chassis with filler panels removed.

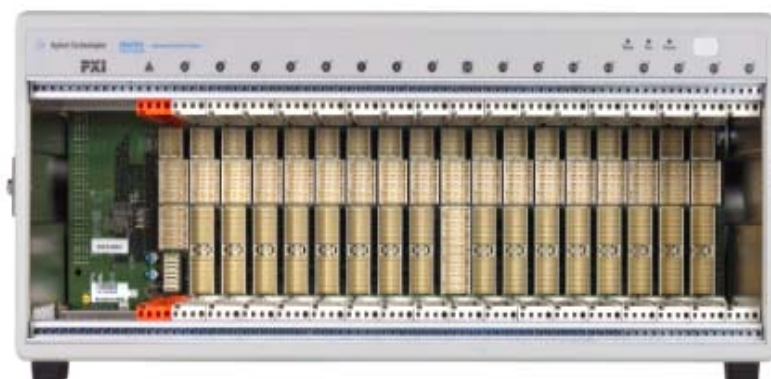


Figure 1 Front view of the M9018A chassis showing the 18 slots

Before continuing, some important terminology is presented. The computer that controls the chassis is known as the *host controller* or *system controller*, and is shown at the top of the hierarchy in Figure 2:

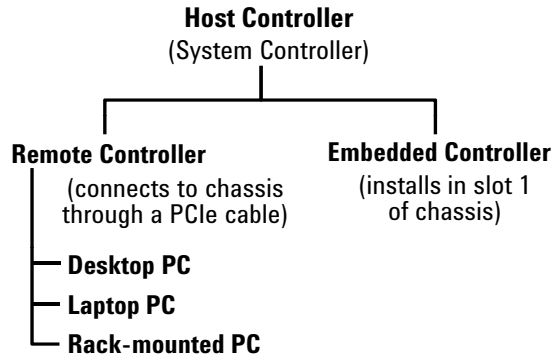


Figure 2 The host controller, remote controller, and embedded controller hierarchy

The host controller can either be a *remote controller* or an *embedded controller*. A remote controller is a Windows-based PC, and can be a desktop PC, a laptop PC, or a rack mounted PC. The remote controller interfaces to the chassis through a PCIe cable.

An embedded controller, such as the Agilent M9036A Embedded Controller, is a small form factor, Windows-based PC that is designed for installation in the system controller slot (slot 1) of the chassis. An embedded controller also consumes two or three expansion slots to the left of slot 1.

The combination of the chassis, the host controller (and a PCIe cable if the host controller is a remote controller), and the chassis I/O software running on the host controller is referred to as a *chassis system*.

NOTE

In order for a PC to serve as a remote controller, its BIOS must support enumeration of the PCIe slots in the chassis; many computers are not capable of enumerating a sufficient number of PCIe slots to ensure that slots in an external chassis are enumerated.

Agilent provides the document “PCI and AXIe Modular Instrumentation Tested Computer List Technical Note” which lists the embedded, desktop, laptop, and rack-mounted PCs that have been verified to enumerate the PCIe slots in the M9018A chassis. Please use this document, available under the **Document Library** tab at www.agilent.com/find/M9018A, to guide your selection of remote controller PCs.

For general PC requirements, such as operating system and RAM requirements, please see the section “System Requirements” in the M9018A Startup Guide.

Organization of the Startup Guide

This guide is organized as follows:

Introduction (this chapter)—The goal of the Introduction is to familiarize you with the features and capabilities of the M9018A chassis. Central to this presentation is an interactive block diagram which is available in the electronic version of this guide on the Software and Product Information CD. Agilent recommends that you check www.agilent.com/find/M9018A to see if a later version of this guide is available.

STEP 1: Verify the Shipment Contents—This section describes how a chassis system is shipped and what is included with the chassis itself.

STEP 2: Prepare the Hardware and Install the Software—This section describes the computer hardware and software requirements, installation of an embedded controller, connection of a remote controller, and software installation on the controller.

STEP 3: Turn On and Verify Operation of the Chassis System—This section describes how to use Agilent Connection Expert and the chassis soft front panel (SFP) to verify operation of the chassis.

STEP 4: Overview of Installing and Verifying Agilent Modules—This section provides an overview of installing and verifying Agilent modules in the chassis, and is intended to supplement your module documentation.

Appendix A: Chassis and Accessory Model Numbers—This appendix lists the model numbers of the chassis and its accessories.

Appendix B: Chassis Specifications—This appendix provides several of the chassis technical specifications.

Chassis system documentation

The following Agilent documents can be found on the Software and Product Information CD (M9018-10001) that came with your chassis:

- *Agilent M9018A PXIe Chassis Startup Guide* (“M9018A Startup Guide”, this document)
- *Agilent M9018A PXIe Chassis User Guide* (“M9018A User Guide”)
- *Agilent M9018A PXIe Chassis Interactive Block Diagram* (“M9018A Block Diagram”)

For versions of the above documents that may be more current than the versions on the CD, please visit the Agilent website at www.agilent.com/find/M9018A. The following documents are also available on this website:

- Agilent M9018A PXIe Chassis Data Sheet (“M9018A Data Sheet”)
- Agilent M9021A PCIe Cable Interface Data Sheet (“M9021A Data Sheet”)
- Agilent PXI and AXIe Modular Instrumentation Tested Computer List Technical Note (“Tested Computer List”) – This document lists the PCs that have been verified to work with the M9018A chassis.

To assist you in locating the documentation that will best meet your needs, Table 1 lists the recommended chassis documents by audience. Also listed are the key topics covered in each group of documents.

Table 1 M9018A chassis documents by audience

Audience	Recommended Documents	Key Topics
First-time users of the M9018A chassis	<ul style="list-style-type: none"> • M9018A Startup Guide (this document) • M9018A Block Diagram • M9018A Data Sheet • M9021A Data Sheet • Tested Computer List • Documentation for each of your modules 	<ul style="list-style-type: none"> • Architecture and capabilities of the M9018A chassis • Selection of the host controller PC • Connecting the chassis to a computer and powering up the system • Using Agilent Connection Expert and the soft front panel (SFP) to verify chassis operation • Installing Agilent modules in the chassis
Experienced users and system integrators	The above documents plus the: <ul style="list-style-type: none"> • M9018A User Guide 	<ul style="list-style-type: none"> • Rack mounting the chassis • Using the SFP to configure the chassis • Software programming overview • Troubleshooting issues with the chassis
Software developers	The above documents plus the: <ul style="list-style-type: none"> • IVI-C/COM help file • LabVIEW help file 	<ul style="list-style-type: none"> • Programming to the IVI-C and IVI-COM interfaces • Programming to the LabVIEW interface

M9018A system overview

An M9018A system consists of the chassis, a computer operating as the host controller, and software on the controller to manage the chassis. Figure 3 shows the primary components of the M9018A system.

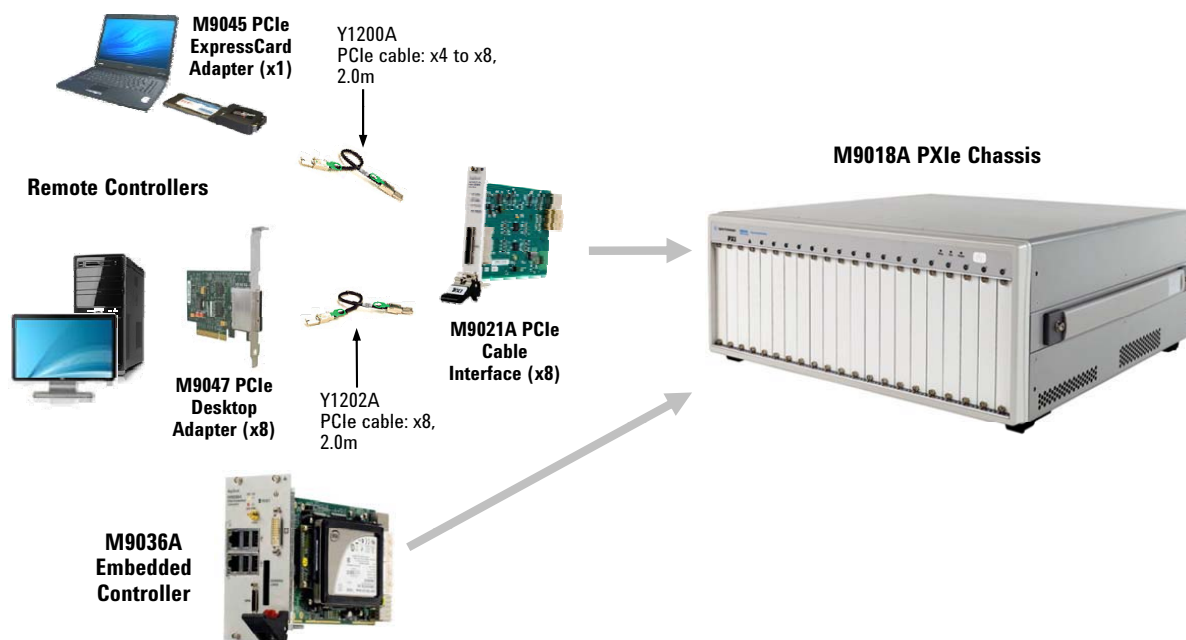


Figure 3 M9018A system components

The host controller can be a desktop PC, a laptop PC, a rack-mounted PC, or an embedded controller. To interface to a remote controller, a cable interface module such as the Agilent M9021A PCIe Cable Interface module is installed in slot 1 of the chassis.

The Agilent M9045 PCIe ExpressCard Adapter is installed in a laptop PC in order to interface to the chassis. The Agilent M9047 PCIe Desktop Adapter is installed in a desktop PC or a rack-mounted PC to interface to the chassis.

Agilent provides a rich set of software to manage the chassis, including Agilent IO Libraries Suite and the M9018A soft front panel (SFP). In addition, IVI-C, IVI-COM, and LabVIEW chassis drivers are provided to support development of custom chassis interface software.

NOTE

The IVI-C, IVI-COM, and LabVIEW chassis drivers are separate and distinct from the drivers for the individual modules that plug into the chassis peripheral slots. The chassis drivers allow interfacing to chassis-specific functionality such as temperature sensors and fan speeds. An overview of the chassis drivers is provided in the M9018A User Guide, while details are provided in the IVI-C/COM and LabVIEW help files. For information on the functionality provided by the module drivers, refer to the documentation for each of your modules.

M9018A interactive block diagram

This section presents an interactive block diagram of the M9018A chassis. Agilent suggests that you use the interactive features to familiarize yourself with the architecture and capabilities of the M9018A chassis. To view the interactive features, please refer to the Software and Product Information CD for the electronic version of this guide or download this guide from www.agilent.com/find/M9018A.

There are two types of interactive features on the block diagram:

- **Mouse-over rounded rectangles**—Placing your mouse over any rounded rectangle will display an informational popup providing additional details.
- **Check boxes**—Clicking a check box will statically display additional information, such as a particular PXIe switch configuration or a particular set of trigger lines.

These features are described on the next two pages, followed by the block diagram.

Table 2 lists the primary mouse-over rounded rectangles and checkboxes in the recommended order of viewing.

