



A3SSV-8C-SPLN10F
A3SSV-16-SPLN10F
A3SSV-24C-SPLN10F

USER MANUAL

Revision 1.0a

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 1.0a

Release Date: May 08, 2023

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 © 2023 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 A3SSV-8C/16C/24C-SPLN10F motherboard.

About This Motherboard

The Supermicro A3SSV-8C/16C/24C-SPLN10F motherboard comes with an integrated A3SSV-8C/16C/24C-SPLN10F System-on-Chip supporting up to 24 cores with a 83W TDP. This Flex ATX form factor motherboard is optimized for various networking applications requiring great performance while minimizing power consumption. Some of the available features on this model are M.2 B-Key, E-Key, and M-Key, five SATA 2.0 ports, 10 LAN ports, and the reliability/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, please 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)
Sales-USA@supermicro.com (Sales Inquiries)
Government_Sales-USA@supermicro.com (Gov. Sales Inquiries)
Support@supermicro.com (Technical Support)
RMA@supermicro.com (RMA Support)
Webmaster@supermicro.com (Webmaster)

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_Europe@supermicro.com (General Information)
Support_Europe@supermicro.com (Technical Support)
RMA_Europe@supermicro.com (RMA 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: Sales-Asia@supermicro.com.tw (Sales Inquiry)
Support@supermicro.com.tw (Technical Support)
RMA@supermicro.com.tw (RMA Support)

Website: www.supermicro.com.tw

Table of Contents

Chapter 1 Introduction

1.1 Checklist	8
Quick Reference	11
Quick Reference Table	12
Motherboard Features	14
1.2 Processor Overview	18
1.3 Special Features	18
Recovery from AC Power Loss	18
1.4 System Health Monitoring	19
Onboard Voltage Monitors	19
Fan Status Monitor with Firmware Control	19
Environmental Temperature Control	19
System Resource Alert	19
1.5 ACPI Features	20
1.6 Power Supply	20

Chapter 2 Installation

2.1 Static-Sensitive Devices	21
Precautions	21
Unpacking	21
2.2 Motherboard Installation	22
Tools Needed	22
Location of Mounting Holes	22
Installing the Motherboard	23
2.3 Memory Support and Installation	24
Memory Support	24
DIMM Module Population Configuration	24
DIMM Module Population Sequence	25
DIMM Installation	26
DIMM Removal	26
2.4 Rear I/O Ports	27
2.5 Front Control Panel	32

2.6 Connectors	37
Power Connections	37
Headers	39
2.7 Jumper Settings	48
How Jumpers Work	48
2.8 LED Indicators	54

Chapter 3 Troubleshooting

3.1 Troubleshooting Procedures	56
Before Power On	56
No Power	56
No Video	56
System Boot Failure	57
Memory Errors	57
Losing the System's Setup Configuration	58
When the System Becomes Unstable	58
3.2 Technical Support Procedures	60
3.3 Frequently Asked Questions	61
3.4 Battery Removal and Installation	62
Battery Removal	62
Proper Battery Disposal	62
Battery Installation	62
3.5 Returning Merchandise for Service	63

Chapter 4 UEFI BIOS

4.1 Introduction	64
4.2 Main Setup	65
4.3 Advanced	67
4.4 BMC	94
4.5 Event Logs	97
4.6 Security	99
4.7 Boot	104
4.8 Save & Exit	106

Appendix A BIOS Codes

A.1 BIOS Error POST (Beep) Codes	109
A.2 Additional BIOS POST Codes.....	110

Appendix B Software Installation

B.1 Supermicro SuperDoctor 5.....	111
-----------------------------------	-----

Appendix C Standardized Warning Statements

Battery Handling.....	112
Product Disposal	114

Appendix D UEFI BIOS Recovery

D.1 Overview.....	115
D.2 Recovering the UEFI BIOS Image.....	115
D.3 Recovering the BIOS Block with a USB Device.....	116

Appendix E Dual Boot Block

BIOS Boot Block	120
BIOS Boot Block Corruption Occurrence	120

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 (included in the retail box)		
Description	Part Number	Quantity
Supermicro Motherboard	A3SSV-8C/16C/24C-SPLN10F	1
SATA Cables	CBL-0044L	6
Quick Reference Guide	MNL-2258-QRG	1
I/O Shield	MCP-260-00133-0N	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/wdl/driver/>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/
- 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. A3SSV-16C-SPLN10F Motherboard Image

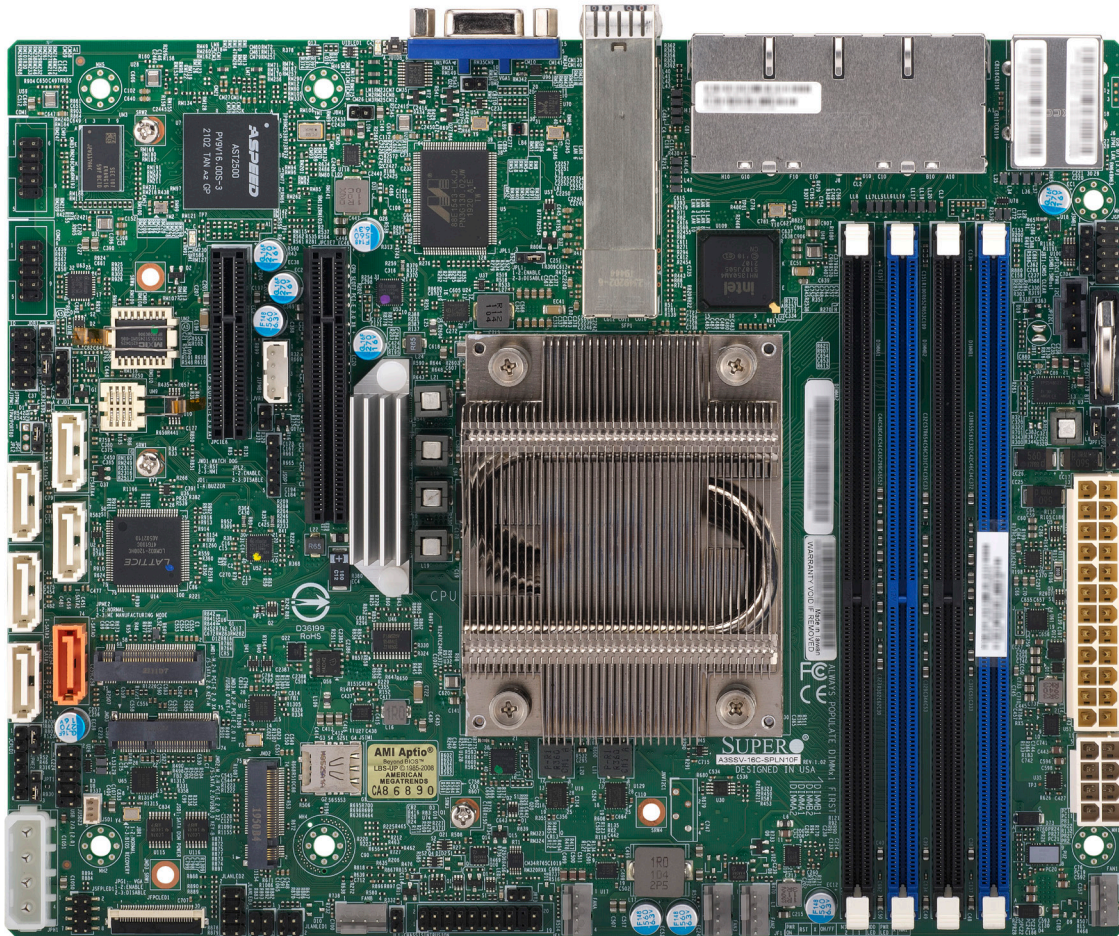
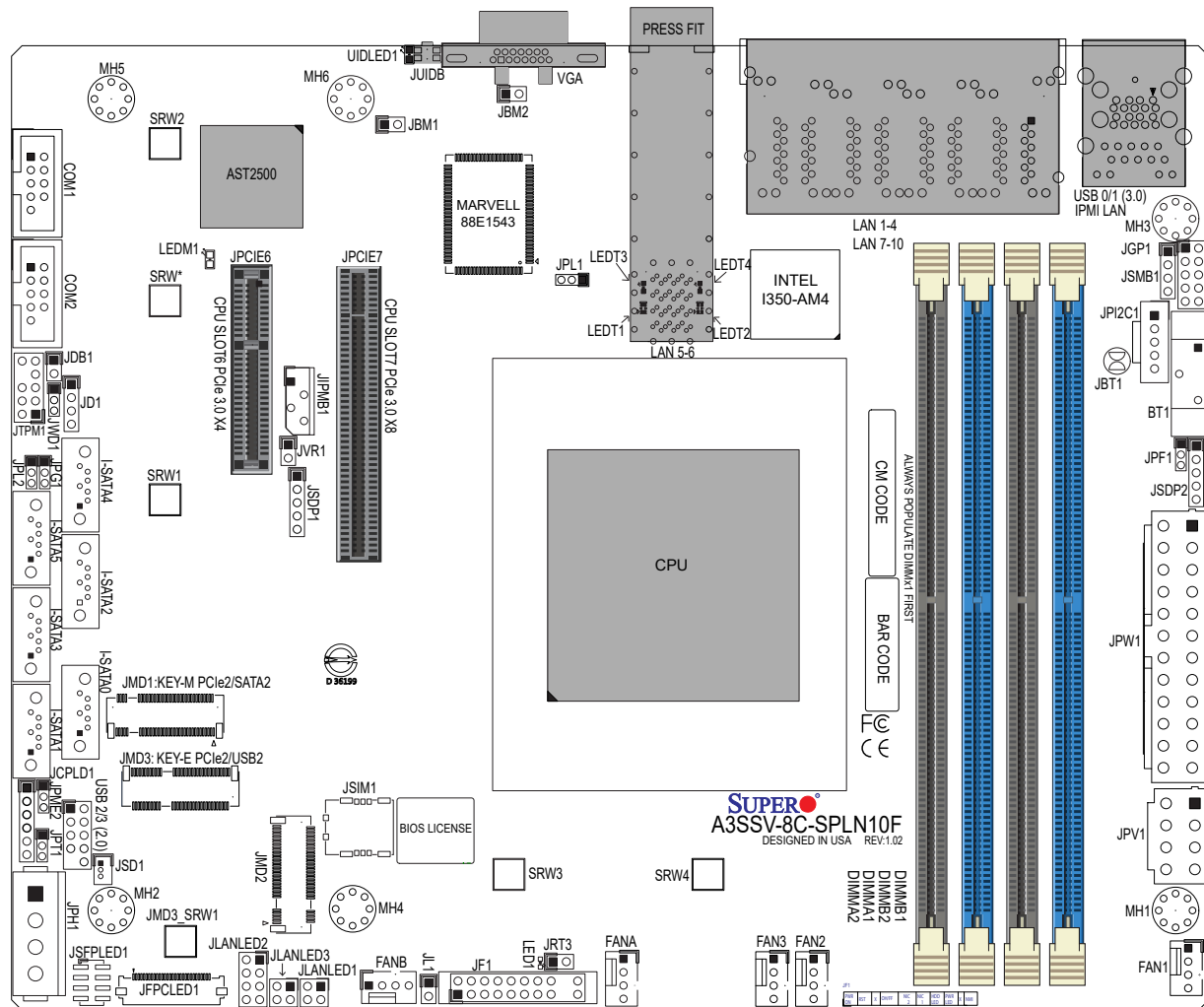
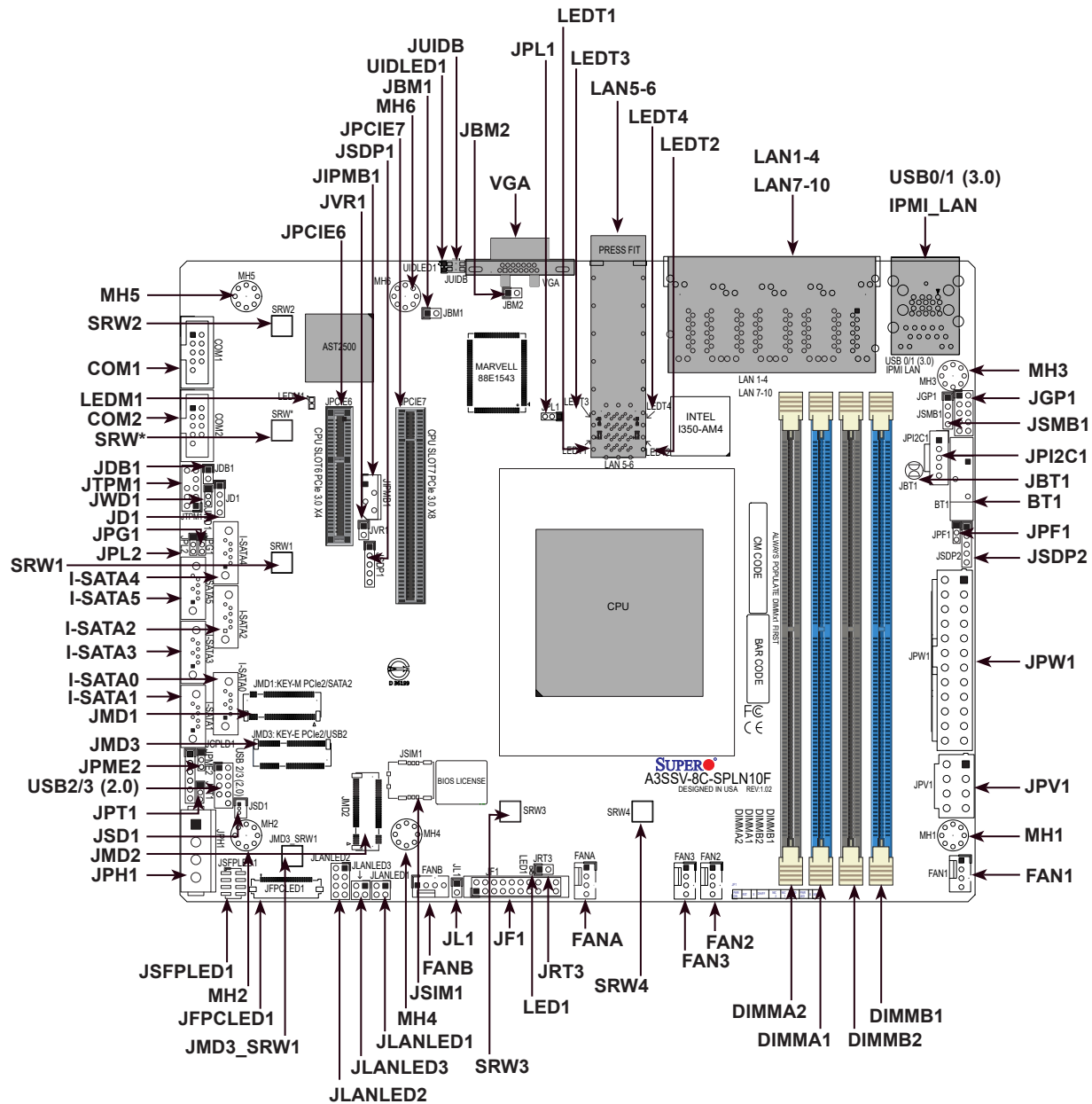


Figure 1-2. A3SSV-8C/16C/24C-SPLN10F Motherboard Layout
(not drawn to scale)



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.
- "1" indicates the location of Pin 1.
- When LED1 (Power LED indicator) is on, system power is on. Unplug the power cable before installing or removing any components.

Quick Reference Table

Jumper	Description	Default Setting
JBM1	Disable IPMI Share LAN	Pins 1-2 Open: Enabled
JBM2	Disable IPMI Dedicated LAN	Pins 1-2 Open: Enabled
JBT1	CMOS Clear	Open: Normal
JPF1	Power Force On	Pins 1-2 (ATX mode) Pins 2-3 (Force PS-ON mode (Default))
JPG1	Onboard VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN1–LAN4 Enable/Disable	Pins 1-2 (Enabled)
JPME2	ME Manufacturing Mode	Pins 1-2 (Normal)
JPT1	Onboard TPM Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer	Pins 1-2 (Reset by BMC)

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

Connector	Description
BT1	Onboard Battery
COM1, COM2	COM Headers
FAN1 - FAN3, FANA, FANB	CPU/System Fan Headers (FAN1: CPU Fan)
IPMI_LAN	IPMI LAN Port
I-SATA0 - I-SATA5	Intel® SoC SATA 2.0 Ports (I-SATA0: SuperDOM)
JD1	Speaker/Buzzer Header (Pins 1-4)
JF1	Front Control Panel Header
JFPCLED1	LED Board Cable Connector for FPB-FPE300-LED10 (Reserved for FPB-FPE300-LED10 on E300 chassis use)
JGP1	General Purpose I/O Header
JIPMB1	System Management Bus Header (for IPMI card)
JL1	Chassis Intrusion Header
JLANLED1	LAN3–LAN4 Port Activity LED Header
JLANLED2	LAN5–LAN8 Port Activity LED Header
JLANLED3	LAN9–LAN10 Port Activity LED Header
JMD1	M.2 M-Key 2242/2280/22110 (supports PCIe 2.0 x4/SATA 2.0/USB 2.0) Slot
JMD2	M.2 B-Key 2242/3042/2280 (supports PCIe 2.0 x2/SATA 2.0/USB 3.0) Slot
JMD3	M.2 E-Key 2230 (supports PCIe 2.0 x1/USB 2.0) Slot
JMD3_SRW1	JMD3 M.2 Holding Screw
JPCIE6	CPU PCIe 3.0 x4 Slot



Note: Table is continued on the next page.

