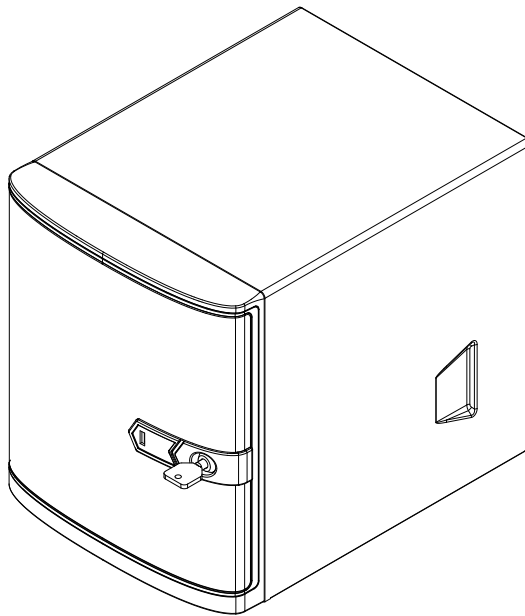




# SuperServer<sup>®</sup> 5029A-2TN4



USER'S MANUAL

Revision 1.0

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# Preface

## About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5029A-2TN4. Installation and maintenance should be performed by experienced technicians only.

Please refer to the 5029A-2TN4 server specifications page on our website for updates on supported memory, processors and operating systems (<http://www.supermicro.com>).

## Notes

For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety info: [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm)

If you have any questions, please contact our support team at:  
[support@supermicro.com](mailto:support@supermicro.com)

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

## Warnings

Special attention should be given to the following symbols used in this manual.



**Warning!** Indicates important information given to prevent equipment/property damage or personal injury.



**Warning!** Indicates high voltage may be encountered when performing a procedure.

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**Appendix A BIOS Codes****Appendix B Standardized Warning Statements for AC Systems****Appendix C System Specifications**

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# Chapter 1

## Introduction

### 1.1 Overview

The SuperServer 5029A-2TN4 is a compact, embedded system comprised of the SC721TQ-250B chassis and the A2SDi-2C-HLN4F single processor motherboard.

Refer to our website for information on operating systems that have been certified for use with the system ([www.supernmicro.com](http://www.supernmicro.com)).

This chapter provides a brief outline of the functions and features. In addition to the motherboard and chassis, several important parts that are included with the system are listed below.

Main Parts List		
Description	Part Number	Quantity
SAS/SATA backplane	CSE-SAS-733TQ	1
3.5" hot-swap drive carriers	MCP-220-00075-0B	4
12-cm exhaust fan	FAN-0124L4	1

## 1.2 System Features

The following table provides an overview of the main features of the 5029A-2TN4.

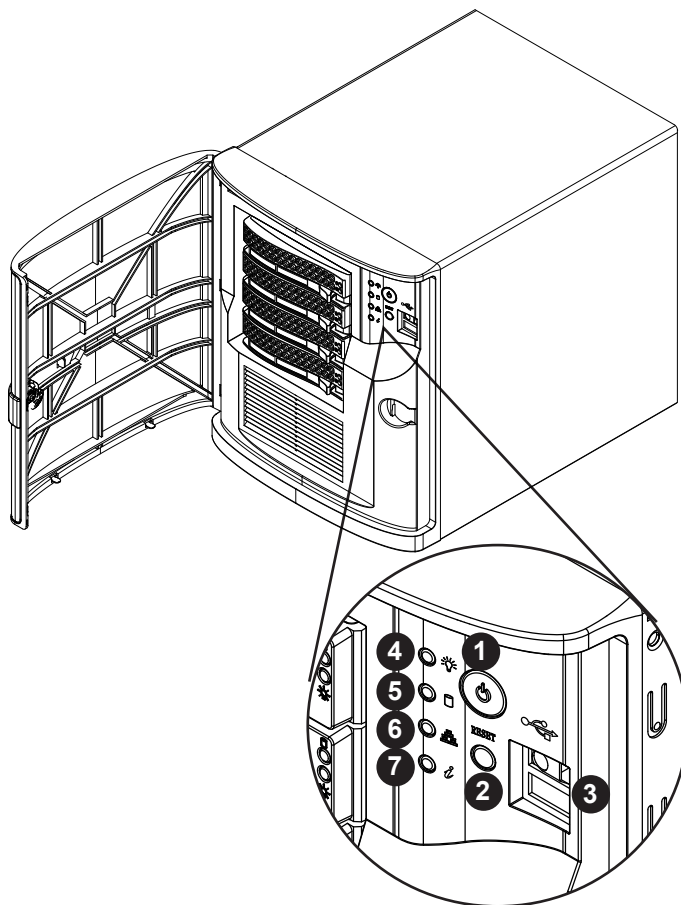
System Features
<b>Motherboard</b>
A2SDi-2C-HLN4F
<b>Chassis</b>
Mini Tower, SC721TQ-250B
<b>CPU</b>
Intel Atom C3000 Series Dual-Core SoC (System on a Chip) in the FCBGA1310 format.
<b>Fan</b>
One 12-cm rear exhaust fan
<b>Memory</b>
Up to 128GB RDIMM or 32GB UDIMM ECC/Non ECC DDR4-1866*
<b>Expansion Slots</b>
One PCI-E 3.0 x4 slot
<b>Hard Drives</b>
Four 3.5" hot-swap drive bays Two internal fixed 2.5" hard drive bays (DVD-ROM as an option in the top 2.5" bay)
<b>Power</b>
One 250W flex ATX power supply
<b>Dimensions</b>
Width 8.27" (210mm), Height 9.45" (240mm), Depth 11" (279mm)

\*Refer to the Supermicro website for possible updates to supported memory.

## 1.3 Chassis Features

### Front Features

The SC721TQ-250B is a compact Mini Tower chassis. The front of the chassis includes a power on/off push-button, a reset button and several LEDs as described below.



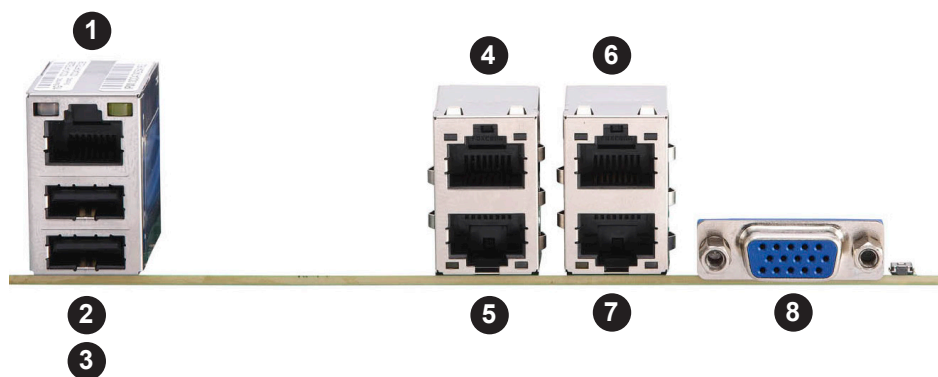
**Figure 1-1. Chassis Front View**

Front Chassis Features		
Item	Feature	Description
1	Power Button	The power button applies or removes power to the system. Turning off power removes the main power but keeps standby power supplied to the system.
2	Reset Button	Restarts the system
3	USB	USB 2.0 ports
4	Power	Indicates power is being supplied to the system power supply. This LED is illuminated when the system is operating normally.
5	HDD	Indicates activity on a hard disk drive when flashing.
6	NIC	Indicates network activity when flashing.
7	Information LED	This LED alerts the operator to several states, as noted in the table below.

Information LED	
Status	Description
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.

## Rear Features

The rear of the chassis has various input/output ports. Refer to Section 3.3 for more information.



Rear I/O Ports			
#	Description	#	Description
1.	IPMI LAN	5.	LAN1
2.	USB1	6.	LAN4
3.	USB0	7.	LAN2
4.	LAN3	8.	VGA



## Quick Reference Table

Jumper	Description	Default Setting
JBR1	BIOS Recovery	Pins 1-2 (Normal)
JBT1	CMOS Clear	Open (Normal)
JI <sup>2</sup> C1/JI <sup>2</sup> C2	SMB to PCI-E Slots Enable/Disable	Pins 2-3 (Disable)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN Enable/Disable	Pins 1-2 (Enabled)
JPME2	ME Manufacturing Mode	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description	Status
LED1	Onboard Power LED	Solid Green: Power On
LEDM1	BMC Heartbeat LED	Blinking Green: BMC Normal
UIDLED1	UID LED	Solid Blue: Unit Identified

Connector	Description
BT1	Onboard Battery
COM1	COM Header
FAN1 ~ FAN3, FANA	System/CPU Fan Headers (FAN1: CPU Fan)
IPMI LAN	Dedicated IPMI LAN Port
I-SATA0 ~ I-SATA3	Intel SATA 3.0 Ports (I-SATA0 supports SuperDOM)
JD1	Speaker Header
JF1	Front Control Panel Header
JGP1	General Purpose I/O Header
JL1	Chassis Intrusion Header
JPH1	4-pin Power Connector for HDD use (To provide power from the motherboard to onboard HDD devices)
JPI <sup>2</sup> C1	Power Supply SMBbus I <sup>2</sup> C Header
JPV1	4-pin DC Power Connector (To provide alternative power for special enclosure when the 24-pin ATX power is not in use.)
JPW1	24-pin ATX Power Connector
JRT3	Thermal Diode 1 Header
JRT4	Thermal Diode 2 Header
JSAS1	I-SATA Ports 4-7
JSD1	SATA DOM Power Connector
JSMB1	SMBus Header
JTGLED1	LAN3/LAN4 Front Activity LED
JTPM1	Trusted Platform Module/Port 80 Connector
LAN1 ~ LAN4	Gigabit Ethernet (RJ45) Ports



Connector	Description
SLOT7	CPU PCI-E 3.0 x4 Slot
SRW1, SRW2	M.2 Holding Screws
UID	Unit ID Button
USB0/1	Back Panel Universal Serial Bus (USB) 2.0 Ports
USB2/3	Front Accessible USB 2.0 Header
USB4	Front Accessible USB 3.0 Type A Port
VGA	VGA Port

## System Block Diagram

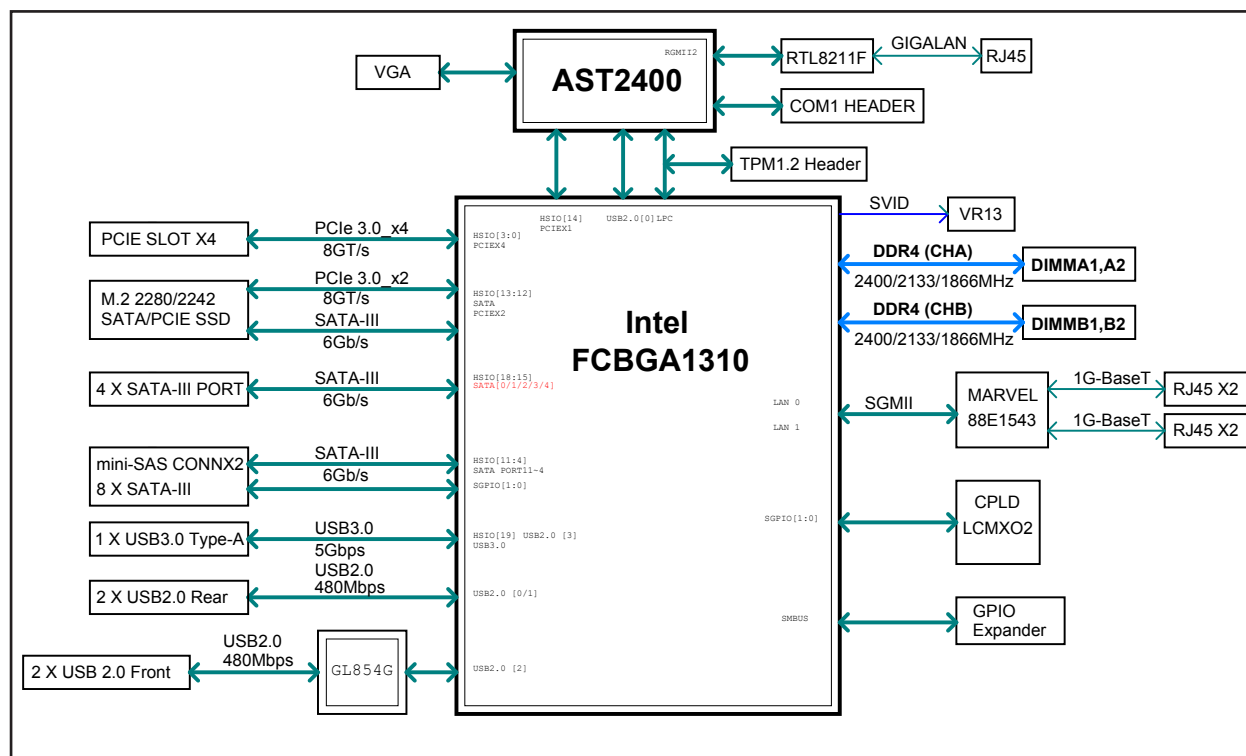


Figure 1-3. System Block Diagram

**Note:** This is a general block diagram and may not exactly represent the features on your motherboard. See the System Specifications appendix for the actual specifications of your motherboard.

## Chapter 2

# Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components requires that power first be removed from the system. Please follow the procedures given in each section.

### 2.1 Removing Power

Use the following procedure to ensure that power has been removed from the system. This step is necessary when removing or installing non hot-swap components or when replacing a non-redundant power supply.

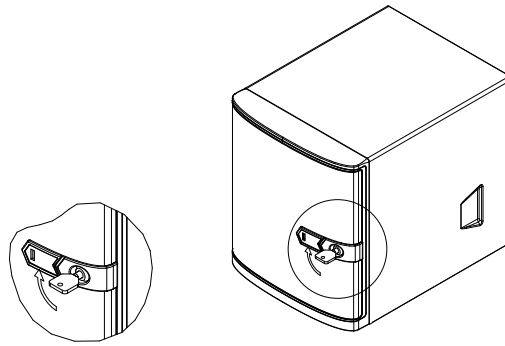
1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the AC power cord from the power source.
3. Disconnect the power cord from the chassis.

### 2.2 Hardware Security

The chassis features multiple locking devices to help deter hardware theft and protect user data. While no lock is infallible, it is recommended that users keep their systems locked when not in use.

