X10SRM-F/-TF

USER MANUAL

Revision 1.1

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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 X10SRM-F/-TF motherboard.

About This Motherboard

The Super X10SRM-F/-TF motherboard supports an Intel® Xeon® E5-1600/E5-2600 v3/v4 processor in an LGA 2011 (R3) socket. With support of the Intel C612 chipset, DDR4 ECC memory, SATA 3.0, M.2 NGFF, and Trusted Platform Module (TPM), this motherboard offers a compact cost-effective solution, optimized for embedded and fast storage. 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 provides 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.

In additon to the motherboard, several important parts that are included with the system 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	X10SRM-F/-TF	1
SATA Cables	CBL-0044L	6
I/O Shield	MCP-260-00042-0N	1
Quick Reference Guide	MNL-1845-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: https://www.supermicro.com/wftp/driver

* Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

* If you have any questions, please contact our support team at: support@supermicro.com

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

Figure 1-1. X10SRM-F Motherboard Image
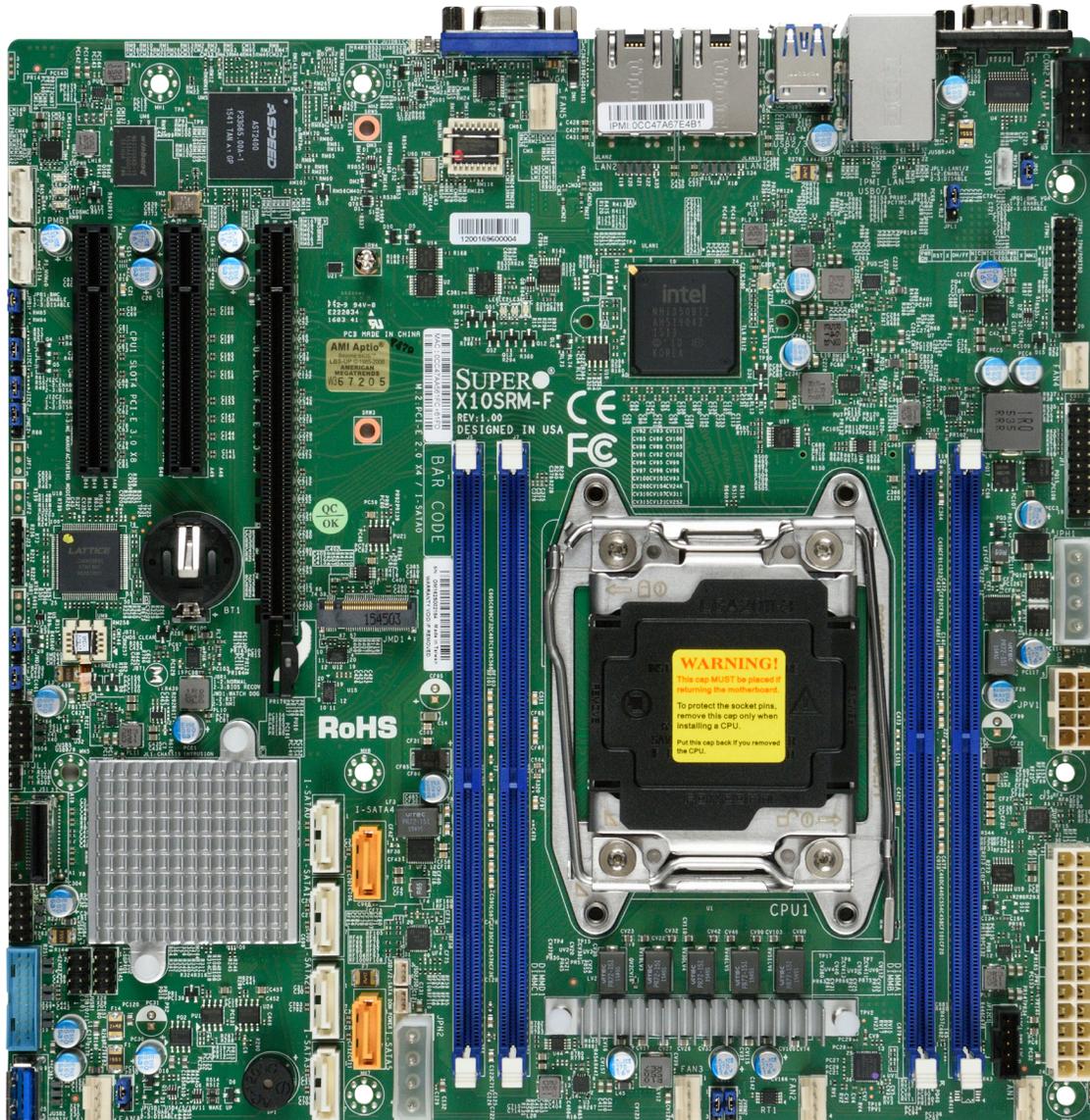
✎ **Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

Figure 1-2. X10SRM-TF Motherboard Image
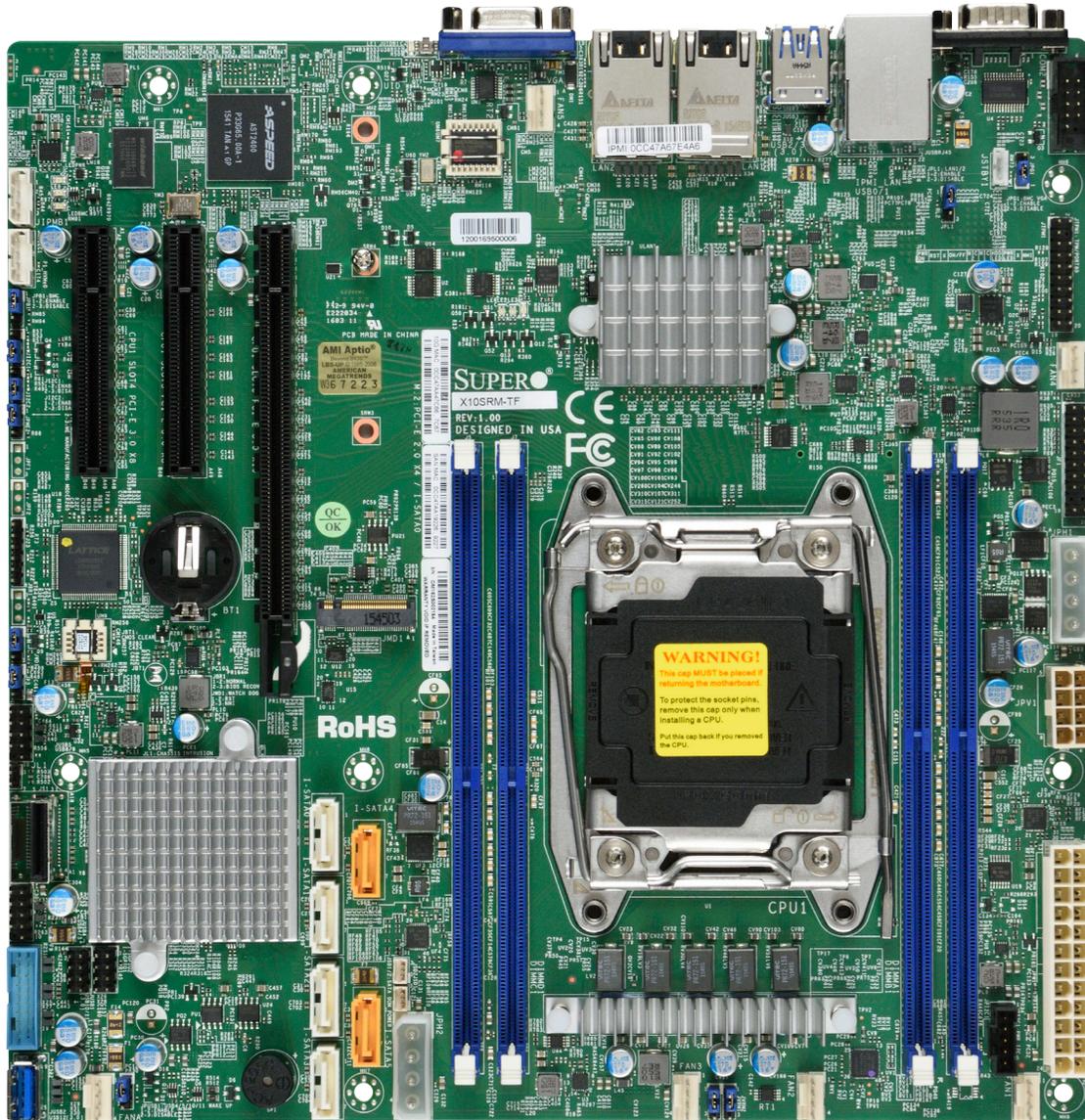
Figure 1-3. X10SRM-F/-TF Motherboard Layout
(not drawn to scale)
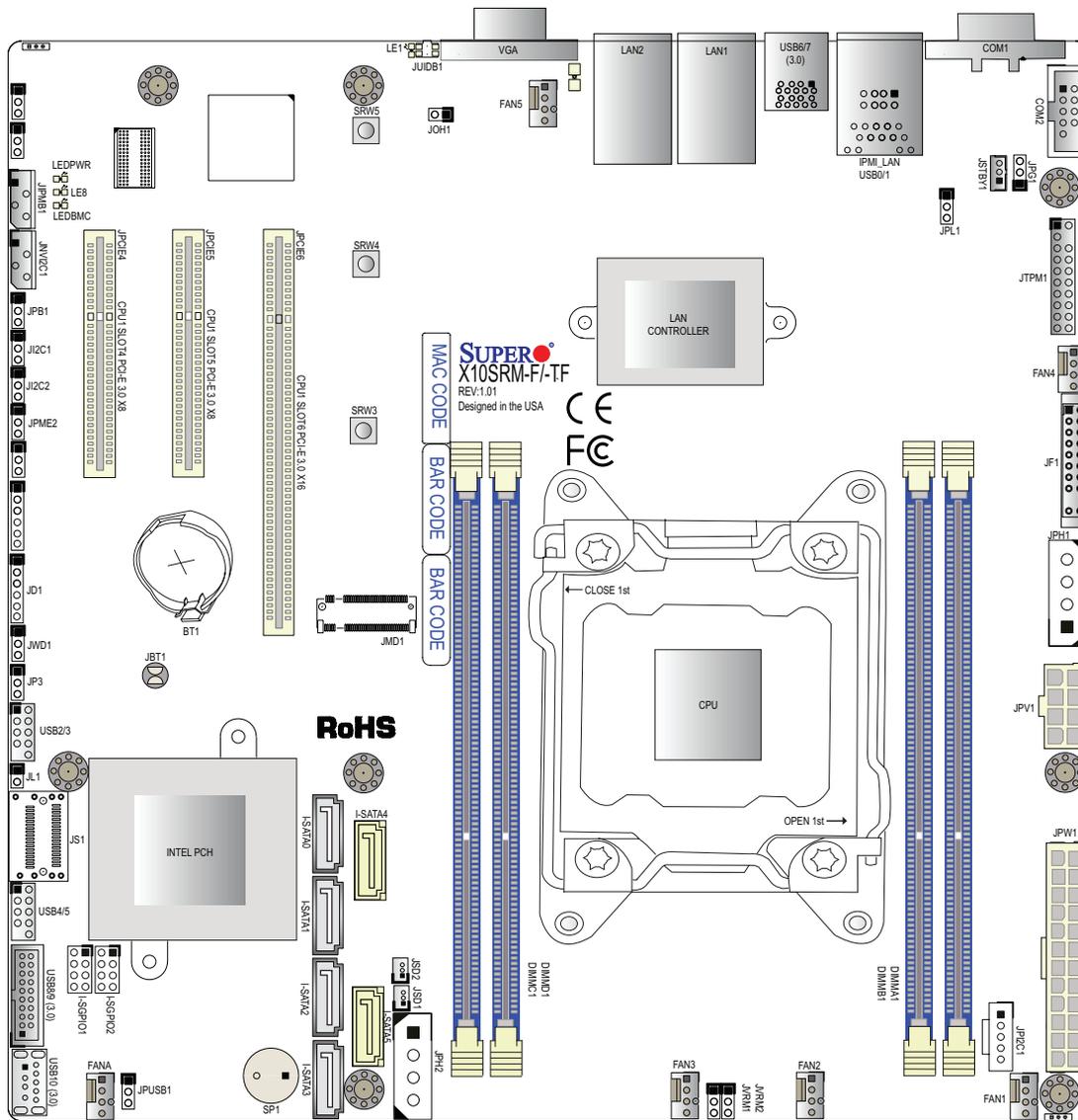
Difference between X0SRM-F/-TF