Table 2 Recommended order of viewing block diagram features




<p>START HERE</p> <p>Please place your mouse over this rounded rectangle to view information about this diagram.</p>	<p>Place your mouse over this rounded rectangle on the diagram to view important information regarding using the diagram.</p>
 <p>M9045 PCIe ExpressCard Adapter (x1)</p> <p>Remote Controllers</p> <p>M9047 PCIe Desktop Adapter (x8)</p>	<p>Place your mouse over the Remote Controllers rounded rectangle to view information on the PCIe adapters that are used with laptop PCs, desktop PCs, and rack-mounted PCs to interface to the chassis. Information is also provided on the cables that are used between the adapters and the chassis.</p>
 <p>M9036A Embedded Controller</p>	<p>Place your mouse over this rounded rectangle to view information on the M9036A Embedded Controller. An embedded controller is a self-contained, Windows-based PC that is installed in slot 1 of the chassis and also consumes the two or three expansion slot to the left of slot 1.</p>
 <p>M9021A PCIe Cable Interface (x8)</p>	<p>This rounded rectangle can be used to view information about the Agilent M9021A PCIe Cable Interface module (x8).</p>

Table 2 Recommended order of viewing block diagram features

<p>Show Chassis Views</p> <p><input checked="" type="checkbox"/> Clear</p> <p><input type="checkbox"/> Front View</p> <p><input type="checkbox"/> Rear View</p>	<p>Click Front View to view a labeled drawing of the front of the chassis, and click Rear View to view a labeled drawing of the rear of the chassis.</p> <p>Of particular importance in the front view is the M9021A power slide switch, which must be positioned to the right to power the M9021A PCIe Cable Interface module, and must be positioned to the left for all other slot 1 modules.</p>
<p>Show PCIe Link Configurations</p> <p><input checked="" type="checkbox"/> Clear</p> <p><input type="checkbox"/> 1x8</p> <p><input type="checkbox"/> 2x8</p> <p><input type="checkbox"/> 4x4</p>	<p>The M9018A chassis currently implements three PCIe link configurations, 2-Link Configuration: 1x8, 2-Link Configuration: 2x8, and 4-Link Configuration: 4x4. These configurations provide different PCIe connections from the system controller slot to the hybrid slots and the system timing slot. Click the check boxes on the diagram to view the PCIe connections associated with each configuration.</p> <p>The 1x8 configuration is the factory default configuration; see the M9018A User Guide for information on selecting the other configurations.</p>
<p><input type="checkbox"/> Show Boards Supported by the Hybrid Slots</p>	<p>Click this check box to view the type of boards supported by the chassis hybrid slots.</p>
<p>Show Host Controller Software</p> <p><input checked="" type="checkbox"/> Clear</p> <p><input type="checkbox"/> Agilent Connection Expert</p> <p><input type="checkbox"/> Soft Front Panel</p> <p><input type="checkbox"/> Development environments</p>	<p>These check boxes can be used to display the two key user interface software components, Agilent Connection Expert and the chassis soft front panel, that run on the host controller. The Development environments check box can be checked to view the supported application development environments.</p>

Because the block diagram uses JavaScript, you may be prompted to enable JavaScript—select **Yes** if asked. If you're not prompted to enable JavaScript and need to do so in order to make the diagram interactive, look for the enable JavaScript check box as follows on Adobe Acrobat and Adobe Reader:

Edit > Preferences > JavaScript

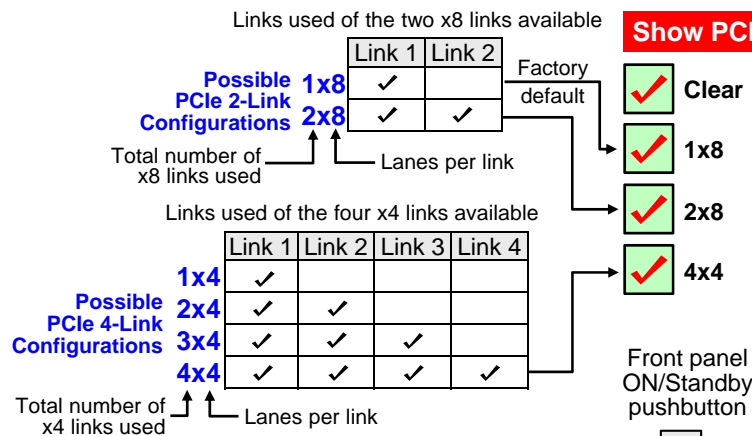
If you print the block diagram, use a tabloid-capable printer (11"x17", which is the page size of the diagram). The diagram can also be printed on letter size paper by selecting "Fit to Printable Area" or equivalent.

Features selected using the check boxes will print the same as viewed on your monitor. However, mouse-over popups are not printable because the popups will disappear as you move your mouse to select printing of the diagram.

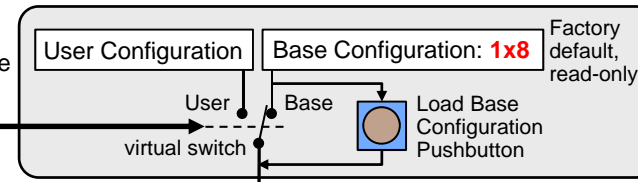
PCIe 2-Link and 4-Link Configurations

Agilent M9018A PXIe Chassis

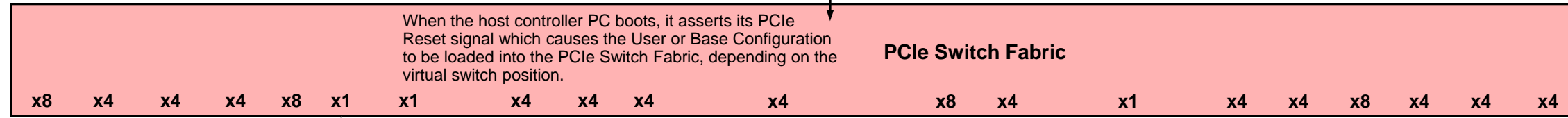
START HERE
Please place your mouse over this rounded rectangle to view information about this diagram.



PCIe Switch Fabric Configurator
This program can be used to set the User Configuration to 2x8 or 4x4 (and point the virtual switch to the User Configuration), or point the switch to the Base Configuration.

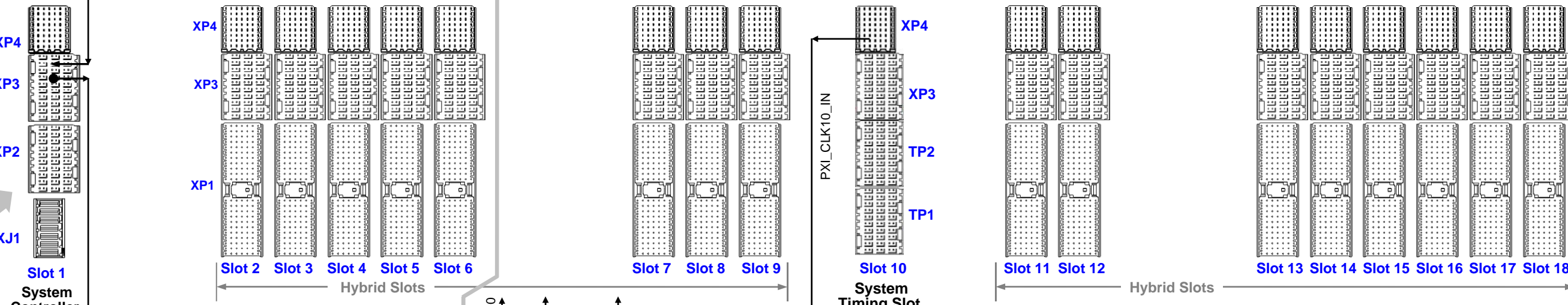
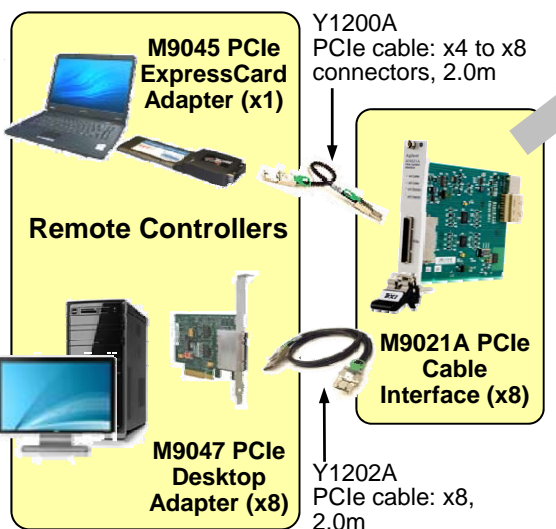


Eight backplane temperature sensors



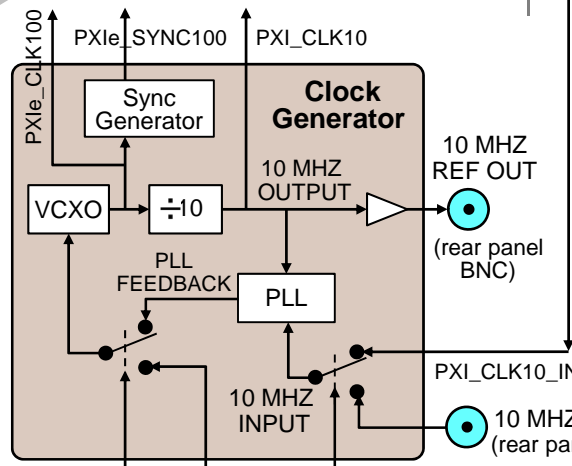
Show Host Controller Software

- Clear
- Agilent Connection Expert
- Soft Front Panel
- Development environments



Show SDBus

- Show Clocks**
- Clear
 - PXI_CLK10
 - PXIe_CLK100
 - PXIe_SYNC100



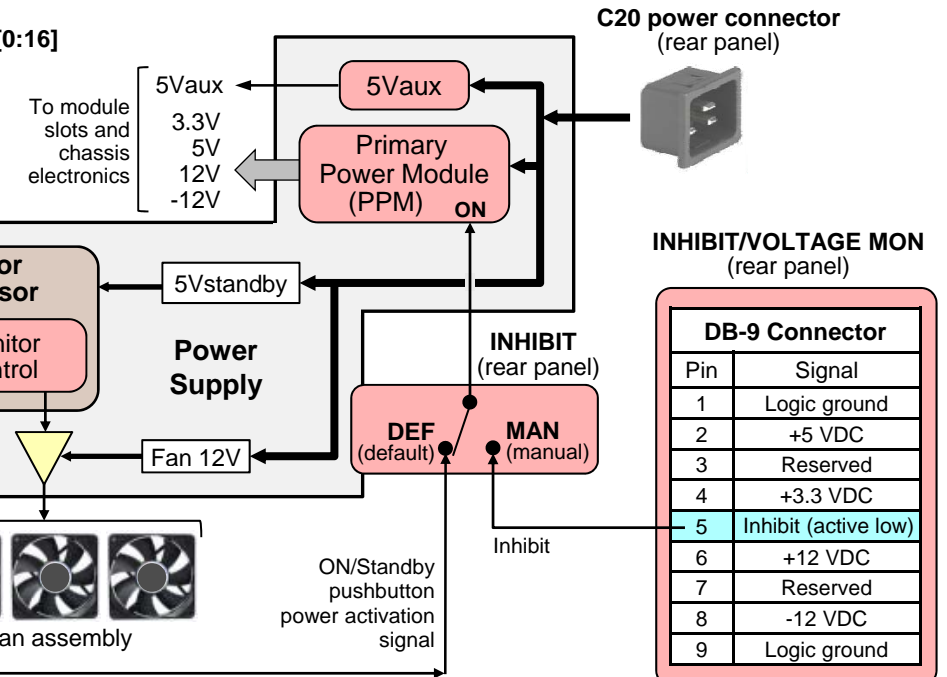
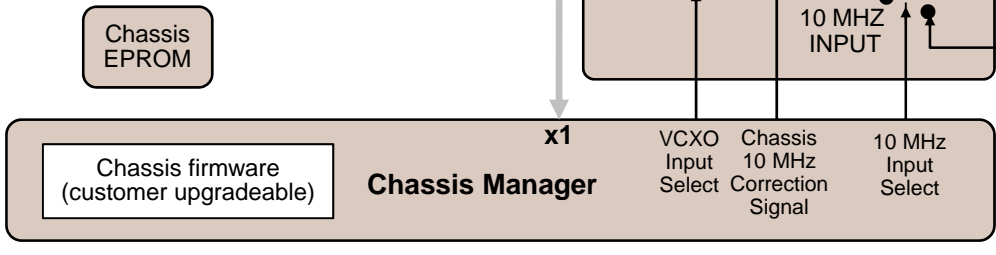
Show Triggers