Connector	Description
JPCIE7	CPU PCIe 3.0 x8 Slot
JPH1	4-pin Power Connector (for one HDD system)
JPI ² C1	Power Supply SMBus I ² C Header
JPV1	8-pin 12V DC Power Connector
JPW1	24-pin ATX Power Connector
JRT3	Thermal Diode 1
JSD1	SATA DOM Power Connector
JSDP1	Software-Defined Pins for LAN5–LAN6
JSDP2	Software-Defined Pins LAN1–LAN4
JSFPLED1	SFP LAN LED Board Cable Connector for FPB-FPE300-LED10
JSIM1	Nano SIM Card Slot
JSMB1	System Management Bus Header
JTPM1	Trusted Platform Module (TPM)/Port 80 Header
JUIDB	Unit Identifier Switch
JVR1	VRM I ² C SMBus to CPU Header
LAN1–4, LAN7–10	Eight LAN 1G Base-T (Intel i350-AM4 & Marvell 88E1543) Ports
LAN5–6	Two LAN SFP28 25G Ports
MH1–MH6	Mounting Holes
SRW1–SRW4, SRW*	M.2 Holding Screws
USB0/1	Back Panel USB 3.0 Ports
USB2/3	Front Accessible USB 2.0 Header
VGA	VGA Port

Motherboard Features

Motherboard Features	
CPU	
Intel® Atom SoC P5000 Series (FCBGA-2106) Processor	
Memory	
- Supports up to 256GB of RDIMM or 64GB of Non-ECC/ECC UDIMM DDR4 memory in four slots. - A3SSV-8C-SPLN10F: DDR4 2400MT/s - A3SSV-16C-SPLN10F: DDR4 2667MT/s - A3SSV-24C-SPLN10F: DDR4 2933MT/s	
DIMM Size	
4GB, 8GB, 16GB, 32GB, 64GB	
Expansion Slots	
- One PCIe 3.0 x4 Slot - One PCIe 3.0 x8 Slot - One M.2 B-Key 2242/3042/2280 Slot - One M.2 E-Key 2230 Slot - One M.2 M-Key 2242/2280/22110 Slot	
Network	
- Quad 1GbE RJ45 LAN from Intel P5000 SoC - Dual 25GbE SFP28 LAN from Intel P5000 SoC - Quad 1GbE RJ45 LAN from Intel i350-AM4	
Baseboard Management Controller (BMC)	
ASpeed AST2500 Baseboard Controller	
Graphics	
VGA Graphics via ASpeed AST2500	
I/O Devices	
Serial (COM) Header	Two COM headers
SATA 2.0	Six SATA 2.0 ports
VGA	One VGA port
Peripheral Devices	
- Two USB 3.0 ports (USB0/1) - Two USB 2.0 headers (USB2/3)	
BIOS	
256Mb AMI BIOS® SPI Flash BIOS - Plug and Play (PnP), SPI dual/quad speed support, rise card auto detection support, ACPI 6.1, SMBIOS 3.0, PCI FW 3.2, UEFI 2.6	

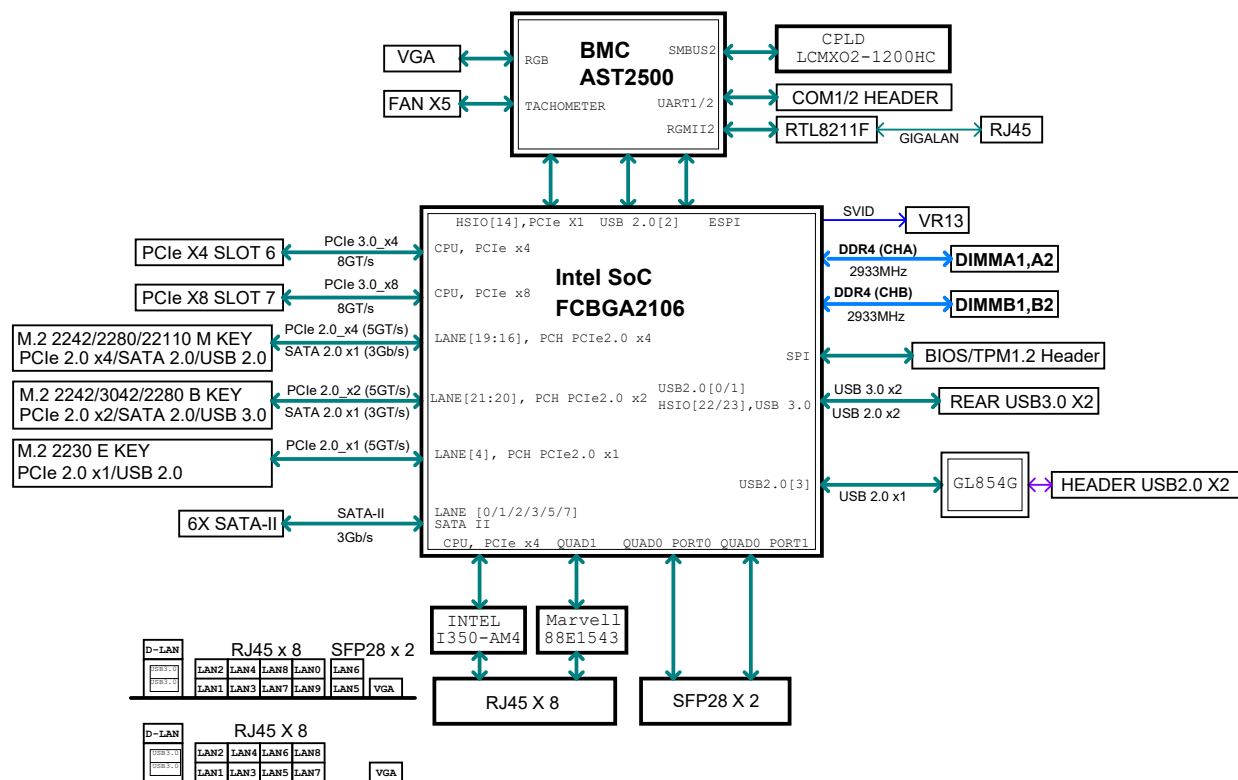


Note: The table above is continued on the next page.

Motherboard Features	
Power Management	
• ACPI power management • CPU fan auto-off in sleep mode • Power button override mechanism • Power-on mode for AC power recovery	
System Health Monitoring	
• Onboard voltage monitors for CPU cores, +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	
• Five 4-pin proprietary fan headers • Fan status monitoring via IPMI connections • Dual cooling zone	
System Management	
• Platform Environment Control Interface (PECI) 3.2 support • IPMI 2.0 • System resource alert via SuperDoctor® 5, Watch Dog, NMI • Chassis Intrusion header and detection • Power supply monitoring	
LED Indicators	
• CPU system overheat • Power / suspend-state indicator LED • Fan fail LED • UID / Remote UID • HDD activity LED • LAN activity LED	
Other	
• RoHS • Operating System: Linux only (RHEL 8.3 and kernel 4.18.0 and above)	
Dimensions	
• Flex ATX form factor (9" x 7.25") (228.6 mm x 184.15 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/>.
-  **Note 3:** Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard. For general documentation and information on IPMI, please visit our website at https://www.supermicro.com/en/support/BMC_Unique_Password.

**Figure 1-4.
Chipset Block Diagram**



Note 1: 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 Atom P5000 series processor, with up to 24 cores at a 83W TDP on the A3SSV-8C/16C/24C-SPLN10F series, offers performance, reliability, and high intelligence. As a low-power system-on-chip motherboard, the A3SSV-8C/16C/24C-SPLN10F is optimized for a wide variety of networking workloads and applications.

- ACPI Power Management Logic Support Rev. 6.1
- Intel QuickAssist Technology
- Adaptive Thermal Management/Monitoring
- PCIe 3.0, SATA 2.0 and M.2 (B-Key, E-Key, and M-Key) slots
- System Management Bus (SMBus) Specification Version 3.0
- Intel VT-x with Extended Page Tables (EPT)
- Intel Virtualization Technology (VT-x)
- Intel Virtualization Technology for Directed I/O (Intel VT-d)
- Intel Trusted Execution Technology (Intel TXT)
- Intel Rapid Storage Technology
- GbE Ethernet with RJ45 and SFP connectors

1.3 Special Features

This section describes the health monitoring features of the A3SSV-8C/16C/24C-SPLN10F 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 A3SSV-8C/16C/24C-SPLN10F 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. Refer to the below table for available fan modes to choose the most appropriate one for nominal operation.

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 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.

Figure 1-5. Fan Speed Modes

Fan Mode	Description
Full Speed	Use this mode to set fan speed at full speed for maximum system cooling
Standard	Use this mode to set fan speed for normal system cooling
Heavy I/O	Use this mode to set fan speed for higher PCIe add-on card area cooling
Optimal	Use this mode to set fan speed for normal PCIe add-on card area cooling
PUE2	Use this mode to set fan speed for best power efficiency and maximum noise reduction

1.5 ACPI Features

The Advanced Configuration and Power Interface (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.

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.

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

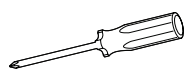
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, 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.



Phillips Screwdriver (1)

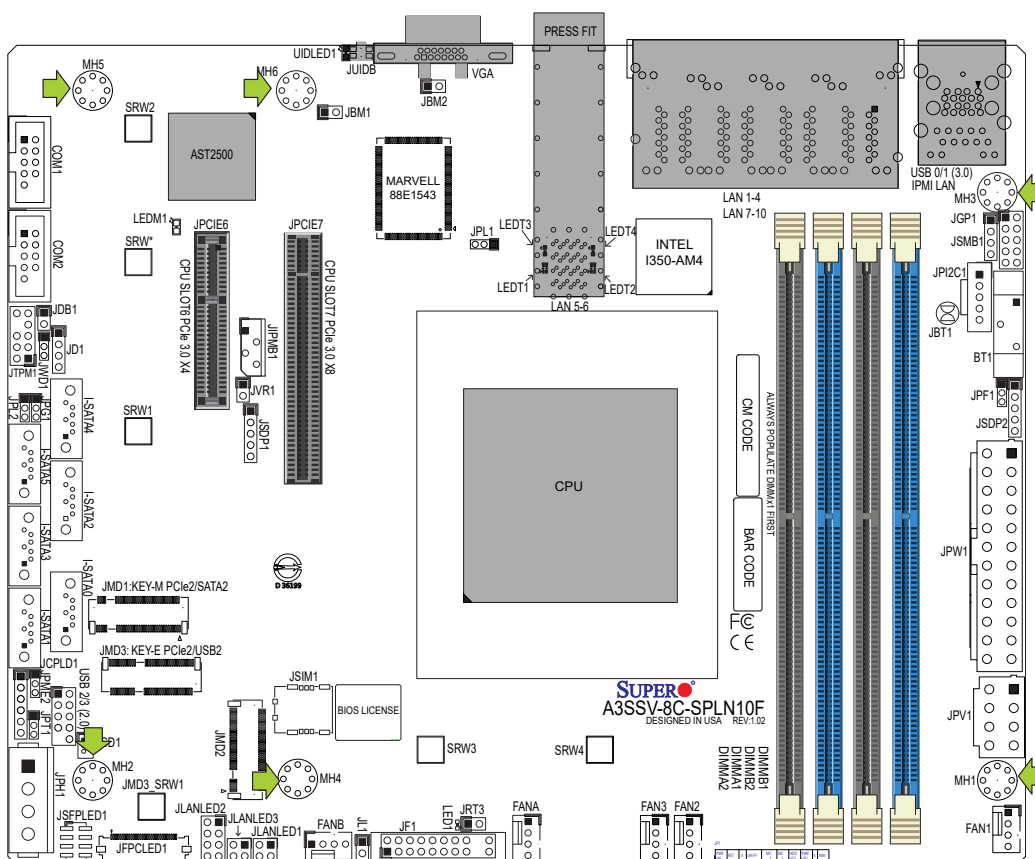


Phillips Screws (6)



Standoffs (6)
Only if Needed

Tools Needed



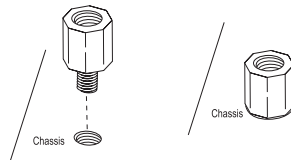
Location of Mounting Holes



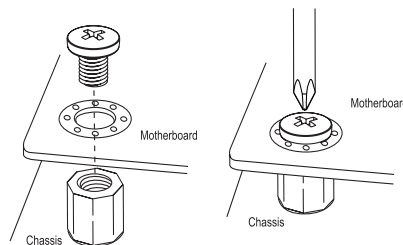
Notes: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when 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 as needed.
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: Refer to the motherboard product page for the list of supported memory.



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

Memory Support

The A3SSV-8C/16C/24C-SPLN10F motherboard supports up to 256GB of ECC RDIMM or 64GB of Non-ECC/ECC UDIMM DDR4 memory in four memory slots. 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

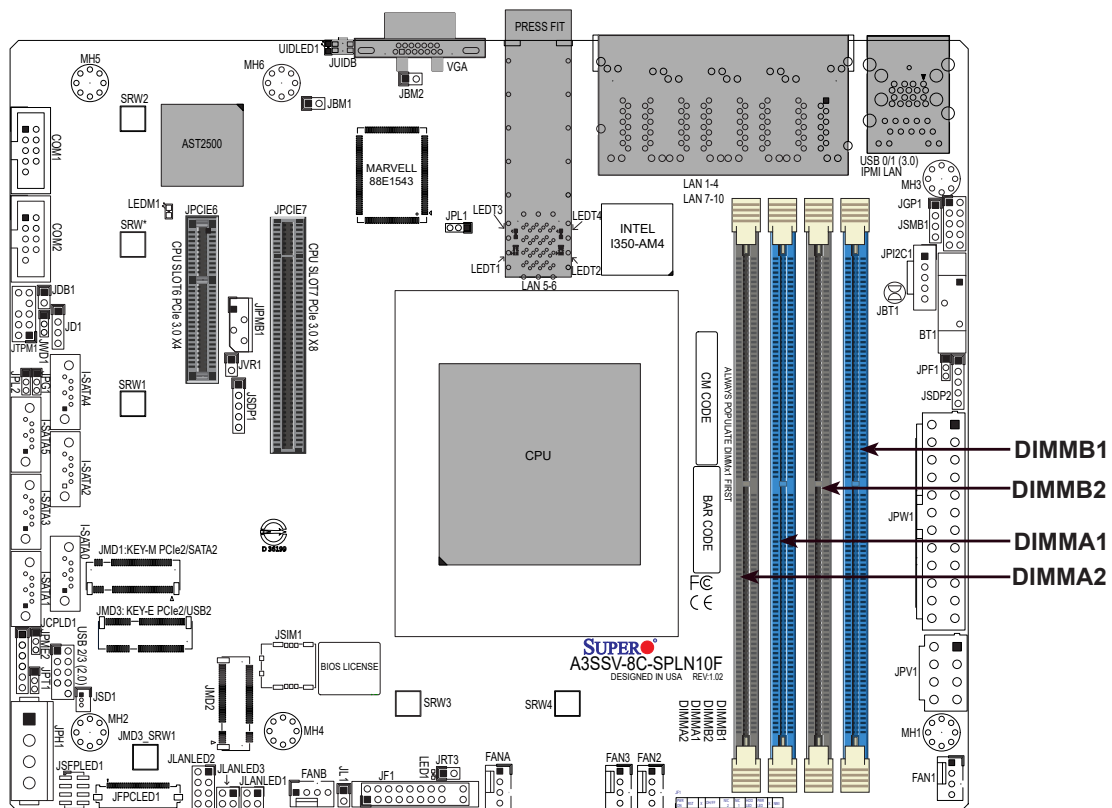
For optimal memory performance, follow the table below when populating memory.

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

DIMM Module Population Sequence

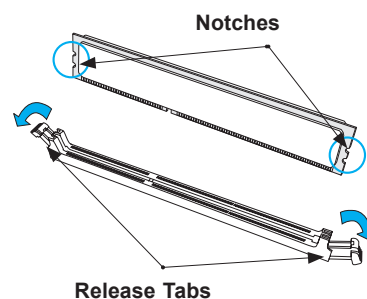
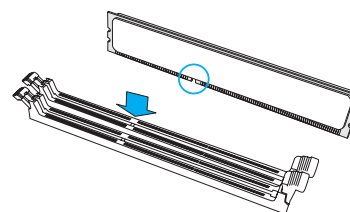
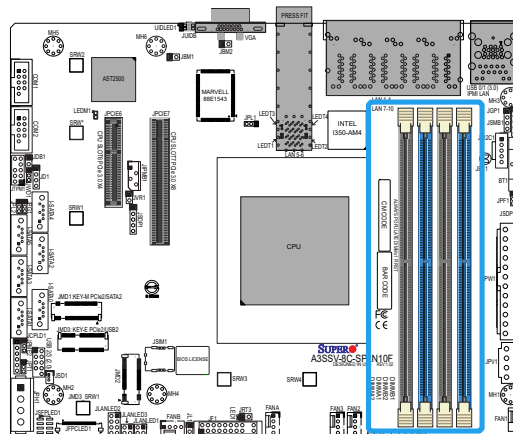
When installing memory modules, the DIMM slots should be populated in the following order: DIMMA1, DIMMB1, DIMMA2, DIMMB2.

- It is recommended to 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.



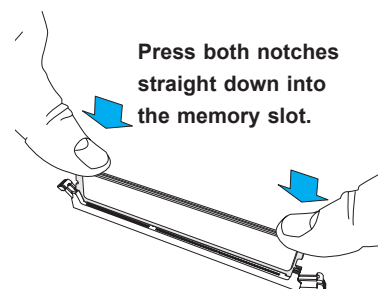
DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMMA1, DIMMB1, DIMMA2, DIMMB2. 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.