#### Front Bezel Lock

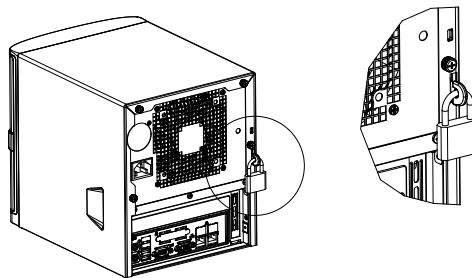
The locking front bezel protects against unauthorized removal of the hard drives. Use the key to lock or unlock the bezel. Always remove the key from the lock and store it in a secure place.



**Figure 2-1. Front Bezel Lock**

### **Rear Chassis Hasp**

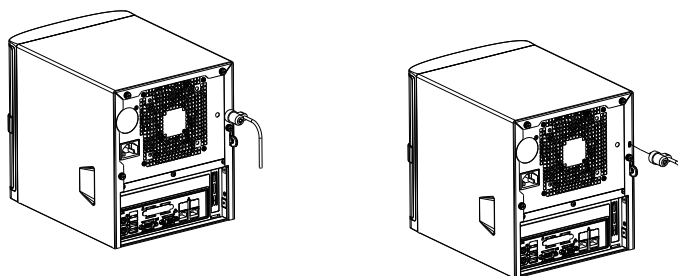
Unauthorized entry through the rear of the chassis may be discouraged by placing a lock on the rear of the chassis. The chassis is equipped with a rear chassis hasp that can accommodate a variety of commonly available locks (not included).



**Figure 2-2. Rear Chassis Hasp**

### **Kensington Cable Slot (K-Slot)**

The chassis features a Kensington cable slot or K-slot. This slot accepts a standard Kensington cable locking device (not included). Attach the loop end of the cable to a secure object, then insert the device into the K-slot as illustrated below.



**Figure 2-3. Inserting a Kensington Cable Device (not included)**

## 2.3 Accessing the System

The SC721TQ-250B features a removable top cover to access to the inside of the chassis.

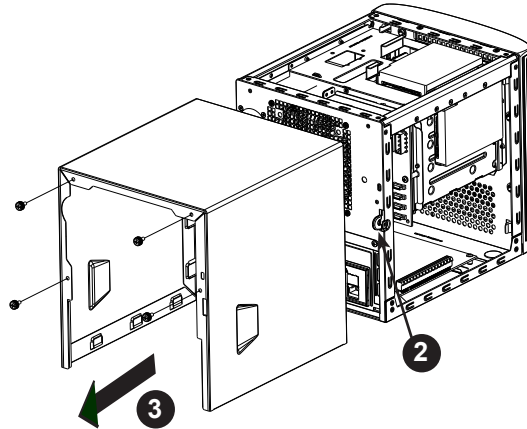


Figure 2-4. Removing the Chassis Cover

### *Removing the Top Cover*

1. Power down the system as described in section 2.1.
2. Lift the release lever located on the right side rear of the chassis.
3. Slide the cover toward the rear of the chassis the lift it off.

**Caution:** Except for short periods of time, do *not* operate the server without the cover in place. The chassis cover helps maintain proper airflow and prevent system overheating.

## 2.4 Motherboard Components

### Processor

The 5029A-2TN4 features an embedded Intel Atom C3000 Series Dual-Core SoC processor.

### Memory Support

The motherboard supports up to 128GB RDIMM or 32GB UDIMM DDR4 ECC/Non ECC DDR4-1866 in two memory slots. Check the Supermicro website for a list of memory modules that have been validated.

### Installing Memory

**Caution:** Exercise extreme care when installing or removing DIMM modules to prevent damage.

### Memory Population Guidelines

For optimal memory performance, follow the table below when populating memory. Populate DIMM slots in the following order: DIMMA1, DIMMB1, then DIMMA2, DIMMB2

Recommended Population (Balanced)				
DIMMA1	DIMMB1	DIMMA2	DIMMB2	Total System Memory
4GB	4GB			8GB
4GB	4GB	4GB	4GB	16GB
8GB	8GB			16GB
8GB	8GB	8GB	8GB	32GB
16GB	16GB			32GB
16GB	16GB	16GB	16GB	64GB
32GB	32GB			64GB
32GB	32GB	32GB	32GB	128GB
64GB	64GB			128GB
64GB	64GB	64GB	64GB	256GB

Unbuffered DDR4 ECC/Non-ECC DIMM Memory				
DIMMs per channel	DIMMs per channel	DIMM Type	POR Speed MT/s	Memory Population Sequence
1	1	Unbuffered DDR4 DIMM	1866, 2133, 2400	A1, A2 (2 DIMMs)
2	2	Unbuffered DDR4 DIMM	1866, 2133, 2400	A1, B1, A2, B2 (4 DIMMs)

## DIMM Installation

1. Insert DIMM modules in the following order: DIMMA1, DIMMB1, then DIMMA2, DIMMB2. For the system to work properly, please use memory modules of the same type and speed.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

## DIMM Removal

Reverse the steps above to remove the DIMM modules from the motherboard.

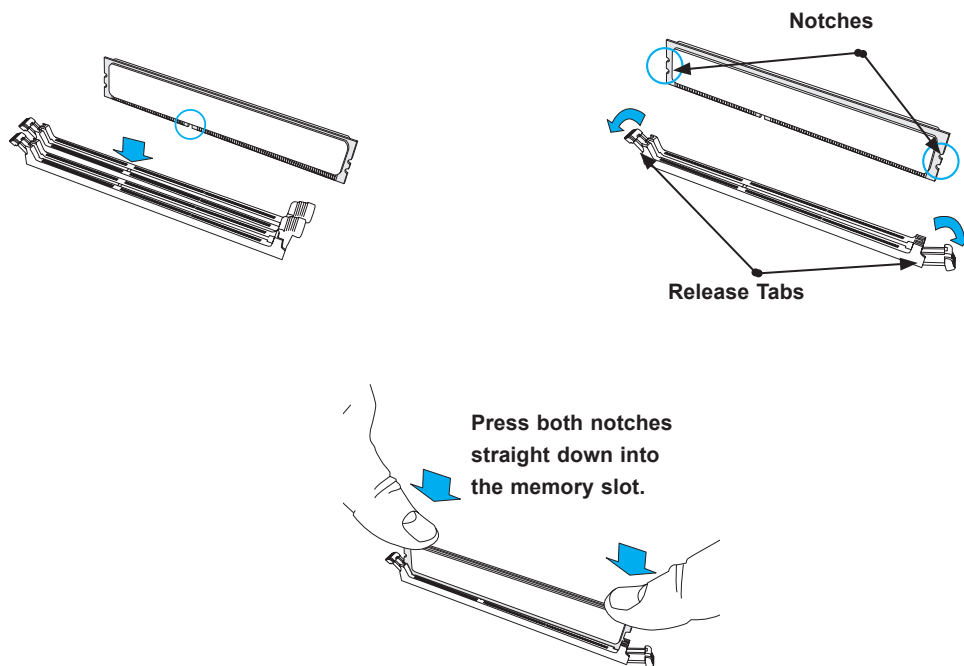


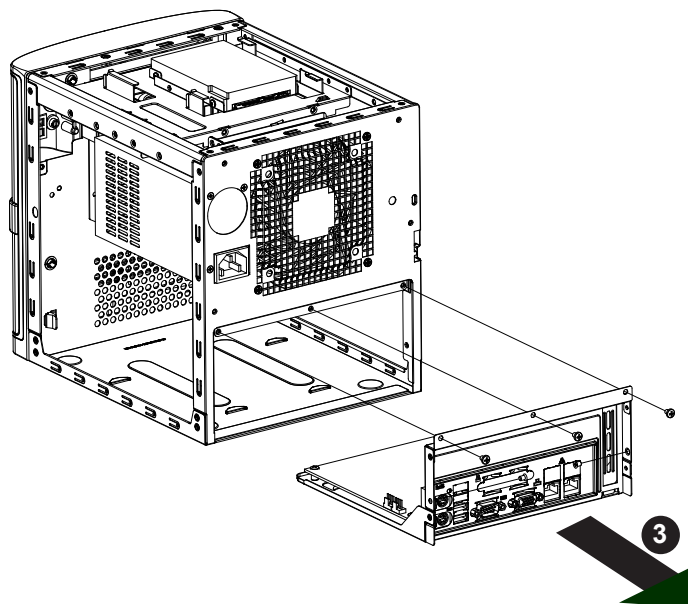
Figure 2-5. Installing a DIMM

## Installing Expansion Cards

The 5029A-2TN4 includes a PCI-E 3.0 x4 slot for an expansion card. The card is installed by removing the chassis tray that holds the motherboard and rear I/O shield.

### *Installing an Expansion Card*

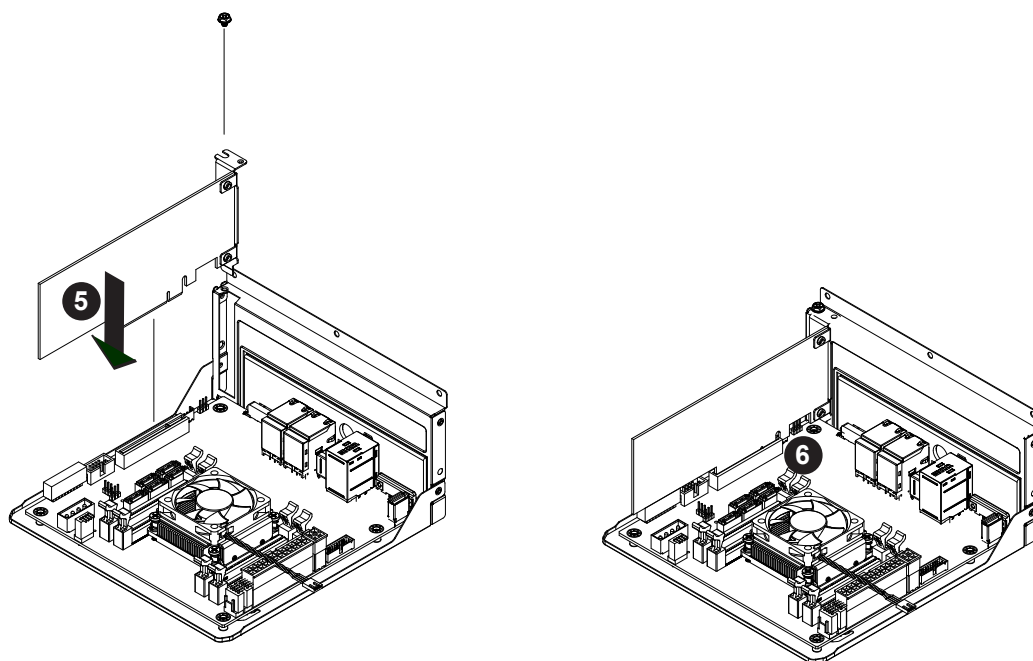
1. Power down the system as described in Section 2.1 and remove the chassis cover.
2. Remove the three screws securing the rear tray to the rear of the chassis and set them aside for later use.
3. Pull the rear tray out from the chassis.



**Figure 2-6. Removing the Rear Tray from the Chassis**



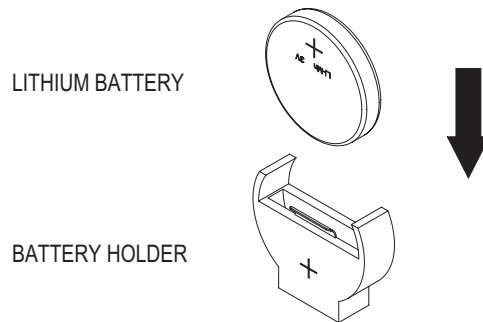
4. Remove the screw that secures the PCI slot shield in the PCI slot at the rear of the tray and set it aside for later use.
5. Slide the PCI slot shield up and out of the PCI slot.
6. Insert the card into its slot on the motherboard while aligning its bracket into the slot on the chassis drawer.
7. Secure the bracket of the expansion card with the screw previously set aside.
8. Slide the rear tray into the chassis and secure it with the screws.
9. Replace the chassis cover and power up the system.



**Figure 2-7. Installing the Expansion Card**

## Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by a lithium battery residing on the motherboard.



**Figure 2-8. Installing the Onboard Battery**

### *Replacing the Battery*

1. Remove power from the system as described in section 2.1.
2. Access the motherboard by removing the chassis cover as described in Section 2.3.
3. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.
4. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

**Note:** Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations of your local hazardous waste management agency to dispose of your used battery properly.

**Warning:** There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032).

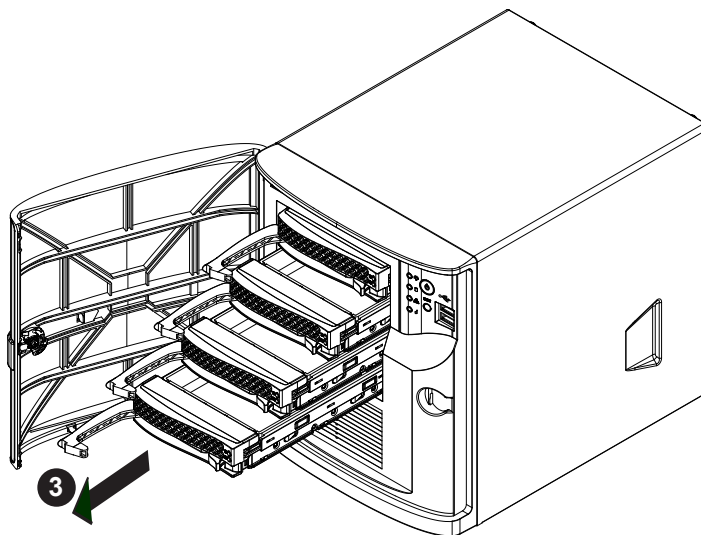
## 2.5 Chassis Components

### Front-Mounted Hot-Swap Drives

The SC721TQ-250B supports four hot-swappable drives mounted in carriers that are accessible from the front of the chassis. These drives may be removed and installed without powering down the system.