- Clear
- PXI_TRIG[0:7]
- PXI_STAR[0:16]
- PXIe_DSTAR A/B/C[0:16]

- Show Boards Supported by the Hybrid Slots
- Show Hybrid Slot Pin Outs

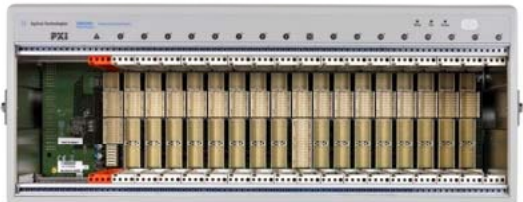


ON/Standby pushbutton power activation signal



Show Chassis Views

- Clear
- Front View
- Rear View



Static-safe handling procedures

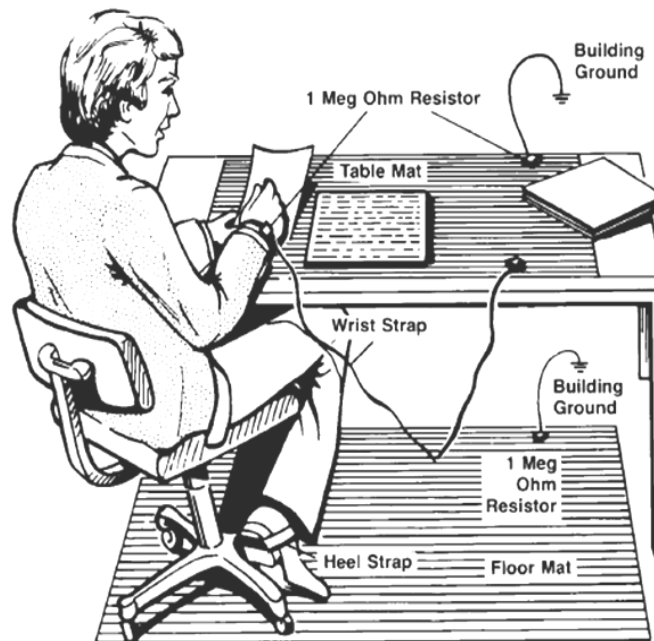
In this guide, you'll be handling electrostatic-sensitive chassis modules and PC adapters. To avoid electrostatic discharge damage, please read and follow these procedures.

CAUTION

Electrostatic discharge (ESD) can damage or destroy electronic components. Agilent modules and interface cards are shipped in materials which prevent static electricity damage. These items should only be unpacked and inspected at a static-safe work station. The following figure shows an example of a static-safe work station which uses the following two ESD protection methods:

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

ESD protection accessories can be purchased from numerous electronics suppliers.



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

To avoid damaging components when unpacking or handling a module, do not touch the module connector pins or the components on the printed circuit board. Store all modules and interface cards in anti-static envelopes when not in use.

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

STEP 1: Verify the Shipment Contents

Depending on your order, your shipment may arrive in separate boxes. For example, if you order the M9018A chassis, the M9021A PCIe Cable Interface module, and the Y1202A cable, your order will arrive in three separate boxes.

Carefully inspect your shipment for any shipping damage. Report any damage to the shipping agent immediately, as such damage is not covered by warranty.

NOTE

Agilent suggests that you save the chassis shipping container in case it ever becomes necessary to return the chassis to Agilent for service. Appendix B in the User Guide describes how to return the chassis to Agilent for service.

M9018A chassis shipment verification

Please verify that your chassis shipment contains the following items:

- Agilent M9018A PXIe Chassis
- Power cord
- This document in hard copy
- *Software and Product Information* CD (M9018-10001) – This CD contains software, drivers, and all product documentation in PDF format for the M9018A chassis.
- *Automation-Ready CD with Agilent IO Libraries Suite* (version 16.1 or later)

STEP 2: Prepare the Hardware and Install the Software

This section provides the following information:

- Host controller hardware and software requirements
- Setting up the chassis on a bench
- Removing and installing filler panels
- Installing an embedded controller in the chassis
- Connecting a host controller PC to the chassis
- Installing software on the host controller PC

CAUTION

The following procedures should be followed to ensure safety and to minimize the possibility of damaging electrical components:

- This product is designed for use in Installation Category II and Pollution Degree 2, per IEC 61010 Second Edition and 664 respectively.
- The Mains wiring and connectors shall be compatible with the connector used in the premise electrical system. Failure to ensure adequate earth grounding by not using the correct components may cause product damage and serious injury.
- Use only the power cord supplied with the chassis. Agilent power cords ensure continuity between the chassis grounding-type power plug and the safety ground terminal at the power outlet.
- Install the chassis so that the detachable power cord is readily identifiable and is easily reached by the operator. The detachable power cord is the chassis disconnecting device. It disconnects the mains circuits from the mains supply to the chassis before other parts of the chassis. The front panel switch is only a standby switch and is not a LINE switch. Alternatively, an externally installed switch or circuit breaker (which is readily identifiable and is easily reached by the operator) may be used as a disconnecting device.
- The chassis does not support hot-swapping of modules; that is, inserting and removing modules with the chassis powered up. Before installing modules in the chassis, the chassis must be powered down and disconnected from AC power.
- To minimize the possibility of electrostatic discharge (ESD) damage to a module while installing it, follow the handling procedures described in [Static-safe handling procedures](#) on page 10.

Host controller hardware and software requirements

The Agilent IO Libraries Suite is the largest software component in the chassis software installation, and its performance is the biggest contributor to system performance. Therefore, the host controller requirements in Table 3 are based on optimizing the installation and performance of the IO Libraries Suite.

Table 3 Host controller hardware and software requirements

Operating System	Windows XP	Windows Vista	Windows 7
OS versions	Service Pack 3 only	SP1 and SP2 (32-bit and 64-bit), Business, Ultimate, Enterprise, Home Basic, and Home Premium	32-bit 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), Itanium64 not supported	1Ghz 32-bit (x86), 1GHz 64-bit (x64), Itanium64 not supported
Available computer 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: <ul style="list-style-type: none"> 1 GB available for Microsoft .NET Framework 3.5 SP1 100 MB for Agilent IO Libraries Suite 	1.5 GB available hard disk space, includes: <ul style="list-style-type: none"> 1GB available for Microsoft .NET Framework 3.5 SP1 100 MB for Agilent IO Libraries Suite 	1.5 GB available hard disk space, includes: <ul style="list-style-type: none"> 1GB available for Microsoft .NET Framework 3.5 SP1 100 MB 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 128 MB graphics memory recommended (Super VGA graphics is supported)
Browser	Microsoft Internet Explorer 6 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.

Setting up the chassis on a bench

NOTE

This guide assumes that chassis preparation, turn-on and verification are performed on the bench prior to installing the chassis in a rack. If you prefer to install the chassis in a rack first, please see the M9018A User Guide on the Software and Product Information CD for rack mounting instructions.

The primary consideration in using the chassis on a bench is ensuring adequate ventilation for cooling. Cooling air enters through the vent holes on the bottom, sides, and front of the chassis, and exits through the rear of the chassis. For bench use, ensure that the feet are installed on the chassis so that air can enter through the bottom of the chassis. Also ensure that there is at least 50 mm (2 inches) of clearance on the sides, front, and rear of the chassis.

Removing and installing filler panels

The chassis is shipped from the factory with all filler panels installed. For the 18 slots, the filler panels are 20.32 mm (.8 inches) wide; these are referred to as *narrow filler panels*. The expansion slot to the left of slot 1 is three slots wide; hence, the filler panel for the expansion slot is 60.96 mm (2.4 inches) wide and is referred to as a *wide filler panel*.

The filler panels are held in place by captive screws (two screws for narrow filler panels and four screws for wide filler panels). When installing a filler panel, the captive screws should be tightened securely to ensure the filler panel is well-grounded to the chassis.

Ensure that filler panels are installed in all empty slots. Missing filler panels will impact cooling of the chassis and may cause RFI (radio frequency interference) with other devices.

NOTE

In addition to installing modules and filler panels in chassis slots, air inlet modules can also be installed in chassis slots. These modules contain holes in their faceplates, and can be placed adjacent to high power modules for additional cooling. Agilent provides an air inlet module kit as listed in [Appendix A: Chassis and Accessory Model Numbers](#) on page 38. For information on using air inlet modules, please see the M9018A User Guide.

NOTE

Please do not install modules in the peripheral slots yet. In this step, only slot 1, the system controller slot, will have a module installed. Deferring the installation of other modules until later will allow the chassis to be turned on and verified in its simplest configuration.

To prepare the hardware, either an embedded controller or a PCIe cable interface module will be installed in slot 1, depending on your configuration. Both of these installations are described in this step.

Setting the M9021A power slide switch

The chassis contains a slide switch that applies power to certain pins on the slot 1 connector in order to provide power to the M9021A Cable Interface module. This switch is located on the backplane board and is accessible through the 3-wide expansion slot to the left of slot 1. For a description of this switch, see the [M9018A block diagram](#) on page 9, and select the **Front View** check box under **Show Chassis Views**. Alternatively, go to www.agilent.com/find/pxi-chassis and select **M9021A PCIe Cable Interface** to view its installation manual.

As shown on the block diagram and in the installation manual, this switch must be positioned to the *right* prior to installation of the M9021A Cable Interface module in slot 1, and must be positioned to the *left* prior to installation of any other module, including an embedded controller, in slot 1.

WARNING

The chassis power cord shall be removed prior to changing the position of the M9021A power slide switch. Failure to remove the power cord could result in accidental contact with the adjacent high current and energy source connector, resulting in potential burns.

To change the position of the slide switch, perform the following steps:

- 1 Turn off the chassis by first pressing the ON/Standby pushbutton and then detach the chassis power cord from AC power.
- 2 Reach in through the three-wide expansion slot to the left of slot 1, and position the M9021A power slide switch to the right in order to provide power to the M9021 Cable Interface module. The slide switch can be moved either with your fingertip or by using a tool such as a small screwdriver.

NOTE

If you're installing an embedded controller, position the slide switch to the *left* in order to remove power from the pins intended to supply power to the M9021 Cable Interface module.

Connecting a remote controller PC to the chassis

A remote controller is an external, Windows-based PC that connects to the chassis through a PCIe cable. The remote controller can be a desktop PC, a laptop PC, or a rack-mounted PC.

NOTE

In order for a PC to serve as a remote controller, its BIOS must support enumeration of the PCIe slots in the chassis; many computers are not capable of enumerating a sufficient number of PCIe slots to ensure that slots in an external chassis are enumerated.