	X10SRM-F	X10SRM-TF
LAN Ports	Dual 1GBase-T i350	Dual 10GBase-T X550

Note: Components not documented are for internal testing only.

Quick Reference
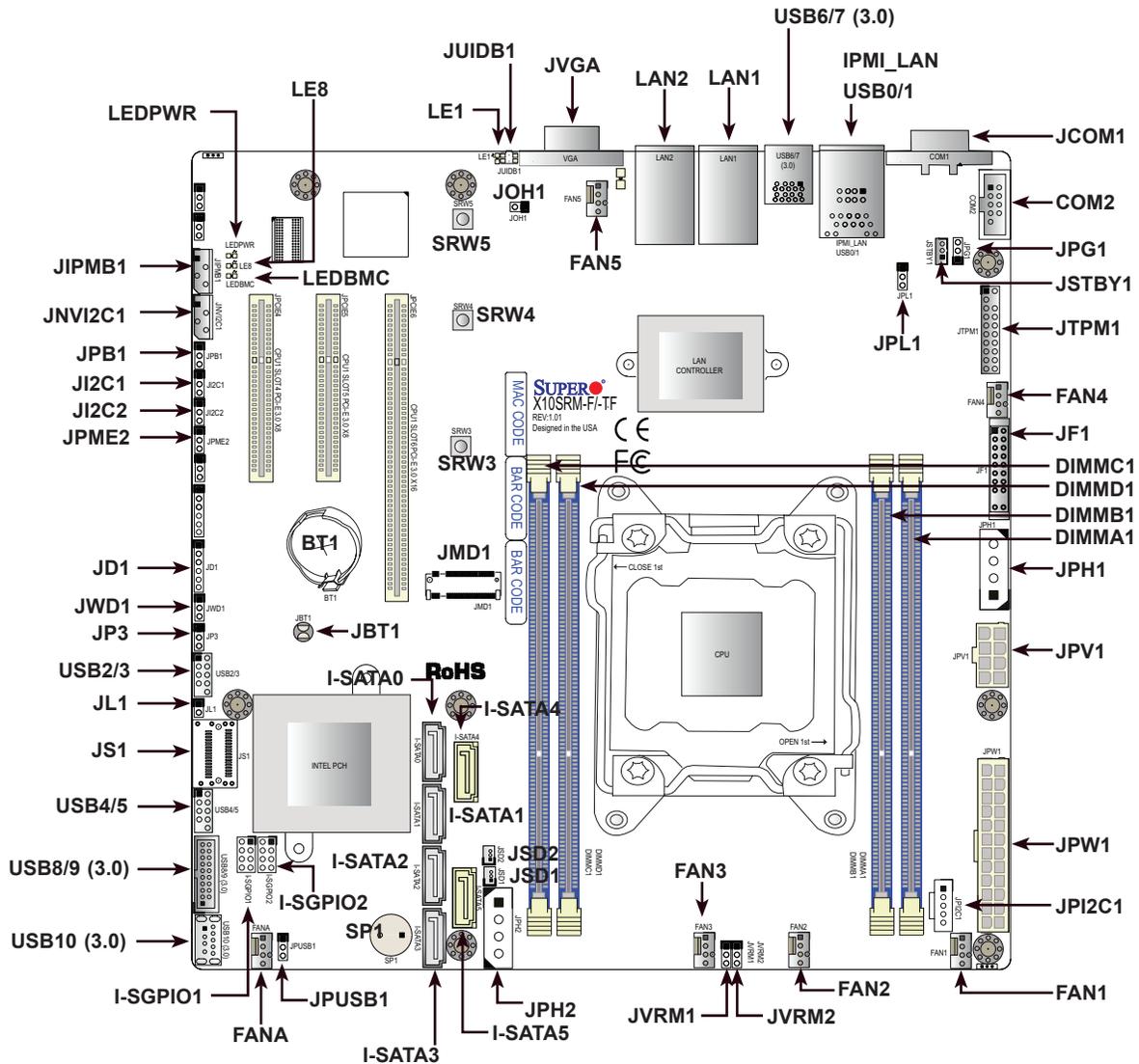
Notes:

- See Chapter 2 for detailed information on jumpers, I/O ports, and JF1 front panel connections.

- "■" indicates the location of Pin 1.

- Jumpers/LED indicators not indicated are used for testing only.

- Please refer to the table on page 11 to see model variations.

- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Chapter 2
JI^{2}C1/JI^{2}C2	SMB to PCI Slots	Pins 2-3 (Disabled)
JP3	M.2 Slots I^{2}C Enable/Disable	Pins 1-2 (Normal)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPME2	Manufacturing Mode Select	Pins 1-2 (Normal)
JPUSB1	USB Wakeup	Pins 1-2 (Enabled) (For USB4/5/8/9 only)
JVRM1	VRM SMB Clock (to BMC or PCH)	Pins 1-2 (BMC, Normal)
JVRM2	VRM SMB Data (to BMC or PCH)	Pins 1-2 (BMC, Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description	Status
LE1	Rear UID LED	Blue: On; Unit identified
LE8	HDD Access LED	Green: On; HDD detected
LEDBMC	BMC Heartbeat LED	Green: Blinking; BMC normal
LEDPWR	Onboard Power LED	Green: Solid on; Power on

Connector	Description
BT1	Onboard Battery
COM1/COM2	COM Port, COM Header
FAN1 ~ FAN5, FANA	CPU Fan Headers, System Fan Header
IPMI_LAN	Dedicated IPMI LAN Port
I-SATA0 ~ I-SATA5	Intel® PCH SATA 3.0 Ports
I-SGPIO1/I-SGPIO2	Serial Link General Purpose I/O Connection Headers
JD1	Speaker/Power LED Indicator
JF1	Front Panel Control Header
JIPMB1	4-pin BMC External I^{2}C Header (for an IPMI Card)
JL1	Chassis Intrusion Header
JMD1	M.2 Socket
JNVI2C1	NVMe I^{2}C Header
JOH1	Overheat LED Indicator
JPCIE4	CPU PCI-E 3.0 X8 (in X8) Slot
JPCIE5	CPU PCI-E 3.0 X8 (in X8) Slot
JPCIE6	CPU PCI-E 3.0 X16 (in X16) Slot
JPH1/JPH2	4-pin Power Connectors for HDD use (To provide power from the motherboard to onboard HDD devices.)
JPI2C1	Power I^{2}C System Management Bus (SMB) Header

Note: Table is continued on the next page.

Connector	Description
JPV1	8-pin Power Connector
JPW1	24-pin ATX Power Connector
JS1	iPass Connector
JSD1/JSD2	SATA DOM Power Connectors
JSTBY1	Standby Power Header
JTPM1	Trusted Platform Module/Port 80 Connector
JUIDB1	UID Switch
LAN1/LAN2	LAN (RJ45) Ports
SP1	Internal Speaker/Buzzer
SRW3	M.2 42mm card holding screw
SRW4	M.2 80mm card holding screw
SRW5	M.2 110mm card holding screw
USB0/1	Back Panel Universal Serial Bus (USB) 2.0 Ports
USB6/7	Back Panel USB 3.0 Ports
USB2/3, USB4/5	USB 2.0 Headers
USB8/9	Front Accessible USB 3.0 Header
USB10	USB 3.0 Type A Header
VGA	VGA Port

Motherboard Features

Motherboard Features
CPU
• Intel® Xeon® E5-1600/E5-2600 v3/v4 Series processors (Socket R3-LGA 2011). Up to 145W TDP and 22 cores.
Memory
• Four (4) slots support up to 128GB of Registered (RDIMM) or 256GB of Load Reduced (LRDIMM) DDR4 (288-pin) ECC 2400/2133/1866/1600/1333 MHz modules.   **Note:** 2400MHz is only available with the E5-2600 v4 processor and LRDIMM.
DIMM Size
• 16GB, 8GB, and 4GB, up to 64GB at 1.2V   **Note 1:** Memory speed support depends on the processors used in the system.   **Note 2:** For the latest CPU/memory updates, please refer to our website at http://www.supermicro.com/products/motherboard.
Chipset
• Intel® PCH C612
Expansion Slots
• Two (2) PCI Express 3.0 x8 slots (CPU1 Slot4, CPU1 Slot5)   **Note**: Slot4 supports NVMe SSD via AOC   • One (1) PCI Express 3.0 x16 slot (CPU1 Slot6)   • One (1) M.2 M-key Mini PCI Express 2.0 x4 Connector (JMD1)   **Note:** Supports 2242, 2280, and 22110 form factors
Network
For LAN 1/2 ports: • Intel® dual 1GBase-T i350 Ethernet Controller (for X10SRM-F only)   • Intel® dual X550 10GBase-T Ethernet Controller (for X10SRM-TF only)   • One (1) Dedicated IPMI LAN located on the rear I/O panel
Baseboard Management Controller (BMC)
• ASpeed AST 2400 Baseboard Controller (BMC) supports IPMI 2.0
Graphics
• Graphics controller via ASpeed 2400 BMC

