



X11SSW-TF  
X11SSW-4TF

USER MANUAL

Revision 1.0a

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# 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 X11SSW-TF/-4TF motherboard.

## About This Motherboard

The Super X11SSW-TF/-4TF motherboard supports Intel® Xeon® E3-1200 v6/v5 series, 7th/6th Gen Core™ i3, Pentium®, and Celeron® processors in an LGA 1151 (H4) socket. With support of the Intel C236 chipset, DDR4 2400MHz memory, SATA 3.0 connectors, PCIe 3.0 slot, M.2 slot, two (-TF) or four (-4TF) 10GbE Base-T and Trusted Platform Module (TPM), this motherboard offers a cost-effective WIO server solution, and is ideal for 1U/2 AOC applications. 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.

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# Chapter 1

## Introduction

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

Several important parts that are included with the motherboard are listed below. If anything listed is damaged or missing, please contact your retailer.

### 1.1 Checklist

Main Parts List		
Description	Part Number	Quantity
Supermicro Motherboard	X11SSW-TF/-4TF	1
SATA Cables	CBL-0044L	6
Quick Reference Guide	MNL-1925-QRG	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: <ftp://ftp.supermicro.com>
- Product safety info: [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm)
- If you have any questions, please contact our support team at: [support@supermicro.com](mailto:support@supermicro.com)

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



Figure 1-1. X11SSW-TF Motherboard Image

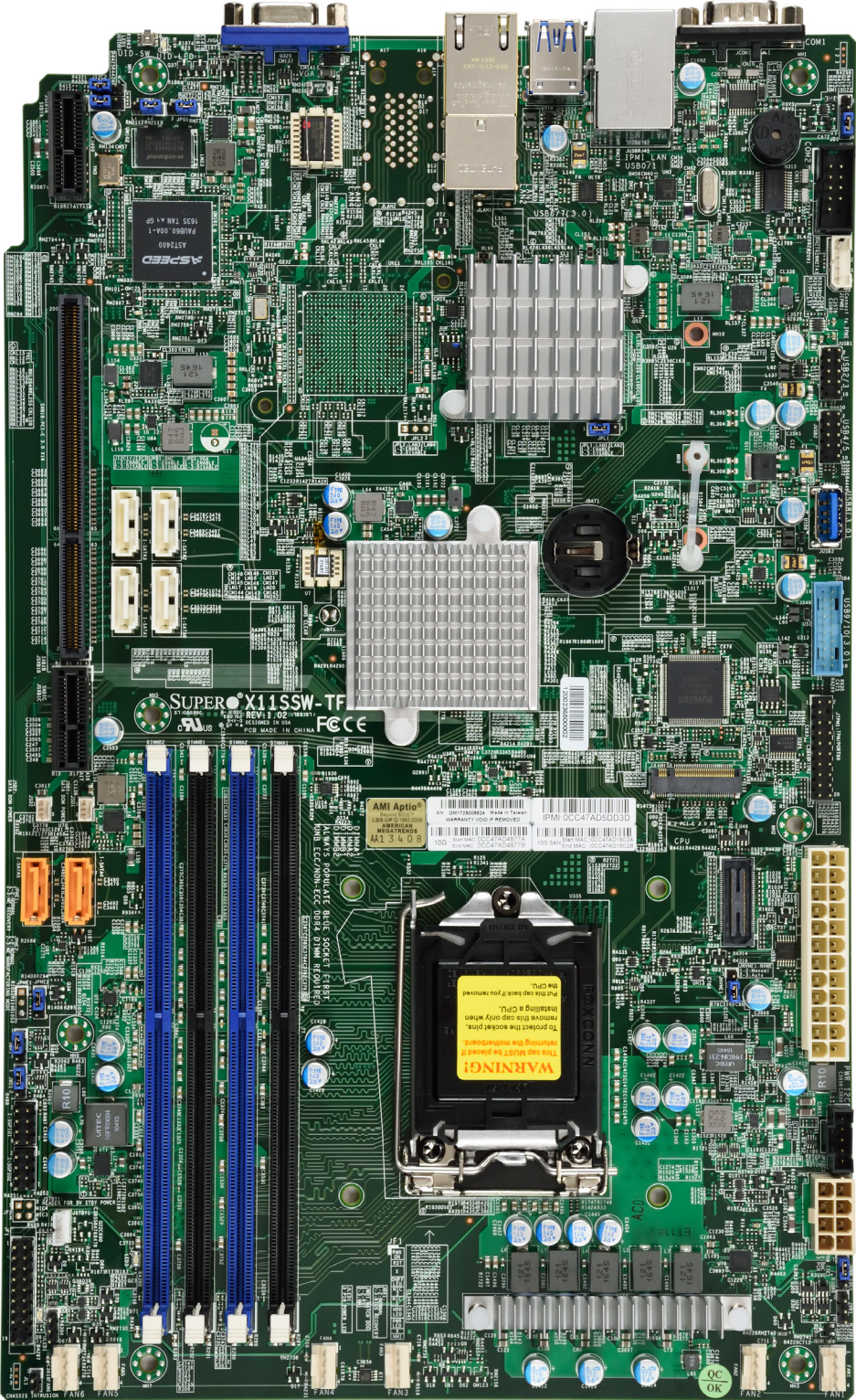
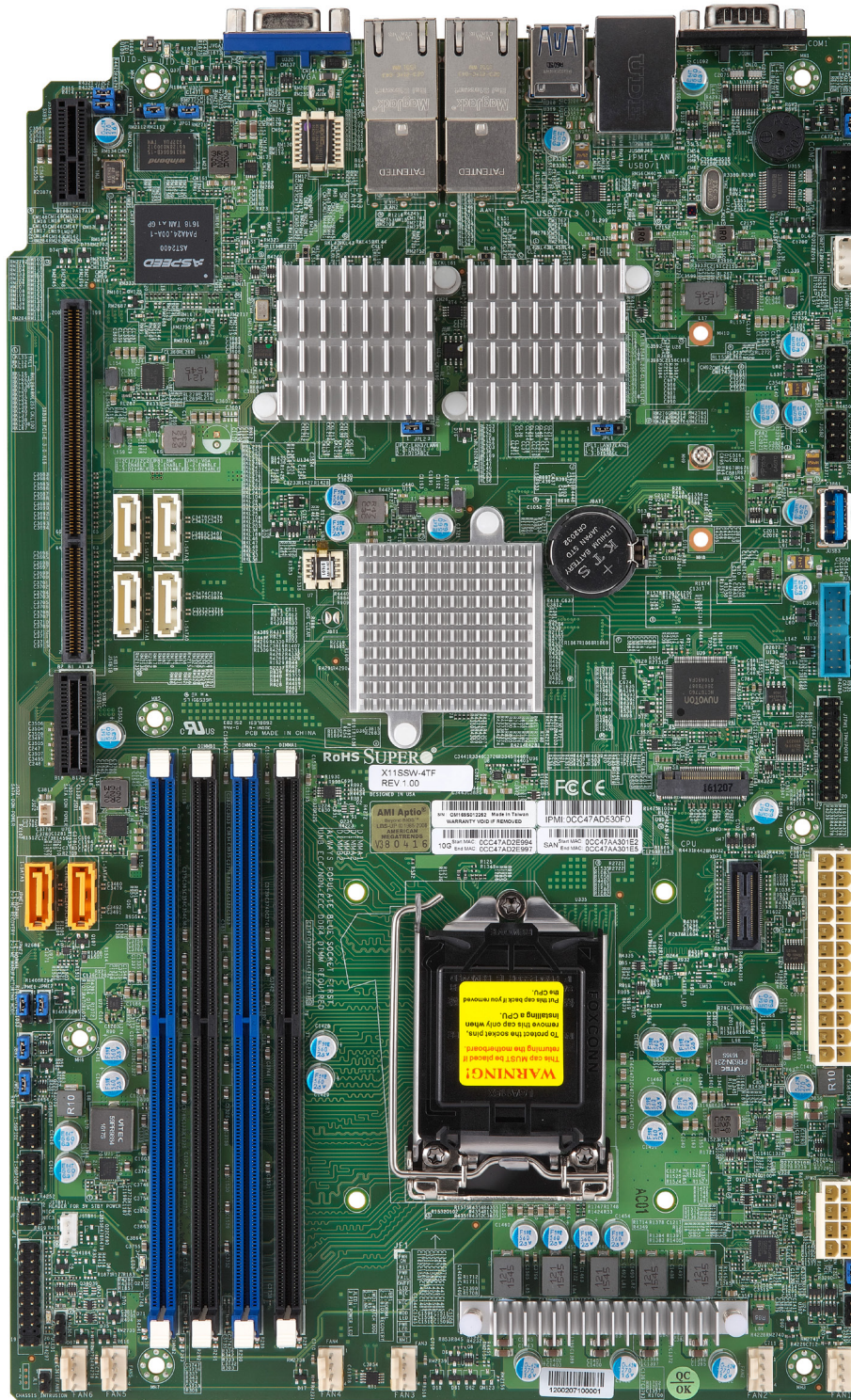
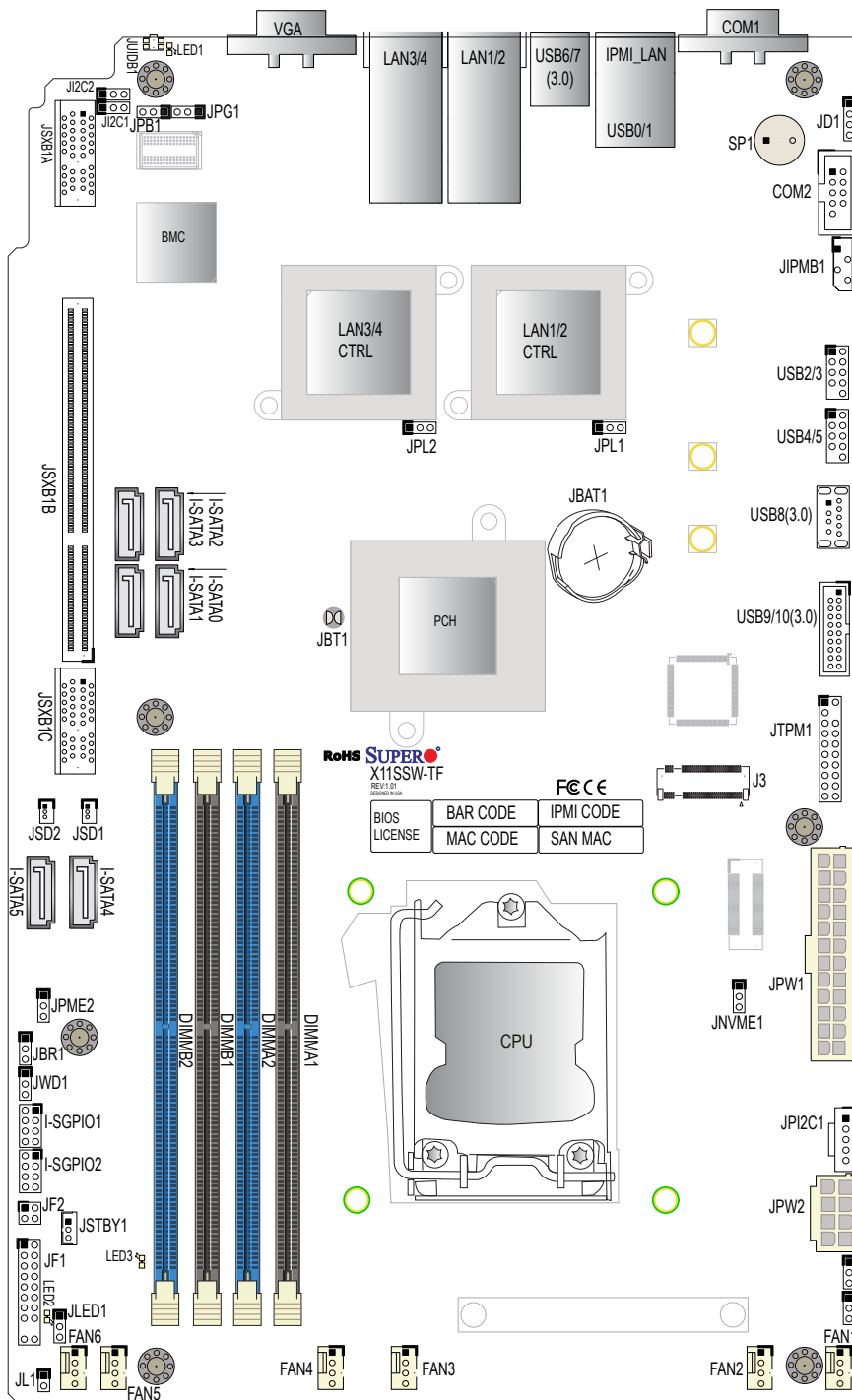


Figure 1-2. X11SSW-4TF Motherboard Image



**Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

**Figure 1-3. X11SSW-TF/-4TF Motherboard Layout**  
(not drawn to scale)



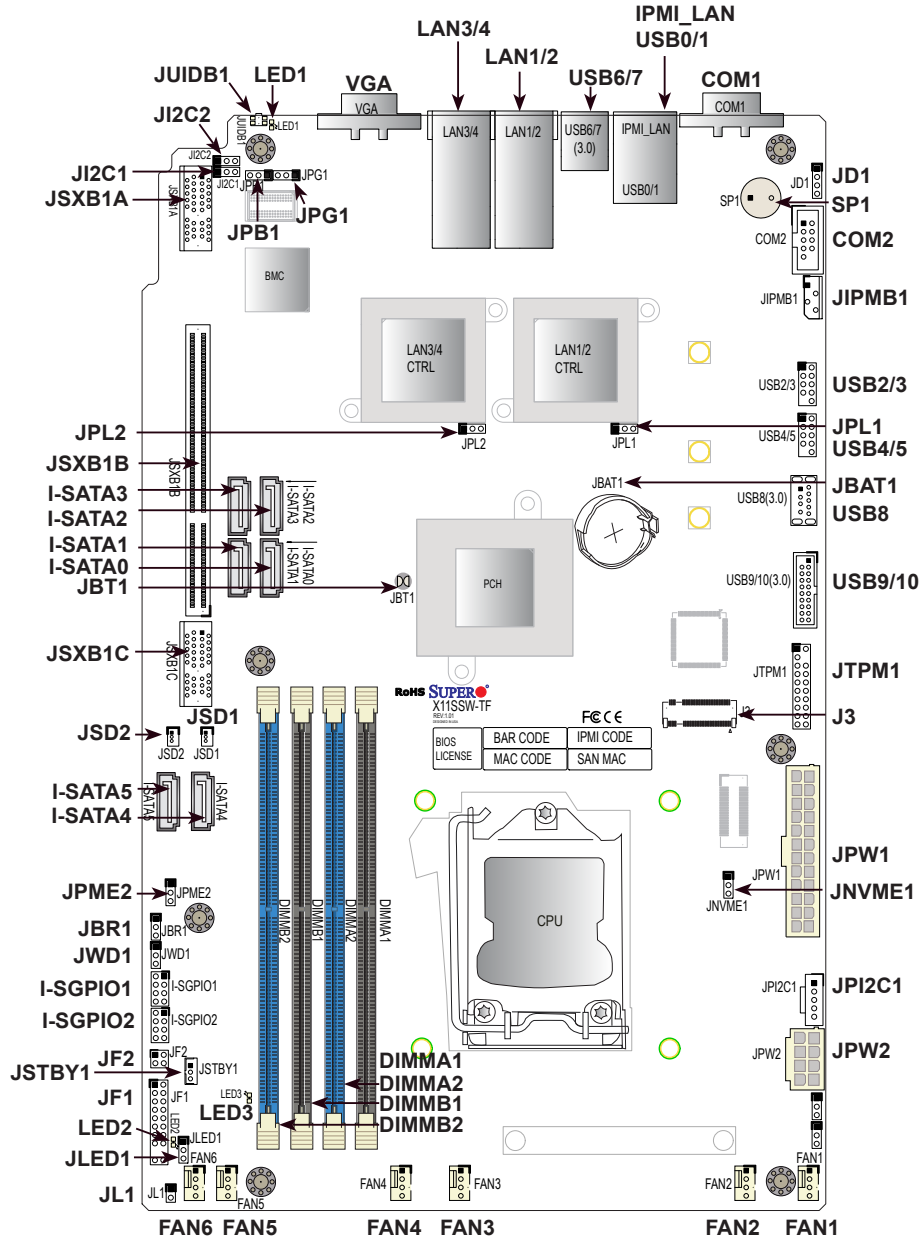
**Differences between X11SSW-TF and X11SSW-4TF**

	X11SSW-TF	X11SSW-4TF
LAN3/LAN4	No	Yes



**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.
- "1" indicates the location of Pin 1.
- Jumpers/LED indicators not indicated are used for testing only.
- When JLED1 (Onboard 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
JBR1	BIOS Recovery	Pins 1-2 (Normal)
JBT1	Clear CMOS	Short: Clear CMOS, Open: Normal
JI2C1/JI2C2	SMB to PCI Slots	Pins 1-2 (Enabled)
JNVME1	NVMe Enable	Pins 2-3 (Auto)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JPL2	LAN3/LAN4 Enable	Pins 1-2 (Enabled)
JPME2	Manufacturing Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Enable	Pins 1-2 (Reset)

LED	Description	Status
LED1	Rear UID LED	Blue On: Unit Identified
LED2	Power LED	Solid Green: Power On
LED3	Standby Power LED	Solid Green: Standby Power On



Connector	Description
COM1/COM2	COM1: Port, COM2: Header
FAN1 ~ FAN6	System/CPU Fan Headers
IPMI_LAN	Dedicated IPMI Gigabit (RJ45) Port
I-SATA0 ~ I-SATA5	SATA 3.0 Connectors via Intel PCH (6Gb/s)
I-SGPIO 1/2	Serial Link General Purpose I/O Connection Headers for I-SATA 3.0 connections (I-SGPIO1 for I-SATA0~3, I-SGPIO2 for I-SATA4~5)
J3	M.2 Socket 3 (supports 2260, 2280, 22110 for NVMe)
JBAT1	Onboard Battery
JD1	Speaker/Buzzer Header (Pins 1-4: Speaker, Pins 3-4: Buzzer)
JF1	Front Control Panel Header
JF2	Activity LED Header for LAN3/LAN4
JIPMB1	4-pin External BMC I <sup>2</sup> C Header (for an IPMI Card)
JL1	Chassis Intrusion Header
JLED1	3-pin Power LED Indicator Header
JPI2C1	Power I2C System Management Bus (Power SMB) Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	+12V 8-pin CPU Power Connector (Required)
JSD1/JSD2	SATA Disk On Module (DOM) Power Connectors
JSTBY1	Standby Power Header
JSXB1A/1B/1C	SMC Proprietary WIO_L (Left) Add-On Card Slot



**Note:** Table is continued on the next page.

<b>Connector</b>	<b>Description</b>
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector
JUIDB1	UID (Unit Identification) Switch
LAN1/LAN2/LAN3/LAN4	10 Gigabit (RJ45) LAN Ports
SP1	Internal Speaker/Buzzer
USB 0/1	Back Panel USB 2.0 Ports
USB 2/3, USB 4/5	Front Accessible USB 2.0 Headers
USB 6/7	Back Panel USB 3.0 Ports
USB 8	Front Accessible USB 3.0 Type-A Header
USB 9/10	Front Accessible USB 3.0 Header
VGA	Back Panel VGA Port