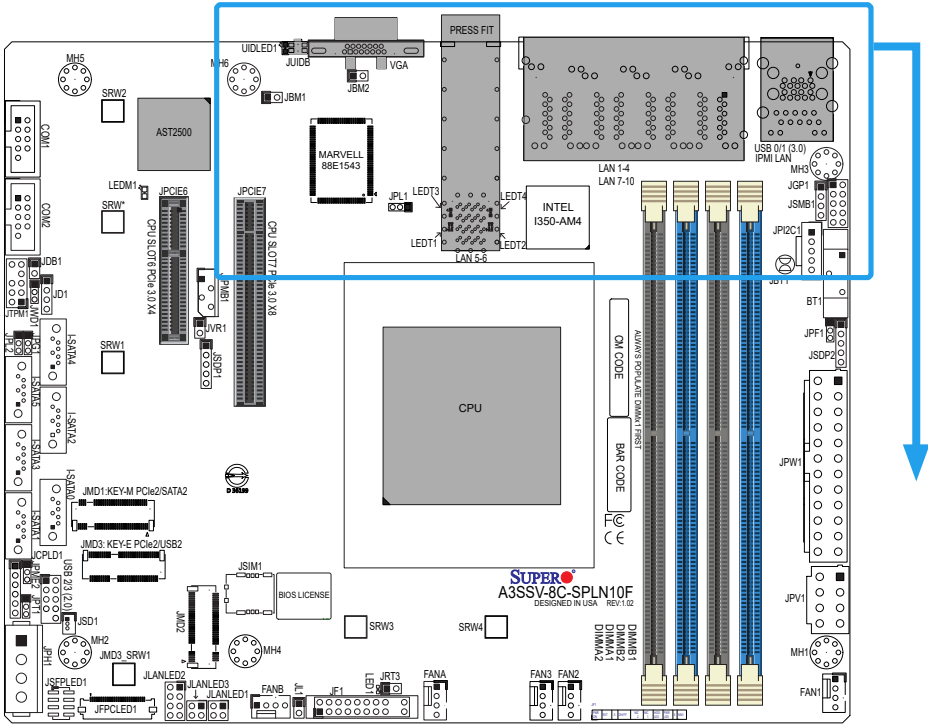
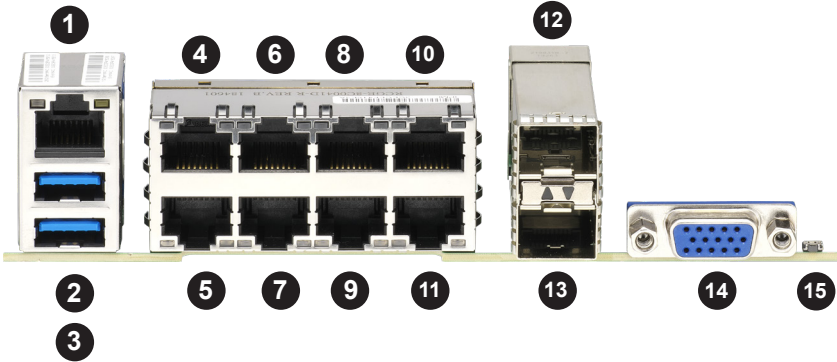


Figure 2-1. I/O Port Locations and Definitions



#	Description	#	Description	#	Description
1	IPMI LAN	6	LAN4	11	LAN9
2	USB1 (USB3.0)	7	LAN3	12	LAN6
3	USB0 (USB3.0)	8	LAN8	13	LAN5
4	LAN2	9	LAN7	14	VGA
5	LAN1	10	LAN10	15	UID Switch

VGA Port

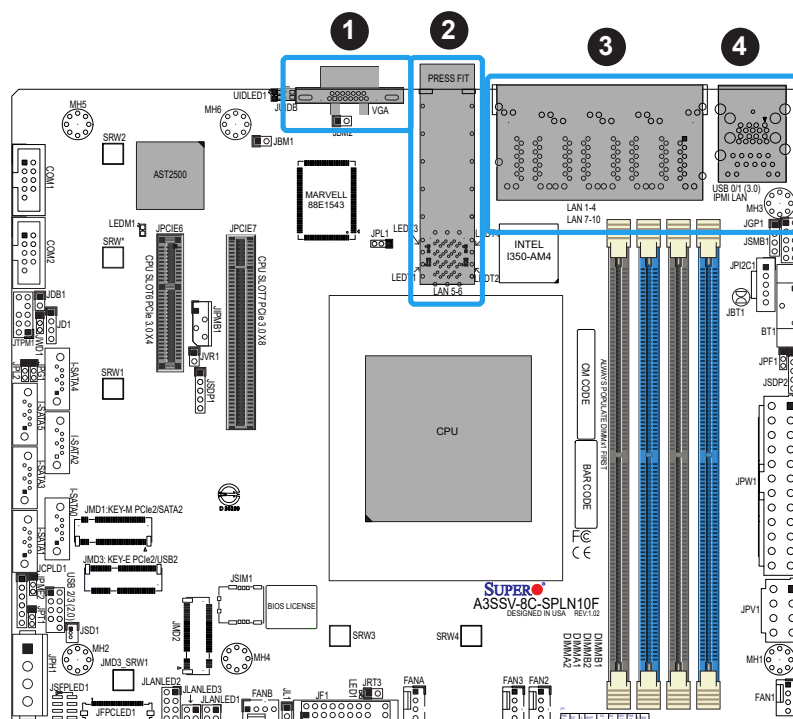
A VGA port is located on the I/O back panel. Use this port to connect to a compatible VGA display.

LAN Ports

There motherboard supports eight RJ45 GbE LAN on LAN1–4, LAN7–10 and two SFP+ LAN ports on LAN5–6. In addition to the LAN ports, there is one IPMI LAN port.

LAN Port Pin Definition			
Pin#	Definition	Pin#	Definition
1	TD0-	11	P3V3_Dual
2	TD0+	12	Act LED (Yellow)
3	TD1-	13	Link 1000 (Amber)
4	TD1+	14	Link 100 LED (Green)
5	TD2-	15	GND
6	TD2+	16	GND
7	TD3-	17	GND
8	TD3+	18	GND
9	COMMCT		
10	GND		

IPMI LAN Pin Definition			
Pin#	Definition	Pin#	Definition
19	VCC	31	YEL+
20	TX1+	32	YEL-
21	TX1-	29	ORG-/GRN+
22	TX2+	30	ORG+/GRN-
23	TX2-	37	CG5
24	TX3+	38	CG6
25	TX3-	39	CG7
26	TX4+	40	CG8
27	TX4-		
28	GND		

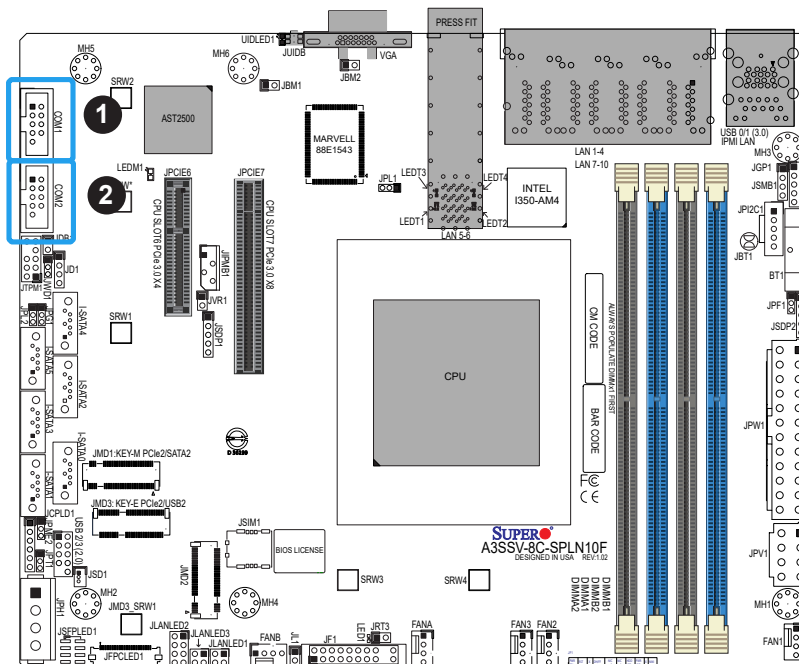


1. VGA Port
2. LAN5-6
3. LAN1-4, LAN7-10
4. IPMI LAN

COM Headers

The motherboard has two front accessible COM headers (COM1 and COM2) to provide serial connections.

COM Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A



1. COM1

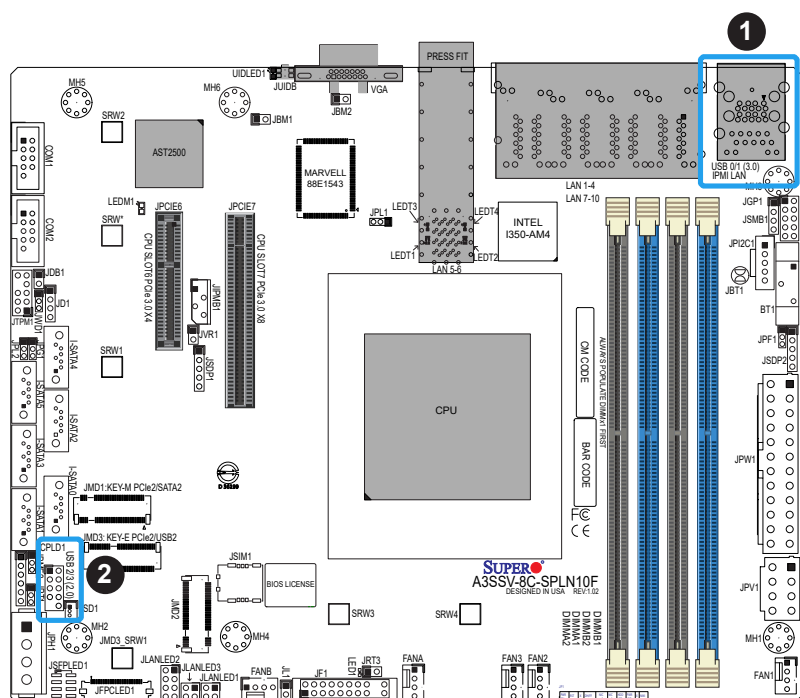
2. COM2

Universal Serial Bus (USB) Ports

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

Back Panel USB 3.0 Ports (USB0/1) Pin Definitions			
Pin#	Definition	Pin#	Definition
14	STDA_SSRX2N	10	VBUS2
15	STDA_SSRX2P	11	D2N
16	GND_DRAIN	12	D2P
17	STDA_SSTX2N	13	GND
18	STDA_SSTX2P		
5	STDA_SSRX1N	1	VBUS1
6	STDA_SSRX1P	2	D1N
7	GND_DRAIN	3	D1P
8	STDA_SSTX1N	4	GND
9	STDA_SSTX1P	33	CG1
		34	CG2
		35	CG3
		36	CG4

USB 2.0 Header (USB2/3) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	2	+5V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	Ground	8	Ground
9	Key	10	NC



1. USB0/1 (3.0)

2. USB2/3 (2.0)

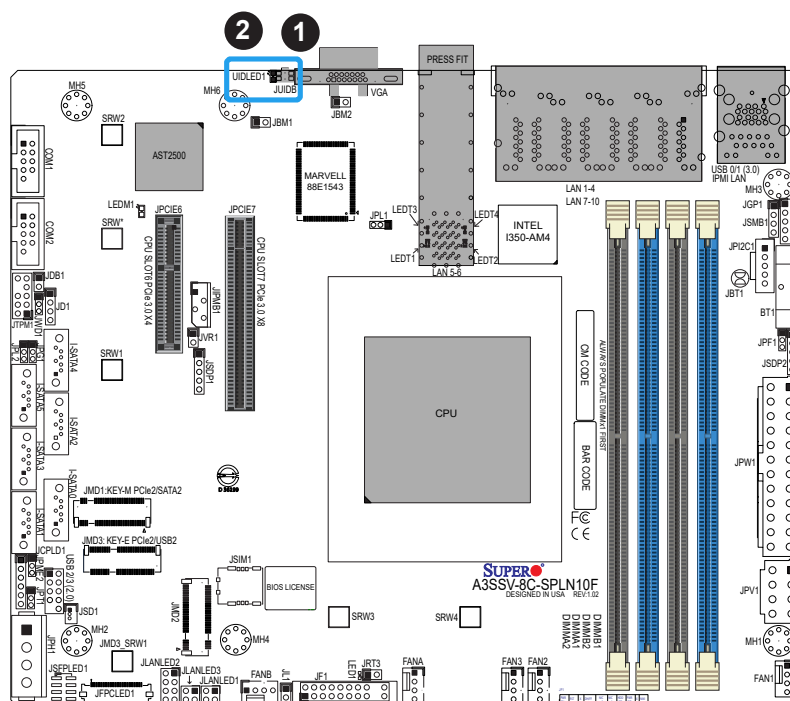
Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED Indicator are located on the motherboard. The UID switch is located at UID SW, which is next to the Display Port on the back panel. The UID LED 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 <https://www.supermicro.com/support/manuals/>.

UID Button 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 Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators.

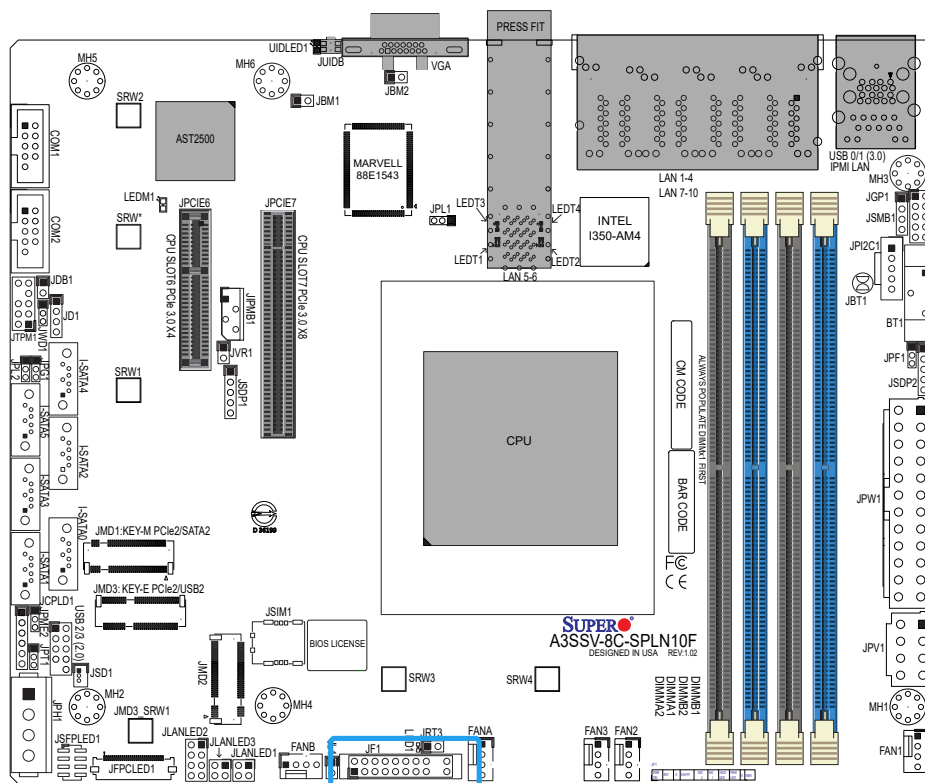


Figure 2-2. JF1 Header Pins

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	PWR Fail
Red+	○	○	Blue+ (OH/Fan Fail)
3.3V SB	○	○	LAN2 Active LED
3.3V SB	○	○	LAN1 Active LED
ID_UID/3.3V SB	○	○	HDD LED
3.3V	○	○	PWR LED
X	○	○	X
NMI	○	○	Ground
	19	20	

Power Button

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

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

Reset Button

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

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

	1	2	
1 Power Button	○	○	Ground
2 Reset Button	○	○	Ground
3.3V	○	○	PWR Fail
Red+	○	○	Blue+ (OH/Fan Fail)
3.3V SB	○	○	LAN2 Active LED
3.3V SB	○	○	LAN1 Active LED
ID_UID/3.3V SB	○	○	HDD LED
3.3V	○	○	PWR LED
X	○	○	X
NMI	○	○	Ground
	19	20	

1. PWR Button

2. Reset Button

Overheat (OH)/Fan Fail

Connect an LED cable to pins 7 and 8 to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure. Refer to the tables below for pin definitions.

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

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	RED+
8	Blue+

NIC1/NIC2 (LAN1/LAN2)

The Network Interface Controller (NIC) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table below for pin definitions.

