



**X11SDD-8C-F
X11SDD-18C-F**

USER MANUAL

Revision 1.0

The information in this user's manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our website at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL Super Micro Computer, Inc. BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPER MICRO COMPUTER, INC. SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Supermicro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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".



WARNING: This product can expose you to chemicals including lead, known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.

Manual Revision 1.0

Release Date: January 22, 2019

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document. Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2019 by Super Micro Computer, Inc.
All rights reserved.

Printed in the United States of America

Preface

About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the X11SDD-8C/18C-F motherboard.

About This Motherboard

The Supermicro X11SDD-8C-F motherboard comes with an integrated Intel® Xeon® D-2141I, 8 Core, 65W SoC, whereas the X11SDD-18C-F comes with an Intel Xeon D-2191, 18 Core, 86W SoC (FCBGA1310). The new Intel Xeon D-2100 processor brings the advanced intelligence of the Intel Xeon Scalable processor architecture into an optimized, dense, lower-power system-on-a-chip (SoC) form factor for environments. The X11SDD series are an ideal solution for specialty cloud services such as web-tier and content distribution seeking the best performance per watt when strategically placing service resources closer to the endpoints. The following are some features that are offered: SATA 3.0, NVMe, Node Manager, TXT, VT-d, AES-NI, AVX-512, ECC, SDDC, up to 512GB memory, PCI-E 3.0, two M.2 M-Key PCI-E 3.0 x4 connectors, a Micro LP PCI-E slot for add-on card connectivity, and the reliability and dependability of a Supermicro product. Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, refer to our website at <http://www.supermicro.com/products/>.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:



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



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



Important: Important information given to ensure proper system installation or to relay safety precautions.



Note: Additional Information given to differentiate various models or to provide information for correct system setup.

Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.
Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Website: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands
Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)
Website: www.supermicro.nl

Asia-Pacific

Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 235
Taiwan (R.O.C)
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3992
Email: support@supermicro.com.tw
Website: www.supermicro.com.tw

Table of Contents

Chapter 1 Introduction

1.1 Checklist	8
Quick Reference	11
Quick Reference Table	12
Motherboard Features	13
1.2 Processor Overview	16
1.3 Special Features	16
Recovery from AC Power Loss	16
1.4 System Health Monitoring	17
Onboard Voltage Monitors	17
Fan Status Monitor with Firmware Control	17
Environmental Temperature Control	17
System Resource Alert	17
1.5 ACPI Features	18
1.6 Power Supply	18
1.7 Super I/O	18

Chapter 2 Installation

2.1 Static-Sensitive Devices	19
Precautions	19
Unpacking	19
2.2 Motherboard Installation	20
Tools Needed	20
Location of Mounting Holes	20
Installing the Motherboard	21
2.3 Memory Support and Installation	22
Memory Support	22
DIMM Module Population Configuration	22
DIMM Module Population Sequence	23
DIMM Installation	24
DIMM Removal	24
2.4 Rear I/O Ports	25

2.5 Connectors	29
Power Connection	29
Headers	30
2.6 Jumper Settings	34
How Jumpers Work	34
2.7 LED Indicator	38
<i>Chapter 3 Troubleshooting</i>	
3.1 Troubleshooting Procedures	40
Before Power On	40
No Power	40
No Video	40
System Boot Failure	41
Memory Errors	41
Losing the System's Setup Configuration	42
When the System Becomes Unstable	42
3.2 Technical Support Procedures	44
3.3 Frequently Asked Questions	45
3.4 Battery Removal and Installation	46
Battery Removal	46
Proper Battery Disposal	46
Battery Installation	46
3.5 Returning Merchandise for Service	47
<i>Chapter 4 BIOS</i>	
4.1 Introduction	48
Starting the Setup Utility	48
4.2 Main Setup	49
4.3 Advanced	51
4.4 IPMI	80
4.5 Security	83
4.6 Event Logs	87
4.7 Boot	89
4.8 Save & Exit	91

Appendix A BIOS Codes

A.1 BIOS Error POST (Beep) Codes	93
A.2 Additional BIOS POST Codes.....	94

Appendix B Software Installation

B.1 Installing Software Programs	95
B.2 SuperDoctor® 5.....	96

Appendix C Standardized Warning Statements

Battery Handling.....	97
Product Disposal	99

Appendix D UEFI BIOS Recovery

D.1 Overview.....	100
D.2 Recovering the UEFI BIOS Image	100
D.3 Recovering the Main BIOS Block with a USB Device	101

Chapter 1

Introduction

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer. The following items are included in the retail box:

1.1 Checklist

Main Parts List		
Description	Part Number	Quantity
Supermicro Motherboard	X11SDD-8C/18C-F	1

Important Links

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.

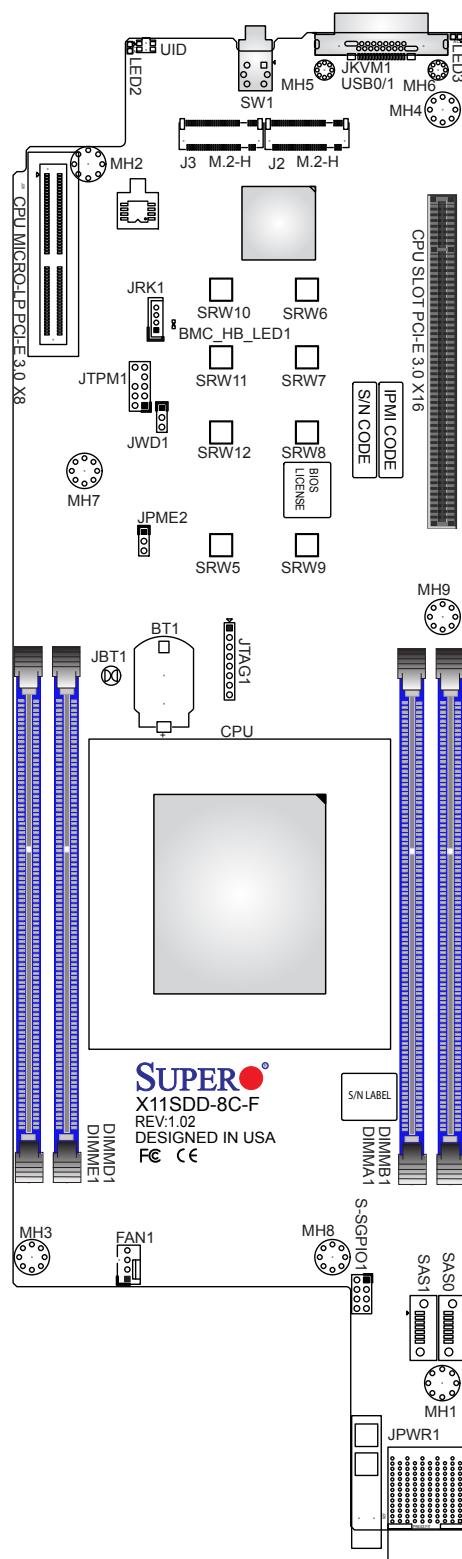
- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wftp/driver/>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.com

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

Figure 1-1. X11SDD-8C-F Motherboard Image



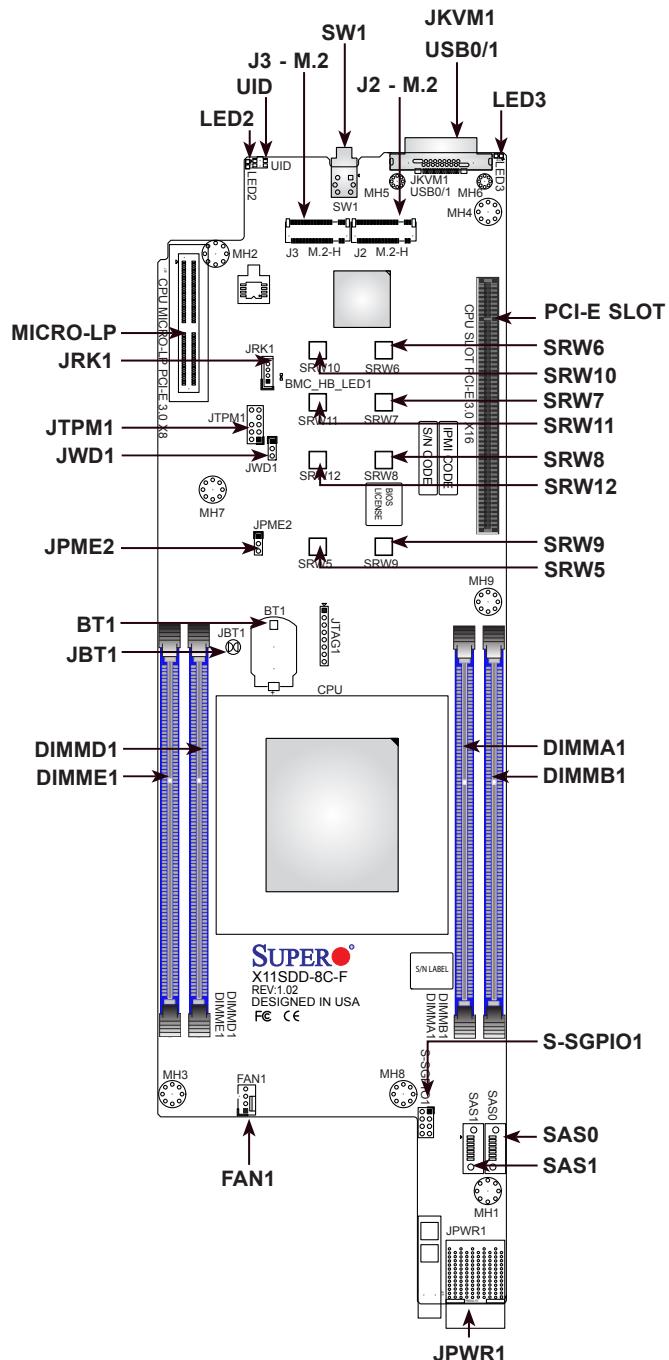
Figure 1-2. X11SDD-8C-F Motherboard Layout
(not drawn to scale)



Note: Components not documented are for internal testing only.



Quick Reference



Notes:

- See Chapter 2 for detailed information on jumpers, I/O ports, and JF1 front panel connections. Jumpers/LED indicators not indicated are used for testing only.
- "■" indicates the location of Pin 1.
- When LED3 (System Failure LED indicator) is on, the system is in danger of the following: overheating, fan or power failure. Unplug the power cable before installing or removing any components.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JPME2	ME Manufacturing Mode	Pins 1-2 (Normal)
JWD1	Watch Dog Timer	Pins 1-2 (Reset)
LED	Description	Status
BMC_HB_LED1	BMC Heartbeat LED	Blinking Green: BMC Normal
LED2	UID LED	Solid Blue: Unit Identified
LED3	System Failure LED	Solid Red: Overheating Blinking Red: Power or Fan Failure
Connector	Description	
BT1	Onboard Battery	
FAN1	System Fan Header	
J2	M.2 M-key Slot	
J3	M.2 M-key Slot	
JKVM1	Keyboard/Video/Mouse Connector	
JPWR1	12V DC Power Connector	
JRK1	Intel RAID Key Header	
JTPM1	Trusted Platform Module (TPM) Header	
MICRO-LP	CPU MICRO-LP PCI-E 3.0 x8 Slot	
PCI-E Slot	PCI-E 3.0 x16 Slot	
SAS0 - SAS1	Serial Attached SCSI 3.0 Ports when a SAS Add on Card is installed	
S-SGPIO1	Serial General Purpose I/O Header	
SRW5 - SRW12	M.2 Holding Screws	
SW1	Power Switch	
UID	Unit ID Switch	
USB0/1	Back Panel USB 2.0 Ports	

Motherboard Features

Motherboard Features	
CPU	<ul style="list-style-type: none"> • X11SDD-8C-F: Intel Xeon D-2141I, 8 Core, 16 Threads, 65W • X11SDD-18C-F: Intel Xeon D-2191, 18 Core, 32 Threads, 86W
Memory	<ul style="list-style-type: none"> • Supports up to 256GB Registered ECC RDIMM and up to 512GB LRDIMM
DIMM Size	<ul style="list-style-type: none"> • 8GB, 16GB, 32GB, 64GB, 128GB
Expansion Slots	<ul style="list-style-type: none"> • One (1) PCI-E 3.0 x16 slot • One (1) Micro-LP PCI-E 3.0 x8 slot • Two (2) M.2 PCI-E 3.0 slots (M-Key 2280/22110) with SATA3 support
Baseboard Management Controller (BMC)	<ul style="list-style-type: none"> • ASpeed AST2500 Baseboard Controller (BMC) supports IPMI 2.0
Graphics	<ul style="list-style-type: none"> • Graphics controller via ASpeed AST2500
I/O Devices	<ul style="list-style-type: none"> • SAS 3.0 (via Backplane) • Two (2) SAS 3.0 ports (via Backplane)
Peripheral Devices	<ul style="list-style-type: none"> • Two (2) USB 3.0 back panel ports (USB0/1)
BIOS	<ul style="list-style-type: none"> • 256Mb AMI BIOS® SPI Flash BIOS • ACPI 6.2, SMBIOS 2.8/3.2, UEFI 2.7, PCI FW 3.1, Real Time Clock (RTC) Support.



Note: The table above is continued on the next page.