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

Motherboard Features	
I/O Devices	
• Serial (COM) Port	• One (1) serial port on the rear I/O panel (COM1) • One (1) front accessible serial port header (COM2)
• SATA 3.0	• Six (6) SATA 3.0 ports supported by Intel PCH (I-SATA 0-5) • Four (4) SATA 3.0 ports via I-PASS connector (JS1) • I-SATA4 & I-SATA5 are SuperDOM connectors
• RAID (PCH)	• RAID 0, 1, 10
• Video (VGA) Port	• One (1) VGA connection on the rear I/O panel
Peripheral Devices	
• Two (2) USB 2.0 ports on the rear I/O panel (USB0/1) • Two (2) USB 3.0 ports on the rear I/O panel (USB6/7) • Two (2) front accessible USB 2.0 headers with two (2) USB connections (USB2/3, USB4/5) • One (1) front accessible USB 3.0 header with two (2) USB connections (USB8/9) • One (1) Type-A USB 3.0 header (USB10)	
BIOS	
• 128Mb AMI BIOS® SPI Flash BIOS • ACPI 3.0 or later, Plug and Play (PnP), BIOS rescue hot-key, Riser Card auto detection support, Dual Boot_Block support, and SMBIOS 2.7 or later	
Power Management	
• ACPI power management • SuperDoctor® 5 • Power button override mechanism • Power-on mode for AC power recovery • Power supply monitoring	
System Health Monitoring	
• Onboard voltage monitoring for +1.8V, +3.3V, +5V, +/-12V, +3.3V stdby, +5V stdby, VBAT, HT, memory, PCH temperature, system temperature, and memory temperature • CPU 5-phase switching voltage regulator • CPU thermal trip support • PECI/TSI	
Fan Control	
• Low-noise fan speed control	
System Management	
• IPMIView, SMCIPMITOOL, IPMICFG • SPM, SUM In-Band, SUM-OOB • SuperDoctor® 5 • Chassis intrusion header and detection • Server Platform Service • Silicon enabling • Single cooling zone	

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

Motherboard Features
LED Indicators
• CPU/system overheat LED • Power/suspend-state indicator LED • Fan failed LED • UID/remote UID • HDD activity LED • LAN activity LED
Dimensions
• 9.6" (L) x 9.6" (W) uATX (243.84mm x 243.84mm)

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

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

Note 3: It is strongly recommended that you change BMC log-in information upon initial system power-on. The manufacture default username is ADMIN and the password is ADMIN. For proper BMC configuration, please refer to http://www.supermicro.com/products/nfo/files/IPMI/Best_Practices_BMC_Security.pdf.

Figure 1-4.
System Block Diagram
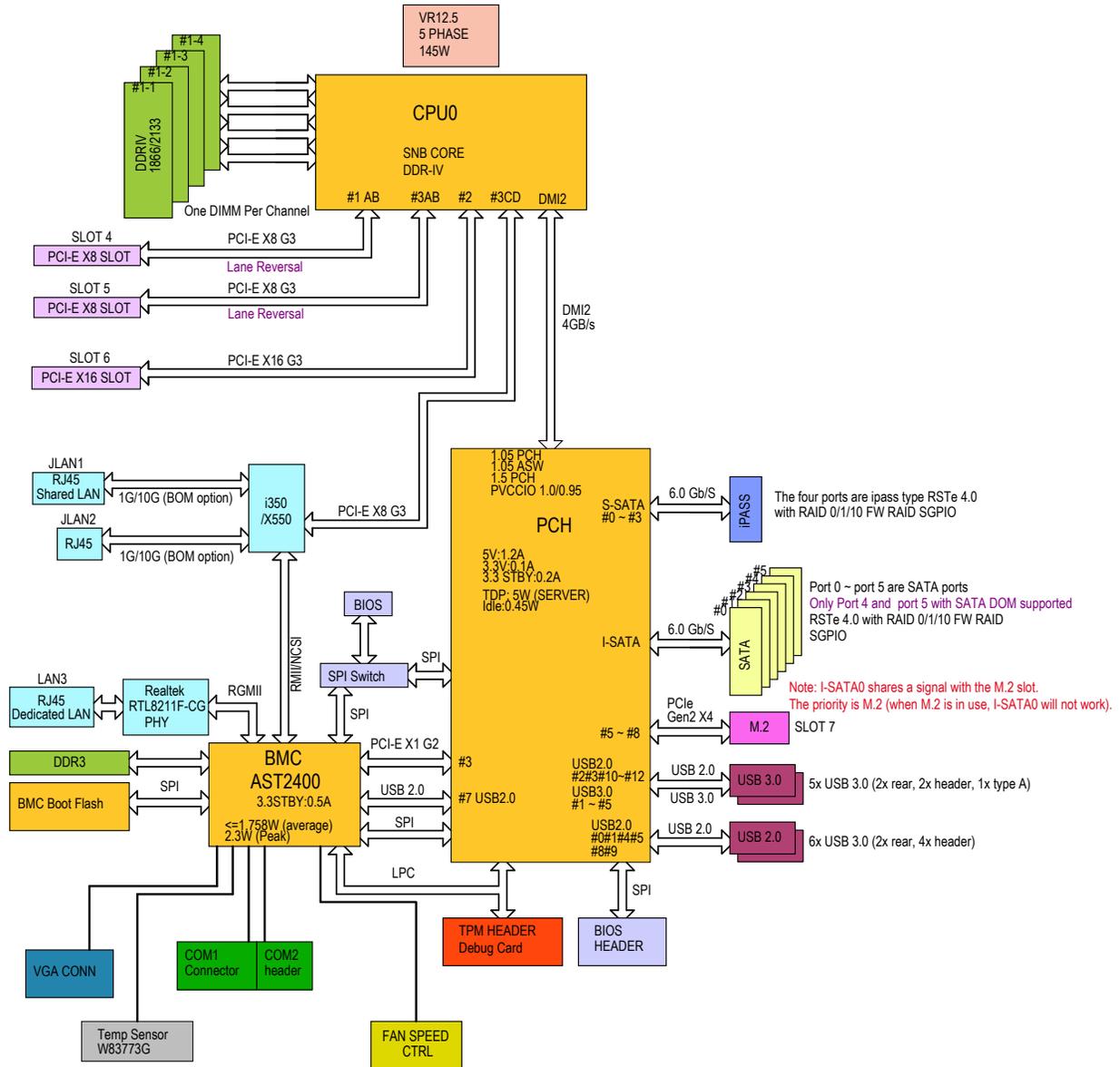
✎ **Note:** This is a general block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard.

1.2 Processor and Chipset Overview

Built upon the functionality and capability of the Intel® Xeon® E5-1600/E5-2600 v3/v4 series processors (Socket R3) and the Intel C612 PCH, the X10SRM-F/-TF motherboard provides system performance, power efficiency, and feature sets to address the needs of next-generation computer users.

With the support of the new Intel Microarchitecture 22nm Process Technology, the X10SRM-F/-TF dramatically increases system performance for a multitude of server applications.

The PCH C612 chip provides Enterprise SMbus support, including the following features:

- DDR4 288-pin memory support on Socket R3

- Hybrid clock support capable of extending to most 2S platforms

- Support for Management Engine (ME)

- Support of SMBus speeds of up to 400KHz for BMC connectivity

- Improved I/O capabilities to high-storage-capacity configurations

- SPI Enhancements

- Intel Node Manager 3.0 for advanced power monitoring, capping and management for BMC enhancement (see note below).

- BMC supports remote management, virtualization, and the security package for enterprise platforms

Note: Node Manager support depends on the power supply used in your system.

1.3 Special Features

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

Onboard Voltage Monitors

An onboard voltage monitor will scan the voltages of onboard chipset, memory, CPU, and battery continuously. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

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

Environmental Temperature Control

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

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

System Resource Alert

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

1.5 ACPI Features

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

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with Windows 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 X10SRM-F/-TF motherboard accommodates 24-pin ATX power supplies with 8-pin **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V main power)** connections, or power supplies with only 8-pin **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V standby power)** connections. Although most power supplies generally meet the specifications required by the CPU, some are inadequate.

> **Warning**: To avoid damaging the power supply or the motherboard, be sure to use a power supply that contains a 24-pin and an 8-pin power connector, or only an 8-pin power connector. You may either connect the power supply to both the 24-pin power connector (JPW1) and the 8-pin power connector (JPV1) on the motherboard, or only the 8-pin power connector.

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 X10SRM-F/-TF 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.115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

Chapter 2

Installation

2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your system board, 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 motherboard 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. Then use a screwdriver to secure the motherboard onto the motherboard tray.
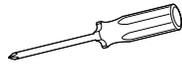
Phillips Screwdriver (1)   **Phillips Screws (8)**   **Standoffs (8) Only if Needed**

Tools Needed
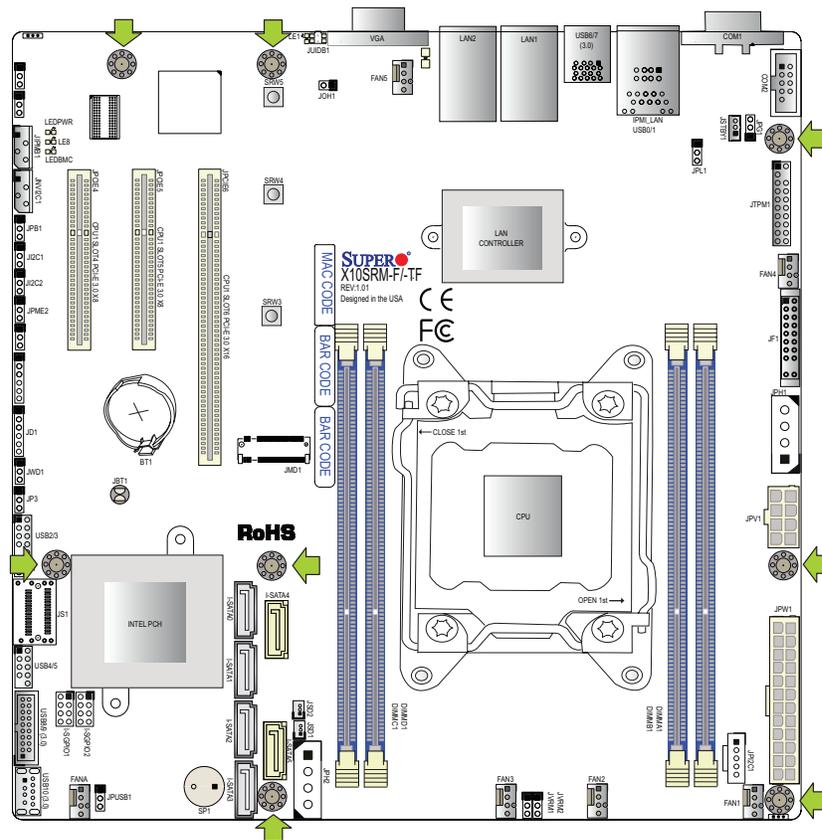
Location of Mounting Holes

Note: 1) To avoid damaging the motherboard and its components, please do not use 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. Install the I/O shield into the back of the chassis.
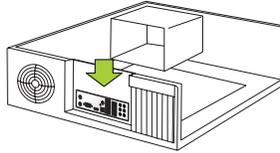
2. Locate the mounting holes on the motherboard. See the previous page for the location.
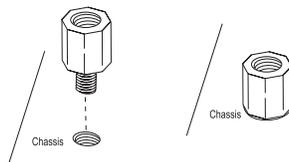
3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.
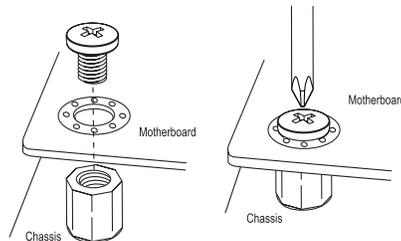
4. Install standoffs in the chassis as needed.