Agilent provides the document “Tested Computer List Technical Note” which lists the embedded, desktop, laptop, and rack-mounted PCs that have been verified to enumerate the PCIe slots in the M9018A chassis. Please use this document, available under the **Document Library** tab at www.agilent.com/find/M9018A, to guide your selection of remote controller PCs.

For general controller requirements, such as RAM and hard disk requirements, please see [Host controller hardware and software requirements](#) on page 13.

To connect a remote controller PC to the chassis, perform the three steps listed below. When handling PC adapter cards and chassis modules, be sure to follow the static-safe procedures described in [Static-safe handling procedures](#) on page 10.

1. Install a PCIe cable interface module in the chassis

The first step is to install a PCIe cable interface module, such as the Agilent M9021A PCIe Cable Interface module, in the chassis system controller slot (slot 1). Cable interface modules contain a PCIe cable connector that permits a PCIe cable to be connected between the module and the remote controller. To install the cable interface module in slot 1, follow the instructions provided with the module as you perform the following steps:

- 1 Turn the chassis off and unplug the chassis from AC power.
- 2 Before inserting the module, inspect the chassis slot to ensure there are no bent pins on the slot connectors.

CAUTION

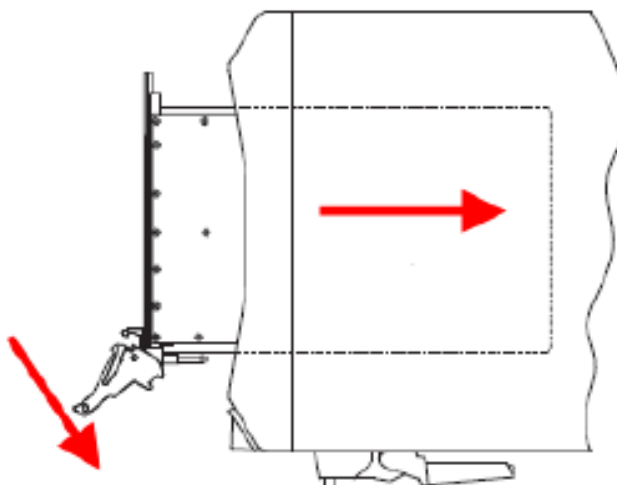
- To avoid damaging the module, do not touch exposed connectors or components on the printed circuit board as you install the module.
- Modules are usually shipped with thread protectors on the mounting screw threads. These protectors must be removed before installing modules in the chassis.

- 3 Insert the module in the chassis slot by placing the module card edges into the top and bottom module guides.

CAUTION

Take care to ensure that the module is aligned perpendicularly to the chassis as you begin sliding it in. Otherwise, it's possible for components on the module (or on adjacent modules) to be damaged by contact between modules.

- 4 With the injector/ejector handle in the down position, carefully slide the module to the rear of the chassis. When you begin to feel resistance from the backplane connectors, push up on the injector/ejector handle to complete insertion of the module and latch it into place.



- 5 Secure the module front panel to the chassis using the captive front panel mounting screws. All modules have two captive mounting screws. Tighten the screws for both mechanical security and to ensure proper grounding of the front panel.

IMPORTANT: Ensure that all empty chassis slots are covered by filler panels or air inlet modules.

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

2. Install a PCIe adapter in the remote controller PC

Agilent offers the M9045 PCIe ExpressCard Adapter (x1) for laptop PCs and the M9047 PCIe Desktop Adapter (x8) for desktop and rack-mounted PCs. To install an adapter in your remote controller PC, follow the instructions provided with your adapter.

3. Connect a PCIe cable between the remote controller PC and the chassis

Connect the appropriate PCIe cable between the remote controller PCIe interface adapter and the chassis PCIe cable interface module.

NOTE

All PCIe cable connector components, including the connectors on the cables and the receptacles on the M9021A/M9045/M9047 interface products, are limited to 250 mating cycles. Beyond this, signal integrity will be impaired. Therefore, the chassis and its accessories should not be used in applications where the number of connector mating cycles will exceed 250 cycles.

Installing an embedded controller PC in the chassis

An embedded controller, such as the Agilent M9036A Embedded Controller, is a small form factor, Windows-based PC that is designed to be installed in the system controller slot (slot 1) of the chassis. The embedded controller also occupies the two or three expansion slots to the left of slot 1; the expansion slot does not contain a connector.

CAUTION

Before installing an embedded controller, turn the chassis off and unplug it from AC power.

To install an embedded controller in the chassis, remove the filler panel in slot 1 and the three-wide filler panel to the left of slot 1. Agilent recommends that you retain these filler panels for future use—for example, if you later replace the embedded controller with a PCIe cable interface module to interface to a remote controller. Because the PCIe cable interface module only consumes one slot, the expansion slot must be covered with the three-wide filler panel to maintain proper airflow and RFI shielding.

CAUTION

To avoid damaging the embedded controller during installation, do not touch exposed connector pins or components on the printed circuit boards.

Before installing the embedded controller, see [Setting the M9021A power slide switch](#) on page 15. Set the slide switch to the *left* in order to remove power from pins that are intended to be used by the M9021A Cable Interface module.

To install your embedded controller, follow the instructions provided earlier for the PCIe cable interface module as well as the instructions provided with your controller.

Once the embedded controller is installed in the chassis, you can interface to the controller by connecting a keyboard, mouse, and monitor to it; alternatively, you can interface to the controller through its network port using software such as Microsoft Remote Desktop.

NOTE

Agilent IO Libraries Suite and the M9018A chassis drivers are pre-installed on the M9036A Embedded Controller. If you're using this embedded controller, you can skip the remainder of this step, and proceed to [STEP 3: Turn On and Verify Operation of the Chassis System](#) on page 24.

Installation of Agilent software on the embedded controller is described in the next section. However, because the software is provided on CDs and because embedded controllers typically do not have optical drives, you should determine which software installation option will work best for you. The installation options include:

- Obtain a USB interface optical drive and connect it to one of the embedded controller USB ports.

- Copy the CD software to the embedded controller hard drive, and then execute the installation process from the hard drive. To do this, the CD software can be read on a PC optical drive, and then copied to the embedded controller over the network or by using a USB flash drive.
- If the embedded controller is connected to the network, you can download the required software from www.agilent.com/find/M9018A, and not use the CDs supplied with the chassis.

Installing software on the host controller

This section describes how to install the host controller software, and applies to both remote controllers and embedded controllers. To install the software, you must have administrator privileges on the host controller, and the software must be installed in the following order:

- 1 **Agilent IO Libraries Suite, version 16.0 or later**—This is a collection of libraries and utilities that enable you to connect your chassis to the host controller and run programs on the host controller that interact with the chassis. The IO Libraries Suite is used with all Agilent instruments, and is not specific to the M9018A chassis. Agilent recommends using the latest version of IO Libraries Suite available.
- 2 **M9018A chassis drivers**—This software consists of the chassis soft front panel (SFP) and the IVI-COM, IVI-C, LabVIEW, and MATLAB drivers for the M9018A chassis. These drivers each provide an API (application programming interface) that can be used to develop programs that interface to the chassis.

NOTE

The software installation process is based on using the CDs that are shipped with the chassis. However, as noted in the previous section, you'll need to adapt the installation process if you have an embedded controller.

Compatibility of the M9018A Chassis Drivers with Agilent IO Libraries Suite

The table below shows the chassis driver releases and their compatibility with the releases of Agilent IO Libraries Suite. The table is ordered by M9018A chassis driver releases, with the most recent release lowest in the table.

Table 4 Chassis Drivers and IO Libraries Suite compatibility

M9018A Chassis Drivers Compatibility with Agilent IO Libraries Suite		
M9018A Chassis Drivers Version	IO Libraries Suite Minimum Version	IO Libraries Suite Version the Chassis Drivers were Released With
1.0.1.3	16.0	16.0
1.1.1.1	16.0	16.1 update 1

Agilent recommends using the latest version of IO Libraries Suite available. However, for those customers interested in using the version of IO Libraries Suite that the M9018A chassis drivers were released with, that information is provided in the above table.

Installing the Agilent IO Libraries Suite

This section describes installation of the Agilent IO Libraries Suite. Note that IO Libraries Suite version 16.0 or later is required.

NOTE

Only one installation of the Agilent IO Libraries Suite is required on the host controller PC. This installation is used by both the M9018A drivers that are installed in the next section and the drivers associated with each module that you install in the chassis.

NOTE

Two libraries, **IVI Shared Components** and **VISA Shared Components**, are required by the IO Libraries Suite. If these libraries are not already installed on your controller, the IO Libraries Suite installer will install them. If **IVI Shared Components** and **VISA Shared Components** are already installed, the IO Libraries Suite installer will upgrade these libraries to the latest version, if necessary, using the same installation location used by the previous version.

For information on Agilent IO Libraries Suite, go to www.agilent.com/find/iosuite. Perform the following steps to install the Agilent IO Libraries Suite:

- 1 Insert the *Automation-Ready CD with Agilent IO Libraries Suite* into the optical drive of your PC.
- 2 Wait a few seconds for the auto-run window to appear. If the auto-run window does not appear automatically, perform:
 - a. On Windows XP, click **Start > Run...**
 - b. On Windows 7, the **Start > Run...** menu selection is disabled by default. To enable it, right click on the **Start** orb (icon), select the Properties dialog and then select the Customize dialog. On the Customize dialog, scroll down and check **Run command**, then click OK to close the Customize dialog and click OK to close the Properties dialog. The **Run...** menu item should now appear in the right-most section of the Start menu. Click **Start > Run...**
 - c. Type: `<drive>:Autorun\IOLibraries.hta`
where `<drive>` is your optical drive letter.

3 The first dialog you'll see is shown in Figure 4.

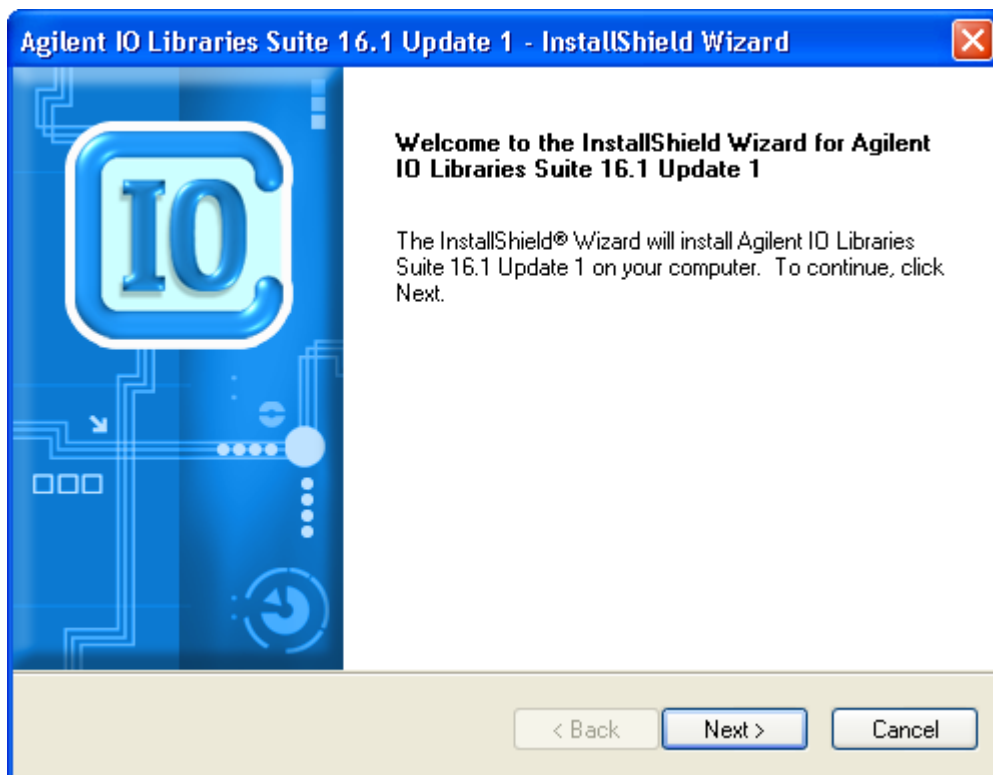


Figure 4 First installation dialog for the Agilent IO Libraries Suite

4 Click **Install Now** and follow the prompts to install the Agilent IO Libraries Suite.

Installing the M9018A chassis drivers

The M9018A chassis drivers consist of three primary components, the M9018A soft front panel (SFP), the M9018A drivers, and the PCIe Switch Fabric **Configurator** program. To install the M9018A software, perform the following steps:

- 1 Insert the M9018A Software and Product Information CD into your optical drive. This should automatically display the browser window in Figure 5. If this window isn't displayed, use Windows Explorer to locate **autorun.exe** at the root level of the CD and then execute that program.



