BIOS and Windows Settings for Modular Systems

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

Compatibility in a system can be impacted by many factors including computer BIOS, Windows settings, and signal path within the computer and cable. This technical note provides the detailed BIOS and Windows settings for modular systems using the tested computers that are compatible with Keysight Technologies, Inc. PXI/AXIe chassis. This document is an extension to the *Tested PC and PXI/AXIe Chassis Configurations* for users who need special BIOS and Windows settings to optimize their systems for compatibility. Refer to tables below for specific detailed BIOS and Windows settings for each tested computer.

Personal Computers Listed in this Document	
Manufacturer	**Model**
Hewlett Packard	Z8 G4 Workstation Tower
Hewlett Packard	Z4 G4 Workstation Tower
Hewlett Packard	Z840
Hewlett Packard	Z440
Dell	T7920
Dell	T5820
Dell	T7910
Dell	T5810

HP Z8 G4 Workstation Tower BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	ASPM/ PCIe Power Mgt	Disable	1 & 2	PXIe/AXIe
BIOS	Secure Boot	Disable	1 & 2	Driver installation of non-KT drivers
BIOS	Expansion Chassis Compatibility	NA	NA	Narrow reset pulse; Zx40+
BIOS	NVMe Write Endurance Masking	Enable	2	If high wear sequential writes allowed using NVMe
BIOS	ACS (Access Control Services)	Disable	1 & 2	Allows full P2P performance
BIOS	PCIe Advanced Error Control	Enable	2	Mask spurious shutdown errors like Cpl timeout
BIOS	Slot N Error Handling	Disable	2	
BIOS	Thunderbolt Security Level	User Authorization	2	Thunderbolt module must be installed in slot 1
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the HP BIOS Configuration Utility: https://ftp.hp.com/pub/caps-softpaq/cmit/HP_BCU.html
3. BIOS has a Thunderbolt Security Level switch with 4 options:
    a. No Security: devices can connect with user intervention
    b. User Authorization: device connections controlled by Thunderbolt Services and user
    c. Secure Connection: allows Thunderbolt controller to differentiate between many devices
    d. Display Port & USB: only allows monitors and USB connections

HP Z4 G4 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	ASPM/ PCIe Power Mgt	Disable	1 & 2	PXIe/AXIe
BIOS	Secure Boot	Disable	1 & 2	Driver installation of non-KT drivers
BIOS	Expansion Chassis Compatibility	NA	NA	Narrow reset pulse; Zx40+
BIOS	NVMe Write Endurance Masking	Enable	2	If high wear sequential writes allowed using NVMe
BIOS	ACS (Access Control Services)	Disable	1 & 2	Allows full P2P performance
BIOS	PCIe Advanced Error Control	Enable	2	Mask spurious shutdown errors like Cpl timeout
BIOS	Slot N Error Handling	Disable	2	
BIOS	Thunderbolt Security Level	User Authorization	2	See #3 below &Thunderbolt module must be installed in slot 4
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the HP BIOS Configuration Utility: https://ftp.hp.com/pub/caps-softpaq/cmit/HP_BCU.html
3. BIOS has a Thunderbolt Security Level switch with 4 options:
    a. No Security: devices can connect with user intervention
    b. User Authorization: device connections controlled by Thunderbolt Services and user
    c. Secure Connection: allows Thunderbolt controller to differentiate between many devices
    d. Display Port & USB: only allows monitors and USB connections

HP Z840 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	Secure Boot	Disable	1 & 2	Driver installation of non-KT drivers
BIOS	Expansion Chassis Compatibility	Enable	2	Narrow reset pulse
BIOS	NVMe Write Endurance Masking	Enable	1&2	If high wear sequential writes allowed using NVMe
BIOS	ACS (Access Control Services)	Disable	1 & 2	Allows full P2P performance
BIOS	PCIe Performance Mode	Enable	1 & 2	
BIOS	PCIe Advanced Error Control	Enable	2	Mask spurious shutdown errors like Cpl timeout
BIOS	Slot N Error Handling	Disable	2	
BIOS	Thunderbolt Security Level	Unique ID	2	See #3 below &Thunderbolt module must be installed in slot 5
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the HP BIOS Configuration Utility: https://ftp.hp.com/pub/caps-softpaq/cmit/HP_BCU.html
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
   a. Legacy Mode: allows any Thunderbolt device to connect to the host
   b. Unique ID: allows hot swap devices
   c. DP++ Only: use the Thunderbolt module as a video device only (Display Port)
   d. One Time Saved Key: applies to Falcon Ridge devices only which allows the controller to differentiate between many of the same type of device