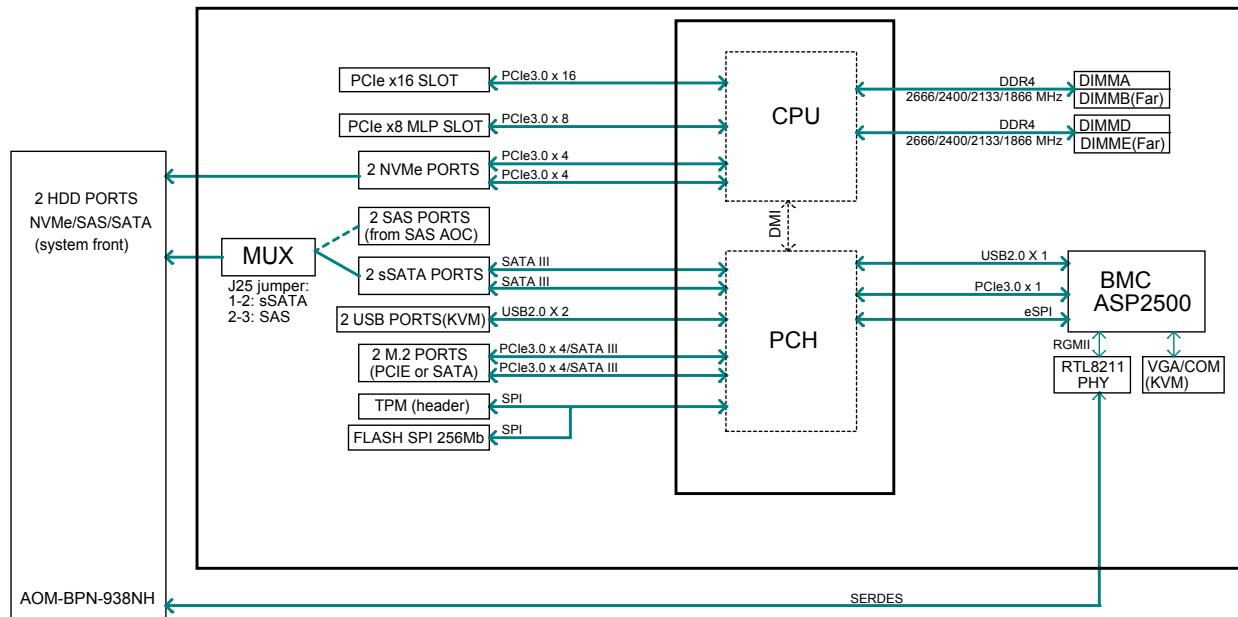
Motherboard Features	
Power Management	
<ul style="list-style-type: none"> • ACPI power management • CPU fan auto-off in sleep mode • Power button override mechanism • Power-on mode for AC power recovery 	
System Health Monitoring	
<ul style="list-style-type: none"> • Onboard voltage monitors for CPU cores, +1.8V, +3.3V, +5V, +12V, +3.3V Stby, +5V Stby, VBAT, HT, Memory, system temperature, and memory temperature • Status monitor for on/off control • CPU switching phase voltage regulator • CPU thermal trip support 	
Fan Control	
<ul style="list-style-type: none"> • One 4-pin fan header • Fan status monitoring via IPMI connections 	
System Management	
<ul style="list-style-type: none"> • Intel Node Manager Base for Adaptive Power Management • IPMI 2.0 • System resource alert via SuperDoctor® 5, Watch Dog, NMI • Chassis Intrusion header and detection • Power supply monitoring 	
LED Indicators	
<ul style="list-style-type: none"> • BMC Heartbeat LED • System Overheat, Power or Fan fail LED • UID / Remote UID 	
Other	
<ul style="list-style-type: none"> • RoHS 	
Dimensions	
<ul style="list-style-type: none"> • 4.66" x 18.50" (118.4 mm x 469.9 mm) 	



Note 1: The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, please check the chassis and heatsink specifications for proper CPU TDP sizing.

Note 2: For IPMI configuration instructions, please refer to the Embedded IPMI Configuration User's Guide available at <http://www.supermicro.com/support/manuals/>.

Figure 1-3.
Chipset Block Diagram



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

1.2 Processor Overview

The Intel Xeon D-2141I and D-2191 series processor offers performance, reliability, and high intelligence. As a low-power system-on-a-chip motherboard, the X11SDD-8C/18C-F is optimized for a variety of workloads that include networking and cloud storage.

- 14nm silicon process technology enables high density, lower-power system designs with thermal design points of 60W to 110W. (D-2141I 65W, D-2191 86W)
- Up to four integrated ports of 10 Gigabit Intel® Ethernet
- Up to 512 GB of memory
- Intel Turbo Boost Technology 2.0, Intel Speed Shift Technology, and Intel Hyper-Threading Technology (Intel HT Technology).
- Intel Advanced Encryption Standard New Instructions (Intel AES-NI) provide integrated support for fast, low-overhead encryption, and Intel Trusted Execution Technology (Intel TXT) provides platform verification (through authenticated boot) to enable strong security with reduced performance impact
- New Intel Advanced Vector Extensions 512 (Intel AVX-512)
- Includes Intel Node Manager (Intel NM) Base for adaptive power management

1.3 Special Features

This section describes the health monitoring features of the X11SDD-8C/18C-F motherboard. The motherboard has an onboard System Hardware Monitor chip that supports system health monitoring.

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See the Advanced BIOS Setup section for this setting. The default setting is **Last State**.

1.4 System Health Monitoring

This section describes the health monitoring features of the X11SDD-8C/18C-F motherboard. The motherboard has an onboard Baseboard Management Controller (BMC) chip that supports system health monitoring. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen.

Onboard Voltage Monitors

The onboard voltage monitor will continuously scan crucial voltage levels. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor. Real time readings of these voltage levels are all displayed in BIOS.

Fan Status Monitor with Firmware Control

The system health monitor embedded in the BMC chip can check the RPM status of the cooling fans. The CPU and chassis fans are controlled via IPMI.

Environmental Temperature Control

System Health sensors monitor temperatures and voltage settings of onboard processors and the system in real time via the IPMI interface. Whenever the temperature of the CPU or the system exceeds a user-defined threshold, system/CPU cooling fans will be turned on to prevent the CPU or the system from overheating



Note: To avoid possible system overheating, please provide adequate airflow to your system.

System Resource Alert

This feature is available when used with SuperDoctor 5® in the Windows OS or in the Linux environment. SuperDoctor is used to notify the user of certain system events. For example, you can configure SuperDoctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a predefined range.

1.5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a computer system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with Windows® 2012.

1.6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1.7 Super I/O

The Super I/O (Aspeed AST2500 chip) provides a high-speed, 16550 compatible serial communication port (UART), which supports serial infrared communication. The UART includes send/receive FIFO, a programmable baud rate generator, complete modem control capability, and a processor interrupt system. The UART provides legacy speed with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, supporting higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2

Installation

2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

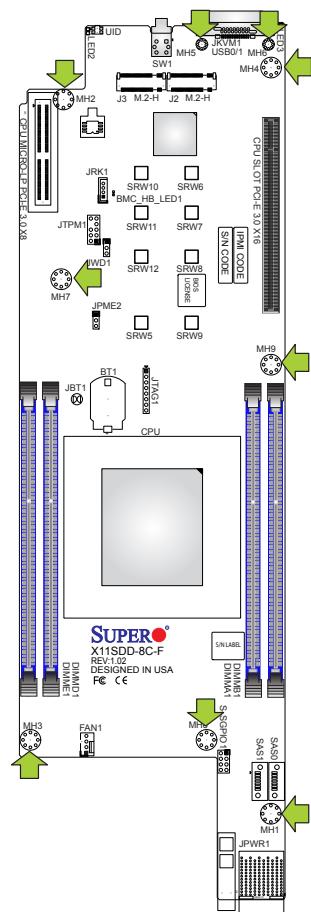
The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the motherboard, make sure that the person handling it is static protected.

2.2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.



Tools Needed

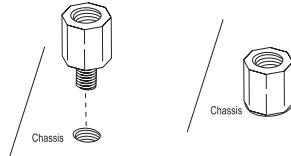


Location of Mounting Holes

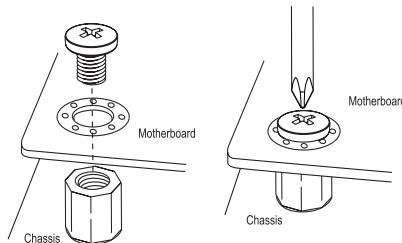
 **Note:** 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.
 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

Installing the Motherboard

1. Locate the mounting holes on the motherboard. See the previous page for the location.



2. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.



3. Install standoffs in the chassis.
4. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.
5. Using the Phillips screwdriver, insert a Phillips head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.
6. Repeat Step 5 to insert #6 screws into all mounting holes.
7. Make sure that the motherboard is securely placed in the chassis.

 **Note:** Images displayed are for illustration only. Your chassis or components might look different from those shown in this manual.

2.3 Memory Support and Installation



Note: Check the Supermicro website for recommended memory modules.



Important: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Memory Support

The X11SDD-8C/18C-F motherboard supports up to 256GB Registered ECC RDIMM and up to 512GB LRDIMM. Populating these DIMM slots with memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

DIMM Module Population Configuration

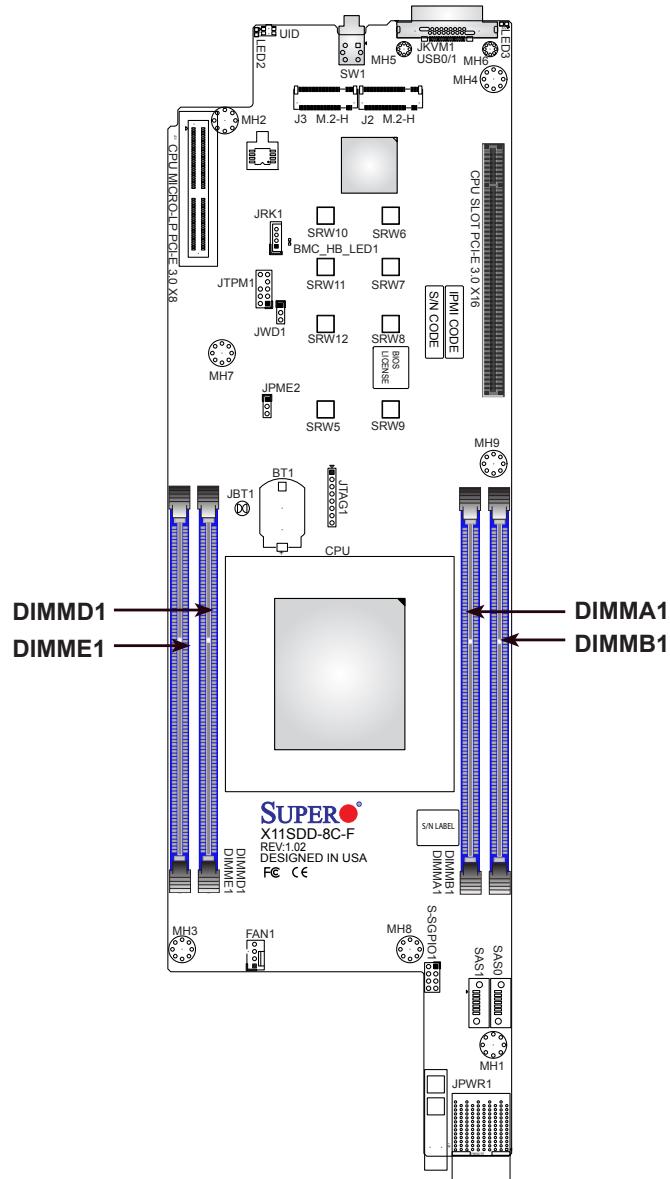
For optimal memory performance, follow the table below when populating memory.

Memory Population (Balanced)				
DIMMA1	DIMMB1	DIMMD1	DIMME1	Total System Memory
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

DIMM Module Population Sequence

When installing memory modules, the DIMM slots should be populated in the following order: DIMMA1, DIMMB1, DIMMD1, DIMME1.

- Always use DDR4 DIMM modules of the same type, size, and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support odd-numbered modules (one or three modules installed). However, for best memory performance, install DIMM modules in pairs to activate memory interleaving.

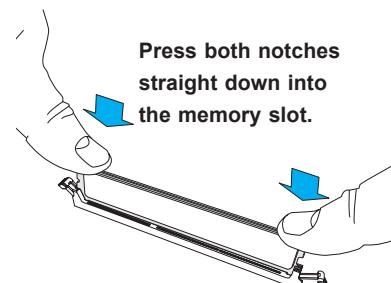
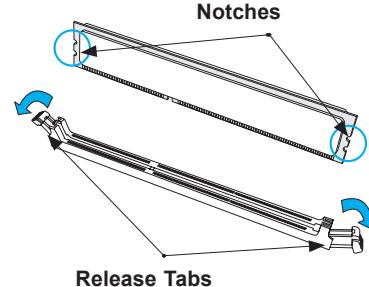
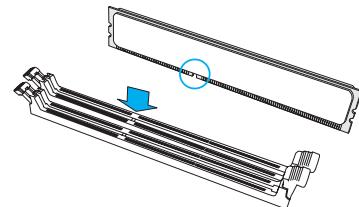
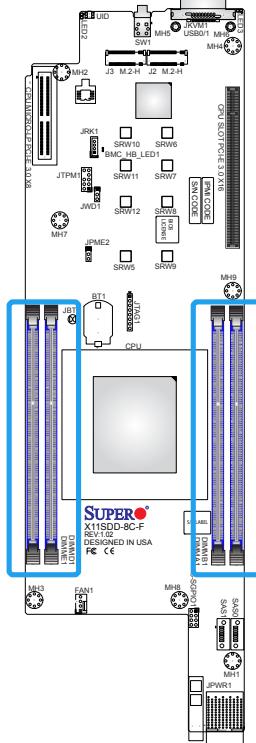


DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMMA1, DIMMB1, DIMMD1, DIMME1. For best performance, please use the 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. Press 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

Press both release tabs on the ends of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.