## Motherboard Features

<b>Motherboard Features</b>	
<b>CPU</b>	
<ul style="list-style-type: none"> <li>Intel® Xeon® E3-1200 v6/v5 series, 7th/6th Gen Core™ i3, Pentium®, and Celeron® processors in an LGA1151 (H4) socket. 80W max TDP.</li> </ul>	
<b>Memory</b>	
<ul style="list-style-type: none"> <li>Four (4) 288-pin DIMM slots support up to 64 GB of SDRAM 72-bit DDR4 unbuffered ECC 2400/2133/1866/1600MHz memory.</li> </ul>	
<b>DIMM Size</b>	
<ul style="list-style-type: none"> <li>16GB, 8GB, and 4GB, up to 64GB at 1.2V</li> </ul>	
 <b>Note 1:</b> Memory speed support depends on the processors used in the system.	
 <b>Note 2:</b> For the latest CPU/memory updates, please refer to our website at <a href="http://www.supermicro.com/products/motherboard">http://www.supermicro.com/products/motherboard</a> .	
<b>Chipset</b>	
<ul style="list-style-type: none"> <li>Intel PCH C236</li> </ul>	
<b>Expansion Slots</b>	
<ul style="list-style-type: none"> <li>One (1) SMC-Proprietary WIO-L slots (JSXB1A/1B/1C)</li> <li>One (1) M.2 NGFF connector [supports PCIe 3.0 x4 (32 Gb/s)]</li> </ul>	
<b>Network</b>	
<ul style="list-style-type: none"> <li>Two Intel® 10G LAN chips (X540-AT2) for LAN1/LAN2/LAN3/LAN4</li> </ul>	
<b>Baseboard Management Controller (BMC)</b>	
<ul style="list-style-type: none"> <li>ASpeed AST 2400 Baseboard Management Controller (BMC) supports IPMI 2.0</li> <li>One (1) Dedicated IPMI LAN located on the rear I/O back panel</li> </ul>	
<b>Graphics</b>	
<ul style="list-style-type: none"> <li>Graphics controller via ASpeed 2400 BMC</li> </ul>	
<b>I/O Devices</b>	
<ul style="list-style-type: none"> <li>Serial (COM) Port</li> </ul>	<ul style="list-style-type: none"> <li>One (1) serial port on the rear I/O panel (COM1)</li> <li>One (1) front accessible serial header (COM2)</li> </ul>
<ul style="list-style-type: none"> <li>SATA 3.0</li> </ul>	<ul style="list-style-type: none"> <li>Six (6) I-SATA 3.0 ports (I-SATA0 ~ 5)</li> <li>Two (2) SuperDOM connectors (I-SATA4 &amp; I-SATA5)</li> </ul>
<ul style="list-style-type: none"> <li>RAID (PCH)</li> </ul>	<ul style="list-style-type: none"> <li>RAID 0, 1, 5, and 10</li> </ul>



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

## Motherboard Features

### Peripheral Devices

- Two (2) USB 2.0 ports on the rear I/O panel (USB 0/1)
- Two (2) front accessible USB 2.0 headers (USB 2/3, 4/5)
- Two (2) USB 3.0 ports on the rear I/O panel (USB 6/7)
- One (1) USB 3.0 Type-A header (USB 8)
- One (1) front accessible USB 3.0 header (USB 9/10)

### BIOS

- 128Mb AMI BIOS® SPI Flash BIOS
- Plug and Play (PnP), Riser Card auto-detection, dual boot block, DMI 3.0, ACPI 3.0+, USB Keyboard, BIOS rescue hot-key, and SMBIOS 2.7+

### 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, +5V AUX, +3.3V Stby, VBAT, VSA, Memory, PCH temperature, and system temperature
- CPU 3+2-phase switching voltage regulator
- CPU/System overheat control
- CPU Thermal Trip support

### Fan Control

- Fan status monitoring with firmware 4-pin fan speed control via IPMI interface
- Low noise fan speed control

### System Management

- PECCI (Platform Environment Configuration Interface) 3.1 support
- Intel® Node Manager
- IPMI 2.0 with KVM support
- SuperDoctor® 5, Watch Dog, NMI
- Chassis Intrusion header and detection
- Power supply monitoring

### LED Indicators


- CPU/system overheat LED
- Power / suspend-state indicator LED
- Fan failed LED
- UID / Remote UID
- HDD activity LED
- LAN activity LED



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

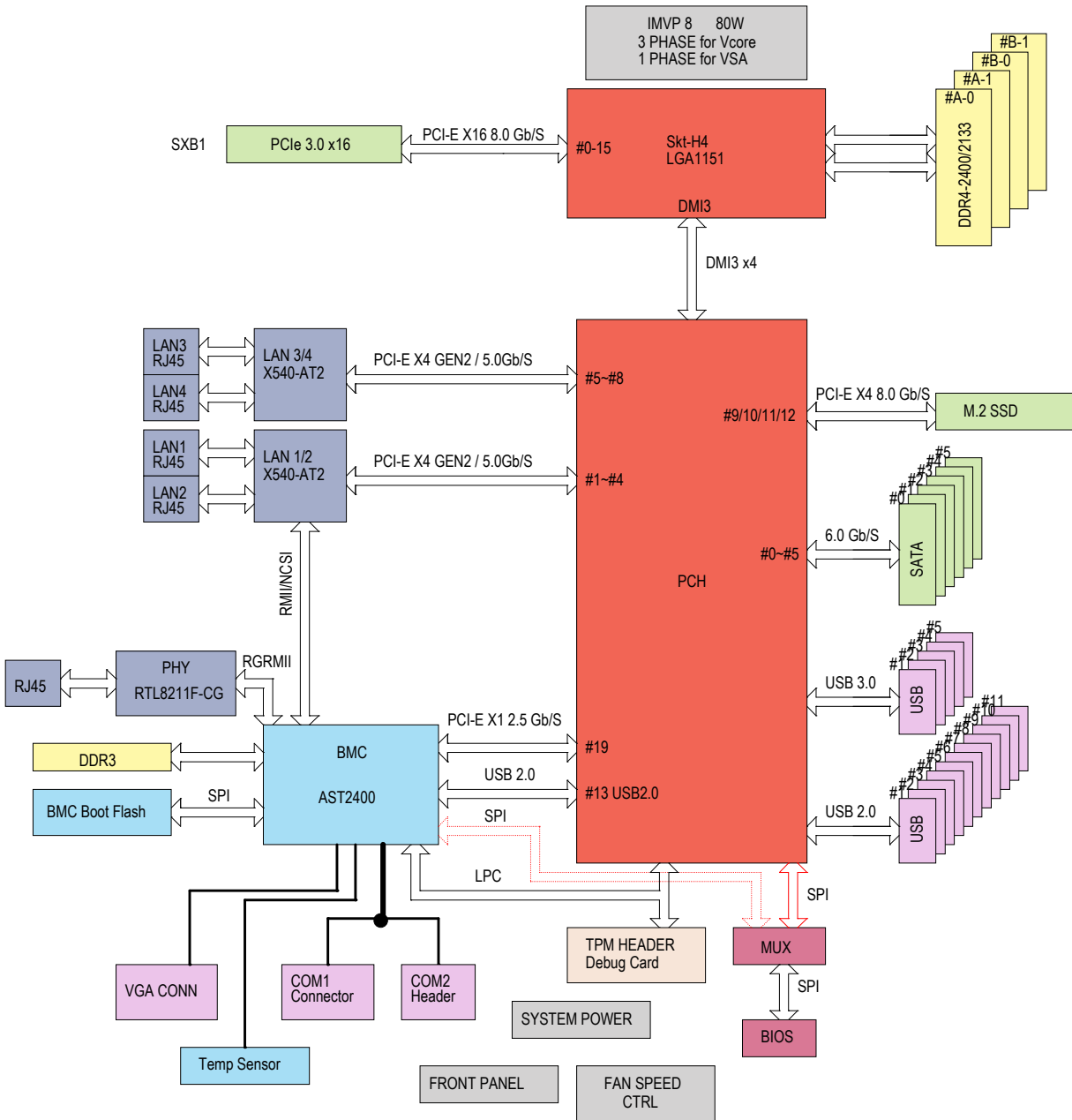


Motherboard Features
<b>Other</b>
<ul style="list-style-type: none"><li>• RoHS</li></ul>
<b>Dimensions</b>
<ul style="list-style-type: none"><li>• WIO form factor (13.0" x 8.0") (330.20 mm x 203.20 mm)</li></ul>

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

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

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



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

## 1.2 Processor and Chipset Overview

Built upon the functionality and capability of the Intel E3-1200 v6/v5 series processors (Socket LGA 1151) and the Intel C236 PCH, the X11SSW-TF/-4TF motherboard offers maximum I/O expandability, energy efficiency, and data reliability in a 14-nm process architecture, and is optimized for embedded storage solutions, networking applications, or cloud-computing platforms.

The Intel E3-1200 v6/v5 and PCH C236 platform supports the following features:

- ACPI Power Management Logic Support, Rev. 4.0a
- Intel Turbo Boost Technology 2.0 Power Monitoring/Power Control, Turbo Time Parameter (TAU), and Platform Power Control
- Configurable TDP (cTDP) and Lower-Power Mode
- Adaptive Thermal Management/Monitoring
- PCI-E 3.0, SATA 3.0 with transfer rates of up to 6 Gb/s, xHCI USB with SuperSpeed 3.0
- System Management Bus (SMBus) Specification, Version 2.0
- Integrated Sensor Hub (ISH)
- Intel Trusted Execution Technology (Intel TXT)
- Intel Rapid Storage Technology
- Intel Virtualization Technology for Directed I/O (Intel VT-d)

## 1.3 Special Features

This section describes the health monitoring features of the X11SSW-TF/-4TF 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

The motherboard has an onboard Baseboard Management Controller (BMC) chip that supports system health monitoring.

### 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 chip can check the RPM status of a cooling fan. The CPU and chassis fans are controlled by BIOS Thermal Management through the back panel.

### 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 be sure to provide adequate air-flow to your system.

### System Resource Alert

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

## 1.5 ACPI Features

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

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with Windows 7, Windows 8, and Windows 2012 Operating Systems.

## 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.

The X11SSW-TF/-4TF motherboard accommodates 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, one 12V 8-pin power connection is also required to ensure adequate power supply to the system.

**Warning:** To avoid damaging the power supply or the motherboard, be sure to use a power supply that contains a 24-pin and 8-pin power connector. Be sure to connect the power supplies to the 24-pin power connector (JPW1), and the 8-pin power connector (JPW2) on the motherboard. Failure in doing so may void the manufacturer warranty on your power supply and motherboard.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant. (For more information, please refer to the website at <http://www.ssiforum.org/>). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1.7 Serial Port

The X11SSW-TF/-4TF motherboard supports two serial communication connections. COM Ports 1 and 2 can be used for input/output. The UART provides legacy speeds with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support high-speed serial communication devices.

## 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

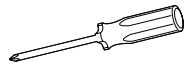
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules,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

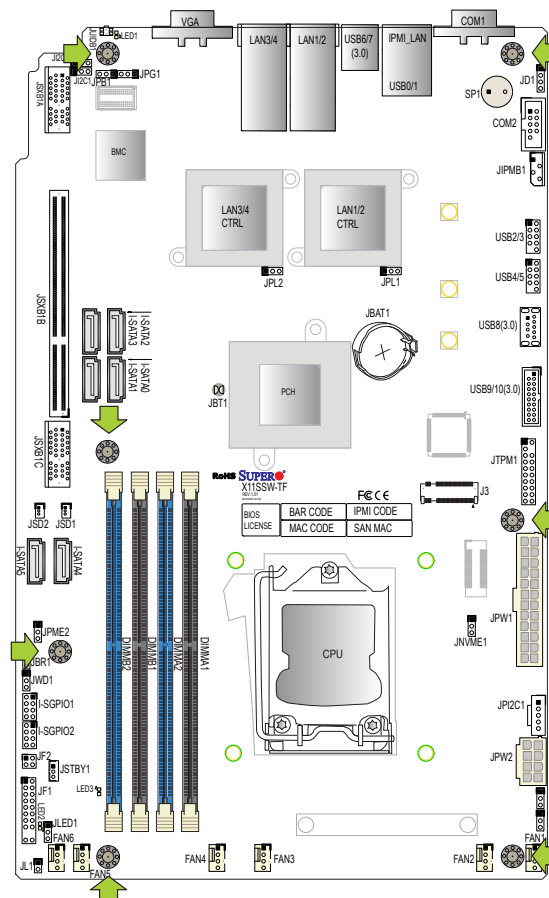


Phillips Screws (7)



Standoffs (7)  
Only if Needed

### Tools Needed



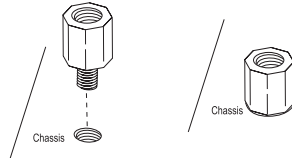
### Location of Mounting Holes



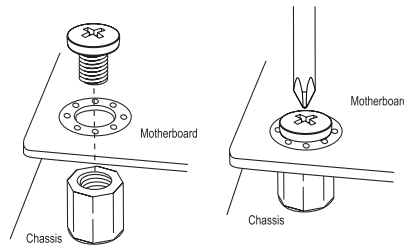
**Note:** 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when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

## Installing the Motherboard


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



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



3. Install standoffs in the chassis 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 Processor and Heatsink Installation

**Warning:** When handling the processor package, avoid placing direct pressure on the label area of the fan.

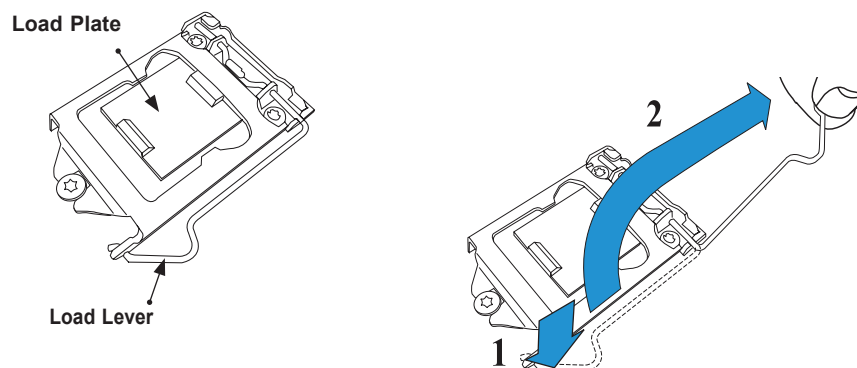


### Important:

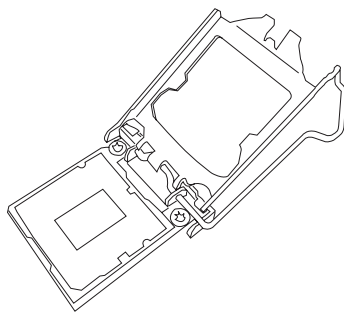
- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the motherboard into the chassis before you install the CPU heatsink.
- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro website for updates on CPU support.

### Installing the LGA1151 Processor

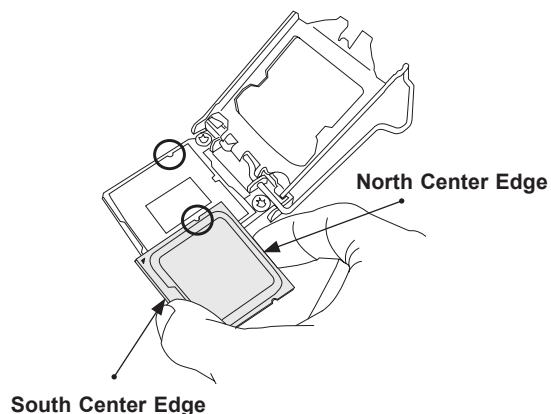
1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.



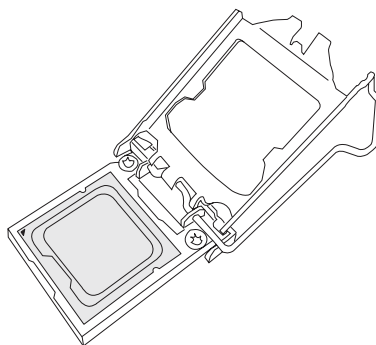
2. Gently lift the load lever to open the load plate. Remove the plastic cap.



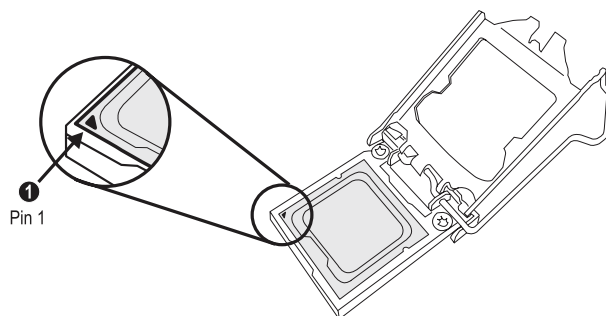
3. Use your thumb and your index finger to hold the CPU at the North center edge and the South center edge of the CPU.



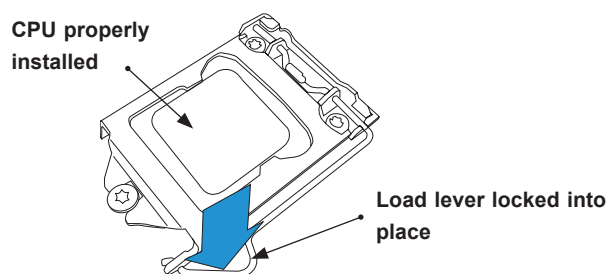
4. Align the CPU key that is the semi-circle cutouts against the socket keys. Once it is aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.




5. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.



6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
7. Use your thumb to gently push the load lever down to the lever lock.



 **Note:** You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

## Installing an Active CPU Heatsink with Fan

1. Locate the CPU fan power connector on the motherboard. (Refer to the layout on the right for the CPU fan location.)
2. Position the heatsink so that the heatsink fan wires are closest to the CPU fan power connector and are not interfering with other components.
3. Inspect the CPU fan wires to make sure that the wires are routed through the bottom of the heatsink.
4. Remove the thin layer of protective film from the heatsink.



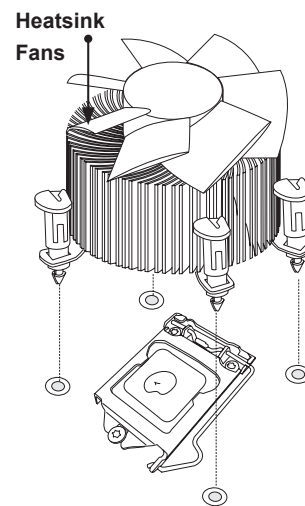
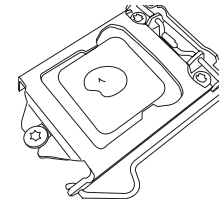
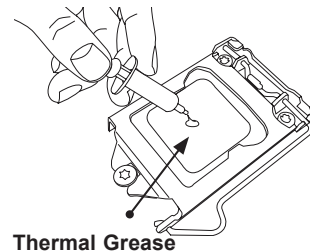
**Important:** CPU overheating may occur if the protective film is not removed from the heatsink.

5. Apply the proper amount of thermal grease on the CPU.



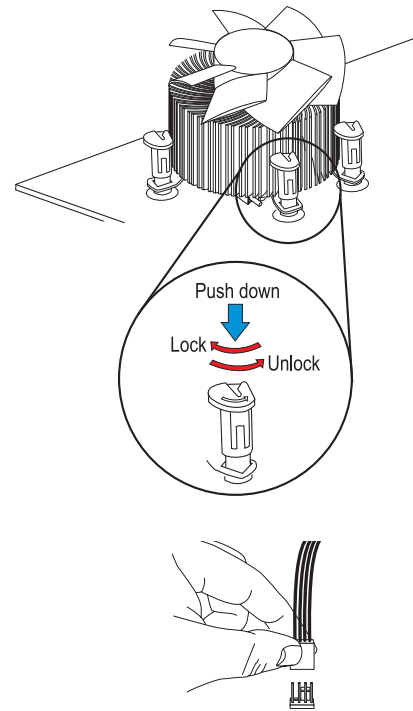
**Note:** If your heatsink came with a thermal pad, please ignore this step.

6. If necessary, rearrange the wires to make sure that the wires are not pinched between the heatsink and the CPU. Also make sure to keep clearance between the fan wires and the fins of the heatsink.