HP Z440 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	Secure Boot	Disable	1 & 2	Driver installation of non-KT drivers
BIOS	Expansion Chassis Compatibility	Enable	2	Narrow reset pulse
BIOS	NVMe Write Endurance Masking	Enable	1&2	If high wear sequential writes allowed using NVMe
BIOS	ACS (Access Control Services)	Disable	1 & 2	Allows full P2P performance
BIOS	PCIe Performance Mode	Enable	1 & 2	
BIOS	PCIe Advanced Error Control	Enable	2	Mask spurious shutdown errors like Cpl timeout
BIOS	Slot N Error Handling	Disable	2	
BIOS	Thunderbolt Security Level	Unique ID	2	See #3 below &Thunderbolt module must be installed in slot 3
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the HP BIOS Configuration Utility: https://ftp.hp.com/pub/caps-softpaq/cmit/HP_BCU.html
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
    a. Legacy Mode: allows any Thunderbolt device to connect to the host
    b. Unique ID: allows hot swap devices
    c. DP++ Only: use the Thunderbolt module as a video device only (Display Port)
    d. One Time Saved Key: applies to Falcon Ridge devices only which allows the controller to differentiate between many of the same type of device

Dell T7920 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	ASPM/ PCIe Power Mgt	Disable	1,2	PXIe/AXIe
BIOS	Secure Boot	Disable	1,2	Driver installation of non-KT drivers
BIOS	Thunderbolt	Enable	1,2	Thunderbolt module must be installed in slot 4 or 5
BIOS	Thunderbolt Security Level	2	1,2	See #3 below
BIOS	PCIe Bus Allocation	Option N	1,2	See #4 below
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the Dell Command & Configure Utility: https://www.dell.com/support/article/us/en/04/sln311302/dell-command-configure?lang=en
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
   a. No Security
   b. User Authorization
   c. Secure Content
   d. Display Port Only
4. Options for T7920 with dual processors. Refer to next page for single processor options.

	Default	TBT	Option 1	Option 2	Option 3
SLOT1	44	66	18	18	10
SLOT2	46	12	42	20	12
SLOT3	10	12	10	10	10
SLOT4	46	66	75	129	177
SLOT5	11	65	11	11	11
SLOT6_CPU1	44	12	46	36	12
SLOT7_CPU1	44	12	42	20	12

Dell T5820 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	ASPM/ PCIe Power Mgt	Disable	1,2	PXIe/AXIe
BIOS	Secure Boot	Disable	1,2	Driver installation of non-KT drivers
BIOS	Thunderbolt	Enable	1,2	Thunderbolt module must be installed in slot 3
BIOS	Thunderbolt Security Level	2	1,2	See #3 below
BIOS	PCIe Bus Allocation	Option N	1,2	See #4 below
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the Dell Command & Configure Utility: https://www.dell.com/support/article/us/en/04/sln311302/dell-command-configure?lang=en
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
   a. No Security
   b. User Authorization
   c. Secure Content
   d. Display Port Only
4. Options for T7920 and T5820 with single processor.

	Default	TBT	Option 1	Option 2	Option 3
SLOT1	76	66	18	18	10
SLOT2	78	44	86	20	12
SLOT3	10	12	10	10	10
SLOT4	78	66	128	194	210
SLOT5	11	65	10	10	10

Dell T7910 BIOS and Windows Configuration Settings

Location of Setting	Setting	Value	Change Mechanism (see Notes below)	Comments
BIOS	ASPM/ PCIe Power Mgt	Disable	1,2	PXIe/AXIe
BIOS	Secure Boot	Disable	1,2	Driver installation of non-KT drivers
BIOS	Thunderbolt	Enable	1,2	Thunderbolt module must be installed in slot 3
BIOS	Thunderbolt Security Level	2	1,2	See #3 below
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the Dell Command & Configure Utility: https://www.dell.com/support/article/us/en/04/sln311302/dell-command-configure?lang=en
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
    a. No Security
    b. User Authorization
    c. Secure Content
    d. Display Port Only

Dell T5810 BIOS and Windows Configuration Settings				
Location of Setting	**Setting**	**Value**	**Change Mechanism (see Notes below)**	**Comments**
BIOS	ASPM/ PCIe Power Mgt	Disable	1,2	PXIe/AXIe
BIOS	Secure Boot	Disable	1,2	Driver installation of non-KT drivers
BIOS	Thunderbolt	Enable	1,2	Thunderbolt module must be installed in slot 3
BIOS	Thunderbolt Security Level	2	1,2	See #3 below
Windows 10	Fast Boot	Disable	Settings	Facilitates enumeration
Windows 10	Sleep	Never	Settings	PXIe/AXIe
Windows 10	PCI Express Link State Power Management	Off	Settings	PXIe/AXIe
Windows 10	UAC	Disable	Settings	Ease system admin

1. Found in BIOS Setup Menu
2. Use the Dell Command & Configure Utility: https://www.dell.com/support/article/us/en/04/sln311302/dell-command-configure?lang=en
3. BIOS has a Thunderbolt Mode with a choice of 4 settings:
    a. No Security
    b. User Authorization
    c. Secure Content
    d. Display Port Only

Additional Notes

- Keysight cannot guarantee system enumeration for computers that are not listed in the *Tested PC and PXI/AXIe Chassis Configurations.*
- For the most current version of this document, please refer to **www.keysight.com/find/PXIAXIePCBIOSandWindowsSettings.**

Learn more at: www.keysight.com

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