2.4 Rear I/O Ports

See Figure 2-1 below for the locations and descriptions of the various I/O ports on the rear of the motherboard.

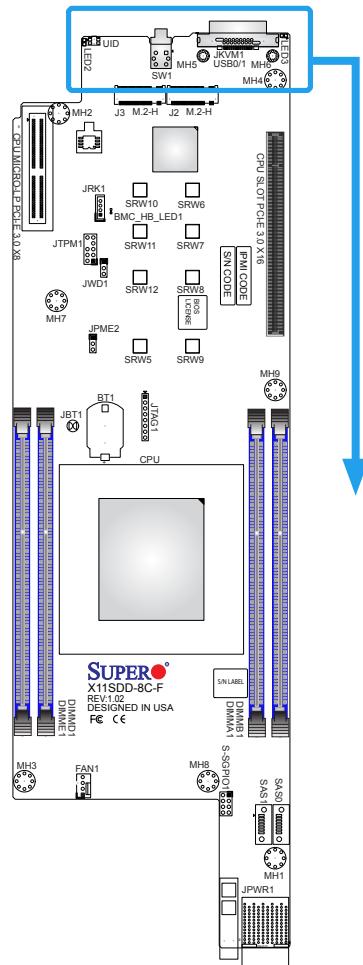


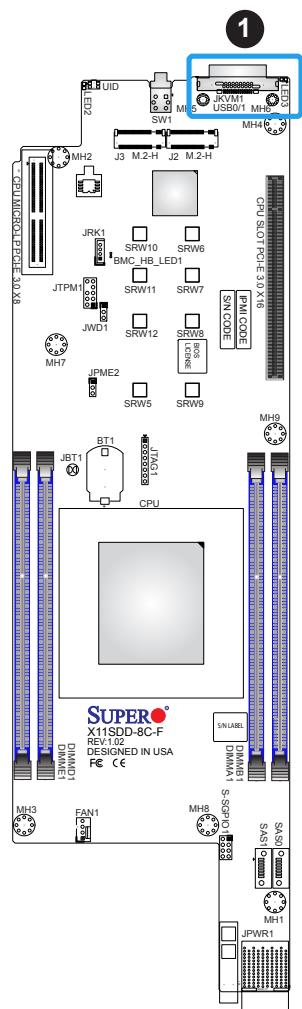
Figure 2-1. I/O Port Locations and Definitions



#	Description
1	KVM Connector
2	Power Switch
3	UID Switch

KVM Connector

The JKVM1 connector is an acronym for Keyboard, Video, and Mouse. The connector supports a set of keyboard, monitor, and mouse to control multiple computers.

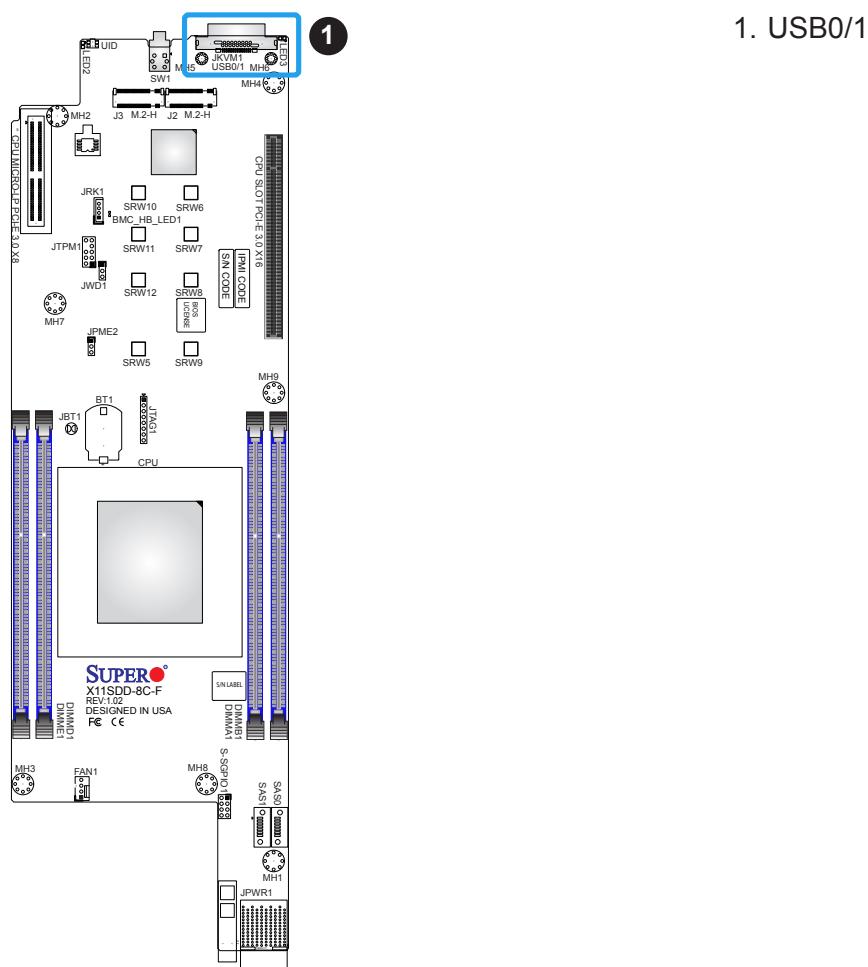


1. KVM Connector

Universal Serial Bus (USB) Ports

There are two USB 2.0 ports (USB0/1) on the I/O back panel. The onboard header provides front side USB access with a cable (not included).

Front Panel USB (3.0/2.0) Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	11	IntA_P2_D+
2	IntA_P1_SSRX-	12	IntA_P2_D-
3	IntA_P1_SSRX+	13	GND
4	GND	14	IntA_P2_SSTX+
5	IntA_P1_SSTX-	15	IntA_P2_SSTX-
6	IntA_P1_SSTX+	16	GND
7	GND	17	IntA_P2_SSRX+
8	IntA_P1_D-	18	IntA_P2_SSRX-
9	IntA_P1_D+	19	VBus
10	ID		



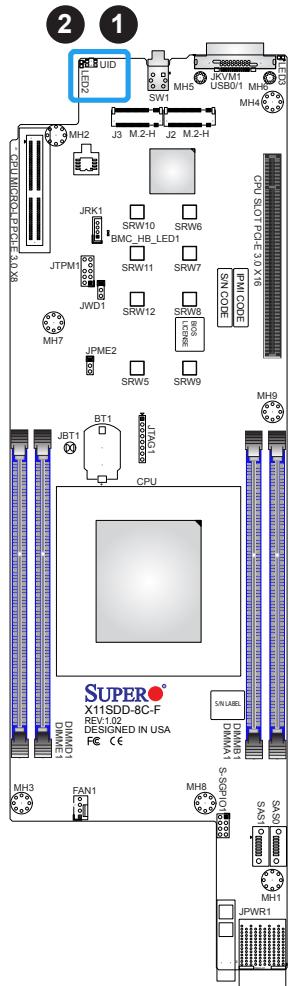
Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED indicator are located on the motherboard. The UID button is located at UID, on the back panel. The UID LED (LED2) 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/support/manuals/>.

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



1. UID Switch

2. UID LED

2.5 Connectors

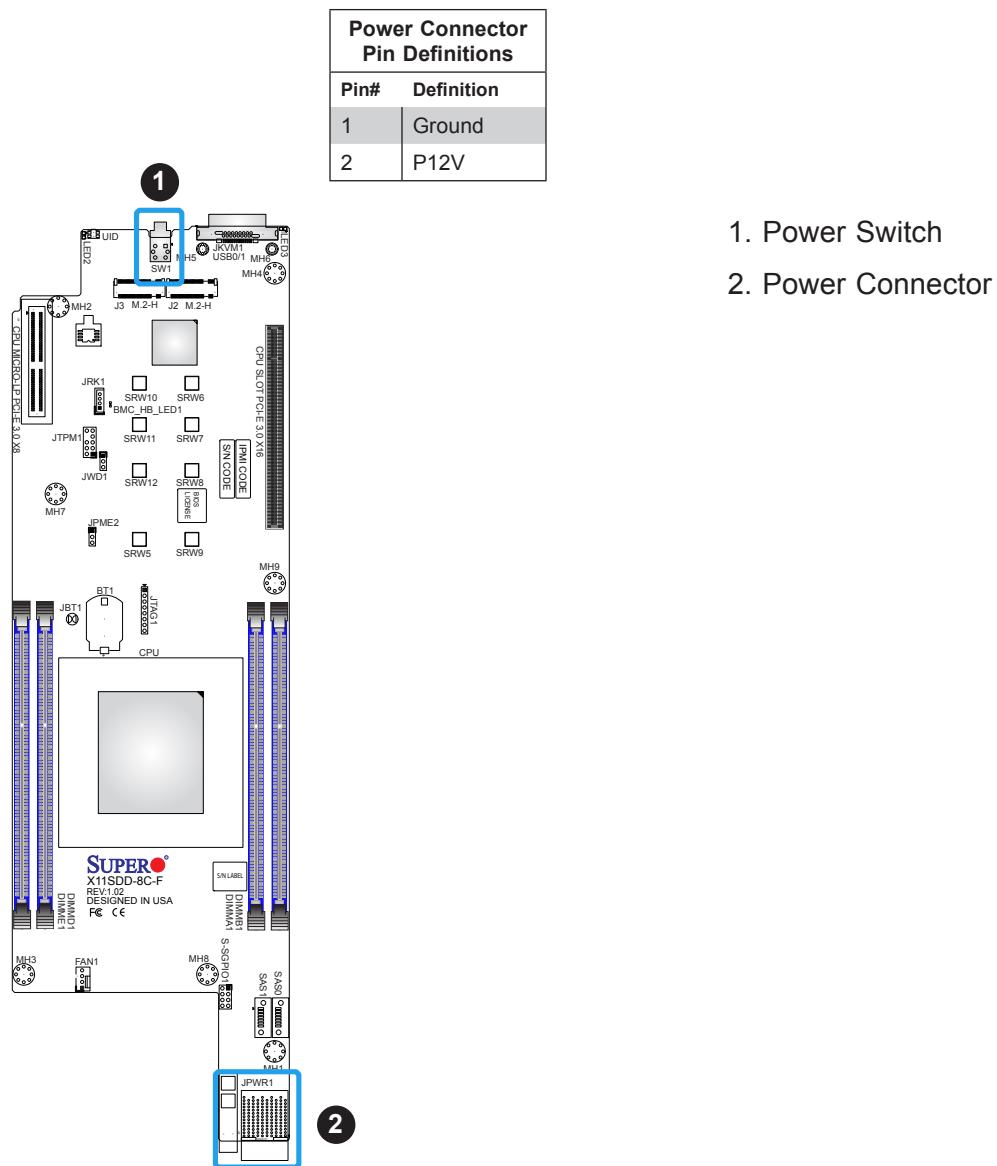
Power Connection

Power Switch

A power switch (SW1) is located next to the UID button/LED on the backplane of the motherboard. Use this switch to power on or power off the system.

Power Connector

Connect a 2-pin power supply cable to JPWR1 to provide power to the motherboard.



Headers

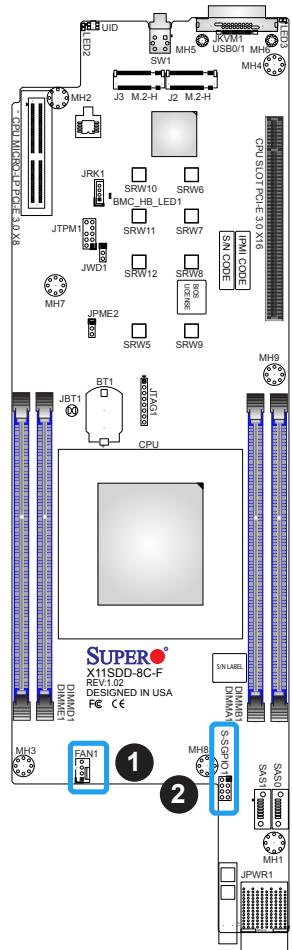
Fan Header

The X11SDD-8C/18C-F has one 4-pin fan headers (FAN1). This header is backwards-compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the IPMI 2.0 interface. Refer to the table below for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	2.5A/+12V (Red)
3	Tachometer
4	PWM_Control

SGPIO Header

One SGPIO (Serial General Purpose Input/Output) header is located on the motherboard. S-SGPIO1 supports the Serial Link (SATA/SAS) interface. See the tables below for pin definitions.



S-SGPIO Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

Note: NC = No Connection

1. FAN1
2. SGPIO Header

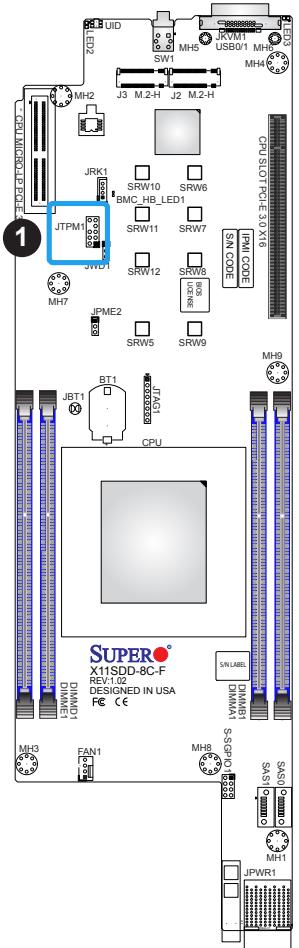
TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM). 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.