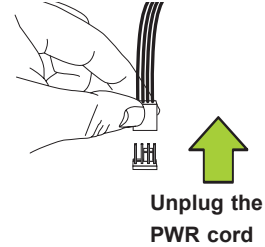
**Recommended Supermicro heatsink:  
SNK-P0046A4 or SNK-P0051AP4  
active heatsink  
(2U+ or 4U chassis)**

7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click. Also, make sure to orient each fastener so that the narrow end of the groove is pointing outward.
8. Repeat step 7 to insert all four heatsink fasteners into the mounting holes.
9. Once all four fasteners are securely inserted into the mounting holes, and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU fan connector.



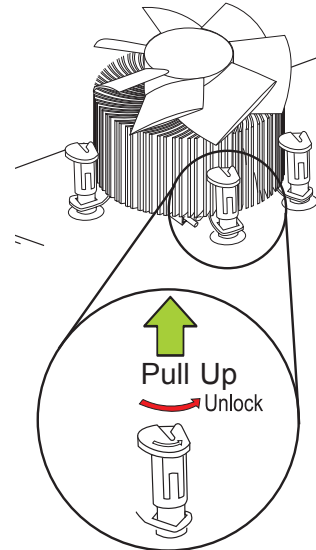
## Removing the Heatsink

 **Note:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to remove the heatsink and to prevent damage done to the CPU or other components.



### *Active Heatsink Removal*

1. Unplug the power cord from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Use your finger tips to gently press on the fastener cap and turn it counterclockwise to make a 1/4 (90°) turn, and pull the fastener upward to loosen it.
4. Repeat step 3 to loosen all fasteners from the mounting holes.
5. With all fasteners loosened, remove the heatsink from the CPU.



## 2.4 Memory Support and Installation



**Note:** Check the Supermicro website for recommended memory modules.



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

### Memory Support

The X11SSW-TF/-4TF motherboard supports up to 64GB of unbuffered (UDIMM) DDR4 ECC 2400/2133/1866/1600MHz 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.

Processors and their Corresponding Memory Modules				
CPU#	Corresponding DIMM Modules			
CPU	DIMMA1	DIMMA2	DIMMB1	DIMMB2

Memory Module Population for Optimal Performance	
Number of DIMMs	Memory Population Configuration Table (For memory to work properly, please follow the instructions below.)
2 DIMMs	DIMMB2/DIMMA2
4 DIMMs	DIMMB2/DIMMA2, DIMMB1/DIMMA1

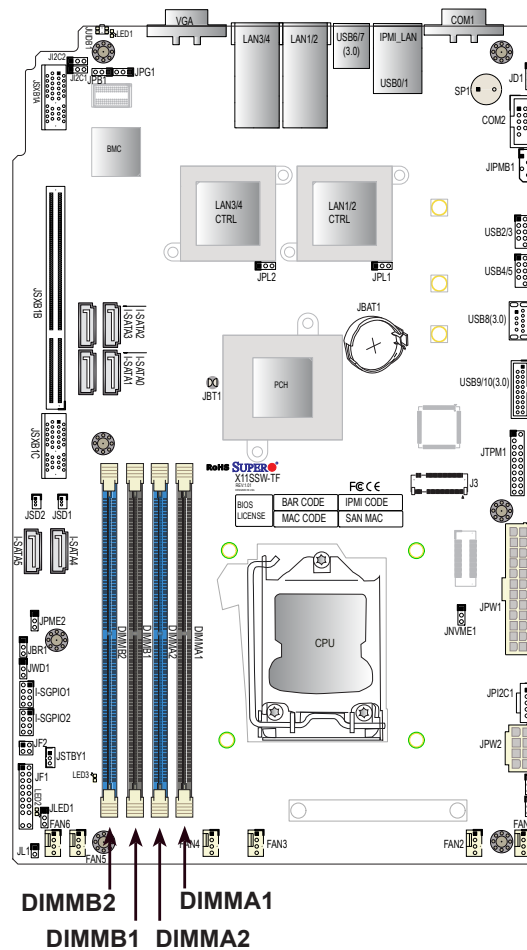
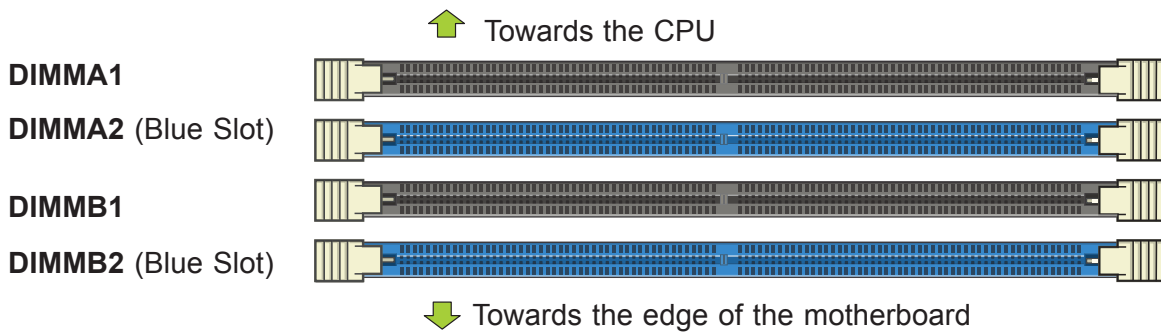
Memory Module Population						
DIMM Slots per Channel	DIMM Type	POR Speeds (MHz)	Ranks per DIMM	Layer Count	FW Base	Supported Voltage
2	Unbuffered DDR4 ECC	2400, 2133 1866, 1600	SR, DR	6	SPS	1.2V

Memory Module Population		
Max Memory Possible	4GB DRAM Technology	8GB DRAM Technology
Single Rank UDIMM	16GB (4x 4GB DIMMs)	32GB (4x 8GB DIMMs)
Dual Rank UDIMMs	32GB (4x 8GB DIMMs)	64GB (4x 16GB DIMMs)

## DIMM Module Population Sequence

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

- Always use DDR4 DIMM modules of the same type, size and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support odd-numbered modules (1 or 3 modules installed). However, for best memory performance, install DIMM modules in pairs to activate memory interleaving.



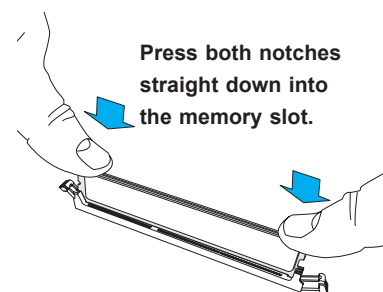
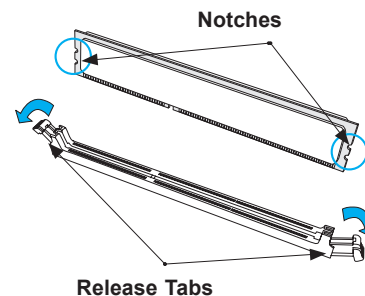
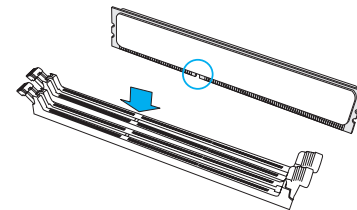
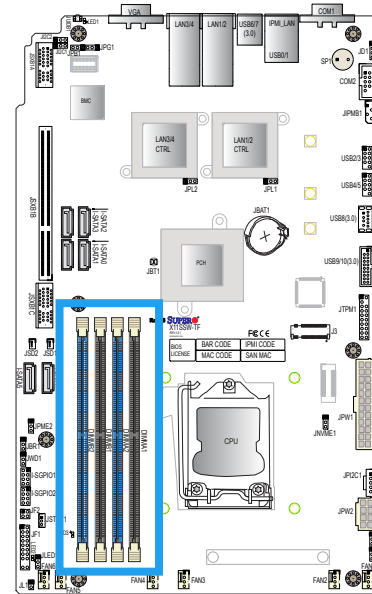


## DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMMB2 (Channel B, Slot 2, blue slot). For best performance, please use the memory modules of the same type and speed in the same bank.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

## DIMM Removal

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.



## 2.5 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.

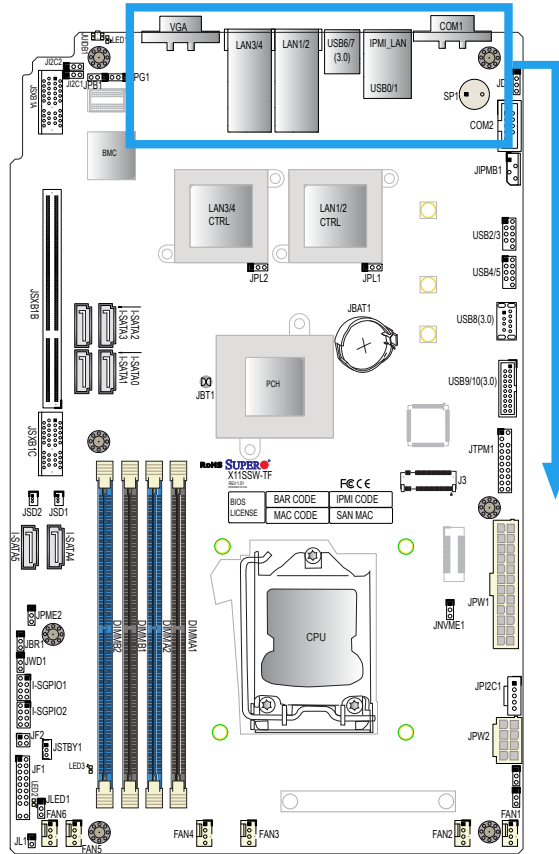
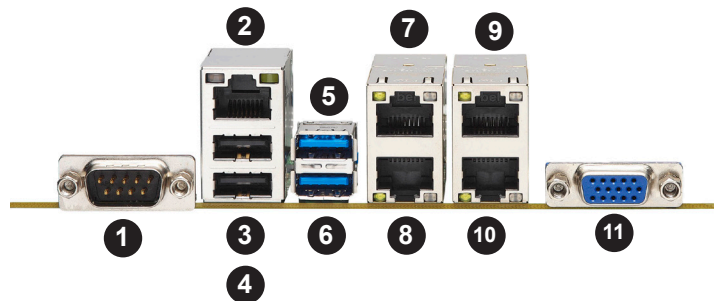


Figure 2-1. I/O Port Locations and Definitions



Rear I/O Ports					
#	Description	#	Description	#	Description
1.	COM1	5.	USB7 (3.0)	9.	LAN4 (-4TF only)
2.	IPMI LAN	6.	USB6 (3.0)	10.	LAN3 (-4TF only)
3.	USB1 (2.0)	7.	LAN2	11.	VGA Port
4.	USB0 (2.0)	8.	LAN1		

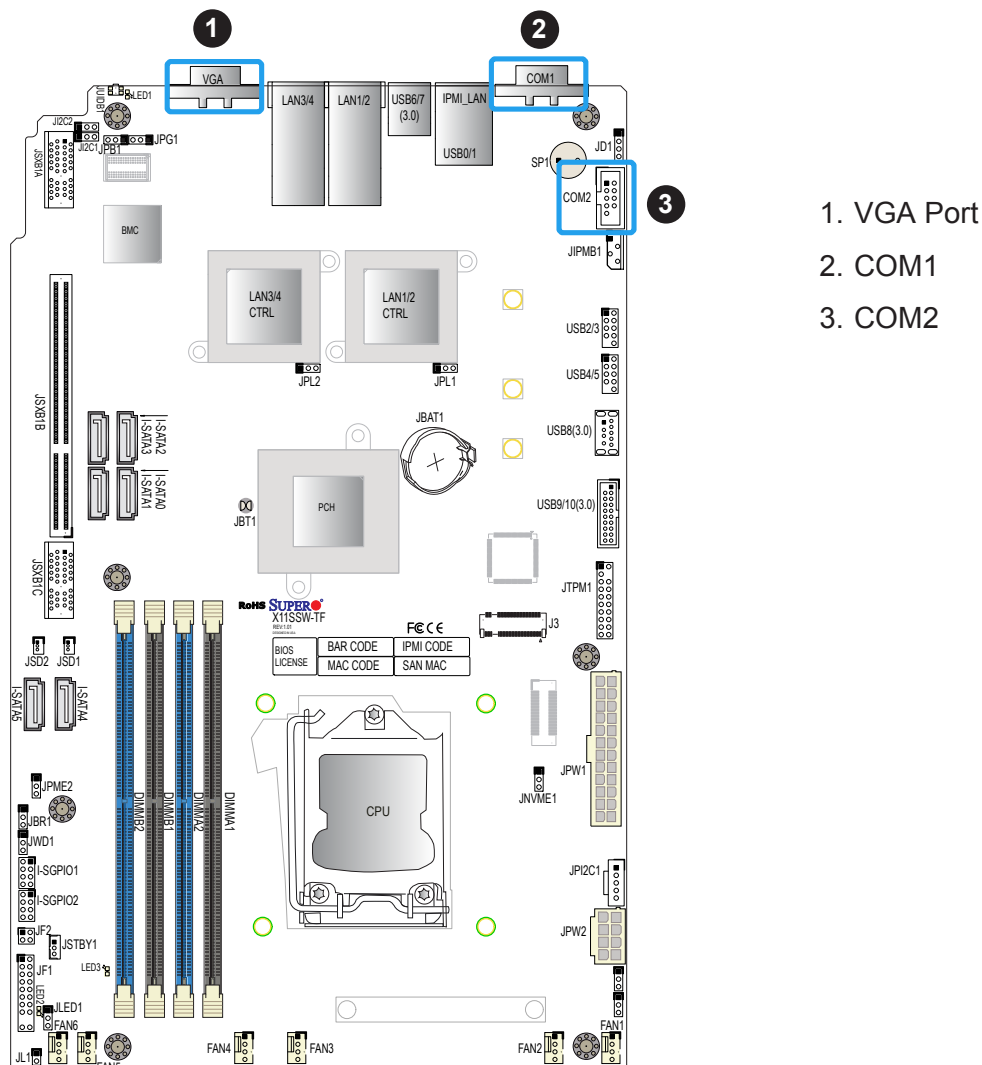
## VGA Port

A video (VGA) port is located next to LAN3/4 on the I/O back panel. See the board layout below for the location.

## Serial Ports

Two COM connections (COM1 and COM2) are located on the motherboard. COM1 is located on the I/O back panel. COM2 is located next to JD1. See the table below for pin definitions.

COM Port 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. VGA Port
2. COM1
3. COM2

## Universal Serial Bus (USB) Ports

There are two USB 2.0 ports (USB0/1) and two USB 3.0 ports (USB6/7) located on the I/O back panel. The motherboard also has two front access USB 2.0 headers (USB2/3 and USB4/5) and one front access USB 3.0 header (USB9/10). The USB8 header is USB 3.0 Type-A. The onboard headers can be used to provide front side USB access with a cable (not included).

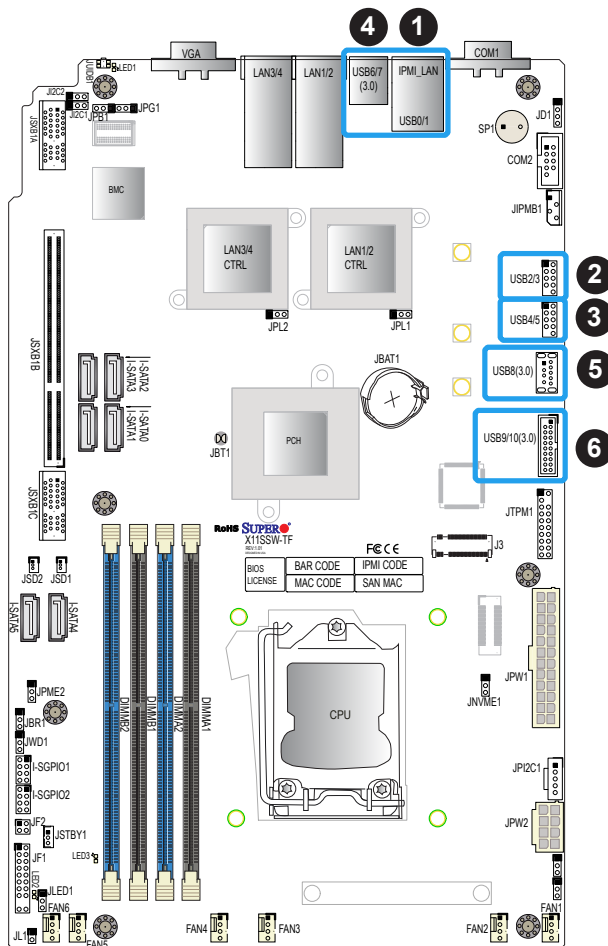
Back Panel USB (2.0) 0/1 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_N	6	USB_N
3	USB_P	7	USB_P
4	Ground	8	Ground

Front Panel USB (2.0) 2/3, 4/5 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

Front Panel USB 9/10 (3.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	19	Power
2	Stda_SSRX-	18	USB3_RN
3	Stda_SSRX+	17	USB3_RP
4	GND	16	GND
5	Stda_SSTX-	15	USB3_TN
6	Stda_SSTX+	14	USB3_TP
7	GND	13	GND
8	D-	12	USB_N
9	D+	11	USB_P
10		x	

Type A USB 8 (3.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	5	SSRX-
2	USB_N	6	SSRX+
3	USB_P	7	GND
4	Ground	8	SSTX-
		9	SSTX+

Back Panel USB 6/7 (3.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	VBUS	B1	Power
A2	D-	B2	USB_N
A3	D+	B3	USB_P
A4	GND	B4	GND
A5	Stda_SSRX-	B5	USB3_RN
A6	Stda_SSRX+	B6	USB3_RP
A7	GND	B7	GND
A8	Stda_SSTX-	B8	USB3_TN
A9	Stda_SSTX+	B9	USB3_TP



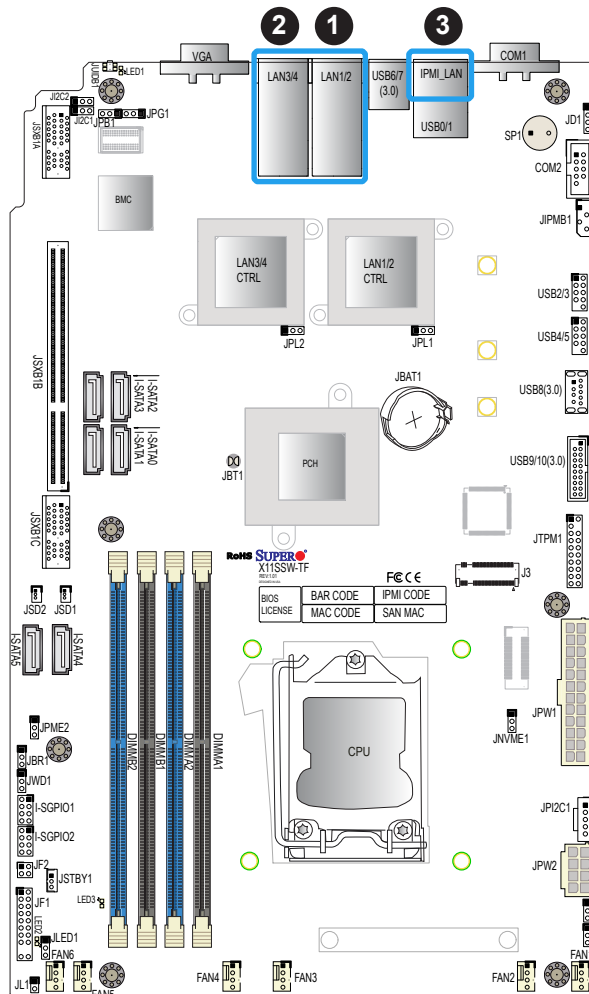
1. USB0/1
2. USB2/3
3. USB4/5
4. USB6/7
5. USB8
6. USB9/10

### LAN Ports

Two 10 Gigabit Ethernet ports (LAN1 and LAN2) are located on the I/O back panel of the motherboard. In addition, a dedicated IPMI LAN is located above USB 0/1 ports on the back panel. All of these ports accept RJ45 cables. Please refer to the LED Indicator section for LAN LED information.