#### *Removing 3.5" Hot-Swap Hard Drives*

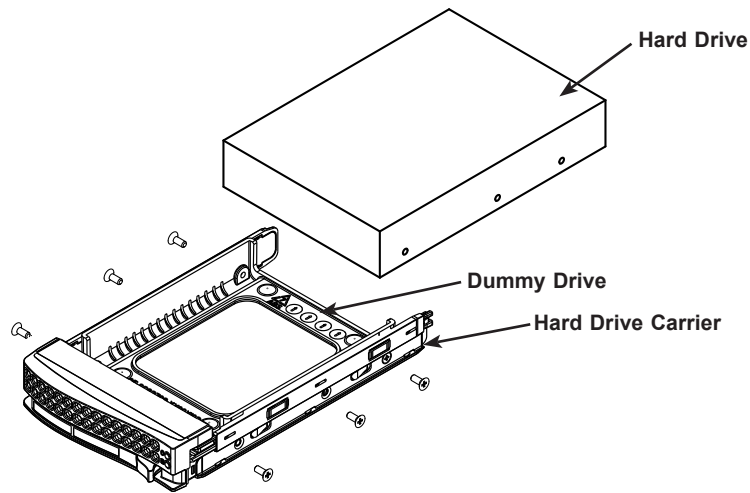
1. Unlock the front bezel and swing it open.
2. Press the release tab on the hard drive carrier; this will extend the hard drive carrier handle.
3. Use the handle to pull the hard drive out of the chassis.



**Figure 2-9. Installing the Hard Drive**

#### *Installing a Hard Drive into a Drive Carrier*

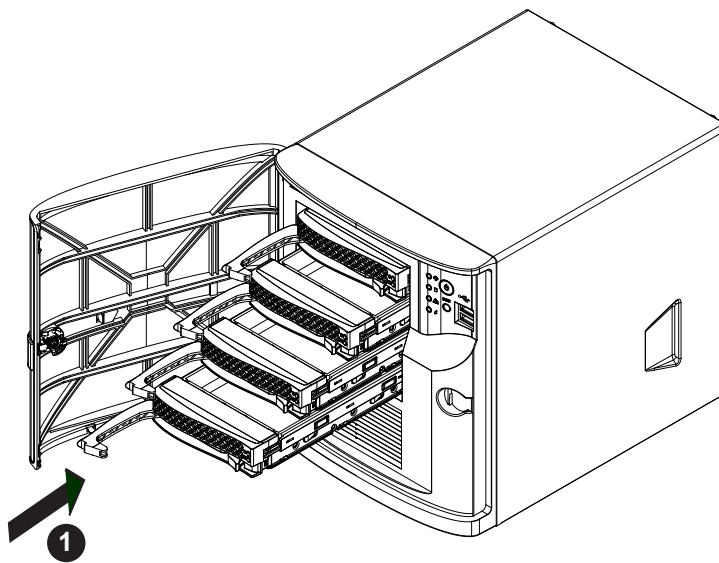
1. After removing a drive carrier, remove the six screws securing the dummy drive tray to the drive carrier. Lift the tray out.
2. Install the new hard drive into the carrier with the printed circuit board side facing down and with the mounting holes in the drive aligned with those in the carrier.
3. Secure the drive to the carrier by tightening all six screws. The logic and power connections to the drive will be supplied through the backplane.



**Figure 2-10. Installing a Hard Drive into a Drive Carrier**

***Installing a Drive Carrier into the Hard Drive Cage***

1. Insert the hard drive carrier into the drive bay, using the drive carrier handle to push it all the way into the hard drive cage until it stops.
2. Close the handle until the drive carrier clicks into the locked position.
3. Close and lock the front bezel.



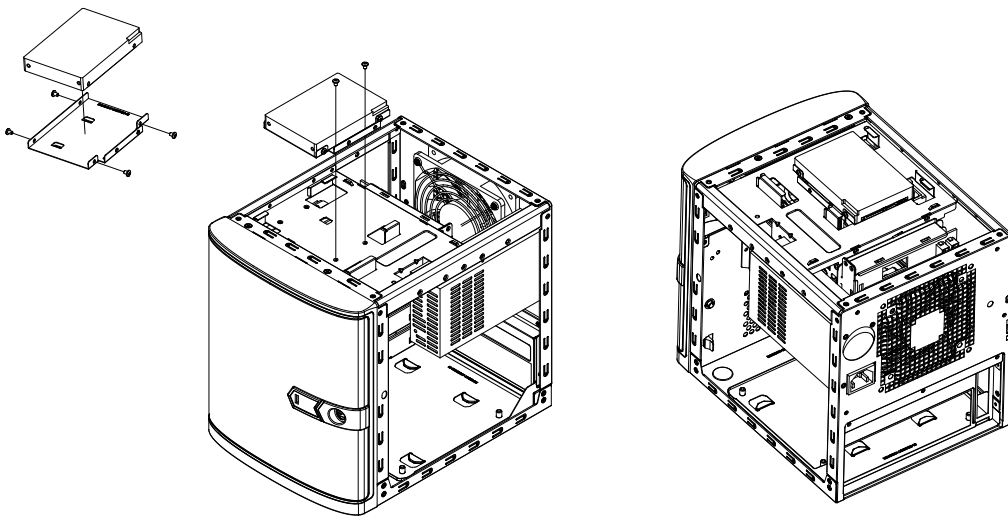
**Figure 2-11. Installing a Drive Carrier into the Hard Drive Cage**

## Installing the Internal Fixed Hard Drives

The SC721TQ-250B chassis supports two internal 2.5" SATA fixed hard drives: one top-mounted drive and one side-mounted drive.

### *Installing a Top-Mounted Fixed Hard Drive*

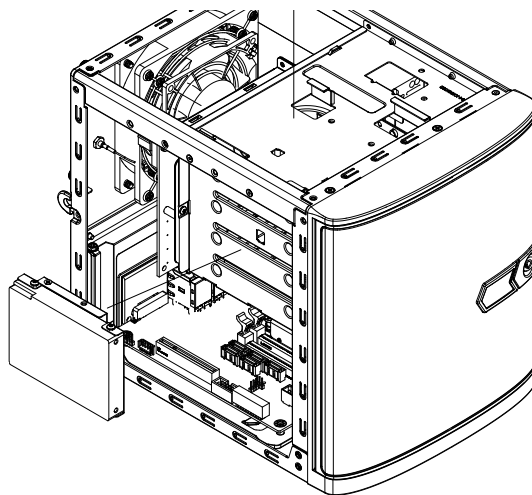
1. Power down the system as described in Section 2.1 and remove the chassis cover.
2. Place a 2.5" hard drive into the hard drive bracket and secure the drive to the bracket with the four screws provided.
3. Place the hard drive and bracket into the top mounting position of the chassis as illustrated below and secure it to the chassis with two screws.
4. Replace the chassis cover, plug the power cord into the rear of the power supply and power up the system.



**Figure 2-12. Installing a Top-Mounted Fixed Hard Drive**

### ***Installing a Side-Mounted Fixed Hard Drive***

1. Power down the system as described in Section 2.1 and remove the chassis cover as described in Section 2.3.
2. Place a 2.5" hard drive into the hard drive bracket and secure the hard drive to the bracket with the four screws provided.
3. Place the hard drive and bracket into the side mounting position of the chassis by inserting the pin on the bracket into the mounting hole on the chassis as illustrated below.
4. Replace the chassis cover, plug the power cord into the rear of the power supply and power up the system.



**Figure 2-13. Installing a Side-Mounted Fixed Hard Drive**

## Installing a DVD Drive

The SC721TQ-250B supports one DVD drive. It can be installed only if the top mounted fixed HDD is not used. It requires a mounting bracket rail (p/n MCP-220-81502-0N).

### *Installing a DVD Drive*

1. Power down the system as described in Section 2.1 and remove the chassis cover as described in Section 2.3.
2. Unlock the front bezel and swing it open.
3. Remove the bracket for the top mounted fixed hard drive by removing the two screws.
4. Remove the two screws securing the EMI grid to the front of the chassis.
5. Remove the EMI grid from inside the chassis, just behind the chassis front. If you will later remove the DVD drive, save the EMI grid.
6. Remove the plastic DVD bay cover from the chassis front by carefully breaking it out.

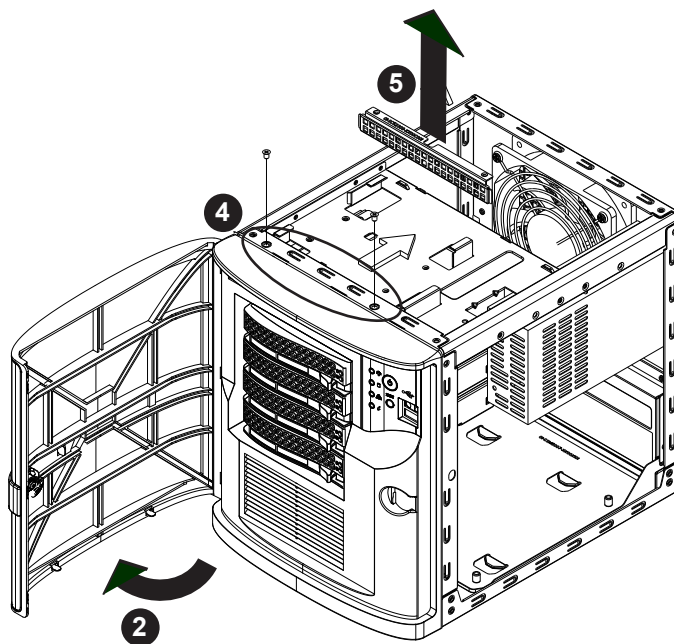
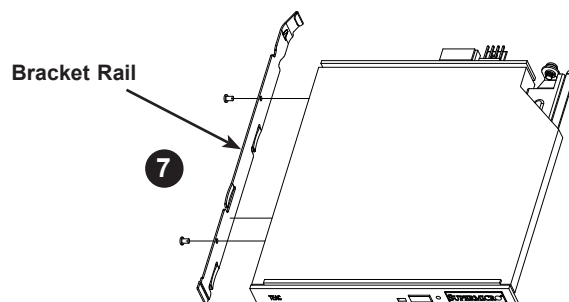


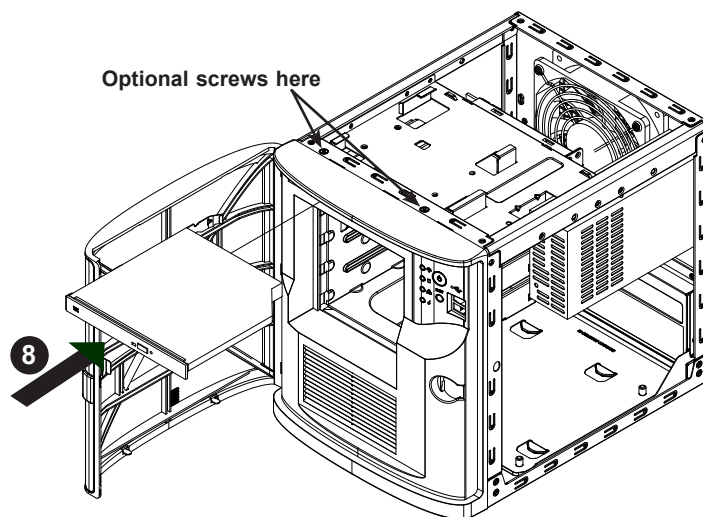
Figure 2-14. Configuring the Chassis for a DVD Drive

7. Install the bracket rail (part number MCP-220-81502-0N) onto the left hand side of the DVD drive, using the two screws provided.



**Figure 2-15. Securing the Bracket Rail to a DVD Drive**

8. Slide the DVD drive into the chassis until it snaps into place. (Some DVD drives allow you to secure the drive with two screws.)
9. Connect the SATA cable and the power cable to the DVD drive.
10. Close the front bezel, replace the chassis cover and power up the system.



**Figure 2-16. Installing a DVD Drive**

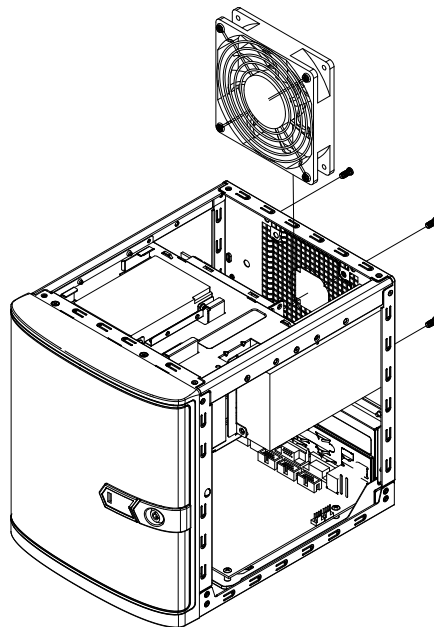


## Installing a Fan

The chassis includes a single 12-cm rear exhaust fan. The chassis also features a set of mounting holes that will support a standard 9-cm exhaust fan (not included).

### *Installing the Exhaust Fan*

1. Power down the system as described in Section 2.1 and remove the chassis cover as described in Section 2.3.
2. Place the fan on top of the fan grill, aligning the mounting holes of the fan grill with the mounting holes of the system fan.
3. Secure the fan to the chassis with four screws.
4. Connect the fan cable to the motherboard.
5. Replace the chassis cover, plug the power cord into the rear of the power supply and power up the system.



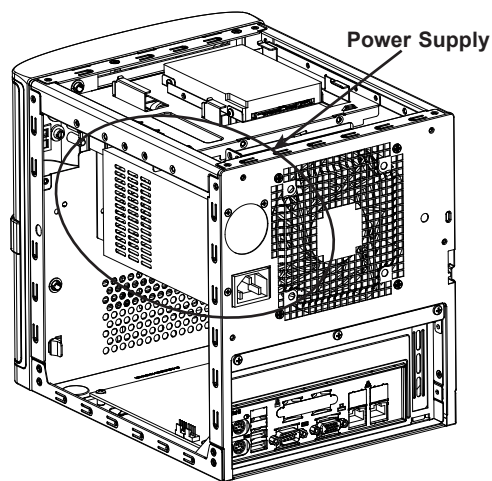
**Figure 2-17. Installing the Exhaust Fan**

## Replacing the Power Supply

The SC721TQ-250B includes a fixed (non-hot-swap) 250W power supply. If it is necessary to replace the power supply, follow the instructions below.

### *Changing the Power Supply*

1. Power down the system as described in Section 2.1 and remove the chassis cover as described in Section 2.3.
2. Remove all power cables from the motherboard, hard drives, and backplane.
3. Remove the screws securing the power supply to the chassis, which are located on the rear of the chassis. Set these screws aside for later use.
4. Remove the power supply from the chassis.
5. Replace the failed power supply with the same model power supply (p/n: PWS-251-1H).
6. Secure the new power supply using the screws previously set aside.
7. Reattach the power cables to the motherboard, hard drives, and backplane.
8. Replace the chassis cover, plug the power cord into the rear of the power supply and power up the system.



**Figure 2-18. Removing the Power Supply**

## Chapter 3

# Motherboard Connections

This section describes the connections on the A2SDi-2C-HLN4F motherboard and provides pinout definitions. Note that depending on how the system is configured, not all connections are required. The LEDs on the motherboard are also described here. A motherboard layout indicating component locations may be found in Chapter 1.