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

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	PWR Fail
Red+	○	○	Blue+ (OH/Fan Fail) 1
3.3V SB	○	○	LAN2 Active LED 2
3.3V SB	○	○	LAN1 Active LED 3
ID_UID/3.3V SB	○	○	HDD LED
3.3V	○	○	PWR LED
X	○	○	X
NMI	○	○	Ground
	19	20	

1. OH/Fan Fail LED
2. NIC2
3. NIC1

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable to show hard drive activity status. Refer to the table below for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	ID_UID/3.3V SB
14	HDD LED

Power LED

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

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

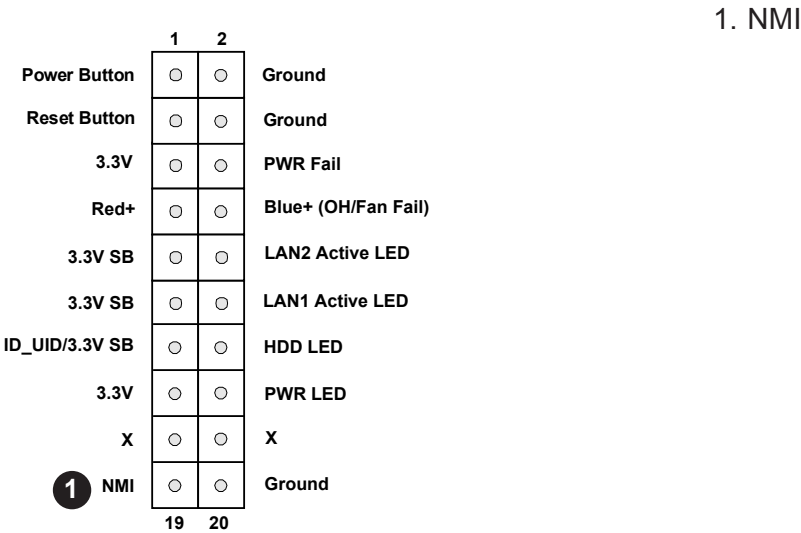
	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	PWR Fail
Red+	○	○	Blue+ (OH/Fan Fail)
3.3V SB	○	○	LAN2 Active LED
3.3V SB	○	○	LAN1 Active LED
ID_UID/3.3V SB	○	○	HDD LED 1
3.3V	○	○	PWR LED 2
X	○	○	X
NMI	○	○	Ground
	19	20	

1. HDD LED
2. Power LED

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

NMI Button Pin Definitions (JF1)	
Pins	Definition
19	NMI
20	Ground



2.6 Connectors

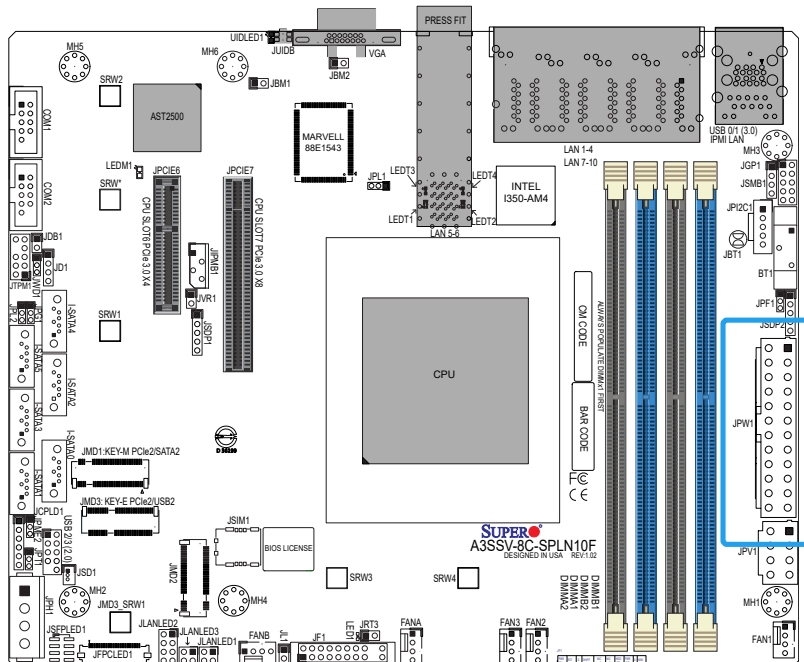
Power Connections

Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the ATX SSI EPS 12V specification.

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

1. Main ATX Power



12V DC Power Connector

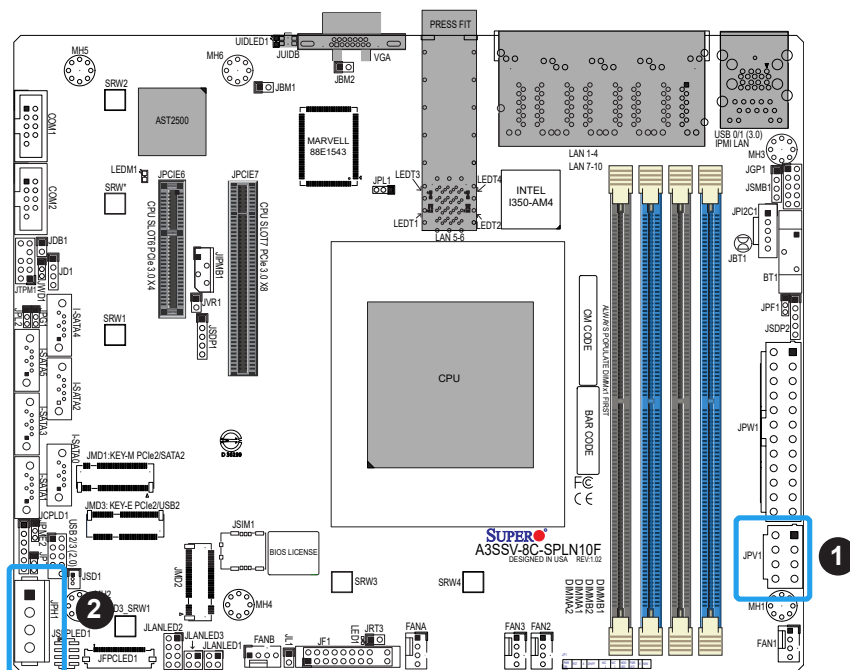
The 8-pin (JPV1) connector is used to provide alternative power for a special enclosure when the 24-pin ATX power is not in use.

8-pin Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	P12V (12V Power)

HDD Power Connector

JPH1 is a 4-pin power connector for HDD use. It provides power from the motherboard to the onboard HDD.

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



1. 12V DC Power
2. 4-pin HDD Power

Headers

Fan Headers

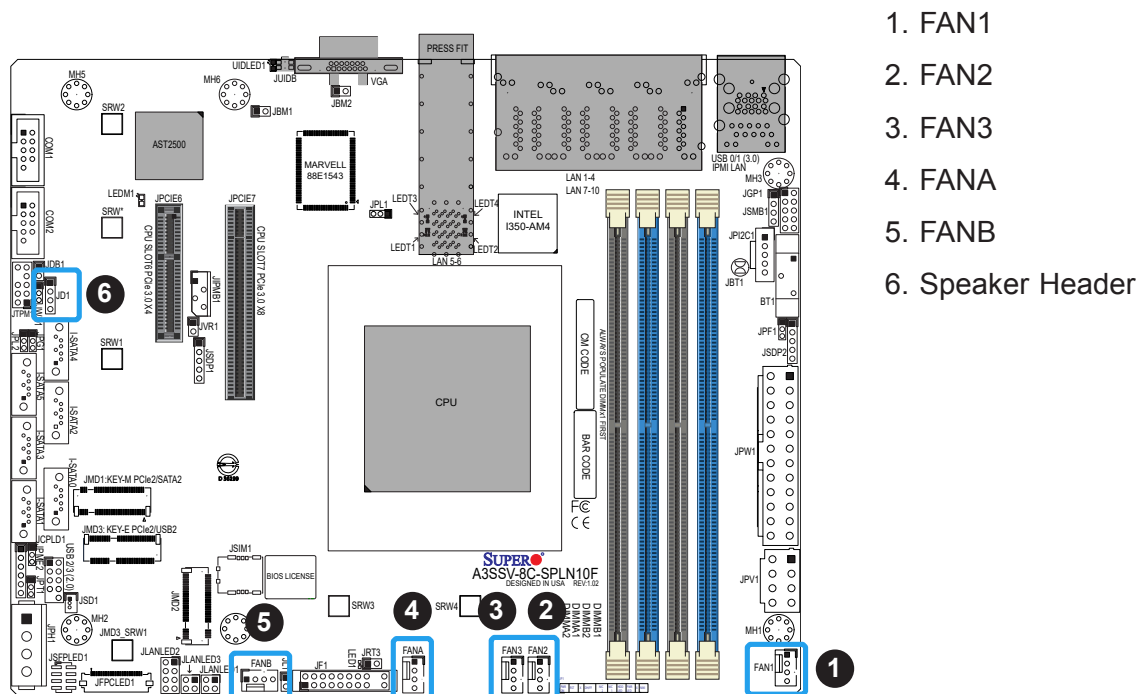
The A3SSV-8C/16C/24C-SPLN10F has five 4-pin fan headers (FAN1 - FAN3, FANA, FANB). These headers are backwards-compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the IPMI 2.0 interface. Refer to the table below for pin definitions.

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

Speaker Header

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

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



Chassis Intrusion

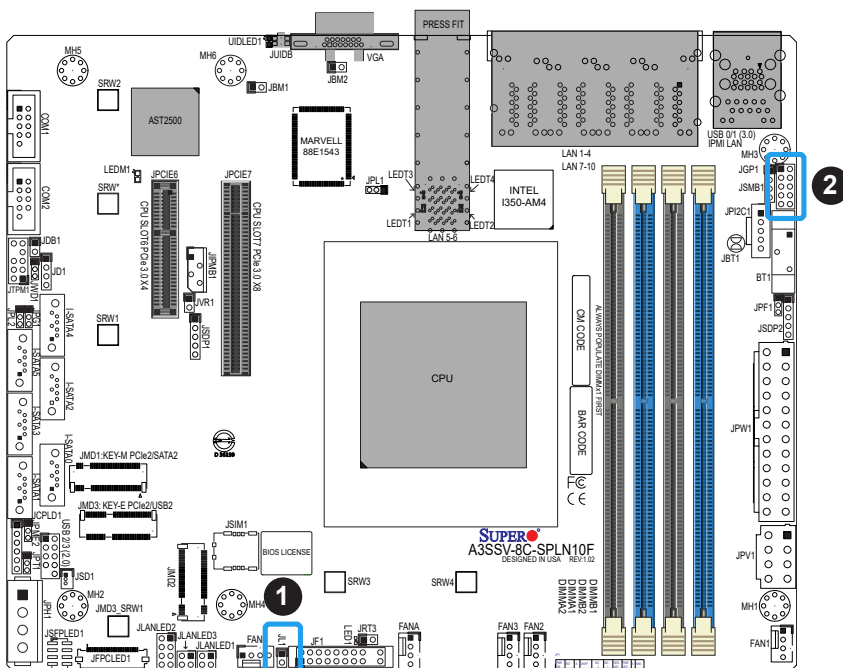
A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened. Refer to the table below for pin definitions.

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

General Purpose I/O Header

JGP1 is a 10-pin general purpose I/O header. Each pin can be configured to be an input or output pin. The GPIO is controlled via the PCA9554 8-bit GPIO expansion. The base address is 0xF040(D31:F4).

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



1. Chassis Intrusion
2. General Purpose Header

Disk On Module Power Connector

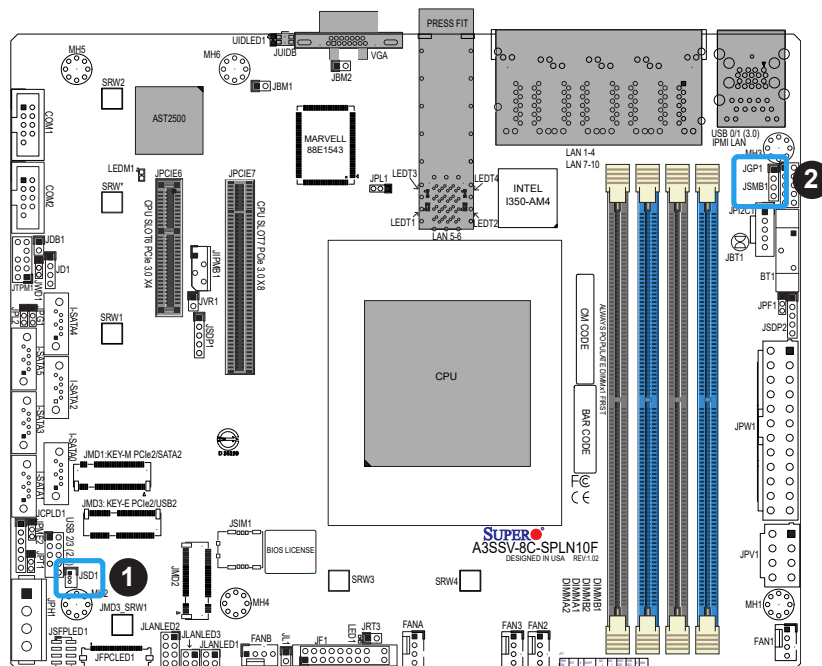
The Disk-On-Module (DOM) power connector at JSD1 provides 5V power to a solid-state DOM storage device connected to one of the SATA ports. Refer the table below for pin definitions.

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

System Management Bus Header

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

SMBus Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	NC



1. DOM Power Connector
2. SMBus Header

BMC External I2C Header

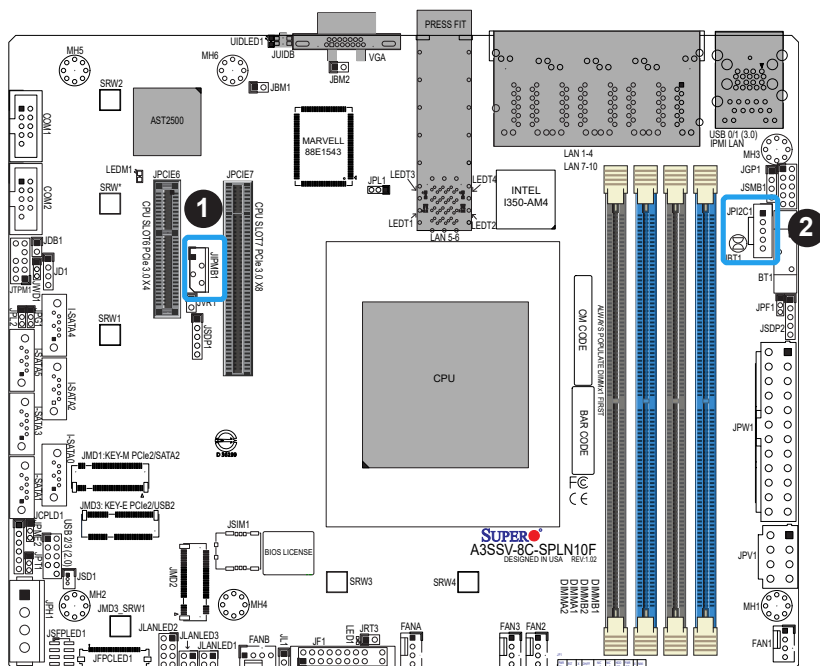
A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I²C connection on your system. Refer to the table below for pin definitions.

External I ² C Header Pin Definitions	
Pin#	Definition
1	Data
2	GND
3	Clock
4	NC

Power SMB (I²C) Header

The Power System Management Bus (I²C) connector (JPI²C1) monitors the power supply, fan, and system temperatures. Refer to the table below for pin definitions.

Power SMB Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	NC



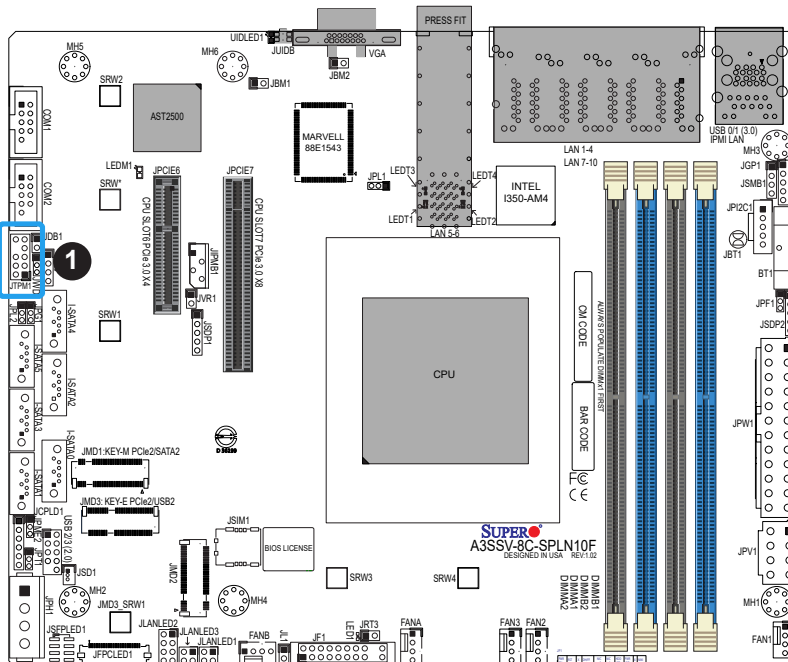
1. BMC External I²C
2. Power SMB I²C Header

TPM/Port 80 Header

A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. Refer to the table below for pin definitions. Please go to the following link for more information on the 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	NC
9	+3.3V Stdbby	10	SPI_IRQ#

1. TPM Header



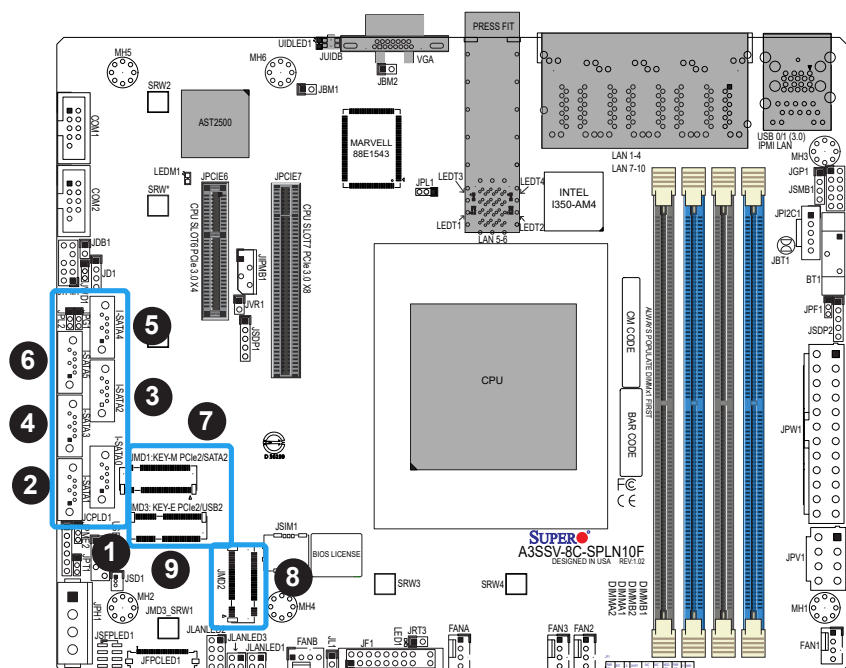
SATA Ports

There are six SATA 2.0 ports on the A3SSV-8C/16C/24C-SPLN10F motherboard. I-SATA0 has the SuperDOM feature. SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA.

