MECS-7211

2U Edge Computing Server
with Dual Intel® Xeon® Processor

User's Manual

Manual Rev.: Rev.1.1
Revision Date: July 28, 2023
Part No.: 50M-F0090-1010

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LEADING EDGE COMPUTING

Preface

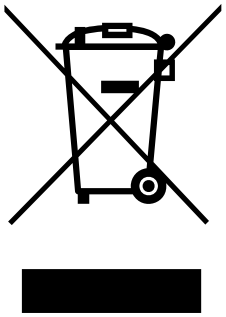
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Revision History

Revision	Release Date	Description of Change(s)
1.0	2022-11-22	Initial release
1.1	2023-07-28	Add DC power supply polarity and ground info. Previous revision: P/N 50M-00046-1000

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Conventions



mise en garde

Information to prevent minor physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.



AVERTISSEMENT

Information to prevent serious physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

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1 Overview

1.1 Introduction

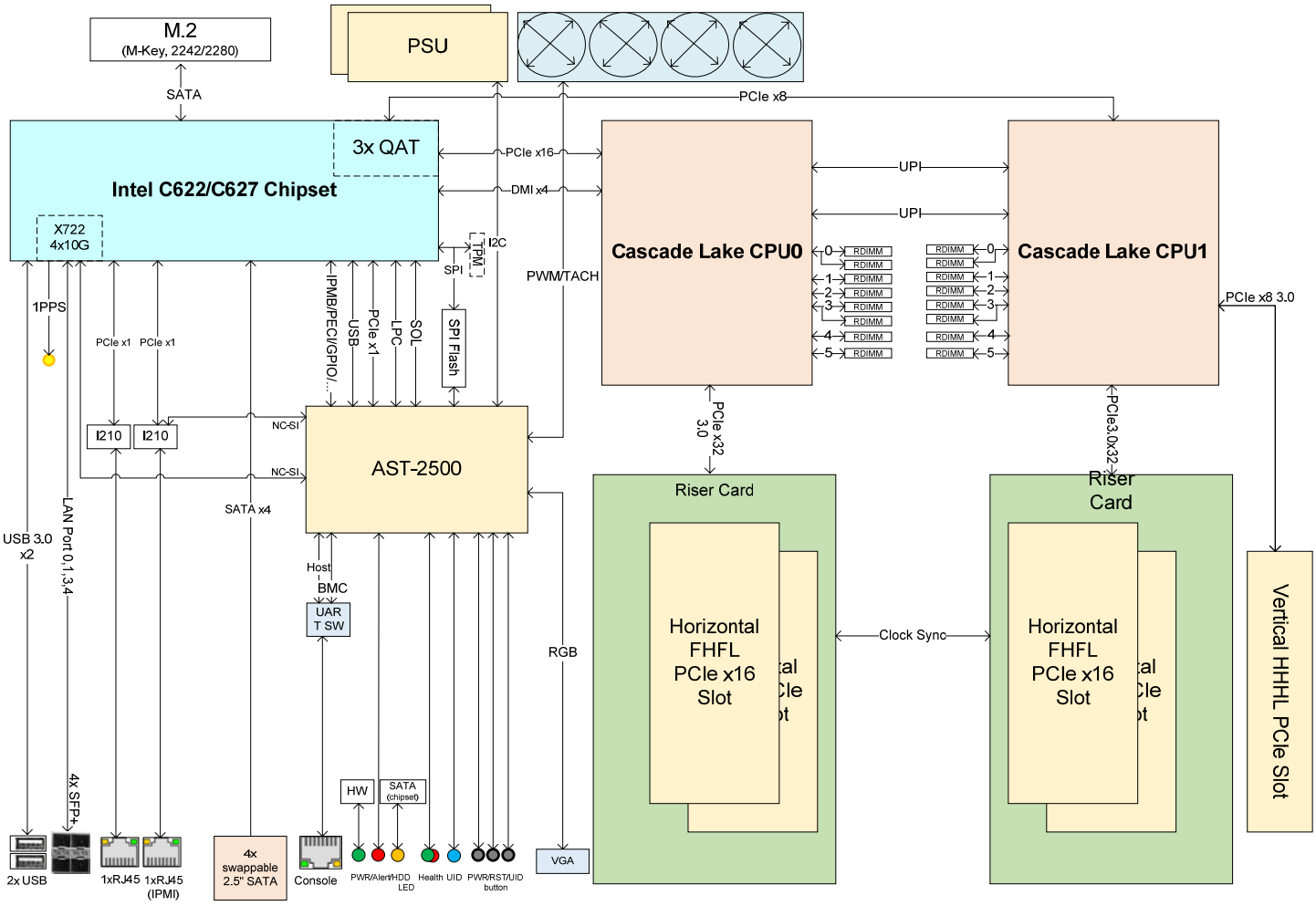
The ADLINK MECS-7211 is a 2U 19" rackmount edge computing server with Intel® Xeon® Scalable processor and Intel® C620 Series Chipset. The MECS-7211 features an IO intensive architecture with up to 5x PCIe interfaces, 4x 2.5'' SATA drive bays, and 4x SFP+ ports, and is an ideal platform for 5G mobile edge computing infrastructure deployment.

The main features of the MECS-7211 are summarized as follows:

- Supports 4x FHFL PCIe x16 Gen3 and 1x HHHL PCIe x8 Gen3 expansion slots
- 16x DDR4 memory slots for up to 512GB memory to meet the requirements of network packet processing
- Up to 4x 2.5" external hot-swappable SATA drives and additional storage expansion via M.2 SATA drive
- Intelligent system management compatible with IPMI 2.0, supports SOL and adaptive fan speeds
- Support for PacketManager software to provide data plane software stacks for dynamic Layer 3 forwarding and flow-based forwarding, accelerating development of customer applications
- Integrates Wind River® Titanium Server, and open source software including Intel® DPDK, Open vSwitch and nDPI, facilitating the building of packet parsing applications
- Supports EMC grade Class B

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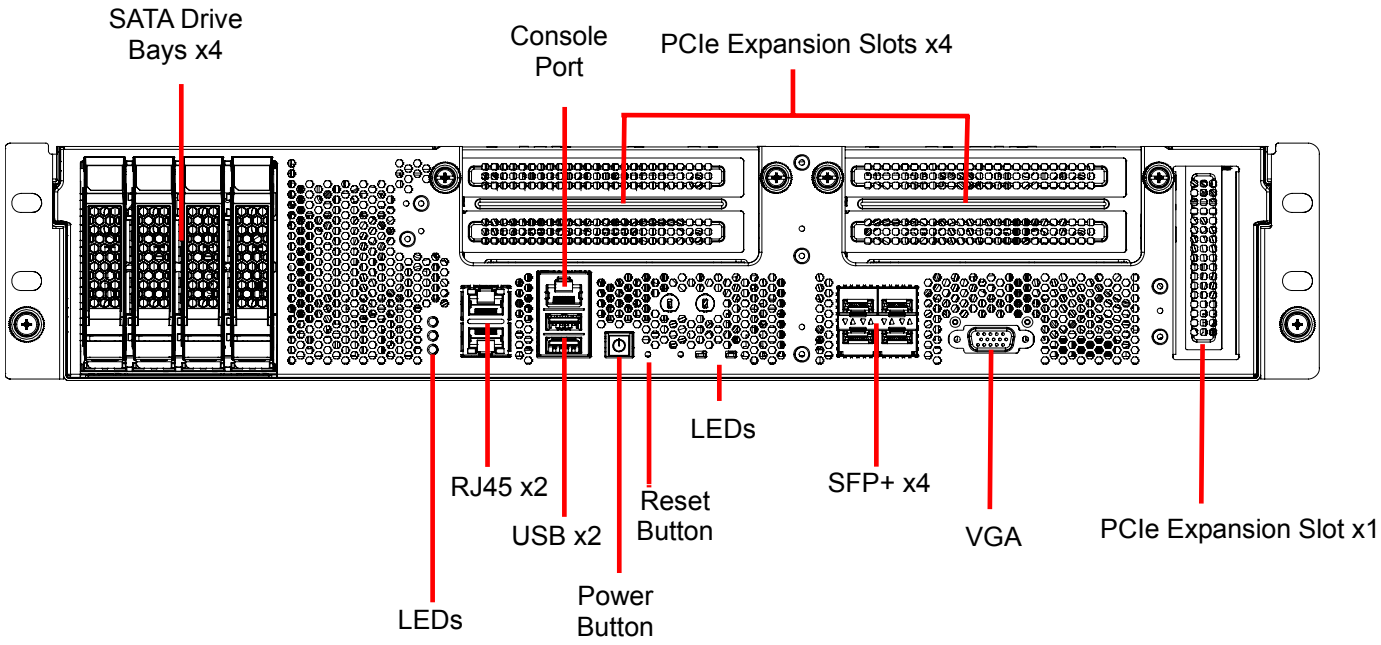
1.1 Block Diagram



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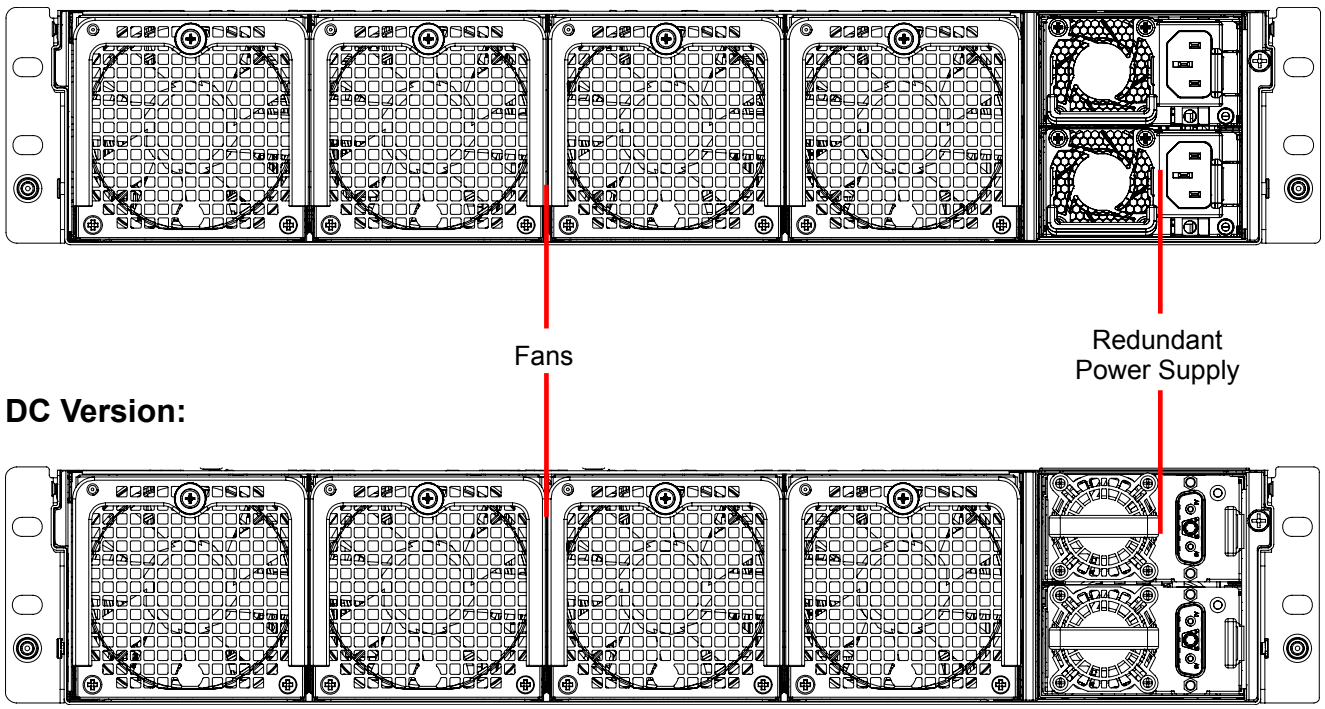
1.2 Mechanical Overview

1.2.1 Front Panel



1.2.2 Rear Panel

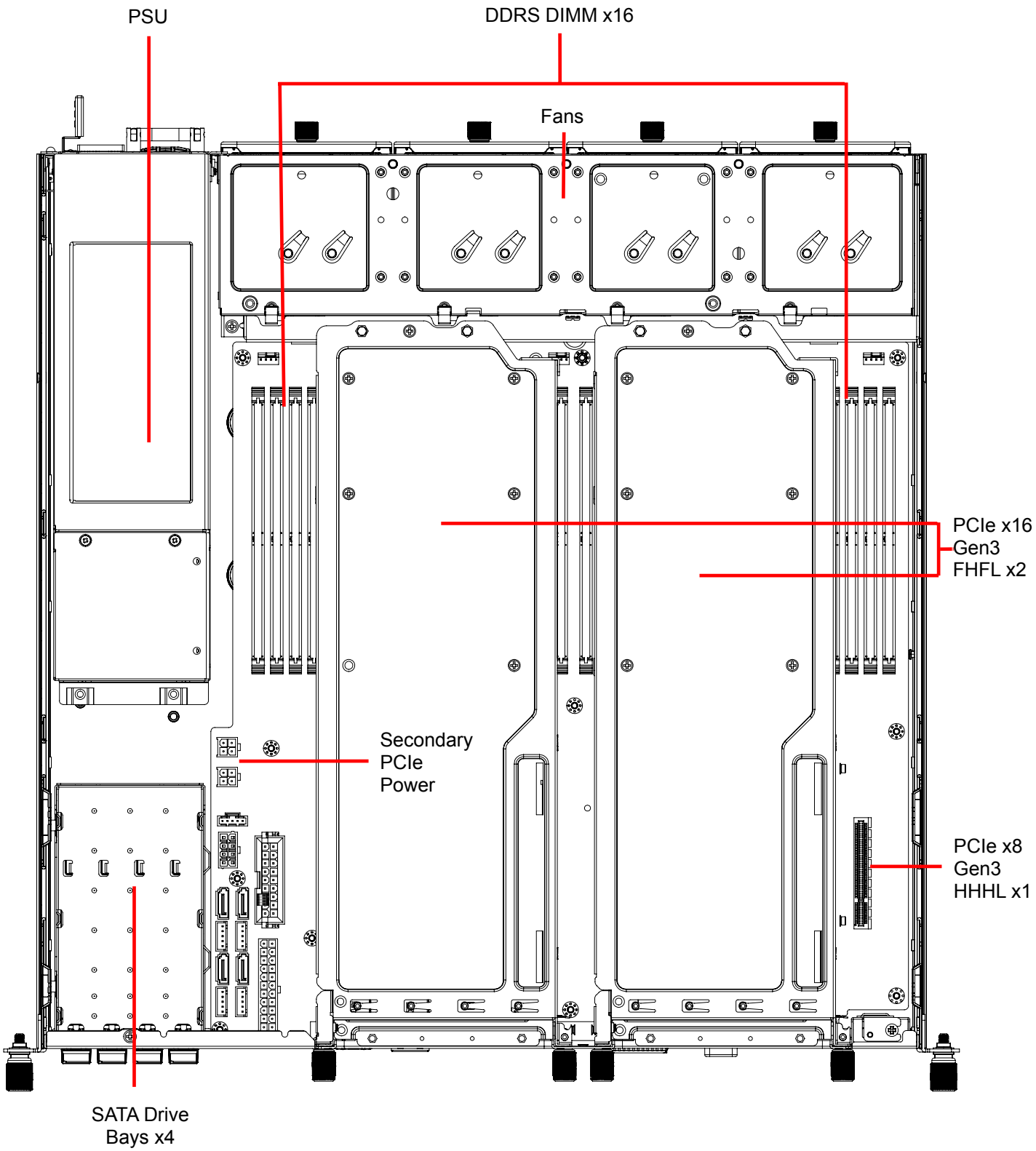
AC Version:



DC Version:

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1.2.3 Chassis Layout

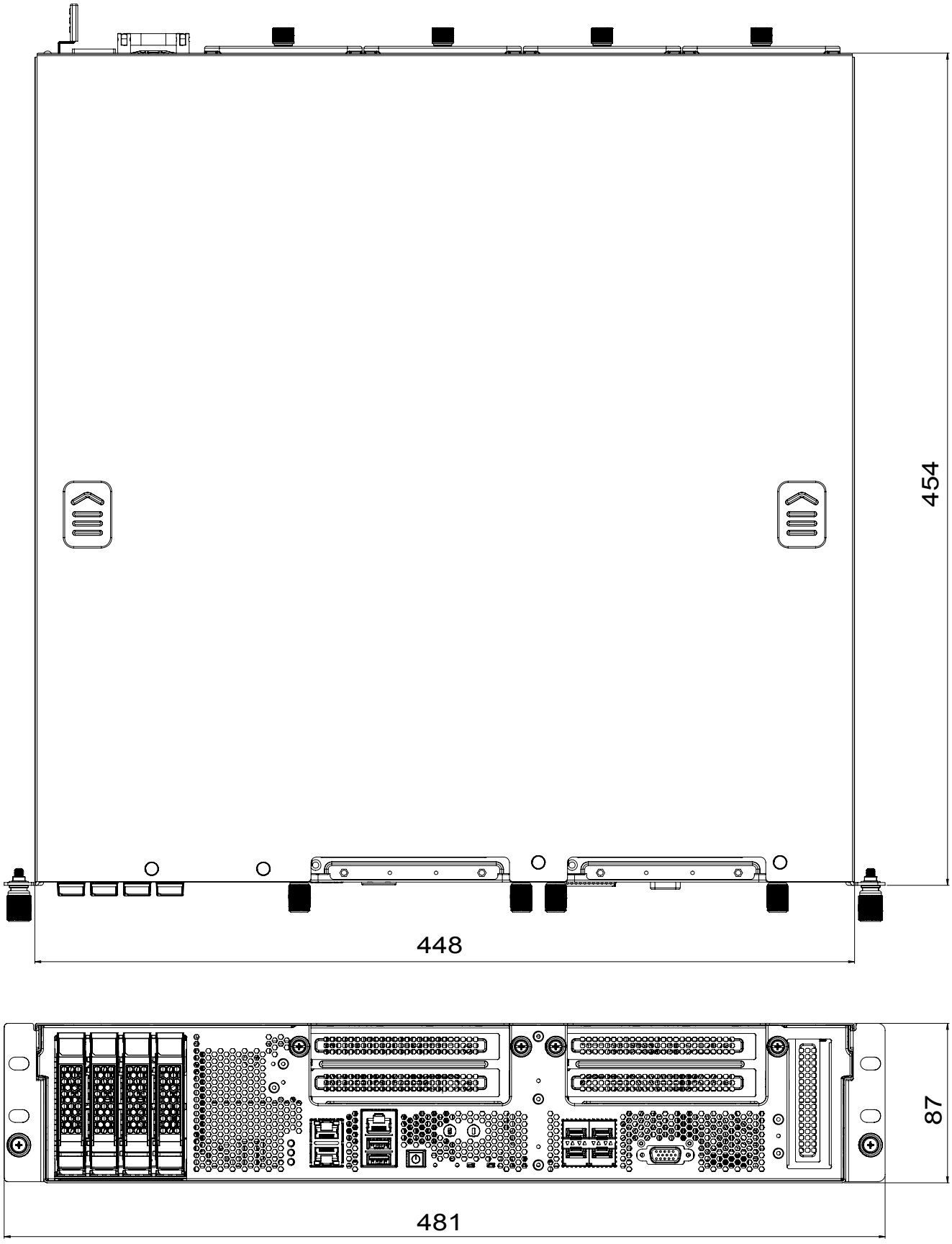


See *3.1 Removing the Chassis Cover* on page 13 for instructions on removing the cover.

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1.3 Mechanical Dimensions

Units: mm



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2 Specifications

2.1 MECS-7211 Specifications

Main System

CPU	Intel® Xeon® Gold 5218R Processor 2.10 GHz (20C/40T, 125W) Intel® Xeon® Gold 5220R Processor 2.20 GHz (24C/48T, 150W) **Note:** Please contact your ADLINK representative for other processor SKUs.
L3 Cache	From 11MB to 24.75MB, dependent on processor
Chipset	Intel® C624/C625/C627 Chipset
Memory	16x DDR4-2666 DIMM sockets, ECC, registered, up to 512GB
BIOS	AMI BIOS on SPI flash memory
Operating System	Windows 7 64-bit, Windows 10 64-bit, Windows Server 2016, Linux Kernel 2.6 and above
Intel® QuickAssist Technology	100Gb/s Intel® QAT support (SKU dependent)
Trusted Platform Module	TPM 1.2 (TPM 2.0 optional)
Chassis Management	IPMI v2.0 compliant with iKVM and SOL support
Software Support	Validated with DPDK, provides a high throughput for data plane packet processing

Interfaces

Expansion (SKU dependent)	4x PCIe x16 Gen3 FHFL single-slot interface or 2x PCIe x16 Gen3 FHFL dual-slot interface 1x PCIe x8 Gen3 HHHL interface
Ethernet	2x RJ-45 10/100/1000BASE-T Ethernet ports 4x 10G SFP+ Ethernet ports
Remote Console	1x RJ-45 serial port
USB	2x USB 3.0 (front panel) 1x USB 3.0 (internal)
Graphics	1x VGA port
LEDs	Power, Alert, Drive Activity, Health Behavior, UID

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Storage

Drive Bays	4x 2.5” external hot-swappable SATA 6 Gb/s drive bays
Internal	1x onboard M.2 2242 or 2280 M-key SATA 6 Gb/s slot

Mechanical & Environmental

Form Factor	2U 19” rackmount 438mm x 88mm x 450mm (W x H x D)
Fans	4 fans, adaptive speed
Weight[1]	13 kg net
Power	800W (EMC class B) or 1200W (EMC class A), 1+1 redundant PSU (SKU dependent) AC Version: 100V to 240V AC @50–60 Hz DC Version: -40V to -72V DC
Temperature[2]	Operating: -5°C 55°C Storage: -40°C to 70°C
Humidity[2]	Operating: 10% to 85% @40°C, non-condensing Storage: 5% to 90%, non-condensing
Shock[3]	Operating: half-sine 2G, 11ms pulse, 100 pulses on each of three axes
	Non-operating: trapezoidal, 25G, 170 inches/sec delta V, three drops on each of three axes
Vibration[3]	Non-operating: 2.2Grms, 10 minutes per axis on all three axes
Certifications	FCC, CE emissions, CCC class B, CB, and RoHS compliant
MTBF	798789 hours @ 25°C (TBC)

Notes:

[1]System weights are measured with 2 processors, 4 memory modules and 1 SSD installed, without rail slides or PCIe cards

[2]Temperature and humidity specifications are valid only with ADLINK approved add-on devices, excluding hard drives and PCIe cards.

[3]Shock and Vibration tests were conducted with WinFast RTX 2060 Super Classic graphics card installed.

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3 Getting Started

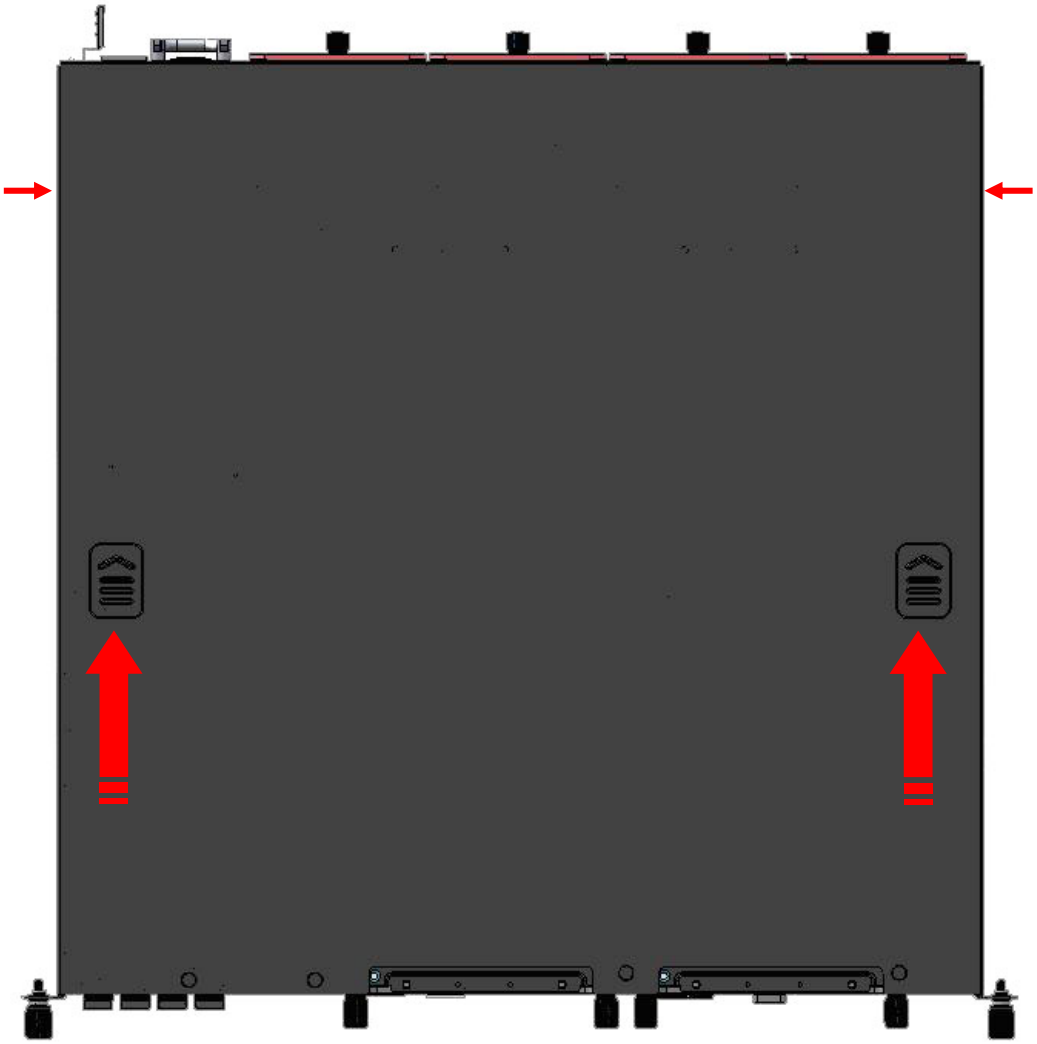
3.1 Removing the Chassis Cover

Follow the instructions below to remove the chassis top cover.

CAUTION:
mise en garde

All installation procedures are restricted to skilled persons.
Toutes les procédures d'installation sont réservées au personnel qualifié.

1. Remove the 1 screws on each side of the top cover (small arrows).



2. Press down on the two depressions with your thumbs and slide the cover towards the rear of the chassis (large arrows). Remove the cover.

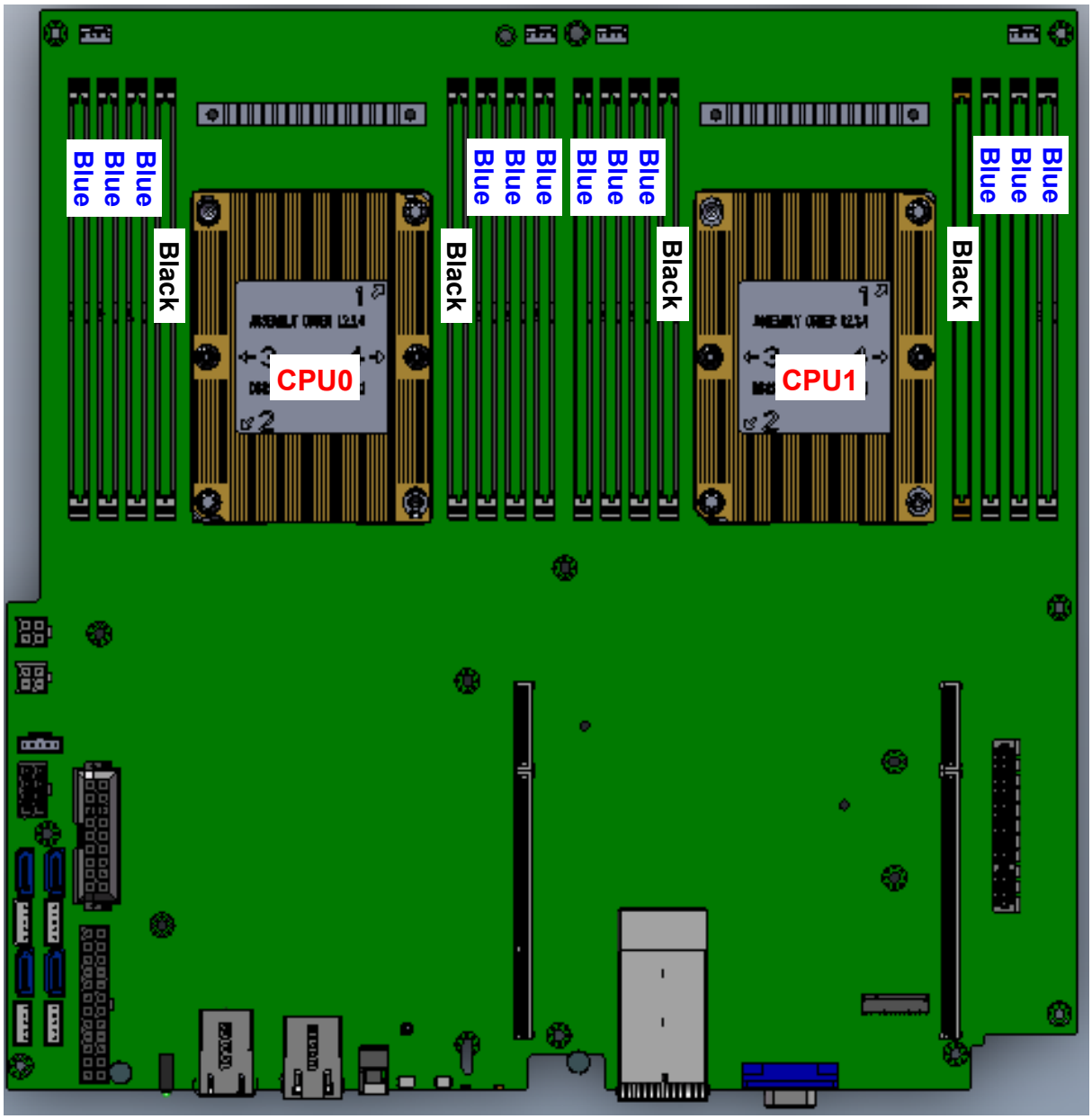
To reinstall the cover, slide it towards the front of the chassis, then replace and tighten the screws loosened and removed in Step 1.

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3.2 Installing Memory Modules

When installing memory modules in the MECS-7211, the blue DIMM slots of each channel can be freely populated (it is suggested to fill the slots from “outside to inside” for each CPU). However, the black DIMM slots must be populated after the blue DIMM slots are completely filled, otherwise the device will not boot up. Please refer to the figure below.

Note: The device will not boot up if the black DIMM slots are populated before the blue DIMM slots are completely filled.



CAUTION:
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All installation procedures are restricted to qualified personnel.
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3.3 PCIe x16 Slot FHFL Card Installation

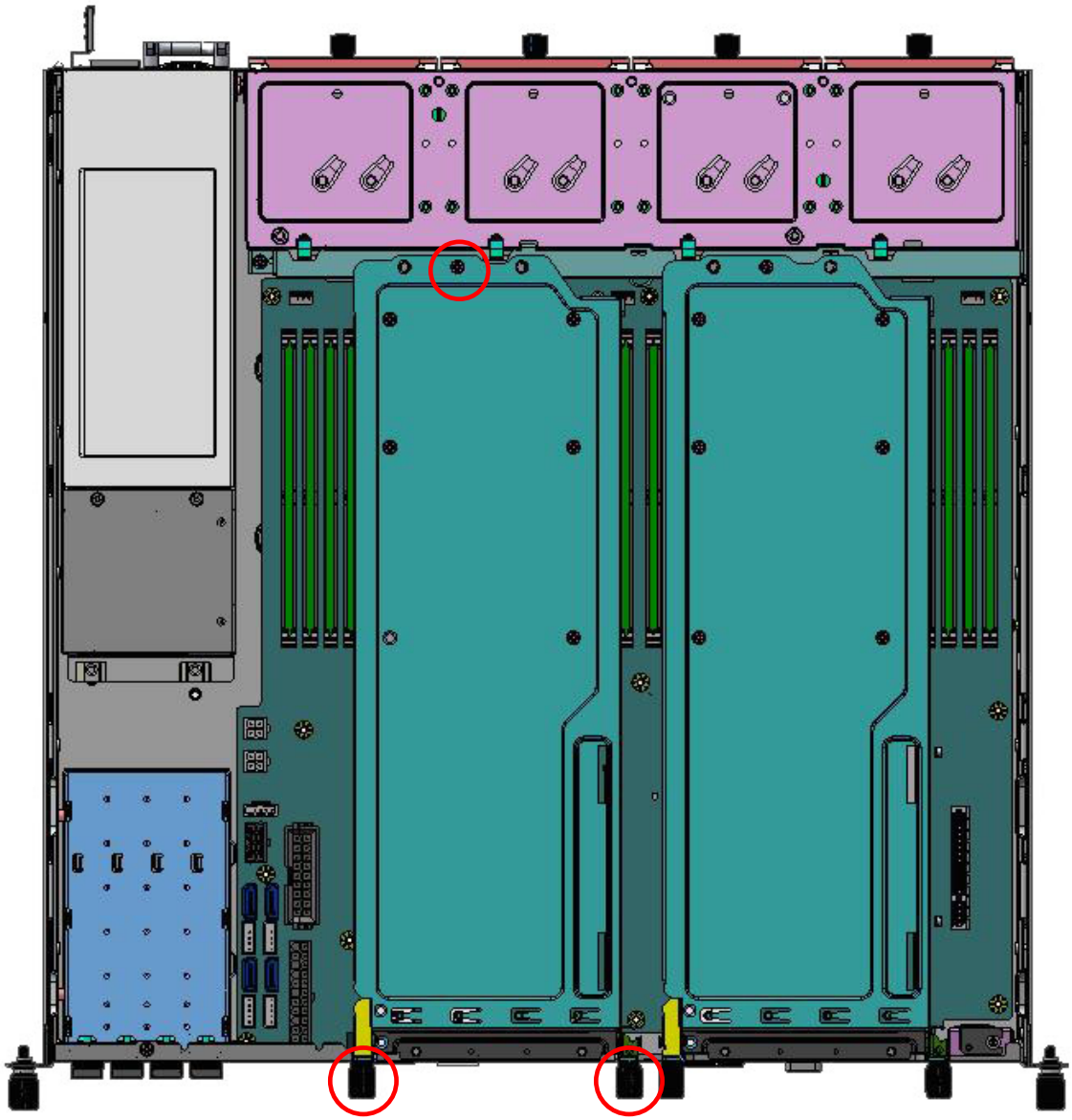
Sample installation instructions for single-slot-passive cooled PCIe x16 expansion cards are described below. For detailed information on installing other PCIe expansion cards, please contact your ADLINK representative.

CAUTION:
mise en garde

All installation procedures are restricted to qualified personnel.
Toutes les procédures d'installation sont réservées au personnel qualifié.