Figure 5 M9018A software installation browser window

- 2 Click the **Install M9018 Software** link, which will bring up the Agilent M9018A InstallShield Wizard. The first installation dialog is shown in Figure 6.

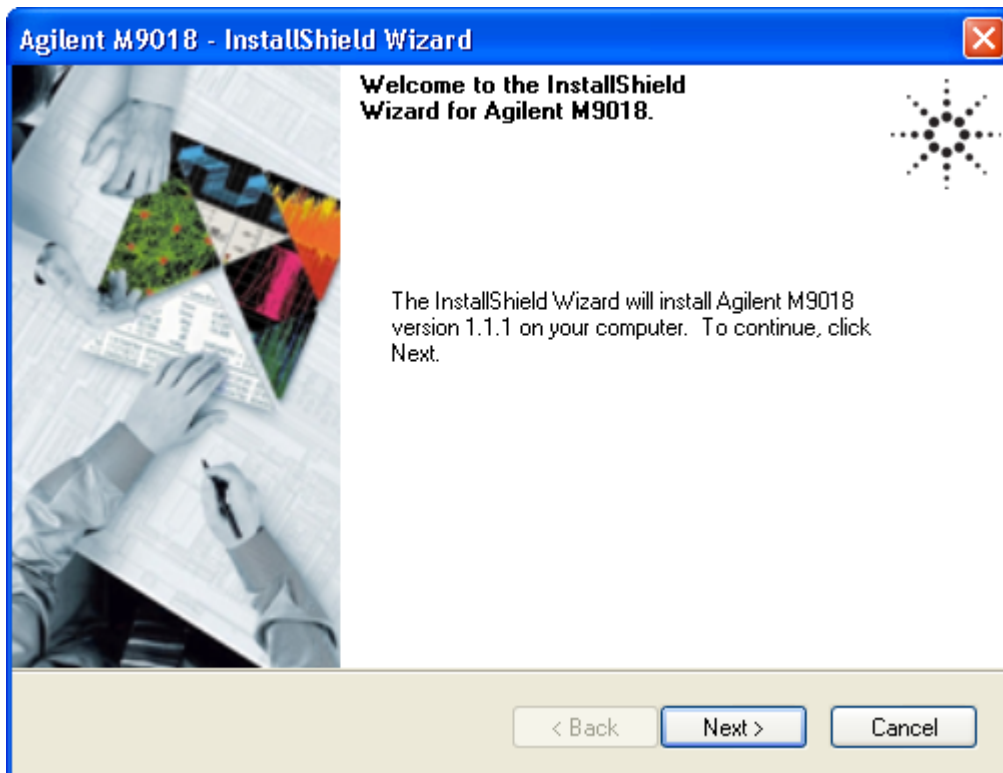


Figure 6 InstallShield Wizard dialog to install the M9018A software

- 3 Click **Next** and follow the prompts to install the M9018A software. The final dialog will prompt you to restart your computer to complete the installation.

Using the SFP is described in [Using the soft front panel to monitor the chassis](#) on page 31. The M9018A chassis drivers are used to develop host controller programs to interface to the chassis, and are described in the M9018A User Guide. The **PCIe Switch Fabric Configurator** program is also described in the User Guide.

STEP 3: Turn On and Verify Operation of the Chassis System

This section provides the following information:

- Powering up the chassis
- Operation of the three LEDs mounted on the front of the chassis
- Using Agilent Connection Expert to connect to the M9018A chassis
- Using the chassis soft front panel (SFP) to verify operation of the chassis

NOTE

- Please do not install modules in the peripheral slots yet—this is done in **STEP 4**. The only module that should be installed in the chassis at this time is either an embedded controller or a PCIe cable interface module in slot 1 as described in **STEP 2**.
 - This guide assumes that chassis preparation, turn-on and verification are performed on the bench prior to installing the chassis in a rack. If you prefer to install the chassis in a rack first, please see the M9018A User Guide on the Software and Product Information CD for rack mounting information.
 - If you encounter difficulty in turning on the chassis system, please see the troubleshooting information in the M9018A User Guide.
-

CAUTION

This instrument has auto-ranging power supplies, meaning that the chassis does not have a voltage selector switch. Ensure that the AC supply line voltage is within the range of 100-120 VAC or 220-240 VAC, and 50/60 Hz frequency.

WARNING

If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

Power sequencing of the chassis

This section describes the power sequencing required for a remote controller PC and the chassis. Also, the two methods of powering up the chassis are described.

Power sequence requirements

When powering up the system, the chassis should be powered up first. After powering up the chassis, you should wait at least three seconds before turning on the PC. The chassis front panel temperature LED, which is on for three seconds after the chassis is powered up, provides a convenient way to measure this delay, as shown below.

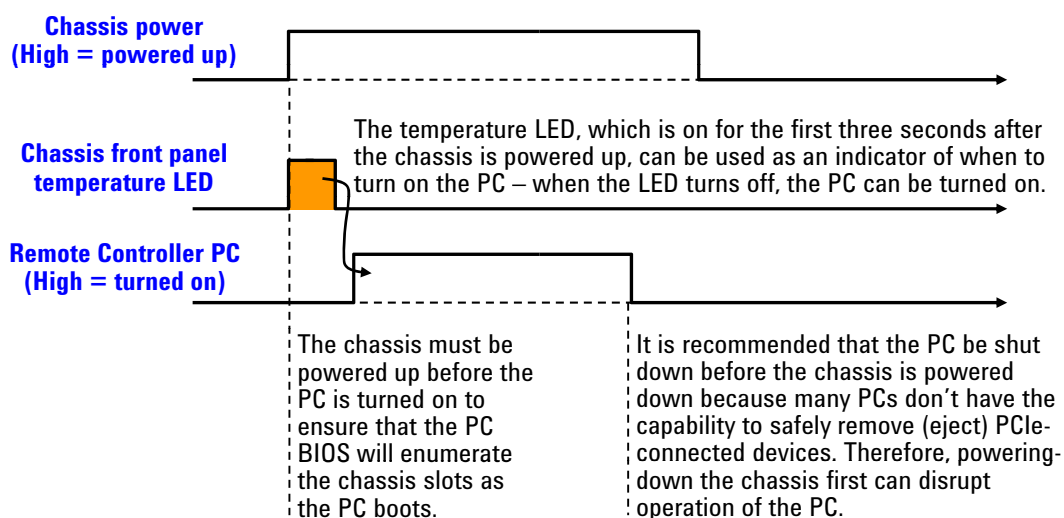


Figure 7 Wait three seconds after powering up the chassis before turning on the PC

The PC should be shut down before the chassis is powered down. This will prevent the chassis, as it's being powered down, from disrupting operation of the PC.

In brief, the PC should be off whenever the chassis is powered up or down. Because chassis modules are not hot-swappable, chassis modules should only be added or removed when the chassis is powered down.

The above power sequence doesn't apply to an embedded controller installed in the chassis because the embedded controller and chassis are powered together.

Methods of powering up the chassis

The method of powering up the chassis depends on the position of the **INHIBIT** rear panel switch, which can be set to the **DEF** (default) position or to the **MAN** (manual) position). These two methods are shown on the **M9018A block diagram** on page 9 and work as follows:

- **INHIBIT** switch in the **DEF** position – In this position, the front panel power pushbutton is used to switch the chassis between ON and Standby—hence, this pushbutton is known as the *ON/Standby pushbutton*. Using this pushbutton requires that a module is installed in the system controller slot (slot 1). This can be a module such as the Agilent M9021A PCIe Cable Interface module or an embedded controller.
- **INHIBIT** switch in the **MAN** position – In this position, the **Inhibit** signal on the rear panel DB-9 connector controls chassis power. The chassis is powered up by applying a logic high signal to the **Inhibit** signal. When the **Inhibit** signal is low, the chassis is in Standby (off except for 5Vaux, an auxiliary power supply).

Use of the ON/Standby pushbutton to power up the chassis is assumed unless otherwise noted. For information on using the **Inhibit** signal on the rear panel DB-9 connector to power the chassis up and down, please see the M9018A User Guide.

Chassis front panel LEDs

The chassis contains three LEDs on its front panel to the left of the ON/Standby (power) pushbutton, as shown in Figure 8.

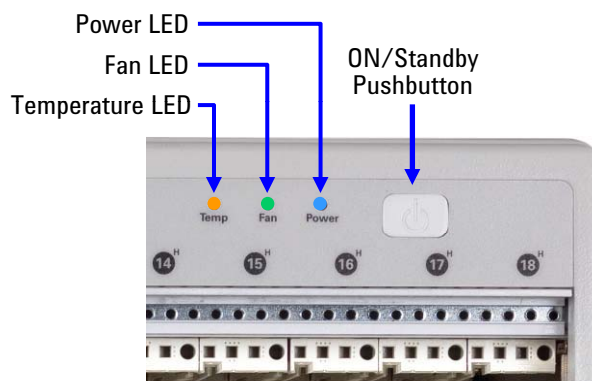


Figure 8 The three front panel LEDs

The front panel LEDs, depending on whether they are off, on continuously, or flashing, provide important information on the status of the chassis, and should be monitored regularly. Table 5 lists each LED and describes the information it provides.

