



Tested PC and PXI/AXIe Chassis Configurations

M9005A PXIe Chassis	M9502A AXIe Chassis
M9010A PXIe Chassis	M9505A AXIe Chassis
M9018B PXIe Chassis	M9506A AXIe Chassis
M9019A PXIe Chassis	M9514A AXIe Chassis

Overview

This personal computer and controller technical note provides the test system designer with a list of tested computers that are compatible with Keysight Technologies, Inc. PXI and AXIe chassis. The computers are compatible with both PXI and AXIe chassis, unless otherwise noted. The testing in this guide covers the PCIe link and enumeration of the chassis. Compatibility can be impacted by many factors including computer BIOS and signal path within the computer and cable.

Keysight Technologies modular chassis tested:

- M9005A PXIe Chassis
- M9010A PXIe Chassis
- M9018B PXIe Chassis
- M9019A PXIe Chassis
- M9502A AXIe Chassis
- M9505A AXIe Chassis
- M9506A AXIe Chassis
- M9514A AXIe Chassis



Figure 1. M9048B and M9049A Gen3 host adapters.



Figure 2. M9502A AXIe 2 slot chassis.



Figure 3. M9019A PXIe Gen3 18-slot chassis.

Personal computing devices tested:

- Desktop PCs
- Rack mount PCs
- Laptops and PCs with Thunderbolt adapters for M9506A
- PXI/AXIe embedded PC controllers

Tested Configurations

- Desktop/rackmounted PCs used an appropriate system module:
 - M9005A PXIe chassis was tested with the integrated system module.
 - M9010A, M9018B and M9019A PXIe chassis were tested utilizing a mixture of M9021A, M9022A, M9023A, and M9024A PXIe system modules except where noted ¹.
 - M9502A, M9505A, and M9506A AXIe chassis were tested with the embedded system module.
 - M9514A AXIe 14-slot chassis was tested with the M9521A AXIe system module.
- Testing used Keysight-recommended PCIe host cable card installed in the PC:
 - M9005A PXIe chassis was tested with option 002 PCIe Desktop Adapter.
 - All other chassis used a mixture of M9048A, M9048B, and M9049A PCIe host adapters and Y1202A PCIe cables to M9021A, M9022A, M9023A, and M9024A system modules.
- Desktop testing was performed with only a graphics card in its standard slot ².
- Both star and daisy-chain configurations were used for multi-chassis testing ³.
- Tested with 64-bit Microsoft Windows 7 or Windows 10 (computers were tested with Win 7/64 Professional unless otherwise documented in computer comments).

Windows and BIOS Settings ⁴

Many customers may be new to modular instrument systems and should check their systems configurations to be sure that:

- All sleep and hibernation modes are disabled. A PC unexpectedly going to sleep in the middle of an extended measurement is not normally desired.
- Windows fast startup is disabled. Having fast startup enabled will typically be problematic in reconfiguring larger multi-chassis systems but disabling is generally recommended also.
- Active State Power Management (ASPM) is disabled in both the BIOS and Windows.
- For best results, multi-chassis configurations may need to be “built up” by adding a single chassis at a time and rebooting – or even a chassis and just a subset of its cards at a time with some PCs. It is generally not recommended to add multiple chassis at one time to “build up” a configuration even though it may work for some PCs.

Additional Notes

- PC BIOS are always continually evolving. BIOS versions listed below may not be the latest version available out there. If you are using a later version than what is listed and things are not enumerating correctly, Keysight recommends you downgrade to the version that was tested from the list below.
- Keysight cannot guarantee system enumeration for computers that are not listed below.
- For the most current version of this document, please refer to www.keysight.com/find/PXIAXIeTestedPC

¹ Only the M9018B testing utilized the M9021A PCIe cable interface. The M9019A and M9010A do not support the M9021A.

² Applies to desktop and rackmounted personal computers only. In some cases, the graphics card must also be removed (see computer comments).

³ Keysight does not recommend a mixed configuration utilizing both star and daisy-chain.