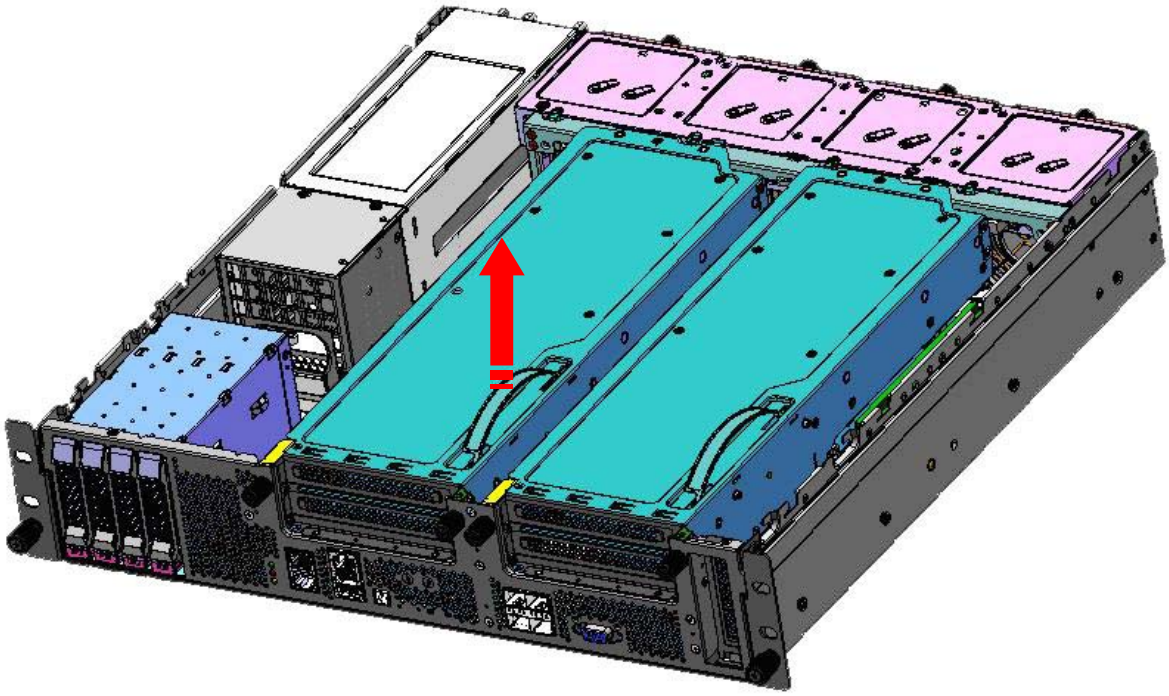
Follow the instructions below to install PCIe x16 Gen3 FHFL single-slot-passive cooled expansion cards. The cards are mounted inside two riser-card/cover assemblies. Two FHFL single-slot cards or one FHFL dual-slot card can be installed in each riser-card/cover assembly.

1. Remove the screw securing the top of the riser-card/cover assembly and loosen the captive screws at the front of the chassis (2 per assembly).

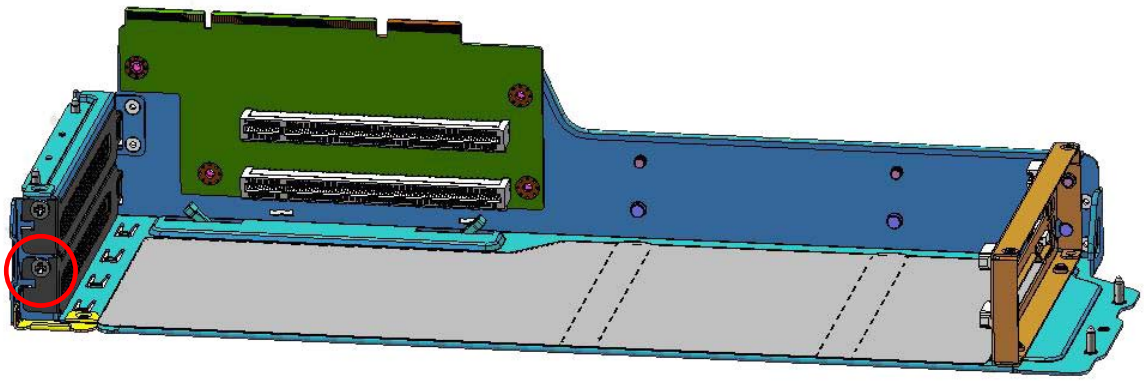


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2. Lift the riser-card/cover assembly using the handle as indicated. This will remove the riser card from the slot on the motherboard which is directly below the handle. Carefully lift the riser-card/cover assembly straight up to remove it from the chassis.

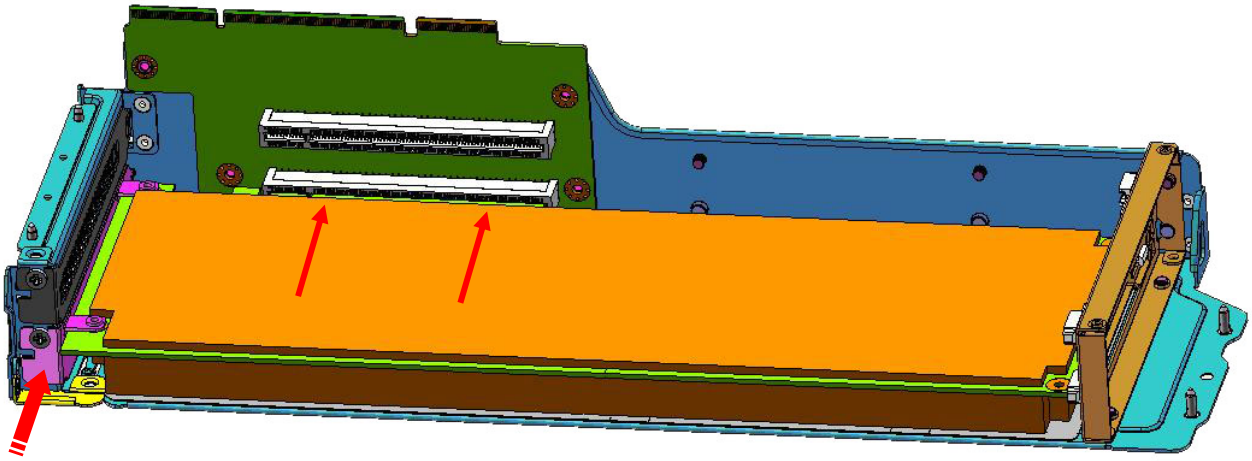


3. Turn the riser-card/cover assembly over and remove the screw securing the PCIe blanking plate from the desired slot. Remove the blanking plate from the front I/O panel of the assembly.

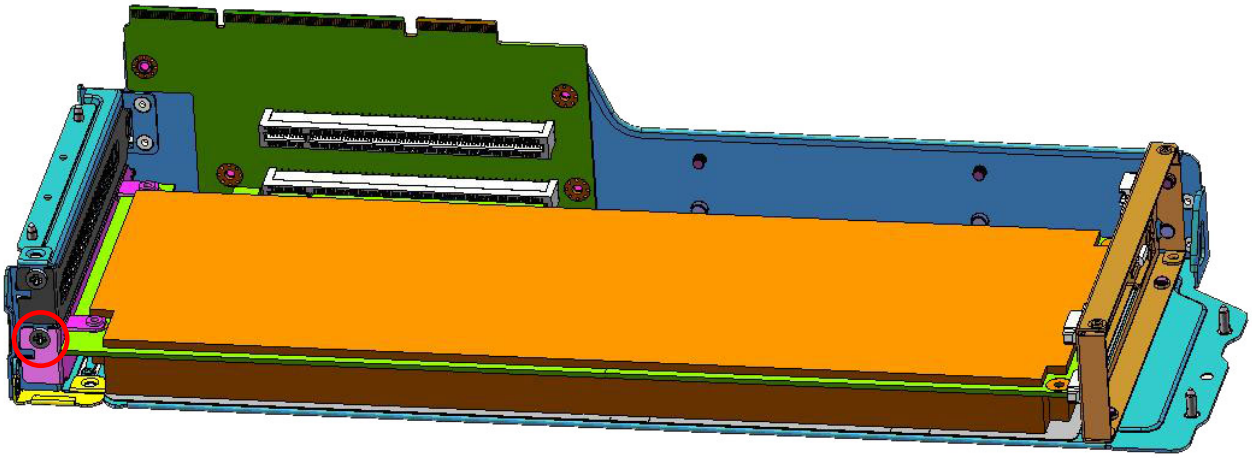


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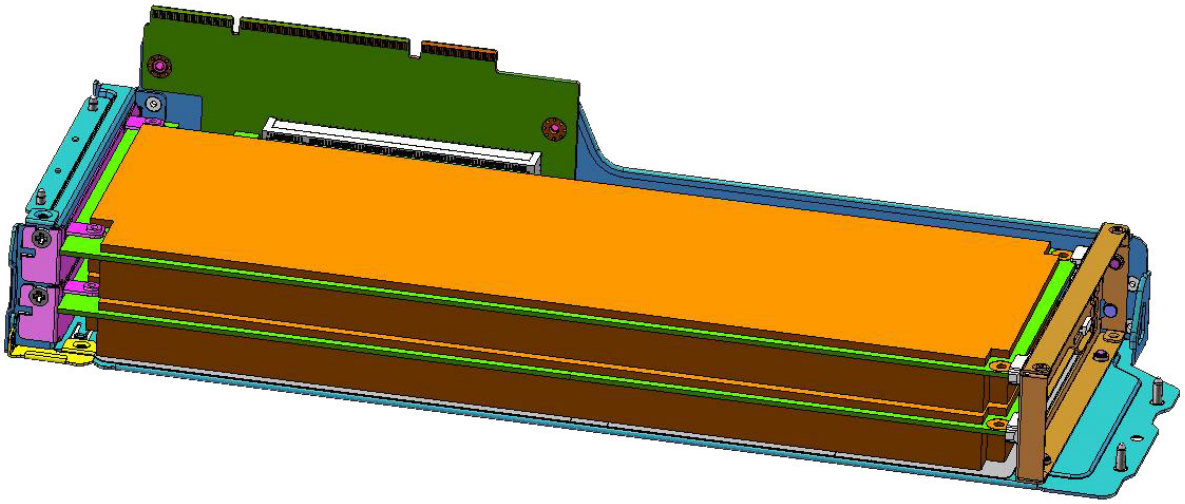
4. To install a single-slot-passive cooled PCIe expansion card, align the tab on the bracket with the opening on the front I/O panel of the assembly and insert the PCIe connectors into the PCIe x16 slot on the riser card. Make sure the connectors are fully inserted into the PCIe slot.



5. Secure the PCIe expansion card to the riser-card/cover assembly using 1 screw as shown below.

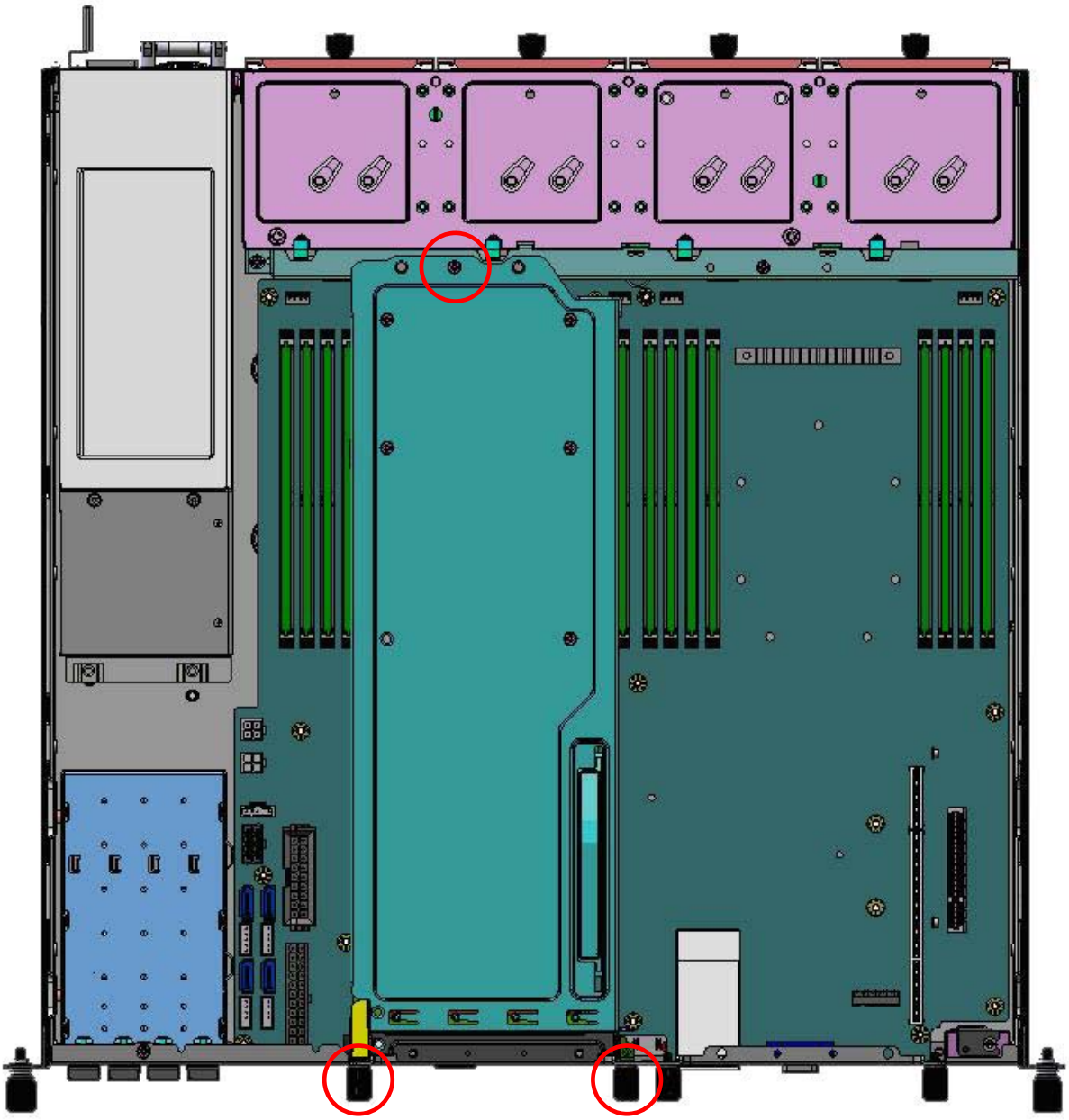


6. Repeat Steps 3 through 5 to install another single-slot-passive cooled PCIe expansion card.



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7. After installing the PCIe expansion card(s), reinstall the riser-card/cover assembly into the chassis by carefully aligning the front I/O panel with the chassis and riser card edge connectors with the slot on the motherboard. Press down until the assembly is securely installed. Attach the screw securing the top of the riser-card/cover assembly and tighten the captive screws at the front of the chassis as shown.



8. Repeat Steps 1 through 7 to install single-slot-passive cooled PCIe expansion cards in the other riser-card/cover assembly.

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3.4 PCIe x8 HHHL Slot Card Installation

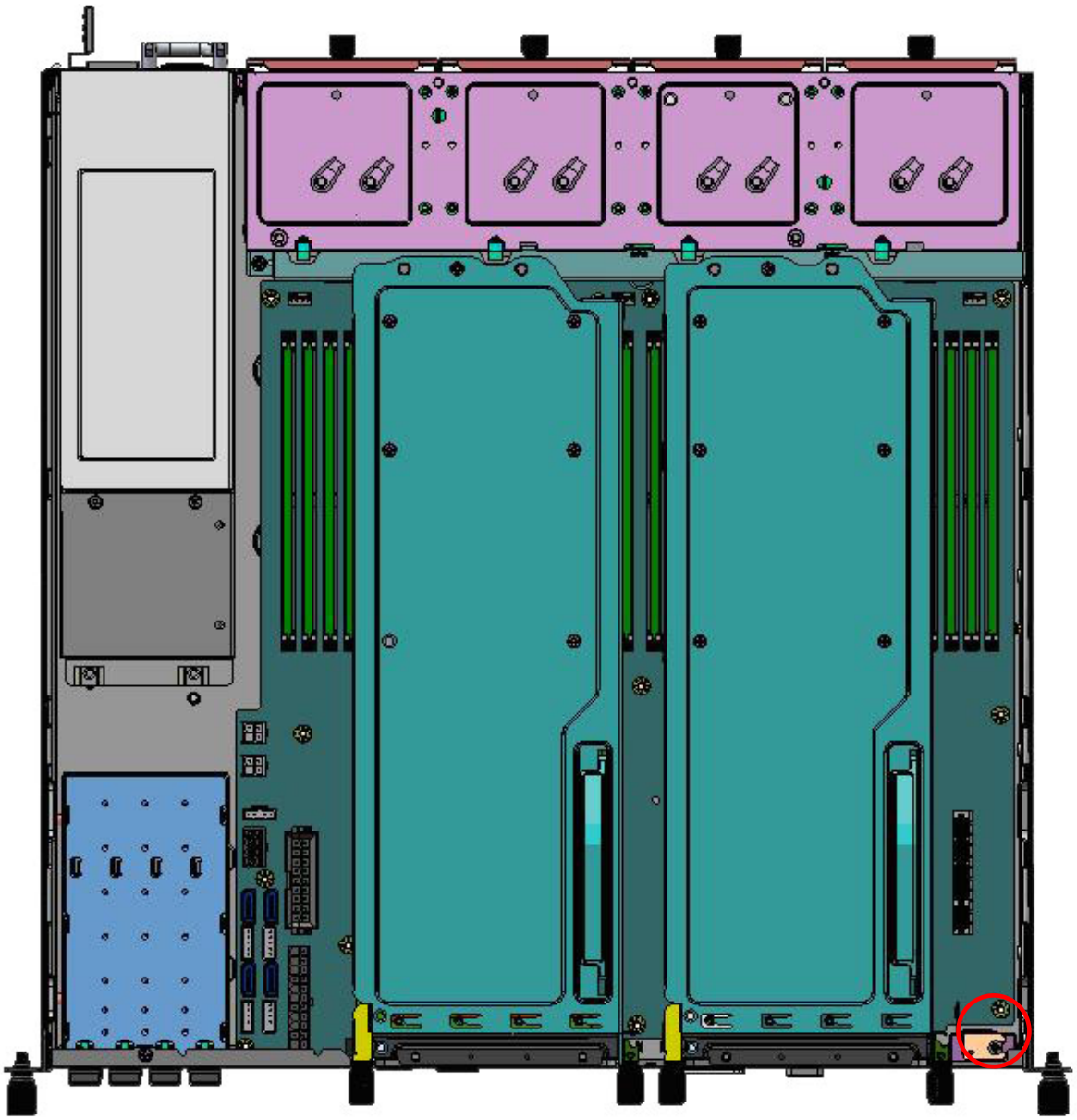
Sample installation instructions for a single-slot-passive cooled PCIe x8 expansion card are described below. For detailed information on installing other PCIe expansion cards, please contact your ADLINK representative.

CAUTION:
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Toutes les procédures d'installation sont réservées au personnel qualifié.

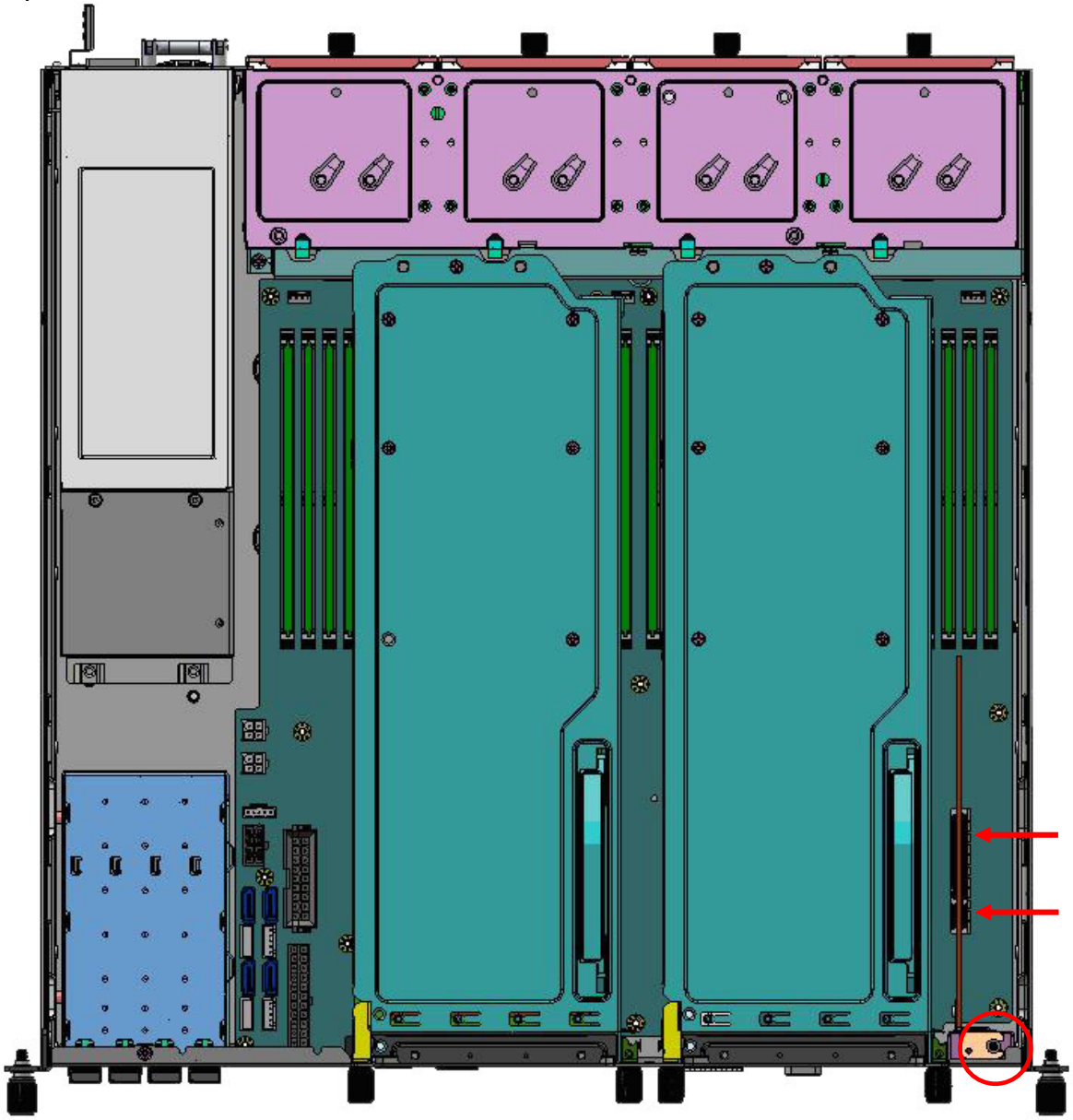
Follow the instructions below to install a PCIe x8 Gen3 HHHL single-slot-passive cooled expansion card.

1. To install a PCIe x8 card, remove the screw securing the PCIe blanking plate as shown. Remove the blanking plate.



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2. Insert the PCIe x8 card into the PCIe slot in the motherboard and secure it to the front panel of the chassis with a the screw as shown.

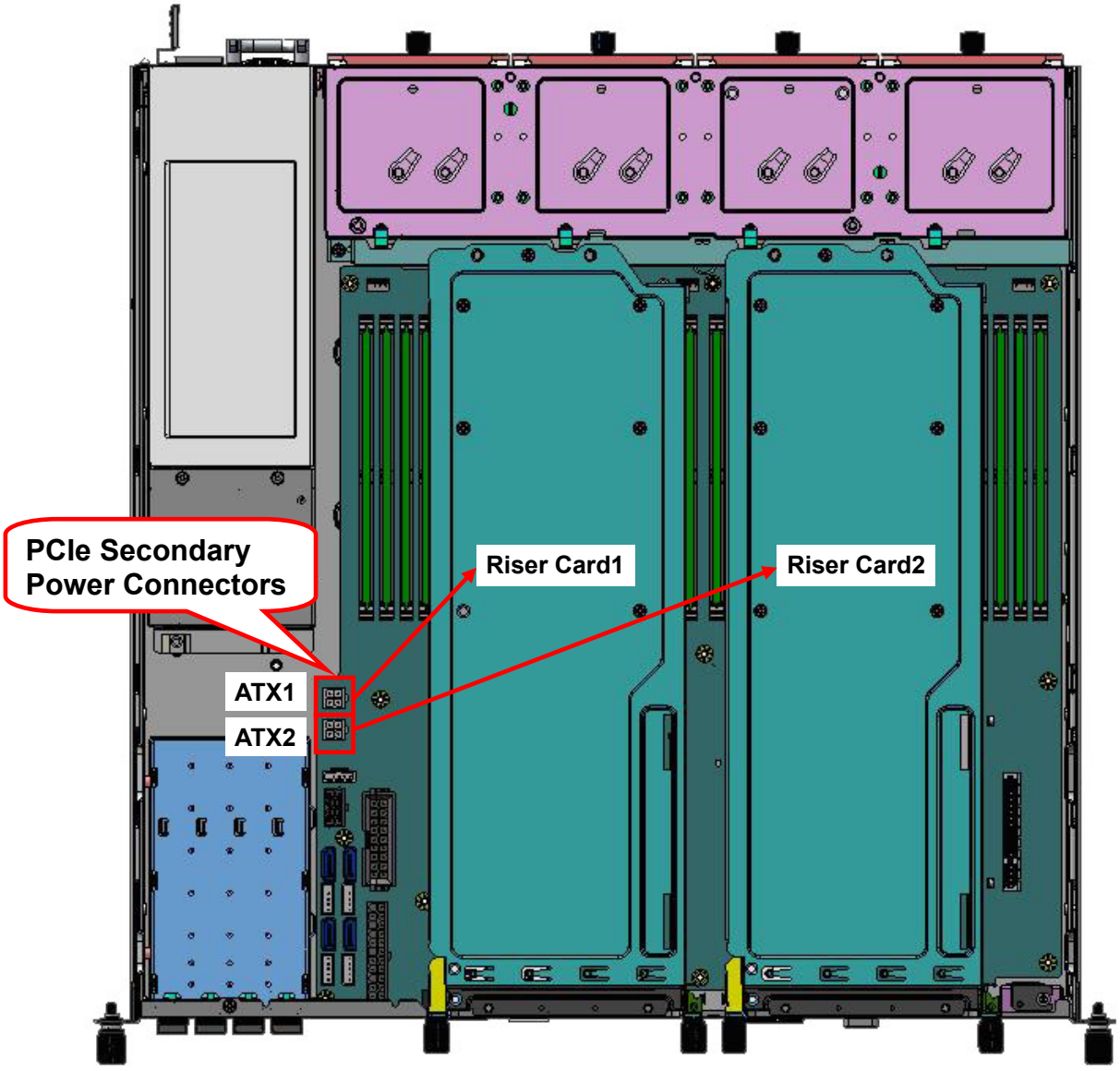


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3.5 PCIe x16 Slot Secondary Power Supply

The MECS-7211 motherboard is equipped with two 4-pin ATX-type 12V power connectors to provide secondary power for PCIe x16 cards if required. Two break-out cables are also included. The pin definitions of the connectors and cables are described below.

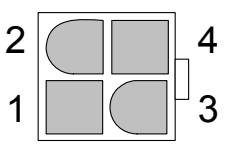
4-pin ATX-type 12V Power Connector Pinout



Note: Connect ATX1 to Riser Card1 and ATX2 to Riser Card2.

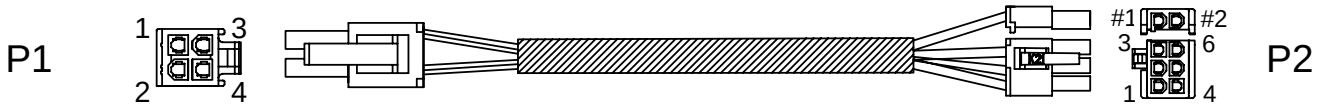
ATX 12V 4-pin Power Connector Pinout

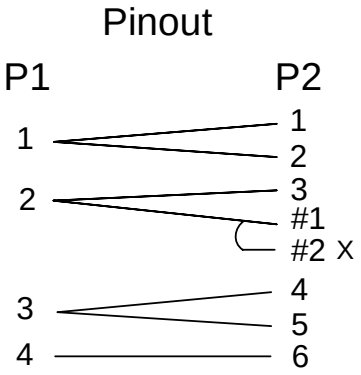
Pin #	Signal	Pin #	Signal
1	GND	3	+12V
2	GND	4	+12V



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Breakout Cable Connector Pinout





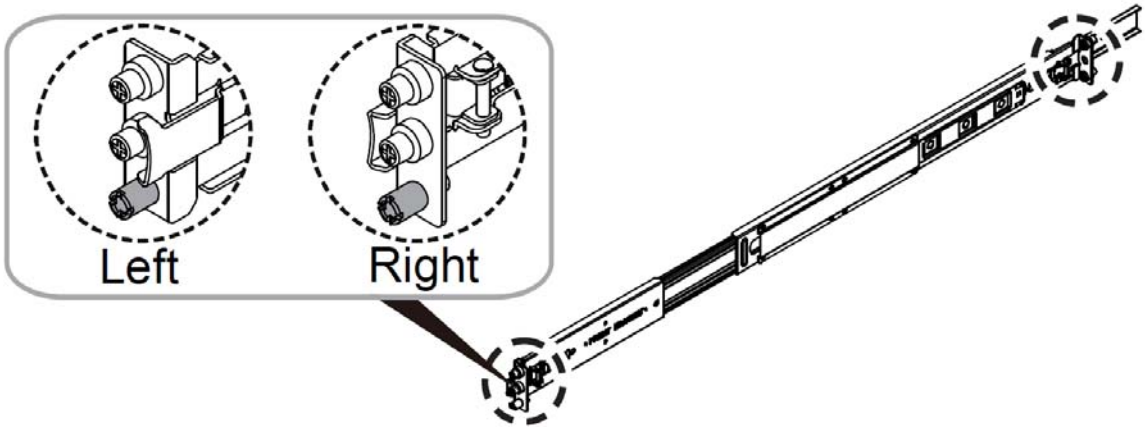
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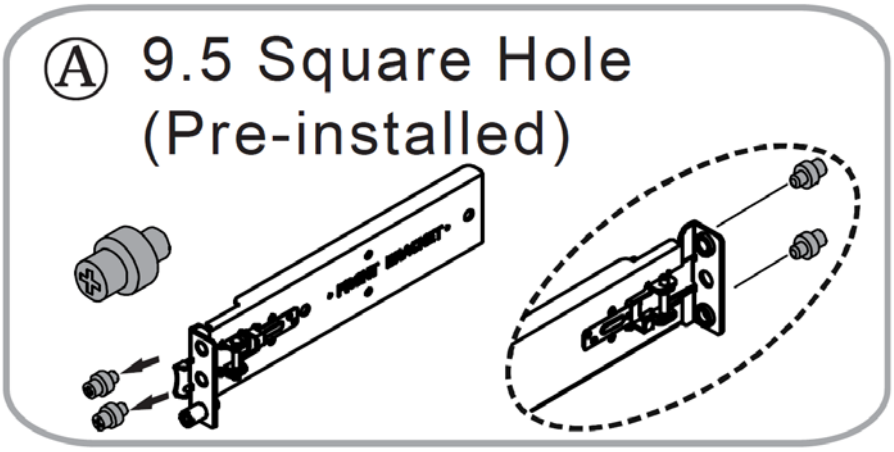
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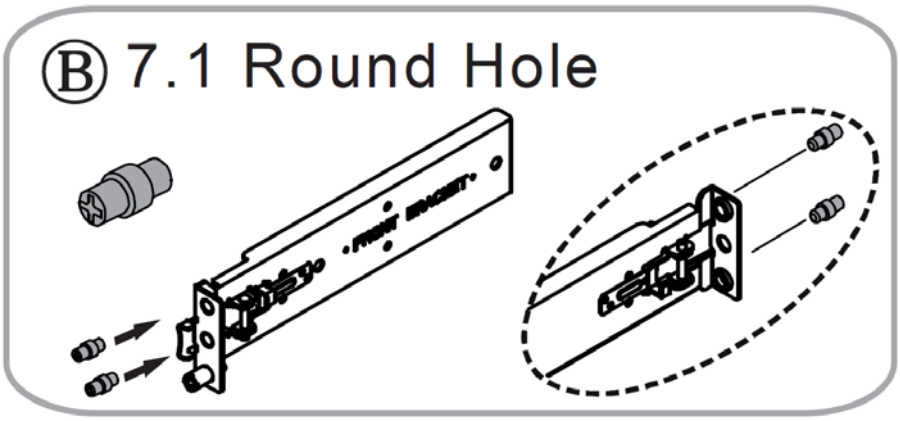
3.6 Rails Assembly and Rack Installation

Note: Please check rack post type before proceeding. The pre-installed rail type is for square hole posts. If the rack post has round holes, please switch to the appropriate screws as shown below.



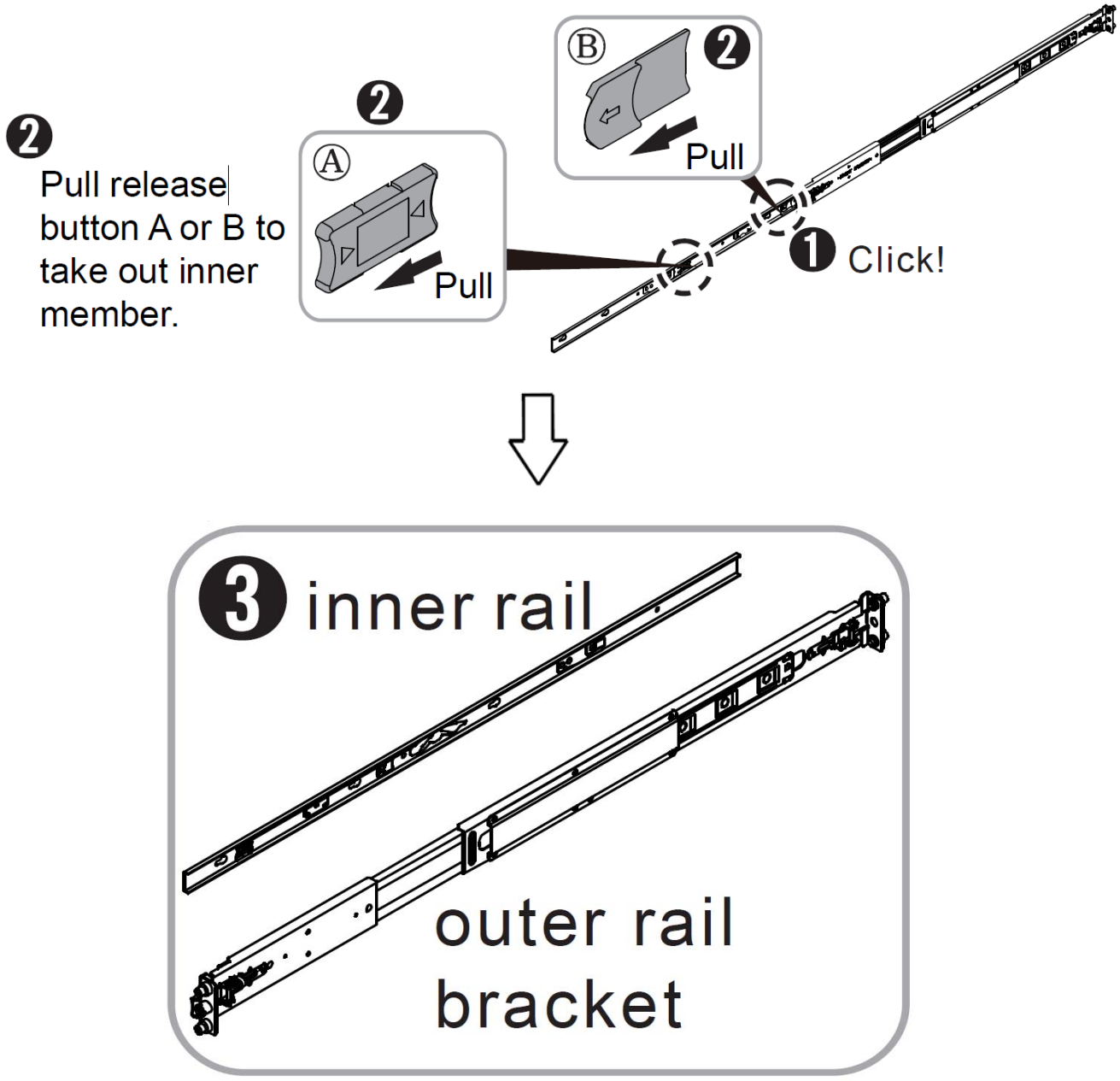
To switch from round hole to square hole, remove the “A” type screws (pre-installed) and switch to “B” type screws.