Table 5 Information provided by the front panel LEDs

LED	Off	On continuously	Flashing
Power LED (blue)	<p>Indicates that the chassis is turned off.</p> <p>If you attempt to turn the chassis on but the Power LED remains off, this can indicate several possible problems — please see the M9018A User Guide for details.</p>	<p>Indicates that the four main supply voltages (3.3V, 5V, 12V, and -12V) plus 5Vaux are within their respective limits. The factory default limits are plus and minus 5% around the nominal values.</p> <p>The 3.3V, 5V, 12V, and -12V limits can be individually changed for each supply using the SFP and programmatically. The limits, if changed, are reset to 5% at the next chassis power cycle.</p>	<p>Indicates that one or more of the four supply voltages are outside of their limits, either the 5% factory default limits or, if changed, the user set limits. Refer to the M9018A User Guide for troubleshooting suggestions.</p> <p>If the power supply condition causing the flashing to occur is no longer present, the Power LED will return to on continuously, i.e. the flashing state is not latched.</p>
Fan LED (green)	<p>Typically indicates that the chassis is turned off. This could also indicate a failed LED or a failure of the LED drive circuitry. See the M9018A User Guide for details.</p>	<p>Indicates that all three fans are operating above 800 RPM, the factory default limit.</p> <p>The fan speed limit can be changed using the SFP or programmatically. The limit, if changed, is reset back to 800 RPM at the next chassis power cycle.</p>	<p>Indicates that one or more of the three fans are operating below the limit, either the 800 RPM factory-default limit or, if changed, the user-set limit.</p> <p>If the fan speed condition causing the flashing to occur is no longer present, the Fan LED will return to on continuously, i.e. the flashing state is not latched.</p>
Temp (Temperature) LED (amber)	<p>To avoid this amber LED being interpreted as indicating a temperature problem in the on state, this LED is <i>off</i> if the chassis temperatures are OK. To allow you to validate that this LED is working, the LED is turned on for the first three seconds after the chassis is powered up.</p>	<p>This LED is never on continuously. It will either be off if the temperatures reported by the eight temperature sensors are all below the limit (see left column), or it will be flashing if one or more of the temperature sensors are reporting a temperature above the limit (see right column).</p>	<p>Indicates that at least one of the eight temperature sensors is reporting a temperature above the limit, either the 70°C factory default limit or, if changed, the user set limit. The limit, if changed, is reset back to 70°C at the next chassis power cycle.</p> <p>If the temperature condition causing the flashing to occur is no longer present, the Temperature LED will turn off, indicating that the chassis temperatures are OK.</p>

The chassis will not intentionally modify its operation because of conditions that cause one or more LEDs to flash. In other words, the chassis will attempt to continue normal operation despite flashing LED(s). However, a flashing LED may indicate a condition that will prevent the chassis from operating correctly. For example, a flashing Fan LED indicates that one or more rear panel fans are under speed, which may cause the temperature of the chassis to rise and exceed specifications. This, in turn, may cause a thermal shutdown of the power supply. Therefore, flashing LEDs should be tended to promptly. Refer to the M9018A User Guide for further information.

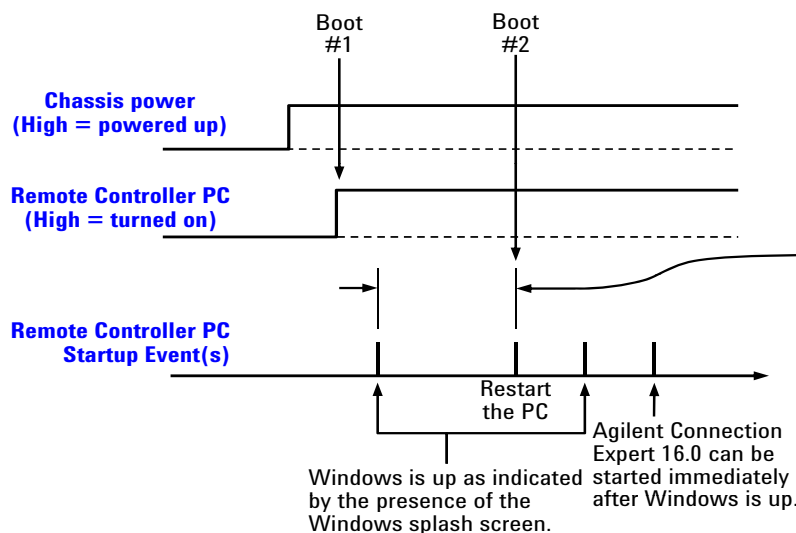
PC startup requirements for Agilent IO Libraries Suite

There are additional PC startup requirements for Agilent IO Libraries Suite over and above the power sequence presented earlier. This section describes the PC startup requirements for Agilent IO Libraries Suite, version 16.0 and version 16.1 (and later). Improvements have been made in Agilent IO Libraries Suite 16.1 that simplify the PC startup process, which is why Agilent recommends use of version 16.1 or later.

The specific component of interest in Agilent IO Libraries Suite is Agilent Connection Expert. The next two sections describe the PC startup requirements for Agilent Connection Expert 16.0 and 16.1.

PC startup events for Agilent Connection Expert 16.0

In addition to following the power sequence described earlier, the PC must be restarted after Windows comes up to ensure that the chassis is recognized by Agilent Connection Expert 16.0 when it starts. Figure 9 shows the complete sequence leading up to starting Agilent Connection Expert.



If the chassis configuration has changed since the last boot (or if this is the first-ever boot), sufficient time needs to be allowed between when Windows is up and when the PC is restarted to ensure that Windows is able to assign drivers to the new modules that it finds. This is usually completed within one minute, but can take longer depending on the number of new modules, the speed of your computer, and other software being executed as the computer boots up.

Presuming that the configuration hasn't changed since the restart, Agilent Connection Expert can be started immediately after Windows is up (the second time) because Windows has kept a copy of the drivers assigned following the first boot, and uses this information to quickly assign drivers following the second boot.

Figure 9 Restarting of the Remote Controller PC after Windows starts for Agilent Connection Expert 16.0

Restarting of the PC after Windows is up ensures that Agilent Connection Expert 16.0 will recognize the chassis. Note the need, before doing the restart, to wait a sufficient length of time after Windows comes up if the chassis configuration has changed. This wait time is also required on the first-ever boot of the PC with of the chassis.

If Agilent Connection Expert 16.0 ever fails to recognize the chassis or appears to have an incorrect view of the chassis modules, the PC should be restarted using the sequence shown in Figure 9.

While Figure 9 depicts a system with a remote controller PC, the same requirement applies to a chassis containing an embedded controller. After powering up the chassis (which powers up the embedded controller), the embedded controller should be restarted.

PC startup events for Agilent Connection Expert 16.1 or later

With IO Libraries Suite 16.1 or later, the need for the restart shown in Figure 9 has been eliminated. However, there is still a need, before starting Agilent Connection Expert, to wait a sufficient length of time after Windows comes up if the chassis configuration has changed. This wait time is also required on the first-ever boot of the PC with of the chassis. This sequence is shown in Figure 10.

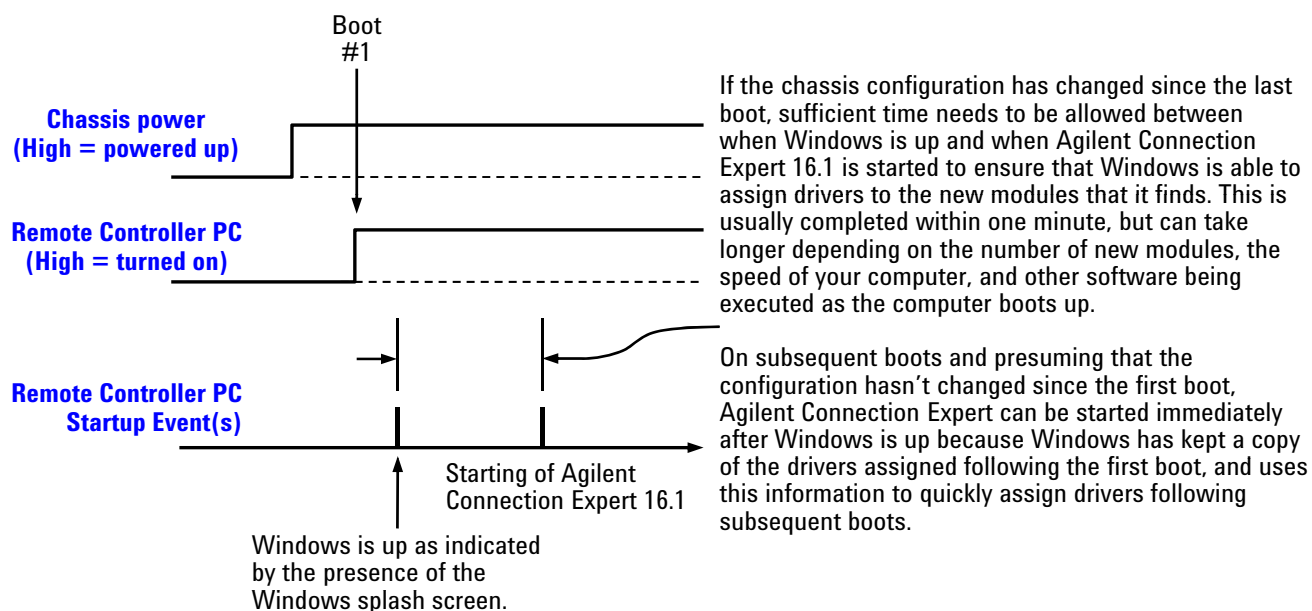


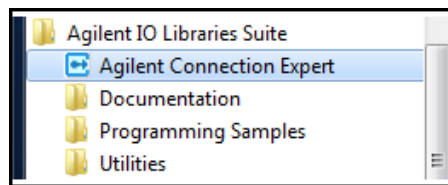
Figure 10 Startup sequence for Agilent Connection Expert 16.1 or later

Using Agilent Connection Expert to connect to the chassis

This section describes use of Agilent Connection Expert to confirm that the host controller can connect to the chassis and applies to both versions, 16.0 and 16.1.

- 1 First, start Agilent Connection Expert on the host controller. This is shown below for Windows 7, and is performed from the **Start** menu as follows:

Start > All Programs > Agilent IO Libraries Suite > Agilent Connection Expert



- 2 Once Agilent Connection Expert is running, a chassis indicator should appear under the PXIO label in the **Instrument I/O on this PC** pane as shown in Figure 11—in this case, the chassis indicator is “Chassis1”. Clicking “Chassis1” displays the contents of each slot in the M9018A chassis in the right pane under the label **Agilent model M9018A PXI chassis**.