5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.

6. 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.

7. Repeat Step 5 to insert #6 screws into all mounting holes.

8. 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 LGA2011 Processor

1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

1
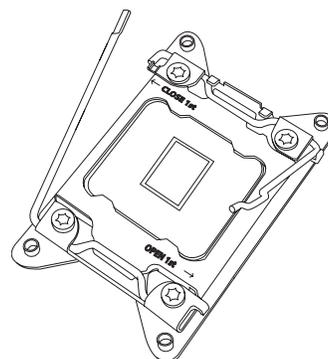
Press down
on Load Lever
labeled 'Open 1st'.

2

Note: All graphics, drawings and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

1   **Press down on Load Lever 'Close 1st'**   **2**   **Pull lever away from the socket**
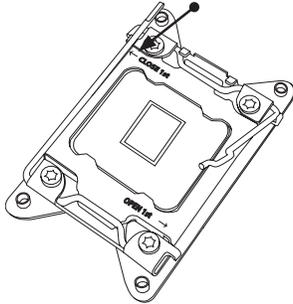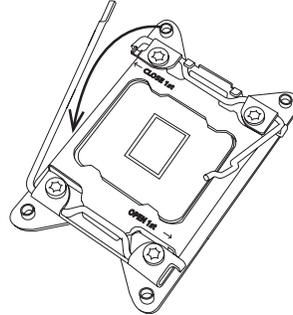
3. With the lever labelled 'Close 1st' fully retracted, gently push down on the lever labelled 'Open 1st' to open the load plate. Lift the load plate to open it completely.

1   **Gently push down to pop the load plate open.**   **2**
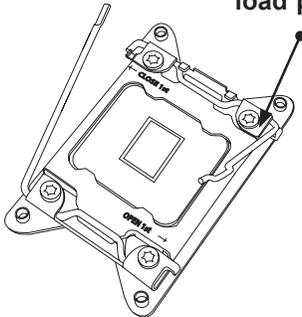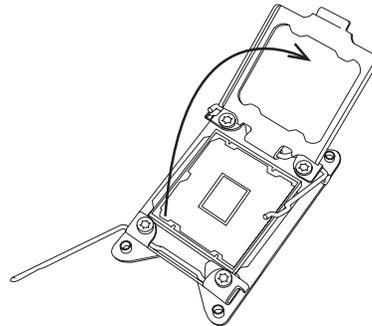
4. Use your thumb and the index finger to loosen the lever and open the load plate.
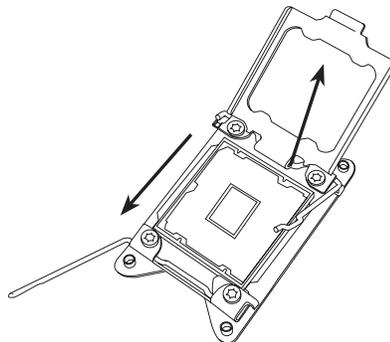
Note: All graphics, drawings and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

5. Using your thumb and index finger, hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

Socket Keys

CPU Keys
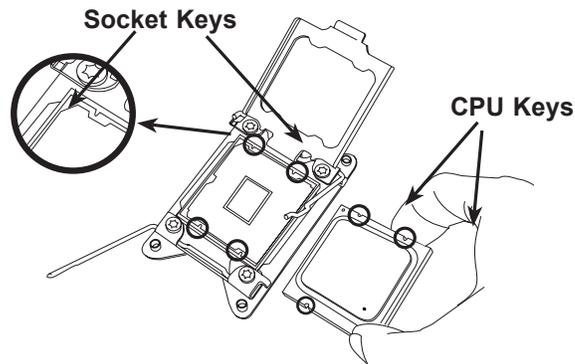
6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)
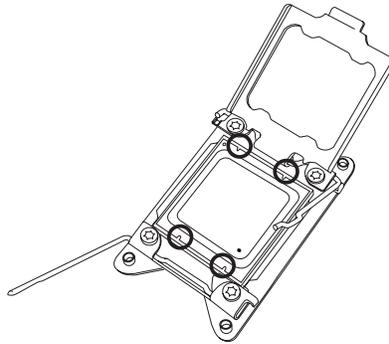
Note: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

1   **Gently close the load plate.**
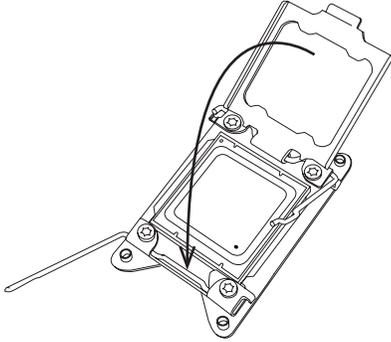
2   **Push down and lock the lever labelled 'Close 1st'.**
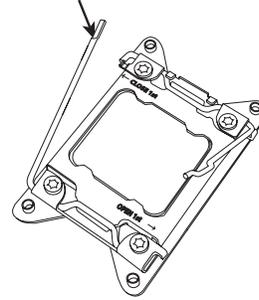
8. Close the load plate with the CPU inside the socket. Lock the lever labelled 'Close 1st' first, then lock the lever labelled 'Open 1st' second. Using your thumb gently push the load levers down to the lever locks.

3

Lever Lock

Push down and lock the lever labelled 'Open 1st'.

4

Lever Lock

Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Motherboard and the Heatsink Bracket underneath.

3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.
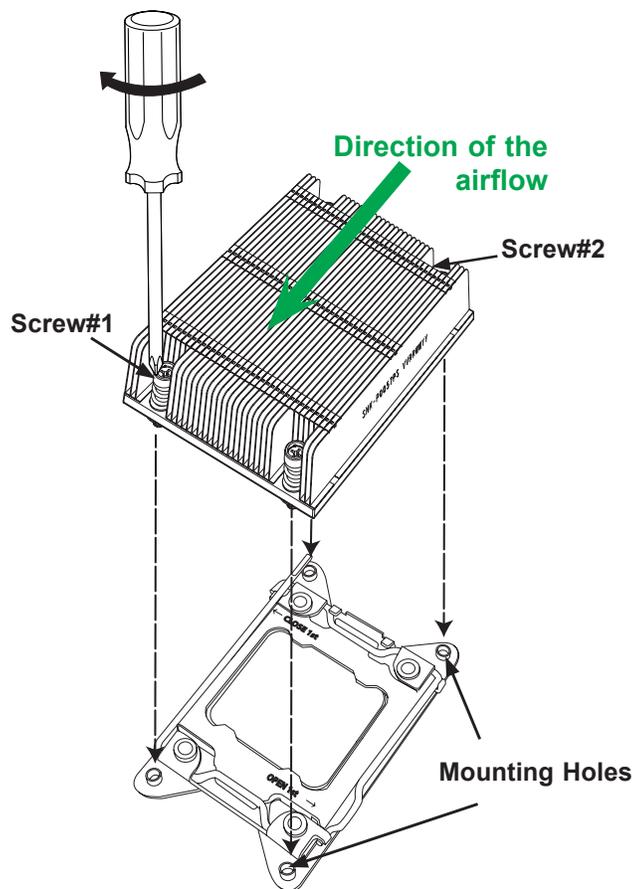
Note 1: Please use the narrow type heatsink model: SNK-P0047PS.

Note 2: For optimized airflow, please follow your chassis airflow direction to properly install the heatsink. Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system.

Removing the Heatsink

Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew the heatsink screws from the motherboard in the sequence as shown in the illustration below.

2. Gently wriggle the heatsink to loosen it from the CPU. Do not use excessive force when wriggling the heatsink!

3. Once the CPU is loosened from the socket, remove the CPU from the CPU socket.

4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink.
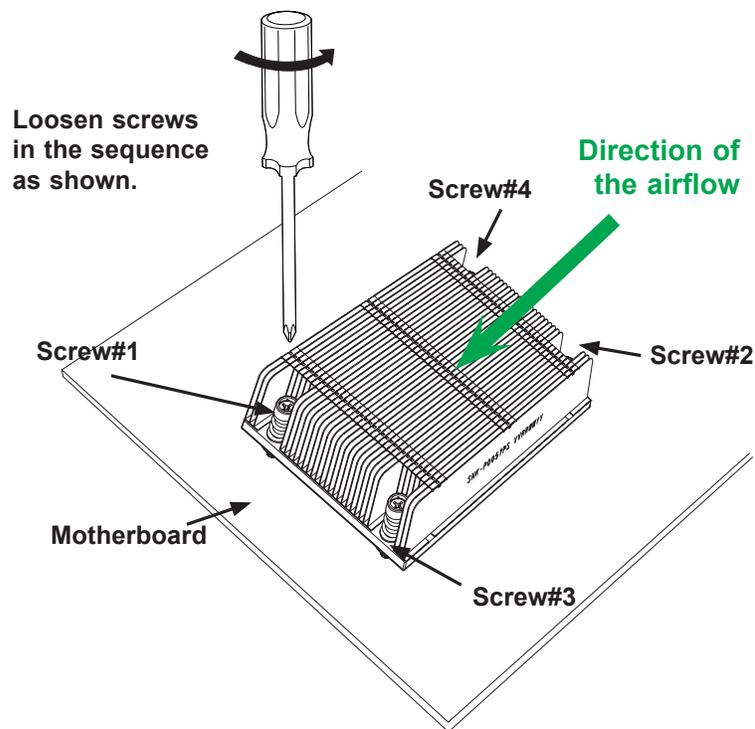
Notes: 1. For optimized airflow, please follow your chassis airflow direction to properly install the heatsink. 2. Graphics shown in this manual are for reference only. They may or may not look the same as the components installed in your system.

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 X10SRM-F/-TF supports up to 128GB of 2133MHz Registered (RDIMM) or 256GB of 2400MHz Load Reduced (LRDIMM) DDR4 ECC memory in four memory slots. Populating these DIMM modules with a pair of memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

Note: 2400MHz speed is only supported when using the Intel Xeon E5-2600 v4 processor and LRDIMM memory. Intel Xeon E5-1600/E5-2600 v3 series processors only support memory frequency up to 2133MHz.