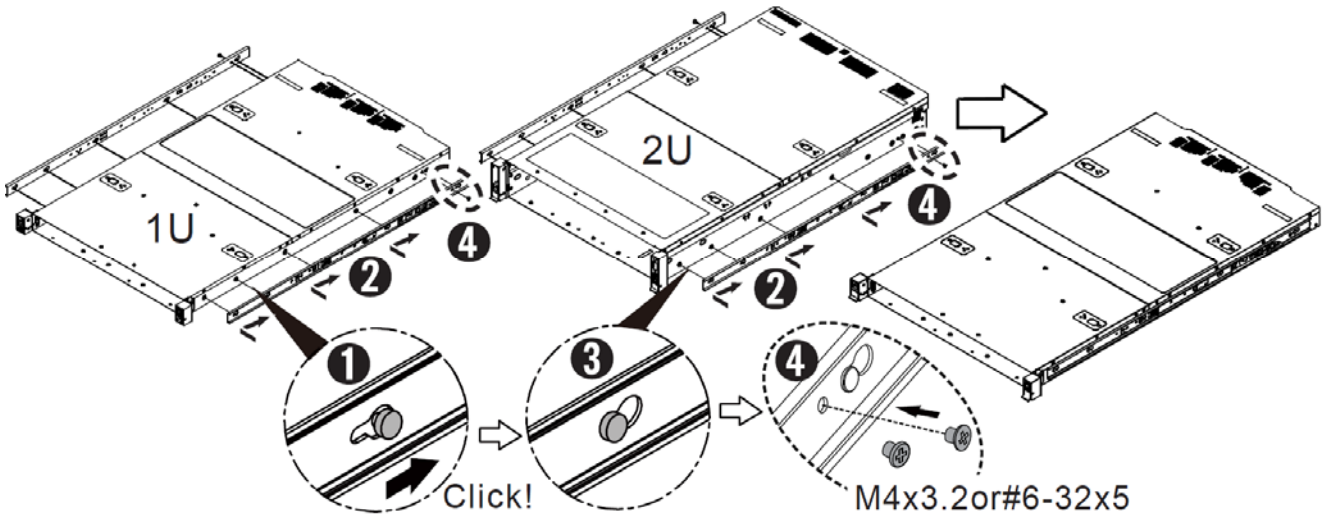
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1. Remove the inner rail.

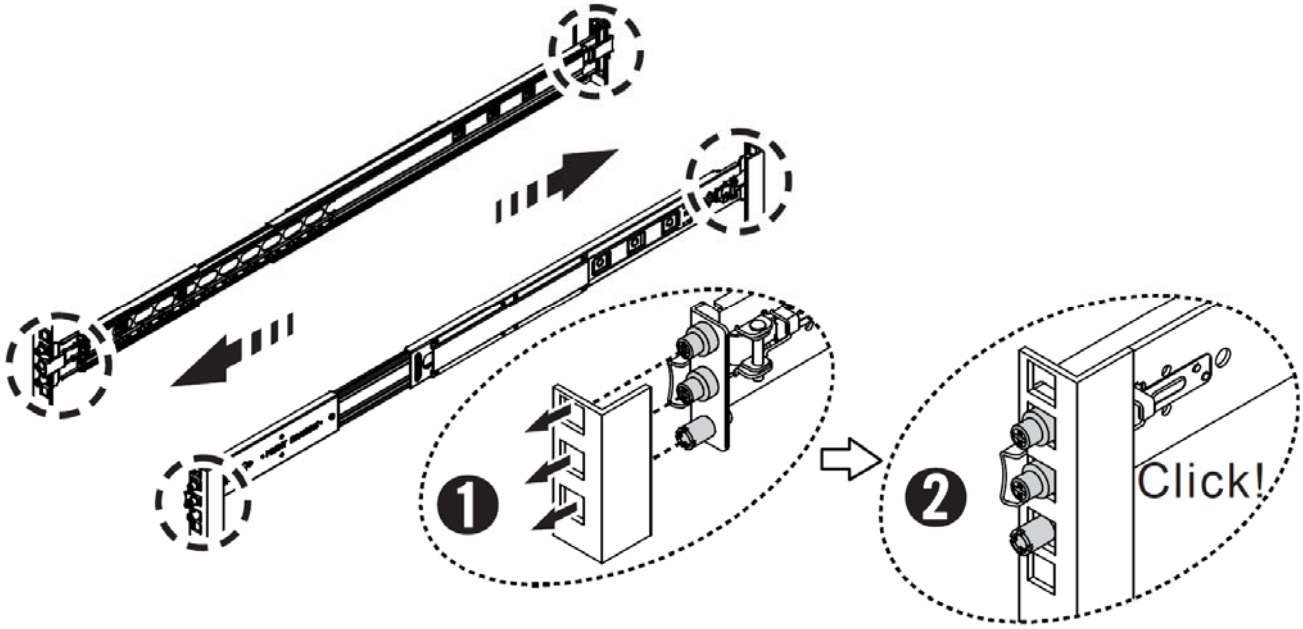


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2. Install the inner rail onto the chassis.



3. Attach the outer rail/bracket assembly to the rack.

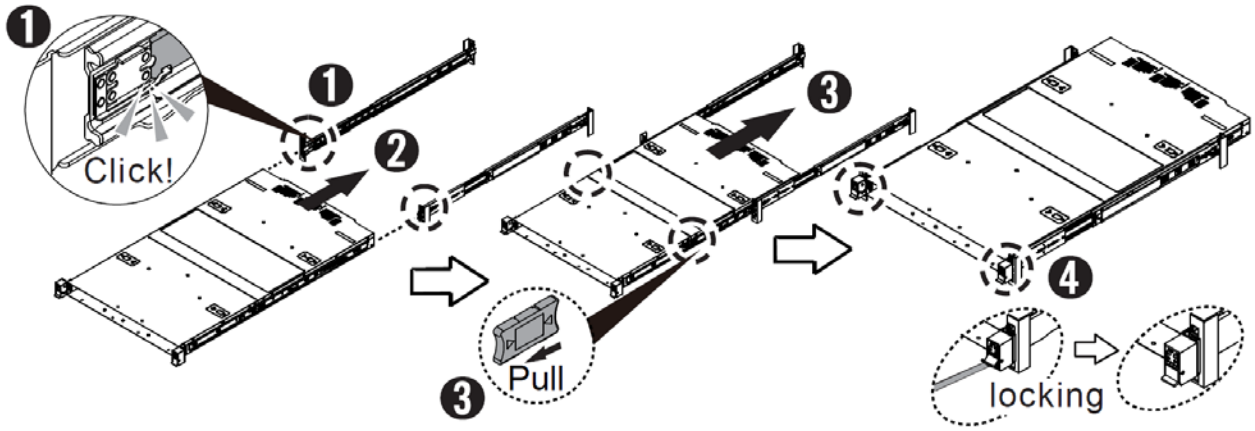


Note: Front and rear bracket installation procedures are the same. The left and right sides of the rail are symmetrical. Repeat the installation steps for the other side.

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4. Insert chassis with mounted inner rails to complete the installation.

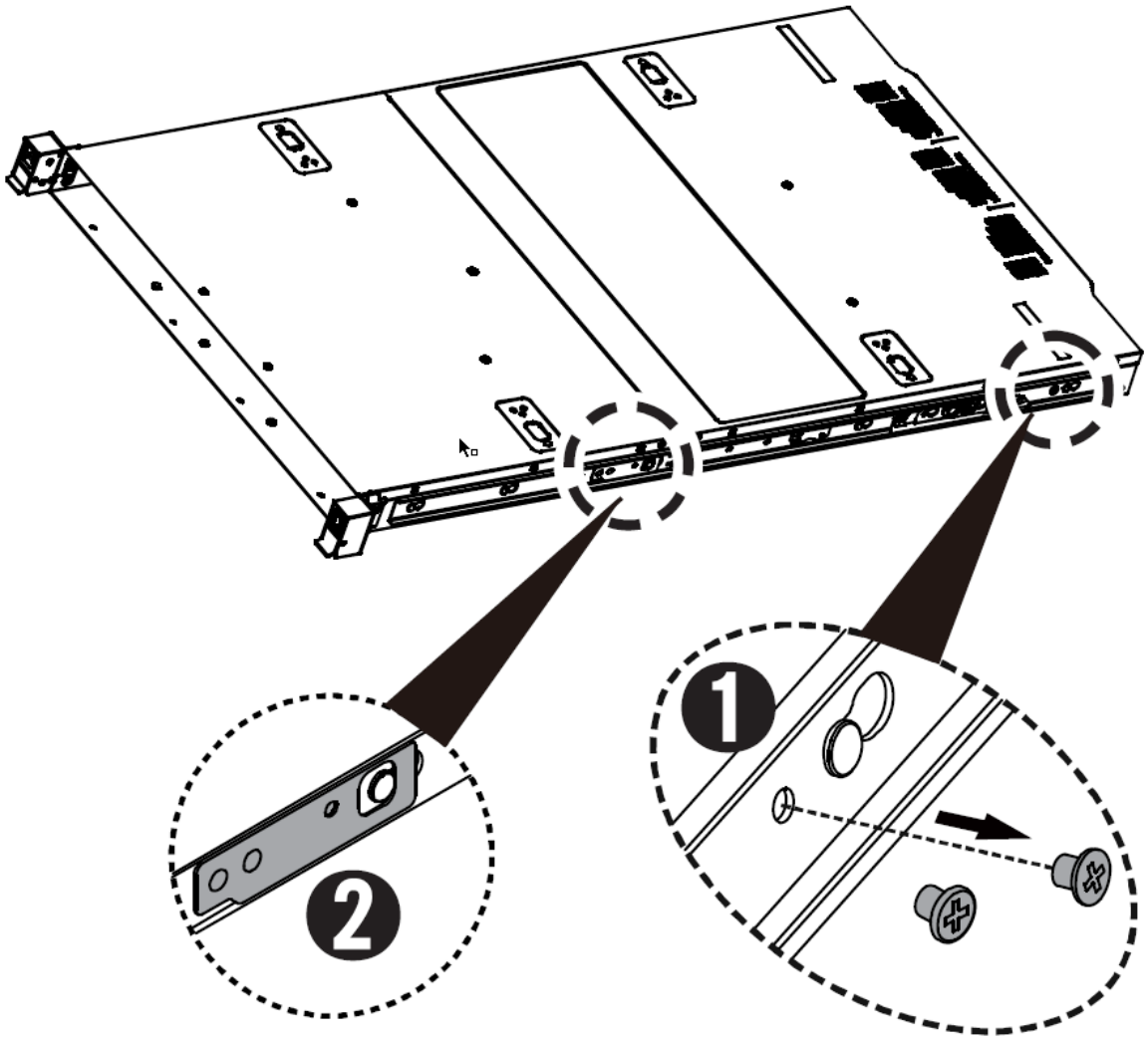
   ❶ Ensure the ball bearing retainer is located at the front of the rail.
   ❷ Insert the chassis into the outer rails.
   ❸ When the chassis is fully inserted, pull/push the release tab on the inner rails.
   ❹ Secure the system to the rack using the captive screws located on the rack handles of the system.



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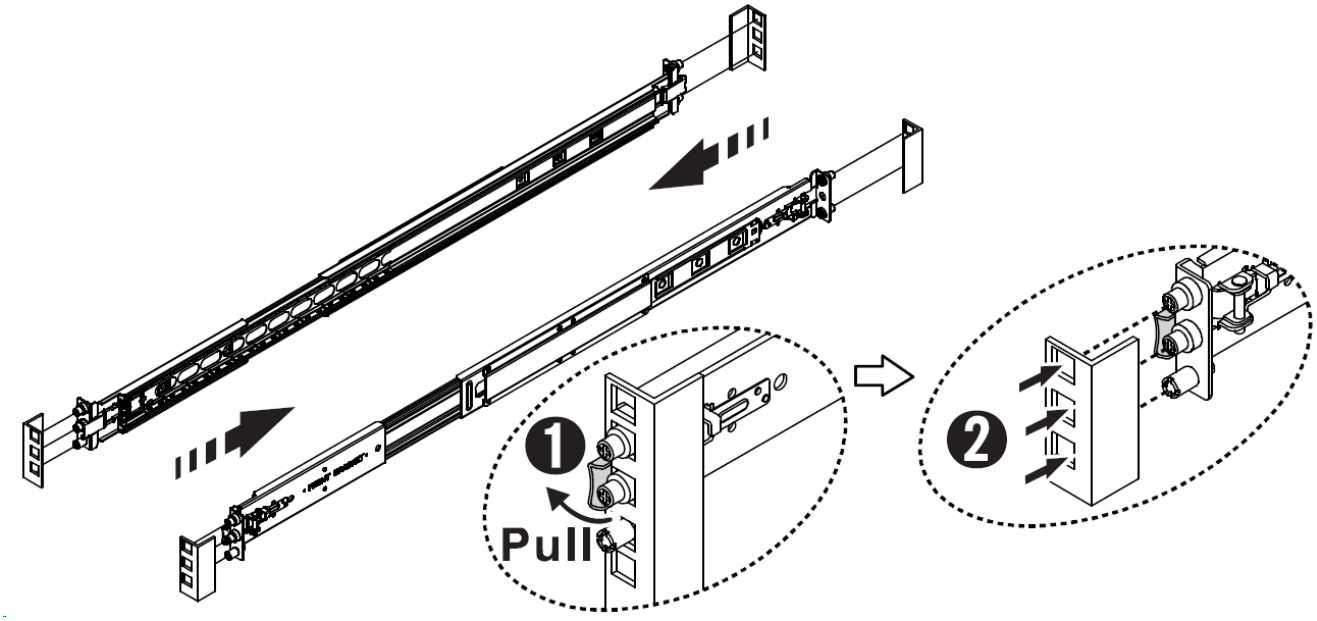
3.7 Uninstalling the Rails from the Chassis

❶ M4 x3.2 or #6-32 x5
❷ Release the latch to detach the inner rail.



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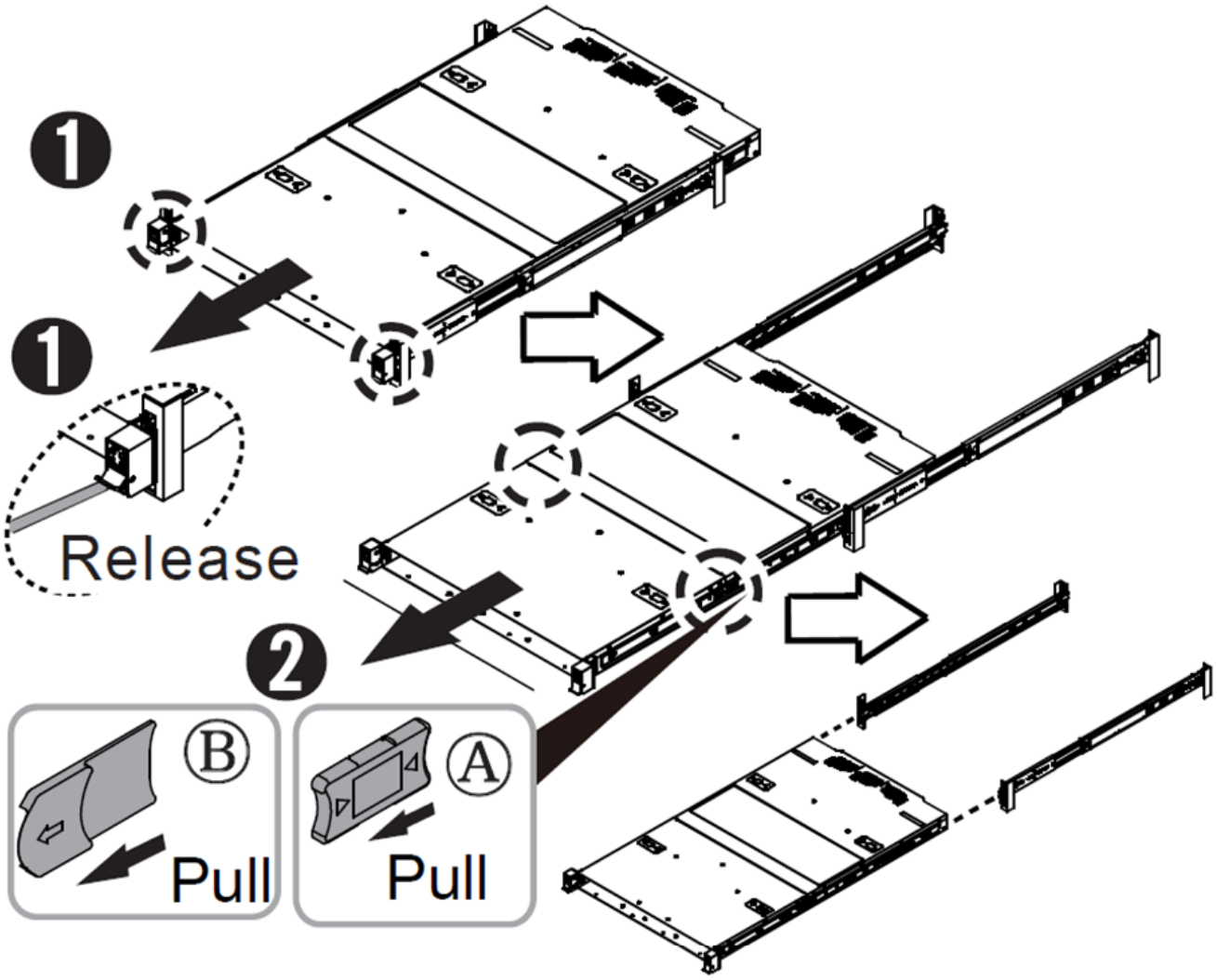
Detach the outer rail/bracket assembly from the rack.



Note: Front and rear bracket detachment procedures are the same. The left and right sides of the rail are symmetrical. Repeat the steps for the other side.

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❶ Loosen the captive screws and then pull out the chassis.
❷ Pull release button A or B to remove the chassis.

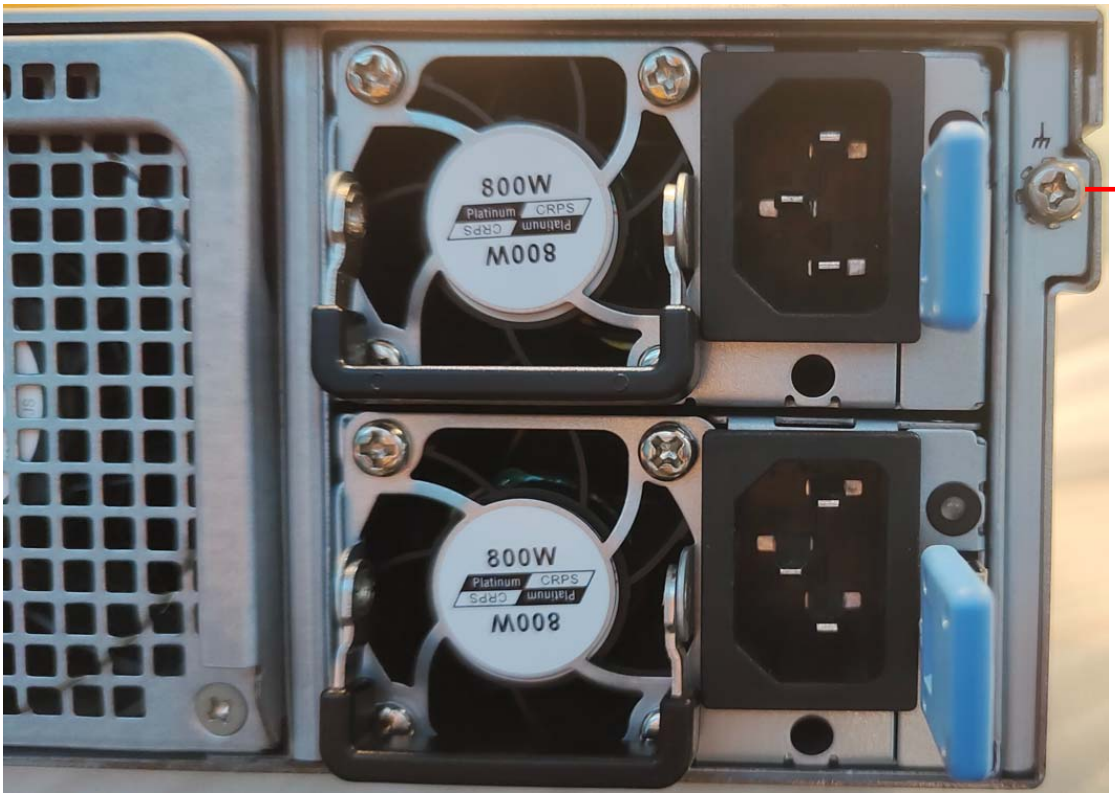


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3.8 Connecting the System to Ground

The MECS-7211 is connected to ground by the ground pin of the 3-prong IEC power cord. Please use the power cord provided with the system for your region.

A grounding stud (M3 size) is provided on the rear of the chassis for additional connection to ground.

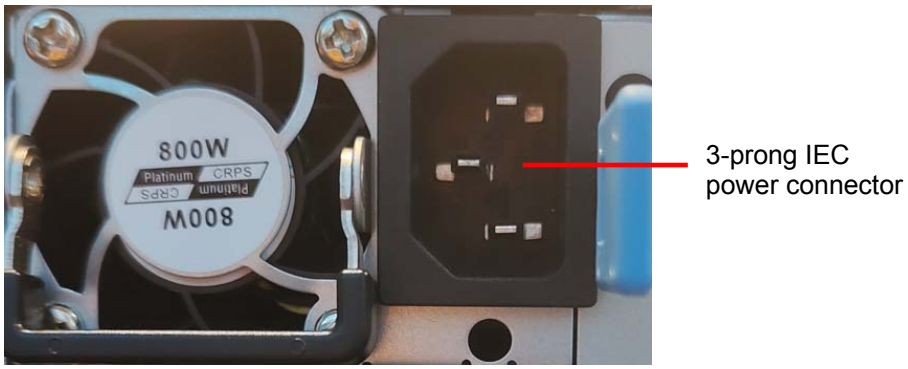


Note: AC Version shown for reference.

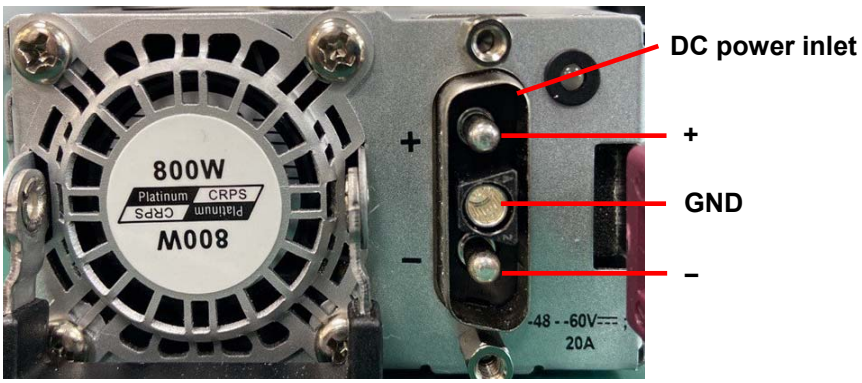
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3.9 System Power Cable Installation

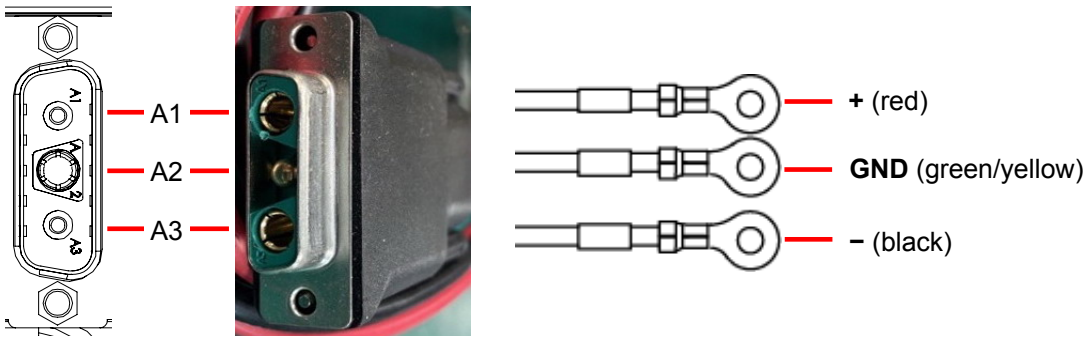
AC PSU Input
3-prong IEC power connector



DC PSU Input
Use the included cable to connect to the DC power inlet (BizLink 115H0-025987-R1).



Align the connector on the cable with DC power inlet and secure it with the two captive screws.



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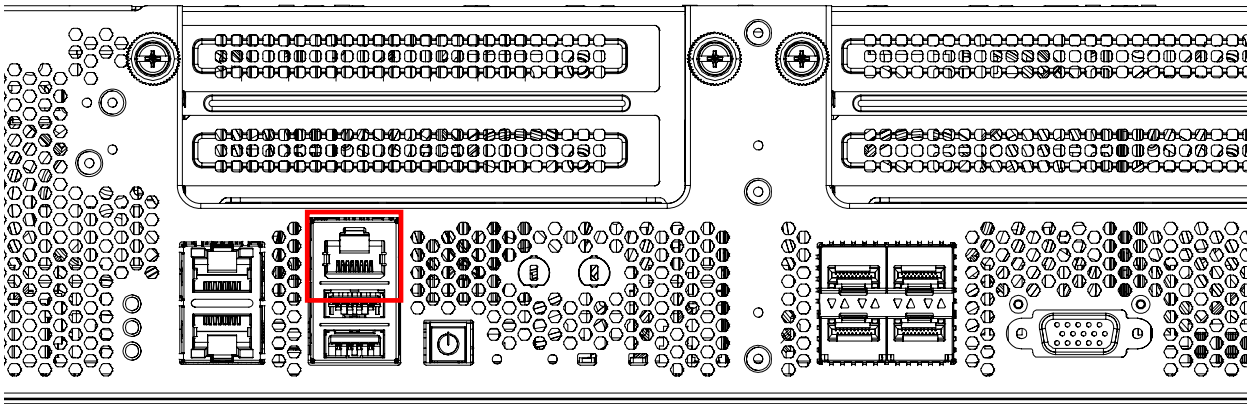
3.10 Login to the BMC via Console Port

Step 1
Set the Console Port to BMC mode using the 4-pole DIP Console Port Mode Switch (SW6) on the I/O board (see 1.2.3 Chassis Layout on page 9).

Pin	Default	BMC Debug
1	OFF	ON
2	ON	OFF
3	OFF	ON
4	ON	OFF

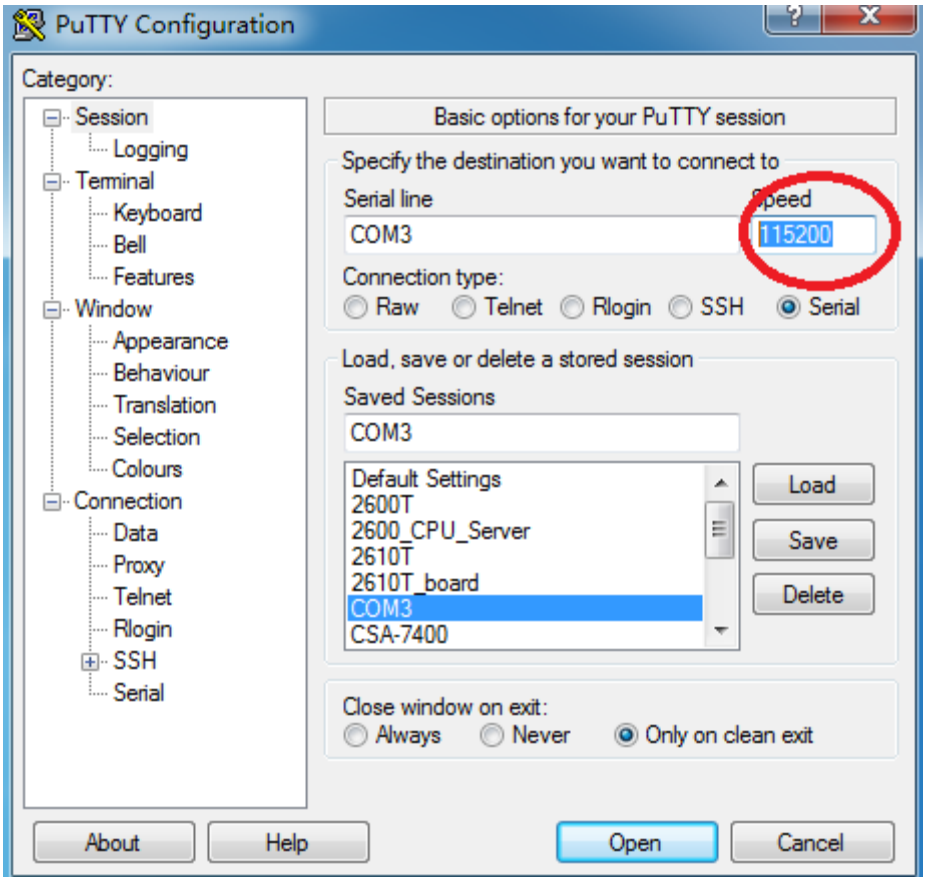
Step 2
Use the included RJ-45 to DB-9 console port adapter cable to connect the PC to the RJ-45 console port of the MECS-7211 (marked below). Refer to *4.4 Dual USB 3.0 and RJ-45 Console Port* on page 48 for the adapter cable pin definition.



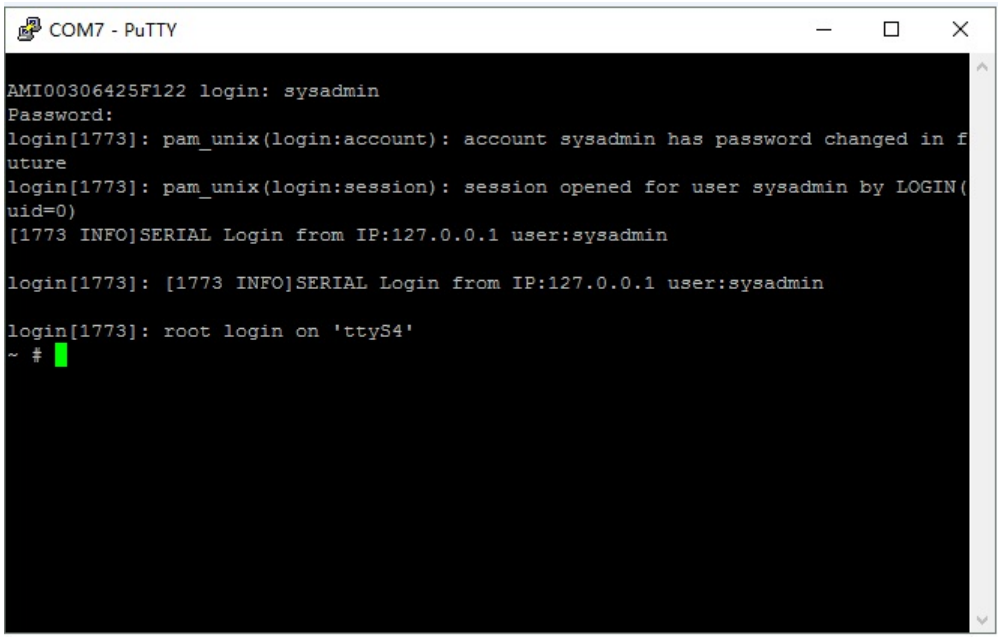


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Step 3
Open a serial port console tool (such as PuTTY), choose the higher COM port (it may be different depending on your computer), then set the baud rate to 115200.



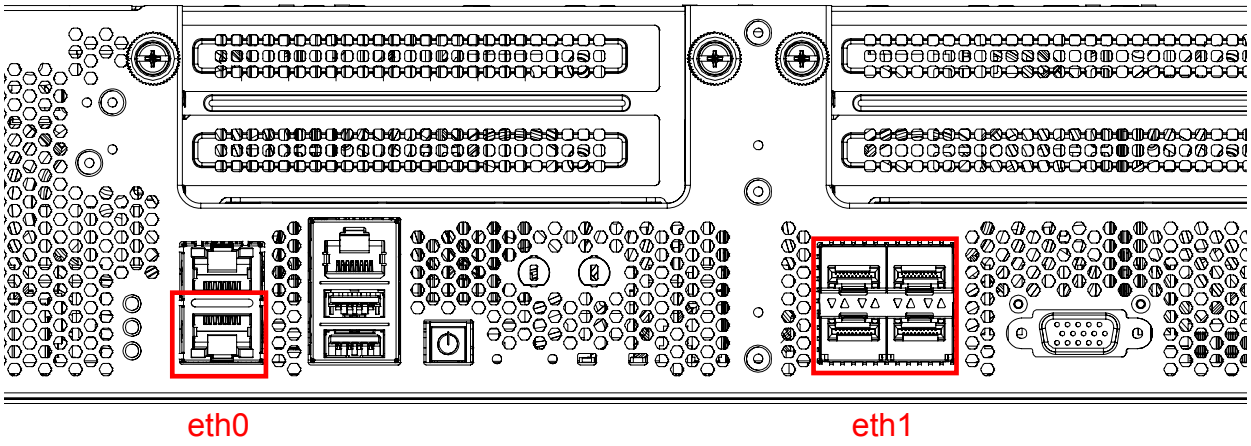
Step 3
Input the user name “sysadmin” and password “superuser” to login to the system.