SATA 2.0 Port Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

M.2 Slot

The A3SSV-8C/16C/24C-SPLN10F motherboard has three M.2 slots (JMD1, JMD2, and JMD3). M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCIe. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. JMD1 supports PCIe 2.0 x4/SATA 2.0/USB 2.0 cards in the M-Key 2242/2280/22110 form factors, JMD2 supports PCIe 2.0 x2/SATA 2.0/USB 3.0 cards in the B-Key 2242/3042/2280 form factors, and JMD3 supports PCIe 2.0 x1/USB2.0 cards in the M.2 E-Key 2230 form factor.



1. I-SATA0
2. I-SATA1
3. I-SATA2
4. I-SATA3
5. I-SATA4
6. I-SATA5
7. JMD1
8. JMD2
9. JMD3

Thermal Diode Headers

JRT3 is the thermal diode 1 header. It's a thermal sensor header that provides additional system temperature monitoring.

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

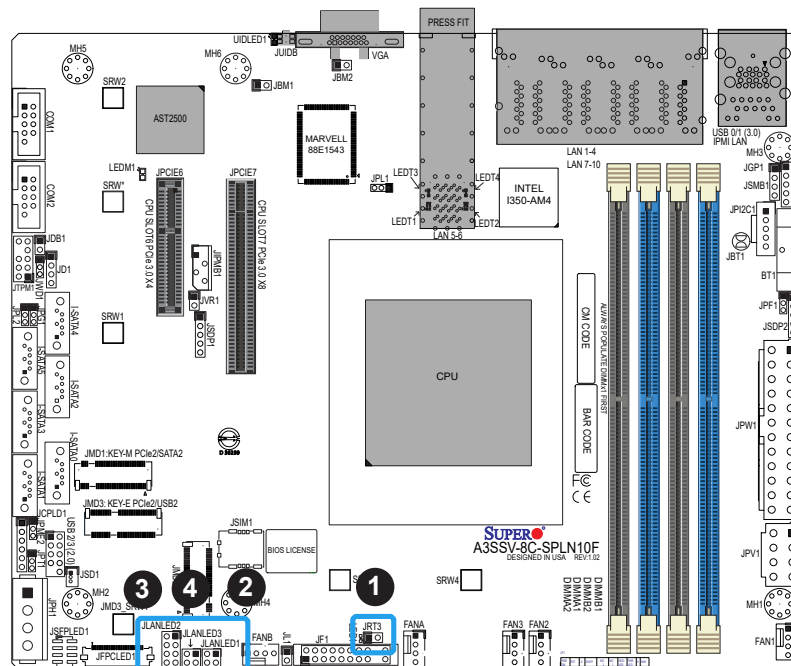
LAN Port Activity LED

JLANLED1 is the activity LED header for LAN3 and LAN4, JLANLED2 is the activity LED header for LAN5–LAN8, and JLANLED3 is the activity LED header for LAN9 and LAN10.

JLANLED1 LAN Activity LED Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LAN3_ACT_N	2	P3V3 Dual
3	LAN4_ACT_N	4	P3V3 Dual

JLANLED2 LAN Activity LED Pin Definitions			
Pin#	Definition	Pin#	Definition
2	LAN5_ACT_N	1	P3V3 Dual
4	LAN6_ACT_N	3	P3V3 Dual
6	LAN7_ACT_N	5	P3V3 Dual
8	LAN8_ACT_N	7	P3V3 Dual

JLANLED3 LAN Activity LED Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LAN9_ACT_N	2	P3V3 Dual
3	LAN10_ACT_N	4	P3V3 Dual



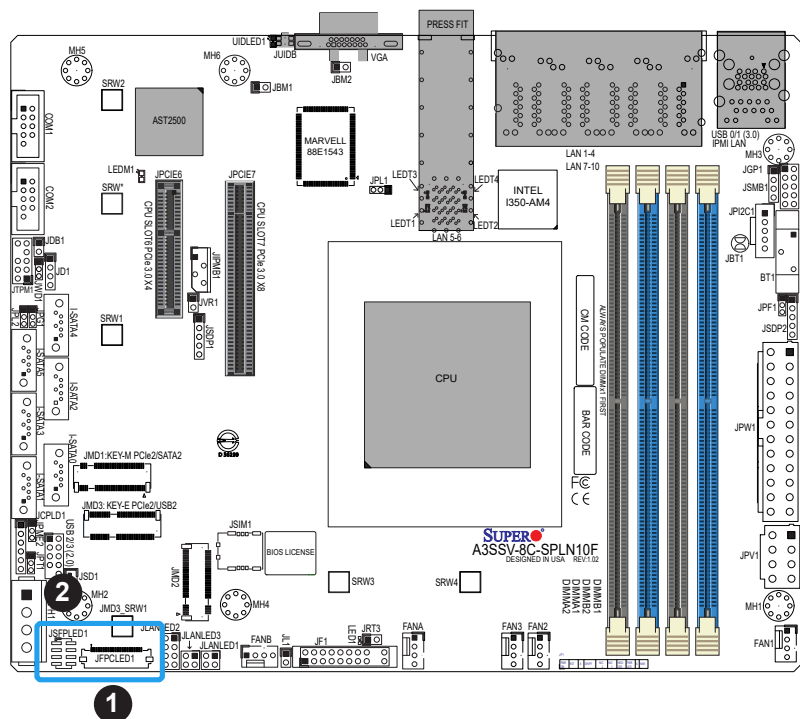
1. Thermal Diode header
2. LAN Port Activity LED 1
3. LAN Port Activity LED 2
4. LAN Port Activity LED 3

Front RJ45 Link and Activity LED Header

JFPCLED1 is the 1GbE RJ45 link and activity LED header. Attach a cable from this header to the Supermicro LED board (Part Number: FPB-FPE300-LED10) to display the status of the RJ45 LAN link and activity LED. The LED board FPB-FPE300-LED10 is reserved for use on the E300 chassis.

Front SFP Link and Activity LED Header

JSPFLED1 is the 1GbE SFP link and activity LED header. Attach a cable from this header to the Supermicro LED board (Part Number: FPB-FPE300-LED10) to display the status of the SFP link and activity LED. The LED board FPB-FPE300-LED10 is reserved for use on the E300 chassis.



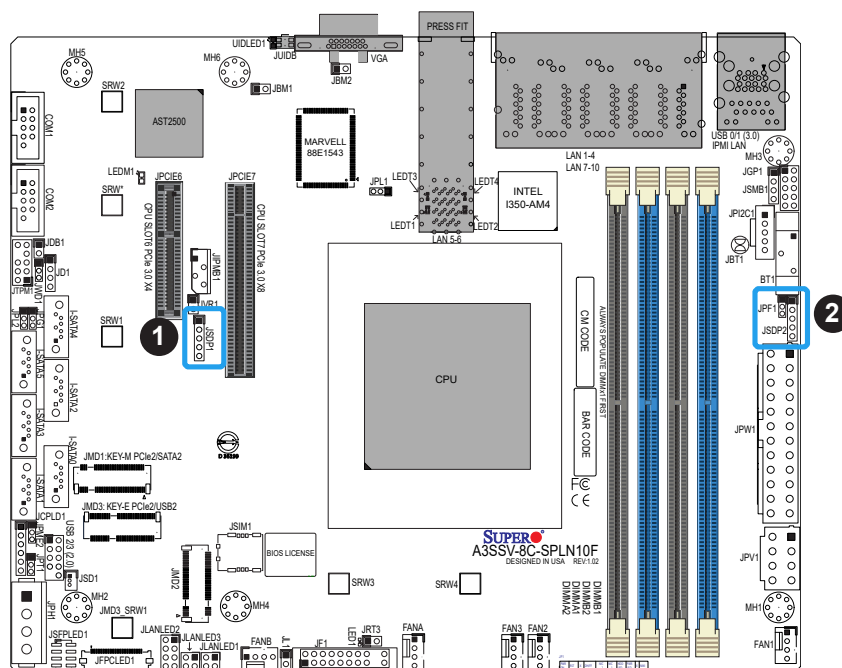
1. Link and Activity LED Header
2. SFP Link and Activity LED Header

Software-Defined Pins (SDP)

JSDP1 and JSDP2 are software-defined pins that can be used to support IEEE 1588 auxiliary devices and other hardware or software-control purposes. These pins can be configured to function as standard inputs or General Purpose Interrupt (GPI) input or output pins. In order for pins to function as GPI, they must be configured as inputs and enabled by the PCH Ethernet or i350.

JSDP1 Pin Definitions	
Pin#	Definition
1	SDP_TIMESYNC0
2	SDP_TIMESYNC1
3	SDP_TIMESYNC2
4	SDP_TIMESYNC3
5	GND

JSDP2 Pin Definitions	
Pin#	Definition
1	I350_SDP0_0
2	I350_SDP0_1
3	I350_SDP0_2
4	I350_SDP0_3
5	GND



1. SDP1

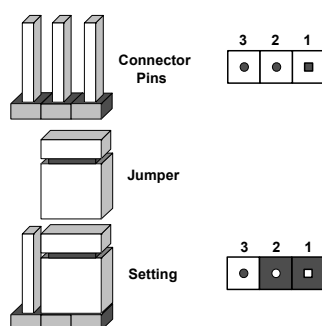
2. SDP2

2.7 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.

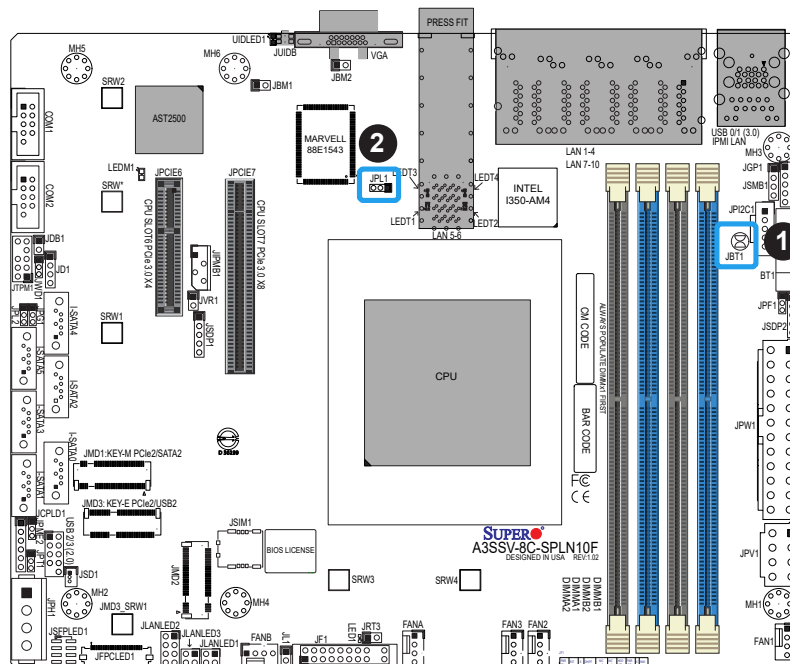


Note: Shut down the system and then short JBT1 to clear the CMOS.

LAN Port Enable/Disable

Change the setting of jumpers JPL1 for LAN1–4.

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



1. Clear CMOS

2. JPL1

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.

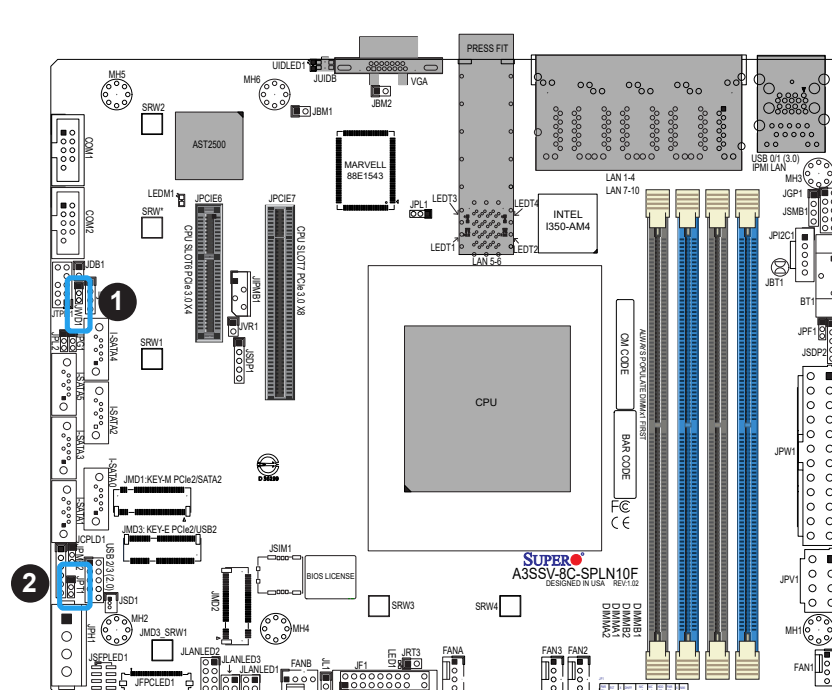
 **Note:** When Watch Dog is enabled, users need to write their own application software to disable it.

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

TPM Enable

Use JPT1 to enable or disable the onboard TPM2.0. Refer to the table below for jumper settings.

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



1. Watch Dog
2. TPM Enable/Disable

Manufacturing Mode Select

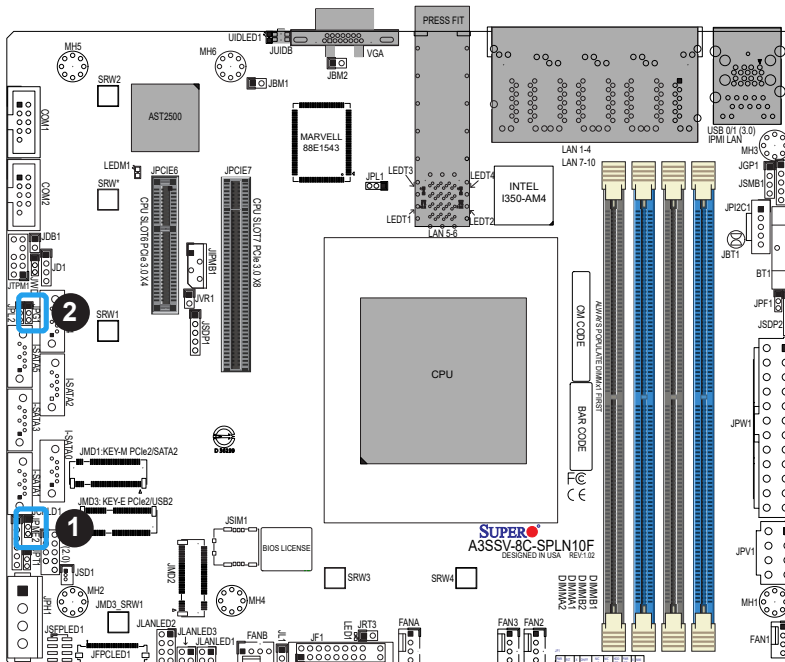
Close pins 2-3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow you to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings.

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

VGA Enable/Disable

Use jumper JPG1 to enable or disable the onboard VGA connector. Refer to the table below for jumper settings.

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



1. Manufacturing Mode
2. VGA Enable/Disable

IPMI Share LAN Enable/Disable

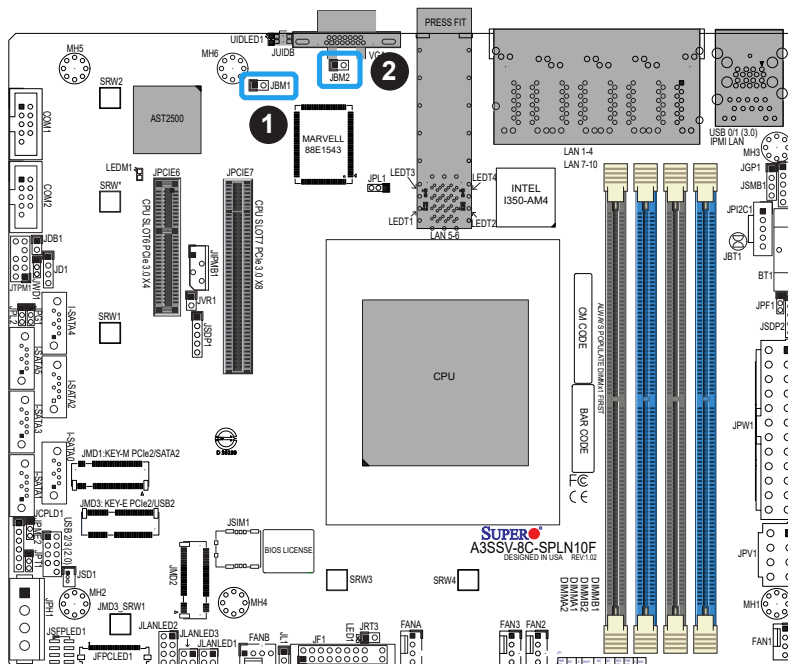
Set the JBM1 jumper to enabled to share i350 LAN with IPMI.

IPMI Share LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2 (Open)	Enabled (Default)
Pins 1-2 (Short)	Disabled

IPMI Dedicated LAN Enable/Disable

Use JBM2 to enable or disable the dedicated IPMI LAN port. Refer to the table below for jumper settings.