Go to the following link for more information on TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	
9	+3.3V Stby	10	SPI_IRQ#

1. TPM Header

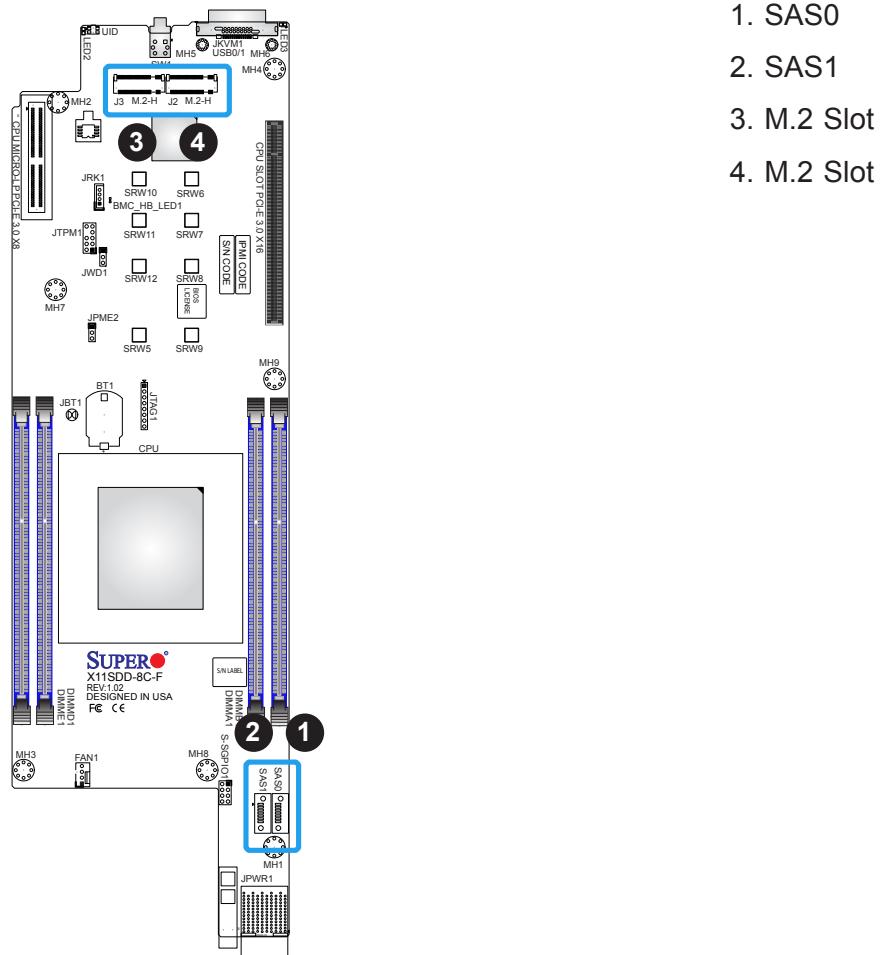


SAS Ports

The X11SDD-8C/18C-F motherboard has two Serial Attached SCSI 3.0 ports (SAS0 and SAS1). Refer to the tables below for pin definitions.

M.2 Slots

There are two M.2 slots on the motherboard. M.2 is formerly known as Next Generation Form Factor (NGFF). They are designed for internal mounting devices and provide M Key 2280//22110 support dedicated for SSD devices with the PCI-E 3.0 x 4 or SATA3 interface.

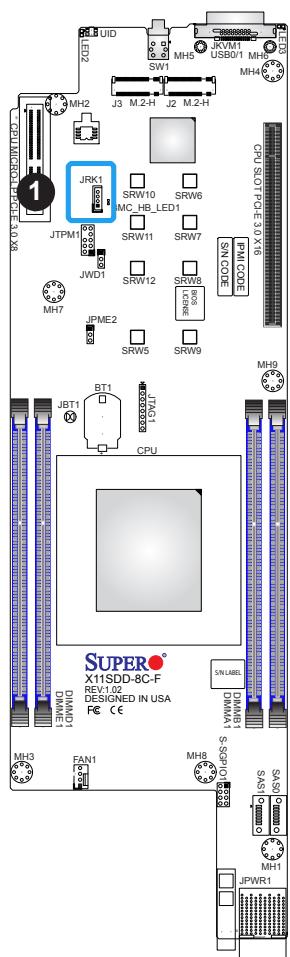


RAID Key Header

A RAID Key header is located at JRK1 on the motherboard. The RAID key is used to support NVMe SDD.

Intel RAID Key Pin Definitions	
Pin#	Definition
1	Ground
2	3.3V Standby
3	Ground
4	PCH RAID Key

1. RAID Key Header

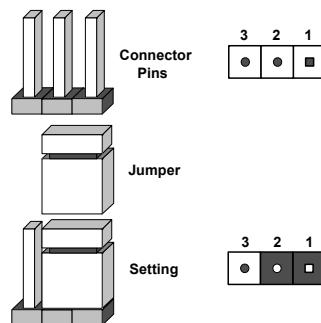


2.6 Jumper Settings

How Jumpers Work

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram below for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

 **Note:** On two-pin jumpers, Closed means the jumper is on the pins and Open means the jumper is off.



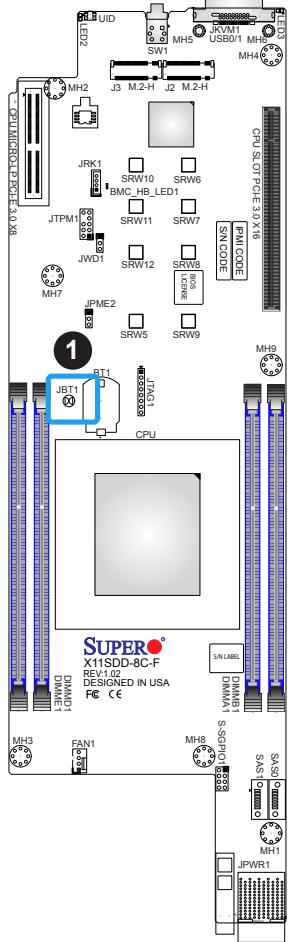
CMOS Clear

JBT1 is used to clear the CMOS. Instead of pins, this jumper consists of contact pads to prevent accidental clearing of the CMOS. To clear the CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection.



Note: Shut down the system and then short JBT1 to clear the CMOS.

1. CMOS Clear

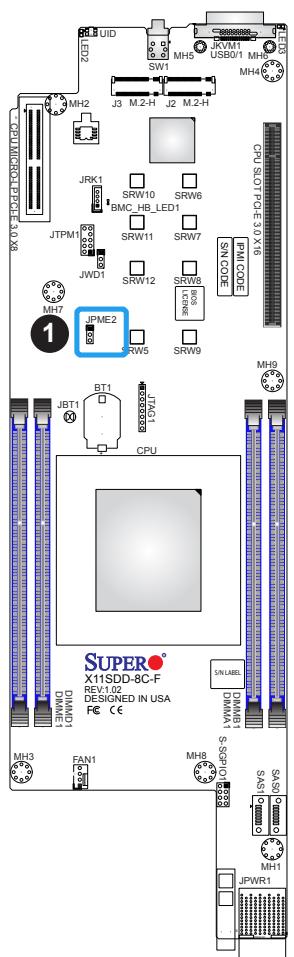


Manufacturing Mode Select

Close pins 2-3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow the user to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings.

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

1. Manufacturing Mode



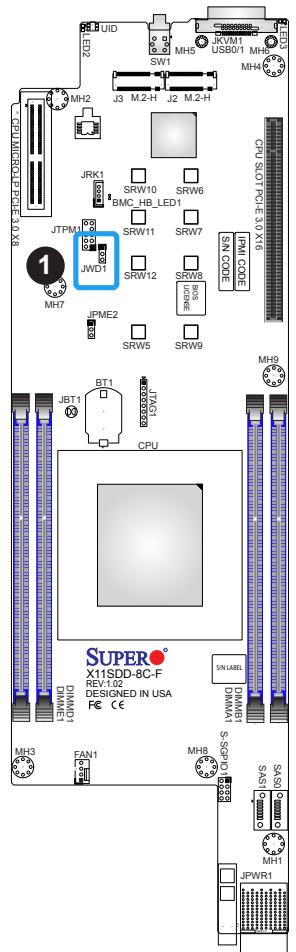
Watch Dog

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

1. Watch Dog

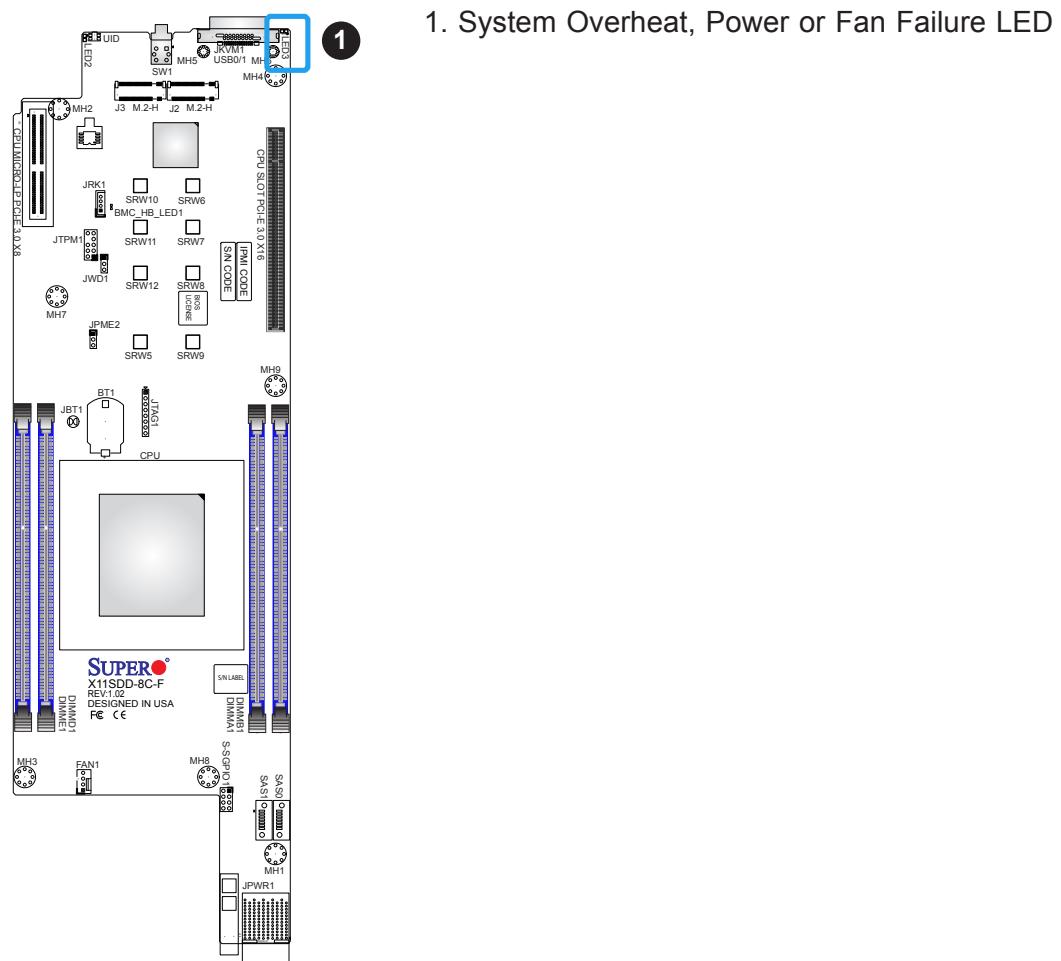


2.7 LED Indicator

System Failure LED

LED3 is the System Failure LED. When this LED is solid red, it means a system overheat. When this LED is blinking red, it means a power failure or fan failure. Turn off the system and unplug the power cord before removing or installing components.

System Overheat/Power Failure/Fan Failure LED Indicator	
LED Color	Definition
Off	System temperature, Power Supply and Fan are healthy
Solid Red	System Overheat
Blinking Red	Power or Fan Failure



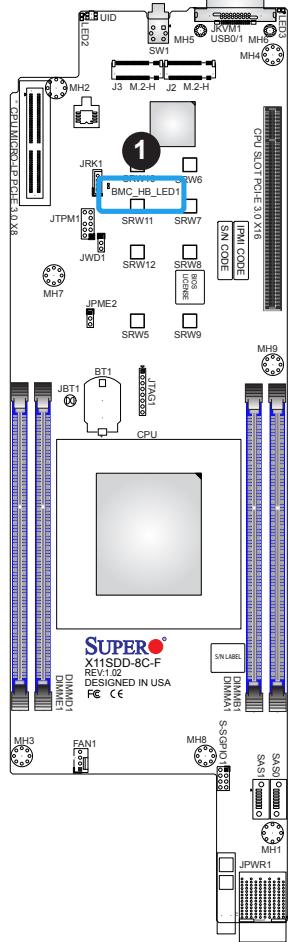
1. System Overheat, Power or Fan Failure LED

BMC Heartbeat LED

BMC_HB_LED1 is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally. Refer to the table below for the LED status.

BMC Heartbeat LED Indicator	
LED Color	Definition
Blinking Green	BMC Normal

1. BMC Heartbeat LED



Chapter 3

Troubleshooting

3.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install the CPU (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that the ATX power connectors are properly connected.
3. Check that the 115V/230V switch, if available, on the power supply is properly set.
4. Turn the power switch on and off to test the system, if applicable.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all add-on cards and cables.
2. Use the speaker to determine if any beep codes are present. Refer to Appendix A for details on beep codes.

3. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory or try a different one).

System Boot Failure

If the system does not display POST or does not respond after the power is turned on, check the following:

1. Check for any error beep from the motherboard speaker.
 - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.
 - If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper (JBT1). (Refer to Section 2-6 in Chapter 2.)
2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system power is on and that memory error beeps are activated.
3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this chapter.

Memory Errors

When a no-memory beep code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and that the DIMMs are properly and fully installed. Click on the Tested Memory List link on the motherboard product page to see a list of supported memory.
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMM modules recommended by the manufacturer.
4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.
5. Make sure that all memory modules are fully seated in their slots. Follow the instructions given in Section 2-4 in Chapter 2.
6. Please follow the instructions given in the DIMM population tables listed in Section 2-4 to install your memory modules.

Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to Section 2-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

When the System Becomes Unstable

A. If the system becomes unstable during or after OS installation, check the following:

1. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.

 **Note:** Click on the Tested Memory List link on the motherboard product page to see a list of supported memory.

3. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the CPU and system temperatures are within the normal range. Also check the front panel Overheat LED and make sure that it is not on.
5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Please refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

B. If the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD.
2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Using the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.
4. Identifying bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, please note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Please go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/FAQ/index.php>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
 - Motherboard model and PCB revision number
 - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
 - System configuration
4. An example of a Technical Support form is on our website at <http://www.supermicro.com/RmaForm/>.
 - Distributors: For immediate assistance, please have your account number ready when placing a call to our Technical Support department. We can be reached by email at support@supermicro.com.

3.3 Frequently Asked Questions

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable USB device. Run the batch file using the format FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!)



Note: The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, please refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com/support/manuals/>.

3.4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

Proper Battery Disposal

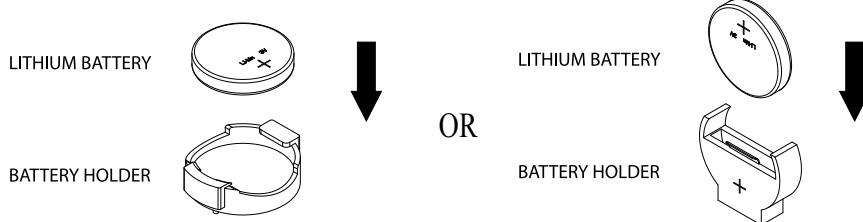
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

Battery Installation

1. To install an onboard battery, follow steps 1 and 2 above and continue below:
2. Identify the battery's polarity. The positive (+) side should be facing up.
3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.



Important: When replacing a battery, be sure to only replace it with the same type.



3.5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4

UEFI BIOS

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the X11SDD 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.

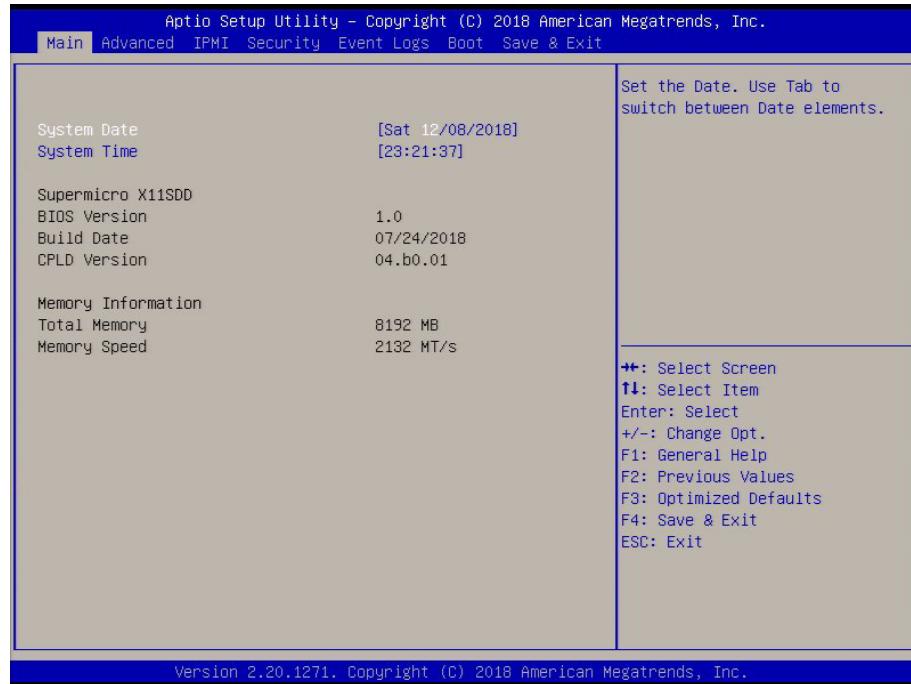
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is 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.

4.2 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 features 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 X11SDD

BIOS Version

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

Build Date

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

CPLD Version

This feature displays the CPLD version.

Memory Information

Total Memory

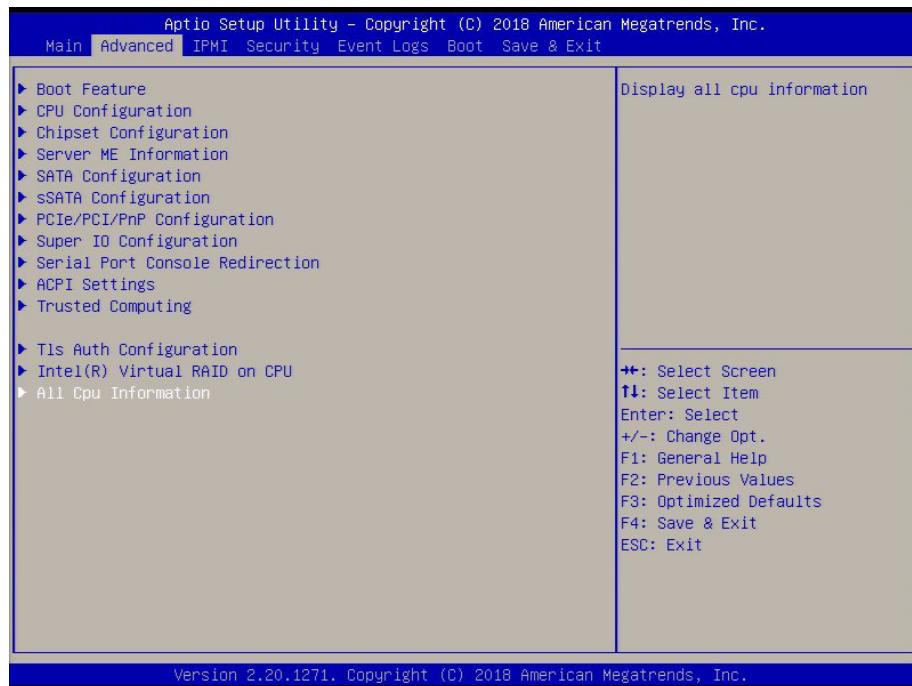
This feature displays the total size of memory available in the system.

Memory Speed

This feature displays the speed of the memory installed in the system.

4.3 Advanced

Use this menu to configure advanced settings.



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**.

Option ROM Messages

Use this feature to set the display mode for the Option ROM. Select Keep Current to display the current AddOn ROM setting. Select Force BIOS to use the Option ROM display set by the system BIOS. The options are **Force BIOS** and **Keep Current**.

Bootup NumLock State

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

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**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this feature is set to **Immediate**, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot up immediately and allow the drives that are attached to these host adaptors to function as bootable disks. If this feature is set to **Postponed**, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately and allow the drives attached to these adapters to function as bootable devices at bootup. The options are **Immediate** and **Postponed**.

Re-try Boot

If this feature is enabled, the BIOS will automatically reboot the system from a specified boot device after its initial boot failure. The options are **Disabled**, **Legacy Boot**, and **EFI Boot**.

Power Configuration

Watch Dog Function

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

AC Loss Policy Depend on

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**.

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 four seconds or longer. Select **Instant Off** to instantly power off the system as soon as the user presses the power button. The options are **Instant Off** and **4 Seconds Override**.

Restore On AC Power Loss

Use this feature to set the power state after a power outage. Select **Stay 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 the power loss. The options are **Power On**, **Stay Off**, and **Last State**.

Throttle on Power Fail

Use this feature to decrease system power by throttling CPU frequency when one power supply has failed. The options are **Disabled** and **Enabled**.

►CPU Configuration

The following CPU information will display:

- Processor BSP Revision
- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version

Hyper-Threading [ALL] (Available when supported by the CPU)

Select Enable to support Intel Hyper-threading Technology to enhance CPU performance. The options are Disable and **Enable**.

Cores Enabled

Set a numeric value to enable the number of cores. Enter **0** to enable all cores.

Execute Disable Bit (Available if supported by the OS & the CPU)

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.

Intel Virtualization Technology

Use this feature to enable the Vanderpool Technology. This technology allows the system to run several operating systems simultaneously. The options are Disabled and **Enabled**.

PPIN Control

Select Unlock/Enable to use the Protected-Processor Inventory Number (PPIN) in the system. The options are Unlock/Disable and **Unlock/Enable**.

Hardware Prefetcher

If set to Enable, 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 **Disabled** and **Enabled**.

Adjacent Cache Line Prefetch

The CPU prefetches the cache line for 64 bytes if this feature is set to **Disabled**. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to **Enabled**. The options are **Disabled** and **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select **Enable** to enable the DCU (Data Cache Unit) Streamer Prefetcher, which will stream and prefetch data and send it to the Level 1 data cache to improve data processing and system performance. The options are **Enable** and **Disable**.

DCU IP Prefetcher (Available when supported by the CPU)

Select **Enable** for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and **Disable**.

LLC Prefetch

If set to **Enable**, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L3 cache to improve CPU performance. 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 (APIIDs) in 8-bit bandwidth. When this feature is set to **Enable**, the APIC ID will be expanded from 8 bits to 16 bits to provide 512 APIIDs 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 **Disable** and **Enable**.

►Advanced Power Management Configuration

►CPU P State Control

This feature allows the user to configure the following CPU power settings:

SpeedStep (Pstates)

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**.

EIST PSD Function

This feature allows the user to choose between Hardware and Software to control the processor's frequency and performance (P-state). In **HW_ALL** mode, the processor hardware is responsible for coordinating the P-state, and the OS is responsible for keeping the P-state request up to date on all Logical Processors. In **SW_ALL** mode, the OS Power Manager is responsible for coordinating the P-state and must initiate the transition on all Logical Processors. In **SW_ANY** mode, the OS Power Manager is responsible for coordinating the P-state and may initiate the transition on any Logical Processors. The options are **HW_ALL**, **SW_ALL**, and **SW_ANY**.

Turbo Mode

This feature will enable dynamic control of the processor, allowing it to run above stock frequency. The options are **Disable** and **Enable**.

►Hardware PM State Control

Hardware P-States

This setting allows the user to select between OS and hardware-controlled P-states. Selecting Native Mode allows the OS to choose a P-state. Selecting Out of Band Mode allows the hardware to autonomously choose a P-state without OS guidance. Selecting Native Mode with No Legacy Support functions as Native Mode with no support for older hardware. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

►CPU C State Control

Autonomous Core C-State

Enabling this setting allows the hardware to autonomously choose to enter a C-state based on power consumption and clock speed. The options are **Disable** and **Enable**.

CPU C6 report

Select **Enable** to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all cache is turned off. The options are **Disable**, **Enable**, and **Auto**.

Enhanced Halt State (C1E)

Select Enable to use Enhanced Halt State technology, which will significantly reduce the CPU's power consumption by reducing its clock cycle and voltage during a Halt state. The options are Disable and **Enable**.

►Package C State Control

Package C State

This feature allows the user to set the limit on the C State package register. The options are C0/C1 State, C2 State, C6 (non Retention) state, C6 (Retention) state, No Limit, and **Auto**.

►Chipset Configuration

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

►North Bridge

This feature allows the user to configure the following North Bridge settings.

►Memory Configuration

Enforce POR

Select POR (Plan of Record) to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **POR** and Disable.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1000, 1200, 1333, 1400, 1600, 1800, 1866, 2000, 2133, 2200, 2400, 2600, and 2666.

IMC Interleaving

This feature allows the user to configure Integrated Memory Controller (IMC) Interleaving settings. The options are **Auto**, 1-way Interleave, and 2-way Interleave.

Data Scrambling for NVDIMM

Use this feature to enable or disable data scrambling support for NVDIMM. The options are **Auto**, Disable, and Enable.

Data Scrambling for DDR4

Use this feature to enable or disable data scrambling support for DDR4. The options are **Auto**, **Disable**, and **Enable**.

tCCD_L Relaxation

Select Auto to get TCDD settings from SPD (Serial Presence Detect) and implement into memory RC code to improve system reliability. Select Disable for TCCD to follow Intel POR. The options are **Auto**, **Disable**, and **Enable**.

tRWSR Relaxation

Select Enable to override the tRWSR timing with optimized values. Select Auto to override the tRWSR timing for Samsung DIMM memory. The options are **Auto**, **Disable**, and **Enable**.

Enable ADR

Select Enable for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are **Disable** and **Enable**.

2X REFRESH

Use this feature to select the memory controller refresh rate to 2x refresh mode. The options are **Auto**, **Enable**, and **Disable**.

Page Policy

This feature allows the user to determine the desired page mode for IMC. When Auto is selected, the memory controller will close or open pages based on the current operation. Closed policy closes that page after reading or writing. Adaptive is similar to open page policy, but can be dynamically modified. The options are **Auto**, **Closed**, and **Adaptive**.