DIMM Module Population Configuration

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

Processors and their Corresponding Memory Modules			
CPU#	**Corresponding DIMM Modules**		
CPU	DIMMA1	DIMMB1	DIMMC1	DIMMD2

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	DIMMA1/DIMMB1
4 DIMMs	DIMMA1/DIMMB1, DIMMC1/DIMMD1

Memory Module Population						
DIMM Slots per Channel	**DIMM Type**	**POR Speeds (MHz)**	**Ranks per DIMM**	**Layer Count**	**FW Base**	**Supported Voltage**
1	DDR4 ECC	2400 (LRDIMM), 2133,1866, 1600, 1333	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)

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
				1DPC	1DPC	2DPC
		4Gb	8Gb	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2400	2400	2133
RDIMM	SRx8	4GB	8GB	2400	2400	2133
RDIMM	DRx8	8GB	16GB	2400	2400	2133
RDIMM	DRx4	16GB	32GB	2400	2400	2133
LRDIMM	QRx4	32GB	64GB	2400	2400	2400
LRDIMM 3DS	8Rx4	64GB	128GB	2400	2400	2400

DIMM Module Population Sequence

When installing memory modules, the DIMM slots should be populated in the following order: DIMMA1, DIMMB1, then DIMMC1, DIMMD1.

- 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 DIMMA1 (Channel A, Slot 1). For best performance, please use the memory modules of the same type and speed.

2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

3. Align the key of the DIMM module with the receptive point on the memory slot.

4. Align the notches on both ends of the module against the receptive points on the ends of the slot.

5. 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.
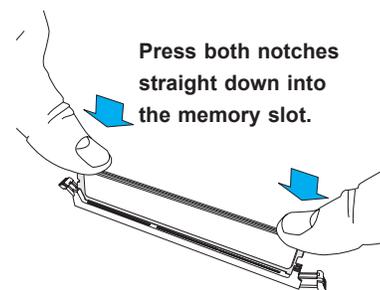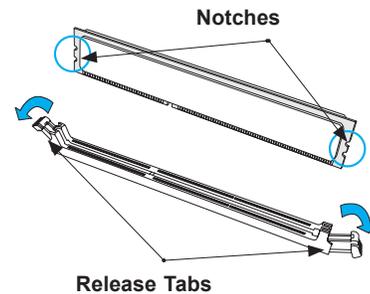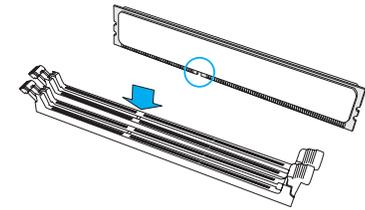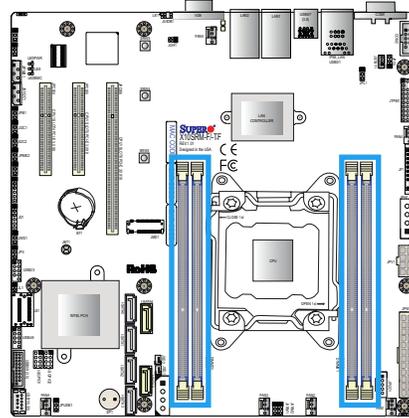
DIMM Removal

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.

Notches

Release Tabs

Press both notches straight down into the memory slot.

2.5 Rear I/O Ports

See Figure 2-2 below for the locations and descriptions of the various I/O ports on the rear of the motherboard.
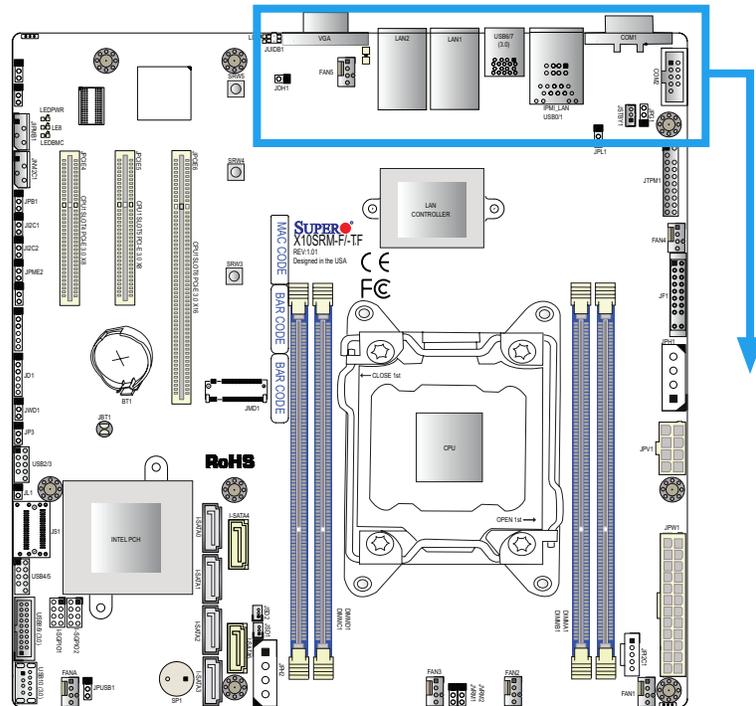
Figure 2-2. I/O Port Locations and Definitions
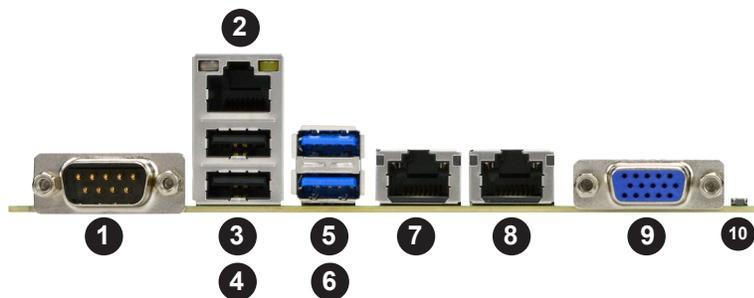
Rear I/O Ports			
#	Description	#	Description
1.	COM Port 1	6.	USB7 (3.0)
2.	IPMI Dedicated LAN	7.	LAN1
3	USB0	8	LAN2
4	USB1	9	VGA Port
5.	USB6 (3.0)	10	UID Switch

VGA Port

A video (VGA) port is located next to LAN2 on the I/O back panel. Refer to the board layout below for the location.

Serial Ports

Two COM connections (COM1 & COM2) are located on the motherboard. COM1 is located on the I/O back panel. COM2 is located next to COM1. 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
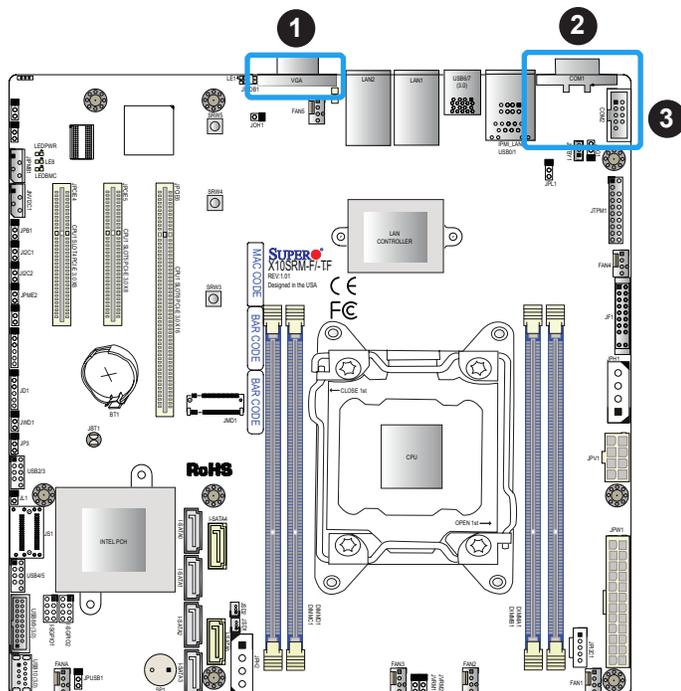
1. VGA Port
2. COM1
3. COM2

LAN Ports

Two 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 the USB0/1 ports on the back panel. All of these ports accept RJ45 cables. Please refer to the LED Indicator section for LAN LED information. Refer to the tables below and on the next page for pin definitions.

X10SRM-TF LAN Ports 1 & 2 Pin Definition			
Pin#	Definition	Pin#	Definition
1	COMMCT	2	TD1+
3	TD1-	4	TD2+
5	TD2-	6	COMMCT
7	COMMCT	8	TD0+
9	TD0-	10	TD3+
11	TD3-	12	COMMCT
13	COMMCT	14	TD4+
15	TD4-	16	N/A
17	GND	18	ACT LED (Green)
19	Link 1G LED (Yellow/Amber)	20	P3V3_DUAL
21	Link 10G LED (Green)		

X10SRM-F LAN Ports 1 & 2 Pin Definition			
Pin#	Definition	Pin#	Definition
1	COMMCT	2	TD1+
3	TD1-	4	TD2+
5	TD2-	6	COMMCT
7	COMMCT	8	TD0+
9	TD0-	10	TD3+
11	TD3-	12	COMMCT
13	N/A	14	TD4+ N/A
15	TD4- N/A	16	N/A
17	GND	18	ACT LED (Yellow/Amber)
19	Link 100M LED (Green)	20	P3V3_DUAL
21	Link 1G LED (Yellow/Amber)		

1. LAN1

2. LAN2

3. IPMI LAN
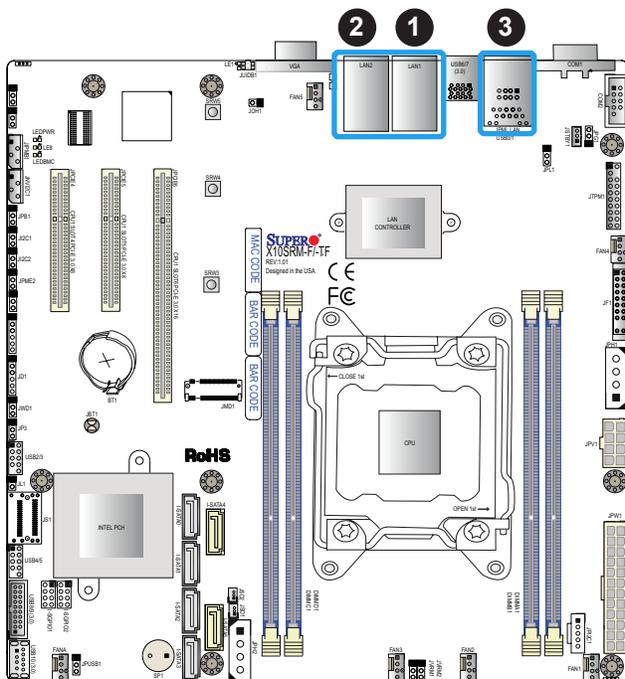
IPMI_LAN Pin Definition			
Pin#	Definition	Pin#	Definition
9		19	GND
10	TD0+	20	Act LED (Yellow)
11	TD0-	21	Link 100 LED (Green)
12	TD1+	22	Link 1000 LED (Amber)
13	TD1-	23	SGND
14	TD2+	24	SGND
15	TD2-	25	SGND
16	TD3+	26	SGND
17	TD3-		
18	GND		