Please review the Safety Precautions in Appendix A before installing or removing components.

## 3.1 Power Connections

### Main ATX Power, 4-pin HDD Power, 4-pin DC Power

The primary power supply connector (JPW1) meets the ATX SSI EPS 24-pin specification. JPH1 is a 4-pin power connector for HDD devices. JPV1 is a 4-pin 12V DC power input for an alternative power source when the 24-pin ATX power is not in use. Refer to the tables below for pin definitions.

ATX Power 24-pin Connector Pin Definitions			
Pin#	Definition	Pin#	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

4-pin HDD Power Pin Definitions	
Pin#	Definition
1	12V
2-3	Ground
4	5V

+12V 4-pin Power Pin Definitions	
Pin#	Definition
1-2	Ground
3-4	+12V

## 3.2 Headers and Connectors

### Fan Headers

There are four 4-pin fan headers on the motherboard; pins 1-3 are backwards compatible with traditional 3-pin fans. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) in the BIOS. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

### Speaker

JD1 is the speaker header. Connect the cable of the external speaker to pins 1-4.

Speaker Connector Pin Definitions	
Pin#	Definition
Pins 1-4	Speaker

### General Purpose I/O Header

JGPIO1 is a 10-pin general purpose I/O header located near the IPMI port. Each pin can be configured to be an input or output pin. The GPIO is controlled via the PCA9554 8-bit GPIO expansion. The base address is 0xF040(D31:F4).

JGP1 Header Pin Definitions		
Pin#	Definition	
1	+5V	+5V
2	Ground	Ground
3	GP0	GPP_E0
4	GP1	GPP_F1
5	GP2	GPP_E1
6	GP3	GPP_F2
7	GP4	GPP_E2
8	GP5	GPP_F3
9	GP6	GPP_F0
10	GP7	GPP_F4

### TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM), which is available from Supermicro or a third-party vendor. A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. Refer the table below for pin definitions.

**Note:** Please go to the following link for information on TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME#	4	No Pin
5	LRESET#	6	+5V (X)
7	LAD3	8	LAD2
9	3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK (X)	14	SMB_DAT (X)
15	P3V3_STBY	16	SERIRQ
17	GND	18	LPC_CLKRUN (X)
19	SUS_STAT_N	20	LDRQ# (X)

### Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connector at JSD1 provides 5V power to a solid-state DOM storage device connected to one of the SATA ports. Refer the table below for pin definitions.

DOM Power Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground

### Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to the header to inform you when the chassis is opened.

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

**Power SMB (I<sup>2</sup>C) Header**

Power System Management Bus (I<sup>2</sup>C) header at JPI<sup>2</sup>C1 monitors the power supply, fan and system temperatures. Refer the table below for pin definitions.

Power SMB Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	Power Fail
4	Ground
5	No Connection

**System Management Bus Header**

A System Management Bus header for additional slave devices or sensors is located at JSMB1. Refer to the table below for pin definitions.

SMBus Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

**LAN Port Activity LED Headers**

JTGLED1 is the activity header for LAN3 and LAN4.

LAN Activity LED Pin Definitions	
Pin#	Definition
1	3V3 Stby
2	LAN3_ACT_N
3	3V3 Stby
4	LAN4_ACT_N

**Thermal Diode Headers**

JRT3 is the thermal diode 1 header, and JRT4 is the thermal diode 2 header. They are thermal sensor headers that provide additional system temperature monitoring.

Thermal Diode 1 Pin Definitions	
Pin#	Definition
1	TD1_P
2	TD1_N

Thermal Diode 2 Pin Definitions	
Pin#	Definition
1	TD1_P
2	TD1_N

## SATA Ports and M.2

The A2SDi-2C-HLN4F supports up to eight SATA3.0 ports (4 via ports and 4 via miniSAS HD header). Using the Flexible I/O feature, a user can select a total of eight SATA ports and/or PCIE lanes on the expansion slot.

## Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED indicator are located on the motherboard. The UID switch is located at UID, which is next to the VGA port on the back panel. The UID LED (UIDLED1) is located next to the UID switch. When you press the UID switch, the UID LED will be turned on. Press the UID switch again to turn off the LED indicator. The UID Indicator provides easy identification of a system unit that may be in need of service.

**Note:** UID can also be triggered via IPMI on the motherboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website at <http://www.supermicro.com>.

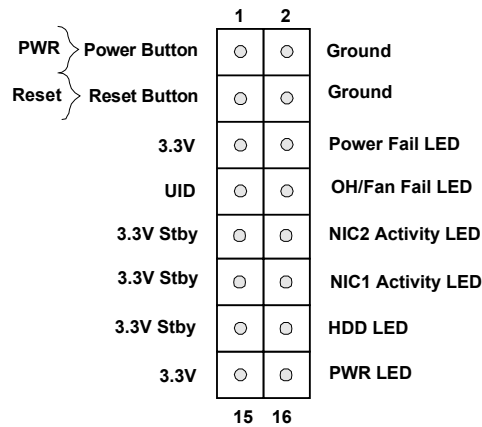
UID Switch Pin Definitions	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Button In

UID LED Pin Definitions	
Color	Status
Blue: On	Unit Identified

### Control Panel Header

JF1 contains header pins for various control panel connections. See the figure below for the pin locations and definitions of the control panel buttons and LED indicators.

All JF1 wires have been bundled into a single cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the motherboard. The other end connects to the control panel PCB board



**Figure 3-1. JF1: Control Panel Pins**

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table below for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+3.3V
16	Pwr LED

### HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate the status of HDD-related activities, including SATA. Refer the table below for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	3.3V Stby
14	HDD LED



### NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on pins 9 and 10. NIC1 LED and NIC2 LED are 2-pin NIC LED headers. Attach NIC LED cables to NIC1 and NIC2 LED indicators to display network activities. Refer to the table below for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	3.3V Stby
10/12	NIC2/NIC1 Active LED

### Overheat (OH)/Fan Fail LED

Connect an LED cable to OH/Fan Fail connections on pins 7 and 8 of JF1 to provide warnings for chassis overheat/fan failure. Refer to the table below for pin definitions.

OH/Fan Fail Indicator Status	
Pin#	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc/Blue UID LED
8	OH/Fan Fail LED

### Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table below for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

### Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power in the suspend mode, press the button for at least 4 seconds. Refer to the table below for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Pwr On
2	Ground

### 3.3 Ports

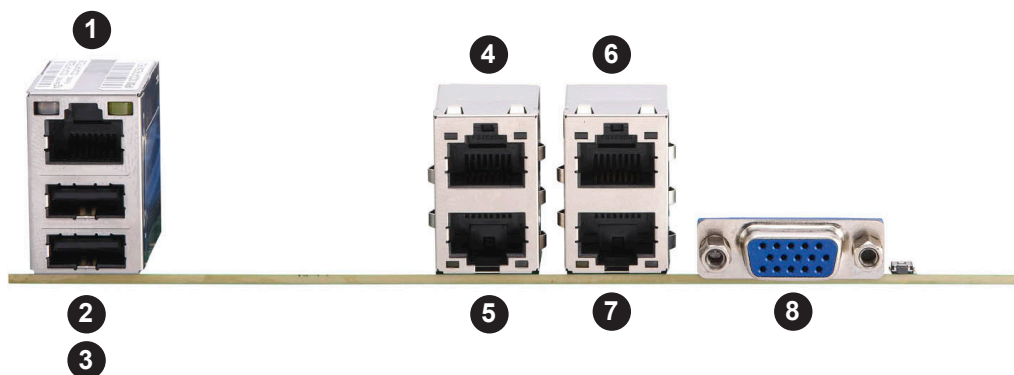


Figure 3-2. Rear input/output Ports

Rear I/O Ports			
#	Description	#	Description
1.	IPMI LAN	5.	LAN1
2.	USB1	6.	LAN4
3.	USB0	7.	LAN2
4.	LAN3	8.	VGA

#### VGA Port

The onboard VGA port is located next to LAN ports 2/4 on the I/O back panel. Use this connection for VGA display.

#### LAN Ports

The A2SDi-2C-HLN4F has four 1Gb Base-T LAN ports. These ports are located on the I/O back panel and accept RJ45 cables. There is also a dedicated IPMI LAN port on the I/O back panel. Refer the table below for the pin definitions.

### Universal Serial Bus (USB) Ports

There are two USB ports (USB0/1) on the I/O back panel. The motherboard also has one front access USB 2.0 header (USB2/3) and one USB 3.0 Type A header (USB4). The onboard headers can be used to provide front side USB access with a cable (not included).

Type A USB 3.0 Pin Definitions	
Pin#	Definition
1	VBUS
2	D-
3	D+
4	Ground
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+

Front Panel USB 2.0 Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	2	+5V
3	USB_PN2	4	USB_PN3
5	USB_PP2	6	USB_PP3
7	Ground	8	Ground
9	Key	10	Ground

### COM Header

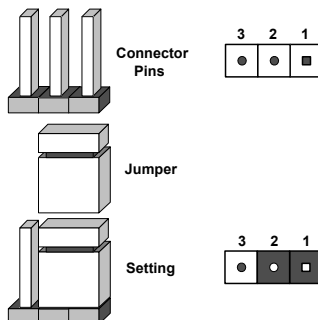
There is one COM header (COM1) located directly on the motherboard.

## 3.4 Jumpers

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers are used to choose between optional settings. Jumpers create shorts between two pins to change the function associated with it. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout page for jumper locations.

**Note:** On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" indicates the jumper is either on only one pin or has been completely removed.



### CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

#### To Clear CMOS



1. First power down the system and unplug the power cord(s).
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Replace the cover, reconnect the power cord(s) and power on the system.

**Notes:** Clearing CMOS will also clear all passwords.

Do not use the PW\_ON connector to clear CMOS.

### VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port using the onboard graphics controller. The default setting is Enabled.

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

### ME Manufacturing Mode Select

Close JPME2 to bypass SPI flash security and force the system to use the Manufacturing Mode, which will allow you to flash the system firmware from a host server to modify system settings. Refer the table below for jumper settings.

ME Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturing Mode

### Watch Dog

JWD1 controls the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watch Dog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in BIOS. The default setting is Reset.

**Note:** When Watch Dog is enabled, users need to write their own application software to disable it.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (Default)
Pins 2-3	NMI
Open	Disabled

### BIOS Recovery

Use jumper JBR1 to recover the BIOS settings. The default setting is Normal. See the table below for jumper settings.

BIOS Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	BIOS Recovery

### SMBus to PCI Slots

Jumpers JI<sup>2</sup>C1 and JI<sup>2</sup>C2 allow you to connect the System Management Bus (I<sup>2</sup>C) to the PCI-E slots. Both jumpers must be set to the same setting (JI<sup>2</sup>C1 controls the clock and JI<sup>2</sup>C2 controls the data). The default setting is Disabled.

SMBus to PCI Slots Jumper Settings		
JI <sup>2</sup> C1 Setting	JI <sup>2</sup> C2 Setting	Definition
JI <sup>2</sup> C1: Pins 1-2	JI <sup>2</sup> C2: Pins 1-2	Enabled
JI <sup>2</sup> C1: Pins 2-3	JI <sup>2</sup> C2: Pins 2-3	Disabled (Default)

### LAN Enable/Disable

Use jumper JPL1 to enable or disable the four LAN ports.

LAN Port Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

## 3.5 LED Indicators

### LAN1/2 LEDs

Each Ethernet port has two LEDs: one indicates activity when flashing while the other LED may be green, amber or off to indicate the speed of the connection.

Link (left) LED	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

Activity (right) LED		
Color	Status	Definition
Off	No Connection	
Yellow	Flashing	Active

### IPMI LAN LEDs

A dedicated IPMI LAN is also included on the motherboard. The amber LED on the right of the IPMI LAN port indicates activity, while the green LED on the left indicates the speed of the connection. Refer to the table below for more information.

IPMI LAN LEDs		
Color	Status	Definition
Off	Off	No Connection
Green: Solid	Link/Speed (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

### Onboard Power LED

LED1 is an Onboard Power LED. When this LED is lit, it means power is present on the motherboard. In suspend mode, this LED will blink on and off. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

Onboard Power LED Indicator	
LED Color	Definition
Off	System Off (power cable not connected)
Green	System On

### BMC Heartbeat LED

LEDM1 is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally. Refer to the table below for the LED status.

Onboard Power LED Indicator	
LED Color	Definition
Green: Blinking	BMC Normal

## Chapter 4

### Software

This section describes the installation of drivers and management programs for the system.

#### 4.1 Driver Installation

The Supermicro FTP site contains drivers and utilities for your system at <ftp://ftp.supermicro.com>. Some of these must be installed, such as the chipset driver.

After accessing the FTP site, go into the CDR\_Images directory and locate the ISO file for your motherboard. Download this file to create a DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

After creating a DVD with the ISO files, insert the disk into the DVD drive on your system and the display shown in Figure 4-1 should appear.

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your motherboard here, where you may download individual drivers and utilities to your hard drive or a USB flash drive and install from there.

**Note:** To install the Windows OS, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/>.

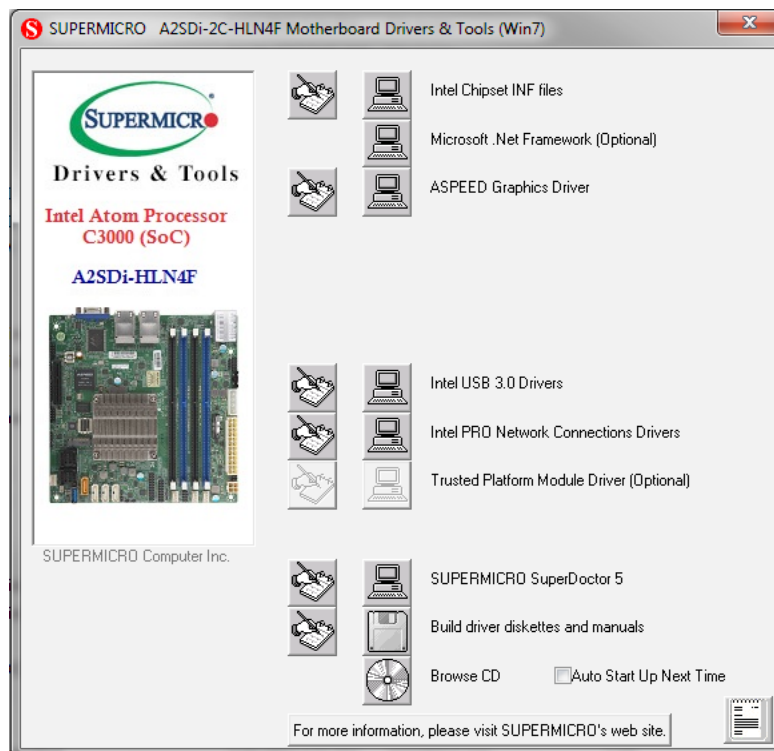


Figure 4-1. Driver & Tool Installation Screen



Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you must re-boot the system before moving on to the next item on the the list. The bottom icon with a CD on it allows you to view the entire contents.