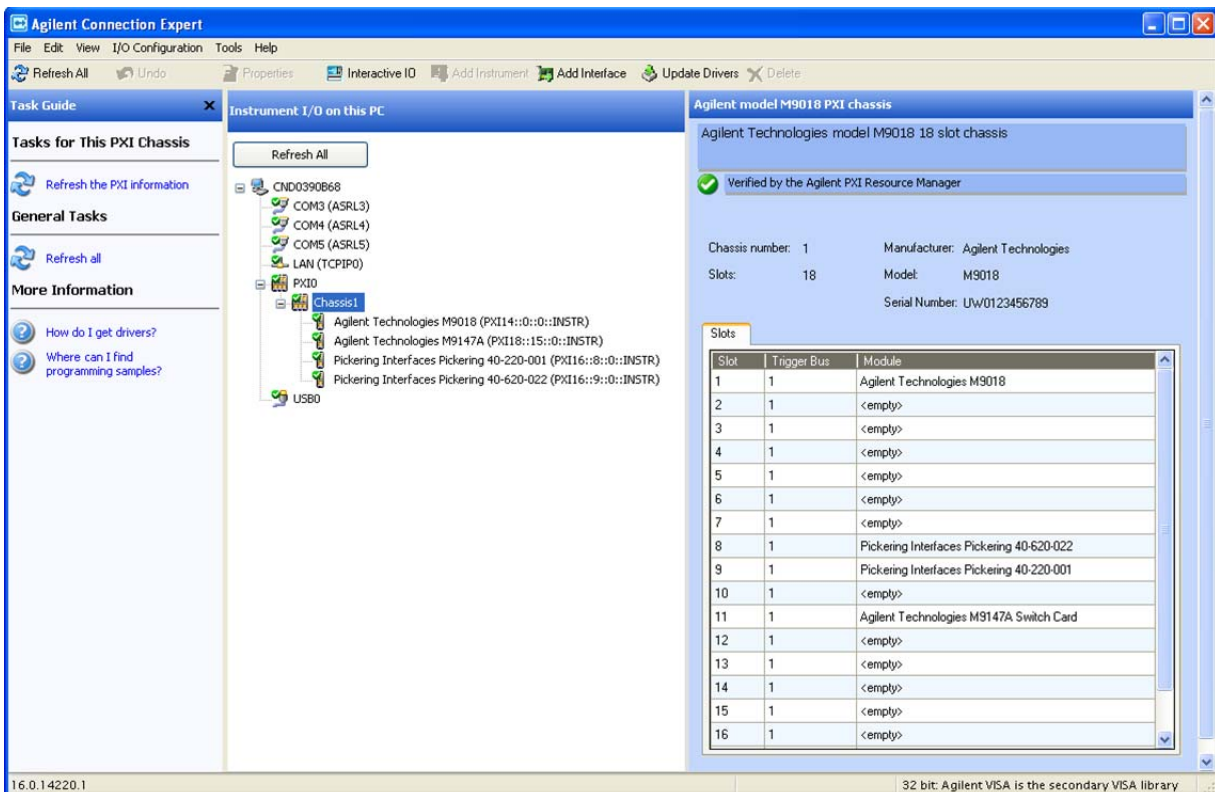


Figure 11 Agilent Connection Expert display of the chassis contents

If Agilent Connection Expert successfully displays the chassis slots, please continue to the next section, and verify that the soft front panel can interface to the chassis. If Agilent Connection Expert fails to display the chassis slots, see the M9018A User Guide for troubleshooting suggestions.

Using the soft front panel to monitor the chassis

The M9018A soft front panel (SFP) can be used both to monitor the status of the chassis as well as configure various chassis parameters, such as the maximum temperature threshold for the temperature alarm. This section describes how to use the SFP to *monitor* the status of the chassis; configuring chassis parameters is described in the M9018A User Guide.

Starting the SFP and selecting Hardware Mode or Simulation Mode

The SFP has two modes, Hardware Mode and Simulation Mode. In Hardware Mode, the SFP interacts with the chassis itself. The SFP will display chassis information and allow you to set chassis parameters such as temperature thresholds and voltage alarms.

In Simulation Mode, the SFP *simulates* chassis operation and does not communicate with the chassis. Simulation Mode is useful to learn the capabilities of the SFP and the chassis.

Independent of whether you plan to run the SFP in Hardware Mode or Simulation Mode, the SFP is started from the **Start** menu as follows:

Start > All Programs > Agilent > M9018A > M9018 SFP

If no chassis has been detected by Agilent Connection Expert, the SFP startup dialog will appear as shown in Figure 12. The absence of a chassis listed under **Modules** indicates that no chassis has been detected; therefore, the SFP can only be run in Simulation Mode.

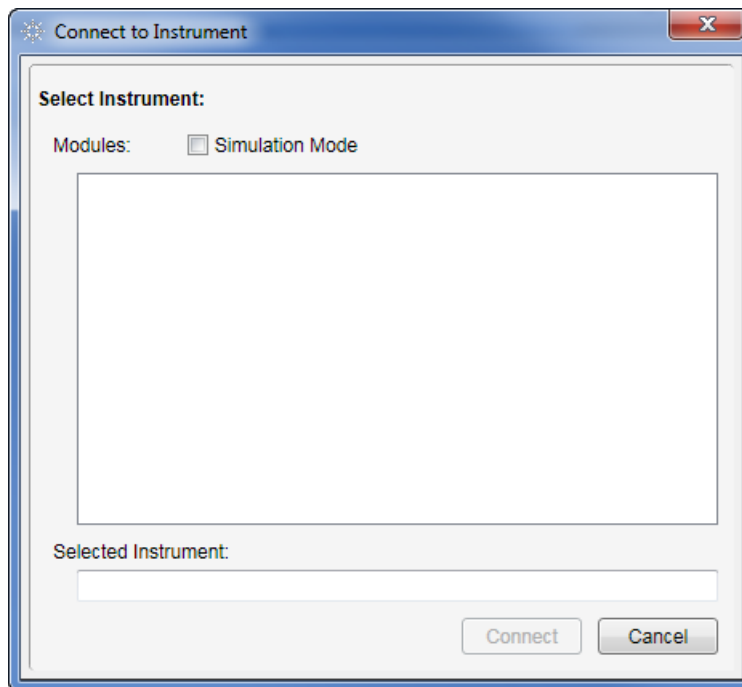


Figure 12 SFP startup dialog when no chassis is detected.

To run in Simulation Mode, select the **Simulation Mode** check box in Figure 12. This will display “M9018A” in the **Modules** list. Then click “M9018A” in the **Modules** list to select it, which will display “M9018A” in the **Selected Instrument** field. Click **Connect** to start the SFP in Simulation Mode.

If a chassis has been detected, “M9018A” and the PCI bus address of the chassis will be listed under **Modules**, as shown in Figure 13.

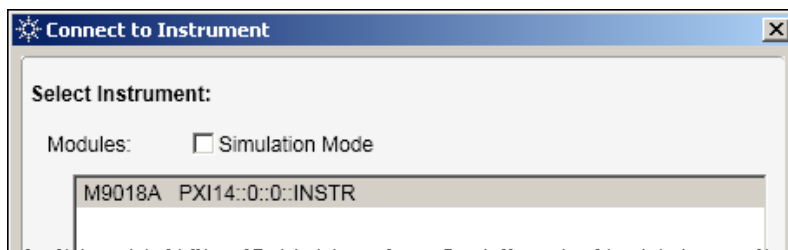


Figure 13 SFP startup dialog when a chassis is detected by Agilent Connection Expert

Click the chassis entry under **Modules** to select it, which will display the chassis entry in the **Selected Instrument** field. Click **Connect** to start the SFP in Hardware Mode.

If Agilent Connection Expert detects a chassis, the chassis will be listed in Agilent Connection Expert. This provides another option for starting the SFP. To start the SFP from Agilent Connection Expert, select the chassis in the **Instruments I/O on this PC** pane, select the **Installed Drivers** tab in the right pane, and click **Start SFP** as shown in Figure 14. This will automatically bring up the SFP in Hardware Mode because of the presence of the chassis.

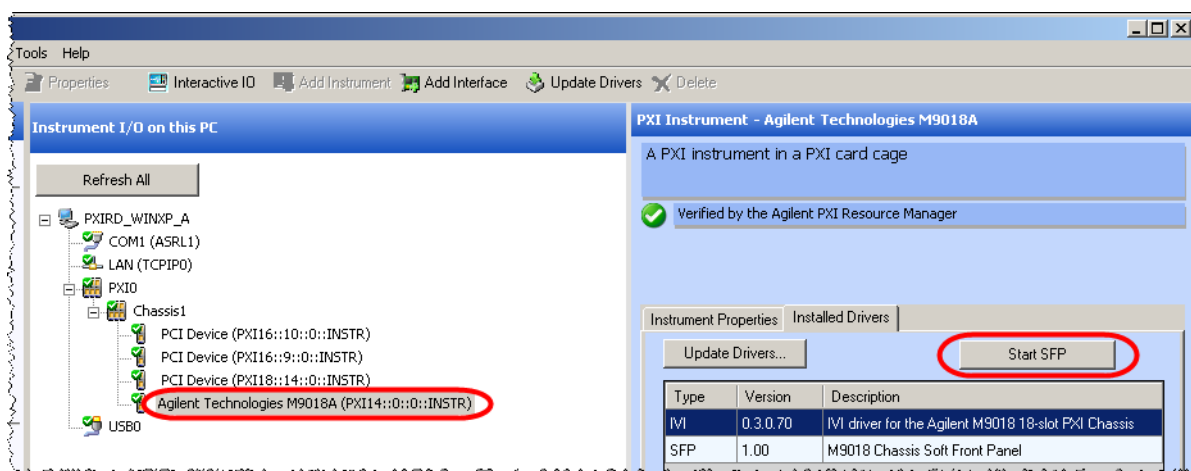


Figure 14 Starting the SFP from Agilent Connection Expert

Note that only a single instance of the SFP can be run at one time on the host controller PC.

Using the SFP to monitor the chassis

This section describes how to use the SFP to monitor the chassis in Hardware Mode.

NOTE

To prevent inadvertently changing parameters such as the chassis temperature alarm, the SFP includes an **Allow Control** check box that is unchecked by default as shown below. The unchecked box prevents any configuration change from being made. In the M9018A User Guide, which describes how to use the SFP to configure the chassis, this check box will be checked.

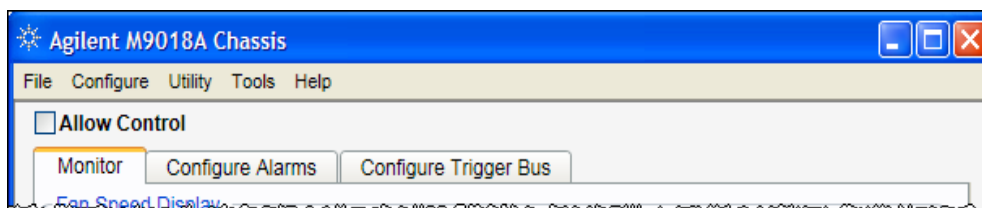


Figure 15 shows the **Monitor** screen of the SFP. This screen displays the speed of the three fans, the temperatures reported by the eight backplane temperature sensors, and the four main power supply voltages. This screen also displays the source of the 10 MHz reference clock and the current PCIe link configuration.