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 (USB8/9). The USB10 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 0/1 (2.0) 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 2/3, 4/5 (2.0) 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

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

Front Panel USB 8/9 (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 10 (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+
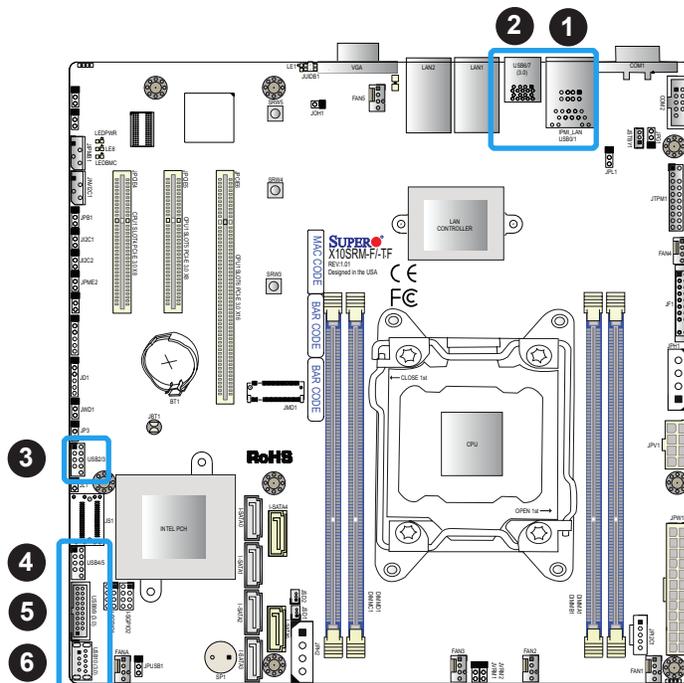
1. USB0/1
2. USB6/7
3. USB2/3
4. USB4/5
5. USB8/9
6. USB10

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.
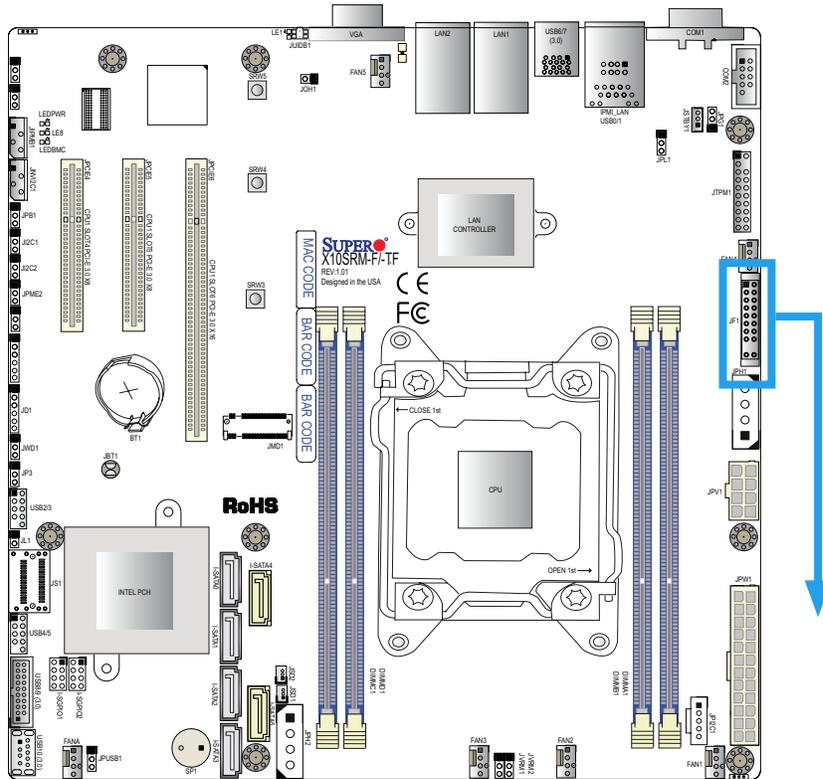
Figure 2-3. JF1 Header Pins

	1	2	
Power Button — PWR	○	○	Ground
Reset Button — Reset	○	○	Ground
P3V3	○	○	PWR Fail LED
UID LED	○	○	OH/Fan Fail LED
P3V3_STB	○	○	NIC2 LED
P3V3_STB	○	○	NIC1 LED
UID SW	○	○	HDD LED
P3V3	○	○	Power LED
X	○	○	X
NMI	○	○	Ground
	19	20	

Power Button

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

Power Button Pin Definitions (JF1)	
Pins	**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 to reset the system. Refer to the table below for pin definitions.

Reset Button Pin Definitions (JF1)	
Pins	**Definition**
3	Reset
4	Ground
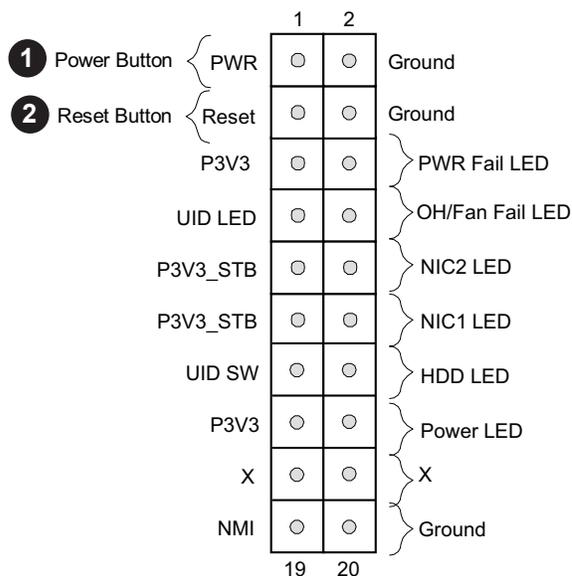
1. PWR Button

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. Refer to the tables below for pin definitions.

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

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

NIC1/NIC2 (LAN1/LAN2)

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

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC 2 Activity LED
10	NIC 2 Link LED
11	NIC 1 Activity LED
12	NIC 1 Link LED

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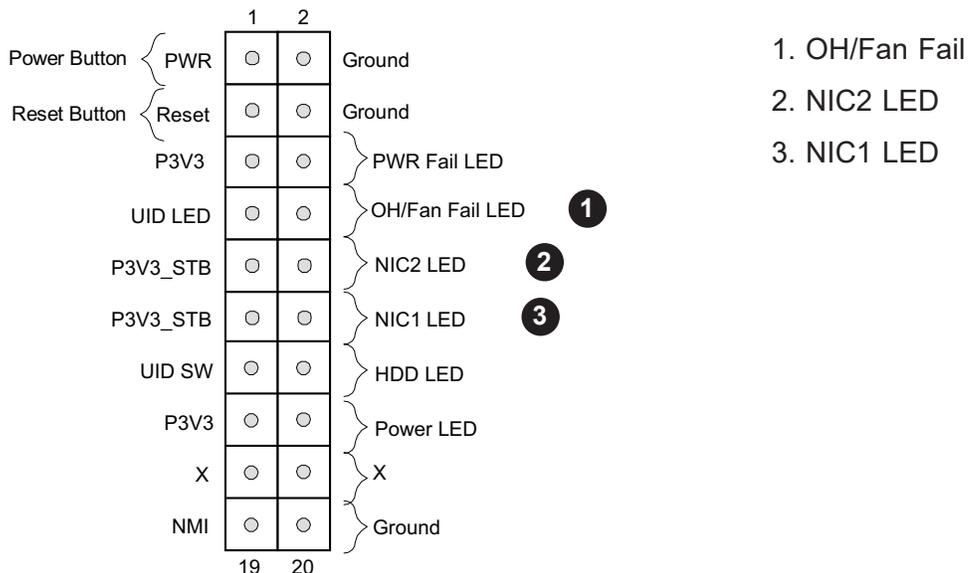
HDD LED

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

HDD LED Pin Definitions (JF1)	
Pins	**Definition**
13	3.3V Stdby
14	HDD Active

Power LED

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

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

NMI Button

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

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

	1	2	
Power Button { PWR	○	○	Ground
Reset Button { Reset	○	○	Ground
P3V3	○	○	PWR Fail LED
UID LED	○	○	OH/Fan Fail LED
P3V3_STB	○	○	NIC2 LED
P3V3_STB	○	○	NIC1 LED
UID SW	○	○	HDD LED **1**
P3V3	○	○	Power LED **2**
X	○	○	X
3 NMI	○	○	Ground
	19	20	
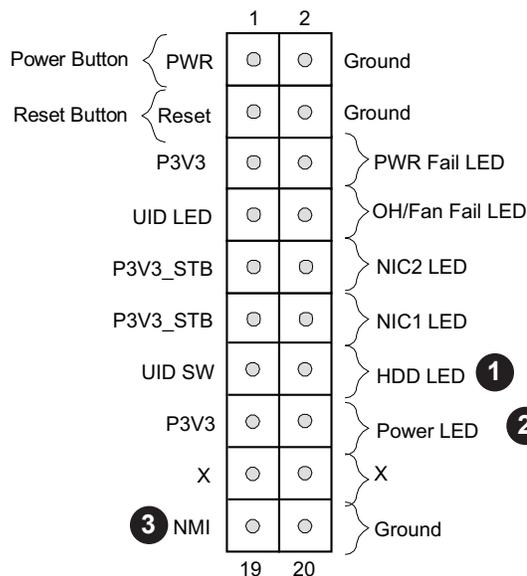
1. HDD LED

2. PWR LED

3. NMI

2.7 Connectors

Power Connections

ATX Power Supply Connector

The 24-pin power supply connector (JPW1) meets the ATX SSI EPS 12V specification. You may use this connector and the 8-pin power connector (JPV1) **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V main power)** to connect to the power supply, or you may use only the 8-pin power connector **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V standby power)**.

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
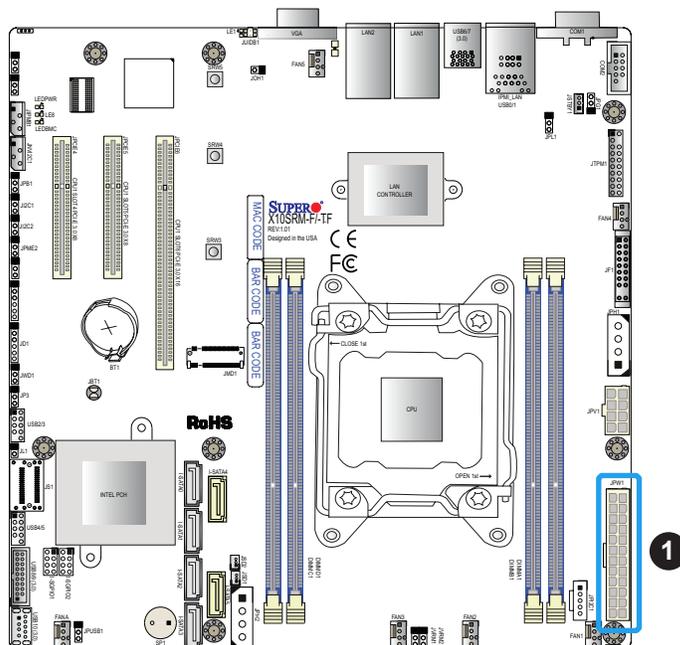
1. 24-Pin ATX PWR

8-Pin Power Connector

You may use the 24-pin power supply connector (JPW1) plus the 8-pin power connector (JPV1) **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V main power)** or only the 8-pin power connector **(Pin 1 ~ Pin 4 is GND; Pin 5 ~ Pin 8 is +12V standby power)**.