⁴ Refer to *BIOS and Windows Settings for Modular Systems* for more detailed Windows and BIOS settings.

Desktop Personal Computers

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Hewlett Packard	Z2 G4 Workstation Tower	Q50 Ver. 01.01.08 10/3/2018	One x16 Gen3	3	Tested with Win10 Pro 64-bit. x16 (x4) and x4 (x1) slots are not supported.
Hewlett Packard	Z4 G4 Workstation Tower ³	Rev 2.46	Two x16 Gen3 One x8 Gen3	6	M9018A SN>TW55090100 (shipped after 3/4/15). Tested with Win10 Enterprise 64-bit.
Hewlett Packard	Z6 G4 Workstation Tower	P60 Ver. 02.21 6/28/2019	One x8 Gen3 Two x16 Gen3	4	Tested with Win10 Pro 64-bit.
Hewlett Packard	Z8 G4 Workstation Tower ³	Rev 2.4	Four x16 Gen3 One x8 Gen3	6	M9018A SN>TW55090100 (shipped after 3/4/15). Second CPU required for 4th & 5th x16 and x8. Tested with two CPUs.
Hewlett Packard	ProDesk 400 G6 Microtower	HP 02.05.01 Rev.A, 5/11/2020	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported.
Hewlett Packard	ProDesk 600 G5 Microtower	HP 02.05.01 Rev. A, 5/11/2020	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported.
Hewlett Packard	EliteDesk 800 G4 Workstation Edition	HP Q01 Ver. 02.07.01 4/23/2019	One x16 Gen3	3	Tested with Win10 Pro 64-bit. x16 (x4) slot is not supported.
Hewlett Packard	EliteDesk 800 G5 Tower Desktop Edition	HP R01 Ver. 02.04.02, 12/27/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. x16 (x4) slot is not supported.
Hewlett Packard	Z1 G5 Entry Tower Desktop	HP R01 Ver. 02.03.02, 11/5/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. x16 (x4) slot is not supported.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.

² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.

³ Refer to *BIOS and Windows Settings for Modular Systems* for more detailed Windows and BIOS settings.

Desktop Personal Computers Continued

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Dell	Precision 3630 Tower	1.2.0 5/27/2019	One x16 Gen3	3	Tested with Win10 Pro for Workstations 64-bit.
Dell	T5820 ³	2.0.2 2/27/2020	Two x16 Gen3 One x16 (x8) Gen3	3	Tested with Win10 Pro 64-bit. May need to move GPU. PCIe bus allocation (Default option using slots 1, 2 & 4).
Dell	T7920 ³	2.5.0 1/28/2020	Two/four x16 Gen3 One x8 Gen3	5 Star	Tested with Win10 Pro 64-bit. Tested with two CPUs. May need to move GPU. Second CPU required for more than two x16 PCIe slots. PCIe bus allocation (Thunderbolt option using slots 1, 2, & 5).
Dell	Optiplex 3060 Tower	1.2.17 9/10/2018	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported.
Dell	Optiplex 5080 Micro Tower	1.1.0 6/2/2020	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. x16 (x4) slot is not supported.
Dell	Optiplex 7070 Mini-size Tower	Dell Inc. 1.0.3 5/30/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. x16 (x4) slot is not supported.
Dell	XPS 8920 Tower (T)	1.0.20 6/20/2019	One x16 Gen3	4	Tested with Win10 Pro 64-bit.
Fujitsu	Celsius W580 Workstation	American Megatrends Inc. V5.0.0.13 R1.11.0 for D3617-A1x 7/11/2018	One x16 Gen3	4	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.

² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.

³ Refer to *BIOS and Windows Settings for Modular Systems* for more detailed Windows and BIOS settings.