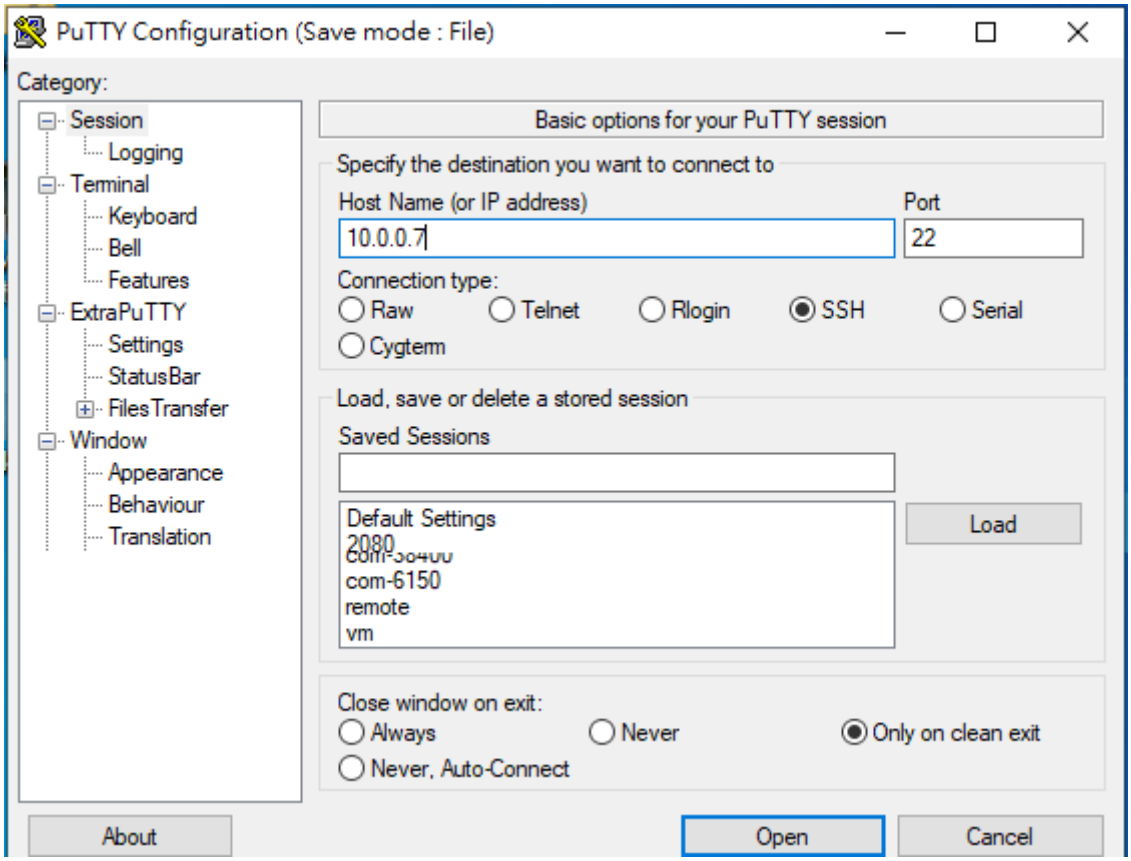
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3.11 Login to the BMC via Network

Step 1
Connect the LAN cable to left RJ-45 LAN port (eth0 or eth1, m below);

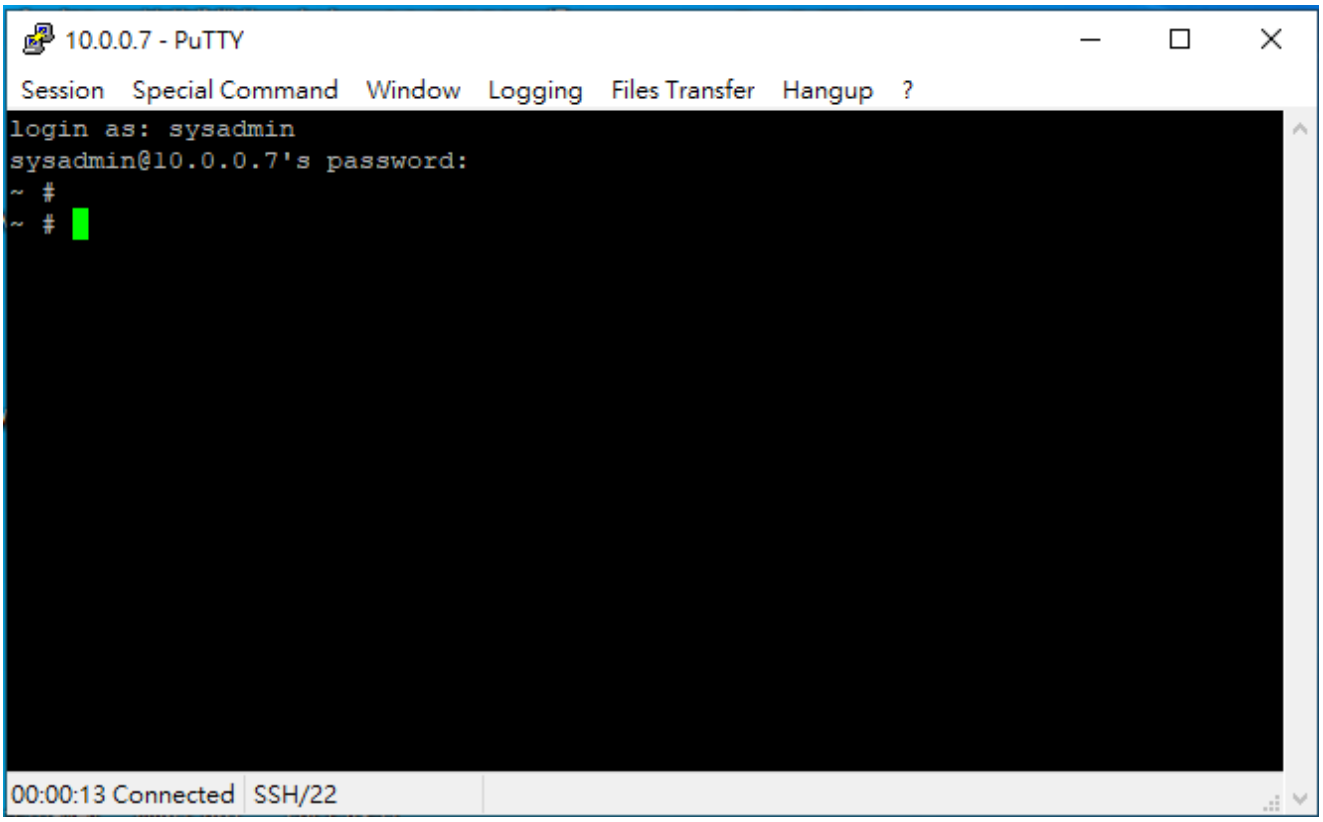


Step 2
Open a serial port console tool (such as PuTTY) enter the IP address, and open a connection to the BMC (login using serial console first to check the IP address).



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Step 3
Input the user name “sysadmin” and password “superuser” to login to the system



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3.12 BMC eth0 Default and Static IP Settings

The default IP setting is DHCP. Users can login to the BMC to modify the IP.

Static IP Settings:

Show the current LAN setting
- ipmitool lan print 1

Set the IP source to static
- ipmitool lan set 1 ipsrc static

Set the IP address
- ipmitool lan set 1 ipaddr xxx.xxx.xxx.xxx

Set the netmask address
- ipmitool lan set 1 netmask xxx.xxx.xxx.xxx

Set the gateway address
- ipmitool lan set 1 defgw ipaddr xxx.xxx.xxx.xxx

Restore Default:

Set IP source to DHCP
- ipmitool lan set 1 ipsrc dhcp

Note: BMC IP can be set in the BIOS. Refer to “5.5.1 Sub-Menu: BMC Network Configuration”.

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3.13 BMC eth1 Default and Static IP Settings

The default IP setting is DHCP. Users can login to the BMC to modify the IP.

Static IP Settings:

Show the current LAN setting
- ipmitool lan print 8

Set the IP source to static
- ipmitool lan set 8 ipsrc static

Set the IP address
- ipmitool lan set 8 ipaddr xxx.xxx.xxx.xxx

Set the netmask address
- ipmitool lan set 8 netmask xxx.xxx.xxx.xxx

Set the gateway address
- ipmitool lan set 8 defgw ipaddr xxx.xxx.xxx.xxx

Show the lan after setting
- ipmitool lan print 8

Restore Default:

Set IP source to DHCP
- ipmitool lan set 8 ipsrc dhcp

Note: BMC IP can be set in the BIOS. Refer to “5.5.1 Sub-Menu: BMC Network Configuration”.

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3.14 BIOS Update

Users can update the MECS-7211 system BIOS over various interfaces (LAN, KCS, console port).

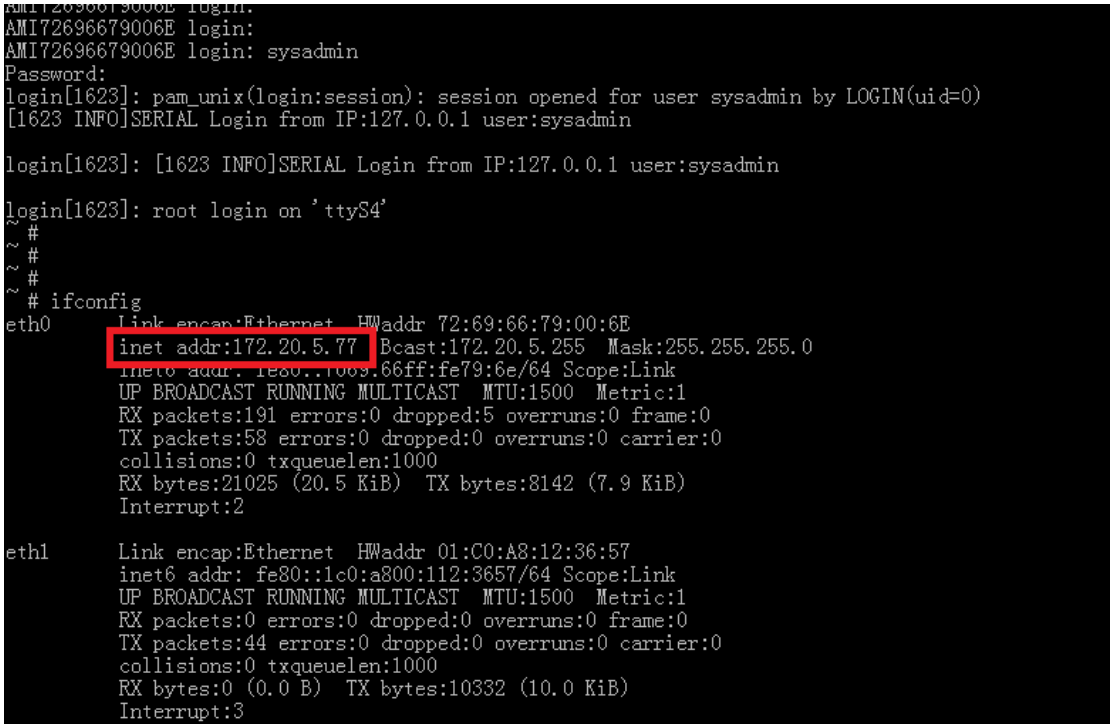
3.14.1 Updating the BIOS via Network with BMC Tool

1. Install a Linux distribution, such as Ubuntu 14/16, to the client PC.
2. Install “expect” to your debug PC (ex: sudo apt-get install expect bash –y).
3. Configure the client PC network setting, let it can ping the BMC through the network.
4. Copy the BMC FW package “BMC_MECS-7211_Release_Vx.xx” and BIOS bin file to the same folder to the client PC, and add Execution Authority to the adlinktool using below command.

   chmod +x *.sh

Update Procedure:

1. Check the IP of the BMC of MECS-7211. Power on the MECS-7211, boot the BMC to Linux (username: sysadmin; Passwd: superuser), and type “ifconfig” check its IP address.



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2. On the client PC, execute the following commands to perform the upgrade.

   cd BMC_MECS-7211_Release_Vx.xx

   cd BIOS

   ./adlinktool.sh upgradebios1 BIOS_xxxx.bin 172.20.5.77

Note: Only “bin” files are supported when updating the BIOS via Network.

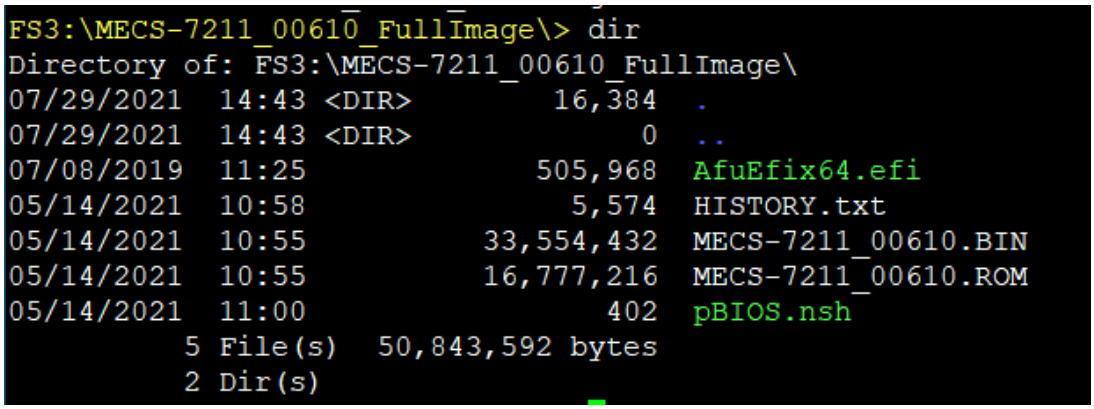
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3.14.2 Updating BIOS via Host with BIOS Tool

1. Boot/Login to Shell
2. Update the BIOS over host with the following commands.

Example:

AfuEfix64 BIOS.ROM /p /b /n /k (to update BIOS without ME)
AfuExfi64 BIOS.BIN /p /b /n /k /me (to update the entire BIOS)



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3.15 BMC Firmware Update via Network

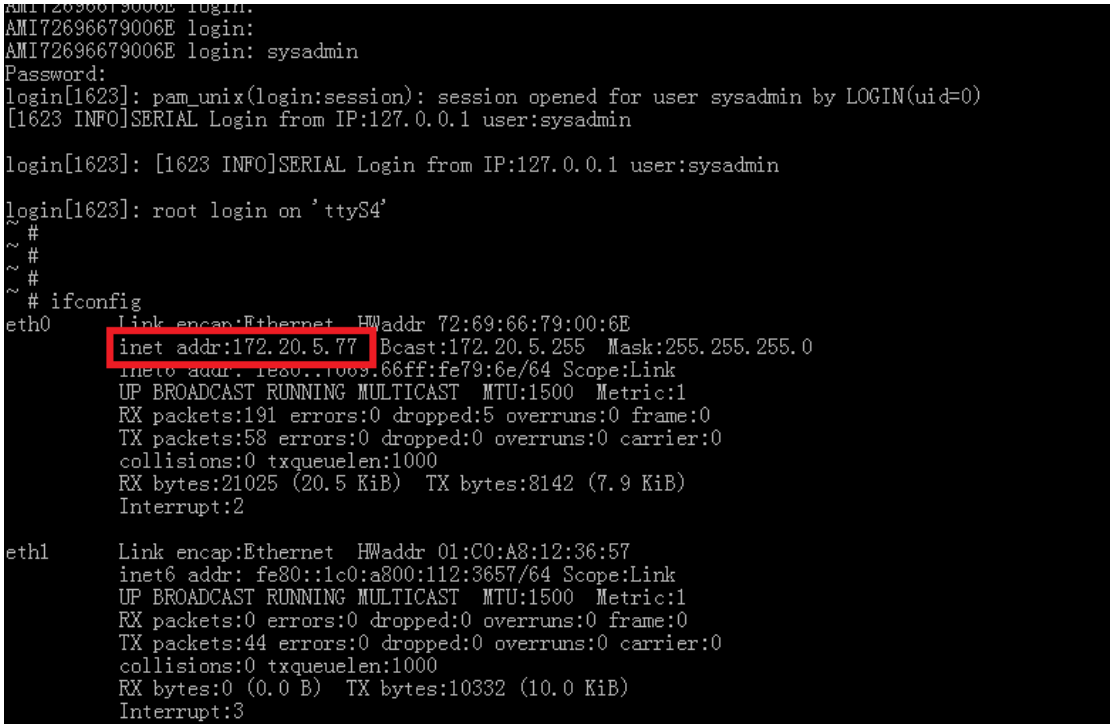
The MECS-7211 supports a BMC Chassis Management firmware, IPMI v2.0 compliant. To install the BMC firmware via network, perform the following steps.

1. Install a Linux distribution, such as Ubuntu 14/16, to the client PC.
2. Install “expect” to your debug PC (ex: sudo apt-get install expect bash –y).
3. Configure the client PC network setting, let it can ping the BMC through the network.
4. Copy the BMC FW package “BMC_MECS-7211_Release_Vx.xx” and BIOS bin file to the same folder to the client PC, and add Execution Authority to the adlinktool using below command.

   chmod +x *.sh

Update Procedure:

1. Check the IP of the BMC of MECS-7211. Power on the MECS-7211, boot the BMC to Linux (username: sysadmin; Passwd: superuser), and type “ifconfig” check its IP address.



2. On the debug PC, execute the following commands to perform the upgrade.

   cd BMC_MECS-7211_Release_Vx.xx

   cd FW

   ./adlinktool.sh bmc1 rom.ima 172.20.5.77

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3.16 BMC Firmware Update via Host with Yafuflash

The MECS-7211 supports a BMC Chassis Management firmware, IPMI v2.0 compliant. To update the BMC firmware via host with Yafuflash, perform the following steps.

1. Install Linux distribution such like ubuntu 14/16, Centos 7.x, to the MECS7211 system;
2. Login to the Linux OS with root user permission.
3. Install ipmitool on the MECS7211
   sudo apt-get install ipmitool (for ubuntu)
   sudo yum install ipmitool (for Centos)
4. Check the BMC FW version.
   sudo ipmitool mc info
5. Update the BMC over host using the commands below:
6. Copy the Yahuflash & BMC ROM to the same folder to the MECS7211.
7. Run upgrade command to upgrade the BMC,

Example:

```
$ sudo ./Yafuflash -kcs rom.ima

YAFUFlash - Firmware Upgrade Utility (Version 4.117.7)
-----------------------------------------------
(C)Copyright 2016, American Megatrends Inc.
The Module root allocated size is different from the one in the Image
So,Type (Y/y) to do Full Firmware Upgrade or (N/n) to exit
Enter your Option : Y

*********************************************************************
 WARNING!
        FIRMWARE UPGRADE MUST NOT BE INTERRUPTED ONCE IT IS STARTED.
        PLEASE DO NOT USE THIS FLASH TOOL FROM THE REDIRECTION CONSOLE.
*********************************************************************
Uploading Firmware Image : 100%... done
Skipping [boot] Module ....
Flashing [conf] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [root] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [osimage] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [www] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [testapps] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [ast2500e] Module ....
Flashing  Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Resetting the firmware.........
```