## 4.2 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption and fan speed and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SuperDoctor 5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

**Note:** The default User Name and Password for SuperDoctor 5 is ADMIN / ADMIN.

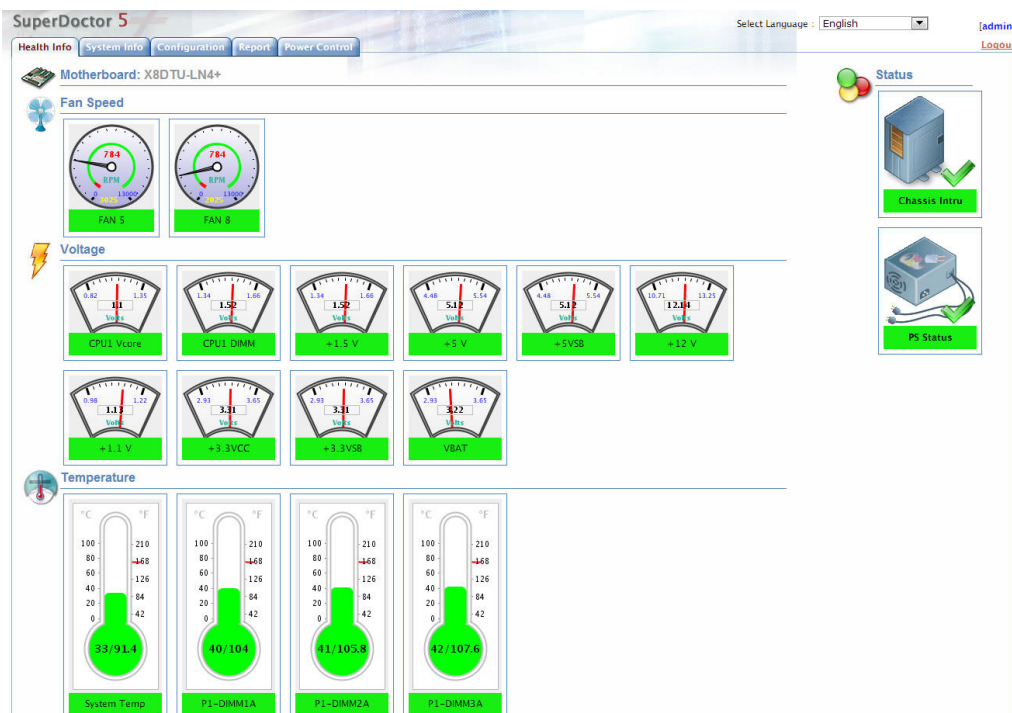


Figure 4-2. SuperDoctor 5 Interface Display Screen (Health Information)

## Chapter 5

### BIOS

#### 5.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the A2SDi-HLN4F series motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our website for any changes to the BIOS that may not be reflected in this manual.

#### Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

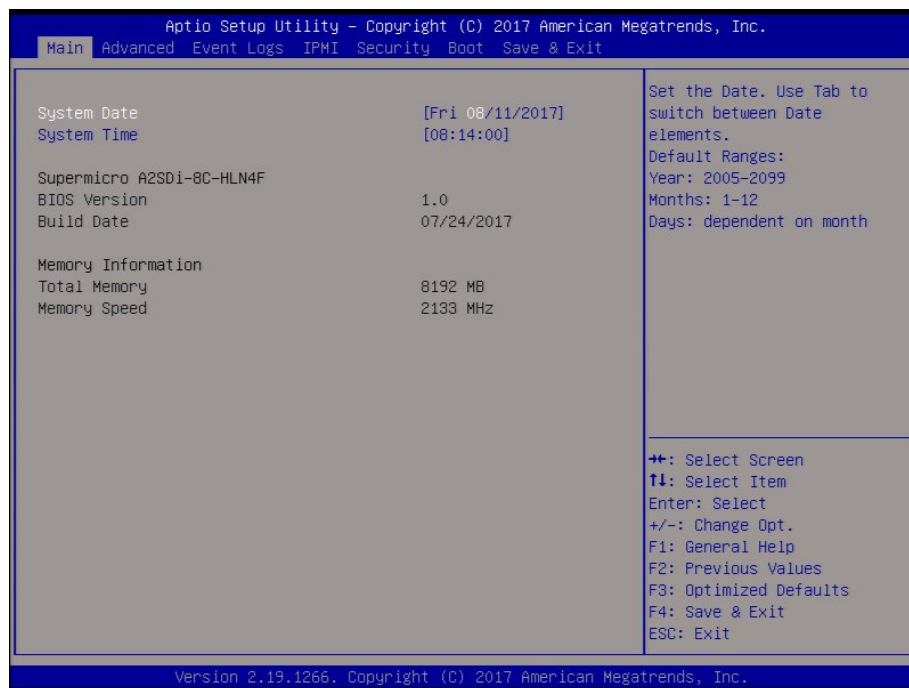
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ►" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

## 5.2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below and the following items will be displayed:



### System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00. The date's default value is the BIOS build date after RTC reset.

### Supermicro A2SDi-2C/4C/8C/8C+/12C/16C-HLN4F

#### BIOS Version

This item displays the version of the BIOS ROM used in the system.

#### Build Date

This item displays the date when the version of the BIOS ROM used in the system was built.

## **Memory Information**

### **Total Memory**

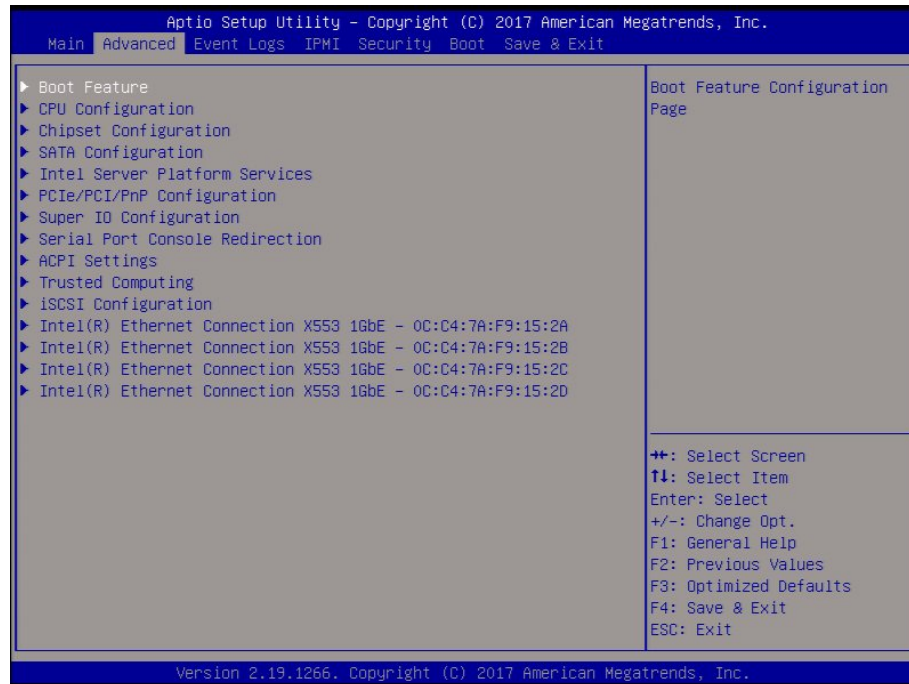
This item displays the total size of memory available in the system.

### **Memory Speed**

This item displays the default speed of the memory modules installed in the system.

## 5.3 Advanced

Use the arrow keys to select Advanced setup and press <Enter> to access the submenu items:



**Warning:** Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect BIOS timing setting may cause the system to malfunction. When this occurs, restore to default manufacturer settings.

### ► Boot Feature

#### Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Disabled and **Enabled**.

#### Bootup NumLock State

Use this feature to set the Power-on state for the Numlock key. The options are Off and **On**.

#### Wait For "F1" If Error

This feature forces the system to wait until the F1 key is pressed if an error occurs. The options are Disabled and **Enabled**.

## Power Configuration

### Watch Dog Function

If enabled, the Watch Dog timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are **Disabled** and **Enabled**.

### Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off**.

### Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power Off for the system power to remain off after a power loss. Select Power On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Stay Off, Power On, and **Last State**.

## ►CPU Configuration

The following CPU information will display:

- Displays the CPU model
- Processor ID
- Microcode Revision
- Processor Frequency
- CPU BCLK Frequency
- L1 Cache RAM
- L2 Cache RAM

### EIST (GV3)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disable and **Enable**.

### BIOS Request Frequency

Use this feature to instruct how much frequency will be delivered to the processor. The options are Disable and **Enable**.

**Turbo**

Select Enable for processor cores to run faster than the frequency specified by the manufacturer. The options are Disable and **Enable**.

***\*The feature above is not available when EIST (GV3) is disabled.***

**TM1**

Select Enable to activate TM1 support for system thermal monitoring. TM1 allows the CPU to regulate its power consumption based upon the modulation of the CPU Internal clock when the CPU temperature reaches a pre-defined overheating threshold. The options are Disable and **Enable**.

**TM2 Mode**

Use this feature to select the throttling mode for TM2. The options are LFM Throttling and **Adaptive Throttling**.

***\*The feature above is not available when EIST (GV3) or TM1 is disabled.***

**Dynamic Self Refresh**

Select Enable to support Dynamic Self-Refreshing for the onboard memory controller. The options are **Disable** and Enable.

**CPU C State**

Select Enabled to enhance the Cx state of the CPU. Reboot the system for this feature to take effect. The options are Disable and **Enable**.

**Package C State limit**

Use this item to set the limit on the C-State package register. The options are No Pkg C-State, No S0Ix, and **No Limit**.

***\*The feature above is not available when CPU C State is disabled.***

**Max Core C-State**

Use this feature to select the CPU C-state. The options are C1 and **C6**.

***\*The feature above is not available when CPU C State is disabled.***

**Enhanced Halt State (C1E)**

Select Enable to enable "Enhanced Halt State" support, which will significantly reduce the CPU's power consumption by minimizing the CPU's clock cycles and voltage use during a Halt State. The options are Disable and **Enable**.

***\*The feature above is not available when CPU C State is disabled.***

**Monitor/Mwait**

Select Enable to enable the Monitor/Mwait instructions. The Monitor instructions monitors a region of memory for writes, and MWait instructions instruct the CPU to stop until the monitored region begins to write. The options are Disable and **Enable**.

*\*The feature above is not available when CPU C State is disabled.*

**L1 Prefetcher**

If enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L1 cache to improve CPU performance. The options are **Enable** and Disable.

**L2 Prefetcher**

If enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are **Enable** and Disable.

**ACPI 3.0 T-States**

Select Enable to support ACPI (Advanced Configuration and Power Interface) 3.0 T-States to determine how the processor will report to the operating system during CPU-Throttling states. The options are **Disable** and Enable.

**Max CPUID Value Limit**

Use this feature to set the maximum CPU ID value. Enable this feature to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enable and **Disable**.

**Execute Disable Bit**

Set to Enable for Execute Disable Bit support, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damaging the system during a virus attack. The options are Disable and **Enable**. (Refer to Intel and Microsoft websites for more information.)

**Virtualization Technology**

Select Enable to use Intel Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple virtual systems in one physical computer. The options are Disable and **Enable**.

**Extended APIC (Advanced Programmable Interrupt Controller)**

Based on the Intel Hyper-Threading technology, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this item is set to Enable, the APIC ID will be expanded from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are Disable and **Enable**.



**AES-NI**

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are **Enable** and Disable.

**Lock PACKAGE\_RAPL\_LIMIT**

Use this feature to lock the MSR 0x610 bit. The options are **Disable** and Enable.

**PL1 Time Window**

Use this feature to define the Running Average Power Limit (RAPL) time window 1 in milliseconds. The default setting is **45**. Use the "+" or "-" keys to define the setting.

**PL1 Power Level**

Use this feature to define the Running Average Power Limit (RAPL) power limit 1 in Watts. The default setting is **25**. Use the "+" or "-" keys to define the setting.

**PL2 Power Level**

Use this feature to define the Running Average Power Limit (RAPL) power limit 2 in Watts. The default setting is **29**. Use the "+" or "-" keys to define the setting.

**Active Processor Cores**

Use this feature to set the number of processor cores that will be activated for each CPU. Select **0** to activate all processor cores.

**►Chipset Configuration**

**Warning:** Setting the wrong values in the following sections may cause the system to malfunction.

**►North Bridge Configuration****North Bridge Configuration****Memory Information**

- MRC Version
- Total Memory
- Memory Frequency

## VT-d

Select Enabled to enable Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The options are Disabled and **Enabled**.

## Interrupt Remapping

Use this feature to enable Interrupt Remapping support, which detects and controls external interrupt requests. The options are Disabled and **Enabled**.

## ►NonVolatile Memory Setup

### Method

Use this feature to select how data will be saved after power loss. The options are **Disabled** and NVDIMM.

***\*If the feature above is set to NVDIMM, the following items will become available for configuration:***

### SoC Pwr Loss Support

Use this feature to enable the internal detection of an Asynchronous DRAM Refresh (ADR) entry instead of a CPLD. The options are **Disabled** and Enabled.

### Cache Flushing

Use this feature to select the amount of cache that should be flushed. The options are **MemCtrlr only** and L1, L2 and MemCtrlr.

### ADR State Source

Use this feature to select whether the ADR State source is internal or external. The options are **external** and internal.

## ►Internal Pwr Loss Event Setup

### SoC Pwr Loss Support

The feature is always **Disabled**.

### PMC Reset

Enable this feature to receive a notification when there is a global reset because of an SMBus slave power down. The options are Disabled and **Enabled**.

**Power Button Override**

When this feature is set to Enabled, it sends a notification when there is a power button override. The options are Disabled and **Enabled**.

**ME Pwr Button Override**

When this feature is set to Enabled, it sends a notification when ME initiates the Power Button Override. The options are Disabled and **Enabled**.

**ME WDT**

When this feature is Enabled, it sends a notification when the ME watchdog timer expires. The options are Disabled and **Enabled**.