**Note:** The -4TF board contains two additional 10 Gigabit Ethernet ports (LAN3 and LAN4), which are located next to LAN1 and LAN2.

LAN Port Pin Definitions			
Pin#	Definition	Pin#	Definition
1	TX_D1+	5	BI_D3-
2	TX_D1-	6	RX_D2-
3	RX_D2+	7	BI_D4+
4	BI_D3+	8	BI_D4-



1. LAN1/2
2. LAN3/4 (-4TF only)
3. IPMI LAN

## 2.6 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.

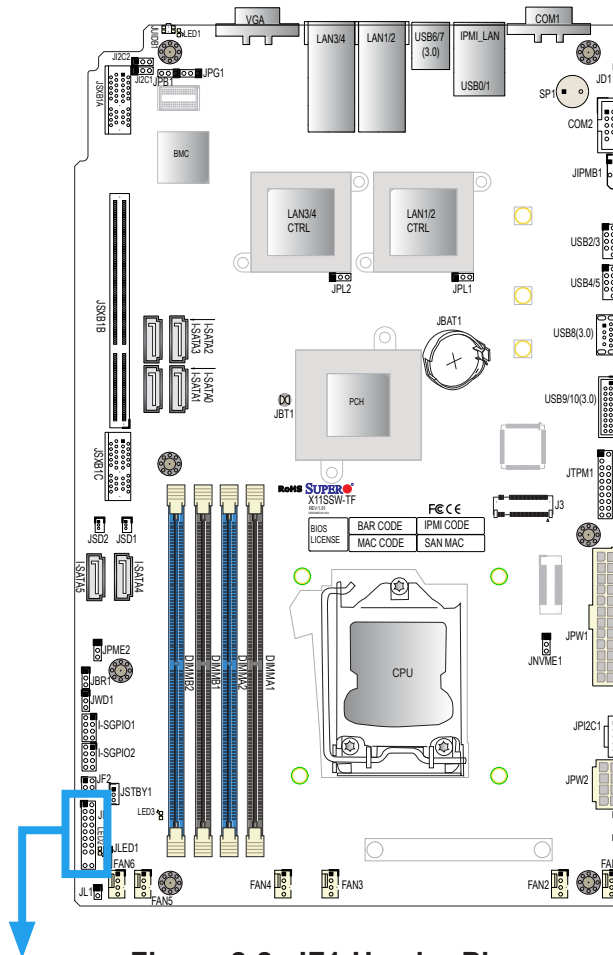


Figure 2-2. JF1 Header Pins

	1	2	
Power Button	PWR	○	Ground
Reset Button	Reset	○	Ground
	3.3 V	○	NC
Red+ (Blue LED Cathode)	○	○	Blue+ (OH/Fan Fail/UID LED)
Pull up to +3.3 Stby	○	○	NIC2 Activity LED
Pull up to +3.3 Stby	○	○	NIC1 Activity LED
ID_UID_SW/3.3V Stdby	○	○	HDD LED
3.3V	○	○	FP PWRLED
X	○	○	X
NMI	○	○	Ground
	19	20	

### Power Button

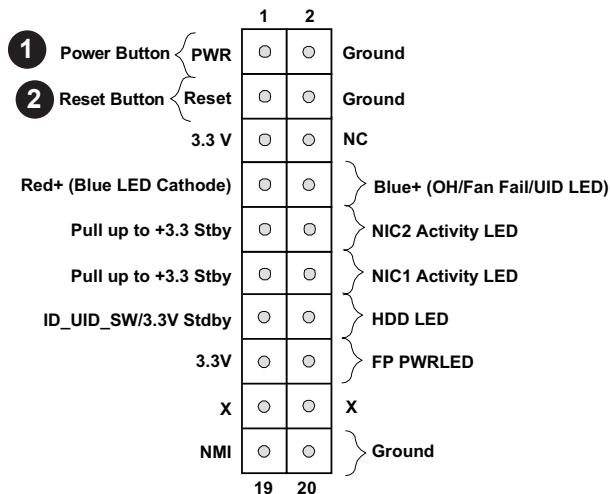
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when the system is in suspend mode, press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

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



1. PWR Button
2. Reset Button

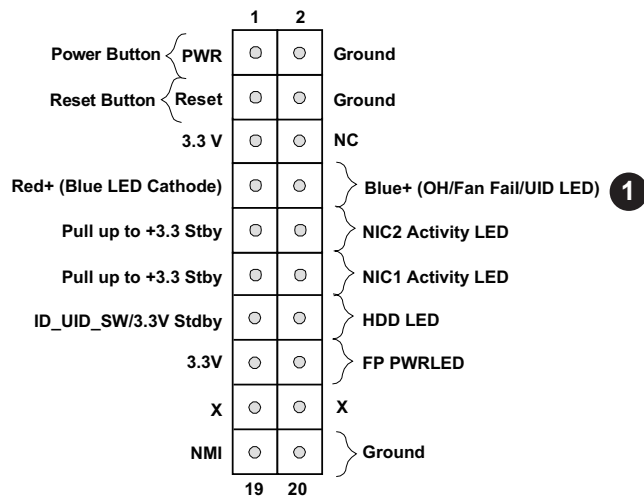


## Overheat (OH)/Fan Fail

Connect an LED cable to pins 7 and 8 of the Front Control Panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure. See 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	Blue LED
8	OH/Fan Fail LED



1. OH/Fan Fail

### NIC1/NIC2 (LAN1/LAN2)

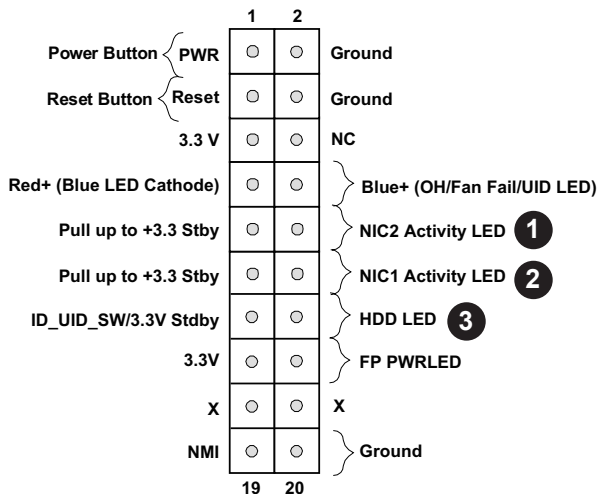
The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. See the table below for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Pull up to +3.3 Stby
10	NIC2 Activity LED
11	Pull up to +3.3 Stby
12	NIC1 Activity LED

### HDD LED/UID Switch

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

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



1. NIC2 LED
2. NIC1 LED
3. HDD LED / UID Switch

## Power LED

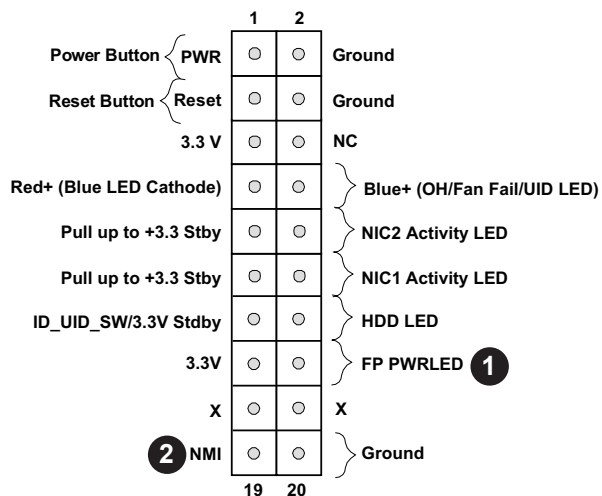
The Power LED connection is located on pins 15 and 16 of JF1. See the table below for pin definitions.

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

## NMI Button

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

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground



1. PWR LED

2. NMI

## 2.7 Connectors

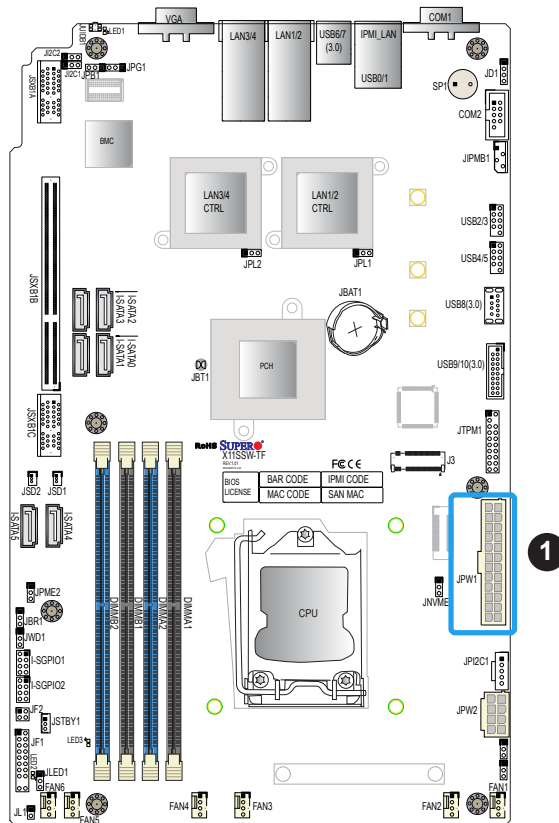
### Power Connections

#### Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the ATX SSI EPS 12V specification. You must also connect the 8-pin (JPW2) processor power connector to your power supply.

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

#### Required Connection




1. 24-Pin ATX Main PWR (Required)

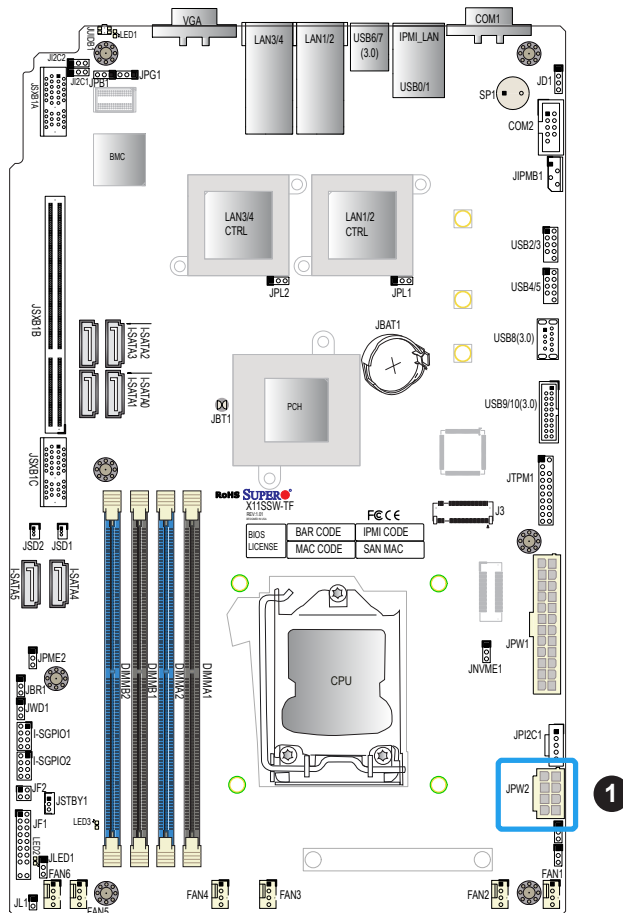
## Secondary Power Connector

JPW2 must also be connected to the power supply. This connector is used to power the processor(s).

+12V 8-pin Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	+12V

### Required Connection

 **Important:** To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR and the 8-pin PWR connectors to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.



### 1. 8-Pin PWR (Required)

## Headers

### Fan Headers

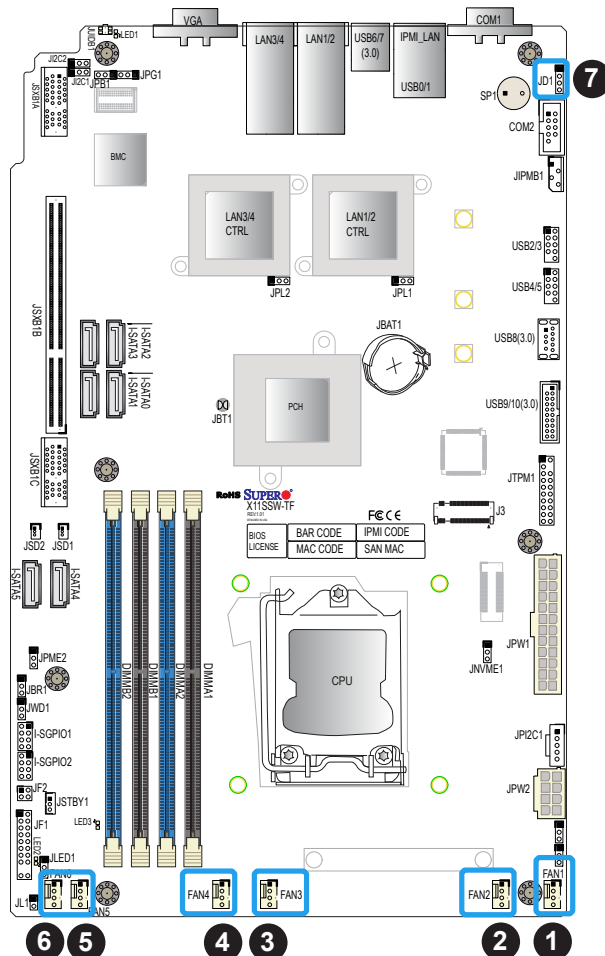
The X11SSW-TF/-4TF has six fan headers (Fan1 - Fan6). All of these 4-pin fan headers are backwards-compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the IPMI 2.0 interface. See the table below for pin definitions.

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

### Speaker/Buzzer Header

On the JD1 header, pins 1-4 are for the speaker and pins 3-4 are for the buzzer. If you wish to use an external speaker, connect its cable to pins 1-4.

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 1-4	Speaker
Pins 3-4	Buzzer



- 1. FAN1
- 2. FAN2
- 3. FAN3
- 4. FAN4
- 5. FAN5
- 6. FAN6
- 7. Speaker/Buzzer Header

## Chassis Intrusion

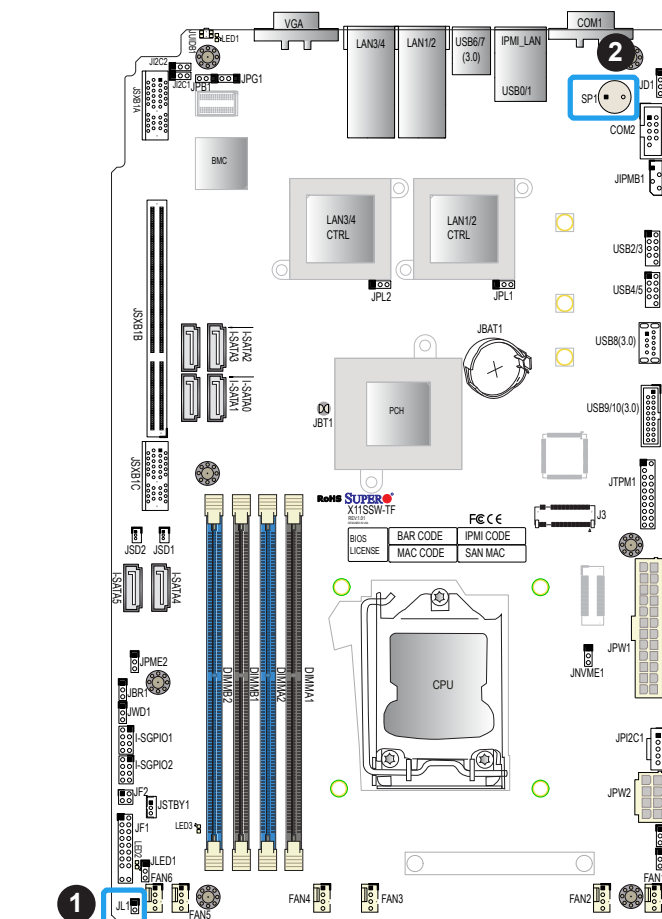
A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened. See the table below for pin definitions.

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

## Internal Speaker/Buzzer

The Internal Speaker (SP1) can be used to provide audible notifications using various beep codes. Refer to the table below for pin definitions. See the layout below for the location of the internal buzzer.

Internal Buzzer Pin Definitions		
Pin#		Definition
1	Pos (+)	DC 5V
2	Neg (-)	Signal In



1. Chassis Intrusion
2. Internal Buzzer

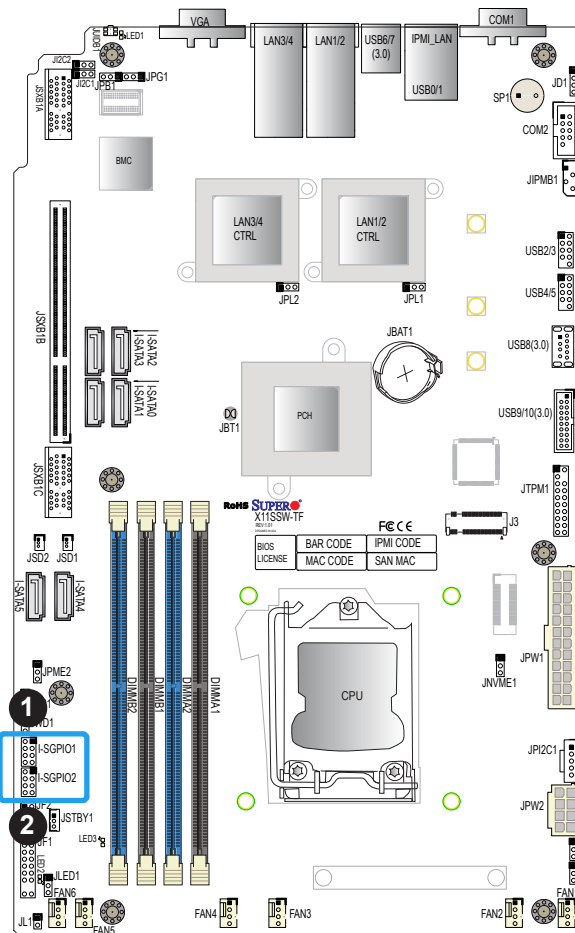
### SGPIO Headers

Two I-SGPIO (Serial Link General Purpose Input/Output) headers are located on the motherboard. They support the onboard I-SATA 3.0 ports. See the tables below for pin definitions.

I-SGPIO 1/2	
I-SGPIO1	I-SATA 3.0 Ports 0-3
I-SGPIO2	I-SATA 3.0 Ports 4-5

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

NC = No Connection



1. I-SGPIO 1
2. I-SGPIO 2



## Standby Power

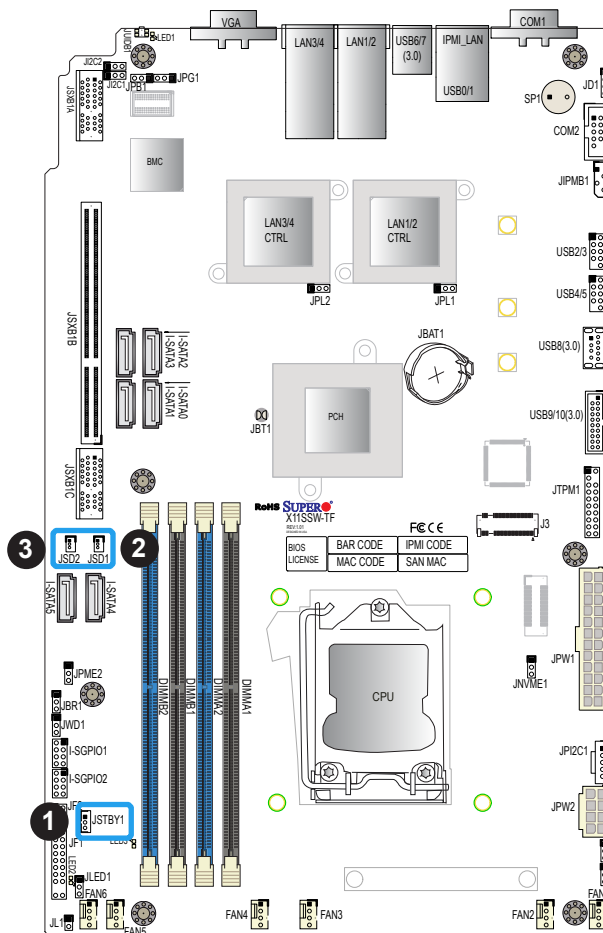
The +5V Standby Power header is located at JSTBY1 on the motherboard. You must have a card with a Standby Power connector and a cable to use this feature. See the table below for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	NC

## Disk On Module Power Connector

Two power connectors for SATA DOM (Disk On Module) devices are located at JSD1 and JSD2. Connect appropriate cables here to provide power support for your Serial Link DOM devices.