IPMI Dedicated LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2 (Open)	Enabled (Default)
Pins 1-2 (Short)	Disabled



1. JBM1

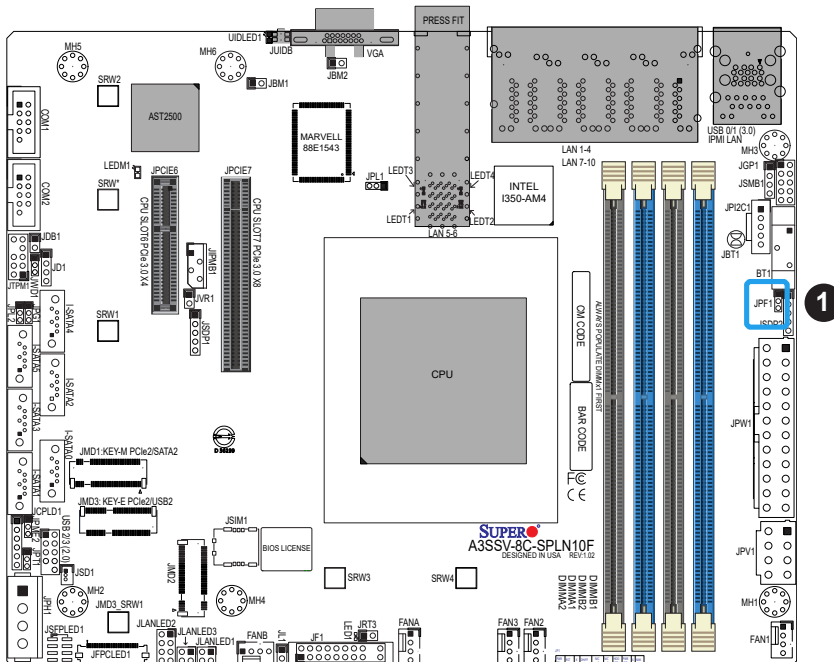
2. JBM2

Power Force On

Use this jumper JPF1 to select the POWER FORCE ON function when the AC power cord is plugged in.

Power Force On Jumper Settings	
Jumper Setting	Definition
Pins 1-2	ATX Mode (when AC power cord is plugged)
Pins 2-3	Force PS-ON Mode (Default) (when AC power cord is plugged)

1. Power Force On



2.8 LED Indicators

LAN LEDs

Eight RJ45 LAN ports and two SFP LAN ports are located on the I/O back panel. Each Ethernet LAN port has two LEDs. One LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information. When the system is in the S1/S3/S4/S5 states, the LAN Link LED will be in the solid on state.

Activity Indicator		
Color	Status	Definition
Off	No Connection	
Yellow	Flashing	Active

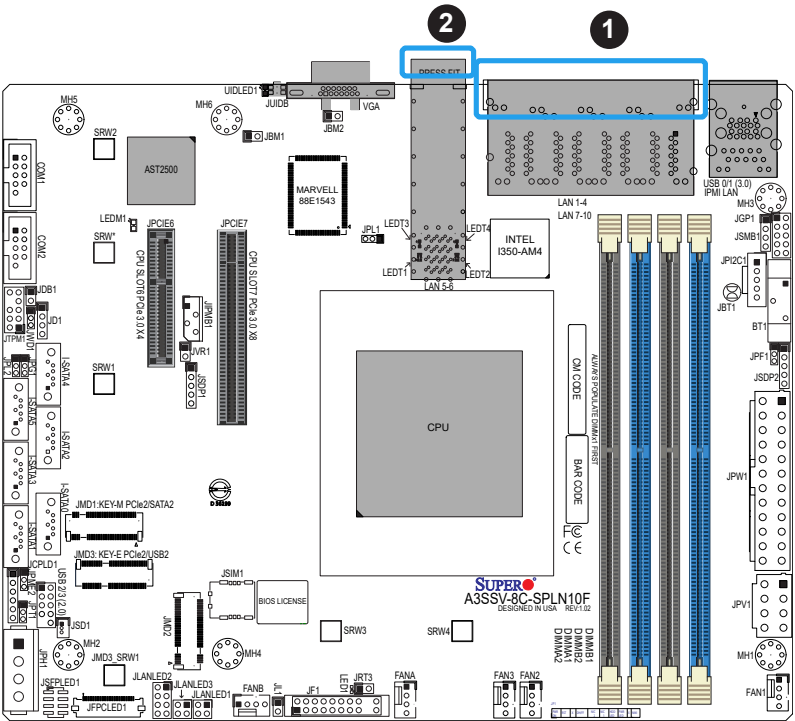
1G RJ45 LAN Link	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s



SFP28 LAN Link LED (LAN5 - LAN6)	
LED Color	Definition
Off	No Connection
Amber	1G



Activity Indicator		
Color	Status	Definition
Off	No Connection	
Yellow	Flashing	Active



- 1. LAN LEDs
- 2. SFP LEDs

Power LED

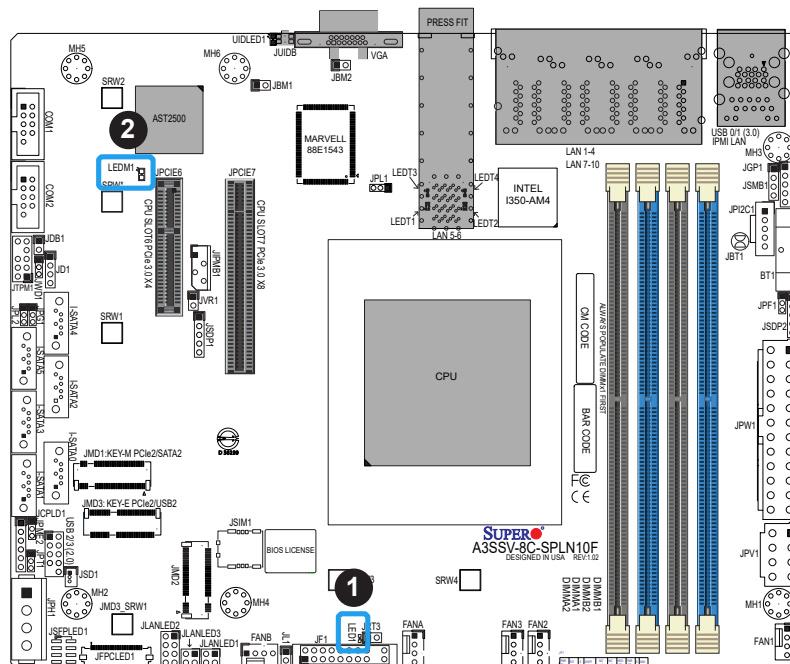
LED1 is an onboard power LED. When this LED is lit, it means power is present on the motherboard. In suspend mode, this LED will blink on and off. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

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

BMC Heartbeat LED

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

BMC Heartbeat LED Indicator	
LED Color	Definition
Blinking Green	BMC Normal



1. Power LED
2. 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 approximately 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 2-7 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 2-3 in Chapter 2.
6. Please follow the instructions given in the DIMM population tables listed in Section 2-3 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 2-7 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 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 appropriate 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 USB flash or media drives.
2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Use 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. Identify 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: What type of memory does my motherboard support?

Answer: The motherboard supports up to 256GB of RDIMM or 64GB of Non-ECC/ECC UDIMM DDR4 memory. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-3 in Chapter 2.

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

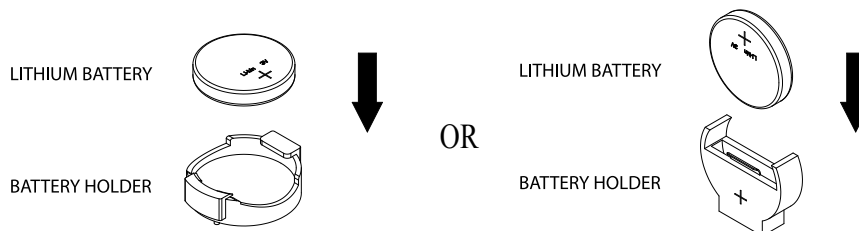
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

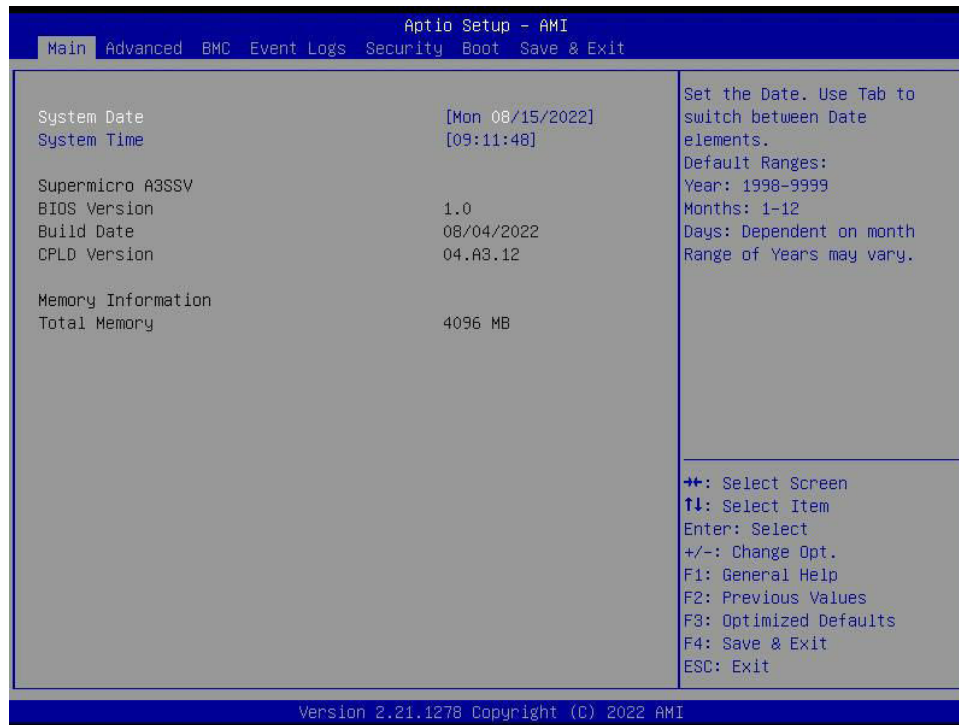
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that the 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>, <F2>, <F3>, <F4>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

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



System Date/System Time

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

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

Supermicro A3SSV

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 Complex Programmable Logic Device version.

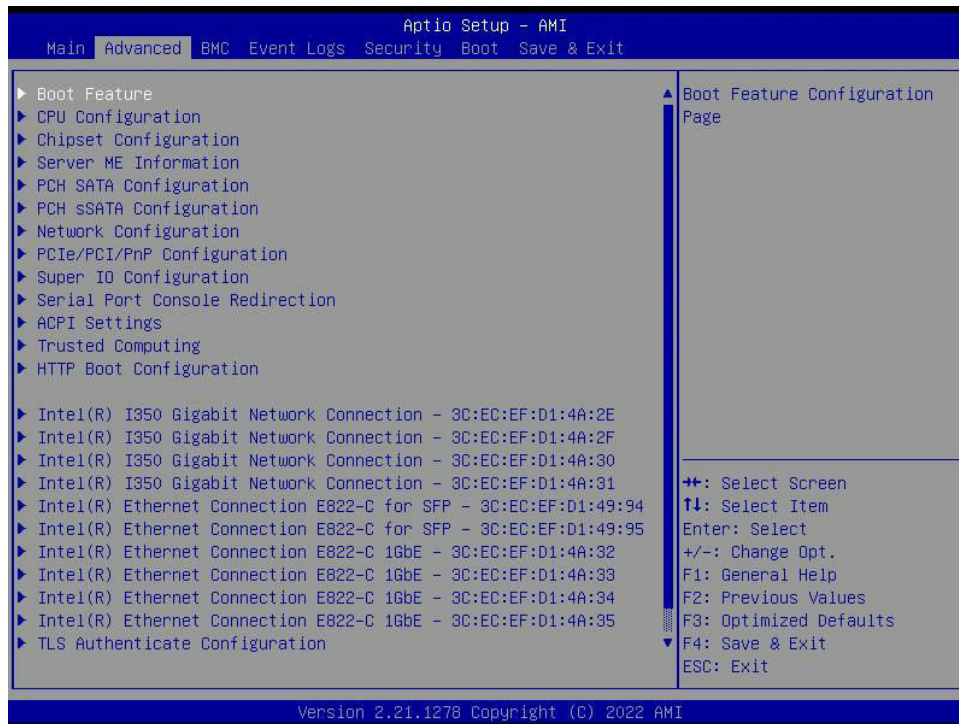
Memory Information

Total Memory

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

4.3 Advanced

Use the arrow keys to select the Advanced menu and press <Enter> to access the menu features.



Warning: Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency, or an incorrect DRAM timing setting may make the system unstable. When this occurs, revert to default manufacturer settings.

► Boot Feature

Quiet Boot

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

Bootup NumLock State

Use this feature to set the power on state for the <Numlock> key. The options are **On** and Off.

Wait For "F1" If Error

Use this feature to force the system to wait until the "F1" key is pressed if an error occurs. The options are **Disabled** and Enabled.

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 reset or generate NMI based on jumper settings when it is expired for more than five minutes. The options are **Disabled** and Enabled.

Front USB Port(s)

Use this feature to enable or disable front USB ports. If this feature is set to Enabled (Dynamic), then front USB ports can be enabled or disabled with resetting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

Rear USB Port(s)

Use this feature to enable or disable rear USB ports. If this feature is set to Enabled (Dynamic), then rear USB ports can be enabled or disabled with resetting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

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 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 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.

►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 (Per Core)
- L2 Cache RAM (Per Package)
- L3 Cache RAM (Per Package)
- Processor 0 Version

► CPU1 Core Disable Bitmap

CPU1 Core Disable Bitmap

Core Disable Bitmap(Hex)

Select 0 to enable all cores or FFFFFFFF to disable all cores. One core must be enabled.

Hardware Prefetcher (Available when supported by the CPU)

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 **Enable** and Disable.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enable to enable the Data Cache Unit (DCU) Streamer Prefetcher, which streams and prefetches data and sends 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 Data Cache Unit (DCU) IP Prefetcher support, which prefetches IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

Extended APIC

Select Enable to activate Advanced Programmable Interrupt Controller (APIC) support. The options are **Disable** and Enable.

Intel (VMX) Virtualization Technology

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

Enable SMX

Use this feature to enable or disable Safer Mode Extensions. The options are **Disable** and **Enable**.

PPIN Control

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

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**.

Config TDP Lock

Use this feature to enable or disable the TDP Control Lock Bit. The options are **Disable** and **Enable**.

EIST PSD Function

This feature allows you 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** and **SW_ALL**.

Turbo Mode

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

►CPU C State Control

Enable Monitor MWAIT

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

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 significantly reduces the CPU's power consumption by reducing its clock cycle and voltage during a Halt-state. The options are Disable and **Enable**.

►CPU T State Control

Software Controlled T-States

Use this feature to enable Software Controlled T-States. The options are **Disable** and Enable.

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

T-State Throttle Level

Use this feature to enable or disable CPU throttling, which reduces power consumption. The options are **Disable**, 6.25%, 12.5%, 18.75%, 25.0%, 31.25%, 37.5%, 43.75%, 50.0%, 56.25%, 62.5%, 68.75%, 75.0%, 81.25%, 87.5%, and 93.75%.

►Chipset Configuration

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

►North Bridge

►Uncore Configuration

Uncore Configuration

- Number of CPU

- Number of IIO
- Current UPI Link Speed
- Current UPI Link Frequency
- Global MMIO Low Base / Limit
- Global MMIO High Base / Limit
- Pci-e Configuration Base / Size

XPT Prefetch

Use this feature to enable or disable Extended Prediction Table (XPT) Remote Prefetch. The options are Disable, Enable, and **Auto**.

PCIe Remote P2P Relaxed Ordering

Enable peer-to-peer relaxed ordering to optimize system performance. The options are **Disable** and Enable.

Stale AtoS

Use this feature to enable or disable Stale A to S optimization. There are three states in the in-memory directory: invalid (I), snoopAll (A), and shared (S). Data in the I state is clean and does not exist in other sockets. Data in the A state may exist in another exclusive or modified socket. Data in the S state is clean and may be shared across one or more sockets. The options are Disable, Enable, and **Auto**.

LLC Dead Line Alloc

Select Enable to opportunistically fill dead lines in the LLC. Select Disable to never fill dead lines in LLC. The options are Disable, **Enable**, and Auto.

►Memory Configuration

Enforce POR

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

PPR Type

Use this feature to select the Post Package Repair (PPR) type. The options are PPR Disabled, **Hard PPR**, and Soft PPR.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 2133, 2200, 2400, 2600, 2666, 2800, 2933, 3000, and 3200.

Data Scrambling for DDR4

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

2x Refresh Enable

Use this feature to enable 2x memory refresh support to enhance memory performance. The options are **Auto**, Disable, and Enable.

►Memory Topology

This feature displays the information of memory modules detected by the BIOS.

►Memory RAS Configuration

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. The default setting is **512**.

Partial Cache Line Sparing PCLS

Use this feature to enable or disable Partial Cache Line Sparing (PCLS). The options are Disabled and **Enabled**.

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 is then disabled. The options are Disabled and **Enabled**.

Patrol Scrub

Patrol Scrubbing 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 feature is set to Enable, the IO hub reads and writes 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 is scrubbed every day. The options are **Disabled**, Enabled, and Enable at End of POST.

► IIO Configuration

► CPU1 Configuration

IOU0 (IIO PCIe Port 1)

Use this feature to select the PCIe port bifurcation for this slot. The options are **Auto**, x4x4x4x4, x4x4x8, x8x4x4, x8x8, and x16.

► Onboard Lan I350 Controller

Link Speed

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

The following information is displayed:

- PCIe Port Link Status
- PCIe Port Link Max
- PCIe Port Link Speed

PCIe Port Max Payload Size

Selecting **Auto** for this feature enables the motherboard to automatically detect the maximum Transaction Layer Packet (TLP) size for the connected PCIe device, allowing for maximum I/O efficiency. Selecting 128B or 256B designates maximum packet size of 128 or 256. The options are 128B, 256B, 512B, and **Auto**.

► CPU SLOT6 PCIe 3.0 X4 ► CPU SLOT7 PCIe 3.0 X8

Link Speed

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

The following information is displayed:

- PCIe Port Link Status
- PCIe Port Link Max
- PCIe Port Link Speed

PCIe Port Max Payload Size

Selecting **Auto** for this feature enables the motherboard to automatically detect the maximum Transaction Layer Packet (TLP) size for the connected PCIe device, allowing for maximum I/O efficiency. Selecting 128B or 256B designates maximum packet size of 128 or 256. The options are 128B, 256B, 512B, and **Auto**.