**ME Reset**

When this feature is set to Enabled, it sends a notification when ME initiates a global reset. The options are Disabled and **Enabled**.

**PMC WDT**

When this feature is Enabled, it sends a notification when the PMC watchdog timer expires. The options are Disabled and **Enabled**.

**ME Uncorr Error**

When this feature is set to Enabled, it sends a notification when there is an uncorrectable ME error. The options are Disabled and **Enabled**.

**SYS\_PWROK**

This feature sends a notification when there is a system power failure. SYS\_PWROK informs the PCH that power to system components is stable. The options are **Disabled** and Enabled.

**PMC Parity Error**

Set this feature to Enabled to receive PMC parity error notifications. The options are **Disabled** and Enabled.

**Return Power**

Set this feature to Enabled for the system to power up within four seconds after an ADR entry. The options are Disabled and **Enabled**.

**Interleaving**

Set this feature to Enabled for NVDIMM interleaving support. Interleaving is a technique that increases memory speed. The options are **Disabled** and Enabled.

### Restore

When this feature is set to Enabled, data is restored to NVDIMM after a system power-up. The options are Disable and **Enabled**.

### Erase & ARM

Select Enabled to enable erasing and arming of NVDIMM after data recovery. The options are Disabled and **Enabled**.

### NVDIMM Battery

Inactive - charging

LAB Start Location [Fixed LAB]

LAB [0]

Size(MB) [1024]

***\*The feature above is not available when the Method feature is disabled.***

### Test NonVol Mode:

Use this feature to force a nonvolatile memory flow. The options are **Disable**, ADR recovery, ADR-C2F save, and ADR-C2F restore.

### Fast Boot

Use this feature to enable or disable fast path through the memory reference code. The options are **Enabled** and Disabled.

### Command Address Parity

Use this feature to address the DDR4 command parity. The options are **Disabled** and Enabled.

### Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are DDR-1600, DDR-1867, DDR-2133, and **DDR-2400**.

### MMIO Size / BMBOUND Base

Use this feature to select the memory mapped IO size and BMBOUND base setting. The low for the two settings will always be 4GB. The options are **Auto**, 1024M/3072M, and 3072M/1024M.

### TCL Performance

Use this feature to enable the CAS Latency (tCL) to increase memory performance. The options are Disabled and **Enabled**.

### Memory Preservation

Enable this feature for the memory content to be preserved through a warm reset. The options are **Disabled** and Enabled.

**Patrol Scrub Enable**

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected in a memory module and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64GB of memory behind the IO hub will be scrubbed every day. The options are **Enabled** and Disabled.

**Patrol Scrub Period**

Use this feature to select the Patrol Scrub period. The options are **24 hours**, 10 hours, 4 hours, and 1 hour.

**Demand Scrub Enable**

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found in a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is corrected as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

**Write Data Early Enable**

Use this feature to enable or disable write data early. The options are **Disabled** and Enabled.

**Select Refresh Rate**

Use this feature to select the memory refresh rate. The options are **1x/2x** and 1x/2x/4x.

**CKE Power Down**

Clock enable (CKE) Power Down controls the low power down for the memory. The options are **Disabled**, Active Power Down, and Precharge Power Down.

**Memory Thermal Throttling**

Memory thermal throttling is a power management feature that monitors read and write activities to control power consumption. The options are Auto and **Disabled**.

***\*If the feature above is set to Auto or Enabled, CLTT Mode and MEMTRIP are available to configure:***

**CLTT Mode**

Use this feature to select the Closed Loop Thermal Throttling (CLTT) mode. The options are **Normal** and Passthru.

**MEMTRIP**

Use this feature to enable or disable MEMTRIP. The options are **Disabled** and Enabled.

**Scrambler**

This feature scrambles data in the memory and makes it inaccessible. The options are Disabled and **Enabled**.

**Slow Power Down Exit**

Use this feature to enable or disable the slow power down exit from pre-charge. The options are Disabled and **Enabled**.

**►South Bridge Configuration****South Bridge Configuration**

- USB Module Version
- USB Controllers
- USB Devices

**Legacy USB Support**

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only. The options are **Enabled**, Disabled, and Auto.

**XHCI Hand-Off**

This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

**Port 60/64 Emulation**

Select Enabled for I/O port 60h/64h emulation support, which in turn, will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

***\*The following two options are displayed if they are detected by and available on the system:***

**Flexible I/O Selection**

This is a feature on the -2C/4C models only. Up to a total of 8 in selected combinations of SATA ports and four lanes on the PCIe slot can be made available at any given time. Mini SAS offers 4 SATA ports from the Mini SAS HD header. The options are [Mini SAS/SATA (3:0)], **[PCIe x2/Mini SAS/SATA (1:0)]**, [PCIe x4/SATA (3:0)], and [PCIe x4/Mini SAS].

## ►IQAT Configuration

### IQAT

Select Enabled to hide IQAT devices from the operating system. The options are Disabled and **Enabled**.

### Set 64B MRR/MPL

Use this feature to enable setting for the 64B MRR/MPL in IQAT DevCTL register. The options are Disabled and **Enabled**.

## ►SATA Configuration

### ►SATA0

#### SATA 0 Enable controller

This item enables or disables the onboard SATA controller supported by the processor. The options are **Enabled** and Disabled.

#### SATA 0 LPM (Link Power Management)

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during extended periods of I/O inactivity and will return the link to an active state when I/O activity resumes. The options are Enabled and **Disabled**.

***\*If the feature above is set to Enabled, SATA 0 ALPM is available to configure:***

#### SATA 0 ALPM

Use this feature to enable or disable Aggressive Link Power Management. The options are **Enabled** and Disabled.

#### SATA 0 SGPIO/LED

Use this feature to select SATA SGPIO or SATA LED. The options are SATA SGPIO and **SATA LED**.

### ►I-SATA4 ~ I-SATA11

This following information is displayed for each SATA drive entry:

- Device Information
- Device Size

**Enable/disable port**

Use this feature to disable or enable the SATA port number. The options are **Enabled** and **Disabled**.

**Hot Plug**

Set this item to Enabled for hot plug support, allowing for a SATA disk drive to be replaced without shutting down the system. The options are **Enabled** and **Disabled**.

**Spin up**

When the value of an edge detect or the value of an image binary (pixel) of a device is from 0 to 1, select Enabled to allow the PCH to start a COMRESET initialization sequence on this device. The options are **Enabled** and **Disabled**.

**► SATA1****SATA 1 Enable controller**

This item enables or disables the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and **Disabled**.

**SATA 1 LPM (Link Power Management)**

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during extended periods of I/O inactivity and will return the link to an active state when I/O activity resumes. The options are **Enabled** and **Disabled**.

***\*If the feature above is set to Enabled, SATA 1 ALPM is available for configuration:***

**SATA 1 ALPM**

Use this feature to enable or disable Aggressive Link Power Management. The options are **Enabled** and **Disabled**.

**SATA 1 SGPIO/LED**

Use this feature to select SATA SGPIO or SATA LED. The options are **SATA SGPIO** and **SATA LED**.

**► I-SATA0 ~ I-SATA3, I-SATA (M.2)**

This following information is displayed for each SATA drive entry:

- Device Information
- Device Size



**Enable/disable port**

Use this feature to disable or enable the SATA port number. The options are **Enabled** and Disabled.

**Hot Plug**

Set this item to Enabled for hot plug support, allowing for a SATA disk drive to be replaced without shutting down the system. The options are **Enabled** and Disabled.

**Spin up**

When the value of an edge detect or the value of an image binary (pixel) of a device is from 0 to 1, select Enabled to allow the PCH to start a COMRESET initialization sequence on this device. The options are Enabled and **Disabled**.

**►Intel Server Platform Services**

This feature displays the following ME information:

- General ME Configuration
- Operational Firmware Version
- ME Firmware Type
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2
  - Current State
  - Error Code

**►PCIe/PCI/PnP Configuration**

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Devices Common Settings:

**Above 4G Decoding (Available if the system supports 64-bit PCI decoding)**

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled**.

**SR-IOV Support (Available if the system supports Single-Root Virtualization)**

Select Enabled for Single-Root IO Virtualization (SR-IOV) support. SR-IOV is an extension of the PCI Express interface and consists of two functions: physical functions (PF) and virtual functions (VF). PF is the primary function and is used to control and configure PCI Express devices, whereas VF is the lightweight function that offers limited configuration. The options are Enabled and **Disabled**.

**Maximum Payload**

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

**Maximum Read Request**

Select Auto for the system BIOS to automatically set the maximum size for a read request for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

**ASPM Support**

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. Select Force L0s to force all links to L0s state. The options are **Disabled**, Auto, and Force L0s.

**Warning:** Enabling ASPM support may cause some PCI-E devices to fail!

**ARI Forwarding**

Select Enabled to lift a traditional Device Number restriction when turning a Type1 Configuration request into a Type0 Configuration request to permit access to extended functions in an ARI Device immediately below the port. The options are **Disabled** and Enabled.

**CPU SLOT7 PCI-E 3.0 X4 OPROM**

Use this item to select the firmware type for the add-on card for this slot. The options are Disabled, Legacy, and **EFI**.

**M.2 PCI-E 3.0 X2 OPROM**

Use this item to select the firmware type for the add-on card for this slot. The options are Disabled, Legacy, and **EFI**.

**Onboard LAN Option ROM Type**

Use this item to select the Onboard LAN Option ROM type. The options are Disabled, Legacy, and **EFI**.

**Onboard Video Option ROM**

Use this item to select the Onboard Video Option ROM type. The options are Disabled, Legacy, and **EFI**.

**VGA Priority**

Use this item to select the active video type. The options are **Onboard** and Offboard.

**Network Stack**

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are **Enabled** and Disabled.

***\*If "Network Stack" is set to Enabled, the following items will display:***

**Ipv4 PXE Support**

Use this feature to enable Ipv4 PXE Boot Support. If this feature is disabled, it will not create the Ipv4 PXE Boot option. The options are Disabled and **Enabled**.

**Ipv6 PXE Support**

Use this feature to enable Ipv6 PXE Boot Support. If this feature is disabled, it will not create the Ipv6 PXE Boot option. The options are **Disabled** and Enabled.

**PXE Boot Wait Time**

Use this feature to select the wait time to press the ESC key to abort the PXE boot. The default is **0**.

**Media Detect Count**

Use this feature to select the wait time in seconds to detect LAN media. The default is **1**.

**►Super IO Configuration****Super IO Chip AST2400****►Serial Port 1 Configuration****COM1****Serial Port 1**

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled.

### Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.



**Note:** This item is hidden when Serial Port 1 is set to Disabled.

### Serial Port 1 Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified. The options are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

## ►Serial Port Console Redirection

### COM 1 Console Redirection

Select Enabled to enable COM Port 1 for Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are Enabled and **Disabled**.

***\*If the feature above is set to Enabled, the following items will become available for configuration:***

### ►COM1 Console Redirection Settings

#### COM1 Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

#### COM1 Bits Per second

Use this item to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

#### COM1 Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

**COM1 Parity**

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

**COM1 Stop Bits**

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and **2**.

**COM1 Flow Control**

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

**COM1 VT-UTF8 Combo Key Support**

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

**COM1 Recorder Mode**

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

**COM1 Resolution 100x31**

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

**COM1 Putty KeyPad**

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

**SOL****SOL Console Redirection**

Select Enabled to use the SOL port for Console Redirection. The options are Disabled and **Enabled**.

***\*If the feature above is set to Enabled, the following items will become available for configuration:***

## ►SOL Console Redirection Settings

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

### SOL Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

### SOL Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

### SOL Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

### SOL Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

### SOL Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

### SOL Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

### SOL VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

**SOL Recorder Mode**

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

**SOL Resolution 100x31**

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

**SOL Putty KeyPad**

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

**Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)**

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

**EMS (Emergency Management Services) Console Redirection**

Select Enabled to use a COM port selected by the user for EMS Console Redirection. The options are **Disabled** and Enabled.

***\*If the item above is set to Enabled, the following items will become available for configuration:***

**►EMS Console Redirection Settings**

This feature allows the user to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

**Out-of-Band Mgmt Port**

The feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are COM1 and **SOL**.

**Terminal Type**

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, VT100+, **VT-UTF8**, and ANSI.

**Bits Per Second**

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

**Flow Control**

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

**Data Bits**

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

**Parity**

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

**Stop Bits**

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

**►ACPI Settings**

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

**ACPI Settings****WHEA Support**

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are Disabled and **Enabled**.



## ►Trusted Computing (Available when a TPM device is installed and detected by the BIOS)

*\*The features from here to Current Status Information are displayed if a TPM module is detected:*

### Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

### TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are **Disable** and Enable.

### Pending operation

Use this item to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.



**Note:** Your system will reboot to carry out a pending TPM operation.

### Device Select

Use this feature to select the TPM version. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support for TPM 2.0 devices. Select Auto to enable support for both versions. The default setting is **Auto**.

### Current Status Information

This item displays the status of the TPM support on this motherboard.

- TPM Enabled Status
- TPM Active Status
- TPM Owner Status

*\*The features from here to Device Select on the next page are displayed if a TPM 2.0 module is detected:*

#### **TPM20 Device Found**

**Vendor:** IFX

**Firmware Version:** 5.51

#### **Configuration**

##### **Security Device Support**

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

The following TPM information will be displayed:

- Active PCR banks
- Available PCR banks

*\*If the feature "Security Device Support" is set to Enable, the following features will become available for configuration:*

##### **SHA-1 PCR Bank**

Use this item to disable or enable the SHA-1 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

##### **SHA256 PCR Bank**

Use this item to disable or enable the SHA256 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

##### **Pending operation**

Use this item to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.

##### **Platform Hierarchy**

Use this item to disable or enable platform hierarchy for platform protection. The options are Disabled and **Enabled**.

##### **Storage Hierarchy**

Use this item to disable or enable storage hierarchy for cryptographic protection. The options are Disabled and **Enabled**.

### **Endorsement Hierarchy**

Use this item to disable or enable endorsement hierarchy for privacy control. The options are Disabled and **Enabled**.

### **TPM2.0 UEFI Spec Version**

Use this feature to specify the TPM UEFI spec version. TCG 1.2 has support for Windows® 2012, Windows 8, and Windows 10. TCG 2 has support for Windows 10 or later. The options are TCG\_1\_2 and **TCG\_2**.

### **Physical Presence Spec Version**

Use this feature to select the PPI spec version. The options are **1.2** and 1.3.

### **Device Select**

Use this feature to select the TPM version. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support for TPM 2.0 devices. Select Auto to enable support for both versions. The default setting is **Auto**.