8-pin Power Pin Definitions	
Pin#	**Definition**
1 - 4	Ground
5 - 8	P12VSB (12V Standby Power)

Required Connection

Hard Drive (HDD) Power Connectors

There are two 4-pin HDD power connectors (JPH1 and JPH2) that provide power to onboard HDD devices. Refer to the table below for pin definitions.

4-Pin HDD Power Pin Definitions	
Pin#	**Definition**
1	12V
2	GND
3	GND
4	5V
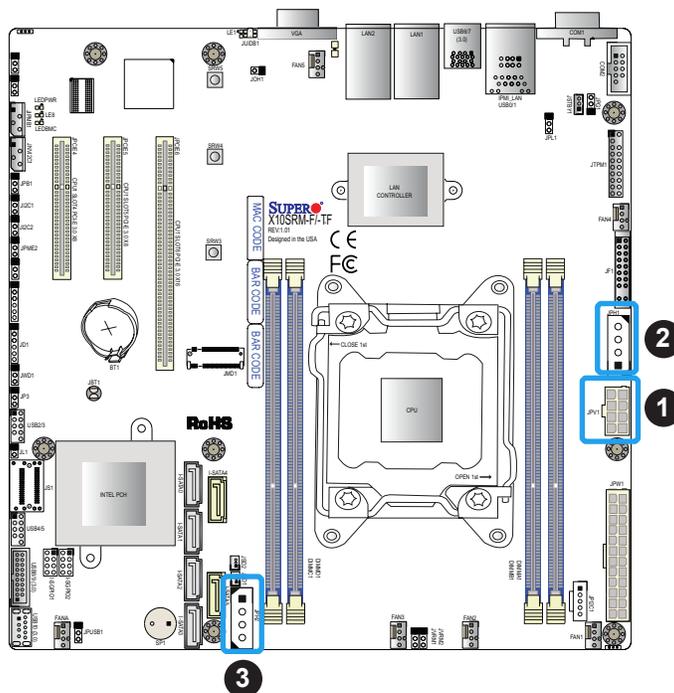
1. 8-Pin PWR

2. JPH1

3. JPH2

Headers

Fan Headers

There are six 4-pin fan headers (FAN1-FAN5, FANA) on the motherboard. All 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. Refer to the table below for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	2.5A/+12V (Red)
3	Tachometer
4	PWM_Control
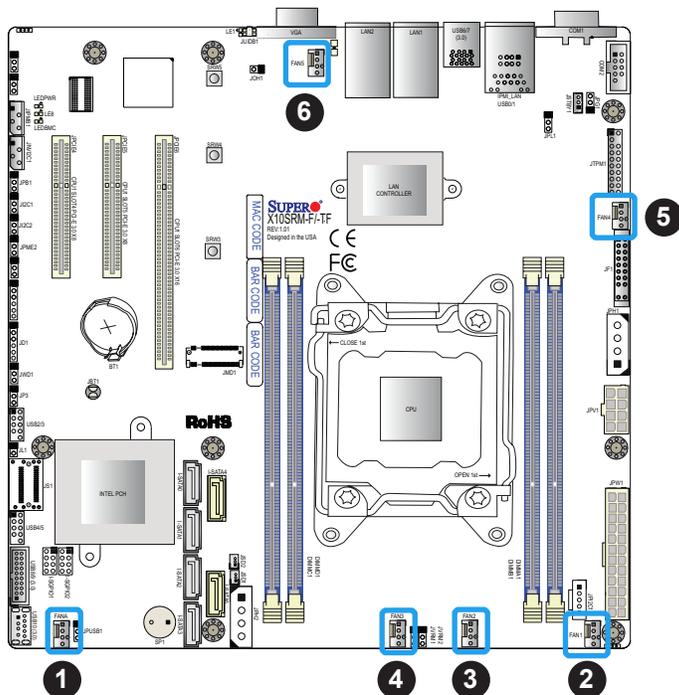
1. FANA
2. FAN1
3. FAN2
4. FAN3
5. FAN4
6. FAN5

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. Refer to 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	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

Disk-On-Module Power Connector

Two power connectors for SATA DOM (Disk On Module) devices are located at JSD1/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
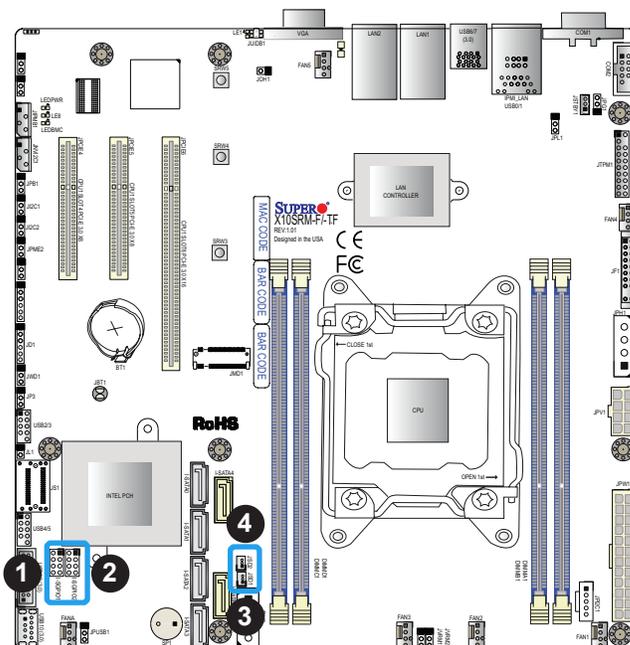
1. I-SGPIO1
2. I-SGPIO2
3. JSD1 (DOM PWR)
4. JSD2 (DOM PWR)

TPM/Port 80 Header

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

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#
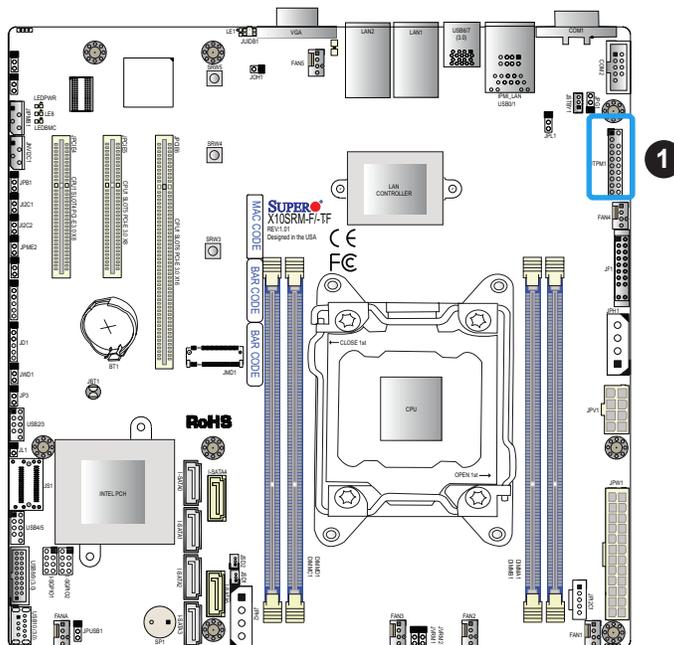
1. TPM Header

Standby Power

The 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. Refer to the table below for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

Internal Speaker/Buzzer

The Internal Speaker/Buzzer (SP1) is used to provide audible indications for various beep codes. Refer to the table below for pin definitions.

Internal Buzzer Pin Definitions		
Pin#	Definition	
1	Pos (+)	Beep In
2	Neg (-)	Alarm Speaker
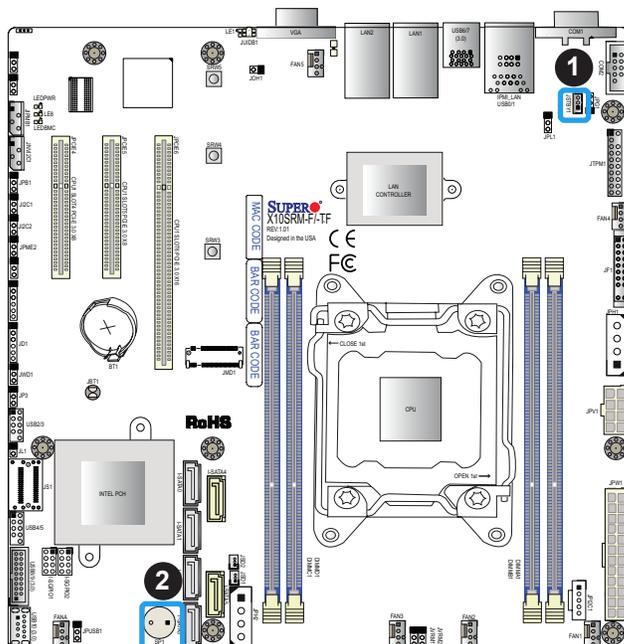
1. Standby Power
2. Internal Speaker

Power SMB (I²C) Header

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

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

4-pin BMC External I²C Header

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

External I²C Header Pin Definitions	
Pin#	**Definition**
1	Data
2	Ground
3	Clock
4	No Connection
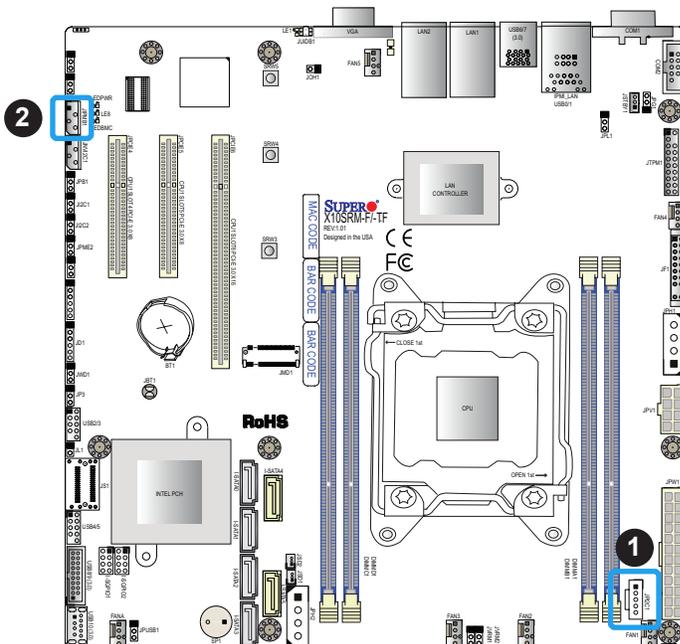
1. Power SMB Header
2. BMC External Header

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. Refer to the table below for pin definitions.