► IOAT Configuration

Disable TPH

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

****If the feature above is set to No, the feature below is available for configuration:***

Prioritize TPH

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

Relaxed Ordering

Select Yes to enable Relaxed Ordering support, which allows 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 **No** and Yes.

► Intel(R) 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 Virtual Machine Monitor (VMM) 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.

ACS Control

Select Enable to program Access Control Services (ACS) to the chipset PCIe root port bridge. Select No to program ACS to all PCIe root port bridges. 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 **Auto**, Enable, and Disable.

PCIe ASPM Support (Global)

Use this feature to enable or disable ASPM support for all downstream devices. The options are **Disable** and Auto.

►South Bridge

The following USB information is displayed:

- 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.

PCIe PLL SSC

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

M.2 (B-Key) I/O Selection

Use this feature to select the I/O type for the M.2 device. The options are SATA/USB and **PCIe**.

►Server ME Information

The following General ME Configuration will display:

- General ME Configuration
- Oper. Firmware Version
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Status #1
- ME Firmware Status #2

- Current State
- Error Code

►PCH SATA Configuration

SATA Controller

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

Aggressive LPM Support

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

I-SATA0-5 Hot Plug

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

I-SATA0-5 Spin Up Device

Set this feature to enable or disable the PCH to initialize the device. The options are **Disabled** and Enabled.

I-SATA0-5 SATA Device Type

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

►PCH sSATA Configuration

sSATA Controller

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

Aggressive LPM Support

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

M.2 KEY-M

This feature displays the information of drives detected by the BIOS.

M.2 KEY-B

This feature displays the information of drives detected by the BIOS.

► Network Configuration

Network Stack

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

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.

PXE Boot Wait Time

Use this option 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 is checked. Press "+" or "-" on your keyboard to change the value. The default setting is **1**.

► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration
► MAC:xxxxxxxxxxxx-IPv6 Network Configuration

► Enter Configuration Menu

Interface Name

Interface Type

MAC Address

Host addresses

Route Table

Gateway addresses

DNS addresses

Interface ID

Use this feature to set the 64-bit alternative interface ID for the device.

DAD Transmit Count

If this set feature is set to 0, the Duplication Address Detection is not performed. Set the value to a preferred selection.

Policy

Use this feature to set the policy to automatic or manual. The options or **automatic** and manual.

Save Changes and Exit

Select this feature to save the changes for the features above and exit.

► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**
► **MAC:xxxxxxxxxxx-IPv4 Network Configuration**

Configured

Use this feature to indicate whether the network address is configured successfully or not. The options or **Disabled** and Enabled.

Save Changes and Exit

Select this feature to save the changes for the features above and exit.

►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**.

Bus Master Enable

Use this feature to enable the Bus Master, which enables the Bus Master Attribute for DMA transaction. The options are Disabled and **Enabled**.

Consistent Device Name Support

This feature controls the device naming for network devices and slots. The options are **Disabled** and Enabled.

Maximum Read Request

Use this feature to select the Maximum Read Request size of the PCIe 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.

NVMe Firmware Source

The feature determines which type of NVMe firmware should be used in your system. The options are **Vendor Defined Firmware** and AMI Native Support.

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 **Onboard** and Offboard.

Onboard Video Option ROM

Enable this feature to select which onboard video firmware type to be loaded. The options are Disabled and **EFI**.

CPU SLOT7 PCIe 3.0 X8 OPRM

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

CPU SLOT6 PCIe 3.0 X4 OPRM

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

KEY-M PCIe 2.0 X4/S-SATA 2.0 OPRM

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

KEY-B PCIe 2.0 X2/S-SATA 2.0/USB 3.0 OPRM

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

Onboard LAN Option ROM

Use this feature to select which firmware function to be loaded for LAN 1 used for system boot. The options are Disabled and **EFI**.

►Super IO Configuration

The following Super IO information is displayed:

- Super IO Chip AST2500

►Serial Port 1 Configuration

This submenu allows you to configure the settings of Serial Port 1.

Serial Port 1

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

Device Settings

This feature displays the I/O and IRQ addresses.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of the serial port. 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=2F8h; IRQ=4;), (IO=3E8h; IRQ=4;), and (IO=2E8h; IRQ=4;).

► Serial Port 2 Configuration

This submenu allows you to configure the settings of Serial Port 2.

Serial Port 2

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

Device Settings

This feature displays the I/O and IRQ addresses.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of the serial port. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=3;), (IO=2F8h; IRQ=3;), (IO=3E8h; IRQ=3;), and (IO=2E8h; IRQ=3;).

Serial Port 2 Attribute (Available for Serial Port 2 only)

Select SOL to use COM Port 2 as a Serial Over LAN (SOL) port for console redirection. The options are **SOL** and COM.

► Serial Port Console Redirection

COM1 Console Redirection

Select Enabled to enable console redirection support for a serial port. The options are Enabled and **Disabled**.

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

► Console Redirection Settings

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

Terminal Type

This feature allows you 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 Bits and **8 Bits**.

Parity

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

Stop Bits

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

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**.

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**.

Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

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 disabled 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.

SOL/COM2 Console Redirection

Select Enabled to enable console redirection support for the specified serial port. The options are Disabled and **Enabled**.

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

► SOL/COM2 Console Redirection Settings

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

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 Bits and **8 Bits**.

Parity

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

Stop Bits

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

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**.

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**.

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.

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 disabled 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)

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

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

► Console Redirection Settings

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

Out-of-Band Mgmt Port

The feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and SOL/COM2.

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 EMS

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 EMS, Parity EMS, Stop Bits EMS

► ACPI Settings

NUMA

Use this feature to enable or disable Non-Uniform Memory Access (NUMA), a feature that improves memory-to-processor communication and performance. The options are Disabled and **Enabled**.

WHEA Support

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

Headless Support

Enable this feature for the system to function without a keyboard, monitor or mouse attached. The options are **Disabled** and Enabled.

►Trusted Computing

The motherboard supports TPM 1.2 and 2.0. The following Trusted Platform Module (TPM) information displays 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 Trusted Platform Module (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 Disabled and **Enabled**.

- Active PCR Banks
- Available PCR Banks

****If the feature above is set to Enabled, the next five 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.

Disable Block Sid

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

SMCI BIOS-Based TPM Provision Support

Use this feature to enable Supermicro TPM Provision support. The options are Disabled and **Enabled**.

Intel Trusted Execution Technology

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.

►HTTP Boot Configuration

HTTP Boot Configuration

HTTP Boot Policy

Use this feature to select the boot policy. The options are Apply to all LANs, **Apply to each LAN**, and Boot Priority #1 instantly.

HTTP Boot Checks Hostname

Use this feature to select whether the HTTPS Boot checks the hostname of the TLS certificates to match the hostname provided by the remote server. The options are **Enabled** and Disabled (WARNING: Security Risk!!).

Priority of HTTP Boot:

Instance of Priority 1:

Use this feature to set the rank target port. The default value is **1**.

Select IPv4 or IPv6

Use this feature to select which LAN port to boot from. The options are **IPv4** and IPv6.

Boot Description

Highlight the feature and press enter to create a boot description. The description cannot be more than 75 characters.

Boot URI

Highlight the feature and press enter to create a boot URI.

Instance of Priority 2:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 3:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 4:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 5:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 6:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 7:

Use this feature to set the rank target port. The default value is **0**.

Instance of Priority 8:

Use this feature to set the rank target port. The default value is **0**.

► **Intel(R) I350 Gigabit Network Connection - xx:xx:xx:xx:xx:xx**
► **Intel(R) I350 Gigabit Network Connection - xx:xx:xx:xx:xx:xx**
► **Intel(R) I350 Gigabit Network Connection - xx:xx:xx:xx:xx:xx**
► **Intel(R) I350 Gigabit Network Connection - xx:xx:xx:xx:xx:xx**

► Firmware Image Properties

Option ROM version

Unique NVM/EEPROM ID

NVM Version

► NIC Configuration

Link Speed

Use this feature to specify the port speed used for the selected boot protocol. The options are **Auto Negotiated**, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, and 100 Mbps Full.

Wake On LAN

Select Enabled for wake on LAN support, which allows the system to wake up when an onboard LAN device receives an incoming signal. The options are Disabled and **Enabled**.

Blink LEDs

Use this feature to identify the physical network port by blinking the associated LED. Use the keyboard to select a value.

UEFI Driver

Adapter PBA

Device Name

Chip Type

PCI Device ID

PCI Address

Link Status

MAC Address

Virtual MAC Address

► Intel(R) Ethernet Connection E822-C for SFP - xx:xx:xx:xx:xx:xx
► Intel(R) Ethernet Connection E822-C for SFP - xx:xx:xx:xx:xx:xx
► Intel(R) Ethernet Connection E822-C 1GbE - xx:xx:xx:xx:xx:xx
► Intel(R) Ethernet Connection E822-C 1GbE - xx:xx:xx:xx:xx:xx
► Intel(R) Ethernet Connection E822-C 1GbE - xx:xx:xx:xx:xx:xx
► Intel(R) Ethernet Connection E822-C 1GbE - xx:xx:xx:xx:xx:xx

► Firmware Image Properties

Option ROM version

Unique NVM/EEPROM ID

NVM Version

► NIC Configuration

Link Speed

Use this feature to specify the port speed used for the selected boot protocol. The options are **Auto Negotiated**, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, and 100 Mbps Full.

Wake On LAN

Select Enabled for wake on LAN support, which allows the system to wake up when an onboard LAN device receives an incoming signal. The options are Disabled and **Enabled**.

LLDP Agent

Use this feature to enable or disable the firmware's Link Layer Discovery Protocol (LLDP) agent. This protocol is used by networks to advertise their information to other devices on the network. The options are **Disabled** and Enabled.

Blink LEDs

Use this feature to identify the physical network port by blinking the associated LED. Use the keyboard to select a value.

UEFI Driver

Adapter PBA

Device Name

Chip Type

PCI Device ID

PCI Address

Link Status

MAC Address

Virtual MAC Address

► TLS Authentication Configuration

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

► Server CA Configuration

► Enroll Certification

Enroll Certification Using File

Use this feature to enroll certification from a file.

Certification 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.

► Driver Health

This feature provides the health status for the network drivers and controllers.

► Intel(R) PRO/1000 9.8.06 PCIe

Intel(R) I350 Gigabit Network Connection

Intel(R) I350 Gigabit Network Connection

► Intel(R) PRO/1000 9.8.06 PCIe

Intel(R) I350 Gigabit Network Connection

Intel(R) I350 Gigabit Network Connection

► Intel(R) PRO/1000 9.8.06 PCIe

Intel(R) I350 Gigabit Network Connection

Intel(R) I350 Gigabit Network Connection

▶Intel(R) PRO/1000 9.8.06 PCIe

Intel(R) I350 Gigabit Network Connection

Intel(R) I350 Gigabit Network Connection

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C for SFP

Intel(R) Ethernet Connection E822-C for SFP

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C for SFP

Intel(R) Ethernet Connection E822-C for SFP

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C 1GbE

Intel(R) Ethernet Connection E822-C 1GbE

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C 1GbE

Intel(R) Ethernet Connection E822-C 1GbE

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C 1GbE

Intel(R) Ethernet Connection E822-C 1GbE

▶Intel(R) 100GbE 4.0.12

Intel(R) Ethernet Connection E822-C 1GbE

Intel(R) Ethernet Connection E822-C 1GbE

4.4 BMC

Use this menu to configure BMC settings.



BMC Firmware Revision

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

IPMI STATUS

This feature displays 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 you to decide 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: All values changed here do not take effect until the computer is restarted.

►BMC Network Configuration

BMC Network Configuration

Update BMC 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, Configuration Address Source, VLAN, and IPv6 Support are available for configuration:***

Configure IPv4 Support

BMC LAN Selection

BMC Network Link Status

Configuration Address Source

This feature allows you to select the source of the IP address for this computer. If Static is selected, you 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 searches for a Dynamic Host Configuration Protocol (DHCP) server in the network that 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 following features are available for configuration:***

Station IP Address

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

Subnet Mask

This feature displays the sub-network that this computer belongs to. The address can be manually entered. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address

Gateway IP Address

This feature displays the Gateway IP address for this computer. The address can be manually entered. This should be in decimal and in dotted quad form (i.e., 172.31.0.1).

VLAN

Use this feature to enable or disable the IPMI VLAN function. The options are **Disable** and **Enable**.

VLAN ID

This feature is enabled if VLAN is enabled. Enter a VLAN ID. The ID range is from 1 to 4094.

Configure IPv6 Support

IPv6 Address Status

IPv6 Support

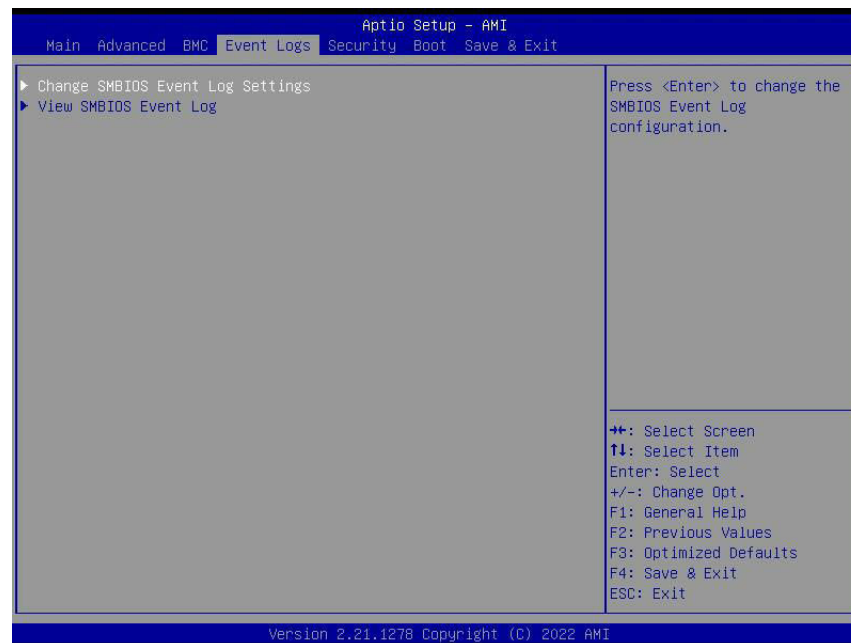
Use this feature to enable IPv6 support. The options are **Enabled** and **Disabled**.

Configuration Address Source

Use this feature to configure the LAN channel parameters. The options are **Static** and **DHCP**.

4.5 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

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data in the event log will be erased upon next system reboot. Select Yes, Every Reset, data in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and **Enabled**.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurrences that a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

The Multiple Event Time Window (METW) defines the number of minutes that must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.



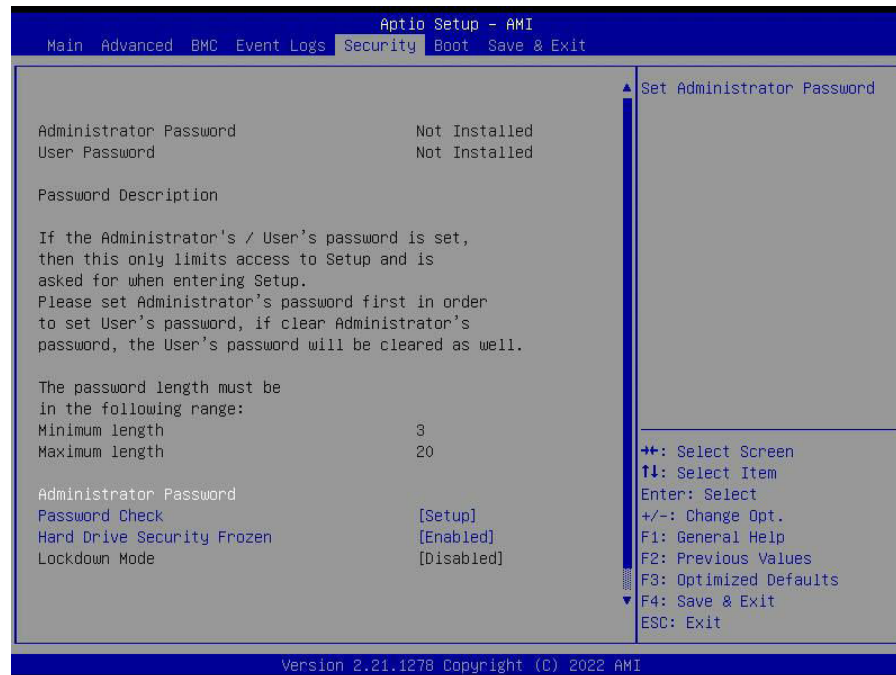
Note: All values changed here do not take effect until the computer is restarted.

►View SMBIOS Event Log

Select this submenu and press enter to see the contents of the SMBIOS event log. The following categories will be displayed: Date/Time/Error Codes/Severity.

4.6 Security

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



Administrator Password

Press Enter to create a new, or change an existing, Administrator 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 boot up or upon entering the BIOS Setup utility. The options are **Setup** and **Always**.

Hard Drive Security Frozen

Use this feature to enable or disable the BIOS security frozen command for SATA and NVMe devices. The options are **Enabled** and **Disabled**.

►SMCI Security Erase Configuration

This section displays information if a storage device is detected by the system.

- HDD Name
- HDD Serial Number
- Security Mode
- TCG Device Type

- Estimated Time
- Admin Pwd Status

Security Function

Use this feature to enable or disable the BIOS security frozen command for SATA and NVMe devices. The options are **Disable**, Set Password, Security Erase - Password, Security Erase - PSID, and Security Erase - Without Password.

Password

Use this feature to set a password for the Supermicro HDD Security Function.

Lockdown Mode

Use this feature to put the BIOS into lockdown mode. The options are Enabled and **Disabled**.

► Secure Boot

This section displays the contents of the following secure boot features:

- System Mode
- Secure Boot

Secure Boot

Use this feature to enable secure boot. The options are **Disabled** and Enabled.

Secure Boot Mode

Use this feature to configure Secure Boot variables without authentication. The options are Standard and **Custom**.