## **► iSCSI Configuration**

### **iSCSI Initiator Name**

This feature allows the user to enter the unique name of the iSCSI Initiator in IQN format. Once the name of the iSCSI Initiator is entered into the system, configure the proper settings for the following items.

► **Add an Attempt**

► **Delete Attempts**

► **Change Attempt Order**

► **Intel® Ethernet Connection X553 1GbE - 0C:C4:7A:XX:XX:XX**

► **Intel® Ethernet Connection X553 1GbE - 0C:C4:7A:XX:XX:XX**

► **Intel® Ethernet Connection X553 1GbE - 0C:C4:7A:XX:XX:XX**

► **Intel® Ethernet Connection X553 1GbE - 0C:C4:7A:XX:XX:XX**

These items display the following information :

## **► NIC Configuration**

### **Link Speed**

Use this feature to change the link speed and duplex for the current port. The options are **Auto Negotiated**, 10Mbps Half, 10Mbps Full, 100Mbps Half, and 100Mbps full.

### **Wake On LAN**

Select enabled to wake the system with a magic packet. The options are **Enabled** and **Disabled**.

### **Blink LEDs**

This feature allows the user to specify the duration for LEDs to blink. The range is from 0 ~ 15 seconds. The default setting is **0**.

### **UEFI Driver**

This item displays the UEFI driver version.

### **Adapter PBA**

This item displays the Processor Bus Adapter (PBA) model number. The PBA number is a nine digit number (i.e., 010B00-000) located near the serial number.

### **Device Name**

This item displays the adapter device name.

### **Chip Type**

This item displays the network adapter chipset name.

### **PCI Device ID**

This item displays the device ID number.

### **PCI Address**

This item displays the PCI address for this computer. PCI addresses are three two-digit hexadecimal numbers.

### **Link Status**

This item displays the connection status.

### **MAC Address**

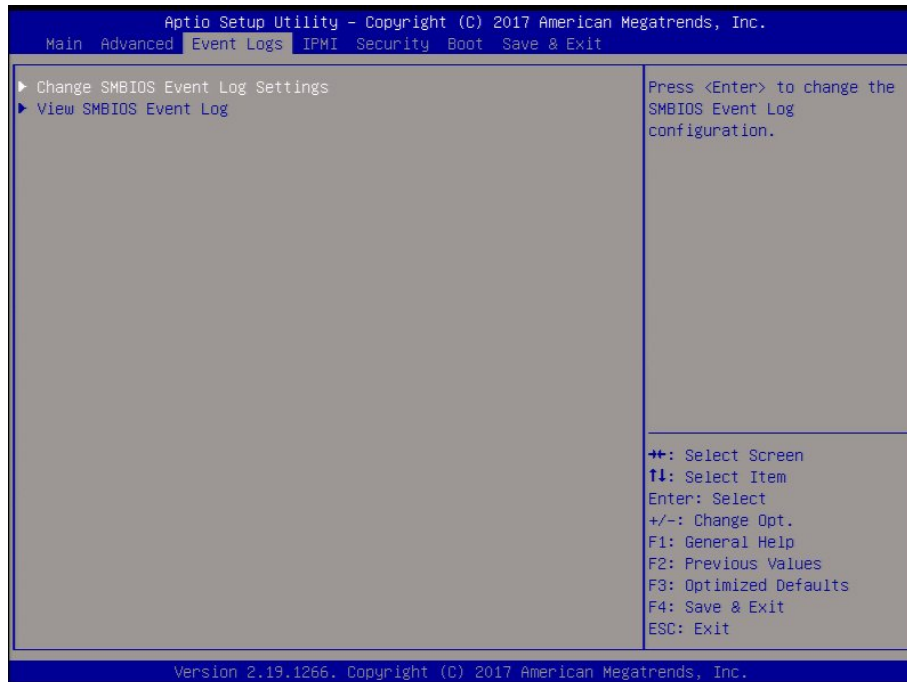
This item displays the MAC address for this computer. Mac addresses are six two-digit hexadecimal numbers.

### **Virtual MAC Address**

This item displays the Virtual MAC address for this computer. Mac addresses are six two-digit hexadecimal numbers.

## 5.4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings

#### Enabling/Disabling Options

##### PCIe ELog Support

Use this feature to enable or disable PCIe error logging suport. The options are Disabled and **Enabled**.

##### Memory ELog Support

Use this feature to enable or disable memory error logging suport. The options are Disabled and **Enabled**.

##### SMBIOS Event Log

Change this item to enable or disable all features of the SMBIOS Event Logging during system boot. The options are **Enabled** and Disabled.

## Erasing Settings

### Erase Event Log

Select Enabled to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No**, Yes, Next reset, and Yes, Every reset.

### When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

## SMBIOS Event Log Standard Settings

### Log System Boot Event

Select Enabled to log system boot events. The options are Enabled and **Disabled**.

### MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number between 1 to 255. The default setting is **1**.

### METW (Multiple Event Count Time Window)

This item is used to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

**Note:** Please reboot the system for the changes to take effect.

## ►View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. The following categories are displayed:

**DATE/TIME/ERROR CODE/SEVERITY**

## 5.5 IPMI

Use this feature to configure Intelligent Platform Management Interface (IPMI) settings.



### BMC Firmware Revision

This feature indicates the IPMI firmware revision used in your system.

### IPMI Status

This feature indicates the status of the IPMI firmware installed in your system.

### ► System Event Log

#### Enabling/Disabling Options

##### SEL Components

Select Enabled for all system event logging at bootup. The options are Disabled and Enabled.

#### Erasing Settings

##### Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No**, Yes, On next reset, and Yes, On every reset.

### When SEL is Full

This feature allows the user to determine what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

**Note:** After making changes on a setting, be sure to reboot the system for the changes to take effect.

## ► BMC Network Configuration

The following items will be displayed:

### IPMI LAN Selection

This item displays the IPMI LAN setting. The default setting is **Failover**.

### IPMI Network Link Status

This item displays the IPMI Network Link status. The default setting is **Dedicated LAN**.

### Update IPMI LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes at the next system boot. The options are **No** and Yes.

***\*If the item above is set to Yes, "Configuration Address Source" and "VLAN" will become available for configuration:***

### Configuration Address Source

Use this item to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** and Static.

The following items are assigned IP addresses automatically if DHCP is selected, or they can be configured manually if Static is selected.

### Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

### Subnet Mask

This item displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.



**Station MAC Address**

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

**Gateway IP Address**

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

**VLAN**

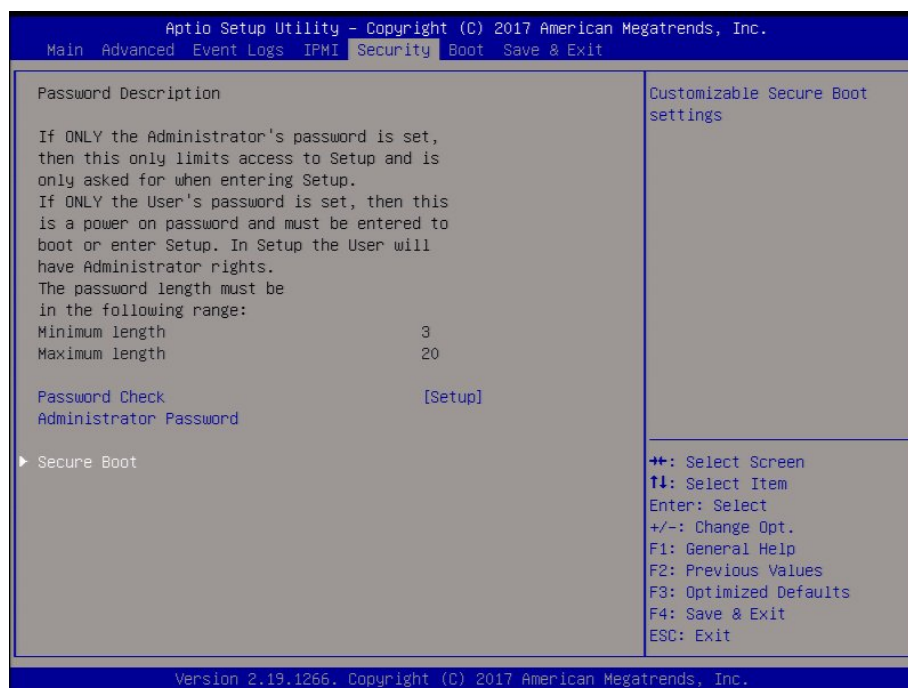
This feature is configurable if the Update IPMI LAN Configuration feature is set to Yes. Use this feature to enable or disable the IPMI VLAN function. The options are **Disable** and **Enable**.

**IPMI Function Support**

Use this feature to enable IPMI support. The options are **Enabled** and **Disabled**. When disabled, the system powers on quicker by removing BIOS support for extended IPMI features. The Disable option is for applications that require faster power on time without using Supermicro Update Manager (SUM) or extended IPMI features. The BMC network configuration in the BIOS setup is also invalid when IPMI Function Support is disabled. The general BMC function and motherboard health monitor such as fan control are still functioning even when this option is disabled.

## 5.6 Security

This menu allows the user to configure the following security settings for the system.



### Password Check

Select Setup for the system to check for a password at Setup. Select Always for the system to check for a password at bootup or upon entering the BIOS Setup utility. The options are **Setup** and **Always**.

### Administrator Password

Use this feature to set the administrator password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

***\*The feature below is displayed if an Administrator Password is set:***

### User Password

Use this feature to set a user password.

### ► Secure Boot

**Platform Mode** - Setup

**Secure Boot** - Not Active

**Vendor Keys** - Not Active

### **Enable Secure Boot**

Select Enable for secure boot support to ensure system security at bootup. The options are **Disabled** and Enabled.

### **Secure Boot Mode**

This feature allows the user to select the desired secure boot mode for the system. The options are Standard and **Custom**.

***\*If Secure Boot Mode is set to Customized, Key Management features will be available for configuration:***

#### **► CSM Support**

This feature is for manufacturing debugging purposes.

#### **► Reset to Setup Mode**

Select Yes to delete all Secure Boot key databases and force the system to Setup Mode. The options are Yes and No.

#### **► Restore Factory Keys**

Select Yes to restore all factory keys to the default settings. The options are Yes and No.

#### **► Key Management**

This submenu allows the user to configure the following Key Management settings.

##### **Provision Factory Defaults**

Select Enabled to install the default Secure Boot keys set by the manufacturer. The options are **Disabled** and Enabled.

##### **Install Factory Default Keys**

Select Yes to install the default settings for all keys. The options are Yes and No.

#### **► Enroll Efi Image**

This feature allows the image to run in Secure Boot mode.

#### **► Save All Secure Boot Variables**

This feature allows the user to decide if all secure boot variables should be saved.

#### **► Platform Key (PK)**

This feature allows the user to configure the settings of the platform keys.

##### **Set New**

Select Yes to load the new platform keys (PK) from the manufacturer's defaults. Select No to load the platform keys from a file. The options are **Yes** and No.

### ► **Key Exchange Key (KEK)**

#### **Set New**

Select Yes to load the KEK from the manufacturer's defaults. Select No to load the KEK from a file. The options are Yes and No.

#### **Append**

Select Yes to add the KEK from the manufacturer's defaults list to the existing KEK. Select No to load the KEK from a file. The options are Yes and No.

### ► **Authorized Signatures**

#### **Set New**

Select Yes to load the database from the manufacturer's defaults. Select No to load the DB from a file. The options are Yes and No.

#### **Append**

Select Yes to add the database from the manufacturer's defaults to the existing DB. Select No to load the DB from a file. The options are Yes and No.

### ► **Forbidden Signatures**

#### **Set New**

Select Yes to load the DBX from the manufacturer's defaults. Select No to load the DBX from a file. The options are Yes and No.

#### **Append**

Select Yes to add the DBX from the manufacturer's defaults to the existing DBX. Select No to load the DBX from a file. The options are Yes and No.

### ► **Authorized TimeStamps**

#### **Set New**

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file. The options are Yes and No.

#### **Append**

Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file. The options are Yes and No.

**► OsRecovery Signature**

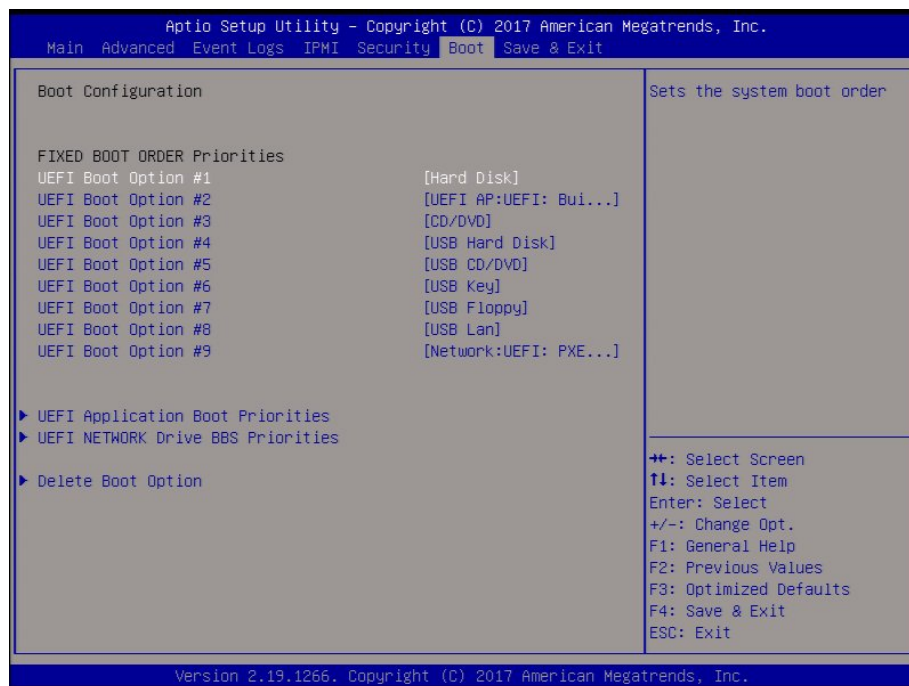
This item uploads and installs an OSRecovery Signature. You may insert a factory default key or load from a file. The file formats accepted are:

- 1) Public Key Certificate
  - a. EFI Signature List
  - b. EFI CERT X509 (DER Encoded)
  - c. EFI CERT RSA2048 (bin)
  - d. EFI SERT SHA256 (bin)
- 2) EFI Time Based Authenticated Variable

When prompted, select "Yes" to load Factory Defaults or "No" to load from a file.

## 5.7 Boot

Use this feature to configure Boot Settings:



### Fixed Boot Order Priorities

This option prioritizes the order of bootable devices that the system boots from. Press <Enter> on each entry from top to bottom to select devices.