►Memory Topology

This item displays the information of onboard memory modules as detected by the BIOS.

►Memory RAS Configuration

Static Virtual Lockstep Mode

Select Enable to run the system's memory channels in lockstep mode to minimize memory access latency. The options are **Disable** and **Enable**.

Mirror Mode

This feature allows memory to be mirrored between two channels, providing 100% redundancy and consequently reducing the memory capacity by half. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM.

UEFI ARM Mirror

Select Enable to support the UEFI-based address range mirroring with setup option. The options are **Disable** and Enable.

Memory Rank Sparing

Select Enable to enable memory-sparing support for memory ranks to improve memory performance. The options are **Disable** and Enable.

Correctable Error Threshold

Use this feature to specify the threshold value for correctable memory error logging, which sets a limit on the maximum number of events that can be logged in the memory error log at a given time. Select a value between 1-32776. The default setting is **7fff**.

SDDC

Single device data correction (SDDC) organizes data in a single bundle (x4/x8 DRAM). If any or all the bits become corrupted, corrections occur. The x4 condition is corrected on all cases. The x8 condition is corrected only if the system is in Lockstep Mode. The options are **Disable** and Enable.

ADDDC Sparing

Adaptive Double Device Data Correction (ADDDC) Sparing detects when the predetermined threshold for correctable errors is reached, copying the contents of the failing DIMM to spare memory. The failing DIMM or memory rank will then be disabled. The options are **Disable** and Enable.

Patrol Scrub

Patrol Scrub is a process that allows the CPU to correct correctable memory errors detected on 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 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Disable** and **Enable**.

Patrol Scrub Interval

This feature allows the user to decide how many hours the system should wait before the next complete patrol scrub is performed. Use the keyboard to enter a value from 0-24. The default setting is **24**.

►II0 Configuration

►Socket0 Configuration

IOU0 (II0 PCIe Br1) / IOU1 (II0 PCIe Br2)

This features configure the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

MCP0 (II0 PCIe Br4) / MCP1 (II0 PCIe Br5)

This features configure the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x16 and **Auto**.

- **Socket 0 PcieBr0D00F0 - Port 0/DMI**
- **Socket 0 PcieBr1D00F0 - Port 1A**
- **Socket 0 PcieBr1D01F0 - Port 1B**
- **Socket 0 PcieBr1D02F0 - Port 1C**
- **Socket 0 PcieBr2D00F0 - Port A2**
- **Socket 0 PcieBr4D00F0 - MCP 0**
- **Socket 0 PcieBr5D00F0 - MCP 1**

Link Speed

Use this feature to select the link speed for the PCI-E port specified by the user. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Max Payload Size

Selecting Auto for this feature will enable the motherboard to automatically detect the maximum Transaction Layer Packet (TLP) size for the connected PCI-E device, allowing for maximum I/O efficiency. Selecting 128B or 256B will designate maximum packet size of 128 or 256. If possible, select max payload size to 256B. The options are 128B, 256B, and **Auto**.

ECRC

Use this feature to enable or disable Error Capabilities and Control Register (ECRC). The options are **Disable** and **Enable**.

►IOAT Configuration

Disable TPH

Transparent Huge Pages (TPH) is a Linux memory management system that enables communication in larger blocks (pages). Enabling this feature will increase performance. The options are **No** and **Yes**.

Prioritize TPH

Use this feature to enable Prioritize TPH support. The options are **Enable** and **Disable**.

Relaxed Ordering

Select **Enable** to enable Relaxed Ordering support, which will allow certain transactions to violate the strict-ordering rules of PCI bus for a transaction to be completed prior to other transactions that have already been enqueued. The options are **Disable** and **Enable**.

►Intel® VT for Directed I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

Select **Enable** to use Intel Virtualization Technology for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI tables. This feature offers fully protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data sharing. The options are **Enable** and **Disable**.

Interrupt Remapping

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

PassThrough DMA

Use this feature to allow devices such as network cards to access the system memory without using a processor. Select **Enable** to use the Non-Isoch VT_D Engine Pass Through Direct Memory Access (DMA) support. The options are **Enable** and **Disable**.

ATS

Use this feature to enable Non-Isoch VT-d Engine Address Translation Services (ATS) support. ATS translates virtual addresses to physical addresses. The options are **Enable** and **Disable**.

Posted Interrupt

Use this feature to enable VT_D Posted Interrupt. The options are **Enable** and **Disable**.

Coherency Support (Non-Isoch)

Use this feature to maintain setting coherency between processors or other devices. Select Enable for the Non-Isoch VT-d engine to pass through DMA to enhance system performance. The options are **Enable** and **Disable**.

►Intel® VMD Technology

►Intel® VMD for Volume Management Device on Socket 0

VMD Config for PStack0

Intel® VMD for Volume Management Device for PStack0

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and **Enable**.

**If the feature above is set to Enable, the following features will become available for configuration:*

VMD port 1A/1B/1C/1D

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and **Enable**.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The options are **Disable** and **Enable**.

CfgBar size

Use this feature to set up the VMD config BAR size. The default value is **25**.

CfgBar attribute

Use this feature to set up the VMD config BAR attribute. The default option is **64-bit prefetchable**.

MemBar1 size

Use this feature to set up the VMD Memory BAR1 size. The default value is **25**.

MemBar1 attribute

Use this feature to set up the VMD config BAR attribute. The options are **32-bit non-prefetchable**, 64-bit non-prefetchable, and 64-bit prefetchable.

MemBar2 size

Use this feature to set up the VMD config BAR size. The default value is **20**.

MemBar2 attribute

Use this feature to set up the VMD config BAR attribute. The options are 32-bit non-prefetchable, **64-bit non-prefetchable**, and 64-bit prefetchable.

VMD Config for PStack1

Intel® VMD for Volume Management Device for PStack1

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

****If the feature above is set to Enable, the following features will become available for configuration:***

VMD port 2A/2B/2C/2D

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The options are **Disable** and Enable.

CfgBar size

Use this feature to set up the VMD config BAR size. The default value is **25**.

CfgBar attribute

Use this feature to set up the VMD config BAR attribute. The default option is **64-bit prefetchable**.

MemBar1 size

Use this feature to set up the VMD Memory BAR1 size. The default value is **25**.

MemBar1 attribute

Use this feature to set up the VMD config BAR attribute. The options are **32-bit non-prefetchable**, 64-bit non-prefetchable, and 64-bit prefetchable.

MemBar2 size

Use this feature to set up the VMD config BAR size. The default value is **20**.

MemBar2 attribute

Use this feature to set up the VMD config BAR attribute. The options are 32-bit non-prefetchable, **64-bit non-prefetchable**, and 64-bit prefetchable.

VMD Config for PStack2**Intel® VMD for Volume Management Device for PStack2**

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

****If the feature above is set to Enable, the following features will become available for configuration:***

VMD port 3A/3B/3C/3D

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The options are **Disable** and Enable.

CfgBar size

Use this feature to set up the VMD config BAR size. The default value is **25**.

CfgBar attribute

Use this feature to set up the VMD config BAR attribute. The default option is **64-bit prefetchable**.

MemBar1 size

Use this feature to set up the VMD Memory BAR1 size. The default value is **25**.

MemBar1 attribute

Use this feature to set up the VMD config BAR attribute. The options are **32-bit non-prefetchable**, 64-bit non-prefetchable, and 64-bit prefetchable.

MemBar2 size

Use this feature to set up the VMD config BAR size. The default value is **20**.

MemBar2 attribute

Use this feature to set up the VMD config BAR attribute. The options are 32-bit non-prefetchable, **64-bit non-prefetchable**, and 64-bit prefetchable.

II0-PCIE Express GLobal Options

PCI-E Hot Plug

Use this feature to enable hot plug support for PCI-E devices. The options are Disable, **Enable**, Auto, and Manual.

PCI-E Completion Timeout (Global) Disable

Use this feature to enable PCI-E Completion Timeout support for electric tuning. The options are Yes, **No**, and Per-Port.

►South Bridge

The following USB information will display:

- USB Module Version
- USB Devices

Legacy USB Support

This feature enables support for USB 2.0 and older. The options are **Enabled**, Disabled, and Auto.

XHCI Hand-off

When this feature is disabled, the motherboard will not support USB 3.0. The options are **Enabled** and Disabled.

Port 60/64 Emulation

This feature allows legacy I/O support for USB devices like mice and keyboards. The options are **Enabled** and Disabled.

PCIe PLL SSC

Use this feature to enable or disable PCIe PLL SSC. The options are **Disabled** and Enabled.

Install Window 7 USB Support

Enable this feature to use the USB keyboard and mouse during the Windows 7 installation, since the native XHCI driver support is unavailable. Use a SATA optical drive as a USB drive, and USB CD/DVD drives are not supported. Disable this feature after the XHCI driver has been installed in Windows. The options are **Disabled** and Enabled.

►Server ME Configuration

The following General ME Configuration will display:

- Oper. Firmware Version
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Status #1
- ME Firmware Status #2
- Current State
- Error Code

►SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chipset and displays the following items:

SATA Controller

Use this feature to enable or disable the onboard SATA controller supported by the Intel PCH chipset. The options are **Enable** and **Disable**.

Configure SATA as

Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are **AHCI** and **RAID**.

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The options are **Enable** and **Disable**.

Aggressive Link Power Management

When this feature is 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 **Disabled** and **Enabled**.

SATA Port 0

This item displays the information detected on the installed SATA drive on the particular SATA port.

Hot Plug

Set this feature to Enable for hot plug support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Disabled** and **Enabled**.

Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are **Disabled** and **Enabled**.

SATA Device Type

Use this feature to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and **Solid State Drive**.

SATA Port 4

This item displays the information detected on the installed SATA drive on the particular SATA port.

Hot Plug

Set this feature to Enable for hot plug support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Disabled** and **Enabled**.

Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are **Disabled** and **Enabled**.

SATA Device Type

Use this feature to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and **Solid State Drive**.

►sSATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chipset and displays the following items:

sSATA Controller

Use this feature to enable or disable the onboard SATA controller supported by the Intel PCH chipset. The options are **Enable** and **Disable**.

Configure sSATA as

Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are **AHCI** and **RAID**.

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The options are **Disable** and **Enable**.

Aggressive Link Power Management

When this feature is 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 **Disable** and **Enable**.

sSATA Port 0 ~ 5

This item displays the information detected on the installed SATA drive on the particular SATA port.

Hot Plug

Set this feature to **Enable** for hot plug support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Disabled** and **Enabled**.

Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are **Disabled** and **Enabled**.

sSATA Device Type

Use this feature to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and **Solid State Drive**.

►PCIe/PCI/PnP Configuration

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 **Disabled** and **Enabled**.

SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization support. The options are **Disabled** and **Enabled**.

MMIO High Base

Use this feature to select the base memory size according to memory-address mapping for the IO hub. The options are **56T**, **48T**, **24T**, **16T**, **4T**, and **1T**.

MMIO High Granularity Size

Use this feature to select the high memory size according to memory-address mapping for the IO hub. The options are **1G**, 4G, 16G, 64G, 256G, and 1024G.

PCI PERR/SERR Support

Use this feature to enable or disable the runtime event for PCI errors. The options are **Disabled** and **Enabled**.

Maximum Read Request

Use this feature to select the Maximum Read Request size of the PCI-Express device, or select Auto to allow the system BIOS to determine the value. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

MMCFG Base

Use this feature to select the low base address for PCI-E adapters to increase base memory. The options are 1G, 1.5G, 1.75G, **2G**, 2.25G, and 3G.

VGA Priority

Use this feature to select VGA priority when multiple VGA devices are detected. Select **Onboard** to give priority to your onboard video device. Select **Offboard** to give priority to your graphics card. The options are **Auto**, Onboard, and Offboard.

PCIe/PCI/PnP Configuration

Onboard NVME 1 OPROM

Use this feature to select which firmware to be loaded for the add-on card in this slot. The options are **Disabled**, **Legacy**, and **EFI**.

Onboard NVME 2 OPROM

Use this feature to select which firmware to be loaded for the add-on card in this slot. The options are **Disabled**, **Legacy**, and **EFI**.

CPU MICRO-LP PCI-E 3.0 X8

Use this feature to select which firmware to be loaded for the add-on card in this slot. The options are **Disabled**, **Legacy**, and **EFI**.

CPU SLOT PCI-E 3.0 X8

Use this feature to select which firmware to be loaded for the add-on card in this slot. The options are **Disabled**, **Legacy**, and **EFI**.

Onboard Video OPROM

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

►Network Stack Configuration

Network Stack

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

**If the feature above is set to Enabled, the next seven features will be available for configuration:*

Ipv4 PXE Support

Select Enabled to enable IPv4 PXE boot support. The options are Disabled and **Enabled**.

Ipv4 HTTP Support

Select Enabled to enable IPv4 HTTP boot support. The options are **Disabled** and Enabled.

Ipv6 PXE Support

Select Enabled to enable IPv6 PXE boot support. The options are Disabled and **Enabled**.

Ipv6 HTTP Support

Select Enabled to enable IPv6 HTTP boot support. The options are **Disabled** and Enabled.

IPSEC Certificate

The feature appears if Network Stack is enabled. Internet Protocol Security (IPSEC) offers a secure connection for remote computers using a secure tunnel. The options are Disabled and **Enabled**.

PXE boot wait time

Use this feature to specify the wait time to press the ESC key to abort the PXE boot. Press "+" or "-" on your keyboard to change the value. The default setting is **0**.

Media detect count

Use this option to specify the number of times media will be checked. Press "+" or "-" on your keyboard to change the value. The default setting is **1**.