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

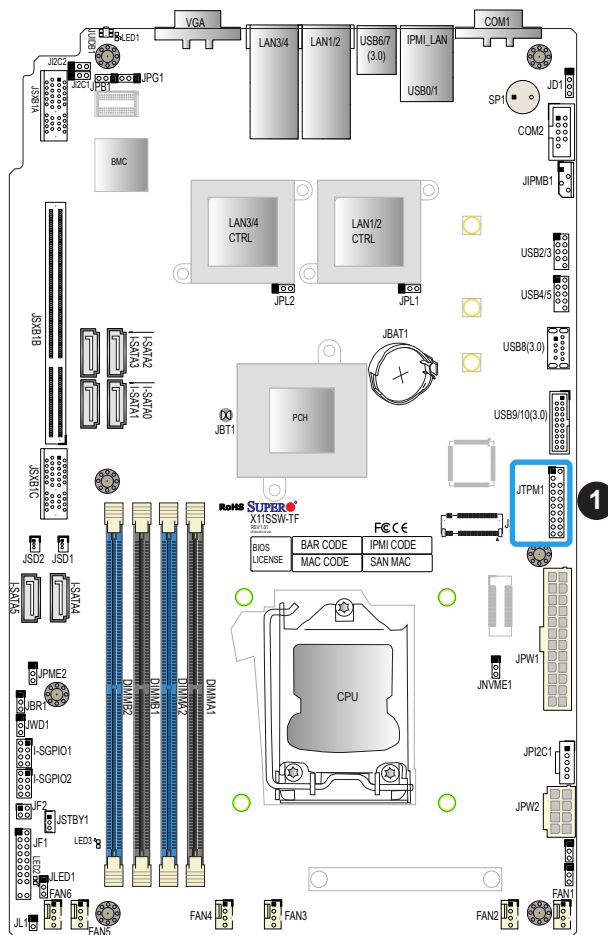


1. Standby PWR
2. JSD1 (DOM PWR)
3. JSD2 (DOM PWR)

### TPM/Port 80 Header

A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and a Port 80 connection. Use this header to enhance system performance and data security. See the table below for pin definitions.

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK	14	SMB_DAT
15	+3V Stdby	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	LDRQ#

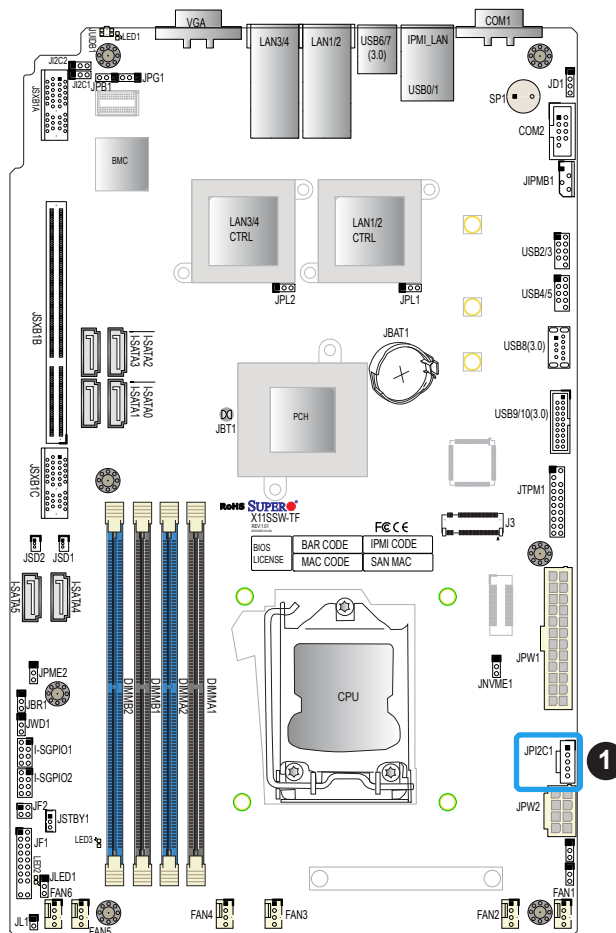


1. TPM Header

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

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

Power SMB Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3V

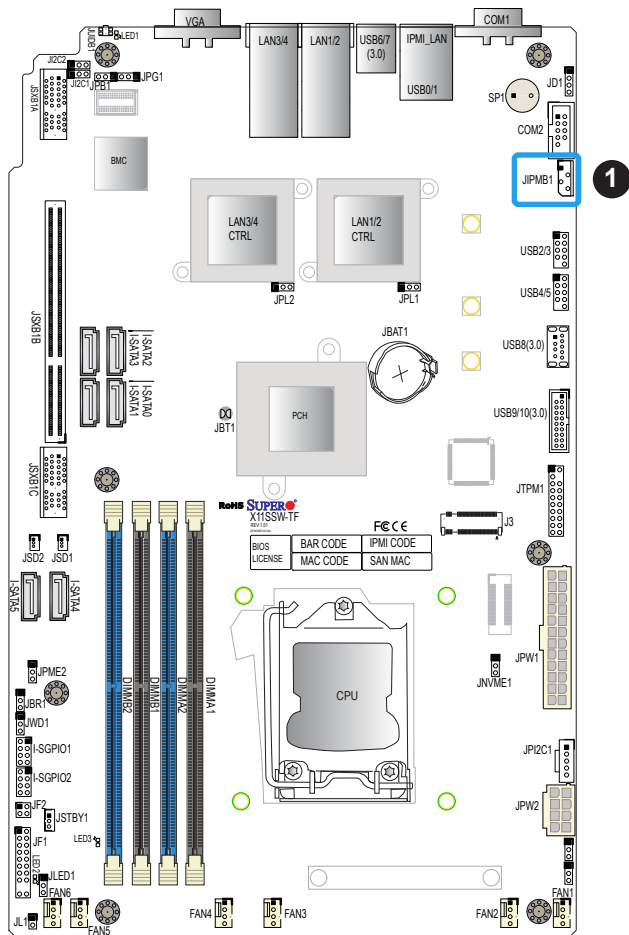


1. PWR SMB

### 4-pin BMC External I<sup>2</sup>C Header

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system. See the table below for pin definitions.

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



1. BMC External Header

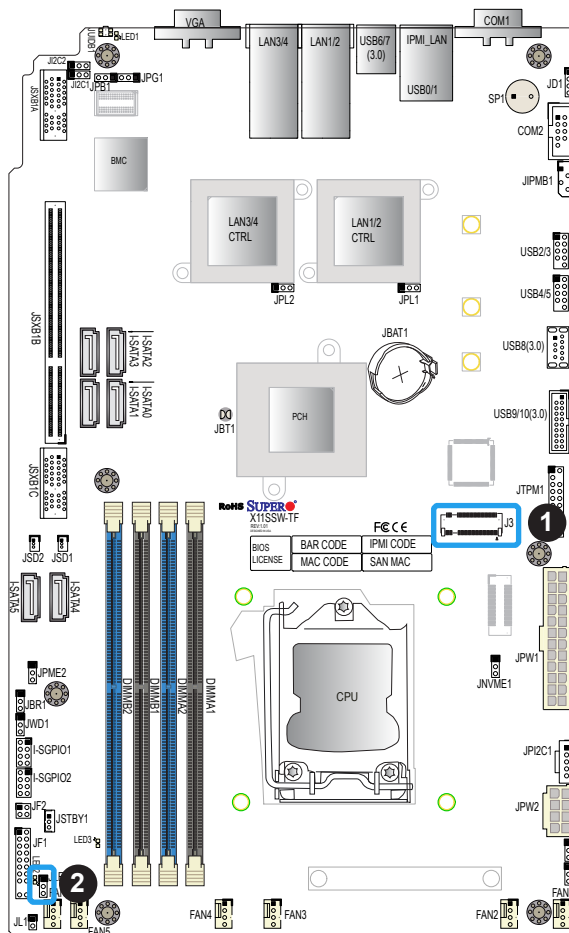
## M.2 Connection

The X11SSW-TF/-4TF board contains one M.2 NGFF socket 3 connector at J3. M.2 was formerly Next Generation Form Factor (NGFF) and serves to replace mini PCI-E and mSATA. M.2 allows for a greater variety of card sizes, increased functionality, and spatial efficiency. The M.2 socket 3 supports 3.0 x4 (32 Gb/s) card in 2260, 2280, and 22110 form factors.

## Onboard Power LED Header

An onboard Power LED header is located at JLED1. This Power LED header is connected to the Front Control Panel located at JF1 to indicate the status of system power. See the table below for pin definitions.

Onboard Power LED Pin Definitions	
Pins	Definition
1	VCC
2	Connection to PWR LED on JF1
3	Connection to PWR LED on JF1

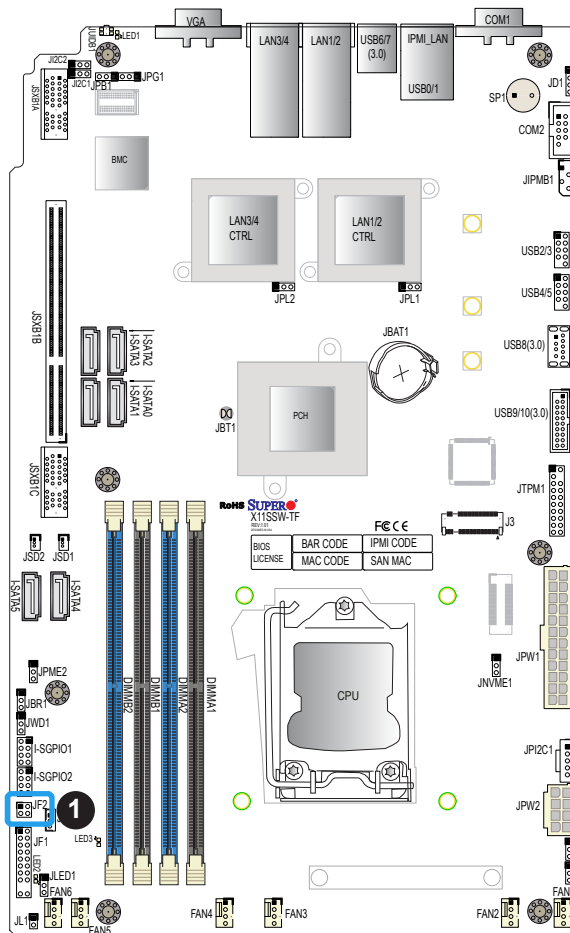


1. M.2 Connector
2. Onboard Power LED Header

### LAN3/LAN4 Activity LED Header

The JF2 header provides LED activity for ports LAN3 and LAN4. See the table below for pin definitions.

JF2 LAN3/LAN4 Activity LED Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3 Stby	2	NIC4 Activity LED
3	+3.3 Stby	4	NIC3 Activity LED



1. LAN3/LAN4 Activity LED Header

## SATA Ports

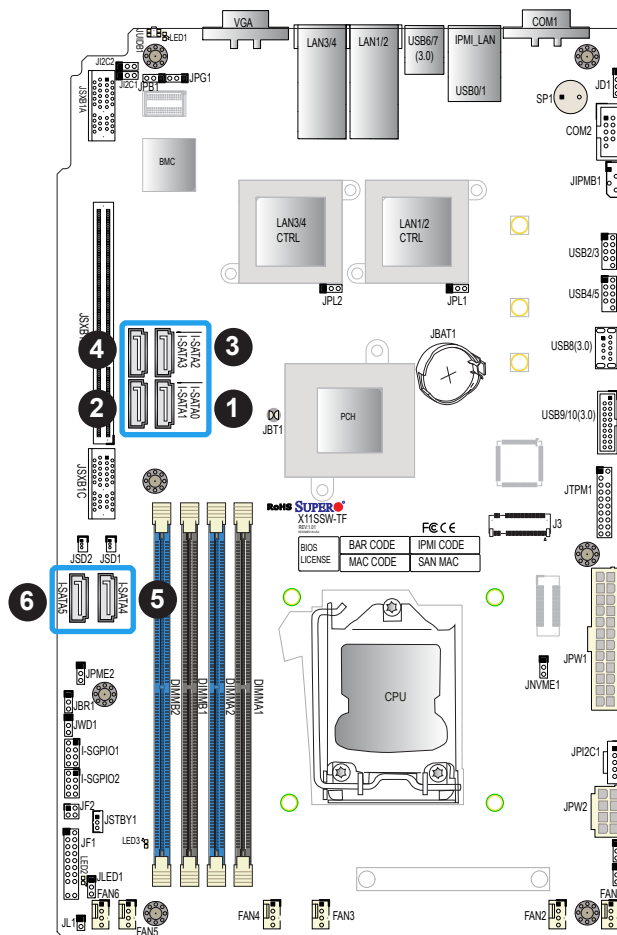
Six SATA 3.0 connectors, supported by the Intel C236 PCH chip, are located on the X11SSW-TF/-4TF motherboard. These SATA ports support RAID 0, 1, 5, and 10. SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA. See the tables below for pin definitions.

**Note 1:** I-SATA4 and I-SATA5 are Supermicro SuperDOMs. These are yellow SATA-DOM connectors with power pins built in and do not require separate external power cables. These connectors are backwards-compatible with non-Supermicro SATADOMs that require an external power supply.

**Note 2:** For more information on the SATA HostRAID configuration, please refer to the Intel SATA HostRAID user's guide posted on our website at <http://www.supermicro.com>.

X11SSW-TF/-4TF SATA 3.0 Connector Types	
Port #	Connection Type
I-SATA 0-3 (Four)	SATA 3.0/6 Gb/s RAID 0, 1, 5, 10
I-SATA 4-5 (Two)	SATA 3.0/6 Gb/s RAID 0, 1, 5, 10 SuperDOM connectors
Supported by	Intel C236 PCH

SATA 3.0 Port Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground



1. I-SATA0
2. I-SATA1
3. I-SATA2
4. I-SATA3
5. I-SATA4
6. I-SATA5

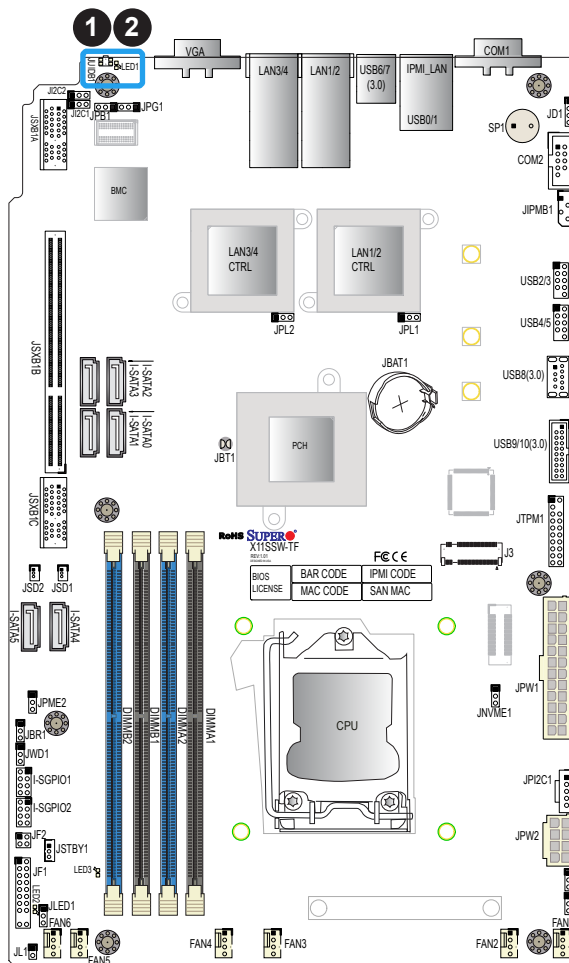
### Unit Identifier Switch/UID LED Indicator

A rear Unit Identifier (UID) switch and a rear UID LED (LED1) are located next to the VGA port on the motherboard. The front UID switch and UID LED are both located on the Front Control Panel (JF1) (with the front UID switch on pin 13, and the front LED on pin 7 of JF1). When you press the front or the rear UID switch, both front and rear UID LEDs will be turned on. Press the UID switch again to turn off the LED indicators. The UID Indicators provide easy identification of a system unit that may be in need of service.

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

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

UID LED Pin Definitions	
Color	Status
Blue	On
Blue	Unit Identified




1. UID Switch
2. UID LED

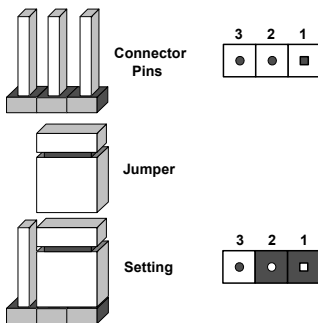


## 2.8 Jumper Settings

### 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 and "Open" means the jumper is off the pins.



### CMOS Clear

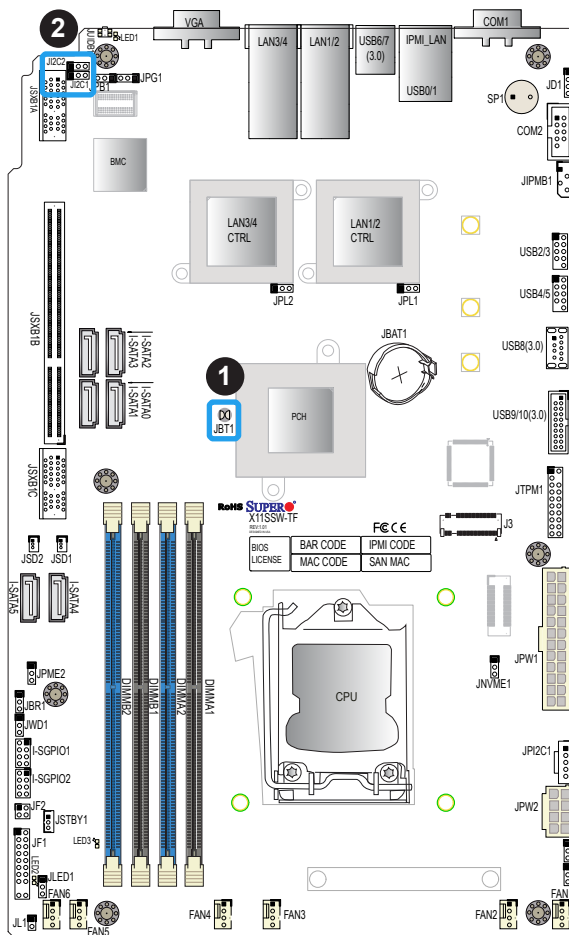
JBT1 is used to clear the CMOS. Instead of pins, this jumper consists of contact pads to prevent accidental clearing of the CMOS. To clear the CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection.

 **Note:** Be sure to completely shut down the system, and then short JBT1 to clear the CMOS.

### SMBus to PCI Slots

Use jumpers JI<sup>2</sup>C1 and JI<sup>2</sup>C2 to connect the System Management Bus (I<sup>2</sup>C) to PCI-Express slots to improve PCI performance. These two jumpers should be set at the same time. See the table below for jumper settings. The default setting is Enabled.