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```
------------------------------------------------
Open IPMI Drivers
------------------------------------------------
Loading Open IPMI Driver:ipmi_devintf
BMC is booting up, Please load ipmi_si Open IPMI Driver after the BMC
Boots up!!!!
Loading Open IPMI Driver:ipmi_msghandler
```


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3.17 Enter BIOS Setup

To enter the BIOS setup screen, follow these steps:

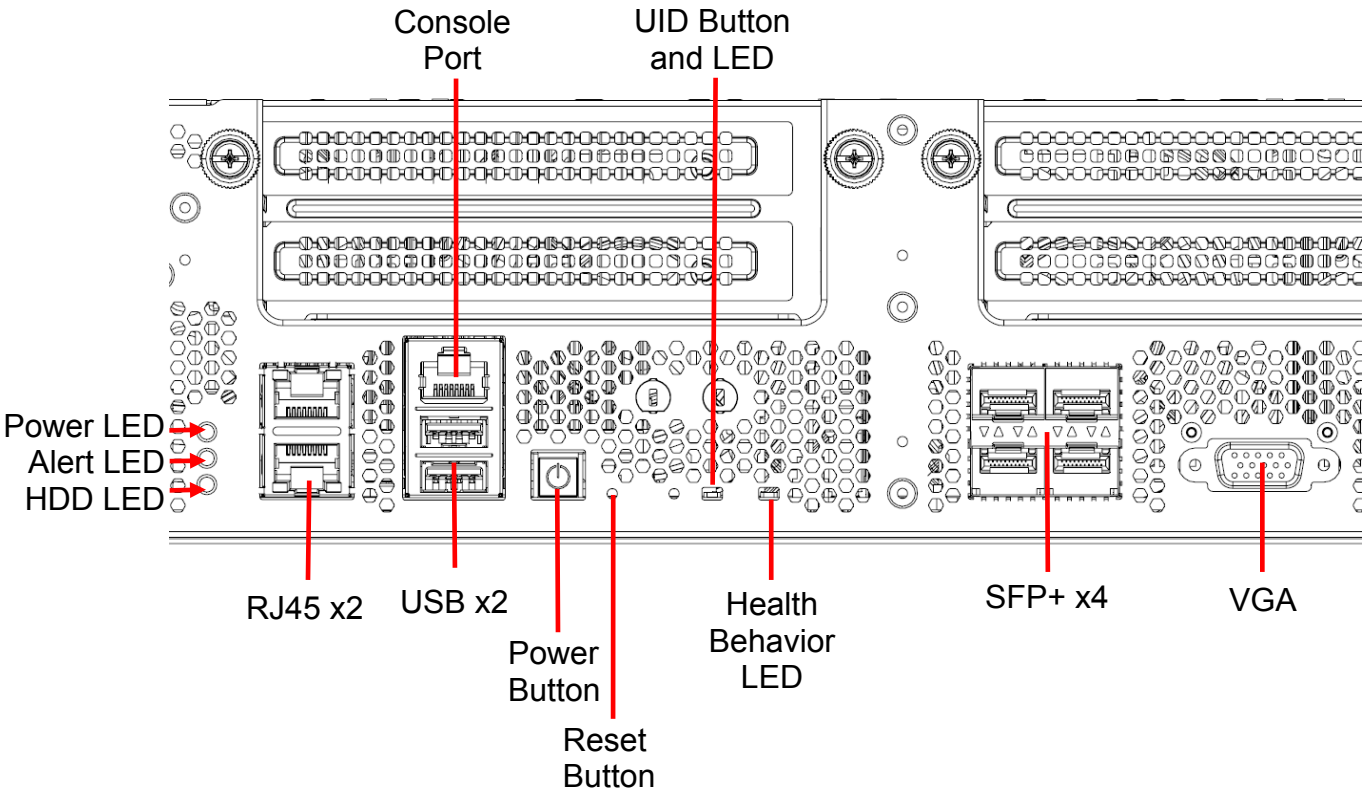
1. Power on the MECS-7211.
2. Press the <Delete> or <ESC> key on your keyboard when you see the following text prompt: “Press DEL or ESC to enter Setup” .
   (Note: If Quick Boot is enabled, the screen below will not display, but pressing the <Delete> or <ESC> key will still allow you to enter the BIOS setup screen.)



3. After pressing the <Delete> or <ESC> key, the main BIOS setup menu will display. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.

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4 System Interfaces



4.1 Status LEDs

Power LED (green)

The Power LED will light when the system is booted up (S0 state).

Alert LED (red)

Off: Indicates normal system operation. On: Indicates a critical alarm.

Drive Activity (HDD) LED (yellow)

The Drive Activity (HDD) LED is controlled by SATALED# from the chipset. When SATA storage is active (read/write), the LED will blink.

Note: This LED can also be user defined. Refer to *4.5 HDD/User LED SW1* and *4.6 User LED Commands* on page 51.

UID Button and LED (blue)

The UID button/indicator is used to conveniently locate the server. The LED can be turned off or on manually by pressing the UID button or remotely controlled by management command.

Health Behavior LED (green/red)

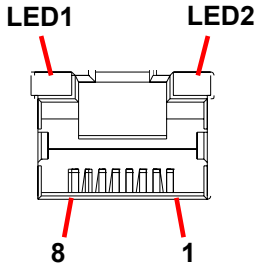
The Health Behavior LED has the following behavior.

1. Default: Green (blinking) indicates healthy BMC status.
2. Override: User can use the OEM LED command (LED1/LED2) to override the LED status to reflect the system health status.

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4.2 LAN Ports

Pin #	Signal
1	MDI_P0
2	MDI_N0
3	MDI_P1
4	MDI_N1
5	MDI_P2
6	MDI_N2
7	MDI_P3
8	MDI_N3



LAN LED Behavior
The LAN LEDs are integrated into the RJ-45 connector. Their behavior is as follows:

LED1 (Speed)	
10 Mbps	Off
100 Mbps	Green
1000 Mbps	Orange

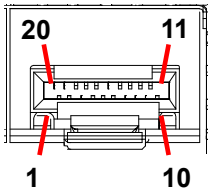
The LED2 (Link/Activity) indicates that a link has been established by lighting orange. When data is transmitted the LED blinks orange.

LED2 (Link/Activity)	
Link with no activity	Steady
Link with activity	Blinking

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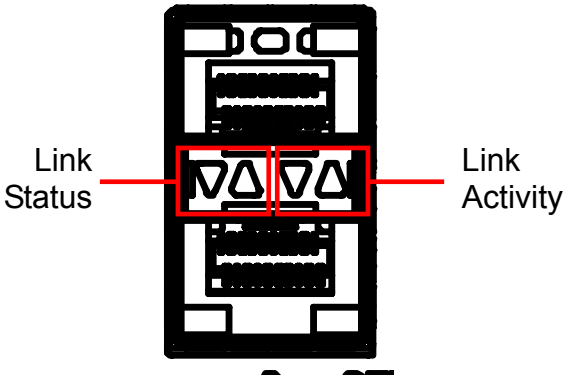
4.3 SFP+ Ports

Pin	Signal Name
1	GND
2	TX_FAULT
3	TX_DSBL
4	SDA
5	SCL
6	MOD_ABS
7	RS0
8	RX_,OS
9	RS1
10	GND
11	GND
12	RD-
13	RD+
14	GND
15	VCCR
16	VCCT
17	GND
18	TX+
19	TX-
20	GND



Note: When using a Fiber Optic Small-Form Pluggable (SFP) module, ensure it is IEC 60825-1 certified and a Class 1 Laser Product.

4.3.1 SFP+ LED Behavior



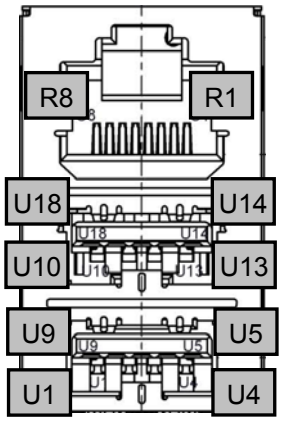
The LEDs point to the respective port.

LED	Status	Behavior
Link Status	Link up	Yellow (steady)
	Link down	Off
Link Activity	Active	Green (blinking)
	Not active	Off

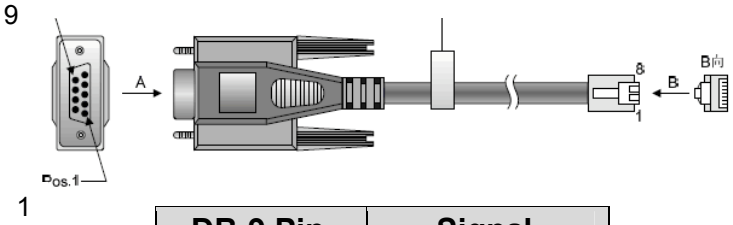
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4.4 Dual USB 3.0 and RJ-45 Console Port

Pin	Signal Name
R1	N/C
R2	N/C
R3	COM_TXD
R4	GND
R5	GND
R6	COM_RXD
R7	N/C
R8	N/C
U1	5V
U2	USB2_N
U3	USB2_P
U4	GND
U5	SSRX_N
U6	SSRX_P
U7	GND
U8	SSTX_N
U9	SSTX_P
U10	5V
U11	USB2_N
U12	USB2_P
U13	GND
U14	SSRX_N
U15	SSRX_P
U16	GND
U17	SSTX_N
U18	SSTX_P



The MECS-7211 comes with an RJ-45 to DB-9 console port adapter cable.



DB-9 Pin	Signal
1	—
2	RXD
3	TXD
4	DTR
5	SG
6	DSR
7	RTS
8	CTS
9	—

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4.5 HDD/User LED Switch

The HDD/User LED Switch (SW1) can be used to set the function of the Drive Activity LED (default is Drive Activity).

LED Function	Pin 1	Pin 2
HDD Activity	ON	OFF
User Defined	OFF	ON

The HDD/User LED Switch (SW1) is located on the board. (see *4.7 Board layout* page 53).

4.6 User LED Commands

4.6.1 OEM ADLINK Set LED Status

NetFn=2Eh, Cmd=10h

Byte	Data Field
1~3	ADLINK Manufacturer ID –005F13h, LS byte first.
4	LED ID: 01h= UID LED (Blue) 02h = USR LED (Yellow, HDD shared) 03h = Alert LED (Red) 04h = LED1 (HB Green) 05h = LED2 (HB Red) Other values: reserved
5	LED Function: 00h = LED OFF override. 01h - 1Eh = LED BLINKING override. The off duration is specified by the value of this byte, and the on duration is specified by the value of byte 5. Both values specify the time in hundreds of milliseconds (100 ms-3 s). 1Fh = LED state is restored to Local Control state 20h-FEh Reserved FF = LED ON override
6	On-duration: The LED on-time in hundreds of milliseconds if (01h <= Byte 6 <= 1Eh) and ignored otherwise. Otherwise, this field is ignored and is set to 0h.
	Response Field
1	Completion Code
2-4	ADLINK Manufacturer ID – 005F13h, LS byte first.

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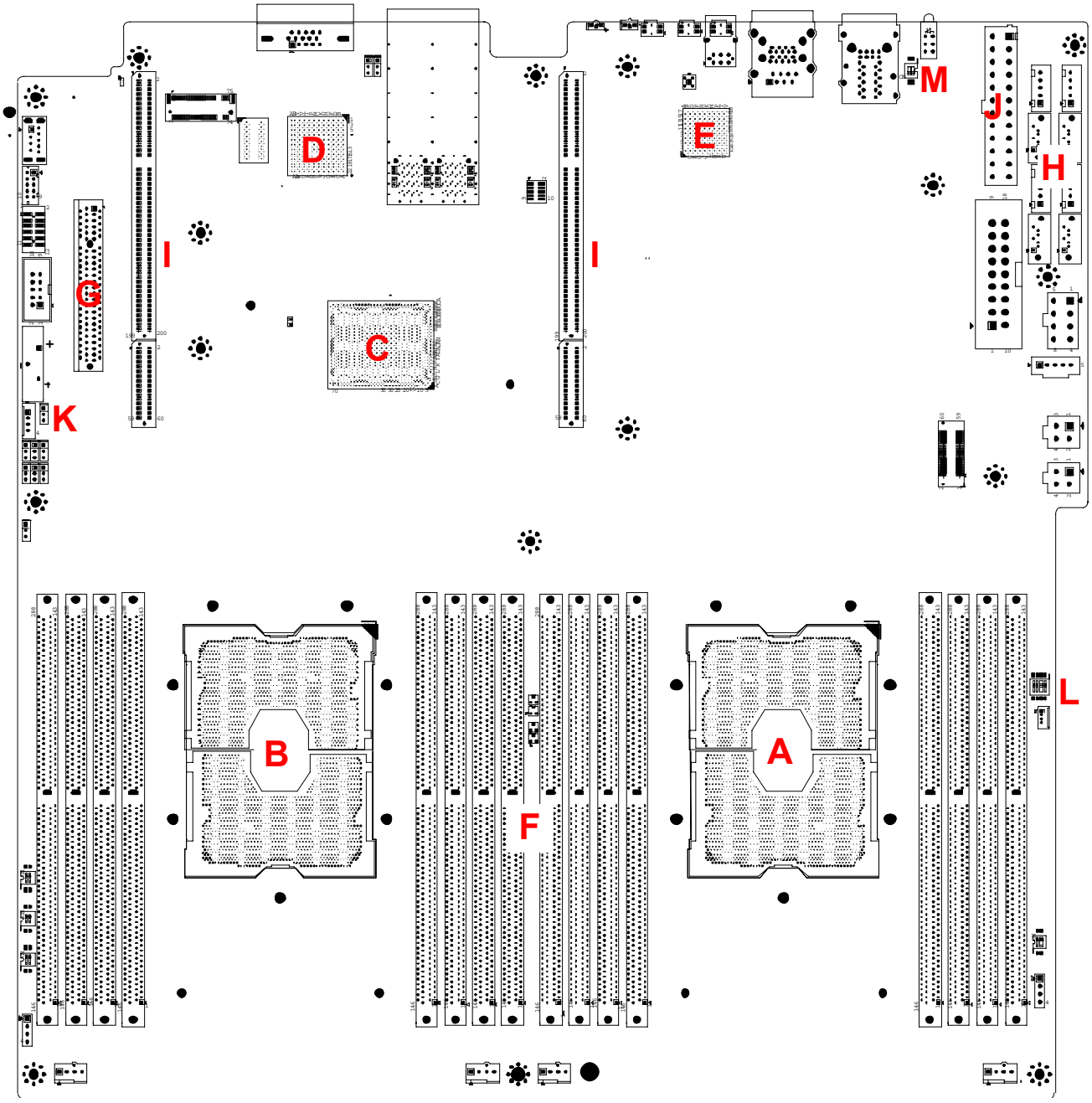
4.6.2 OEM ADLINK Get LED Status

NetFn=2Eh, Cmd=11h

Byte	Data Field
1-3	ADLINK Manufacturer ID – 005F13h, LS byte first.
4	LED ID: 01h= UID LED (Blue, UID led) 02h = USR LED (Yellow, HDD shared) 03h = Alert LED (Red) 04h = LED1 (HB Green, default blink) 05h = LED2 (HB Red, default off) Other values: reserved
	Response Field
1	Completion Code
2-4	ADLINK Manufacturer ID D of ran, LS byte first.
5	LED ID: 01h= UID LED (Blue) 02h = USR LED (Yellow, HDD shared) 03h = Alert LED (Red) 04h = LED1 (HB Green, default blink) 05h = LED2 (HB Red) Other values: reserved
6	LED Function: 00h = LED OFF override. 01h - 1Eh = LED BLINKING override. The off duration is specified by the value of this byte, and the on duration is specified by the value of byte 7. Both values specify the time in hundreds of milliseconds (100 ms-3 s). 1Fh = LED is in Local Control state 20h-FEh Reserved FF = LED ON override
7	On-duration : The LED on-time in hundreds of milliseconds if (01h <= Byte 6 <= 1Eh) and ignored otherwise set to 0h.

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4.7 Board Layout



A	CPU1	**I**	PCIe x32 slot
B	CPU2	**J**	PWR CONN
C	PCH	**K**	Clear CMOS Jumper(CN6)
D	BMC Chip	**L**	BMC mode switch (SW6)
E	CPLD Chip	**M**	HDD/User LED switch(SW1)
F	DDR4 DIMM		
G	PCIe x8 slot		
H	SATA Port		

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5 BIOS Setup

5.1 BIOS Setup Menu

The BIOS setup utility is invoked by pressing <ESC> or <DEL> keys. User can change BIOS settings during setup utility runs. A system reset is required for new settings to take effect.

In the BIOS setup utility, there are several hot keys are designed for specific purposes, as listed below.

- <F1>: General help in setup menu
- <F8>: Load previous BIOS values
- <F9>: Load BIOS default in setup utility
- <F10>: Save & Exit setup utility

To navigate through the BIOS setup menu, use the following.

→←	Left/Right. The *Left and Right* < Arrow > keys allow you to select a setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
↑↓	Up/Down The *Up and Down* < Arrow > keys allow you to select a setup item or sub-screen.
+-	Plus/Minus The *Plus and Minus* < Arrow > keys allow you to change the field value of a particular setup item. For example: Date and Time.
Tab	The < Tab > key allows you to select setup fields.

5.1.1 Menu Selection Bar

The Menu Selection Bar is located at the top of the screen. It displays the top level available menus to the user:

- Main Menu
- Advanced Menu
- Platform Configuration Menu
- Server Mgmt
- Security Menu
- Boot Menu
- Save & Exit Menu

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5.1.2 Menu Conventions

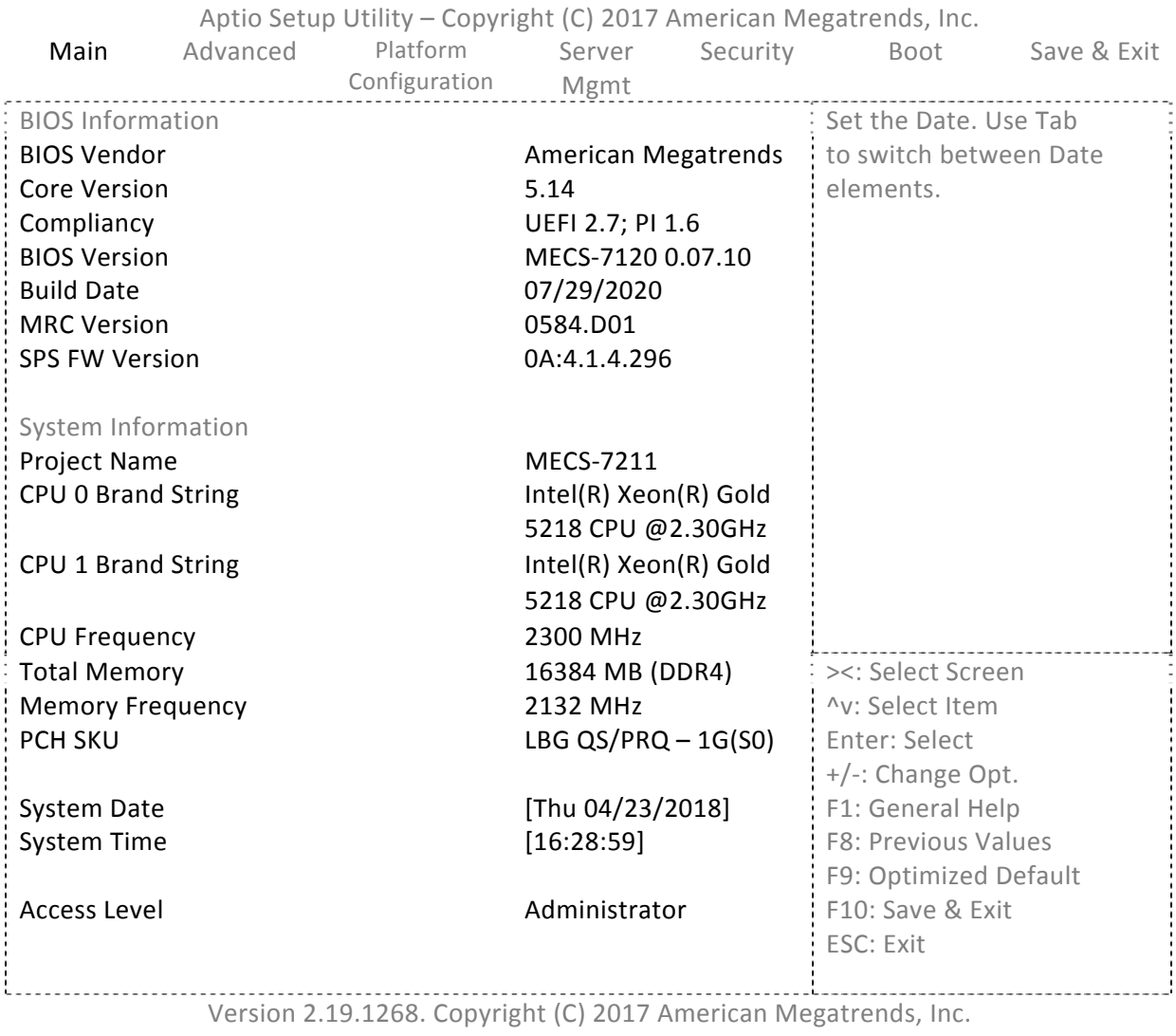
The appearance of the setup menu listed in this chapter is a sample to describe the item list. It is shown on a VT100 terminal via serial console. The menu conventions are as follows.

Using color
The mandatory BIOS setup fields are in black. The BIOS setup fields currently not used are in grey. The display only strings are in black.

Using brackets
Editable menu options are marketed with squares '[' and ']' to distinguish them from display only fields that can't be modified.

5.2 Main Menu

The Main Menu provides read-only information about the system and also allows you to set the system date and time. The tables below show screen shots of the Main menu details, submenus and settings.



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5.2.1 BIOS Information

BIOS Item	Options	Description
BIOS Vendor	**Info-only.** American Megatrends	Display vendor name of system BIOS.
Core Version	**Info-only** **x.yy**	Display core version of booting BIOS.
Compliancy	**Info-only** **UEFI 2.7; PI 1.6**	Display compliancy of booting BIOS
BIOS Version	**Info-only.** x.yy.zz	Display version of booting BIOS.
Build Date	**Info-only.** MM/DD/YYYY	It shows the date that BIOS was built.
MRC Version	**Info-only.** xxx.Ryy	Display the revision of MRC code which is implemented in BIOS.
SPS FW Version	**Info-only.** ww:x.y.z.aaa	Display the version of Intel manageability firmware which is implemented in BIOS.

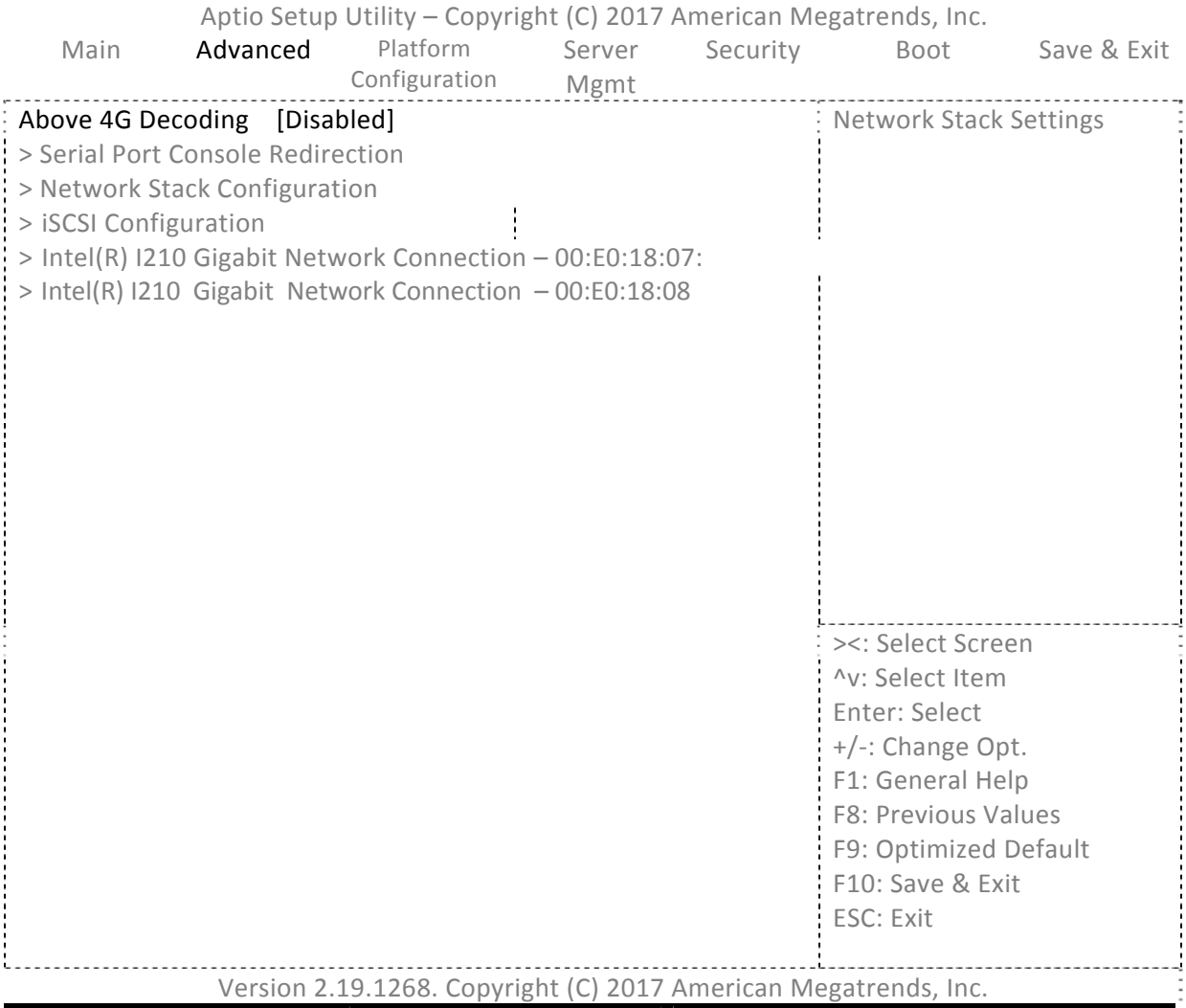
5.2.2 System Information

BIOS Item	Options	Description
Project Name	**Info-only.** **MECS-7211**	It shows project name.
CPU 0/1 Brand String	**Info-only.** **Intel(R) Xeon …**	It shows what CPU is booting the system.
CPU Frequency	**Info-only.** XXXX MHz	It shows CPU's frequency.
Total Memory	**Info-only.** XXXX MB (DDR4)	It shows total memory size used on the motherboard and memory type.
Memory Frequency	**Info-only.** XXXX MHz	It shows memory's frequency.
PCH SKU	**Info-only.** LBG xxxxx	It shows what PCH SKU is designed on motherboard.
System Date	MM/DD/YYYY	For configuring/showing system date. When setting the Date, use <Tab> key to switch between Date elements.
System Time	HH:MM:SS	For configuring/showing system time. When setting the Time, use <Tab> key to switch between Time elements.
Access Level	**Info-only.** Administrator/User	It shows what access level is used to enter BIOS setup menu.

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5.3 Advanced Menu

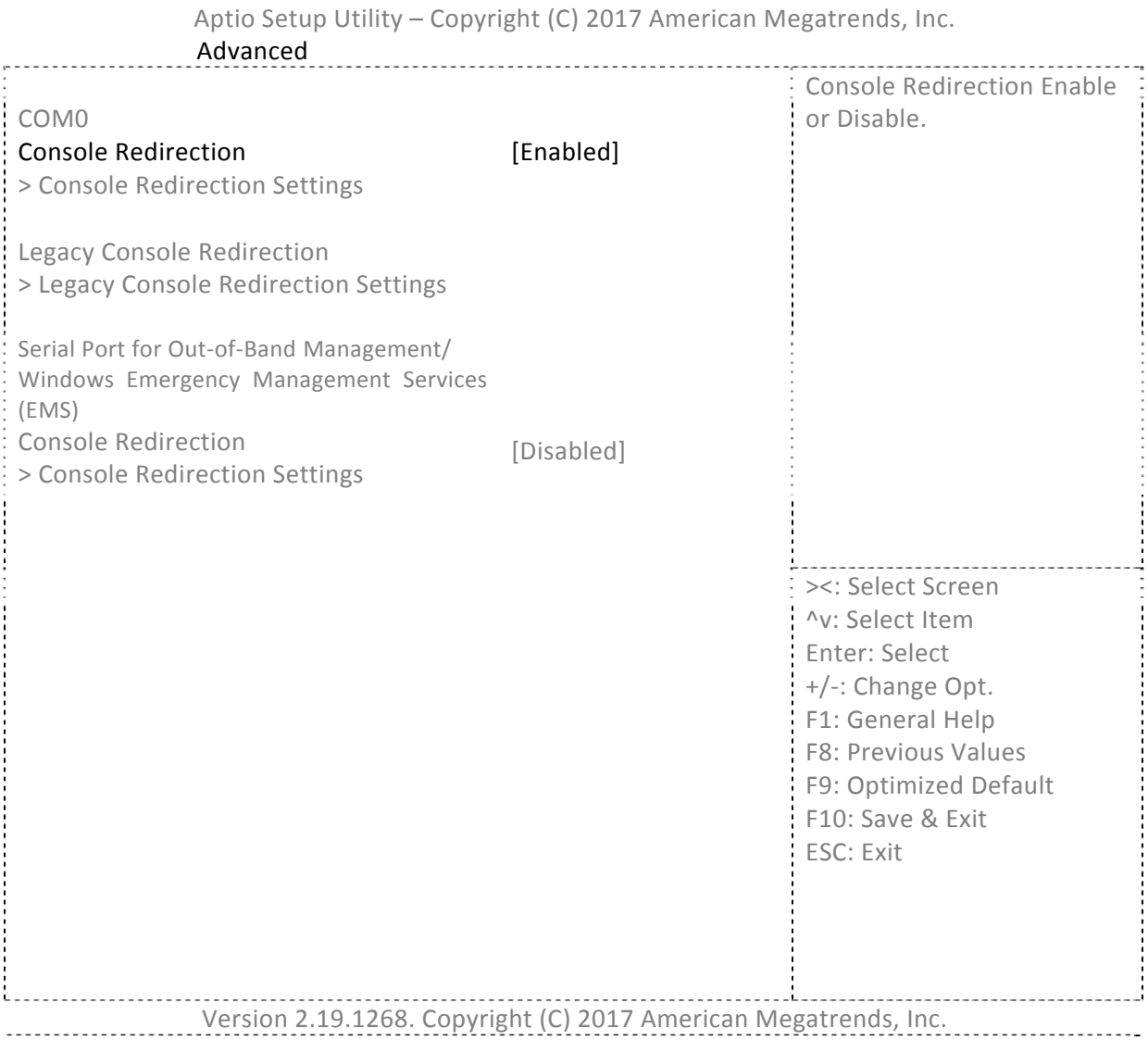
This menu contains the settings for most of the user interfaces in the system.



BIOS Item	Options	Description
Above 4G Decoding	**Disabled** **Enabled**	The definition of “Above 4G decoding” is to allow the user to enable or disable memory-mapped I/O for a 64-bit PCIe device to 4GB or greater address space
Serial Port Console Redirection	**Sub-Menu**	For configuring serial console.
Network Stack Configuration	**Sub-Menu**	For configuring Network Stack.
iSCSI Configuration	**Sub-Menu**	For iSCSI Configuration.
Intel(R) I210 Gigabit Network Connection - …	**Sub-Menu**	Onboard Ethernet controller configuration loaded by EFI driver. The setup page designed by Intel and when running Ethernet EFI driver, this page will be shown. It is related to “Network” setting in Boot setup page.

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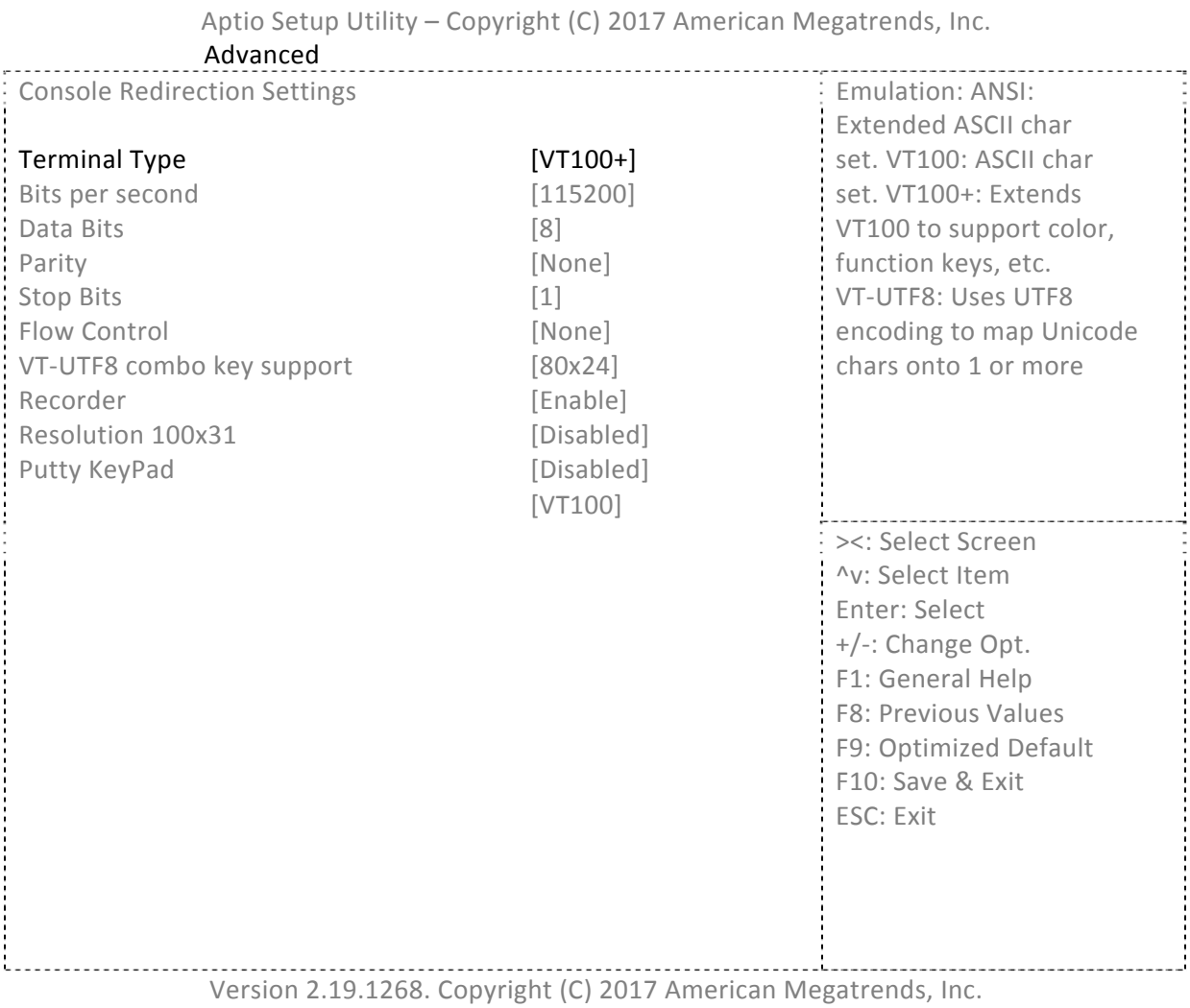