►Super IO Configuration

Super IO Configuration

Super IO Chip AST2500

►Serial Port 1 Configuration

Serial Port

Select Enabled to enable the selected onboard serial port. The options are Disabled and **Enabled**.

Device Settings

This feature displays the status of a serial port specified by the user.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. 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 (O=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

►Serial Port 2 Configuration

Serial Port

Select Enabled to enable the selected onboard serial port. The options are Disabled and **Enabled**.

Device Settings

This feature displays the status of a serial port specified by the user.

Change Settings

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

Serial Port 2 Attribute

Use this feature to select the serial port 2 mode. The options are **SOL** and **COM**.

►Serial Port Console Redirection

COM1

Console Redirection

Select Enabled to enable COM1 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 **Disabled** and **Enabled**.

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

►Console Redirection Settings

COM1

Console Redirection Settings

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**.

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).

Data Bits

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

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**.

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.

VT-UTF8 Combo Key Support

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

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**.

Resolution 100x31

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

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**.

COM2/SOL

Console Redirection

Select Enabled to enable COM1 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 **Disabled** and **Enabled**.

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

►Console Redirection Settings

COM2/SOL

Console Redirection Settings

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**.

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).

Data Bits

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

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**.

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.

VT-UTF8 Combo Key Support

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

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**.

Resolution 100x31

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

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**.

Legacy Console Redirection

►Legacy Console Redirection Settings

Legacy Redirection COM Port

Use this feature to select a COM port to display redirection of Legacy OS and Legacy OPROM messages. The options are **COM1** and **COM2/SOL**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are **80x24** and **80x25**.

Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to **BootLoader**, legacy console redirection is disable before booting the OS. When set to **Always Enable**, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and **BootLoader**.

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

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 feature above is set to Enabled, the following features are available for configuration:***

►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 **COM2/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 feature 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 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**, Hardware RTS/CTS, and Software Xon/Xoff.

Data Bits

Parity

Stop Bits

►ACPI Settings

NUMA Support (Available when the OS supports this feature)

Select Enabled to enable Non-Uniform Memory Access support to enhance system performance. The options are Disabled and **Enabled**.

WHEA Support

This feature Enables the Windows Hardware Error Architecture (WHEA) support for the Windows 2008 (or a later version) operating system. The options are Disabled and **Enabled**.

High Precision Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

►Trusted Computing

****This motherboard supports TPM 1.2 and 2.0. The following Trusted Platform Module (TPM) information will display if a TPM 2.0 module is detected:***

- Vendor
- Firmware Version

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**.

- Active PCR Bank
- Available PCR Bank

****If the feature "Security Device Support" is enabled, the following features are available for configuration:***

SHA-1 PCR Bank

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

Storage Hierarchy

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

Endorsement Hierarchy

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

PH Randomization

Use this feature to disable or enable Platform Hierarchy (PH) Randomization. The options are **Disabled** and **Enabled**.

TXT Support

Intel Trusted Execution Technology (TXT) helps protect against software-based attacks and ensures protection, confidentiality, and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disabled** and **Enabled**.

►TLS Authentication Configuration

This submenu allows the user to configure Transport Layer Security (TLS) settings.

►Server CA Configuration

►Enroll Cert

Enroll Cert Using File

Use this feature to enroll certification from a file.

Cert GUID

Use this feature to input the certification GUID.

►Commit Changes and Exit

Use this feature to save all changes and exit TLS settings.

►Discard Changes and Exit

Use this feature to discard all changes and exit TLS settings.

►Delete Certification

Use this feature to delete certification.

►Client Cert Configuration

►Enroll Cert

Enroll Cert Using File

Use this feature to enroll certification from a file.

Cert GUID

Use this feature to input the certification GUID.

►Commit Changes and Exit

Use this feature to save all changes and exit TLS settings.

►Discard Changes and Exit

Use this feature to discard all changes and exit TLS settings.

►Delete Certification

Use this feature to delete certification.

►Intel® Virtual RAID on CPU

This submenu displays RAID volumes, if detected by the system.

►All Cpu Information

The following CPU information will display:

- Total CPU Number
- Backup Firmware Version
- CPU0 - CPU15
- CPUID

- Stepping
- MicroCodeRev
- PlatformID
- CpuCoreFreq (MHz)
- ActualCoreFreq (MHz)

4.4 IPMI

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



IPMI Firmware Revision

This feature indicates the IPMI firmware revision in your system.

Status of BMC

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 boot up. 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, reboot the system for the changes to take effect.

►BMC Network Configuration

IPMI LAN Selection

IPMI Network Link Status

Station MAC Address

VLAN

IPv4 Address Source

Station IP Address

Subnet Mask

Gateway IP address

IPV6 address status

Station IPV6 address

Prefix Length

IPV6 Router IP Address

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 feature above is set to Yes, the Configuration Address Source and VLAN features are available for configuration:***

IPMI LAN Selection

This feature displays the IPMI LAN setting. The options are Dedicated, Shared, and Failover.

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**.

****If the feature above is set to Enable, the VLAN feature below is available for configuration:***

VLAN

Use this feature to select a value for VLAN ID.

Configure IPV4 support

Configuration Address Source

Use this feature 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 it is attached to and request the next available IP address for this computer. The options are **DHCP** and **Static**.

****If the feature above is set to Static, the Station IP Address/Subnet Mask/Gateway IP Address features are available for configuration:***

Station IP Address

Use this feature to set the IP address.

Subnet mask

Use this feature to set the subnet mask address.

Gateway IP Address

Use this feature to set the Gateway IP address.

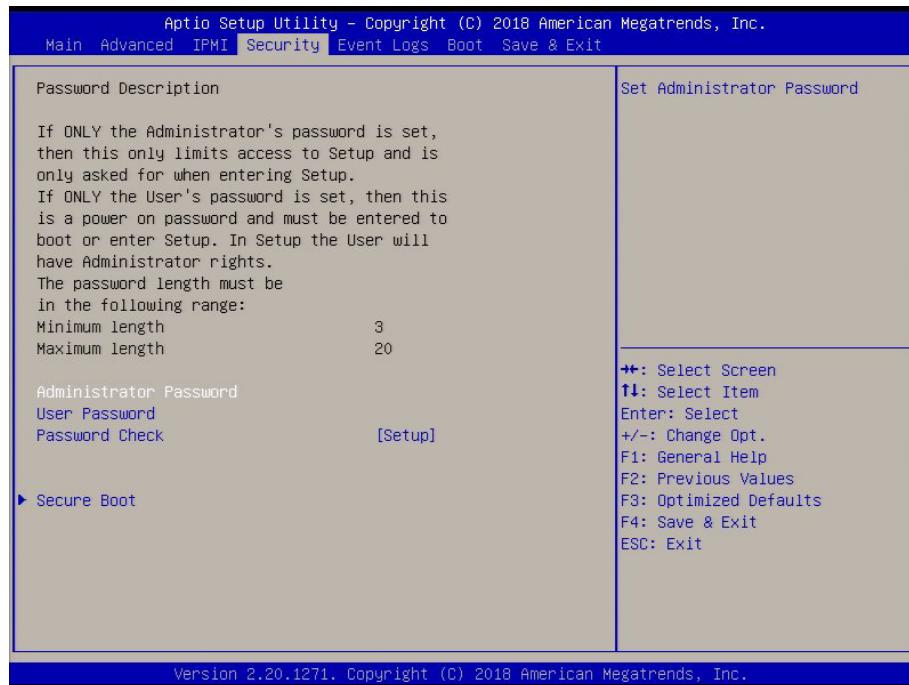
Configure IPV6 support

IPV6 Support

Use this feature to enable or disable IPV6 support for LAN1. The options are **Enabled** and **Disabled**.

4.5 Security

Use this menu to configure the security settings for the system.



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 to 20 characters long.

User Password

Use this feature to set a user password.

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**.

►Secure Boot

- System Mode
- Secure Boot

Secure Boot

Select Enable for secure boot support to ensure system security at boot up. 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 are available for configuration:**

CSM Support

This feature is for manufacturing debugging purposes.

Vendor Keys

► Restore Factory Keys

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

► 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.

► Key Management

Factory Key Provision

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

► Restore Factory Keys

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

► 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.

► Export Secure Boot variables

Use this feature to copy the NVRAM contents of the secure boot variables to a file.

► Enroll Efi Image

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

Device Guard Ready

► Remove 'UEFI CA' from DB

Use this feature to remove the Microsoft UEFI CA certificate from the database. The options are Yes and No.

►Restore DB defaults

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

Secure Boot variable**►Platform Key (PK)****Details**

Select this feature to view the details of the Platform Key.

Export

Select Yes to export a PK from a file on an external media.

Update

Select Yes to load a factory default PK or No to load from a file on an external media.

Delete

Select Ok to remove the PK and then the system will reset to Setup/Audit Mode.

►Key Exchange Keys**Details**

Select this feature to view the details of the Key Exchange Key.

Export

Select Yes to export a KEK from a file on an external media.

Update

Select Yes to load a factory default KEK or No to load from a file on an external media.

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.

Delete

Select Ok to remove the KEK and then the system will reset to Setup/Audit Mode.

►Authorized Signatures**Details**

Select this feature to view the details of the db.

Export

Select Yes to export a db from a file on an external media.

Update

Select Yes to load a factory default db or No to load from a file on an external media.

Append

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

Delete

Select Ok to remove the db and then the system will reset to Setup/Audit Mode.

►Forbidden Signatures

Details

Select this feature to view the details of the dbx.

Export

Select Yes to export a dbx from a file on an external media.

Update

Select Yes to load a factory default dbx or No to load from a file on an external media.

Append

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

Delete

Select Ok to remove the dbx and then the system will reset to Setup/Audit Mode.

►Authorized TimeStamps

Update

Select Yes to load a factory default dbt or No to load from a file on an external media.

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 Signatures

Update

Select Yes to load a factory default dbr or No to load from a file on an external media.

Append

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

4.6 Event Logs

Use this menu to configure event log settings.



►Change SMBIOS Event Log Settings

Enabling/Disabling Options

Smbios Event Log

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

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 feature 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.

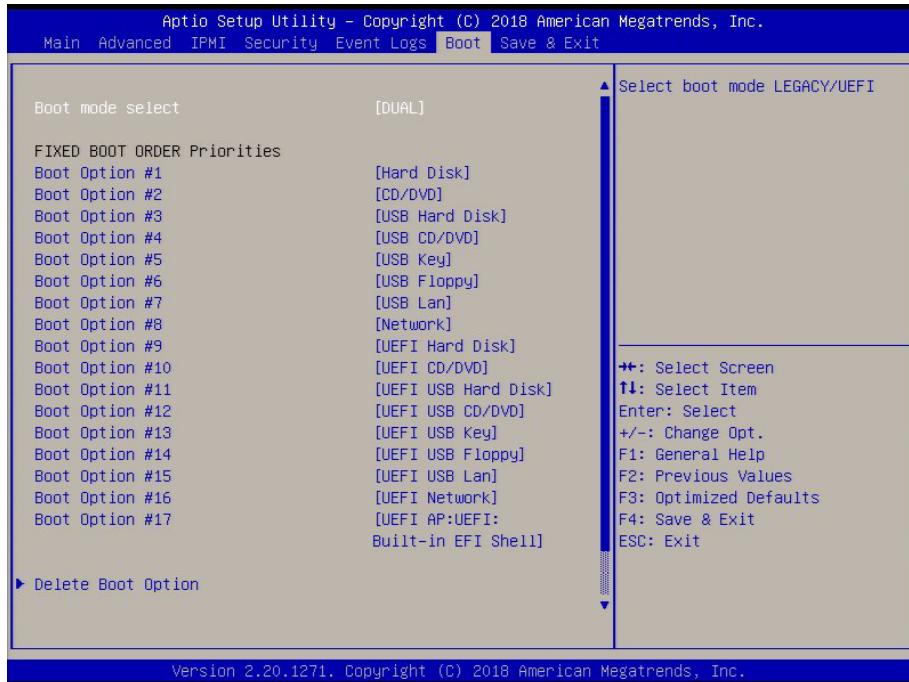
►View Smbios Event Log

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

DATE/TIME/ERROR CODE/SEVERITY

4.7 Boot

Use this menu to configure boot settings.



Setup Prompt Timeout

Use this feature to specify the length of time (the number of seconds) for the BIOS to wait before rebooting the system when the setup activation key is pressed. Enter the value of 65535 (0xFFFF) for the BIOS to wait indefinitely. The default setting is **1**.

Boot mode select

Use this feature to select the boot mode. The options are **LEGACY**, **UEFI**, and **DUAL**.