I <sup>2</sup> C for PCI-E Slots Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

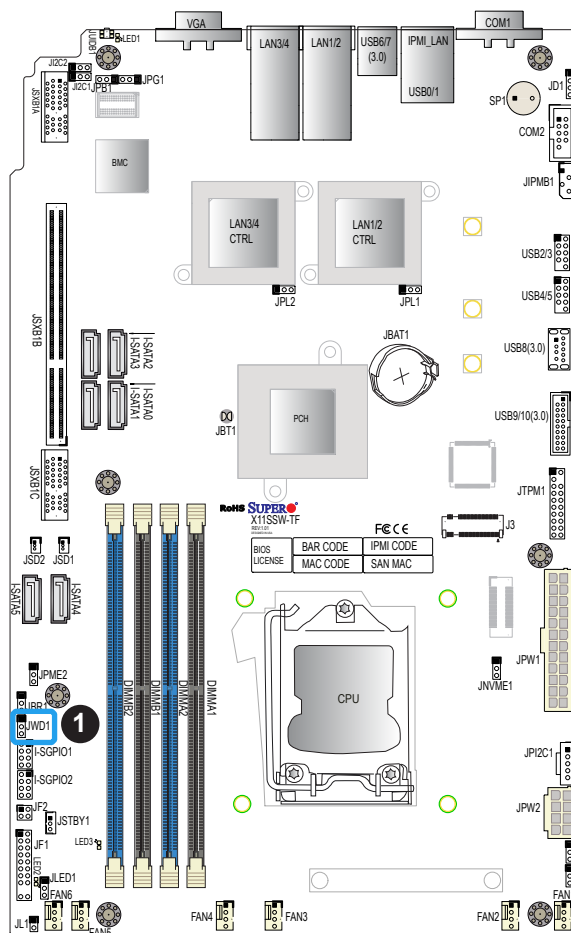


1. CMOS Clear
2. SMBus to PCI Slots

## Watch Dog

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. Refer to the table below for jumper settings. The Watch Dog must also be enabled in the BIOS. The default setting is Reset.

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



1. Watch Dog

### LAN Port Enable/Disable

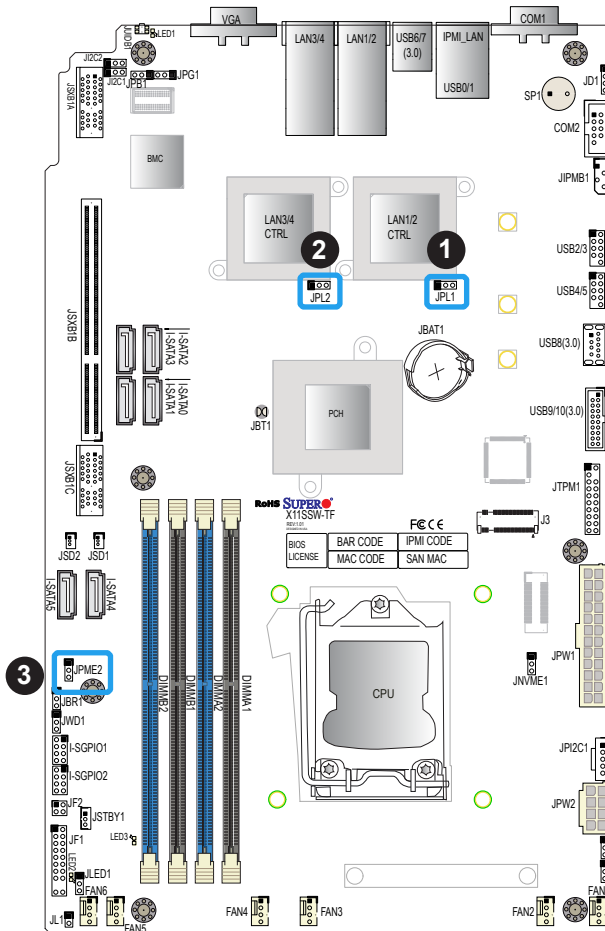
Jumpers JPL1 and JPL2 enable or disable LAN ports 1/2 and 3/4 respectively on the motherboard. Refer to the table below for jumper settings. The default setting is Enabled.

LAN1-LAN4 Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

### Manufacturing Mode Select

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

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



1. LAN1/2 Ports Enable/Disable
2. LAN3/4 Ports Enable/Disable
3. Manufacturing Mode

## VGA Enable/Disable

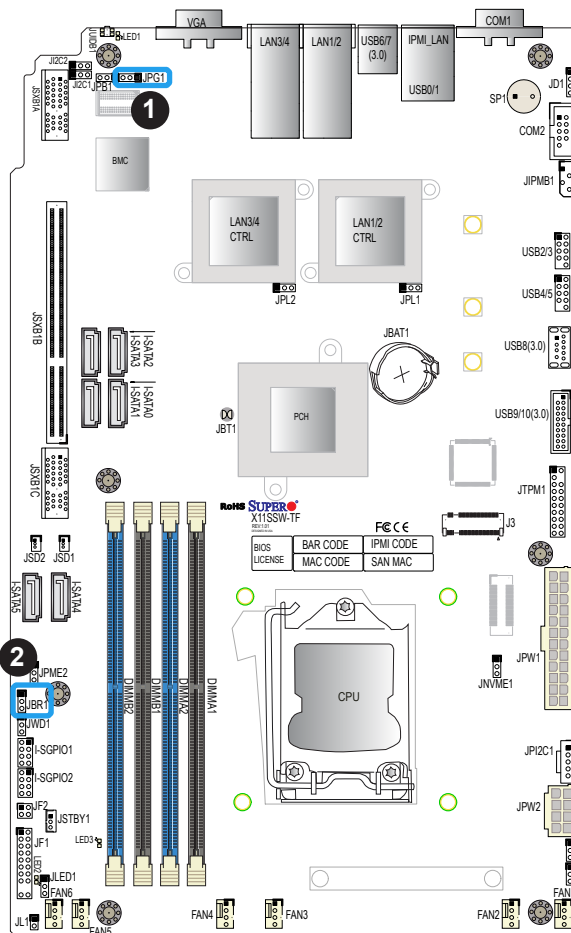
Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is pins 1-2 to enable the connection. See the table below for jumper settings. The default setting is Enabled.

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

## BIOS Recovery

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

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



1. VGA Enable
2. BIOS Recovery

### BMC Enabled

Jumper JPB1 allows the user to enable the embedded Baseboard Management Controller (BMC) to provide IPMI 2.0/KVM support on the motherboard. See the table below for jumper settings. The default setting is BMC Enable.

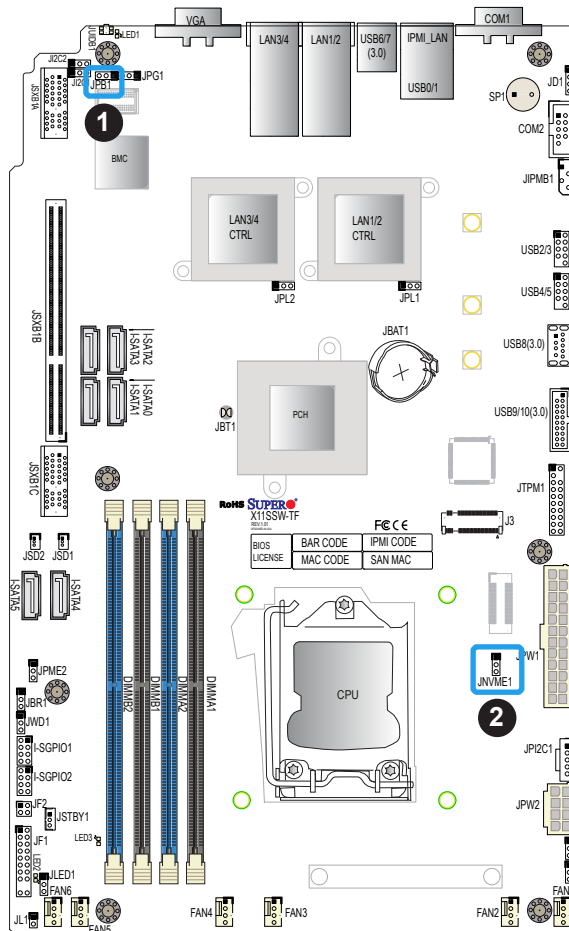
BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	Disabled

### NVMe Connection

Close pins 1 and 2 to manually enable the NVMe add-on card support on the motherboard, which will allow one of PCIe 3.0 x8 links to always run at dual PCIe 3.0 x4. See the table below for jumper settings. The default setting is Auto.

**Note:** Use only NVMe add-on cards that have been validated by Supermicro. For the latest updates, please refer to our website at <http://www.supermicro.com/products/motherboard>.

NVMe Connection Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Manual
Pins 2-3	Auto (Default)



1. BMC Enable
2. NVMe Connection

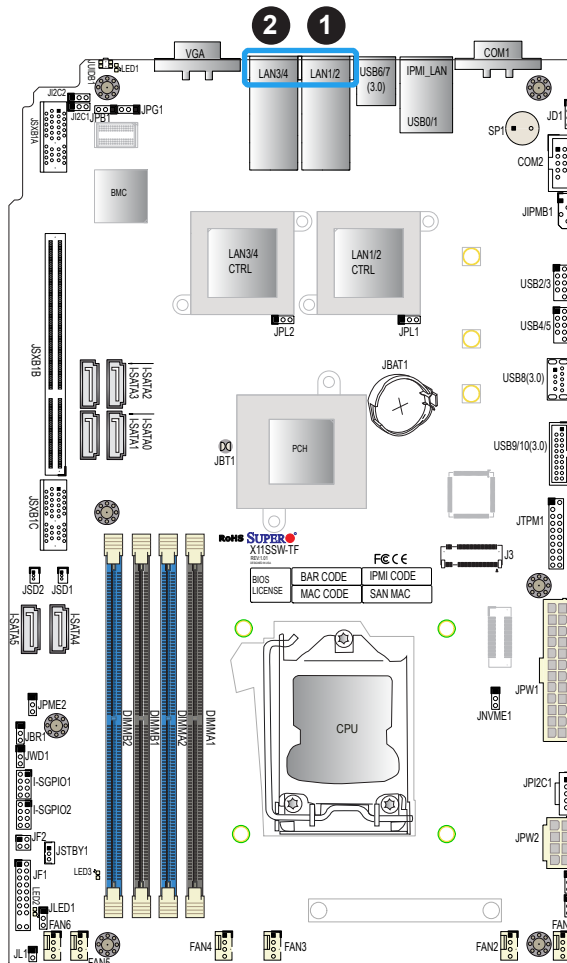
## 2.9 LED Indicators

### LAN LEDs

Four LAN ports (LAN 1/2 and LAN 3/4) are located on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The green LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection. See the tables below for more information.

LAN1/2/3/4 Activity LEDs (Right) LED State		
Color	Status	Definition
Green	Flashing	Active

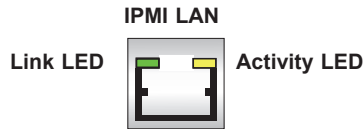
LAN1/2/3/4 Link LEDs (Left) LED State	
LED Color	Definition
Off	No Connection/10 Mbps/100 Mbps
Amber	1 Gbps
Green	10 Gbps



1. LAN1/2 LEDs
2. LAN3/4 LEDs

### IPMI LAN LEDs

In addition to LAN1/2 and LAN3/4, a dedicated IPMI LAN is also located on the I/O back panel. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table below for more information.

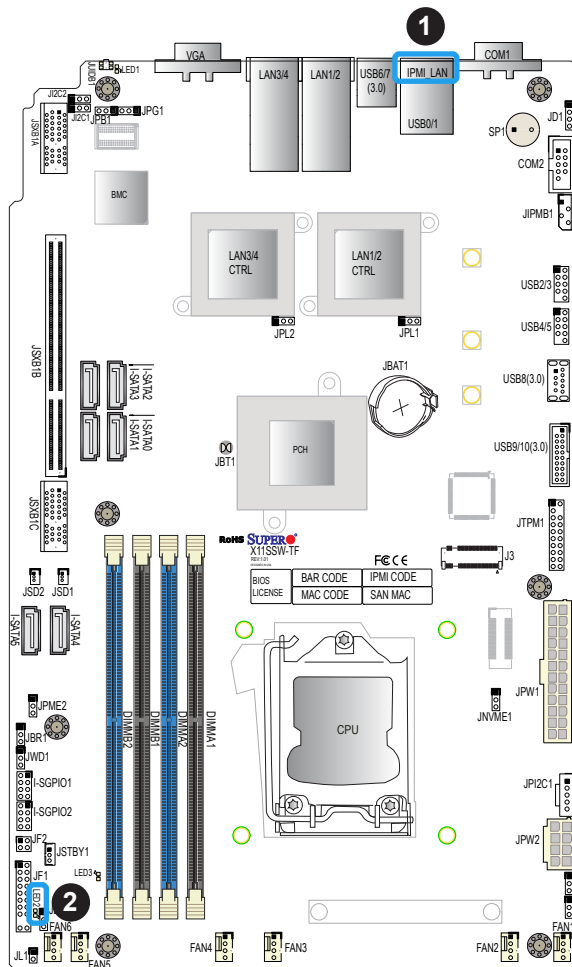


IPMI LAN LEDs		
	Color/State	Definition
Link (left)	Green: Solid	100 Mbps
	Amber: Solid	1Gbps
Activity (Right)	Amber: Blinking	Active

### Onboard Power LED

The Onboard Power LED is located at LED2 on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table below for more information.

Onboard Power LED Indicator	
LED Color	Definition
Off	System Off
Green	System On



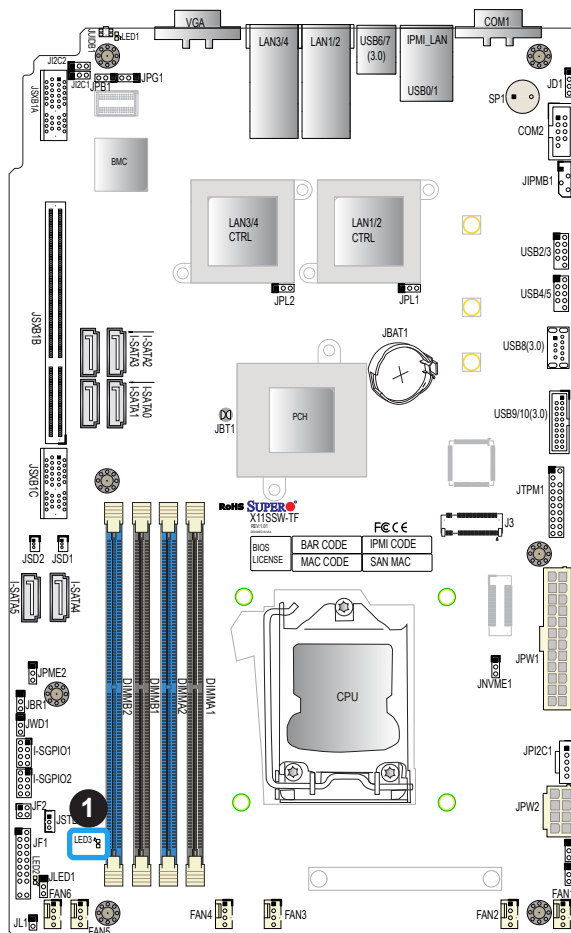
1. IPMI LAN LED
2. Onboard PWR LED



## Standby Power LED

The 5V Standby Power LED is located at LED3 on the motherboard. When this LED is on, the standby power is connected. Be sure to unplug the power cable before removing or installing components. See the table below for more information.

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



1. Standby Power LED

# Chapter 3

## Troubleshooting

### 3.1 Troubleshooting Procedures

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

#### **Before Power On**

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

#### **No Power**

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

#### **No Video**

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

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

## System Boot Failure

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

1. Check for any error beep from the motherboard speaker.
  - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.
  - If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper (JBT1). (Refer to Section 2-8 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. (For memory compatibility, refer to the memory compatibility chart posted on our website at <http://www.supermicro.com>.)
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 ECC DDR4 UDIMM modules recommended by the manufacturer.
4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.
5. Make sure that all memory modules are fully seated in their slots. Follow the instructions given in Section 2-4 in Chapter 2.
6. Please follow the instructions given in the DIMM population tables listed in Section 2-4 to install your memory modules.

## Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to Section 2-7 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

## When the System Becomes Unstable

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

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



**Note:** Refer to the product page on our website at <http://www.supermicro.com> for memory and CPU support and updates.

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

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

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

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

## 3.2 Technical Support Procedures

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

1. Please go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (<http://www.supermicro.com>).
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](mailto:support@supermicro.com).

### 3.3 Frequently Asked Questions

**Question: What type of memory does my motherboard support?**

**Answer:** The motherboard supports ECC DDR4 UDIMM modules. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-4 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>. 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>.

## 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

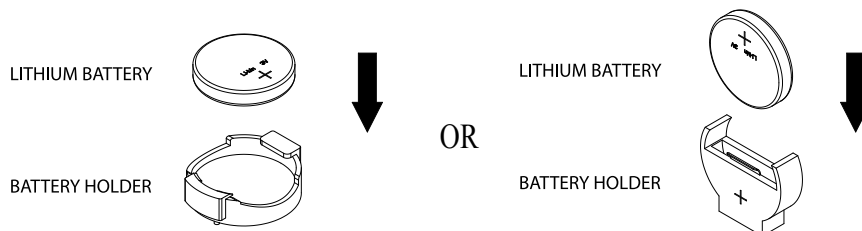
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

### Battery Installation

1. To install an onboard battery, follow the 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

### BIOS

#### 4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the X11SSW-TF/-4TF motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash program.



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

#### Starting the Setup Utility

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

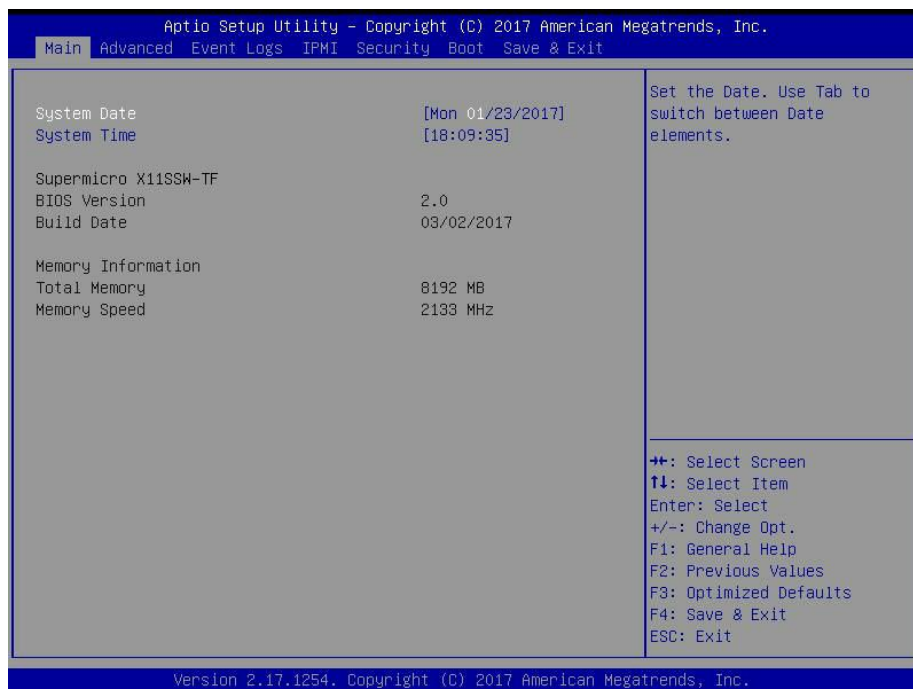
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.


## 4.2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below. The following Main menu 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 03/02/2017 after RTC reset.