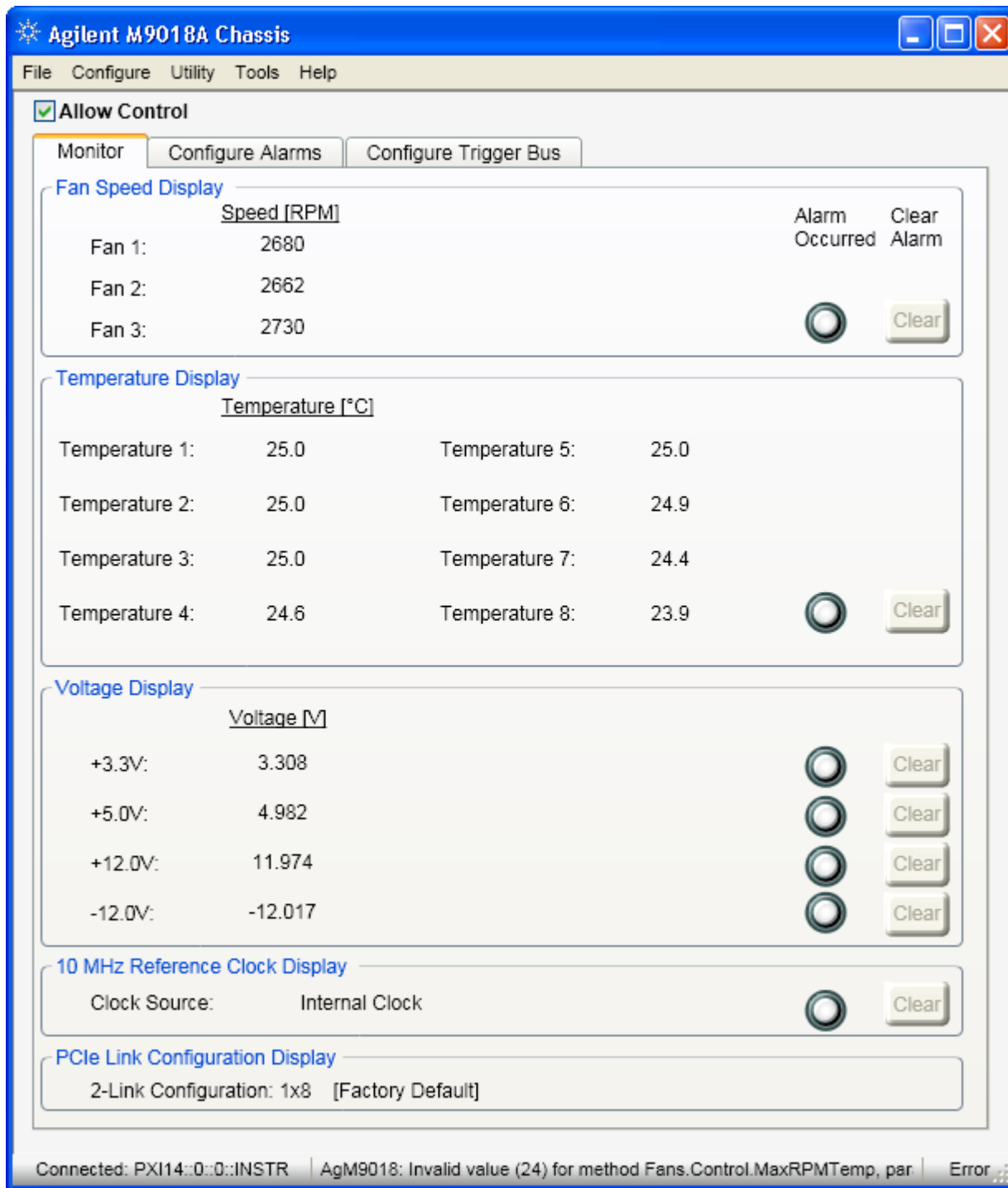


Figure 15 The **Monitor** screen of the M9018A soft front panel

As you can see, there are seven Alarm Occurred indicators on the right side of the **Monitor** screen. These alarms are enabled by default and operate as described in Table 6. If the chassis is operating normally and is using the default alarm thresholds, none of the alarms should be set. For information on configuring these alarms to other than their default thresholds, please see the M9018A User Guide.

Table 6 SFP default alarm thresholds and operation

Alarm	Description
Fan speed alarm	The fan speed alarm is illuminated if the speed of any of the three fans drops below 800 RPM. The alarm is latched and will persist even if all fans resume operation above 800 RPM. The fan speed alarm can be cleared using its Clear button; however, if any of the three fans are still operating below 800 RPM when the Clear button is clicked, the fan speed alarm will remain illuminated.
Temperature alarm	The temperature alarm is illuminated if the temperature reported by any of the eight temperature sensors is above 70 °C. The alarm is latched and will persist even if all temperature sensors subsequently report temperatures below 70 °C. The temperature alarm can be cleared using its Clear button; however, if any of the temperature sensors are still reporting a temperature above 70 °C when the Clear button is clicked, the temperature alarm will remain illuminated.
3.3V alarm	Each of the four voltage alarms has upper and lower voltage limits of 5% about the nominal voltage. For example, the 12V alarm has an upper voltage limit of 12.6V and a lower voltage limit of 11.4V. A particular voltage alarm is illuminated if that voltage falls outside of the range specified by the upper and lower voltage limits. The alarm signal is latched and will persist even if the voltage subsequently returns to within the specified range. The voltage alarm can be cleared using the Clear button; however, if the voltage is still outside of the specified range when the Clear button is clicked, the voltage alarm will remain illuminated.
5V alarm	
12V alarm	
-12V alarm	
10 MHz reference clock source changed alarm	This alarm is illuminated if the 10 MHz reference clock source changes. For example, if an external 10 MHz reference clock source is being provided through the rear panel BNC connector, that signal will be used as the chassis 10 MHz reference clock source. If this signal is disconnected, the 10 MHz reference clock source will revert to the chassis internal 10 MHz reference clock source, and this alarm will be illuminated. This alarm, like the other alarms, is latched and can be cleared using its Clear button.

STEP 4: Overview of Installing and Verifying Agilent Modules

This section provides an overview of installing Agilent modules in the chassis and verifying their operation. For detailed instructions, see the documentation provided with your module.

NOTE

Installation of Agilent modules should only be performed if you've been able to successfully view the chassis slots with Agilent Connection Expert as described in [Using Agilent Connection Expert to connect to the chassis](#) on page 30. Preferably you've also been able to use the M9018A soft front panel with the chassis as well.

CAUTION

The following procedures should be followed to ensure safety and to minimize the possibility of damaging electrical components:

- Before installing any module in the chassis, the chassis must be disconnected from AC power.
- To minimize the possibility of ESD damage to a module while installing it, follow the static-safe handling procedures described in [Static-safe handling procedures](#) on page 10. Do not touch exposed module connector pins or components on the printed circuit boards. When removing modules from the chassis, store them in anti-static envelopes.
- Modules are usually shipped with thread protectors on the mounting screw threads. These protectors must be removed before installing modules in the chassis.

CAUTION

If you're using a remote controller, ensure that you follow the power sequencing requirements shown in [Power sequencing of the chassis](#) on page 25. This sequencing is important both when powering up the chassis and powering down the chassis.

Installing modules

If you plan to install multiple high power Agilent modules in the chassis, see the M9018A User Guide for information on power planning and chassis cooling. Prior to installing your modules, please review the installation instructions for the PCIe cable interface module in [1. Install a PCIe cable interface module in the chassis](#) on page 16—the instructions for this module are applicable to all modules installed in the chassis.

Installing the module software

NOTE

The M9018A chassis drivers that you installed in [Installing the M9018A chassis drivers](#) on page 22 are completely separate from your module software. The chassis drivers permit interfacing to chassis functionality such as temperature sensors and fan speeds, while your module software is required to interface to your particular module.

The documentation for your Agilent module will indicate that Agilent IO Library Suite should be installed. However, only one installation of IO Library Suite is required on the host controller PC. Presuming that you installed IO Libraries Suite as described in [Installing the Agilent IO Libraries Suite](#) on page 20, it does not need to be installed again when installing software for Agilent modules. If you did not install IO Libraries Suite earlier, it must be installed *before* you install your module-specific software.

After ensuring that IO Libraries Suite is installed, follow the instructions provided with your module to install its software.

Verifying your module

Follow the instructions provided with your Agilent module to verify its operation. Module verification typically includes the following steps:

- 1 Verify that your module is displayed within the chassis in Agilent Connection Expert as described in [Using Agilent Connection Expert to connect to the chassis](#) on page 30, and as described in your module documentation.
- 2 Bring up the soft front panel (SFP) for your module, if available, and verify that the SFP can interface correctly to the module.



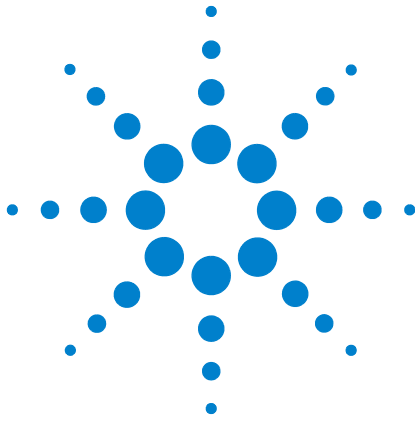
Appendix A: Chassis and Accessory Model Numbers

Table 7 lists the model number of the chassis and its accessories. Information on these parts can be found by starting at www.agilent.com/find/pxi-chassis.

Table 7 Chassis and accessory model numbers

M9018A	PXIe Chassis: 18 slot, 3U, 8 GB/s
opt 900-932	Power cord options
M9021A	PCIe Cable Interface module (x8)
M9045	PCIe ExpressCard Adapter (x1)
M9047	PCIe Desktop Adapter (x8)
Y1200A	PCIe cable: x4 to x8, 2.0m (for use with M9045)
Y1202A	PCIe cable: x8, 2.0m (for use with M9047)
Y1213A	PXI EMI Filler Panel Kit: 5 single-slot
Y1214A	Air Inlet Module Kit
Y1215A	Rack Mount kit for the M9018A





Appendix B: Chassis Specifications

This appendix lists the key chassis specifications. For more detailed specifications, please see the Agilent M9018A Data Sheet available at www.agilent.com/find/M9018A.

Safety

Complies with European Low Voltage Directive 2006/95/EC
<ul style="list-style-type: none"> • IEC/EN 61010-1, 2nd Edition • Canada: CSA C22.2 No. 61010-1-04 • USA: UL Std No. 61010-1, 2nd Edition
EMC
<p>This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB du Canada.</p>

Operating conditions

Indoor/outdoor	Ambient Temperature	Humidity	Altitude
For indoor use only	0 °C to 55 °C	Maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly to 50% relative humidity at 40 °C	Up to 2,000 meters

CAUTION

This product is designed for use in INSTALLATION CATEGORY II and POLLUTION DEGREE 2, per IEC 61010 Second Edition and 664 respectively.

Chassis weight and size

Weight	Size
13.4 kg (29.5 lbs)	444.4mm W x 191.8mm H x 466mm D (with feet installed) 444.4mm W x 177.8mm H x 466mm D (with feet removed)



AC power supply - Category II

Operating voltage/power (low line)	100-120V, 900W MAX
Operating voltage/power (high line)	220-240V, 1200W MAX
Input frequency	50/60 Hz
Mains supply voltage fluctuations are not to exceed $\pm 10\%$ of the nominal voltage	
Transient overvoltages typically present on the Mains supply.	

PCIe cable connector and receptacle mating cycles

Connector on:	Maximum number of mating cycles
Y1200A and Y1202A PCIe cables	250
M9021A Cable Interface module	250
M9045 ExpressCard Adapter	250
M9047 Desktop Adapter	250

Important safety information

To ensure comprehensive availability of chassis safety information, this section lists important warning and caution safety notices from the M9018A User Guide.

WARNING

- **This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the product is likely to make the product dangerous. Intentional interruption is prohibited. Inspect the protective conductor periodically to ensure that it is uninterrupted.**
- **No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock, do not remove covers.**
- **To prevent electrical shock, disconnect the chassis power cord before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.**
- **Cleaning connectors with alcohol shall only be done with the chassis power cord removed and in a well-ventilated area. Allow all residual alcohol moisture to evaporate, and the fumes to dissipate prior to energizing the chassis.**

WARNING

Restoring the chassis PCIe switch fabric to its factory default configuration requires pressing a pushbutton internal to the chassis while the chassis is powered up. Only qualified, service-trained personnel shall be allowed to remove the instrument cover and actuate the pushbutton while the instrument is energized. High current and high energy source connectors are proximate to the pushbutton which could cause potential burns if short circuited.

WARNING

To prevent injury during rack mounting, the chassis should be empty of modules and two people should lift the chassis into the rack.

CAUTION

- Chassis should never be stacked on top of each other. To position chassis vertically, they should be rack mounted as described in this chapter.
 - In preparing the chassis for rack mounting, do not stand the chassis on its side; the side handles can cause the chassis to tip over.
 - Depending on the power consumed by the chassis, a 1U space may be required below the chassis to ensure adequate ventilation for cooling. Be sure to provide this space if required as described in this chapter.
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