- UEFI Boot Option #1
- UEFI Boot Option #2
- UEFI Boot Option #3
- UEFI Boot Option #4
- UEFI Boot Option #5
- UEFI Boot Option #6
- UEFI Boot Option #7
- UEFI Boot Option #8
- UEFI Boot Option #9

**►UEFI Application Boot Priorities**

- Boot Option # - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled.

**►UEFI USB Key Drive BBS Priorities**

This feature is displayed when a storage media is detected.

**►UEFI Network Drive BBS Priorities**

- Boot Option # - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled.

**►Add New Boot Option**

This feature is displayed when a storage media is detected.

**►Delete Boot Option**

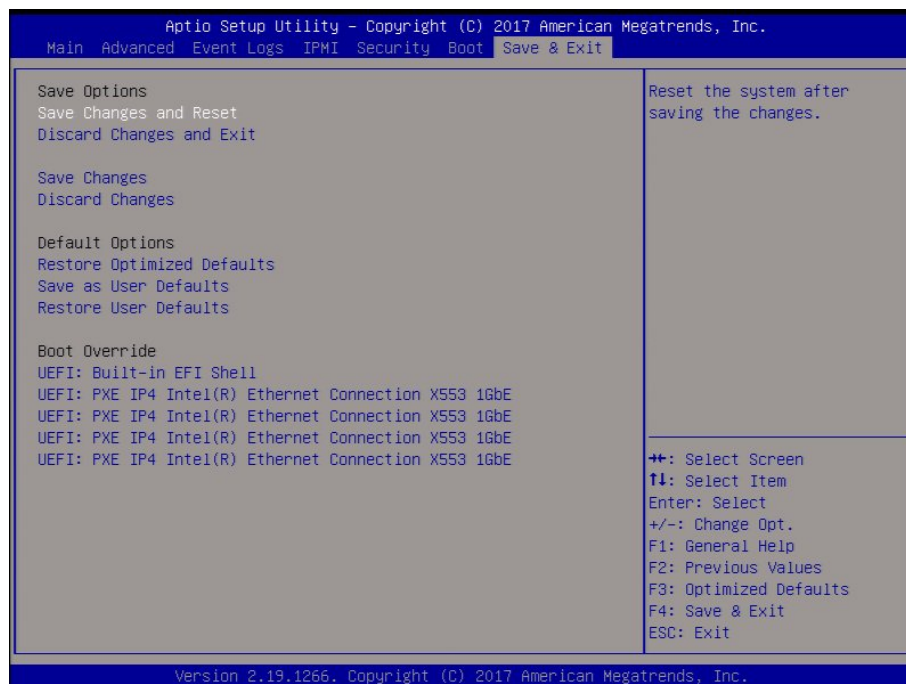
Use this item to select a boot device to delete from the boot priority list.

**Delete Boot Option**

Select the target boot device to delete.

## 5.8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below.



### Save Options

#### Save Changes and Reset

When you have completed the system configuration changes, select this option to save all changes made and reset the system.

#### Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

#### Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

#### Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.



## **Default Options**

### **Restore Optimized Defaults**

To set this feature, select Restore Optimized Defaults and press <Enter>. These are factory settings designed for maximum system performance but not for maximum stability.

### **Save as User Defaults**

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

### **Restore User Defaults**

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

### **Boot Override**

This feature allows the user to override the Boot Option Priorities sequence in the Boot menu and immediately boot the system with another device specified by the user. This is a one-time override.

### **UEFI: Built-in EFI Shell**

**UEFI: PXE IP4 Intel® Ethernet Connection X553 1GbE**

**UEFI: PXE IP4 Intel® Ethernet Connection X553 1GbE**

**UEFI: PXE IP4 Intel® Ethernet Connection X553 1GbE**

**UEFI: PXE IP4 Intel® Ethernet Connection X553 1GbE**

# Appendix A

## BIOS Codes

### A.1 BIOS Error POST (Beep) Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

**Non-fatal errors** are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

**Fatal errors** are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

BIOS Beep (POST) Codes		
Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 long, 2 short	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

## A.2 Additional BIOS POST Codes

The AMI BIOS supplies additional checkpoint codes, which are documented online at <http://www.supermicro.com/support/manuals/> ("AMI BIOS POST Codes User's Guide").

When BIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, a diagnostic card can be attached to the computer to read I/O port 0080h (Supermicro p/n AOC-LPC80-20).

For information on AMI updates, please refer to <http://www.ami.com/products/>.

## Appendix B

# Standardized Warning Statements for AC Systems

### B.1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our website at [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm).

#### Warning Definition



**Warning!** This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

#### 警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危險。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

## Warnung

### WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

### INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

### IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

## תקנון הזהרות אזהרה

הזהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים. יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

اَكْ ف حالة وُكِي اَي تتسبب ف اصابة جسدهُ هذا الزهرز عُ خطر! تحذُرُ .  
 قبل اَي تعول على اَي هعدات، كي على علن بالوخاطز ال اُجوة عي الذوائر  
 الكهزبائِة  
 وكي على دراةُ بالووارسات النقاائِة لو عُ وقع اَي حادث  
 استخدم رَقن الب اِي الو صُص ف هَاةُ كل تحذُرُ للعشر تزجوتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는  
 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된  
 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기  
 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

## BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

## BEWAAR DEZE INSTRUCTIES

### Installation Instructions



**Warning!** Read the installation instructions before connecting the system to the power source.

### 設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

### 警告

将此系统连接电源前,请先阅读安装说明。

### 警告

將系統與電源連接前，請先閱讀安裝說明。

#### Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

#### ¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

#### Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقرأ إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

#### Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

### Circuit Breaker



**Warning!** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

#### サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

#### 警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

#### 警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

#### Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

#### ¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

#### Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250VDC, 20A

هذا المنتج يعتمد على معدات الحماية مه الدوائر القصيرة التي تم تثبيتها في المبنى  
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20A, 250V

#### 경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

#### Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 250V, 20A.



## Power Disconnection Warning



**Warning!** The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

### 電源切斷の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシ内部にアクセスするには、システムの電源はすべてのソースから切斷され、電源コードは電源モジュールから取り外す必要があります。

### 警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

### 警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

### Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

### ¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

### Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de système.

אזהרה מפני ניתוק חשמלי

אזהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل انظاؤ من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد  
انطاقت قېم  
انصل إلى امناطق انداخھيت نهھيكم نتشيج أو إزانت مكنناث الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

## Equipment Installation



**Warning!** Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

**Attention**

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاز يجب أن يسمح فقط للموظفيه المؤهليه

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

**Waarschuwing**

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

**Restricted Area**

**Warning!** This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

**アクセス制限区域**

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

**警告**

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

**警告**

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

### Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

### ¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

### Attention

Cet appareil doit être installé dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת 'כלי אבטחה בלבד' (מפתח, מנעול וכד.).

تخصيص هذه انحدزة نترك بُها ف مناطق محظورة تم .  
ممكن اننصل إن منطقت محظورة فقط من خلال استخداو أداة خاصت  
أو أ وس هُت أخري نلاأمما قفم ومفتاح

### 경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

### Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

## Battery Handling



**Warning!** There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

### 電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

### 警告

電池更換不當會有爆炸危險。請只使用同類電池或制造商推荐的功能相当的電池更換原有電池。請按制造商的說明處理廢舊電池。

### 警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

### Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

### Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

### ¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

### אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת. סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبذال البطارية بطريقة غير صحيحة فعلى  
اسحبذال البطارية  
فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة  
جخلص من البطاريات المسحمة وفقا لعمليات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontplofingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

## Redundant Power Supplies



**Warning!** This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom zugeführt wird, müssen alle Verbindungen entfernt werden.

**¡Advertencia!**

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

**Attention**

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה!

ליחידה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

**경고!**

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

**Waarschuwing**

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

## Backplane Voltage



**Warning!** Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

### バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

### 警告

当システム正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

### 警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

### Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

### ¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

### Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה!

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.



هناك خطر من التيار الكهربائي أو الطاقة المبددة على الساحة  
عندما يكون النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생 합니다.  
서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

## Comply with Local and National Electrical Codes



**Warning!** Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי

אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة  
بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

## Product Disposal



**Warning!** Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

## Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية عند

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

## Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

## Hot Swap Fan Warning



**Warning!** Hazardous moving parts. Keep away from moving fan blades. The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

## ファン・ホットスワップの警告

警告!回転部品に注意。運転中は回転部(羽根)に触れないでください。シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告!

警告! 危险的可移动性零件。请务必与转动的风扇叶片保持距离。当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

危险的可移动性零件。请务必与转动的风扇叶片保持距离。当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇。

**Warnung**

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

**¡Advertencia!**

Riesgo de piezas móviles. Mantener alejado de las aspas del ventilador. Los ventiladores podran dar vuelta cuando usted quite el montaje del ventilador del chasis. Mantenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

**Attention**

Pieces mobiles dangereuses. Se tenir a l'écart des lames du ventilateur Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

**אזהרה!**

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולה כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير! أجزاء متحركة خطيرة. ابتعد عن شفرات المروحة المتحركة. من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة

**경고!**

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

**Waarschuwing**

Gevaarlijk bewegende onderdelen. Houd voldoende afstand tot de bewegende ventilatorbladen. Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

## Power Cable and AC Adapter



**Warning!** When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

### 電源コードとACアダプター

製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとACアダプターを、該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。

電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicro が指定する製品以外に使用することを禁止しています。

### 警告

安装此产品时,请使用本身提供的或指定的或采购的连接线,电源线和电源适配器。包含遵照当地法规和安全要求的合规的电源线尺寸和插头。使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

### 警告

安裝此產品時,請使用本身提供的或指定的或採購的連接線,電源線和電源適配器。包含遵照當地法規和安全要求的合規的電源線尺寸和插頭。使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

### Warnung

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapter, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adapter können Fehlfunktionen oder Feuer verursachen. Die Richtlinien untersagen das Nutzen von UL oder CAS zertifizierten Kabeln (mit UL/CSA gekennzeichnet), an Geräten oder Produkten die nicht mit Supermicro gekennzeichnet sind.

### ¡Advertencia!

Cuando instale el producto, utilice la conexión provista o designada o procure cables, Cables de alimentación y adaptadores de CA que cumplan con los códigos locales y los requisitos de seguridad, incluyendo el tamaño adecuado del cable y el enchufe. El uso de otros cables y adaptadores podría causar un mal funcionamiento o un incendio. La Ley de Seguridad de Aparatos Eléctricos y de Materiales prohíbe El uso de cables certificados por UL o CSA (que tienen el certificado UL / CSA en el código) para cualquier otros dispositivos eléctricos que los productos designados únicamente por Supermicro.

### Attention

Lors de l'installation du produit, utilisez les cables de connection fournis ou désigné ou achetez des cables, cables de puissance et adaptateurs respectant les normes locales et les conditions de securite y compris les tailles de cables et les prises electriques appropries. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifiés- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

AC כבלים חשמליים ומתאמי

אזהרה!

אשר נרכשו או הותאמו לצורך ההתקנה, ואשר הותאמו לדרישות AC כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים הבטיחות המקומיות, כולל מידה נכונה של הכבל והתקע. שימוש בכל כבל או מתאם מסוג אחר, עלול לגרום לתקלה או קצר חשמלי. בהתאם כאשר מופיע עליהם קוד) UL-CSA או ב UL - לחוקי השימוש במכשירי החשמל וחוקי הבטיחות, קיים איסור להשתמש בכבלים המוסמכים ב Supermicro עבור כל מוצר חשמלי אחר, אלא רק במוצר אשר הותאם ע"י (UL/CSA) של

عند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحوّلات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقابس السليم. استخدام أي كابلات ومحوّلات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة Supermicro مع أي معدات أخرى غير المنتجات المعنية والمحددة من قبل (UL/CSA) والتي تحمل علامة CSA أو UL من قبل

### 전원 케이블 및 AC 어댑터

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오.

다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블)을 Supermicro가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

### Stroomkabel en AC-Adapter

Waarschuwing! Bij het aansluiten van het Product uitsluitend gebruik maken van de geleverde Kabels of een andere geschikte aan te schaffen Aansluitmethode, deze moet altijd voldoen aan de lokale voorschriften en veiligheidsnormen, inclusief de juiste kabeldikte en stekker. Het gebruik van niet geschikte Kabels en/of Adapters kan een storing of brand veroorzaken. Wetgeving voor Elektrische apparatuur en Materiaalveiligheid verbied het gebruik van UL of CSA -gecertificeerde Kabels (met UL/CSA in de code) voor elke andere toepassing dan de door Supermicro hiervoor beoogde Producten.

# Appendix C

## System Specifications

### Processors

Single Intel Atom C3000 Series Dual-Core SoC in an FCBGA1310 type socket

**Note:** Please refer to the motherboard specifications pages on our website for updates to supported processors.

### Chipset

n/a

### BIOS

API Flash EEPROM with AMI UEFI BIOS

### Memory

Up to 128GB RDIMM or 32GB UDIMM ECC/Non ECC DDR4-1866

**Note:** See the memory section in Chapter 3 for details and the Supermicro website for updates to supported memory.

### SATA Controller

SATA 3.0 (6Gbps) from Intel SoC

### Drive Bays

Four 3.5" hot-swap drive bays

Two internal fixed 2.5" hard drive bays (DVD-ROM as an option in the top 2.5" bay)

### PCI Expansion Slots

One PCI-E 3.0 x4

### Motherboard

A2SDi-2C-HLN4F; Mini-ITX form factor 6.7" x 6.7" (17cm x 17cm)

### Chassis

SC721TQ-250B; Mini ITX, 8.27" (210mm) x 9.45" (240mm) x 11" (279mm) (W x H x D)

### System Cooling

One 12-cm rear exhaust fan

### Power Supply

One 250W flex ATX power supply

+12V (18A), -12V (.3A), +5V (14A), +3.3V (12A), +5Vstby (2.5A)

Power cord specifications: Type SVT or SJT, minimum 18 AWG or better, minimum 125V, minimum 8A, maximum 4.5m long

### Operating Environment

Operating Temperature: 0°C to 40°C (32°F to 104°F)

Non-operating Temperature: -20°C to 60°C (-4°F to 140°F)

Operating Relative Humidity: 10% to 85% (non-condensing)

Non-operating Relative Humidity: 10% to 95% (non-condensing)



### **Regulatory Compliance**

Electromagnetic Emissions: FCC Class B, EN 55032 Class B, EN 61000-3-2/3-3, CISPR 22 Class B

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

1. The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.
2. Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

### **Perchlorate Warning**

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)"