5.3.1 Sub-Menu: Serial Port Console Redirection



BIOS Item	Options	Description
Console Redirection	**Enabled** Disabled	Enable or disable serial port console redirection function.
Console Redirection Settings	**Sub-Menu**	For configuring serial port settings when console redirection function is enabled.
Legacy Console Redirection Settings	**Sub-Menu**	For configuring Legacy Console Redirection Settings

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5.3.2 Sub-Menu: Console Redirection Settings



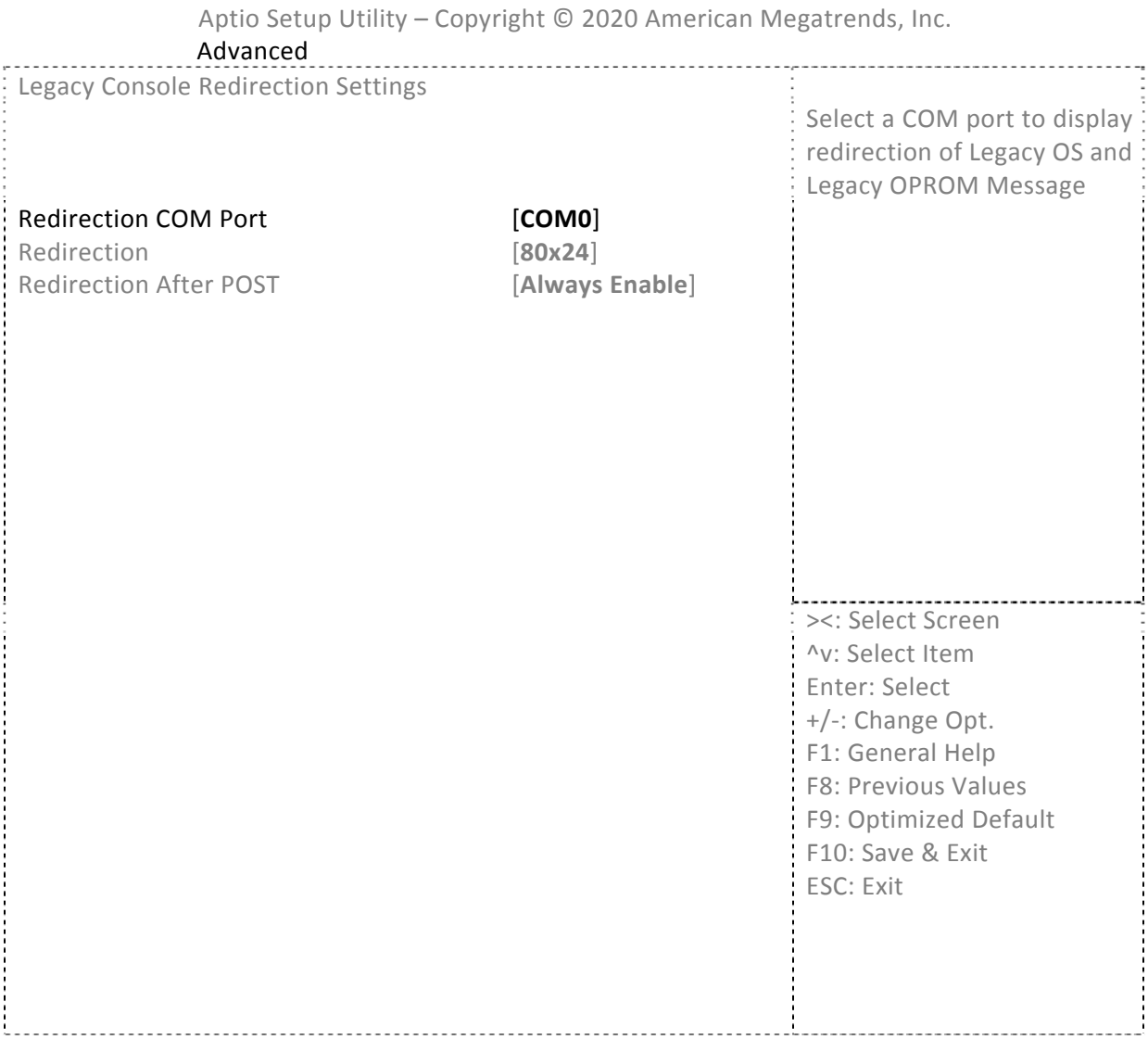
BIOS Item	Options	Description
Terminal Type	VT100 **VT100+** VT-UTF8 ANSI	Configure the type of console emulation. Emulation: **ANSI:** Extended ASCII char set. **VT100:** ASCII char set. **VT100+:** Extends VT100 to support color, function keys, etc. **VT-UTF8:** Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 **115200**	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speed.
Data Bits	7 **8**	Configure the number of data bits in each transmitted or received serial character for both serial ports.
Parity	**None** Even	Configures if parity bit is generated (transmit data) or checked.

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BIOS Item	Options	Description
	Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	**1** 2	Configures the number of stop bits transmitted and received in each serial character for both serial ports. Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	**None** Hardware RTS/CTS	Configures flow control for console redirection. Hardware flow control uses RTC/CTS.
VT-UTF8 combo key Support	**Enable** Disable	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Enable **Disable**	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Enable **Disable**	Enables or disables extended terminal resolution
Putty KeyPad	**VT100**	Select FunctionKey and KeyPad on Putty.

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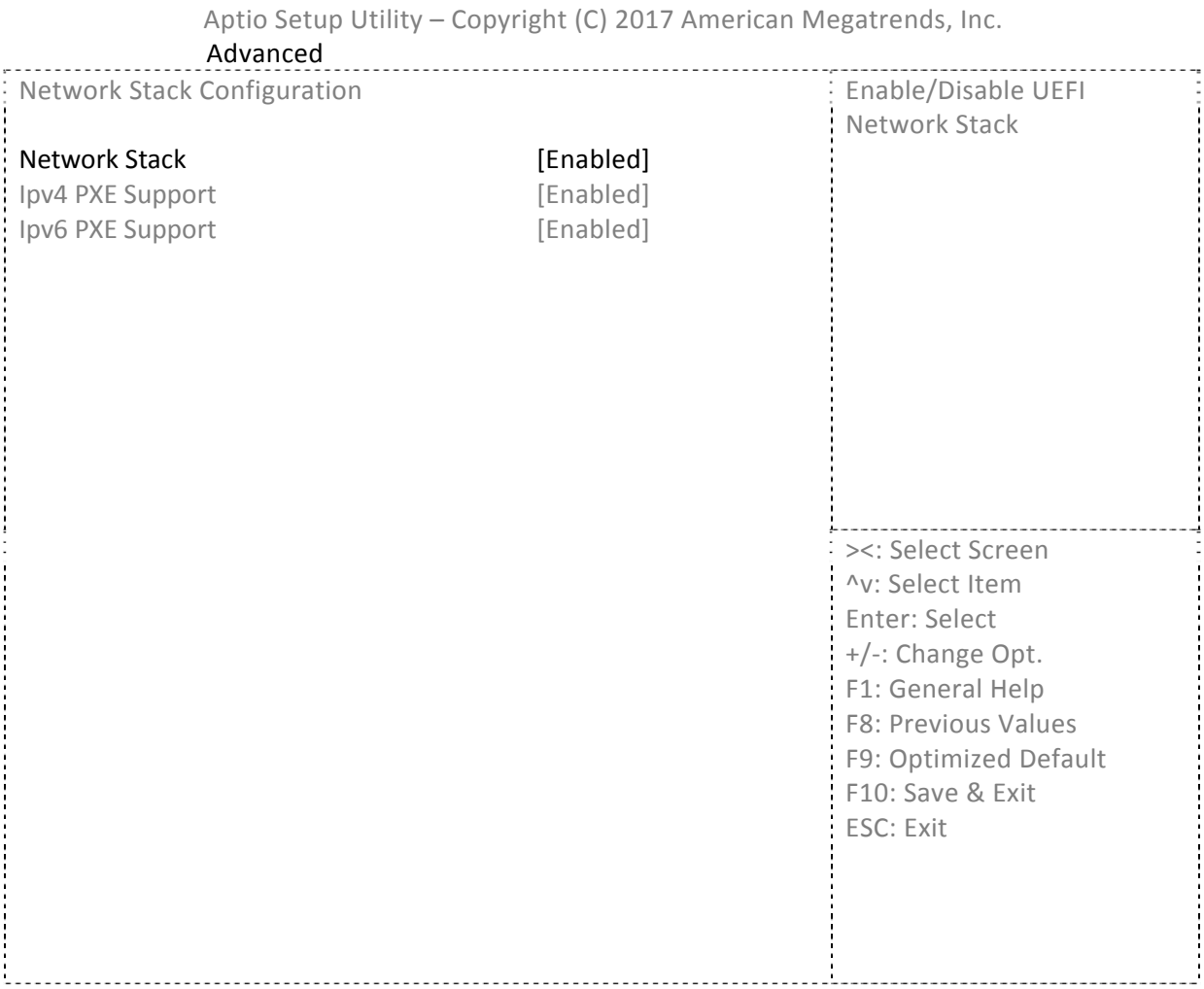
5.3.3 Sub-Menu: Legacy Console Configuration



BIOS Item	Options	Description
Redirection COM Port	**COM0**	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
Redirection	**80X24** 80X25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirection After POST	**Always Enable** BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

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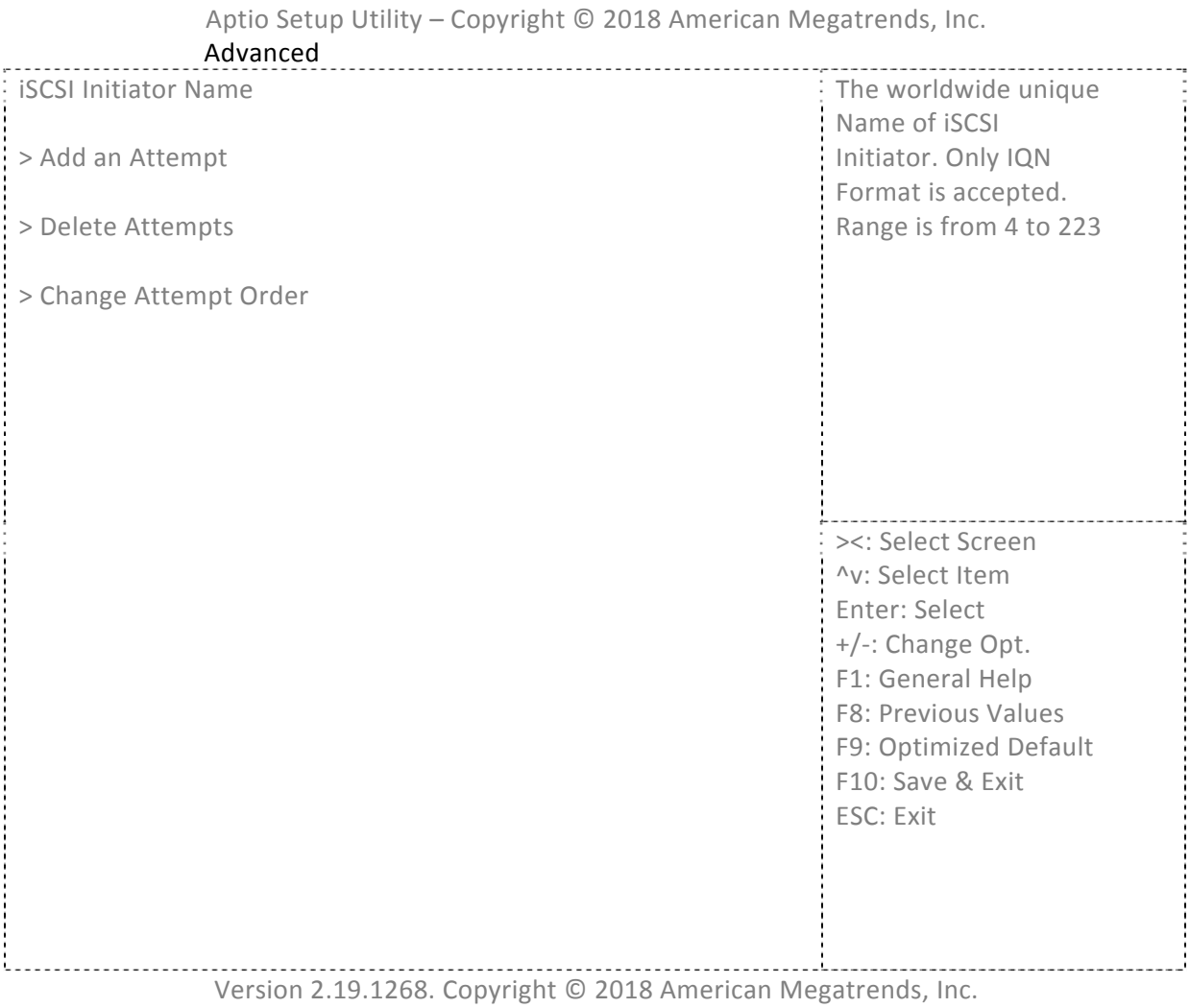
5.3.4 Sub-Menu: Network Stack Configuration



BIOS Item	Options	Description
Network Stack Configuration	**Info-only**	
Network Stack	Disabled **Enabled**	To enable or disable network stack.
IPv4 PXE Support	Disabled **Enabled**	To enable or disable IPv4 PXE boot.
IPv6 PXE Support	Disabled **Enabled**	To enable or disable IPv6 PXE boot.

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5.3.5 Sub-Menu: iSCSI Configuration

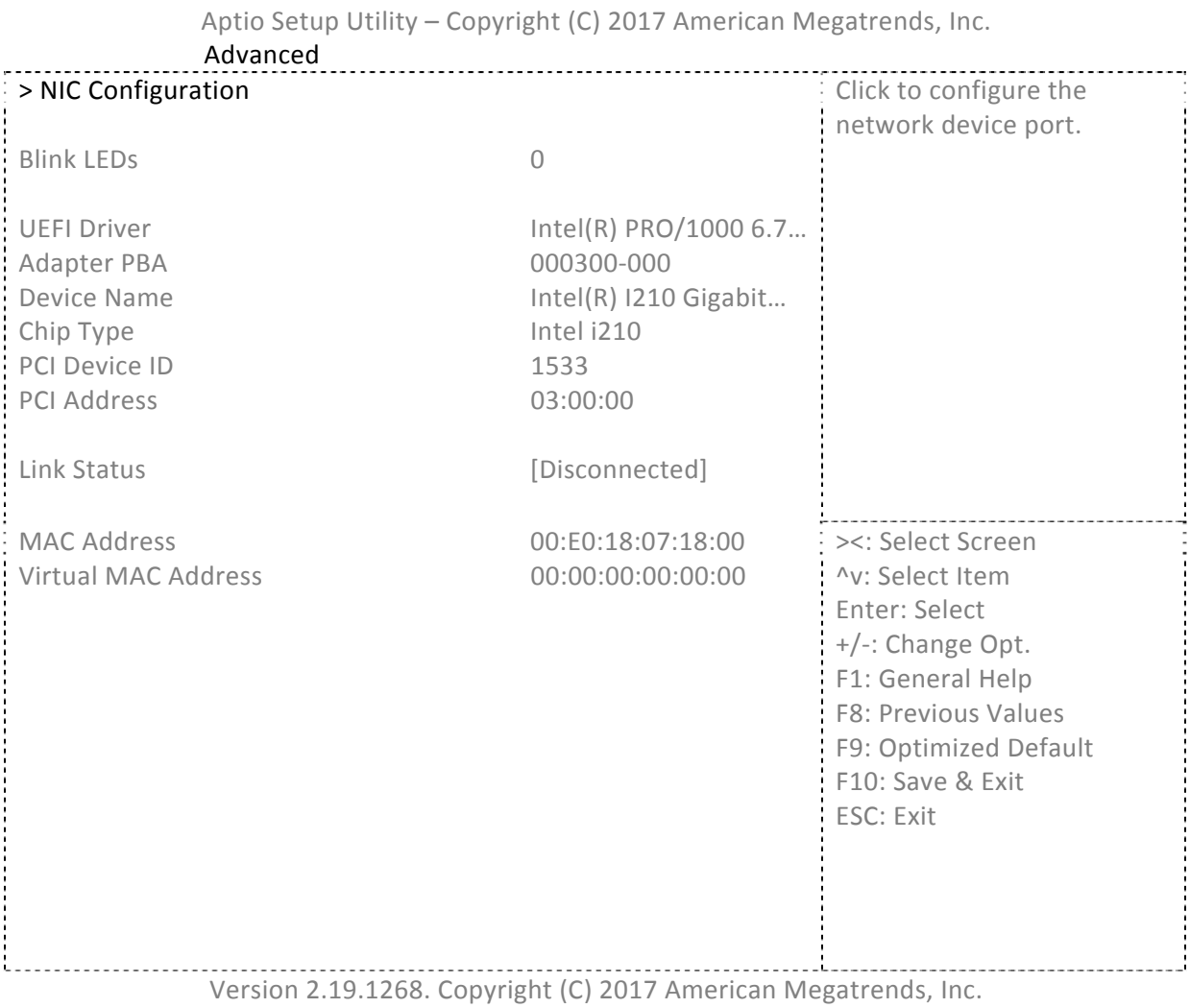


BIOS Item	Options	Description
iSCSI Initiator Name	**Info-only**	
Add an Attempt	**Sub-Menu**	To Add an Attempt for MAC Selection if it's available.
Delete Attempts	**Sub-Menu**	To Delete Attempts if it's available.
Change Attempt Order	**Sub-Menu**	To Change Attempt Order if it's available.

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5.3.6 Sub-Menu: Intel(R) I210 Gigabit Network Connection

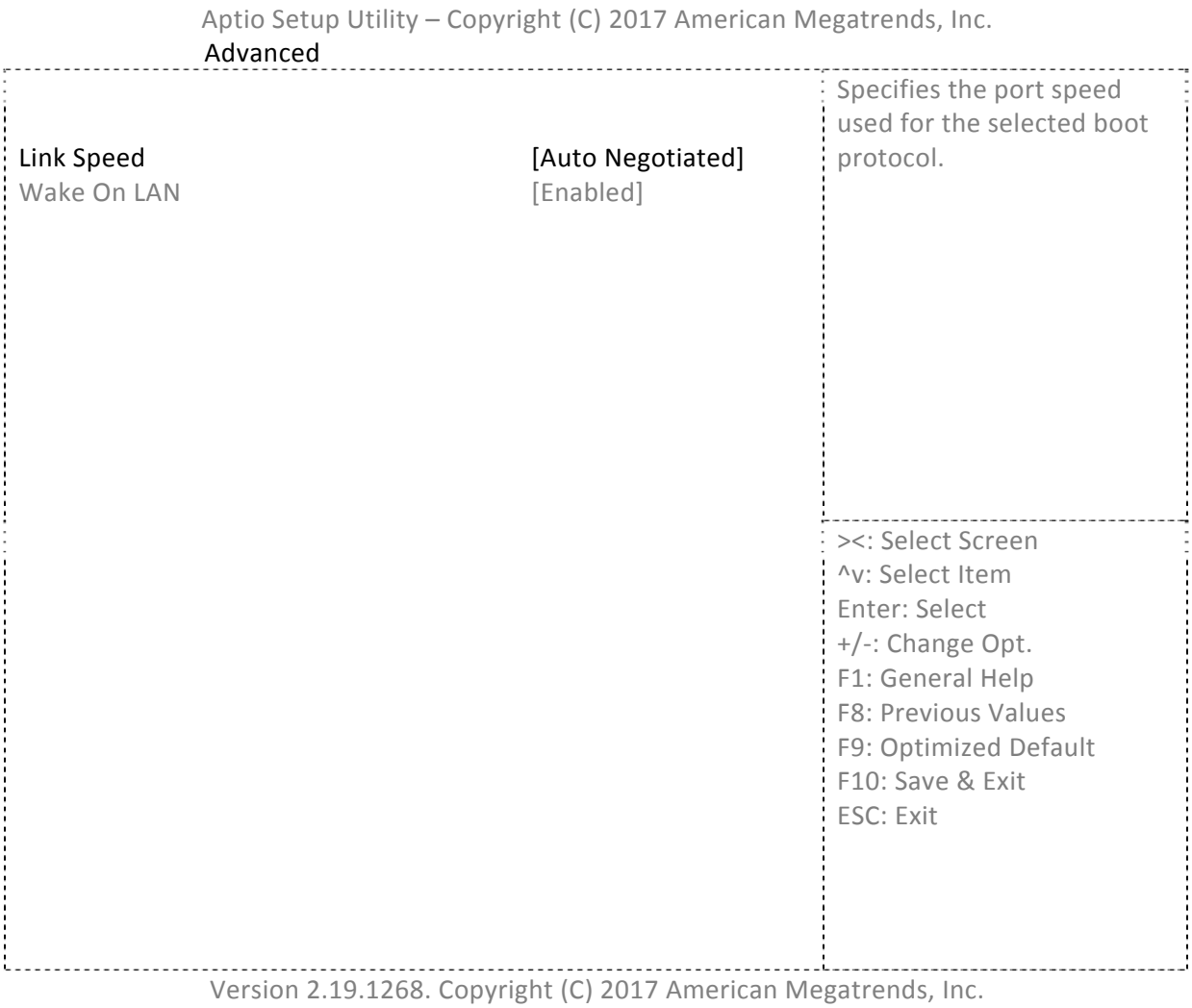
This setup page is shown when “Network” setting in Boot page is set to “UEFI”. When the BIOS boots the system, it will launch the onboard Ethernet I210 controller’s UEFI driver. The driver provides a setup page for configuring Ethernet parameters and shows information about Ethernet controller. When the Ethernet’s UEFI driver is not executed, this setup page will not be shown.



BIOS Item	Options	Description
NIC Configuration	**Sub-Menu**	For configuring link speed and wake function.

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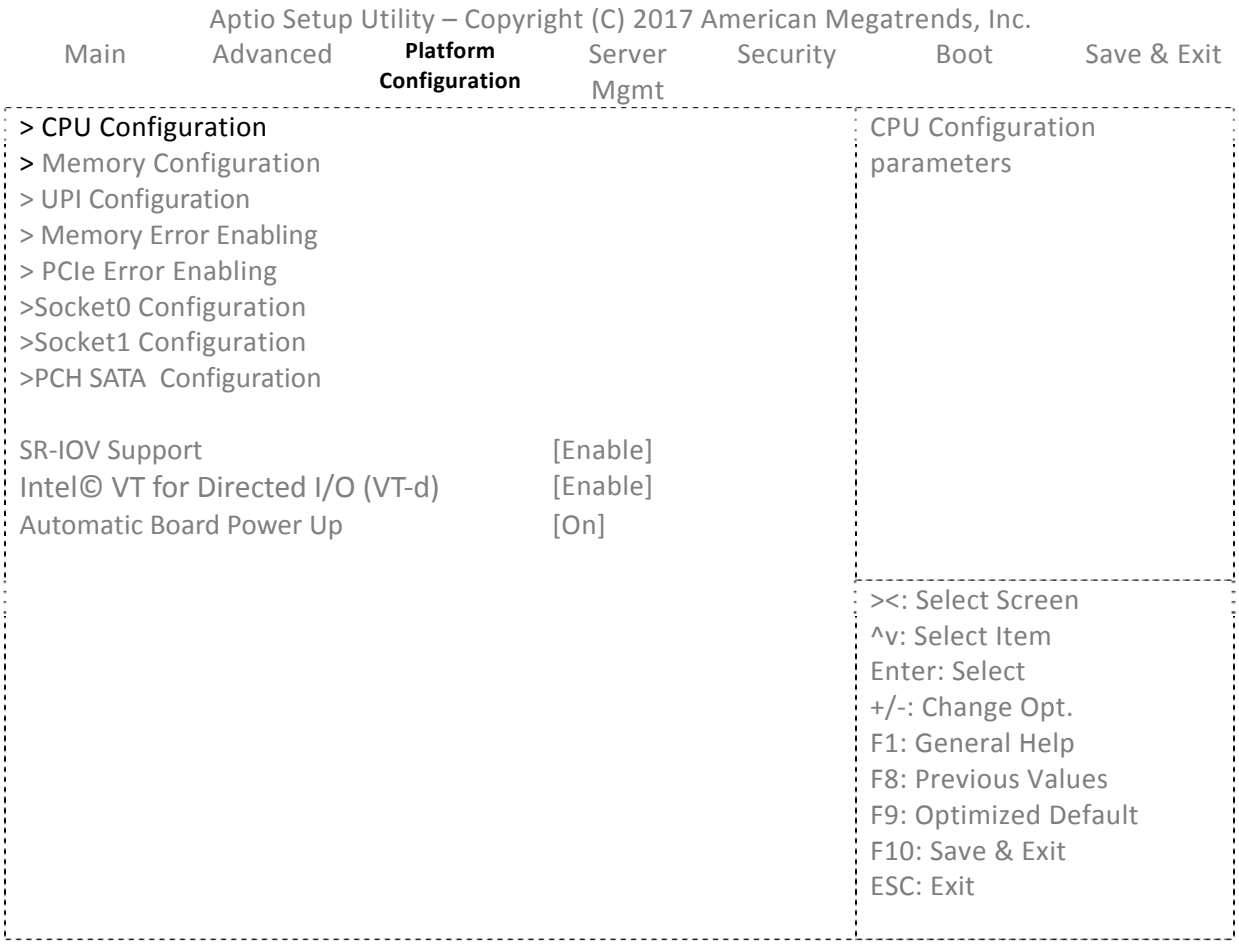
5.3.7 Sub-Menu: NIC Configuration



BIOS Item	Options	Description
Link Speed	**Auto Negotiated** 10 Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full	For setting link speed of Ethernet.
Wake On LAN	Enabled **Disabled**	For enabling/disabling wake on LAN function.

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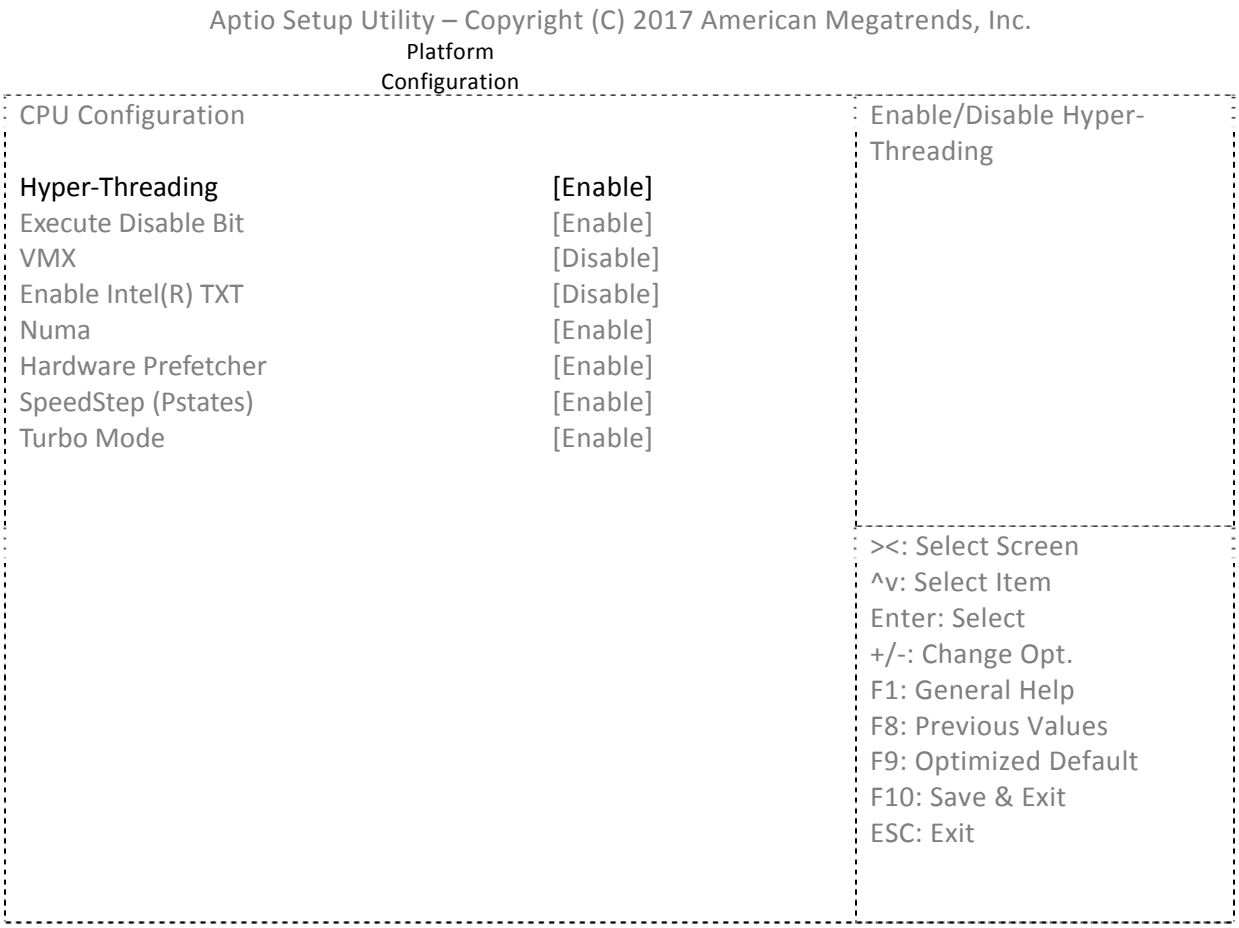
5.4 Platform Configuration Menu



BIOS Item	Options	Description
CPU Configuration	**Sub-Menu**	For configuring CPU features/functions.
Memory Configuration	**Sub-Menu**	For configuring memory features and functions.
UPI Configuration	**Sub-Menu**	For configuring UPI features and functions.
Memory Error Enabling	**Sub-Menu**	For configuring memory error assertion settings.
PCIe Error Enabling	**Sub-Menu**	For configuring PCIe error assertion settings.
Socket0 Configuration	**Sub-Menu**	For configuring Socket0 features and functions.
Socket1 Configuration	**Sub-Menu**	For configuring Socket1 features and functions.
PCH SATA Configuration	**Sub-Menu**	For SATA operating mode setting.
SR-IOV Support	Disable **Enable**	For enabling/disabling SR-IOV Support.
Intel© VT for Directed I/O (VT-d)	Disable **Enable**	For enabling/disabling Intel VT-d function.
Automatic Board Power Up	**On** Off	Select 0m/0ff for ACPI state after a G3

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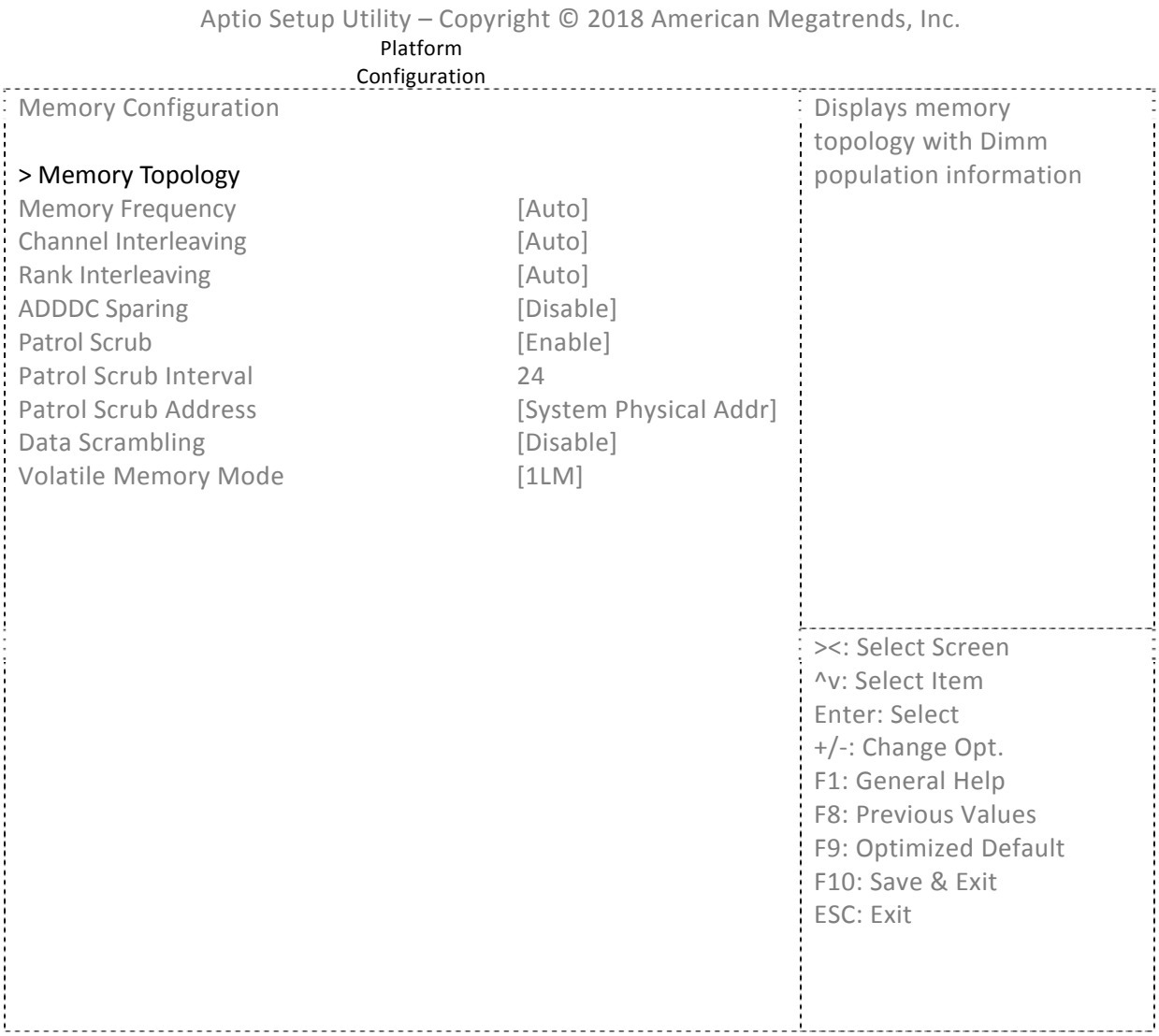
5.4.1 Sub-Menu: CPU Configuration



BIOS Item	Options	Description
CPU Configuration	**Info-only**	
Hyper-Threading	**Enable** Disable	To enable or disable hyper-threading function of CPU.
Execute Disable Bit	Disable **Enable**	Execute Disable Bit can help prevent certain classes of malicious buffer overflow attacks. OS and application installed must support this feature in order for it is enabled.
VMX	Disable **Enable**	To enable or disable Virtual-Machine Extensions of CPU.
Enable Intel(R) TXT	**Disable** Enable	Enable or disable Intel(R) TXT function.
Numa	Disable **Enable**	For enabling or disabling Numa function.
Hardware Prefetcher	Disable **Enable**	To enable or disable hardware prefetcher of CPU.
SpeedStep (P-states)	Disable **Enable**	To enable or disable Speedstep function of CPU.
Turbo Mode	Disable **Enable**	To enabled or disable Turbo Mode of CPU.

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5.4.2 Sub-Menu: Memory Configuration



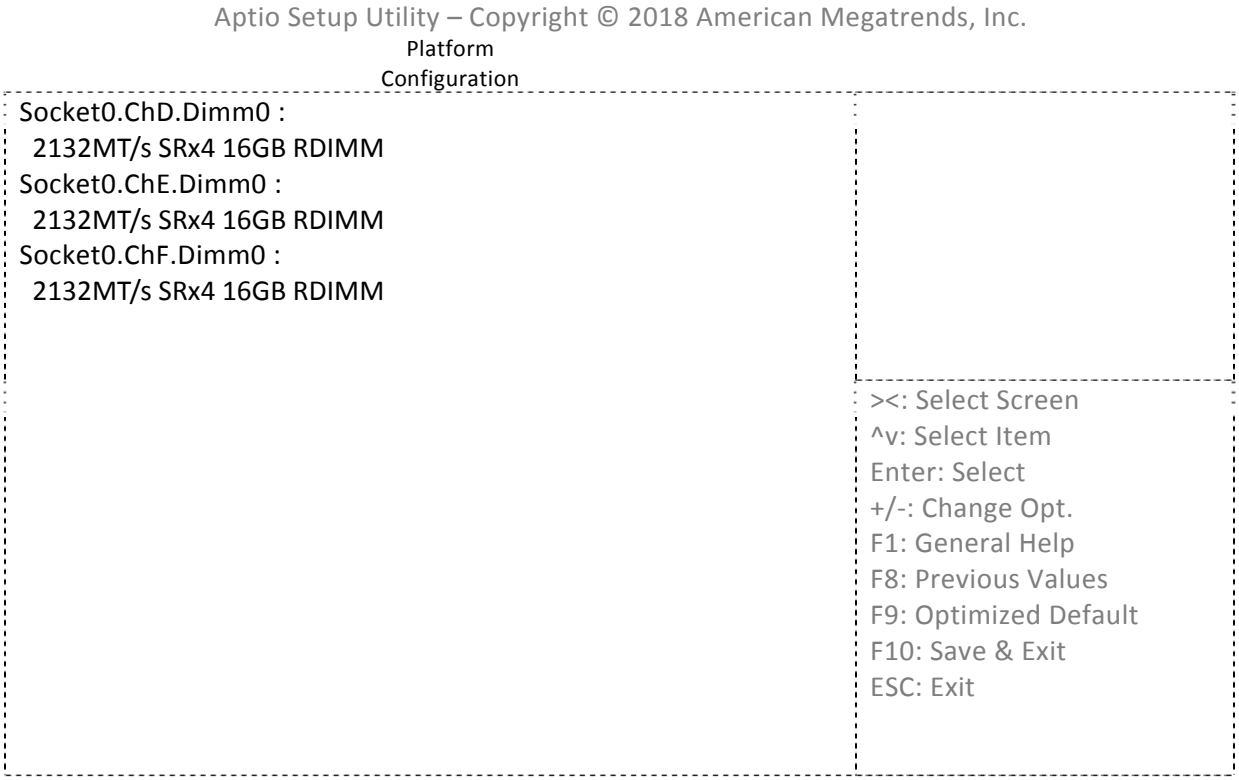
BIOS Item	Options	Description
Memory Configuration	**Info-only**	
Memory Topology	**Sub-Menu**	To display memory topology with DIMM's population information.
Memory Frequency	**Auto** 1866 2133 2400 2666	Use this item to set the maximum memory frequency for onboard memory modules.
Channel Interleaving	**Auto** 1-way Interleave 2-way Interleave 3-way Interleave	Channel interleaving divide memory blocks and spread contiguous portions of data across interleaved channels. It increases potential read bandwidth as requests for data can be made to all interleaved channels in an overlapped manner. Enable channel interleaving is possible to enhance the performance.
Rank Interleaving	**Auto**	The interleaving is performed on

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BIOS Item	Options	Description
	1-way Interleave 2-way Interleave 4-way Interleave 8-way Interleave	rank to have different bandwidth.
ADDDC Sparing	**Disable** Enable	It is to enable/disable ADDDC sparing. **NOTE:** it can't be enabled when mirror mode is enabled or memory sparing is enabled.
Patrol Scrub	Disable **Enable**	When setting, Enable is set to this option, patrol scrub is initialized to read through all of memory in an interval hour period which is gotten from "Patrol Scrub interval" option. Patrol scrub will correct any correctable error correction code (ECC) errors it encounters by writing back the corrected data to memory.
Patrol Scrub Interval	**24**	Hour-based setting for the interval of patrol scrub. **NOTE:** this option will be hidden when "Patrol Scrub" is disabled.
Patrol Scrub Address	Reverse Address **System Physical Address**	This is a feature for configuring the mode of Patrol scrub. When "System Physical Address" is set, patrol runs in system address generation mode. If it is set to "Reverse Address", patrol will run in legacy mode. **NOTE:** this option will be hidden when "Patrol Scrub" is disabled.
Data Scrambling	**Disable** Enable Auto	Enable it to enhance system performance and data integrity.
Volatile Memory Mode	**1LM** 2LM Auto	Configure "volatile memory mode" to one-level memory mode or two-level memory mode.

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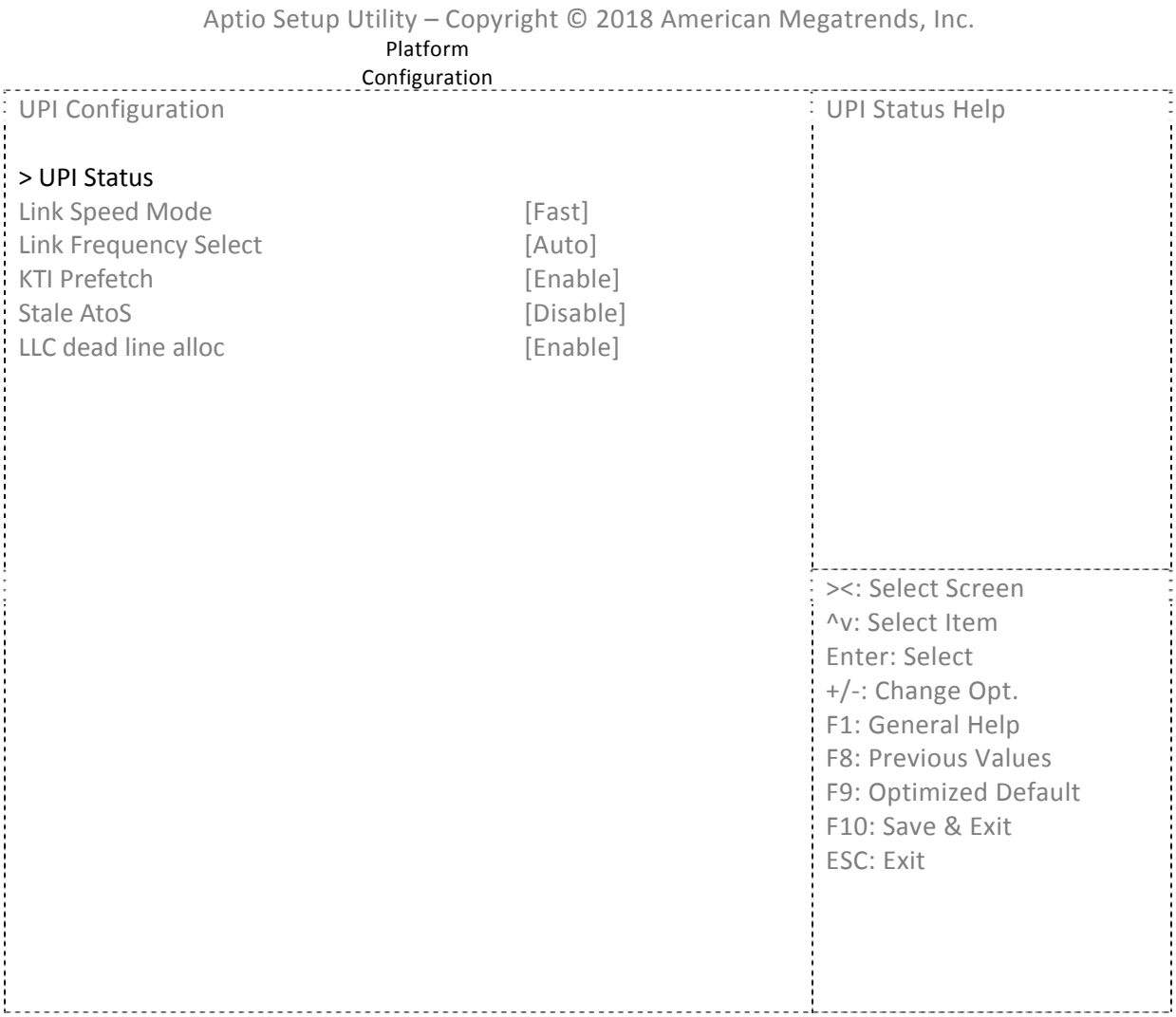
5.4.3 Sub-Menu: Memory Topology



BIOS Item	Options	Description
Socket**X**.Ch**Y**.Dimm**Z** :	**Info-only**	The information shows only when memory is present in the DIMM slot. It is the information of DIMM slot's location and X, Y and Z indicate which slot has memory plugged. **X** = 0/1 – CPU0/CPU1 **Y** = Channel A/B/C/D/E/F of CPU0 or Channel G/H/J/K/L/M of CPU1 **Z** will always be 0 because hardware design only supports one DIMM per channel. Regarding to the topology, please refer to section 2.2 – Memory initialization.
[Memory Frequency] [Rank number] [Memory size] [Memory type]	**Info-only**	It is the information of memory frequency, type and size which varies by what memory is plugged. **For example:** 2132MT/s SRx4 16GB RDIMM It means 16GB registered DIMM with 2133MT/s frequency is operating at 1 single rank x4 configuration.

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5.4.4 Sub-Menu: UPI Configuration



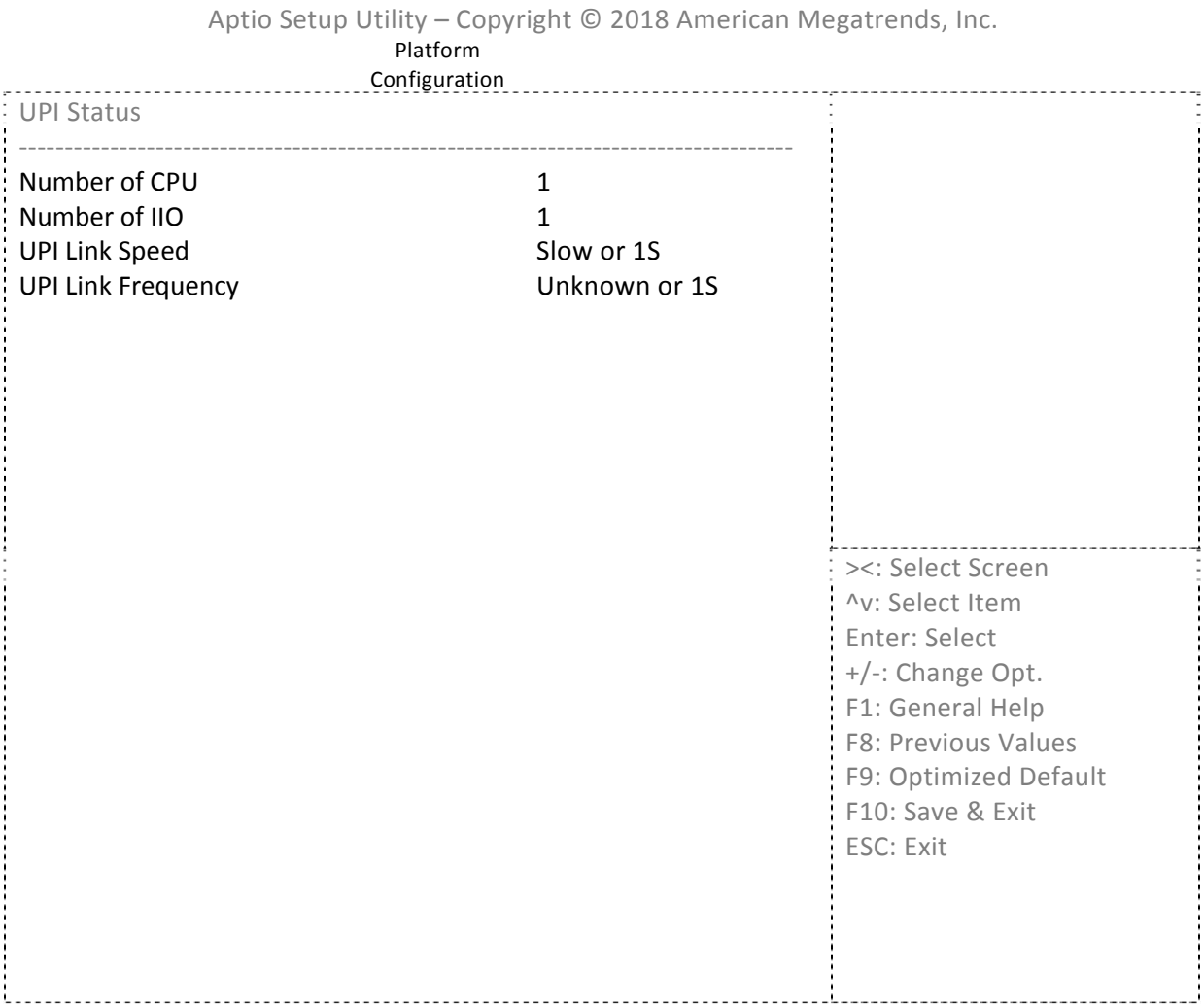
BIOS Item	Options	Description
UPI Configuration	**Info-only**	
UPI Status	**Sub-Menu**	To show the current UPI status includes number of CPU, IIO and UPI link speed and frequency.
Link Speed Mode	Slow **Fast**	For configure UPI link speed. UPI speed mode should be 'Slow' when there only has one processor installed because UPI is not functional. Set 'Slow' for multi-processor only when it wants UPI to run at the boot speed of 50 MT/s.
Link Frequency Select	9.6GT/s 10.4GT/s **Auto** Use Per Link Setting	For selecting UPI link frequency. When there is only one processor, setting of this item will not be functional and status of link frequency will be unknown or 1S configuration.
KTI Prefetch	Disable **Enable**	It is for enabling/disabling KTI prefetch function.
Stale AtoS	**Disable**	The in-memory directory has three

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BIOS Item	Options	Description
	Enable Auto	states: invalid (I), snoopAll (A), and Shared (S). The snoopAll (A) means the data may exist in another socket or modified state. Shared (S) state means the data may be shared across one or more socket's caches. When reading memory and directory line is in the A state, we must snoop all the other sockets because another socket may have the line in modified state. If this is the case, the snoop will return the modified data. However, it may be the case that all snoops come back a miss if another socket read the line earlier and then dropped it from its cache without modifying it. **Disable** – allows processing memory directory states as described above. **Enable** – where a line in A state returns only snoop misses, the line will be transition to S state. Subsequent reads to the line will encounter it in S state and not have to snoop, saving latency and snoop bandwidth.