Fixed BOOT ORDER Priorities

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

- **LEGACY/UEFI/DUAL Boot Order #1**
- **LEGACY/UEFI/DUAL Boot Order #2**
- **LEGACY/UEFI/DUAL Boot Order #3**
- **LEGACY/UEFI/DUAL Boot Order #4**
- **LEGACY/UEFI/DUAL Boot Order #5**
- **LEGACY/UEFI/DUAL Boot Order #6**

- LEGACY/UEFI/DUAL Boot Order #7
- LEGACY/UEFI/DUAL Boot Order #8
- LEGACY/UEFI/DUAL Boot Order #9
- LEGACY/UEFI/DUAL Boot Order #10
- LEGACY/UEFI/DUAL Boot Order #11
- LEGACY/UEFI/DUAL Boot Order #12
- LEGACY/UEFI/DUAL Boot Order #13
- LEGACY/UEFI/DUAL Boot Order #14
- LEGACY/UEFI/DUAL Boot Order #15
- LEGACY/UEFI/DUAL Boot Order #16
- LEGACY/UEFI/DUAL Boot Order #17

► **Delete Boot Option**

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

► **Delete Driver Option**

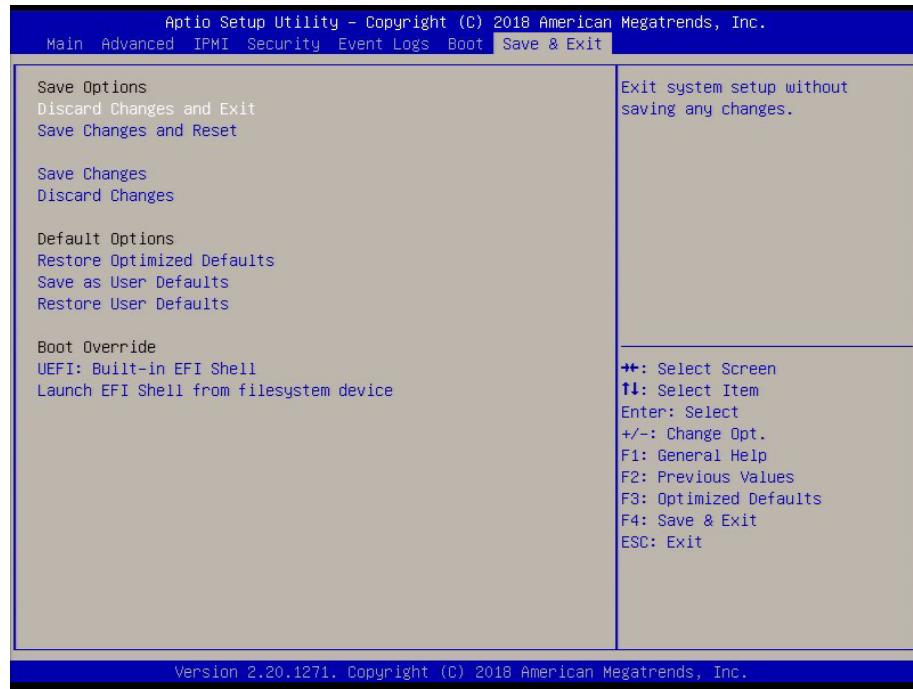
Use this feature to remove an EFI driver option from the driver order.

► **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.

4.8 Save & Exit

Use this menu to configure save and exit settings.



Save Options

Discard Changes and Exit

Select this feature 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 and Reset

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

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 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

Other boot options are listed in this section. The system will boot to the selected boot option.

UEFI: Built-in EFI Shell

Launch EFI Shell from filesystem device

Appendix A

BIOS Codes

A.1 BIOS Error POST (Beep) Codes

During the POST (Power-On Self-Test) routines, which are performed upon each system boot, errors may occur.

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

Fatal errors will not allow the system to continue with bootup. 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 table below lists some common errors and their corresponding beep codes encountered by users.

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 AOM-SPI80-V).

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

Appendix B

Software Installation

B.1 Installing Software Programs

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

After accessing the website, go into the CDR_Images (in the parent directory of the above link) 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 B-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 operating system, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/>.

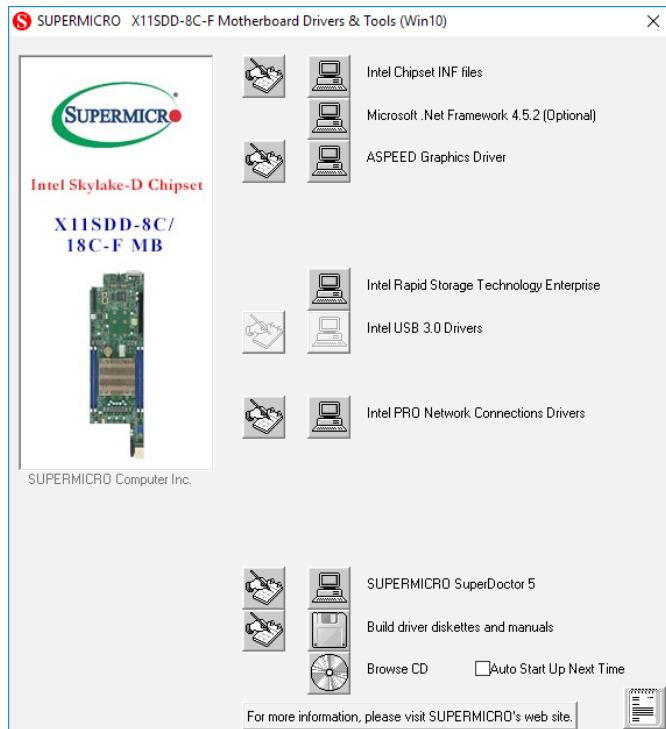


Figure B-1. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to bottom) one at a time. After installing each item, you must reboot the system before proceeding with the next item on the list. The bottom icon with a DVD on it allows you to view the entire contents of the DVD.

When making a storage driver diskette by booting into a driver DVD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.

B.2 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a hardware monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, 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. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.



Note: The default Username and Password for SuperDoctor 5 is ADMIN / ADMIN.

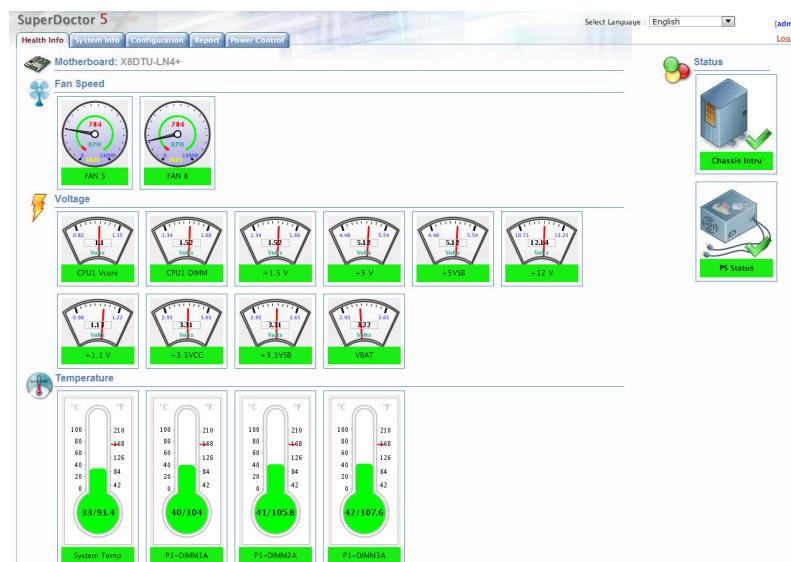


Figure B-2. SuperDoctor 5 Interface Display Screen (Health Information)



Note: The SuperDoctor 5 program and user's manual can be downloaded from the Supermicro website at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

Appendix C

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 section in its entirety before installing or configuring components.

These warnings may also be found on our website at http://www.supermicro.com/about/policies/safety_information.cfm.

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

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

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.

ازوهرا!

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

هناك خطر من انفجار في حالة اسحبدال البطارية بطريقة غير صحيحة فعليل اسحبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصت به الشرمة المصنعة جخلص من البطاريات الممسحعملة وفقا لتعليمات الشرمة 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 ontploffingsgevaar 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.

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

ازהרה!

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

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقاً لجميع القوانين واللائحةطنية

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.

Appendix D

UEFI BIOS Recovery

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

D.1 Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an add-on card to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

D.2 Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining POST (Power-On Self-Test) routines.



Note 1: Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS block crashes.

Note 2: When the BIOS recovery block crashes, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. (For a RMA request, please see section 3.5 for more information). Also, you may use the Supermicro Update Manager (SUM) Out-of-Band (OOB) (https://www.supermicro.com.tw/products/nfo/SMS_SUM.cfm) to reflash the BIOS.

D.3 Recovering the Main BIOS Block with a USB Device

This feature allows the user to recover the main BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32) which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below.

1. Using a different machine, copy the "Super.ROM" binary image file into the Root "\\" directory of a USB device or a writable CD/DVD.



Note 1: If you cannot locate the "Super.ROM" file in your drive disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and reset the system when the following screen appears.



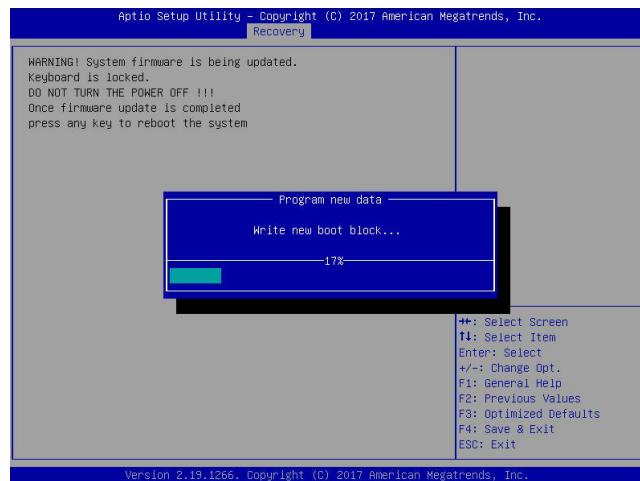
3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



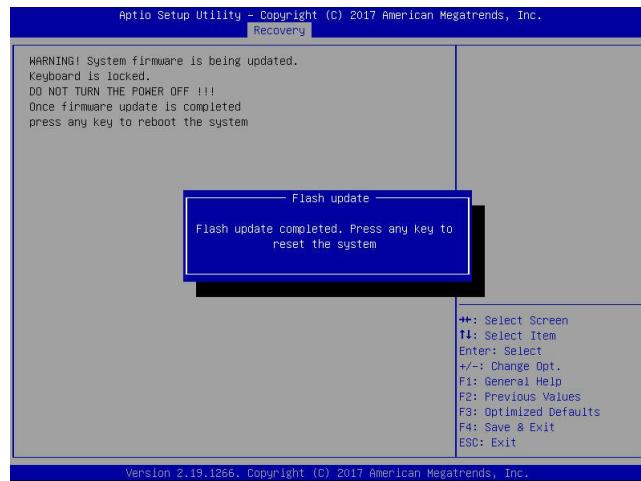
 **Note:** At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

 **Note:** Do not interrupt the BIOS flashing process until it has completed.

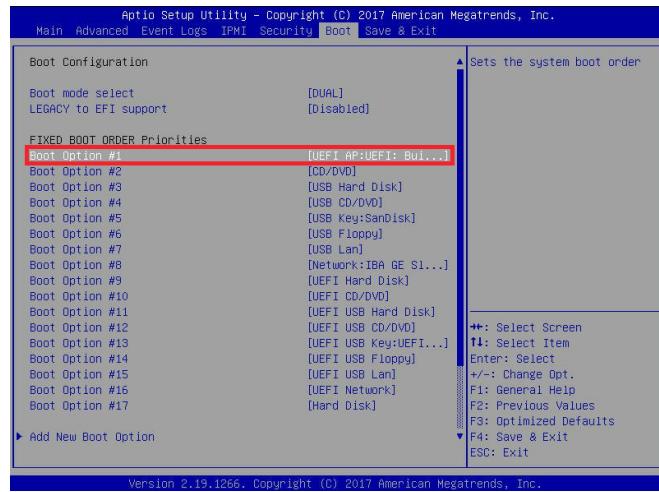


5. After the BIOS recovery process is complete, press any key to reboot the system.



6. Using a different system, extract the BIOS package into a USB flash drive.

7. Press **** continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press **<F4>** to save the settings and exit the BIOS Setup utility.



- When the UEFI Shell prompt appears, type `fs#` to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter `flash.nsh BIOSname.###` at the prompt to start the BIOS update process.



```

UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000C)
Mapping table
  FS0: Alias(s):+00:0b::BLK1:
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x37901072,0x800,0x1
049592)
  BLK0: Alias(s):
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:> cd \FUDOS
FS0:\FUDOS> cd SJJPME2_03162017
FS0:\FUDOS\SJJPME2_03162017> flash.nsh X10DPU7.314

```

Note: *Do not interrupt this process* until the BIOS flashing is complete.



```

Done.
[ Access Cmos Port Ex ]
<read>
Index 0x51: 0x18

Done.
*****
* Program BIOS and ME (including FOT) regions...
*
*****
| AMI Firmware Update Utility v5.09.01.1317
| copyright (C)2017 American Megatrends Inc. All Rights Reserved.
|
CRVID = 50652

Reading Flash ..... done
- ME Data Size Checking .. ok
- FFS Checksums ..... ok
- Check RomLayout ..... ok
Erasing Main Block ..... done
Erasing Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... (0%) (0%)

```

- The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug the AC power cable in the power supply again to power on the system.



```

Verifying NCB Block ..... done
- Update success for FDR
- Update success for IE, -
- Successful update Recovery Loader to OPRx1!
- Successful update MFSB1!
- Successful update FTRP1!
- Successful update MFS, IVB1 and IVB2!
- Successful update FLOG and UTK1!
ME Data Size Checking .. ok
WARNING : System must power-off to have the changes take effect!
Moving FS0:\FUDOS\SJJPME2_03162017\fdtx64.efi -> FS0:\FUDOS\SJJPME2_03162017\f
dt.smc
- [ok]
Moving FS0:\FUDOS\SJJPME2_03162017\afuefi64.efi -> FS0:\FUDOS\SJJPME2_03162017\7
7\afuefi.smc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*
Delete "flash.nsh"
Delete successful.
FS0:>

```

- Press `` continuously to enter the BIOS Setup utility.
- Press `<F3>` to load the default settings.
- After loading the default settings, press `<F4>` to save the settings and exit the BIOS Setup utility.