► Enter Audit Mode

This submenu can only be used if current System Mode is set to User (refer to Exit Deployed Mode). The PK variable will be erased on transition to Audit Mode.

► Enter Audit Mode

Provision Factory Defaults

Use this feature to install the factory default secure boot keys after the platform reset and while the system is in setup mode. The options are **Disabled** and Enabled.

► Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases.

► Key Management

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

► Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases. The options are **Yes** and **No**.

► Reset to Setup Mode

This feature deletes all Secure Boot key databases from NVRAM. The options are **Yes** and **No**.

► Export Secure Boot variables

This feature allows you to copy NVRAM content of Secure boot variables to files in a root folder on a file system device.

► Enroll EFI Image

This feature allows the image to run in Secure Boot Mode. Enroll SHA256 Hash Certificate of the image into the Authorized Signature Database.

Device Guard Ready

► Remove 'UEFI CA' from DB

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

► Restore DB defaults

Select **Yes** to restore the DB defaults.

Device Guard Ready

► Remove 'UEFI CA' from DB

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

► Restore DB defaults

Select Yes to restore the DB defaults.

Secure Boot Variable

► Platform Key (PK)

Update

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

► Key Exchange Key

Update

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

Append

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

► Authorized Signatures

Update

Select Yes to load the factory default db. Select No to load the db from an external file. The options are Yes and No.

Append

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

► Forbidden Signatures

Update

Select Yes to load the dbx factory default dbx. Select No to load it from an external file. The options are Yes and No.

Append

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

► Authorized TimeStamps**Update**

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

Append

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

► OsRecovery Signature**Update**

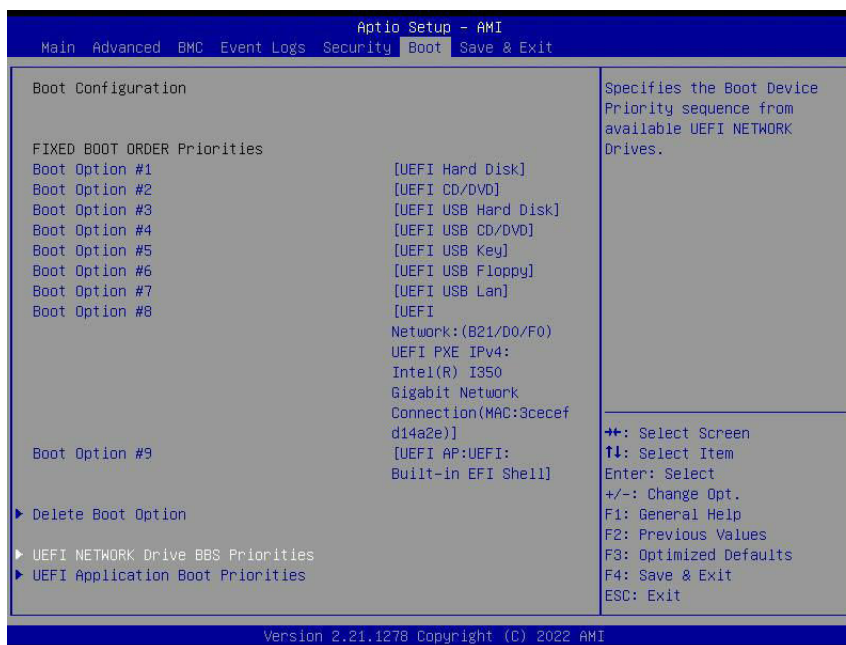
Select Yes to load a factory default dbr or No to load from a file on an external media.

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.

4.7 Boot

Use this menu to configure Boot settings.



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

► Delete Boot Option

This feature allows you to select a boot device to delete from the boot priority list.

Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list.

►UEFI NETWORK Drive BBS Priorities

This feature sets the system boot order of detected devices.

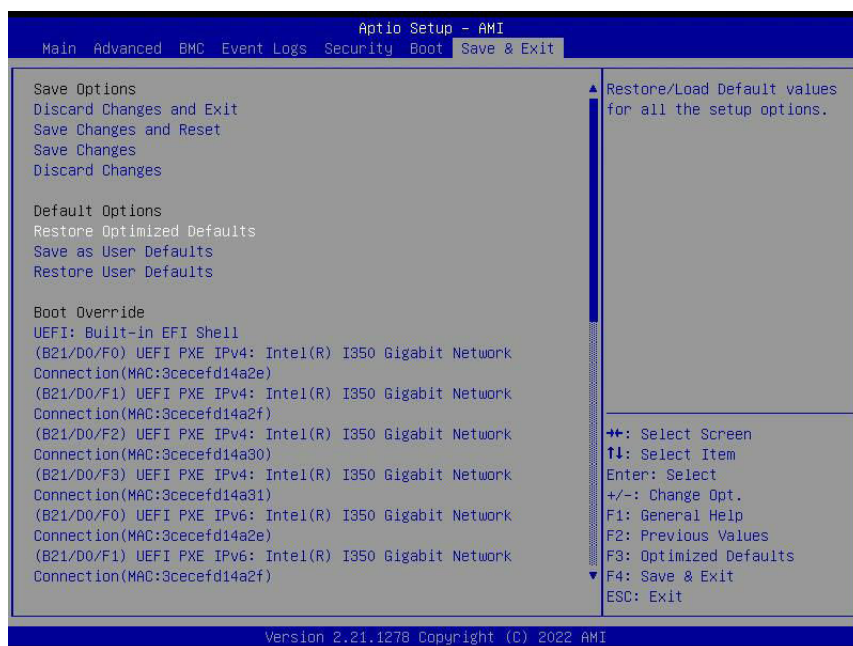
►UEFI Application Boot Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

4.8 Save & Exit

Use this menu to save settings and exit from the BIOS.



Save Options

Discard Changes and Exit

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

Save Changes and Reset

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

Save Changes

When you have completed the system configuration changes, select this option to leave the BIOS setup utility and reboot the computer for the new system configuration parameters to take effect. Select Save Changes from the Save & Exit menu and press <Enter>.

Discard Changes

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

Default Options

Restore Optimized Default

To set this feature, select Restore Defaults from the Save & Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

Save As User Defaults

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

Boot Override

Listed in this section are other boot options for the system (i.e., Built-in EFI shell). The options may vary on each system. Select an option, press <Enter>, and your system will boot to the selected boot option.

UEFI: Built-in EFI Shell

(B21/D0/F0) UEFI PXE IPv4: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F1) UEFI PXE IPv4: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F2) UEFI PXE IPv4: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F3) UEFI PXE IPv4: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F0) UEFI PXE IPv6: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F1) UEFI PXE IPv6: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F2) UEFI PXE IPv6: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B21/D0/F3) UEFI PXE IPv6: Intel(R) I350 Gigabit Network Connection
(MAC:xxxxxxxxxxxx)

(B236/D0/F0) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C for SFP
(MAC:xxxxxxxxxxxx)

**(B236/D0/F1) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C for SFP
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F1) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C for SFP
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F4) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F5) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F6) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F7) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F4) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F5) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F6) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F7) UEFI PXE IPv4: Intel(R) Ethernet Connection E822-C 1GbE
(MAC:xxxxxxxxxxxx)**

**(B236/D0/F0) UEFI PXE IPv6: Intel(R) Ethernet Connection E822-C for SFP
(MAC:xxxxxxxxxxxx)**

Launch EFI Shell from filesystem device

Appendix A

BIOS Codes

A.1 BIOS Error POST (Beep) Codes

During the Power-On Self-Test (POST) 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.supernmicro.com/support/manuals/> ("AMI BIOS POST Codes User's Guide").

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

Appendix B

Software Installation

B.1 Supermicro SuperDoctor 5

The Supermicro SuperDoctor 5 is a hardware monitoring program that functions in a command-line or web-based interface in the Linux operating systems. The program monitors system health information, such as CPU temperature, system voltages, system power consumption, and fan speed, and provides alerts via email or the 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 the SuperDoctor 5 Management Server (SSM Server), you can remotely control the power status 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 SuperDoctor 5 program and user's manual can be downloaded from the Supermicro website at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

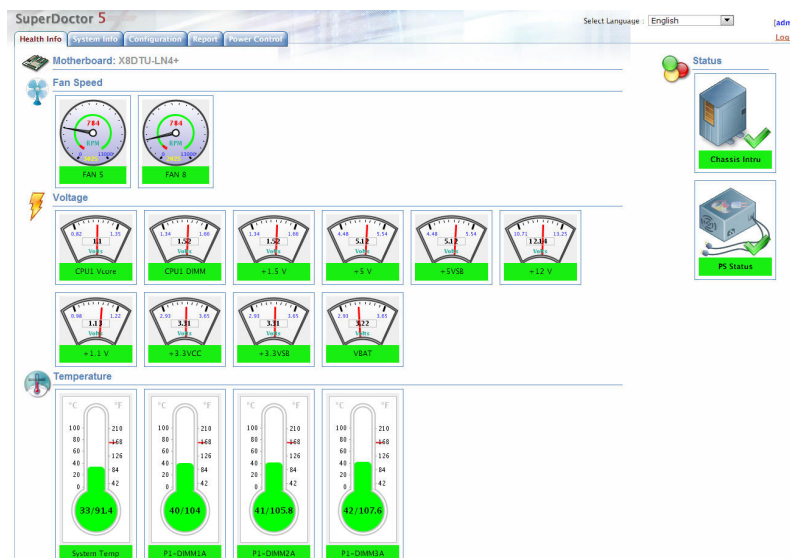


Figure B-1. SuperDoctor 5 Interface Display Screen (Health Information)

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

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

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

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فاعلil

اسبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة

جخلص من البطاريات المسحمة وفقا لعمليات الشركة الصانعة

경고!

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

Waarschuwing

Er is 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

אזהרה!

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

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

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. The UEFI BIOS recovery doesn't support the Ctrl+home function.

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 for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot the system. The UEFI offers a clean, hands-off control to a computer system at bootup.

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 boot block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Once it is completed, the main BIOS code will continue with system initialization and bootup.

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

 **Note 2:** When the BIOS boot block crashes, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request (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 BIOS Block with a USB Device

This feature allows you to recover a BIOS image using a USB-attached device without additional utilities used. A USB flash or media drive 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:

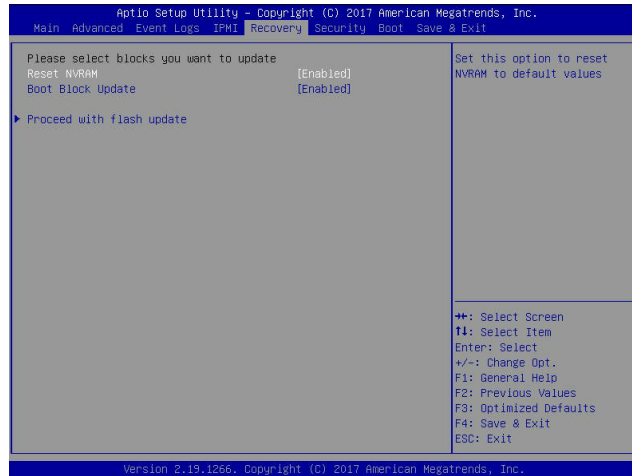
1. Using a different machine, copy the "Super.ROM" binary image file into the disc Root "\" directory of a USB device or a writable CD/DVD.

 **Note 1:** If you cannot locate the "Super.ROM" file in your driver 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.





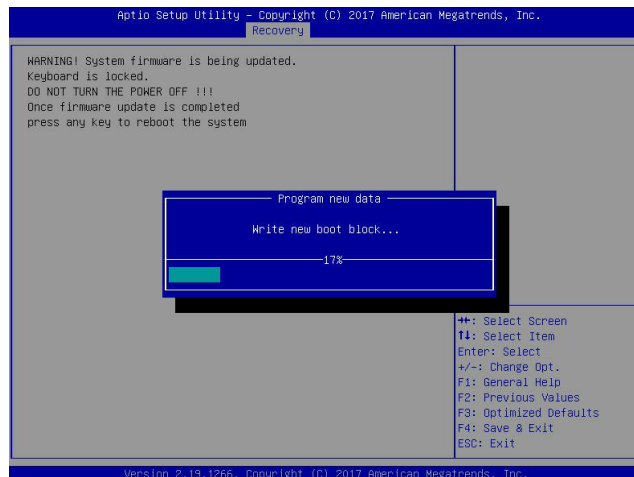
Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.



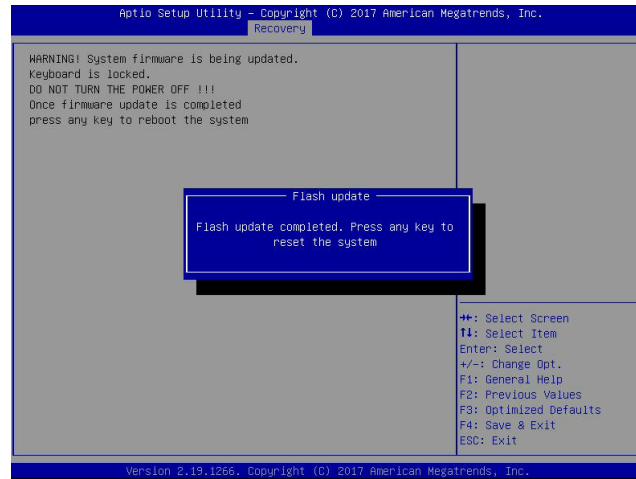
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system
3. After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below:



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.

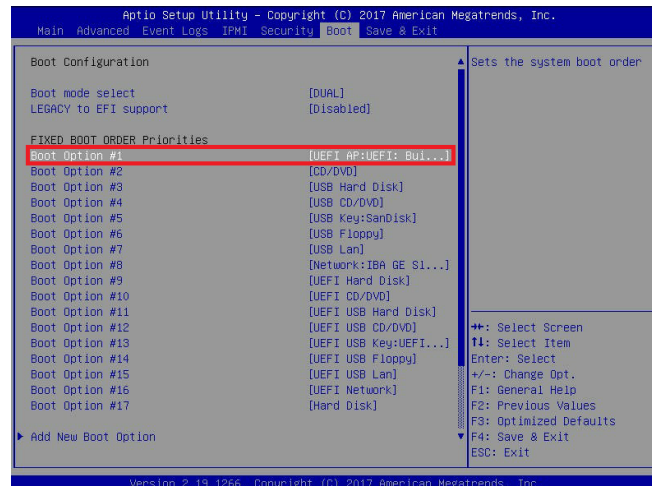


4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below:



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

5. After the BIOS recovery process is completed, press any key to reboot the system.
6. Using a different system, extract the BIOS package into a USB flash drive.
7. Press <Del> 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.



8. 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, 0x00050000)
Mapping table
FS0: Alias(s):HD0:0b1:BLK1:
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x3791072,0x800,0x1
      0A3992)
BLK0: Alias(s):
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press F80 in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0
FS0:\> cd AFUD05
FS0:\AFUD05\> cd SHJPM2_03162017
FS0:\AFUD05\SHJPM2_03162017> flash.nsh X10PU7.314

```



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

```

Done.
[ Access Cmos Port Ex ]
<Read>
Index 0x51: 0x10

Done.
*****
*
* Program BIOS and ME (Including FDT) regions...
*
*****
| AMI Firmware Update Utility v5.09.01.1317 |
| Copyright (C)2017 American Megatrends Inc. All Rights Reserved. |
*****
CPUID = 50652

Reading flash ..... done
- ME Data Size checking . ok
- FFS checksums ..... ok
- Check RomLayout ..... Ok
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... 0x0132000 (OK)

```

```

Verifying NCB Block ..... done
- Update success for FDR
- Update success for IE
- Successful Update Recovery Loader to DPRx!!
- Successful Update MFSB!!
- Successful Update FTPI!!
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTX!!
- ME Entire Image update success !!
WARNING : System must power-off to have the changes take effect!
Moving F80:\AFUD05\SHJPM2_03162017\fdt64.efi -> F80:\AFUD05\SHJPM2_03162017\
dt.smc
- [ok]
Moving F80:\AFUD05\SHJPM2_03162017\afuefi.v64.efi -> F80:\AFUD05\SHJPM2_0316201
7\afuefi.smc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*
*****
Deleting 'f80:\afuefi.smc'
Delete successful.
FS0:\>

```

9. 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.\
10. Press `<Del>` to enter the BIOS Setup utility.
11. Press `<F3>` to load the default settings.
12. After loading the default settings, press `<F4>` to save the settings and exit the BIOS Setup utility.

Appendix E

Dual Boot Block

E.1 Introduction

This motherboard supports the Dual Boot Block feature, which is the last-ditch mechanism to recover the BIOS boot block. This section provides an introduction to the feature.

BIOS Boot Block

A BIOS boot block is the minimum BIOS loader required to enable necessary hardware components for the BIOS crisis recovery flash that will update the main BIOS block. An on-call BIOS boot-block corruption may occur due to a software tool issue (see image below) or an unexpected power outage during BIOS updates.

```
-----  
                AMI Firmware Update Utility vX.XX.XX  
      Copyright (C)XXXX American Megatrends Inc. All Rights Reserved.  
-----  
Reading flash . . . . . done  
-- ME Data Size checking . ok  
-- FFS checksums . . . . . ok  
Erasing Boot Block . . . . . done  
__ Updating Boot Block . . . . . 0x00A91000 (13%)
```

BIOS Boot Block Corruption Occurrence

When a BIOS boot block is corrupted due to an unexpected power outage or a software tool malfunctioning during BIOS updates, you can still reboot the system by closing pins 2 and 3 using a cap on jumper JBR1. When JBR1 is set to pins 2 and 3, the system will boot from a backup boot block pre-loaded in the BIOS by the manufacturer.

E.2 Steps to Reboot the System by Using Jumper JBR1

1. Power down the system.
2. Close pins 2-3 on jumper JBR1 and power on the system.
3. Follow the BIOS recovery SOP listed in the previous chapter (Appendix D).
4. After completing the steps above, power down the system.
5. Close pins 1-2 on jumper JBR1 and power on the system.