### Supermicro X11SSW-TF

#### BIOS Version

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

#### Build Date

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

## **Memory Information**

### **Total Memory**

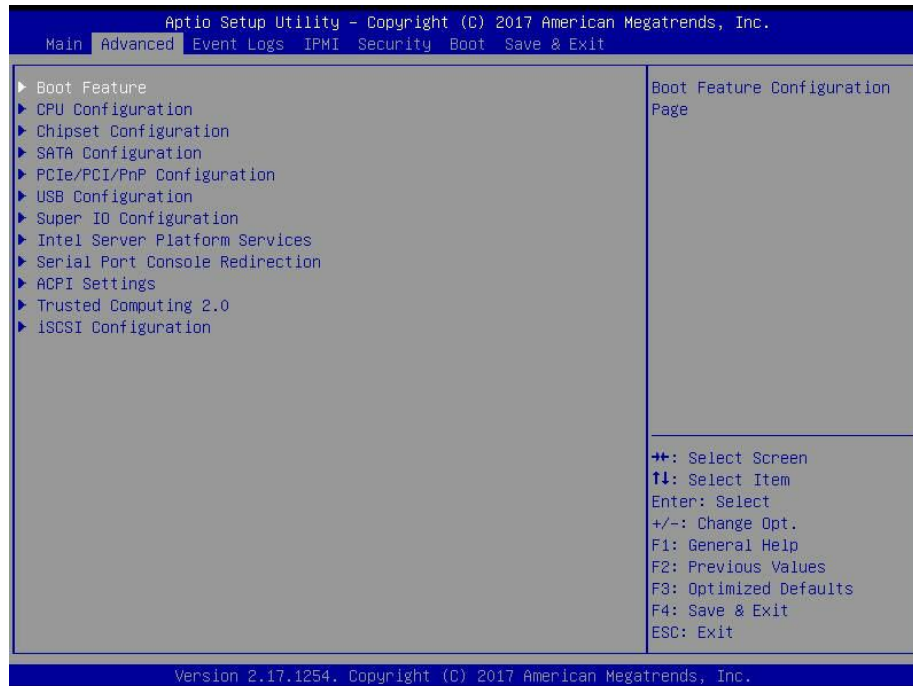
This item displays the total size of memory available in the system.

### **Memory Speed**

This item displays the memory speed.

## 4.3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and press <Enter> to access the submenu items.



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

### ► Boot Feature

#### Boot Feature

##### Quiet Boot

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

##### AddOn ROM Display Mode

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

**Bootup NumLock State**

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

**Wait For "F1" If Error**

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**.

**INT19 (Interrupt 19) Trap Response**

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

**Re-try Boot**

If this item 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.

**Install Windows 7 USB Support**

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

**Power Configuration****DeepSx Power Policies**

Use this item to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S3 to use Standby Mode (Suspend-to-RAM) and maintain power supply to the system RAM when the system is in the sleep mode. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in of the main memory can be saved in a non-volatile memory area such as in a hard drive and then power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button "alive" so that the user can "wake-up" the system by using an USB keyboard or mouse. The options are **Disabled** and Enabled.

**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 5 minutes. The options are **Disabled** and Enabled.

### **Power Button Function**

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

### **Restore on AC Power Loss**

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

## **► CPU Configuration**

### **CPU Configuration**

The following CPU information will be displayed:

- CPU Signature
- Microcode Patch
- Max CPU Speed
- Min CPU Speed
- CPU Speed
- Processor Cores
- Hyper Threading Technology
- Intel VT-x Technology
- Intel SMX Technology
- 64-bit
- EIST Technology
- CPU C3 State
- CPU C6 State
- CPU C7 State
- CPU C8 State

- CPU C9 State
- CPU C10 State
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache
- L4 Cache

#### **Hyper-threading (Available when supported by the CPU)**

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

#### **Active Processor Cores**

This feature determines how many CPU cores will be activated for each CPU. When All is selected, all cores in the CPU will be activated. (Please refer to Intel's website for more information.) The options are **All**, 1, 2, and 3.

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

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

#### **Intel® Virtualization Technology**

Select Enabled to use Intel Virtualization Technology so that I/O device assignments will be reported directly to the VMM (Virtual Memory Management) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The options are Disabled and **Enabled**.

#### **Hardware Prefetcher (Available when supported by the CPU)**

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



**Adjacent Cache Line Prefetch (Available when supported by the CPU)**

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

**CPU AES**

Select Enabled to enable Intel CPU Advanced Encryption Standard (AES) Instructions for CPU to enhance data integrity. The options are Disabled and **Enabled**.

**Boot Performance Mode**

This feature allows the user to select the performance state that the BIOS will set before the operating system handoff. The options are Power Saving, **Max Non-Turbo Performance**, and Turbo Performance.

**HardWare P-States (HWP)**

Use this feature to enable or disable hardware P-States support. The options are **Disabled** and Enabled.

**Intel® SpeedStep™**

Intel SpeedStep Technology allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled and **Enabled**.

**Turbo Mode**

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

**Package Power Limit MSR Lock**

Select Enabled to lock the package power limit for the model specific registers. The options are **Disabled** and Enabled.

**Power Limit 1 Override**

Select Enabled to support average power limit (PL1) override. The default setting is **Disabled**.

**Power Limit 2 Override**

Select Enabled to support rapid power limit (PL2) override. The default setting is **Enabled**.

**Power Limit 2**

Use this item to configure the value for Power Limit 2. The value is in milli watts and the step size is 125mW. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting. If the value is 0, the BIOS will set PL2 as 1.25\* TDP.

**1-Core Ratio Limit Override**

This increases (multiplies) one clock speed in the CPU core in relation to the bus speed when one CPU core is active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

**2-Core Ratio Limit Override**

This increases (multiplies) two clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

**3-Core Ratio Limit Override**

This increases (multiplies) three clock speeds in the CPU core in relation to the bus speed when three CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

**4-Core Ratio Limit Override**

This increases (multiplies) four clock speeds in the CPU core in relation to the bus speed when three CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

**CPU C-States**

Use this feature to enable the C-State of the CPU. The options are Disabled and **Enabled**.

**Enhanced C-States**

Use this feature to enable or disable C1E, which is a power saving feature for the CPU. C1E drops the frequency and voltage of the CPU to reduce power usage when the system is idle. The options are Disabled and **Enabled**.

**C-State Auto Demotion**

Use this feature to prevent unnecessary excursions into the C-states to improve latency. The options are Disabled, C1, C3, and **C1 and C3**.

**C-State Un-Demotion**

This feature allows the user to enable or disable the un-demotion of C-State. The options are Disabled, C1, C3, and **C1 and C3**

**Package C-State Demotion**

Use this feature to enable or disable the Package C-State demotion. The options are **Disabled** and Enabled.

**Package C-State Un-Demotion**

Use this feature to enable or disable the Package C-State un-demotion. The options are **Disabled** and Enabled.

### **C-State Pre-Wake**

This feature allows the user to enable or disable the C-State Pre-Wake. The options are Disabled and **Enabled**.

### **Package C-State Limit**

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7s, C8, and **Auto**.

## **► CPU Thermal Configuration**

### **CPU Thermal Configuration**

#### **CPU DTS**

Select Enabled for the ACPI thermal management to use the DTS SMM mechanism to obtain CPU temperature values. Select Disabled for EC to report the CPU temperature values. The options are **Disabled** and Enabled.

#### **ACPI 3.0 T-States**

Select Enabled to support CPU throttling by the operating system to reduce power consumption. The options are **Disabled** and Enabled.

## **► Chipset Configuration**

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

## **► System Agent (SA) Configuration**

The following System Agent information will be displayed:

- System Agent Bridge Name
- SA PCIe Code Version
- VT-d

### **VT-d**

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

### **eDRAM Mode**

Use this feature to select the eDRAM mode. The options are SW Mode eDRAM Off, SW Mode eDRAM On, and **eDRAM HW Mode**.

## ► Graphics Configuration

### Graphics Configuration

#### Primary Display

Use this feature to select the graphics device to be used as the primary display. The options are **Auto**, PEG, and PCIE.

#### Primary PCIE

This feature allows the user to specify which graphics device to be used as the primary graphics card. The option is **Onboard**.

## ► DMI/OPI Configuration

### DMI/OPI Configuration

The following DMI information will be displayed:

- DMI

#### DMI VC1 Control

Use this feature to enable or disable DMI Virtual Channel 1. The options are Enabled and **Disabled**.

#### DMI VCm Control

Use this feature to enable or disable the DMI Virtual Channel map. The options are **Enabled** and Disabled.

#### CPU DMI Link ASPM Control

Use this feature to set the ASPM (Active State Power Management) state on the SA (System Agent) side of the DMI Link. The options are Disabled and **L1**.

#### DMI Extended Sync Control

Use this feature to enable or disable the DMI extended synchronization. The options are Enabled and **Disabled**.

#### DMI De-Emphasis Control

Use this feature to configure the De-emphasis control on DMI. The options are -6 dB and **-3.5 dB**.

## ► Memory Configuration

### Memory Configuration

The following memory information will be displayed:

- Memory RC Version
- Memory Frequency
- Total Memory
- VDD
- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2
- Memory Timings (tCL-tRCD-tRP-tRAS)

### Maximum Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1067, 1200, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, 2667, 2800, 2933, 3000, and 3200.

### Max TOLUD

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB, 3.25 GB, and 3.5 GB.

### Energy Performance Gain

Use this feature to enable or disable the energy performance gain. The options are **Disabled** and **Enabled**.

### Memory Scrambler

Select **Enabled** to enable memory scrambler support. The options are **Disabled** and **Enabled**.

### Fast Boot

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

**REFRESH\_2X\_MODE**

Use this feature to select the refresh mode. The options are **Disabled**, 1-Enabled for WARM or HOT, and 2-Enabled HOT only.

**Closed Loop Thermal Management**

Use this feature to monitor the power consumption and temperature of the system to predict a thermal trend. The options are Disabled and **Enabled**.

**►GT - Power Management Control****GT - Power Management Control**

The following GT - Power Management Control information will be displayed:

- GT Info

**RC6 (Render Standby)**

Select Enabled to enable render standby support. RC6 is a power saving feature that allows the onboard graphics to enter standby mode to decrease power usage. The options are Disabled and **Enabled**.

**►PCH-IO Configuration**

The following PCH-IO information will be displayed:

- Intel PCH RC Version
- Intel PCH SKU Name
- Intel PCH Rev ID

**►PCI Express Configuration****PCI Express Configuration****PCH DMI Link ASPM Control**

Use this feature to set the ASPM (Active State Power Management) state on the SA (System Agent) side of the DMI Link. The options are Disabled and **Enabled**.

**Peer Memory Write Enable**

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

## ► PCH PCI-E 3.0 M.2

### PCH PCI-E 3.0 M.2 ASPM Support

Use this item to set the Active State Power Management (ASPM) level for the PCI-E 3.0 M.2 device installed on the slot specified. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, L0s, L1, L0s & L1, and **Auto**.

### PCH PCI-E 3.0 M.2 L1 Substates

Use this feature to configure the PCI Express L1 substates. The options are Disabled, L1.1, L1.2, and **L1.1 & L1.2**.

### PCH PCI-E 3.0 M.2 PCIe Speed

Use this feature to select the PCI Express port speed. The options are **Auto**, Gen1, Gen2, and Gen3.

### PCH PCI-E 3.0 M.2 Detect Non-Compliance

Select Enabled for the AMI BIOS to automatically detect a PCI-E device that is not compliant with the PCI-E standards. The options are **Disabled** and Enabled.

### Port 61h bit-4 Emulation

Select Enabled to enable the emulation of Port 61h bit-4 toggling in SMM (System Management Mode). The options are Disabled and **Enabled**.

### PCIe PLL SSC

Enable this feature to reduce EMI interference by down spreading clock 0.5%. Disable this feature to centralize the clock without spreading. The options are **Disabled** and Enabled.

## ► SATA Configuration

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

### SATA Controller(s)

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

### SATA Mode Selection

Use this item to select the mode for the installed SATA drives. The options are **AHCI** and RAID.

### SATA Frozen

Use this item to enable the HDD Security Frozen Mode. The options are **Disabled** and Enabled.

***\*If the item "SATA Mode Selection" is set to AHCI, the following items will be displayed:***

#### **Serial ATA Port 0 ~ Port 5**

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

- Model number of drive and capacity
- Software Preserve Support

#### **Port 0 ~ Port 5 Hot Plug**

This feature designates the SATA port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Disabled** and Enabled.

#### **Port 0 ~ Port 5 Spin Up Device**

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

#### **Port 0 ~ Port 5 SATA Device Type**

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

***\*If the item "SATA Mode Selection" is set to RAID, the following items will be displayed:***

#### **SATA RAID Option ROM/UEFI Driver**

Select UEFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are **Legacy ROM** and UEFI Driver.

#### **Serial ATA Port 0 ~ Port 5**

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

- Model number of drive and capacity
- Software Preserve Support

#### **Port 0 ~ Port 5 Hot Plug**

This feature designates the SATA port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Disabled** and Enabled.



**Port 0 ~ Port 5 Spin Up Device**

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

**Port 0 ~ Port 5 SATA Device Type**

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

**►PCIe/PCI/PnP Configuration**

The following information will be displayed:

- PCI Bus Driver Version

**PCI Devices Common Settings:****PCI PERR/SERR Support**

Select Enabled to allow a PCI device to generate a PERR/SERR number for a PCI Bus Signal Error Event. The options are **Disabled** and Enabled.

**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.

**RSC-W-68 Riser:****Slot1: PCI-E 3.0 X16 OPROM**

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

**Slot2: PCI-E 3.0 X8 OPROM**

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

**Onboard LAN Option ROM Type**

Select Enabled to enable Option ROM support to boot the computer using a network device specified by the user. The options are **Legacy** and EFI.

**Onboard LAN1 Option ROM****Onboard LAN2 Option ROM****Onboard LAN3 Option ROM****Onboard LAN4 Option ROM**

Use the above four items to select the type of device installed in a LAN port specified by the user for system boot. The default setting for Onboard LAN1 Option ROM is **PXE**, and the default setting for Onboard LAN2 Option ROM/Onboard LAN3 Option ROM/Onboard LAN4 Option ROM is **Disabled**.

**Onboard Video Option ROM**

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

**Network Stack**

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

***\*If the item "Network Stack" is set to Enabled, the four items below will be displayed:***

**IPv4 PXE Support**

Select Enabled to enable IPv4 PXE 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.

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

**►USB Configuration****USB Configuration**

The following USB items will be displayed:

- USB Module Version
- USB Controllers
- USB Devices

**Legacy USB Support (Available when USB Functions is not Disabled)**

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are **Enabled**, Disabled, and Auto.

**XHCI Hand-off**

This item is for operating systems that do not support eXtensible Host Controller Interface (XHCI) hand-off. When this item is enabled, XHCI ownership change will be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

**Port 60/64 Emulation**

Select Enabled for I/O port 60h/64h emulation support which will provide complete USB keyboard legacy support for the operating system that does not support Legacy USB devices. The options are Disabled and **Enabled**.

**► Super IO Configuration****Super IO Configuration**

The following Super IO information will be displayed:

- Super IO Chip

**► Serial Port 1****Serial Port 1**

This submenu allows the user the configure 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 item displays the status of a serial part specified by the user.

**Serial Port 1 Change Settings**

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

## ► Serial Port 2

### Serial Port 2

This submenu allows the user the configure 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 item displays the status of a serial part specified by the user.

### Serial Port 2 Change Settings

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

### 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.

## ► Intel Server Platform Services

The following Intel Server Platform Services information will be displayed:

- ME BIOS Interface Version
- SPS Version
- ME FW Status Value
- ME FW State
- ME FW Operation State
- ME FW Error Code
- ME NM FW Status Value
- BIOS Booting Mode
- Cores Disabled

- ME FW SKU Information
- End-of-POST Status

## ► Serial Port Console Redirection

### COM1

#### COM1 Console Redirection

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

*\*If the item "COM1 Console Redirection" is set to Enabled, the following items will become available for configuration:*

#### ► COM1 Console Redirection Settings

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

#### COM1 Terminal Type

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

#### COM1 Bits Per second

Use this 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).

#### COM1 Data Bits

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

#### COM1 Parity

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

**COM1 Stop Bits**

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

**COM1 Flow Control**

Use this 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.

**COM1 VT-UTF8 Combo Key Support**

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

**COM1 Recorder Mode**

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

**COM1 Resolution 100x31**

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

**COM1 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**.

**COM1 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.

**COM1 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****SOL/COM2 Console Redirection**

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

---

*\*If the item "SOL/COM2 Console Redirection" is set to Enabled, the following items will become available for configuration:*

### ► SOL/COM2 Console Redirection Settings

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

#### 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.

#### COM2 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).

#### COM2 Data Bits

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

#### COM2 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.

#### COM2 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.

#### COM2 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.

**COM2 VT-UTF8 Combo Key Support**

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

**COM2 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.

**COM2 Resolution 100x31**

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

**COM2 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**.

**COM2 Putty KeyPad**

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

**COM2 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)****EMS Console Redirection**

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

***\*If the item "EMS Console Redirection" is set to Enabled, the following items will become available for user's configuration:***

**►EMS Console Redirection Settings**

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

**Out-of-Band Mgmt Port**

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

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

### Flow Control

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

The settings below are displayed:

### Data Bits, Parity, Stop Bits

## ►ACPI Settings

### ACPI Settings

#### High Precision Event Timer

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

#### WHEA Support

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

## ► Trusted Computing 2.0

### TPM20 Device Found

#### Security Device Support

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

The following Platform Configuration Register information will be displayed:

- Active PCR banks
- Available PCR banks

***\*If the item "Security Device Support" is set to Enable, the following items will become available for user's configuration:***

#### SHA-1 PCR Bank

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

#### SHA256 PCR Bank

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

#### Pending Operation

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

#### Platform Hierarchy

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

#### Storage Hierarchy

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

#### Endorsement Hierarchy

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

**TPM2.0 UEFI Spec Version**

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

**PH Randomization**

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

**Device Select**

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

**TXT Support**

Intel TXT (Trusted Execution Technology) 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.

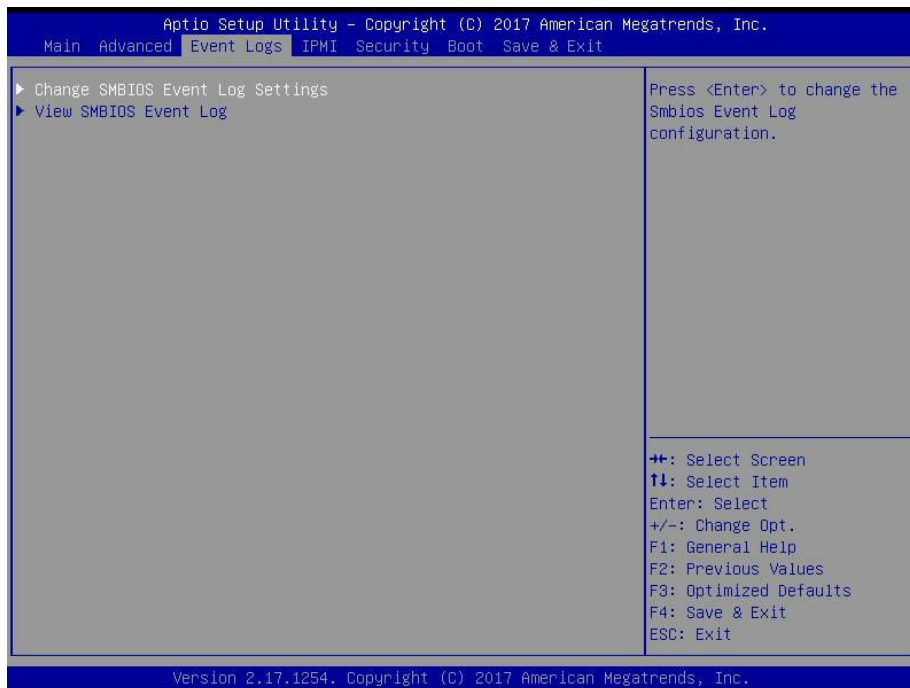
**► iSCSI Configuration****iSCSI Initiator Name**

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

**► Add an Attempt****► Delete Attempts****► Change Attempt order**

## 4.4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings

#### Enabling/Disabling Options

##### SMBIOS Event Log

Change this item 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 Enabled and **Disabled**.