Discontinued Desktop Personal Computers but Supported (may still be available through distribution channels)

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Dell	T3610	A.06	Two x16 Gen3 One x16 (x8) Gen3	2	May need to move GPU. For multiple chassis, set "Bus Number" field in BIOS to 256.
Dell	T5610	A.03	Two x16 Gen3 One x16 (x8) Gen3	2	May need to move GPU. For multiple chassis, set "Bus Number" field in BIOS to 256.
Dell	T5810 ³	A31	Two x16 Gen3 One x16 (x8) Gen3	6	Tested with Win10 Pro 64-bit. May need to move GPU.
Dell	T7610	A.03	Two/four x16 Gen3	2	May need to move GPU. For multiple chassis, set "Bus Number" field in BIOS to 256. Second CPU required for fourth PCIe slot.
Dell	T7810	A24	Two x16 Gen3 One x16 (x8) Gen3	5 Cascade 4 Star	Tested with Win10 Pro 64-bit. Tested with two CPUs. May need to move GPU.
Dell	T7910 ³	A31	Two/four x16 Gen3	6	Tested with Win10 Pro 64-bit. Tested with two CPUs. May need to move GPU. Second CPU required for more than two x16 PCIe slots.
Dell	Optiplex 3050 Tower	1.7.9 1/30/2018	Two x16 Gen3	1	Tested with Win10 Pro 64-bit. Only supported in Gen2 system configuration.
Dell	Optiplex 5050 Tower	1.7.9 1/30/2018	Two x16 Gen3	1	Tested with Win10 Pro 64-bit. Only supported in Gen2 system configuration. x16 (x4) slot is not supported.
Dell	Optiplex 5060 Mini-size Tower	1.4.2 6/11/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. x16 (x4) slot is not supported.
Dell	Optiplex 7050 Full-size Tower	1.5.2 6/19/2017	One x16 Gen3	1	Tested with Win10 Pro 64-bit. Only supported in Gen2 system configuration. x16 (x4) slot is not supported.
Dell	Optiplex 7060 Mini-size Tower	Dell Inc. 1.4.2 6/11/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. x16 (x4) slot is not supported.
Dell	Optiplex 9020	A07	One x16 Gen2	1	x16 (x4) slot is not tested.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.

² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.

³ Refer to *BIOS and Windows Settings for Modular Systems* for more detailed Windows and BIOS settings.

Discontinued Desktop Personal Computers but Supported Continued

(may still be available through distribution channels)

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Hewlett Packard	Z240	01.24 Rev A 5/31/2016	One x16 Gen3	3	Tested with Win7 and Win10 Pro 64-bit. x16 (x4) slot is not supported.
Hewlett Packard	Z420	3.65 Rev A	Two x16 Gen3 One x8 Gen3	2	Only two slots supported the third can be used for graphics.
Hewlett Packard	Z440 ³	2.50	Two x16 Gen3 One x8 Gen3	6	M9018A SN>TW55090100 (shipped after 3/4/15). Tested with Win10 64-bit.
Hewlett Packard	Z620	3.65 Rev A	Two x16 Gen3 One x8 Gen3	2	Only two slots supported the third can be used for graphics.
Hewlett Packard	Z640	2.1 Rev A	Two x16 Gen3 One x8 Gen3	4	M9018A SN>TW55090100 (shipped after 3/4/15).
Hewlett Packard	Z820	3.65 Rev A	Two/three x16 Gen3 One x16 (x8) Gen3	3	Second CPU required for third x16 and x16 (x8) slots.
Hewlett Packard	Z840 ³	2.50	Two/three x16 Gen3 One/two x8 Gen3	6	M9018A SN>TW55090100 (shipped after 3/4/15). Second CPU required for 4th & 5th x16 and x8. Tested with two CPUs.
Hewlett Packard	HP 280 G3 Microtower	AMI 02.01 4/20/2017	One x16 Gen3	4	Tested with Win10 Pro 64-bit.
Hewlett Packard	ProDesk 400 G4 Microtower	N02 Ver. 02.17 11/1/2016	One x16 Gen3	1	Tested with Win10 Pro 64-bit. x16 (x4) slot is not supported. M9514A/M9521A is not supported.
Hewlett Packard	ProDesk 400 G5 Small Form Factor	Q08 Ver. 02.07.00 4/11/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. M9048A and M9048B only in small form factor models (M9049A will not mechanically fit).
Hewlett Packard	ProDesk 600 G3 Microtower	P02 Ver. 02.06 9/6/2017	One x16 Gen3	1	Tested with Win10 Pro 64-bit. x16 (x4) slot is not supported. M9514A/M9521A is not supported.
Hewlett Packard	ProDesk 600 G4 Microtower	Q02 Ver. 02.02.04 6/8/2018	One x16 Gen3	1	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported.
Hewlett Packard	EliteDesk 705 G3	P06 Ver. 02.02 9/26/2016	One x16 Gen3	1	Tested with Win10 Pro 64-bit.
Hewlett Packard	EliteDesk 800 G4 Tower Desktop Edition	HP Q01 Ver. 02.07.01 4/23/2019	One x16 Gen3	1	Tested with Win10 Pro 64-bit. x16 (x4) slot is not supported.
Acer	Aspire TC-780	American Megatrends Inc. R02-B2, 5/28/2018	One x16 Gen3	1	Tested with Win10 Home Edition 64-bit.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.

² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.

³ Refer to *BIOS and Windows Settings for Modular Systems* for more detailed Windows and BIOS settings.

Rackmounted Computers

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Dell	R7920	1.5.6	Up to seven Gen3 slots	4 Star	May need to move GPU. Number of slots depends on CPU/riser option.
Dell	Precision 3930 Rack Workstation	Dell Inc. 2.3.0 8/21/2019	One x16 Gen3 One x8 Gen3	3	Tested with Win10 Pro 64-bit. M9514A/M9521A is not supported. M9048A and M9048B only (M9049A will not mechanically fit). Riser Option: Riser 1A.
Dell	EMC PowerEdge R240	Dell Inc. 2.1.6 8/21/2018	One x16 (x8) Gen3	4	Tested with Windows Server 2019 Standard 64-bit. M9514A/M9521A is not supported. M9048A and M9048B only (M9049A will not mechanically fit). PCIe Riser needed.
Hewlett Packard Enterprise	Edgeline EL1000	H07 1.72	Two x8 Gen3	6	PCIe slot model tested.
Hewlett Packard Enterprise	Edgeline EL4000	H07 1.72	One/four x16 Gen3	6	Each slot is dedicated to a CPU for up to 4 slots and 4 CPUs. Tested configuration had one slot for a M9049A with 2 ports. The Star configuration consisted of 3 cascaded chassis to each port. PCIe slot model tested.
Hewlett Packard Enterprise	DL380 Gen10	U30 1.99 5318	One/two x16 Gen3 Two/six x8 Gen3	4 Cascade	May need to move GPU. Number of slots depends on CPU/riser options.
Advantech	HPC-7442	American Megatrends 5.6.5, 5/6/2015	Four x16 Gen3 Two x16 (x8) Gen3	3	Customized PC with ASMB-9231 EATX server motherboard.
SuperLogics	SL-4U-WS-PD-C236SAE-HA	AMI 02.2 12/13/2017	One x8 Gen3 One x16 Gen3	4	Tested with Win10 Pro 64-bit. Multi-chassis only supported with slots 4 and 6.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.

² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.

Discontinued Rackmounted Computers but Supported (may still be available through distribution channels)

Manufacturer	Model	BIOS	PCIe slots ¹	Number of chassis ²	Comments
Advantech	PN: C-AGI1-AIMB781-V1	Custom BIOS supplied with computer	One x16 Gen3	2	4U Chassis, Win7 64-Bit 3.4 GHz i7 quad core, 16 GB, RAM, 256 GB SSD.
Dell	R230	2.4.3 9/30/2018	Two x16 Gen3 Two x8 Gen3	5	PCIe slot width depends on riser option ordered (x16 recommended).
Dell	R7910	2.8.0	Up to seven Gen3 slots	3 Cascade 4 Star	Max 3 chassis with cascade, 4 with star. May need to move GPU. Number of slots depends on CPU/riser option.
Kontron	KISS IPC 760	08.00.15	One x16 Gen2	1	Only M9048A tested.
SuperLogics	SL-4U-Q67SW-WB	SWQ6710H.86A.00 60. 2011.1220.1805	One x16 Gen2	1	Only M9048A tested.