LLC dead line alloc	Disable **Enable** Auto	In CPU cache scheme, mid-level cache (MLC) evictions are filled into last-level case (LLC). When lines are evicted from MLC, core can flag them as "dead". This means that lines are not likely to be read again. This option allows dropping dead line and never fills them into LLC if the option is disabled. When it is enabled, the LLC can opportunistically fill dead lines into LLC if space is available.

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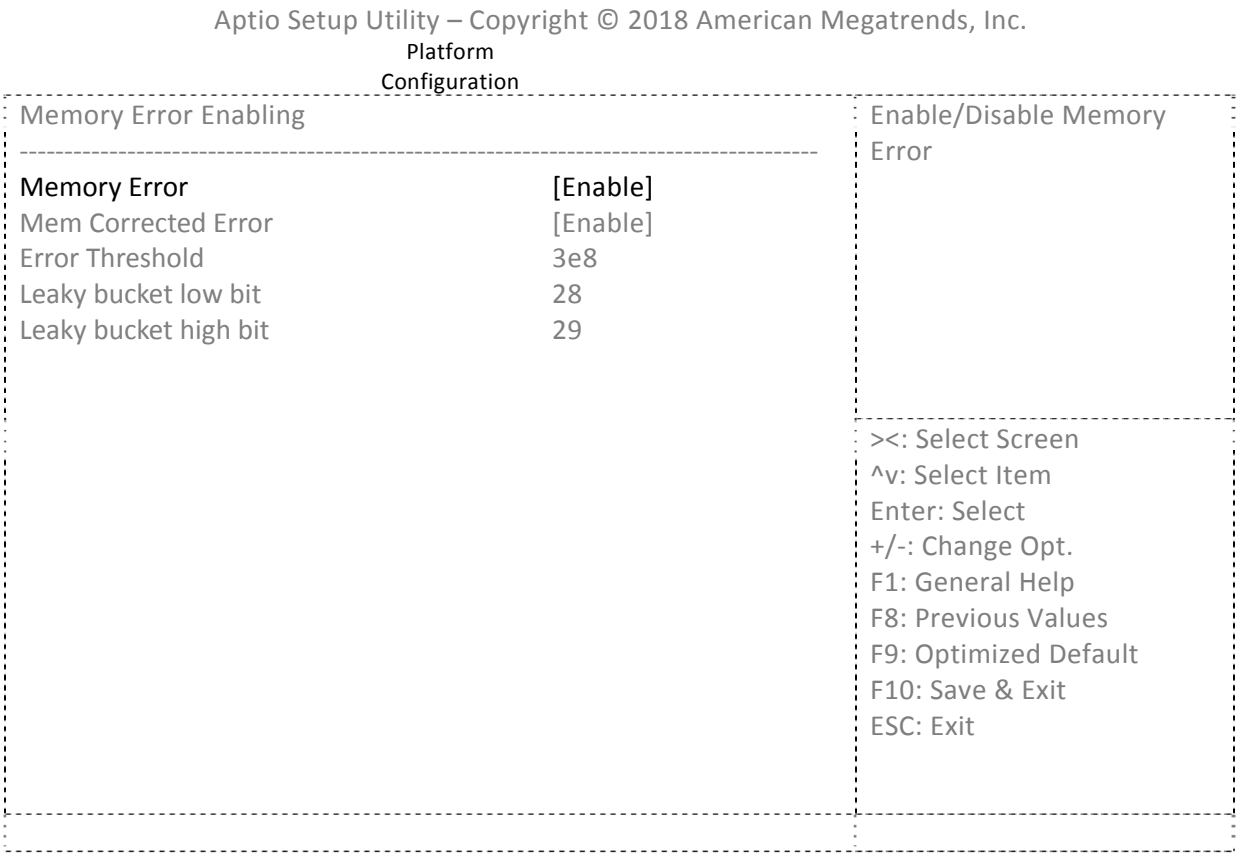
5.4.5 Sub-Menu: UPI Status



BIOS Item	Options	Description
UPI Status	**Info-only**	
Number of CPU	**Info-only**	Shows how many CPUs are using on system.
Number of IIO	**Info-only**	Shows how many IIOs are using on system.
UPI Link Speed	**Info-only**	Shows current UPI speed (fast/slow).
UPI Link Frequency	**Info-only**	Shows current UPI link frequency (9.6 GT/s or 10.4 GT/s).

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5.4.6 Sub-Menu: Memory Error Enabling

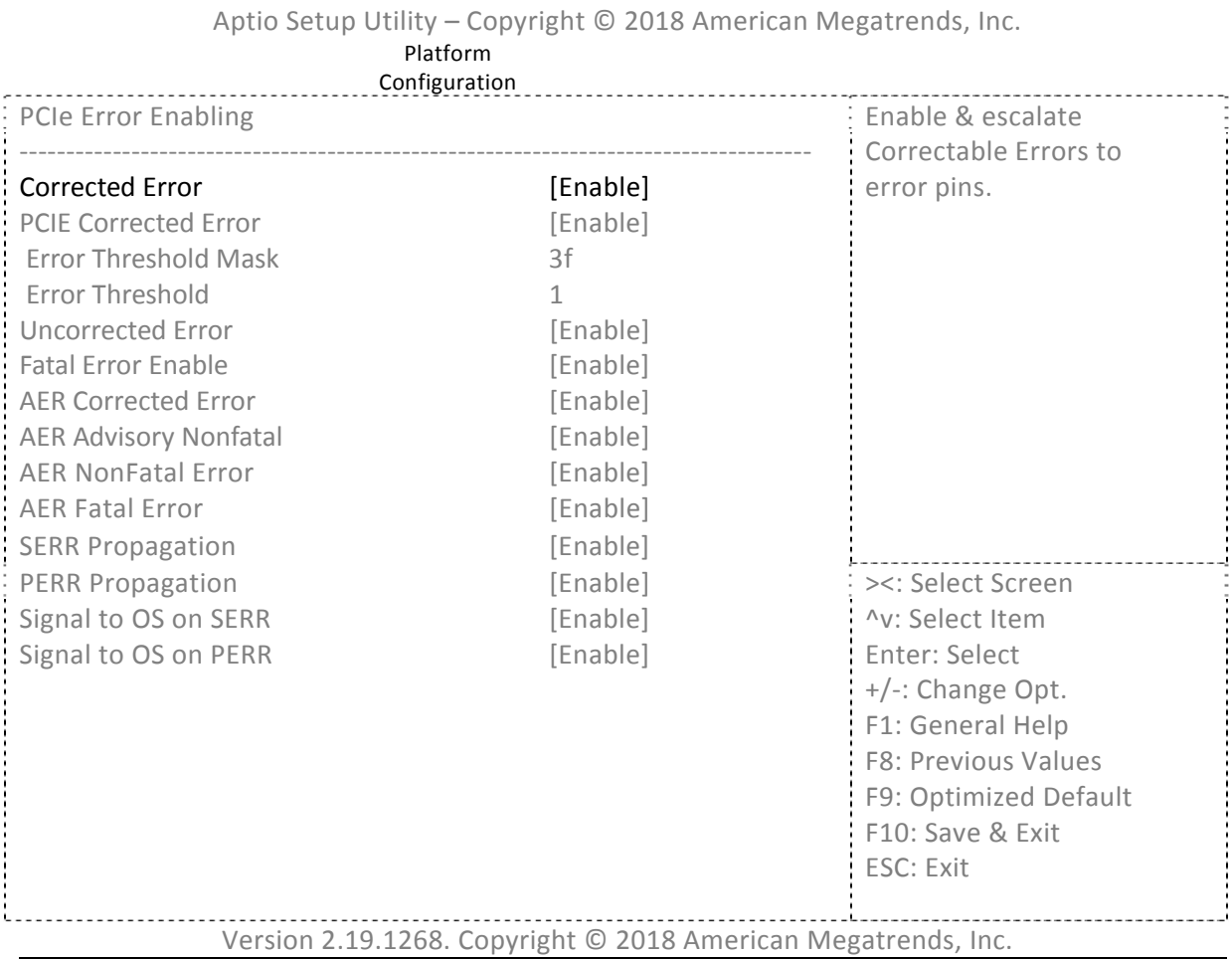


BIOS Item	Options	Description
Memory Error Enabling	**Info-only**	
Memory Error	**Disable** Enable	This is used to enable/disable memory error handling.
Mem Corrected Error	Disable **Enable**	This is used to enable/disable memory correctable error handling.
Error Threshold	**1000**	Rank sparing enables a failing rank to be replaced by an unused spare rank installed on the same DDR channel. The failure prediction is done via **corrected error threshold** and a **leaky bucket**, both of which are programmable to allow the platform to "judge" when the right time is to spare a failing rank. The value set in this item will be set to correctable error threshold used for error handling.
Leaky bucket low bit	**40**	Value range: 1 – 41 It is to set low bit for the leaky bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller.
Leaky bucket high bit	**41**	Value range: 1 – 41

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BIOS Item	Options	Description
		It is to set high bit for the leaky bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller.

5.4.7 Sub-Menu: PCIe Error Enabling



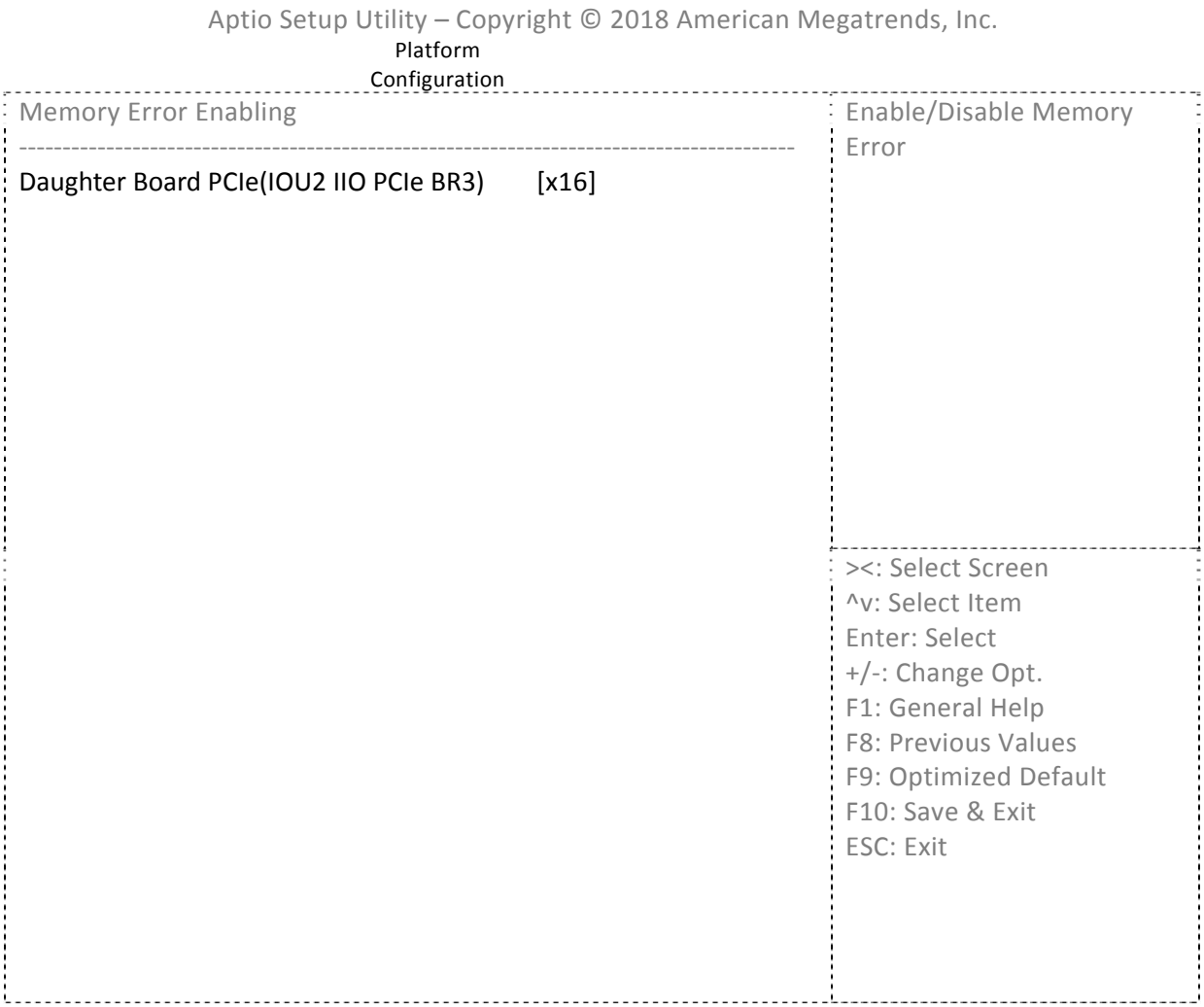
BIOS Item	Options	Description
PCIe Error Enabling	**Info-only**	
Corrected Error	Disable **Enable**	It is used to enable/disable PCIe correctable error monitoring and handling.
PCIE Corrected Error	Disable **Enable**	It is used to enable/disable PCIe correctable error counter.
Error Threshold Mask	**0x3F**	This is for setting what errors will be included in error count. (Bit 0 – Bit 5) Bit 0 – receiver error Bit 1 – Bad TLP Bit 2 – Bad DLLP Bit 3 – replay num rollover Bit 4 – Replay Timer Timeout Bit 5 – Advisory non-fatal
Error Threshold	**1**	It is for setting the threshold of PCIe correctable error counter.
Uncorrected Error	Disable	It is for enabling/disabling the

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BIOS Item	Options	Description
	Enable	escalation of uncorrectable event to error pins.
Fatal Error Enable	Disable **Enable**	It is for enabling/disable the escalation of PCIe fatal errors to error pins.
AER Corrected Error	Disable **Enable**	For enabling or disabling PCIE AER correctable error reporting.
AER Advisory Nonfatal	Disable **Enable**	For enabling or disabling PCIE AER Advisory Non-fatal error reporting.
AER NonFatal Error	Disable **Enable**	For enabling or disabling PCIE AER Non-fatal error reporting.
AER Fatal Error	Disable **Enable**	For enabling or disabling PCIE AER fatal error reporting.
SERR Propagation	Disable **Enable**	When PCI express root port detects an error, it will bring down the PCIe link associated with the affected root port within one cycle and then SMM handler restores the link. PCIe LER (live error recovery) prevents the transfer of associated corrupt data during process, trapping errors at a root port to prevent their propagation. This option is to enable/disable the prevention of SERR propagation.
PERR Propagation	Disable **Enable**	This option is to enable/disable the prevention of PERR propagation.
Signal to OS on SERR	Disable **Enable**	It is used for notifying OS on receiving SERR event.
Signal to OS on PERR	Disable **Enable**	It is used for notifying OS on receiving PERR event.

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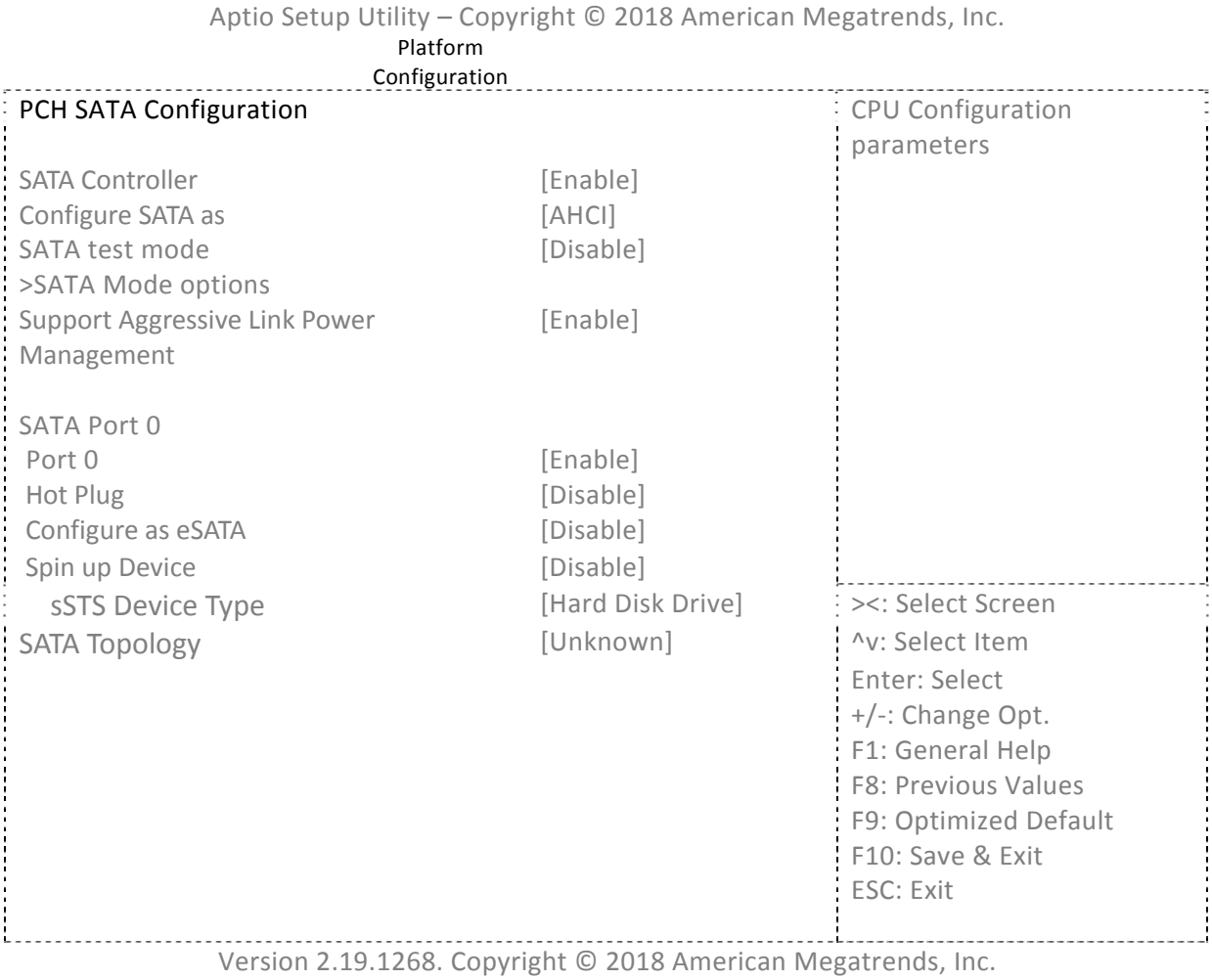
5.4.8 Sub-Menu: Socket 0/1 Configuration



BIOS Item	Options	Description
Daughter Board PCIe(IOU2 IIO PCIe BR3)	**X16** X8	Selects PCIe port Bifurcation for selected slot(s)

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5.4.9 Sub-Menu: PCH SATA Configuration

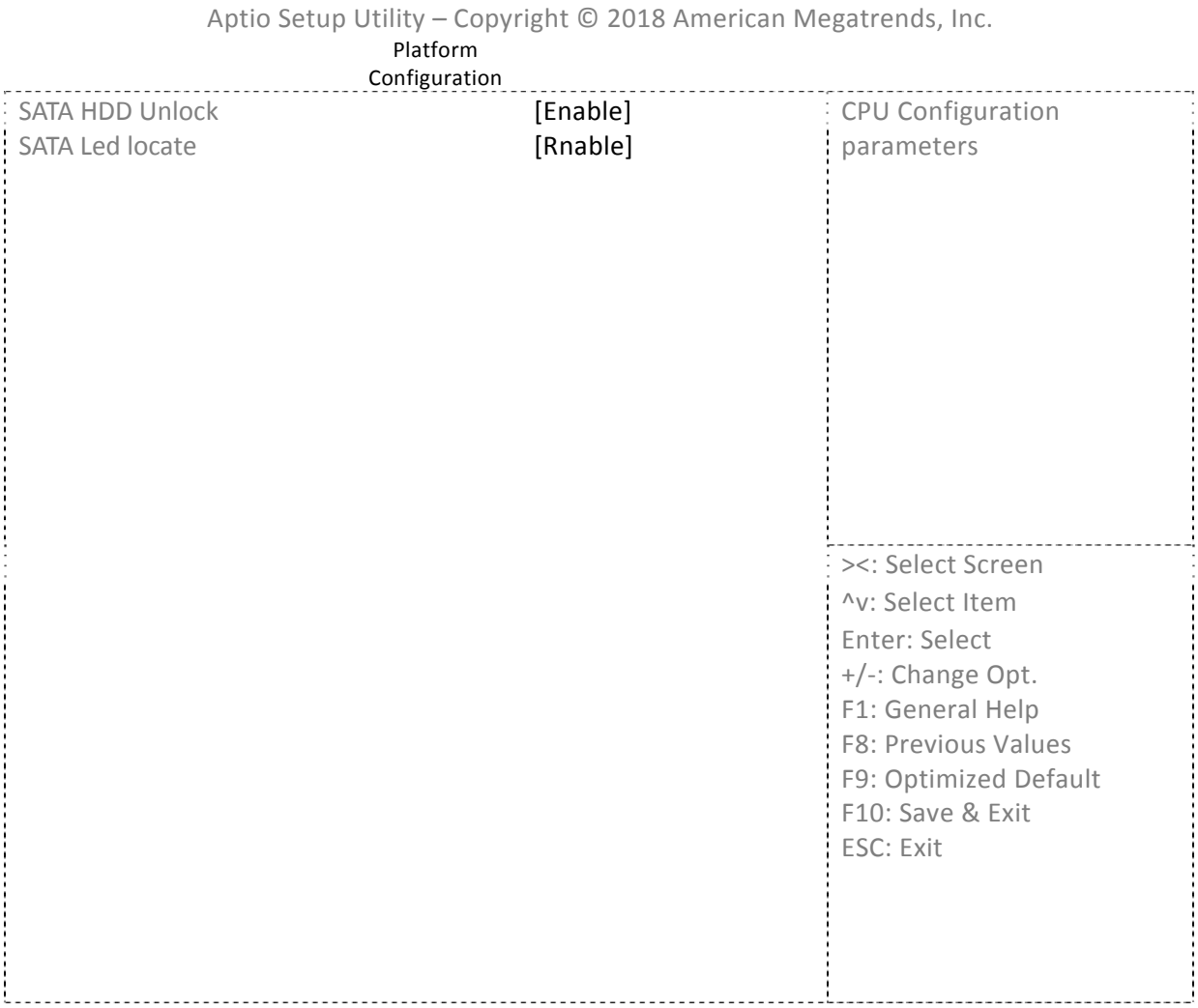


BIOS Item	Options	Description
SATA Controller	**Disable** Enable	For controlling SATA controller's enabling/disabling.
Configure SATA as	**AHCI** **RAID**	For SATA operating mode setting.
SATA test mode	**Disable** Enable	Enable/Disable SATA test mode
SATA Mode option	**Sub-Menu**	SATA mode related option
Support Aggressive Link Power Management	Disable **Enable**	Enables/Disables SALP
Port 0	**Disable** **Enable**	Enable or Disable SATA Port
Hot Plug	**Disable** Enable	Designates this port as Hot Pluggable
Configure as eSATA	**Disable** Enable	Configures port as External SATA (eSATA)
Spin up Device	**Disable** Enable	If enabled for any of ports Staggerred Spin Up will be performed and only the drives witch have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

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BIOS Item	Options	Description
SATA Device Type	**Hard Disk Drive** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Topology	**Unknown** **I**SATA Direct Connect Flex M2	Identify the Secondary SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2

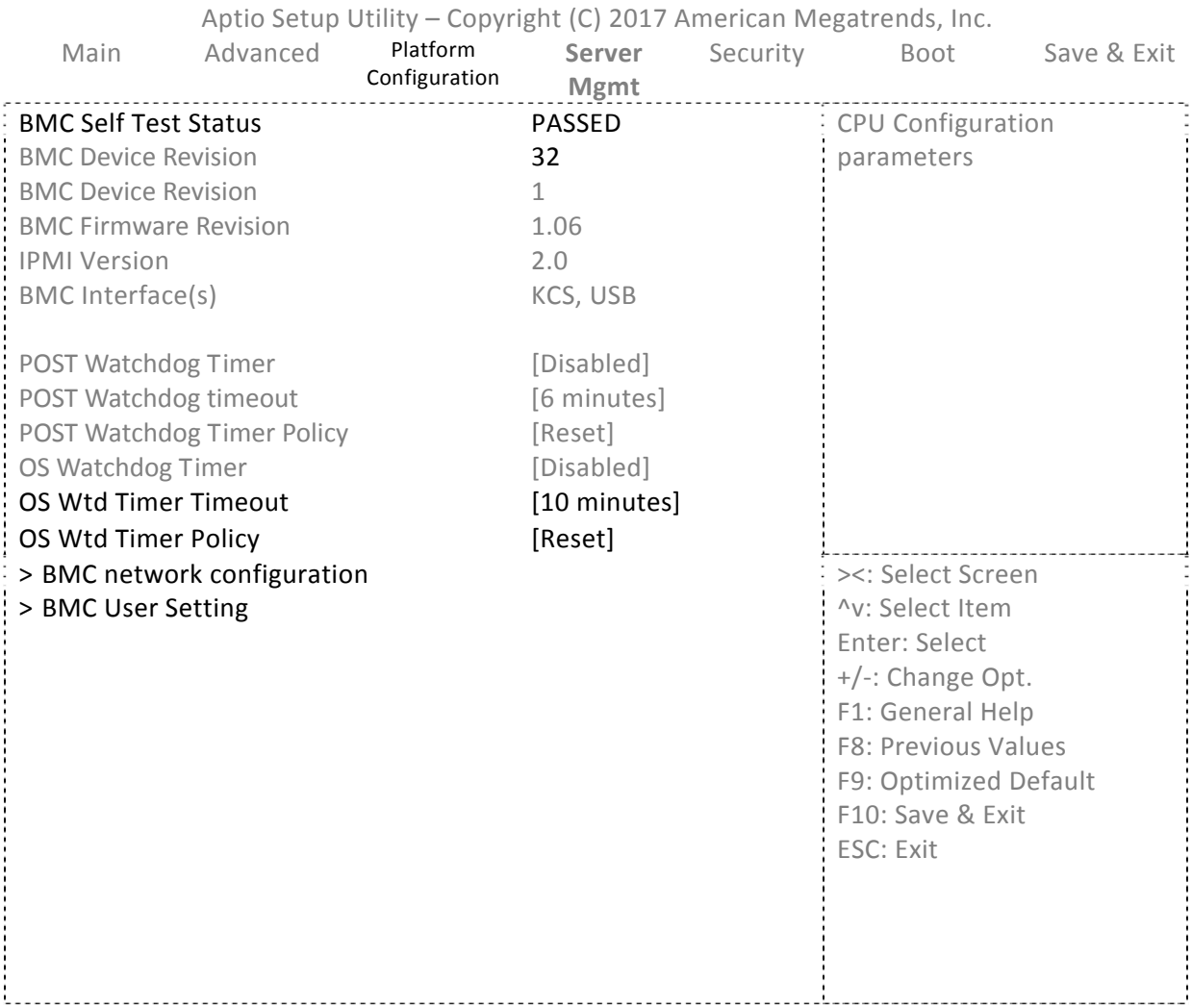
5.4.10 Sub-Menu: SATA Mode options



BIOS Item	Options	Description
SATA HDD Unlock	Disable **Enable**	Enable: HDD password unlock is enabled in the OS
SATA Led locate	Disable **Enable**	If enabled LED/SGPIO hardware is attached

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5.5 Server Mgmt Menu

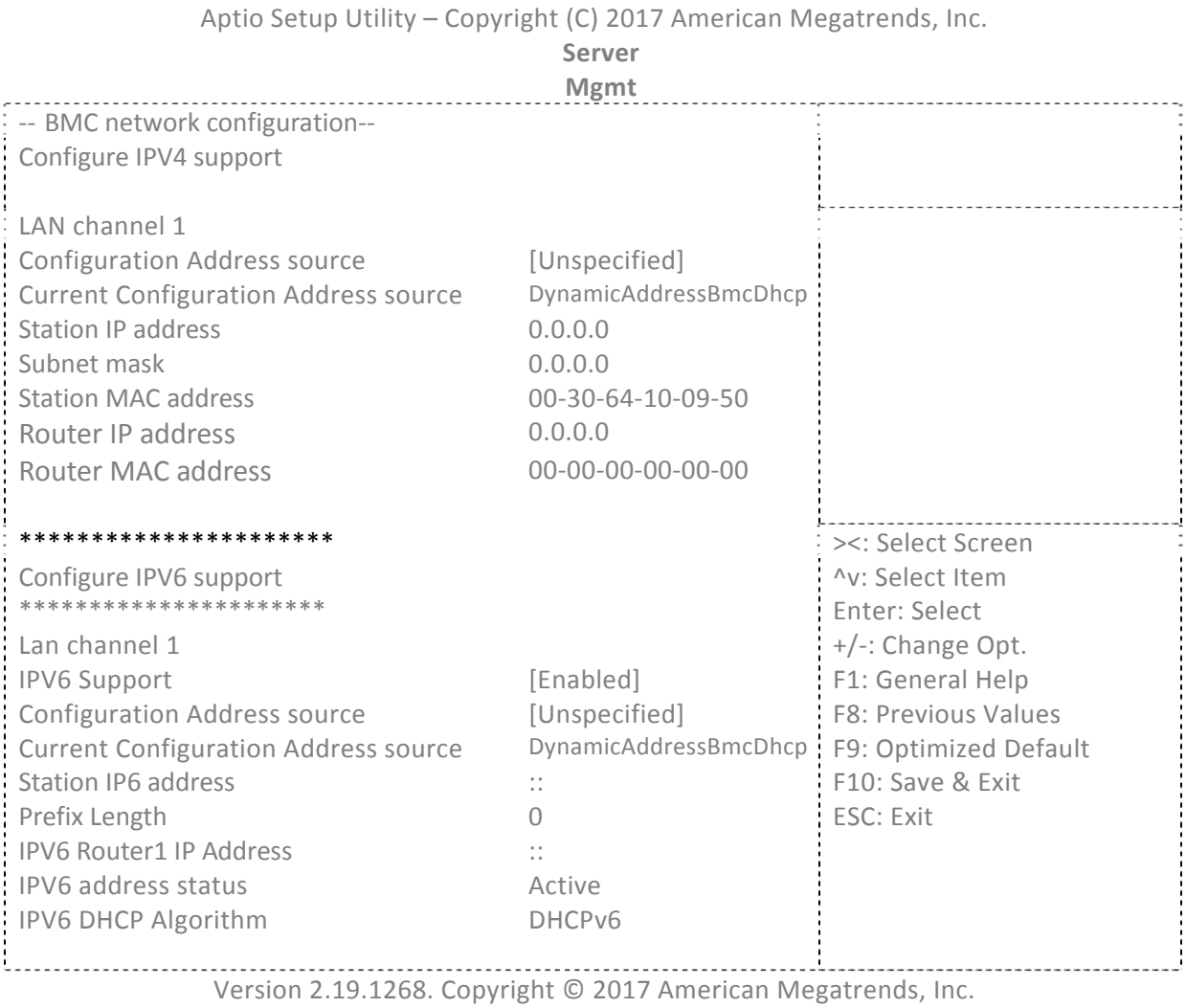


BIOS Item	Options	Description
BMC Self Test Status	**Info-only**	Shows BMC Self Test Status
BMC Device ID	**Info-only**	Shows BMC Device ID
BMC Device Revision	**Info-only**	Shows BMC Device Revision
BMC Firmware Revision	**Info-only**	Shows BMC Firmware Revision
IPMI Version	**Info-only**	Shows IPMI Version
BMC Interface(s)	**Info-only**	Shows BMC Interface(s)
POST Watchdog Timer	**Disable** Enable	Enable or Disable POST Watchdog Timer(FRB-2 timer)
POST Watchdog timeout	3 minutes 4 minutes 5 minutes **6 minutes**	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value
POST Watchdog Timer Policy	Do Nothing **Reset**	Configure how the system should respond if the POST Watchdog Timer(FRB-2 Timer) expires. Not available if (FRB-2 Timer) is disabled.
OS Watchdog Timer	**Disable** Enable	If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps

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BIOS Item	Options	Description
		determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.
OS Wtd Timer Timeout	5 minutes **10 minutes** 15 minutes 20 minutes	Configure the length of the OS Boot Watchdog Timer. Not available if OS Boot Watchdog Timer is disabled."
OS Wtd Timer Policy	Do Nothing **Reset**	Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog Timer is disabled
BMC network configuration	**Sub-Menu**	Configure BMC network parameters
BMC User Setting	**Sub-Menu**	Press <Enter> to Add, Delete and Set Privilege level for users

5.5.1 Sub-Menu: BMC Network Configuration



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BIOS Item	Options	Description
Configuration Address source	**Unspecified** Static DynamicBmcDhcp DynamicBmcNonDhcp	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
IPV6 Support	Disable **Enable**	Enable or Disable LAN1 IPV6 Support

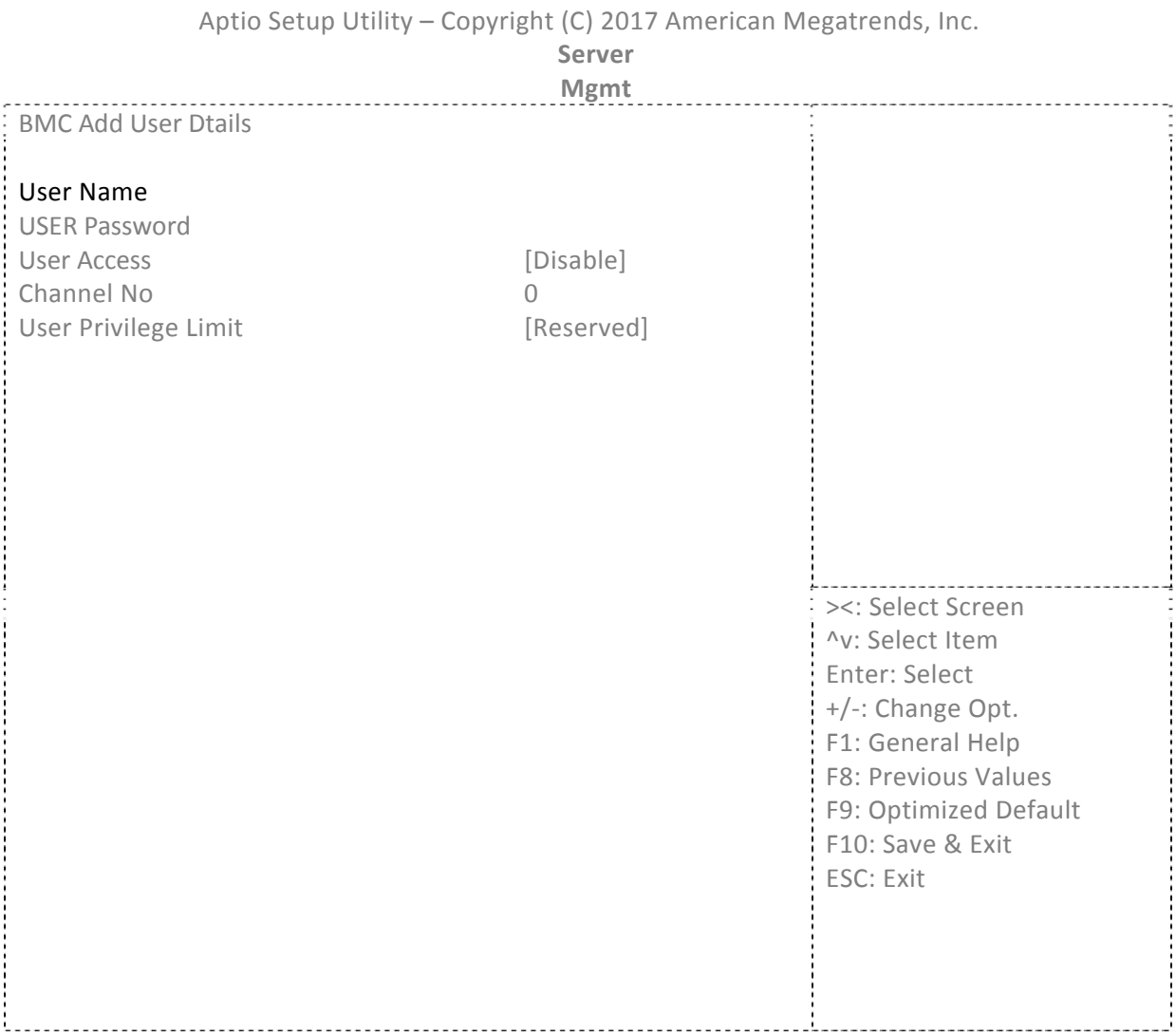
5.5.2 Sub-Menu: BMC User Setting



BIOS Item	Options	Description
Add User	**Sub-Menu**	Press <Enter> to Add a User
Delete user	**Sub-Menu**	Press <Enter> to Delete a User
Change User Setting	**Sub-Menu**	Press <Enter> to Change User Settings

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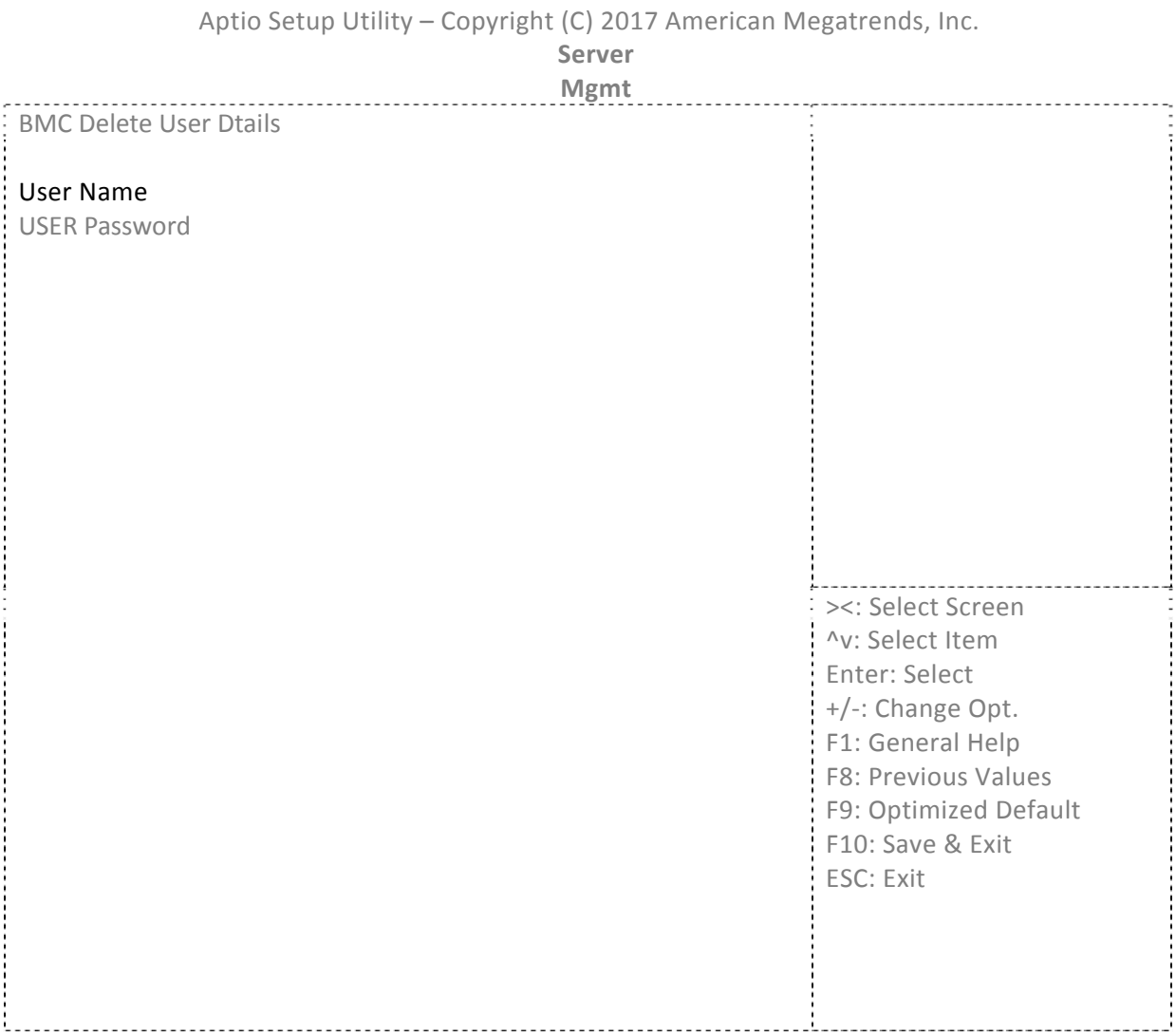
5.5.3 Sub-Menu: Add User



BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password
User Access	**Disable** Enable	Enable/Disable the BMC User's Access
Channel No	**0**~15	Enter BMC Channel Number
User Privilege Limit	**Reserved** Callback User Operator Administrator OEM Proprietary No Access	Enter BMC User Privilege Limit for Selected Channel

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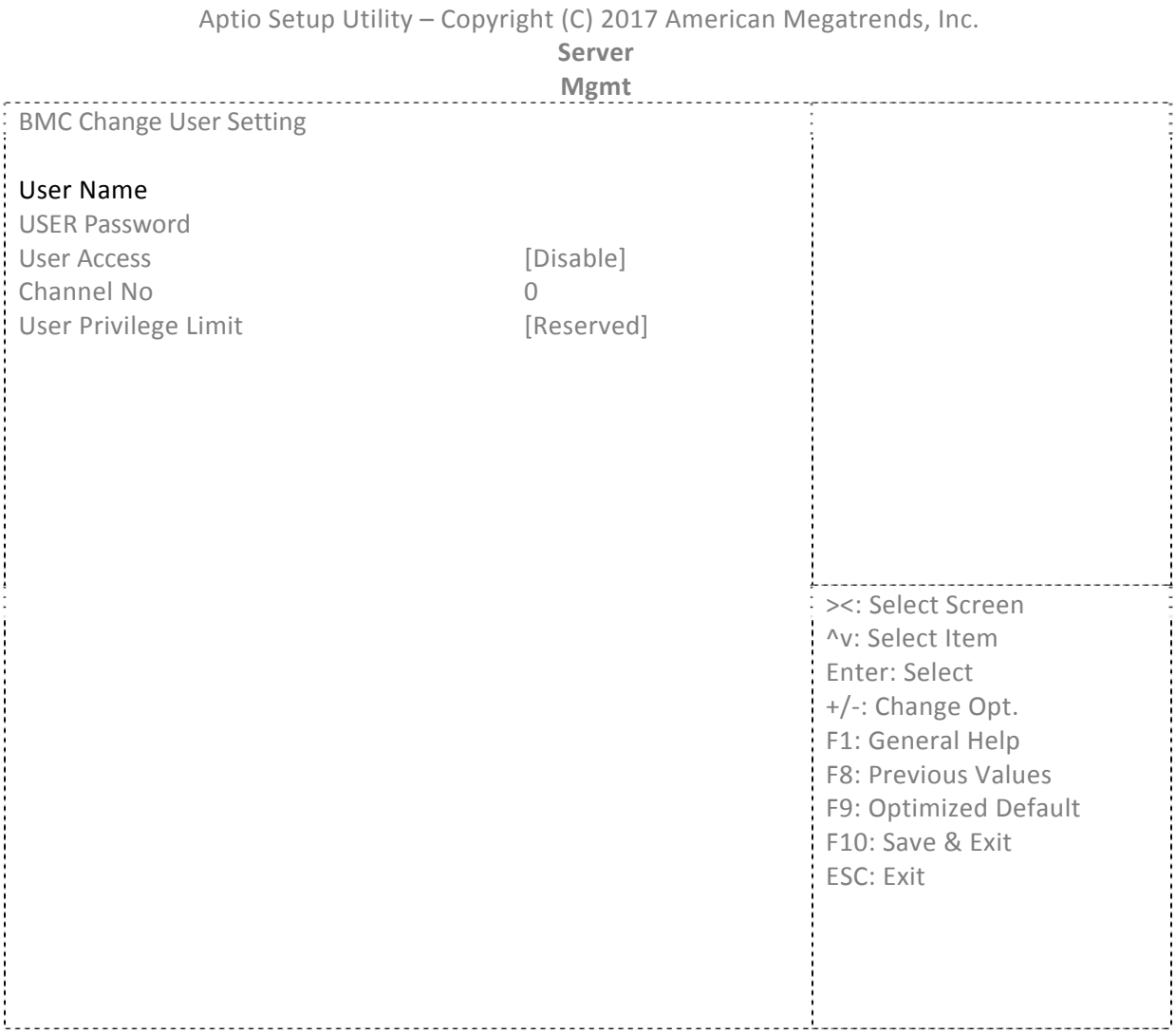
5.5.4 Sub-Menu: Delete User



BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password

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5.5.5 Sub-Menu: Change User Setting

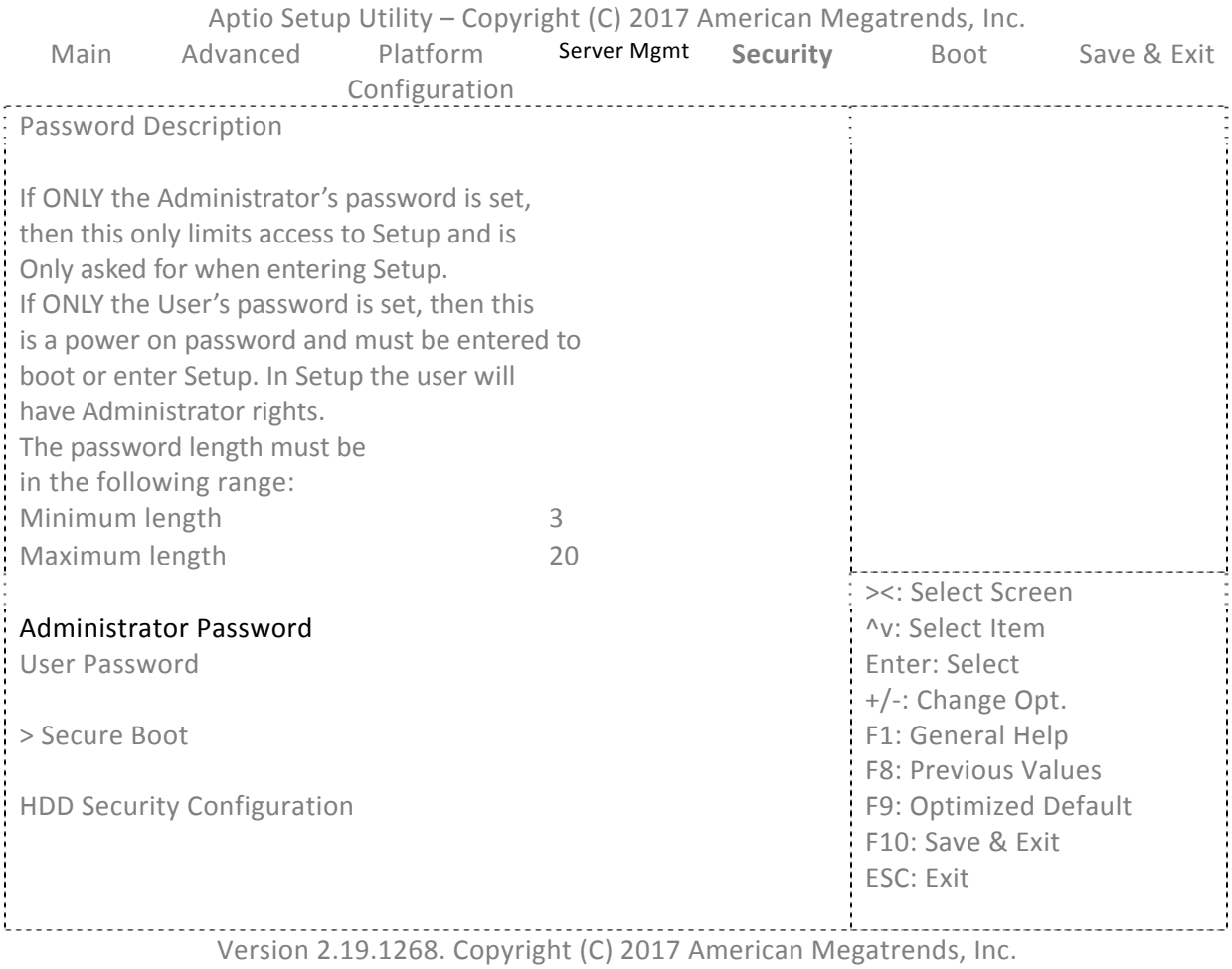


BIOS Item	Options	Description
User Name	**Enter to set user name**	Enter BMC User Name
User Password	**Enter to set password**	Enter BMC User Password
User Access	**Disable** Enable	Enable/Disable the BMC User's Access
Channel No	**0**~15	Enter BMC Channel Number
User Privilege Limit	**Reserved** Callback User Operator Administrator OEM Proprietary No Access	Enter BMC User Privilege Limit for Selected Channel

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5.6 Security Menu

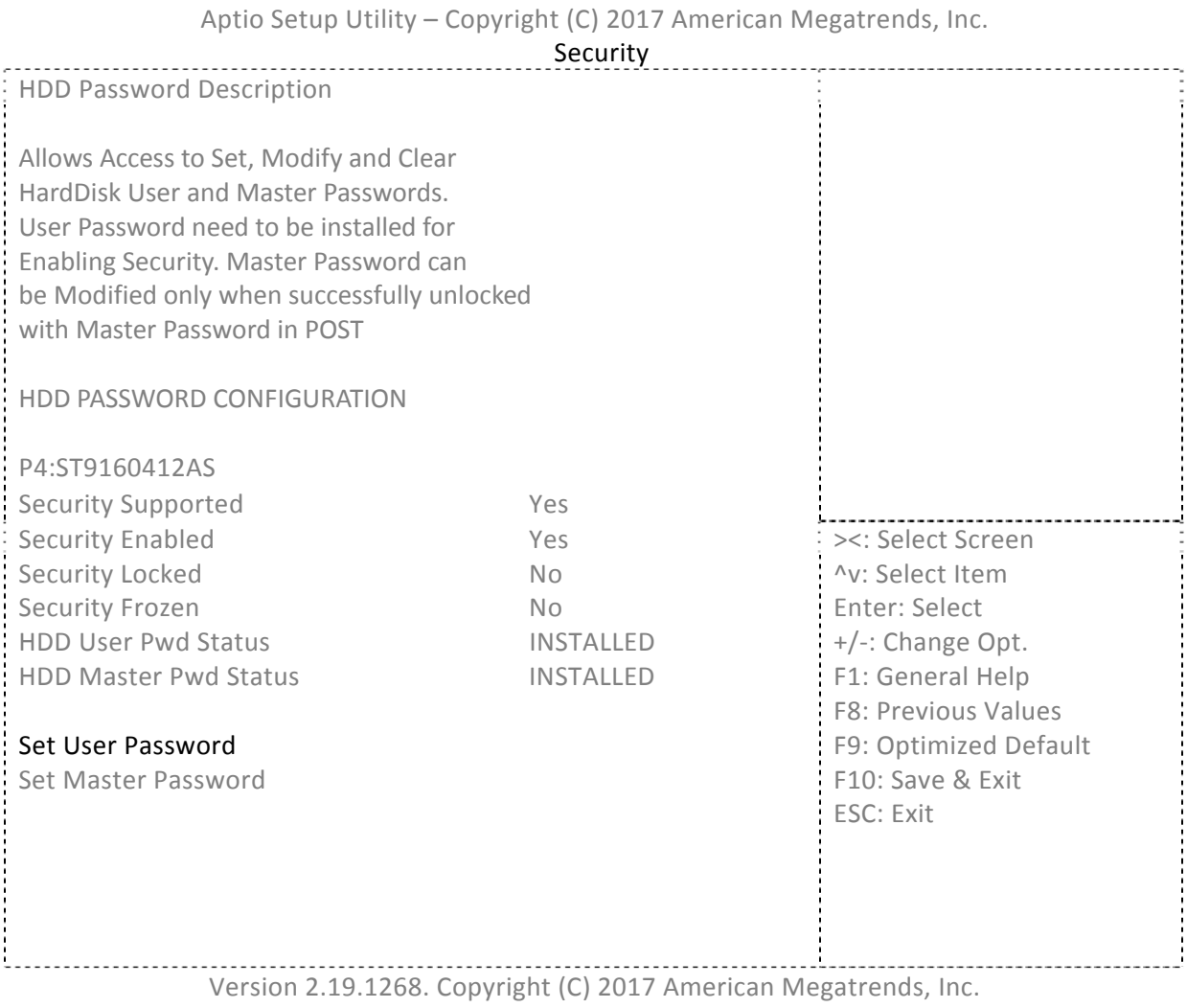
This menu contains the settings for system security.



BIOS Item	Options	Description
Administrator Password	**Enter to set password**	Configure/Clear Administrator Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
User Password	**Enter to set password**	Configure/Clear User Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
Secure Boot	**Sub-Menu**	For secure boot configuration.
HDD Security Configuration	**Sub-Menu**	For HDD security, it will list all HDD detected on motherboard. Select the HDD and then press enter can figure/clear HDD password.

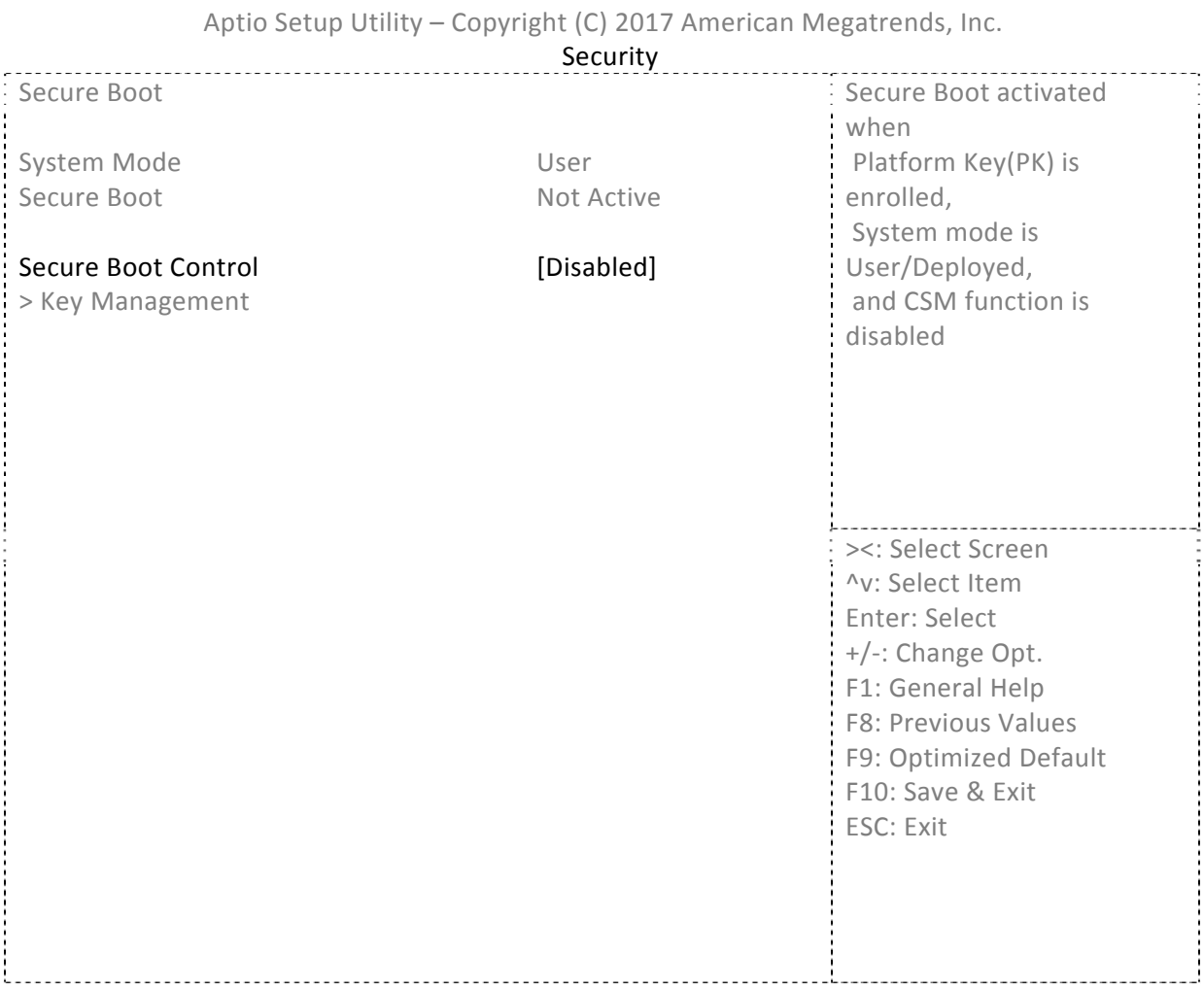
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When selecting a HDD to configure passwords, BIOS will enter another setup page as below. The method of configuring HDD password is the same as that for BIOS passwords. Once a password is set, it will reflect the status on the screen, such as 'HDD User Pwd Status' changed to 'INSTALLED'. When there is no HDD user password installed, you can change the master password without confirming the latest installed password. Once the HDD user password is installed, the HDD master password cannot be changed.



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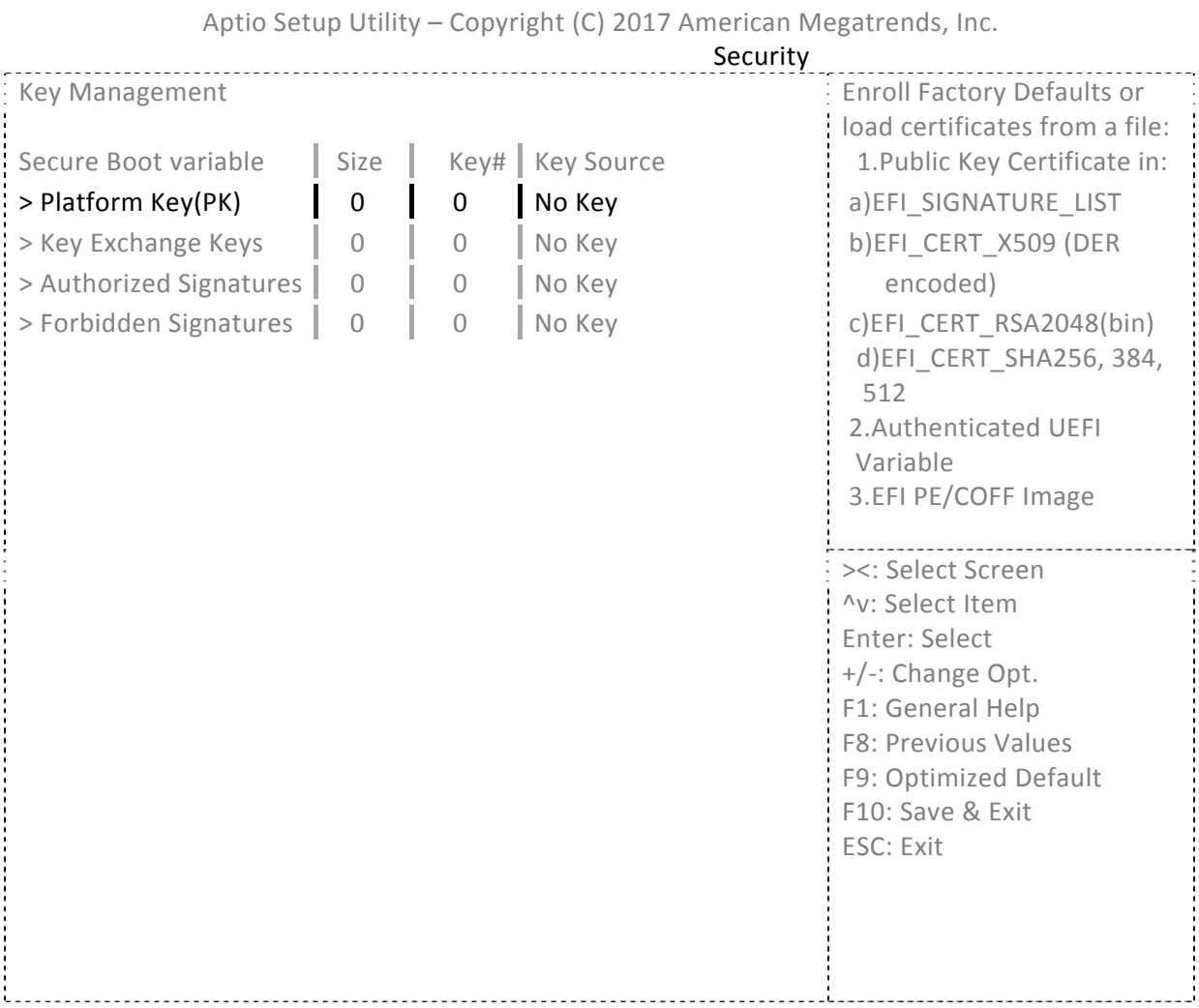
5.6.1 Sub-Menu: Secure Boot



BIOS Item	Options	Description
Secure Boot	**Info-only**	
System Mode	**Info-only**	Showing current system mode.