### **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 number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.



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

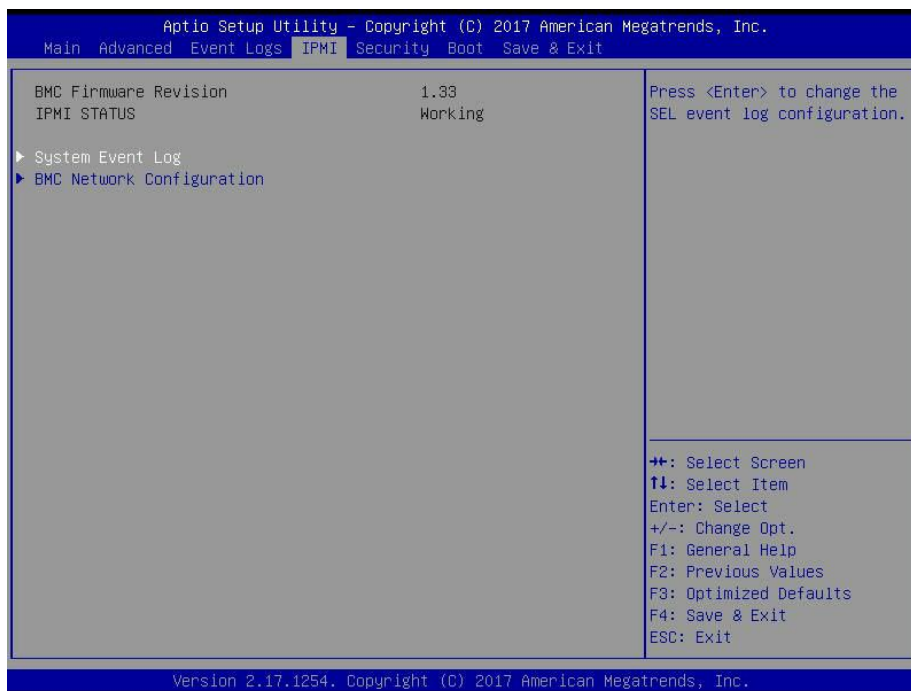
## **►View SMBIOS Event Log**

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

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

## 4.5 IPMI

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



### BMC Firmware Revision

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

### IPMI Status (Baseboard Management Controller)

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

### ► System Event Log

#### Enabling/Disabling Options

#### SEL Components

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

#### Erasing Settings

#### Erase SEL

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

### When SEL is Full

This feature allows the user to 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:** After making changes on a setting, be sure to reboot the system for the changes to take effect.

## ► BMC Network Configuration

### BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

### Update IPMI LAN Configuration

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

***\*If the item "Update IPMI LAN Configuration" is set to Yes, the following item will become available for configuration:***

### Configuration Address Source

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

### Station MAC Address

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

### Station IP Address

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

### Subnet Mask

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

### **Gateway IP Address**

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

### **VLAN**

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

***\*If the item "VLAN" is set to Enable, the following item will become available for configuration:***

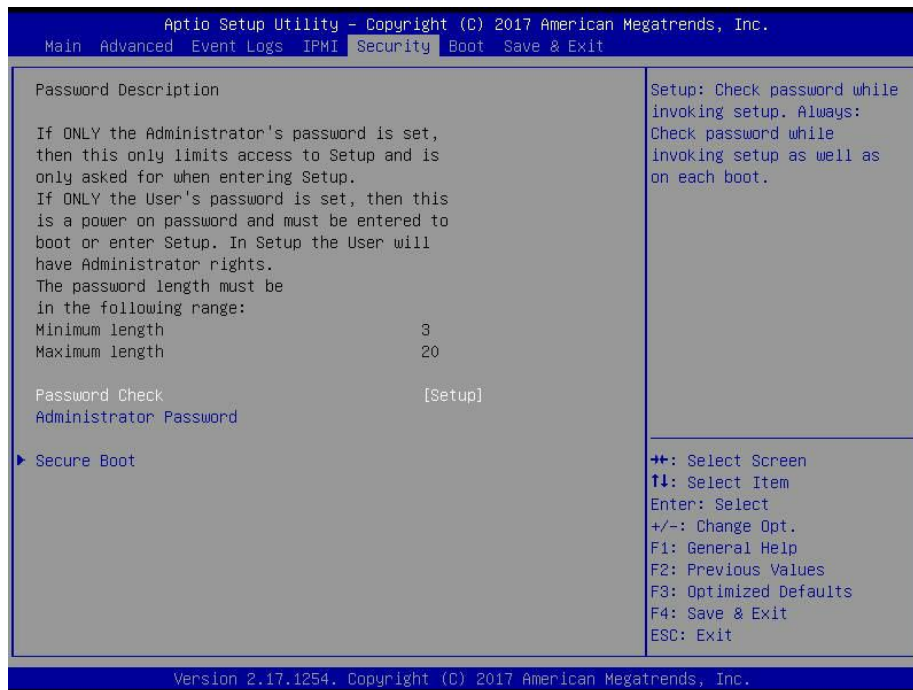
### **VLAN ID**

Use this item to enter the VLAN ID. The default setting is **0**.



## 4.6 Security

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



### Password Check

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

### Administrator Password

Press Enter to create a new, or change an existing Administrator password.

### ► Secure Boot

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

- System Mode
- Secure Boot
- Vendor Keys

### Secure Boot control

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

### Secure Boot Mode

Use this item to select the secure boot mode. The options are **Standard** and **Custom**.

## CSM Support

Select Enabled to support the EFI Compatibility Support Module (CSM), which provides compatibility support for traditional legacy BIOS for system boot. The options are Disabled and **Enabled**.

*\*If the item "Secure Boot Mode" is set to Custom, the following item will become available for configuration:*

### ▶ Key Management

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

#### Provision Factory Default Keys

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

#### ▶ Delete all Secure Boot variables

Select Yes to delete all secure boot variables and reset the platform to setup mode. The options are **Yes** and No.

#### ▶ Save all Secure Boot variables

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

### Secure Boot variable: Size/Key#/Key Source

#### ▶ Platform Key (PK)

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

#### Set New Key

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 Keys

#### Set New Key

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 Key

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

### ▶ **Authorized Signatures**

#### **Set New Key**

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

#### **Append Key**

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

### ▶ **Forbidden Signatures**

#### **Set New Key**

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

#### **Append Key**

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

### ▶ **Authorized TimeStamps**

#### **Set New Key**

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 Key**

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

### ▶ **OsRecovery Signatures**

#### **Set New Key**

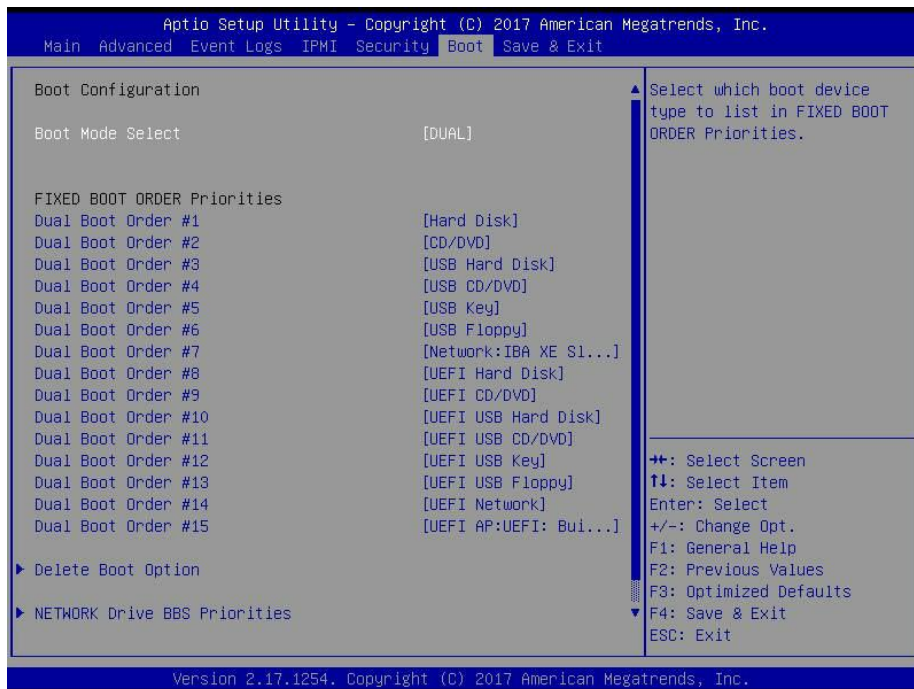
Select Yes to load the DBR from the manufacturer's defaults. Select No to load the DBR from a file. The options are **Yes** and No.

#### **Append Key**

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 feature to configure Boot Settings:



### Boot Configuration

#### Boot Mode Select

Use this item to select the type of device that the system is going to boot from. The options are LEGACY, UEFI, and **DUAL**.

#### FIXED BOOT ORDER Priorities

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

***\*If the item "Boot Mode Select" is set to LEGACY/UEFI/DUAL the following items will be displayed:***

- Dual Boot Order #1
- Dual Boot Order #2
- Dual Boot Order #3
- Dual Boot Order #4
- Dual Boot Order #5

- Dual Boot Order #6
- Dual Boot Order #7
- Dual Boot Order #8
- Dual Boot Order #9
- Dual Boot Order #10
- Dual Boot Order #11
- Dual Boot Order #12
- Dual Boot Order #13
- Dual Boot Order #14
- Dual Boot Order #15

► **Delete Boot Option**

Use this feature to remove a pre-defined boot device from which the system will boot during startup. The options are (**Select one to Delete**) and (UEFI: Built-in EFI Shell).

► **NETWORK Drive BBS Priorities**

This feature allows the user to specify which UEFI network drive devices are boot devices.

- Legacy Boot Order #1

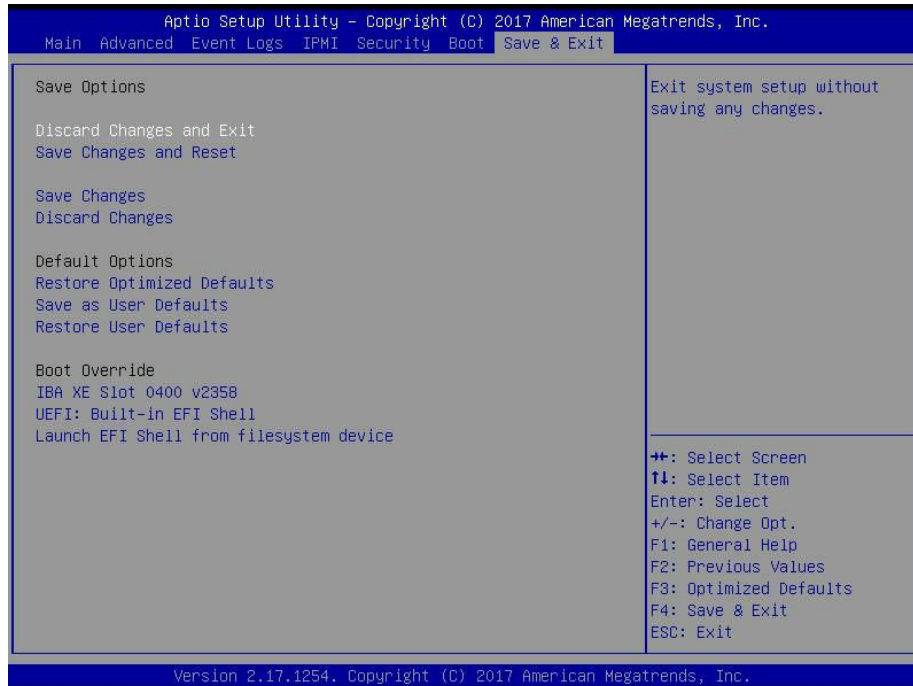
► **UEFI Application Boot Priorities**

This feature allows the user to specify which UEFI devices are boot devices.

- UEFI Boot Order #1

## 4.8 Save & Exit

Select the Exit tab from the BIOS setup utility screen to enter the Exit BIOS Setup screen.



### Discard Changes and Exit

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

### Save Changes and Reset

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

### Save Changes

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

### Discard Changes

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

## **Default Options**

### **Restore Optimized Defaults**

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

### **Restore User Defaults**

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

### **Boot Override**

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

## Appendix A

### BIOS Codes

#### BIOS Error POST (Beep) Codes

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

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

**Fatal errors** will not allow the system to continue with bootup. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

BIOS Beep (POST) Codes		
Beep Code	Error Message	Description
1 beep	Refresh	Ready to boot
5 short, 1 long	Memory error	No memory detected in system
5 beeps	No con-in or con-out devices	Con-in includes USB or PS/2 keyboard, PCI or serial console redirection, and IPMI KVM or SOL. Con-out includes the video controller, PCI or serial console redirection, and IPMI SOL
1 beep per device	Refresh	1 beep for each USB device detected

IPMI Error Codes		
Beep Code	Error Message	Description
1 long continuous	System OH	System overheat condition



# Appendix B

## Software Installation

### B.1 Installing Software Programs

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

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

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system, and the following screen should appear.


 **Note 1:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to bottom) one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.




Figure B-1. Driver/Tool Installation Display Screen

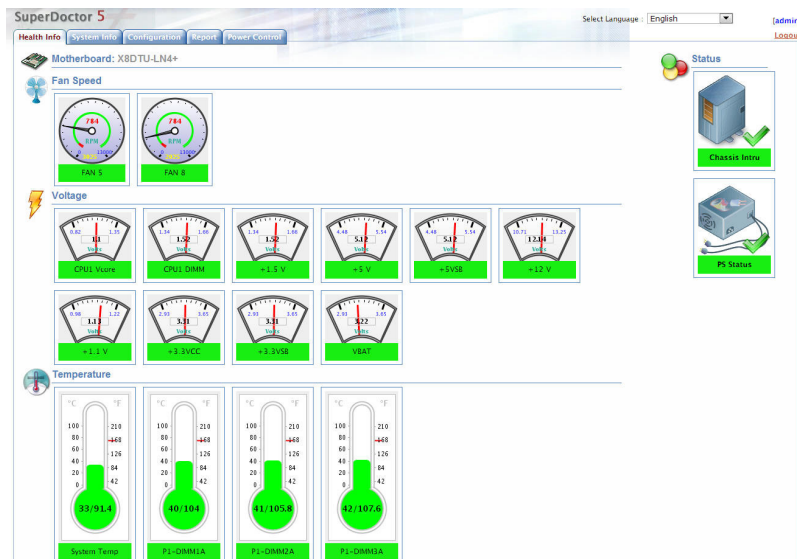
**Note 2:** When making a storage driver diskette by booting into a driver CD, please set the SATA configuration to *Compatible Mode*, and configure the SATA as IDE in the BIOS setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.


The Supermicro SuperDoctor 5 is a hardware monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information, such as CPU temperature, system voltages, system power consumption, 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 default username and password for SuperDoctor 5 is ADMIN/ADMIN.

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



 **Note:** The SuperDoctor 5 program and user's manual can be downloaded from the Supermicro website at [http://www.supermicro.com/products/nfo/sms\\_sd5.cfm](http://www.supermicro.com/products/nfo/sms_sd5.cfm).

## Appendix C

### Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations that might potentially cause 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](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薦的功能相當的電池更換原有電池。請按製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 استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقا لتعليمات 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.

#### D.1 Overview

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

#### D.2 Recovering the UEFI BIOS Image

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



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

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


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

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

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

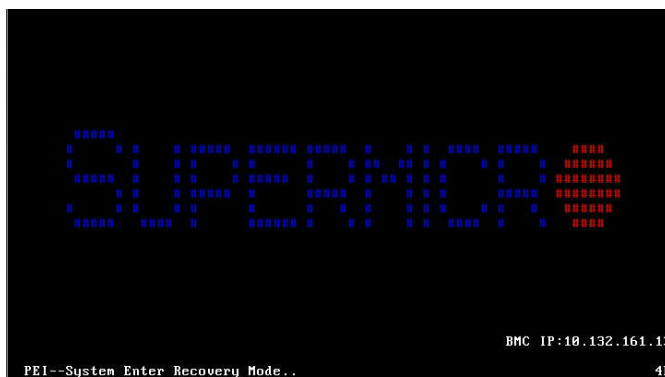
To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below:


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

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

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

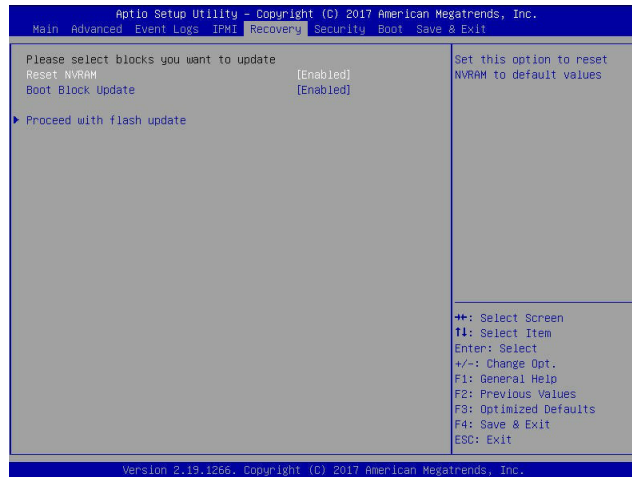
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and reset the system until the following screen appears:




 **Note:** On the other hand, if the following screen displays, please load the "Super.ROM" file to the root folder and connect this folder to the system. (You can do so by inserting a USB device that contains the new "Super.ROM" image to your machine for BIOS recovery.)



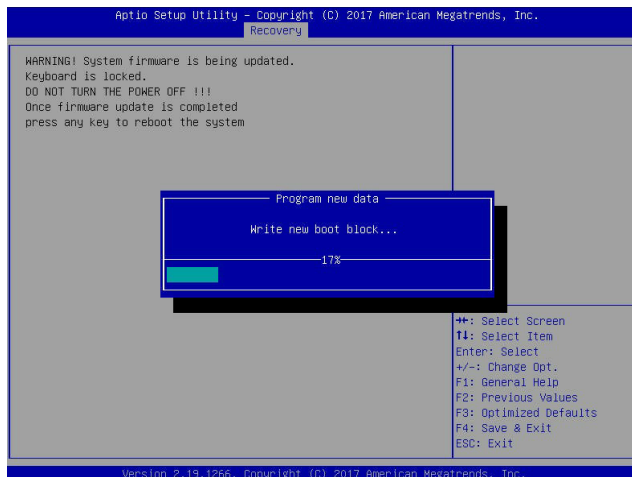
3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below:



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

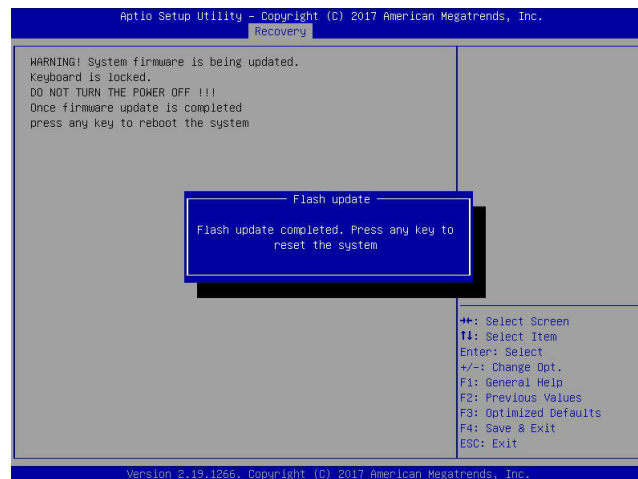
4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below:

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





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



6. Using a different system, extract the BIOS package into a bootable USB flash drive.
7. When a DOS prompt appears, enter `FLASH.BAT BIOSname.###` at the prompt.



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

8. After seeing the message indicating the BIOS update has completed, unplug the AC power cable from the power supply, clear CMOS, then plug the AC power cable in the power supply again to power on the system.
9. Press <Del> continuously to enter the BIOS Setup utility.
10. Press <F3> to load the default settings.
11. 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.