¹ Tested PCIe slots in the PC. There may be additional slots in the PC which are not tested/supported. First number is connector size, number in parenthesis is the number of lanes. For example, x8 (x4) is a x8 slot wired with 4 lanes. PCIe slots without a second number have the same number of lanes as the connector size.
² Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.



Figure 4. M9505A AXIe chassis with M9537A embedded controller.

Laptops and PCs with Thunderbolt (TBT) adapters for M9506A

Manufacturer	Model	BIOS	TBT Dock Station/PCIe Adapter	Number of chassis ¹	Comments
Hewlett Packard Enterprise	Zbook 15 G6	HP R92 Ver 01.01.02	HP Thunderbolt Dock G2	1	
Hewlett Packard Enterprise	Z4/Z6/Z8 Workstation Tower	P60 Ver. 02.21, 6/28/2019	HP Thunderbolt 3 PCIe 2-port I/O Card (3UU05AA)	1	User MUST follow the Installation Guide to use this adapter.
Lenovo	ThinkPad P52	LENOVO N2CE744W (1.27), 6/21/2019	N/A	1	
Dell	Precision 5530	DELL Inc, 1.12.0, 6/27/2019	Dell TB16 Dock	1	

¹ Number of chassis which are supported when connected to the computer. Available slots may depend on graphics used. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.



Figure 5. M9506A AXIe chassis system.

PXle Embedded Personal Computers

Manufacturer	Model	BIOS	System slot PCIe links	Number of chassis ¹	Comments
Keysight	M9037A	AG11	4x4 or 2x8 Gen2 x8 Gen2 (front panel)	7 Cascade	Tested with Win10 64-bit Embedded Standard.
Keysight	M9036A	AG25	4x4 Gen2 and 2x8 Gen2	2	Tested with Win7 Embedded Standard (32/64-bit) and Win10 IoT Enterprise (64-bit).
National Instruments	PXle-8821	National Instruments 2.0.2f0, 6/29/2017	4x1 or 2x1 Gen2	1	
National Instruments	PXle-8880	1.1.1f0	x8, x16, Gen3	1	
National Instruments	RMC-8354	American Megatrends 1.0b, 9/2/2010	One x16 Gen2	4	M9048A and M9048B only (M9049A will not mechanically fit).

Discontinued PXle Embedded Personal Computers but Supported (may still be available through distribution channels)

Manufacturer	Model	BIOS	System slot PCIe links	Number of chassis ¹	Comments
National Instruments	PXle-8101	4.6.3	4x1 Gen1	1	
National Instruments	PXle-8105	1.3.3	Four link: 1x1 and 3x4 Gen1	1	
National Instruments	PXle-8108	4.6.3	4x1 Gen1	1	
National Instruments	PXle-8133	4.6.3	4x4 Gen1	1	
National Instruments	PXle-8135	1.0.0f4	4x4 or 2x8 Gen2	1	

¹ Number of chassis which are supported when connected to the computer. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.



Figure 6. M9037A PXle Embedded Controller.

AXIe Embedded Personal Computers

Manufacturer	Model	BIOS	System slot PCIe links	Number of chassis ¹	Comments
Keysight	M9537A	SL07	AXIe PCIe link up to x16 Gen3	2 with AXIe 4 with AXIe and PXIe	AXIe slot one only. Tested with Win7 Embedded Standard (32/64-bit) and Win10 IoT Enterprise (64-bit).

¹ Number of chassis which are supported when connected to the computer. More than two chassis require a 64-bit OS. For more information see: www.keysight.com/find/pxie-multichassis.



Figure 7. M9537A AXIe Embedded Controller.

Learn more at: www.keysight.com

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