Secure Boot	**Info-only**	Showing current state of secure boot function.
Secure Boot Control	**Disabled** Enabled	Secure Boot can be enabled if: 1. System running in User mode with enrolled Platform Key (PK) 2. CSM function is disabled.
Key Management	**Sub-Menu**	For installing/appending/erasing secure boot databases and keys.

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5.6.2 Sub-Menu: Key Management

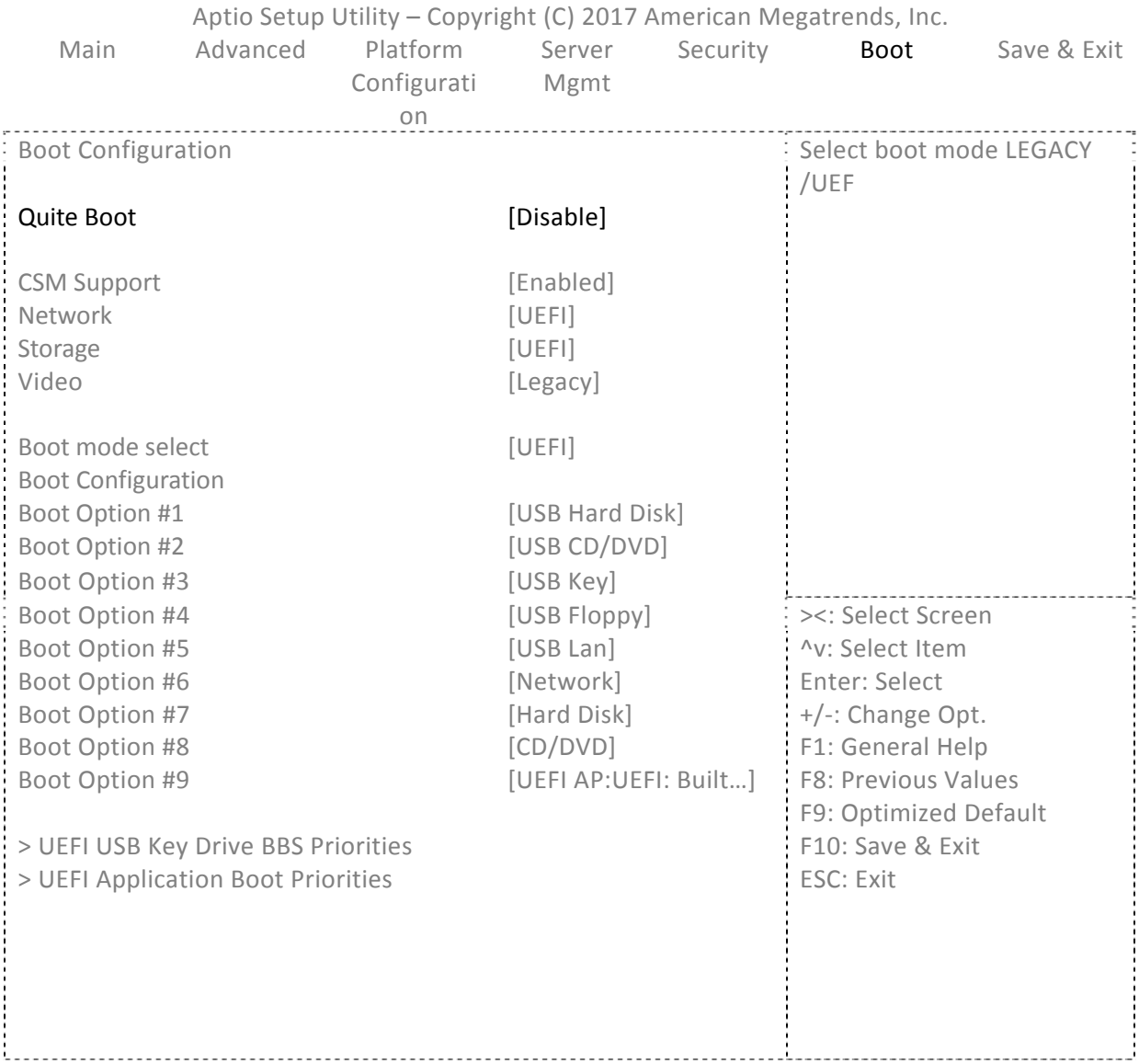


BIOS Item	Options	Description
Platform Key(PK)	**Enter**	For installing/saving/erasing PK.
Key Exchange Keys	**Enter**	For installing/saving/appending/erasing KEK.
Authorized Signatures	**Enter**	For installing/saving/appending/erasing db.
Forbidden Signatures	**Enter**	For installing/saving/appending/erasing dbx.

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5.7 Boot Menu

This menu contains the settings for bootable devices in the system.



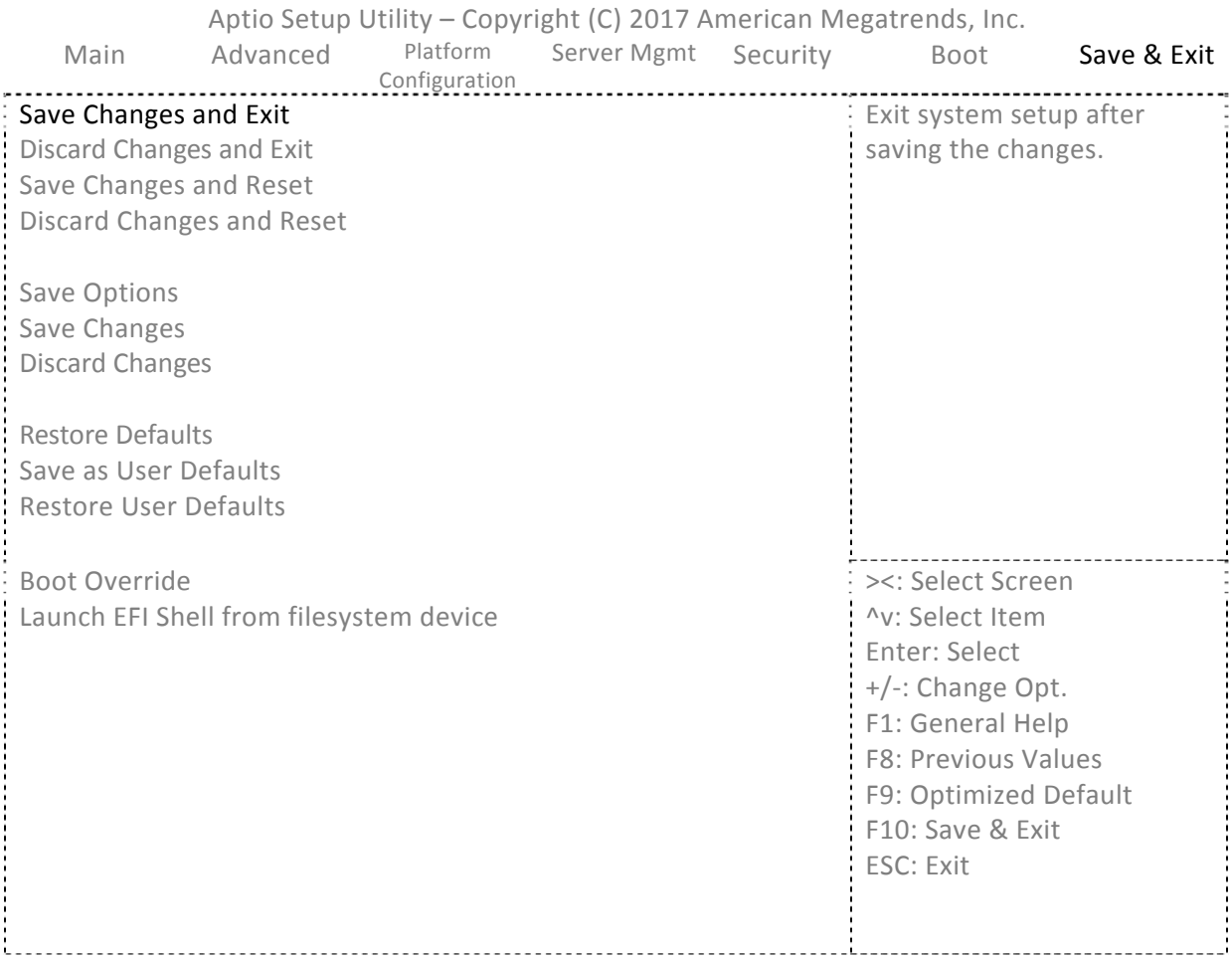
BIOS Item	Options	Description
Quite Boot	**Disabled** Enabled	Enables or Disables Quiet Boot option.
CSM Support	Disabled **Enabled**	Enable to support operating system that only support legacy mode.
Network	Do not launch **UEFI** Legacy	Select the method of launch option ROM of network controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.
Storage	Do not launch **UEFI** Legacy	Select the method of launch option ROM of storage controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.

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BIOS Item	Options	Description
Video	Do not launch UEFI **Legacy**	Select the method of launch option ROM of graphic controller. **UEFI** will execute EFI driver and **legacy** will search option ROM of device to hook.
Boot mode select	LEGACY UEFI	Select boot mode, LEGACY/UEFI.
Boot Option #1 ~ #9	#1: USB Hard Disk #2: USB CD/DVD #3: USB Key #4: USB Floppy #5: USB Lan #6: Network #7: Hard Disk #8: CD/DVD #9: Built-in EFI Shell	For boot priority setting.
XXXX Drive BBS Priorities	**Sub-Menu**	When the bootable device is attached to system and found by BIOS, it will be listed at boot option #. If there are many devices with the same device type found, it can set priority among these devices through this sub-menu.

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5.8 Save & Exit Menu



BIOS Item	Options	Description
Save Changes and Exit	**Enter**	Save changed settings and exit BIOS setup utility.
Discard Changes and Exit	**Enter**	Skip changed setting and exit BIOS setup utility.
Save Changes and Reset	**Enter**	Save all changed settings and let system do reset to boot system.
Discard Changes and Reset	**Enter**	Discard all changed settings and let system do reset to boot system.
Save Changes	**Enter**	Save all changed settings.
Discard Changes	**Enter**	Discard changes done so far to any of the setup options.
Restore Default	**Enter**	Load the default made when BIOS was built.
Save as User Default	**Enter**	Save all changed done so far as User Defaults.
Restore User Default	**Enter**	Load the default that user save as user defaults.
Boot Override	**Info-only**	

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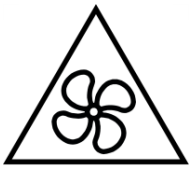
Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

1. Read these safety instructions carefully.
2. Keep this user's manual for future reference.
3. Read the specifications section of this manual for detailed information on the operating environment of this equipment.
4. The equipment can be operated at an ambient temperature of 55°C.
5. When installing/mounting or uninstalling/removing equipment; or when removal of the chassis lid required for user servicing (Section 3.1-3.5):
   - Turn off power and unplug any power cords/cables, and
   - Reinstall the chassis lid before restoring power.



Hazardous moving parts. Keep body parts out of the motion path.



6. To avoid electrical shock and/or damage to equipment:
   - Keep equipment away from water or liquid sources;
   - Keep equipment away from high heat or high humidity;
   - Keep equipment properly ventilated (do not block or cover ventilation openings);
   - Make sure to use recommended voltage and power source settings;
   - Always install and operate equipment near an easily accessible electrical socket-outlet;
   - Secure the power cord (do not place any object on/over the power cord);
   - Only install/attach and operate equipment on stable surfaces and/or recommended mountings;
   - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
   - The power cord must be connected to a socket or outlet with a ground connection.
7. Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
8. An RTC battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Discard used batteries according to the manufacturer's instructions.

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9. This equipment is not suitable for use in locations where children are likely to be present.
10. Equipment must be serviced by authorized technicians when:
    - The power cord or plug is damaged;
    - Liquid has penetrated the equipment;
    - It has been exposed to high humidity/moisture;
    - It is not functioning or does not function according to the user's manual;
    - It has been dropped and/or damaged; and/or,
    - It has an obvious sign of breakage.
11. Please pay strict attention to all warnings and advisories appearing on the device, to avoid injury or damage.
12. The equipment may have more than one power supply input. To reduce the risk of electrical shock, trained personnel should disconnect all power supply inputs before servicing.



Shock hazard! Disconnect all power supply inputs before servicing.



Shock hazard!
Risque d'électrocution!



Multiple power sources
Sources d'alimentation multiples

13. It is recommended that equipment be installed only in a server room or computer room where access is:
    - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required;
    - Only afforded by the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
14. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
15. The DC power supply should be well-grounded to ensure safe operation and use the DC power cables shipped with MECS-7211or use a protective earthing conductor of minimum 14 AWG and having green-and-yellow insulation. The ground wire should be installed first (before "+" and "-").

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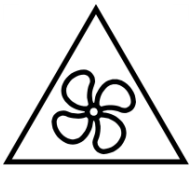
Consignes de Sécurité Importantes

*Pour assurer la sécurité de l'utilisateur, veuillez lire et suivre toutes les **directives**, ainsi que les **AVERTISSEMENTS**, **MISES EN GARDE** et **REMARQUES** de ce manuel et indiqués sur l'équipement associé avant de manipuler ou utiliser l'équipement.*

1. *Veuillez lire attentivement ces instructions de sécurité avec soin.*
2. *Veuillez conserver ce manuel pour référence future.*
3. *Veuillez lire la section des spécifications de ce manuel pour avoir des informations détaillées sur l'environnement d'exploitation de cet équipement.*
4. *L'équipement peut être utilisé à une température ambiante de 55°C.*
5. *Lors de l'installation ou du montage et de la désinstallation ou de la dépose de l'équipement; ou lors de la dépose du couvercle du châssis pour procéder à l'entretien par l'utilisateur (Sections 3.1-3.5):*
   - *Coupez l'alimentation et débranchez les cordons et les câbles d'alimentation, et*
   - *Reposez le couvercle du châssis avant de remettre l'alimentation.*



***Pièces mobiles dangereuses.** Gardez les parties du corps hors de la trajectoire.*



6. *Pour éviter un risque d'électrocution et pour éviter d'endommager l'équipement :*
   - *Éloignez l'équipement de l'eau et de toute source liquide;*
   - *Éloignez l'équipement de toute source de chaleur ou d'humidité élevée;*
   - *Gardez l'équipement correctement ventilé (ne pas bloquer ou couvrir les ouvertures de ventilation);*
   - *Veillez à utiliser la tension recommandée et les réglages adéquats pour la source d'alimentation;*
   - *Veuillez toujours installer et exploiter l'équipement à proximité d'une prise de courant facilement accessible;*
   - *Assurez-vous que le cordon d'alimentation est acheminé de manière sécuritaire (ne déposez aucun objet dessus);*
   - *Installez, fixez et utilisez l'équipement sur des surfaces stables ou sur les fixations recommandées uniquement;*
   - *Si l'équipement n'est pas utilisé pendant une longue période, éteignez-le et débranchez-le de sa source d'alimentation.*
   - *Le cordon d'alimentation doit être connecté à une prise ou à une prise de courant avec mise à la terre.*
7. *N'essayez jamais de réparer l'équipement. L'équipement ne doit être réparé que par du personnel qualifié.*

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8. *Une pile au lithium peut être installée pour assurer l'alimentation de secours ou d'urgence en continu.*



mise en garde

***Risque d'explosio**n si la batterie est remplacée par une batterie d'un type incorrect. Jetez les piles usagées conformément aux instructions du fabricant.*

9. *Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.*
10. *L'équipement doit être entretenu par des techniciens agréés lorsque :*
    - *le cordon d'alimentation est endommagé ou lorsque la fiche électrique est endommagée;*
    - *du liquide a pénétré à l'intérieur de l'équipement;*
    - *l'équipement a été exposé à un taux d'humidité élevé;*
    - *l'équipement ne fonctionne pas ou ne fonctionne pas conformément au manuel de l'utilisateur;*
    - *l'équipement est tombé ou lorsqu'il a été endommagé;*
    - *l'équipement présente un signe évident de défaillance.*
11. *Veuillez porter une attention rigoureuse à tous les avertissements et à tous les avis figurant sur l'appareil, pour éviter des blessures ou des dommages.*
12. *L'équipement peut avoir plus d'une entrée d'alimentation. Pour réduire le risque d'électrocution, le personnel qualifié devrait déconnecter toutes les entrées d'alimentation avant de procéder à l'entretien.*



mise en garde

***Risque d'électrocution!** Débranchez toutes les entrées d'alimentation avant de procéder à l'entretien.*



Shock hazard!
Risque d'électrocution!



Multiple power sources
Sources d'alimentation multiples

13. *Il est recommandé que l'équipement soit installé que dans une salle de serveur ou de la salle informatique où:*
    - *L'accès est limité au personnel de maintenance qualifié ou utilisateurs familiers avec les restrictions appliquées à l'emplacement, motifs, et tout les précautions nécessaires, et;*
    - *L'accès est uniquement assurée par l'utilisation d'un outil ou clé, ou d'autres moyens de sécurité, et est contrôlé par l'autorité responsable de l'emplacement.*
14. *Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.*
15. *L'alimentation CC doit être bien mise à la terre pour assurer un fonctionnement sûr et utiliser les câbles d'alimentation CC livrés avec le MECS-7211 ou utiliser un conducteur de mise à la terre de protection d'au moins 14 AWG et ayant une isolation verte et jaune. Le fil de terre doit être installé en premier (avant "+" et "-").*

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