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

NVMe I²C Header

Connector JNVI²C1 is a management header for the Supermicro AOC NVMe PCI-E peripheral cards. Please connect the I²C cable to this connector. Please short jumpers JI²C1 and JI²C2 by closing pins 1 and 2 when using Supermicro AOC NVMe PCI-E peripheral cards.
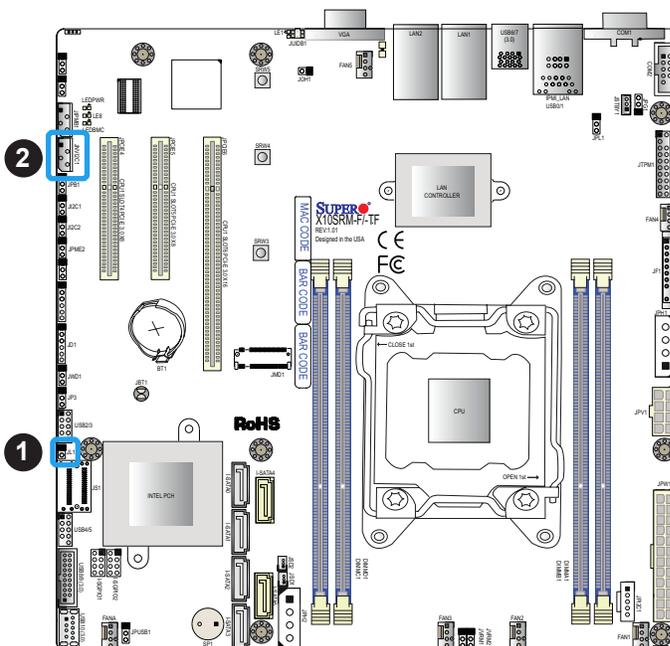
1. Chassis Intrusion
2. NVMe I²C

Power LED/Speaker

Pins 1-3 of JD1 are used for power LED indication, and pins 4-7 are for the speaker. Please note that the speaker connector pins (4-7) are used with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a cap. Refer to the tables below for pin definitions.

PWR LED Connector Pin Definitions	
Pin#	Signal
1	JD1_PIN1
2	FP_PWR_LED
3	FP_PWR_LED

Speaker Connector Pin Definitions	
Pin#	Signal
4	P5V
5	Key
6	R_SPKPIN_N
7	R_SPKPIN

Overheat/Fan Fail LED Header

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating and fan failure. This LED will blink when a fan failure occurs. Refer to the tables below for pin definitions.

Overheat LED header Status	
State	Definition
Solid	Overheat
Blinking	Fan Fail

Overheat LED Pin Definitions	
Pin#	Signal
1	Pull high to +3.3V standby power through 330-ohm resistor
2	OH Active
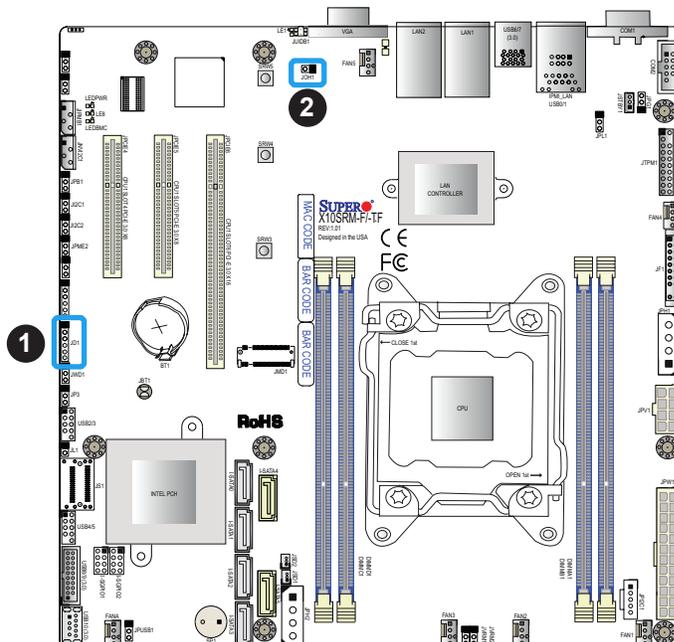
1. Speaker Header
2. Overheat/Fan Fail LED Header

SATA Ports

Six SATA 3.0 ports are located on the X10SRM-F/-TF motherboard, supported by the Intel C612 PCH chip. These SATA ports support RAID 0, 1, and 10. SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA. Refer to 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.

X10SRM-F/-TF SATA 3.0 Connector Types	
Port #	**Connection Type**
I-SATA0~3 (Four)	SATA 3.0/6 Gb/s RAID 0, 1, 10
I-SATA4~5 (Two)	SATA 3.0/6 Gb/s RAID 0, 1, 10 SuperDOM connectors
Supported by	Intel C612 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
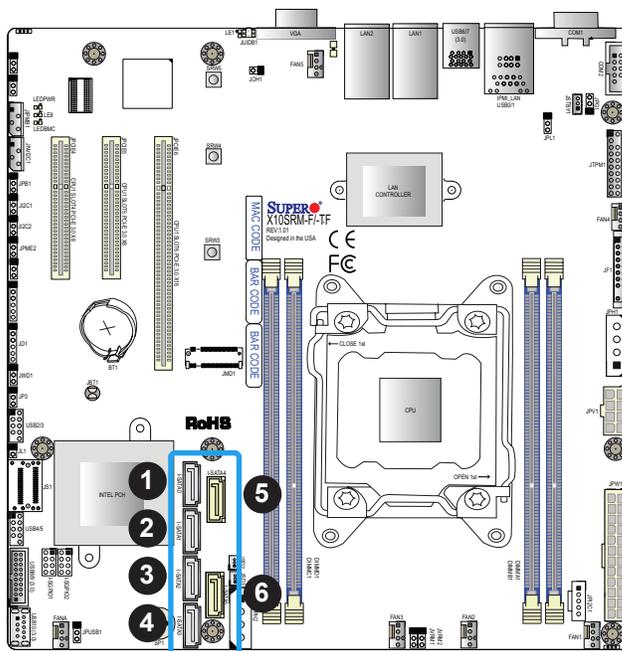
1. I-SATA0
2. I-SATA1
3. I-SATA2
4. I-SATA3
5. I-SATA4
6. I-SATA5

iPass connector

The X0SRM-F/-TF motherboard contains an iPass connector at JS1. This slim connector houses four I-SATA connections. Connect devices to JS1 using an internal mini-SAS to SATA cable (model SFF-8087) (SMC P/N: CBL-0097L-03 or CBL-0288L-01).

M.2 Slot

The X0SRM-F/-TF motherboard contains one M.2 socket at JMD1. M.2 was formerly Next Generation Form Factor (NGFF) and serves to replace mini PCI-E and mSATA. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. The M.2 socket on the motherboard supports PCI-E 2.0 x4 SSD (20Gb/s) cards in the 22x42mm, 22x80mm, and 22x110mm form factors. It is important to note that I-SATA0 shares the same SATA signal with the M.2 slot. M.2 has the priority. When M.2 mSATA is in use, I-SATA0 will not work.
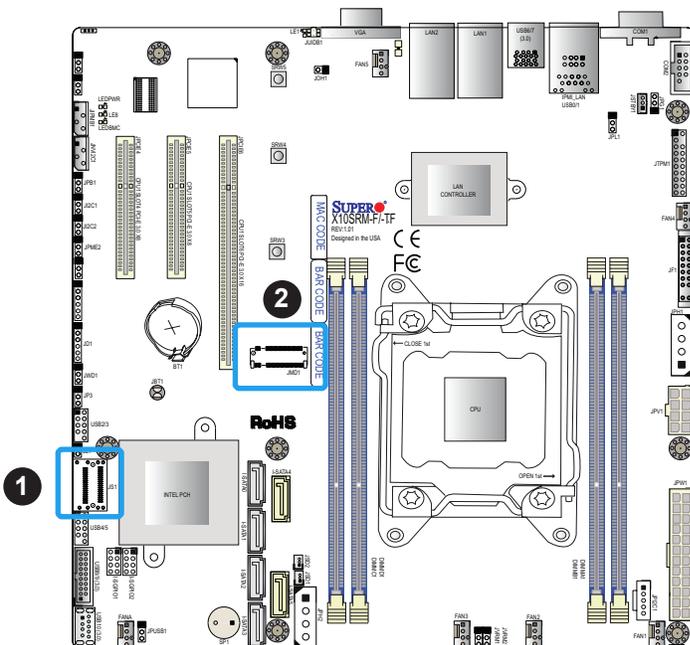
1. iPass

2. M.2

Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED Indicator are located on the motherboard. The UID switch is located at JUIDB1, which is next to the VGA port on the back panel. The UID LED (LE1) is located next to the UID switch. When you press the UID switch, the UID LED will be turned on. Press the UID switch again to turn off the LED indicator. The UID Indicator provides easy identification of a system unit that may be in need of service.

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

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

UID LED Pin Definitions	
Color	**Status**
Blue: On	Unit Identified
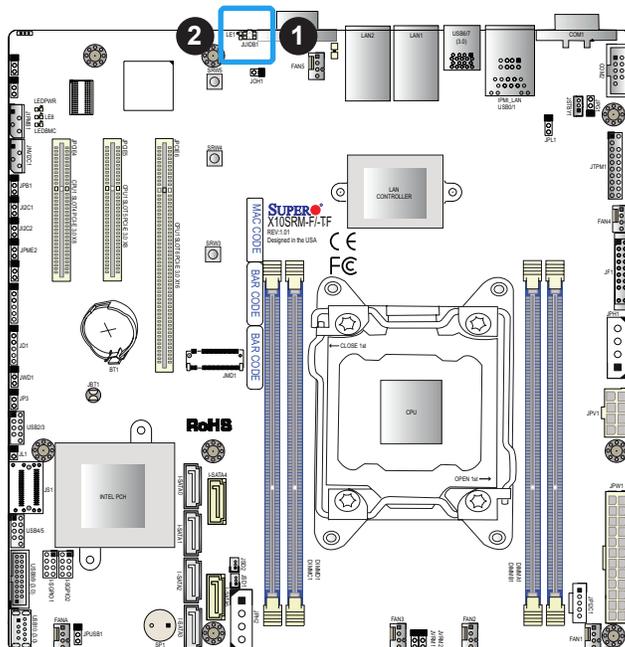
1. UID Switch
2. UID LED

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.
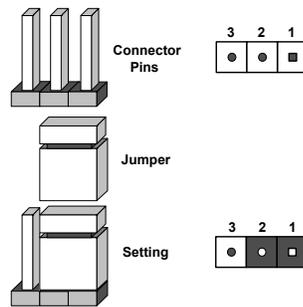
CMOS Clear

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.
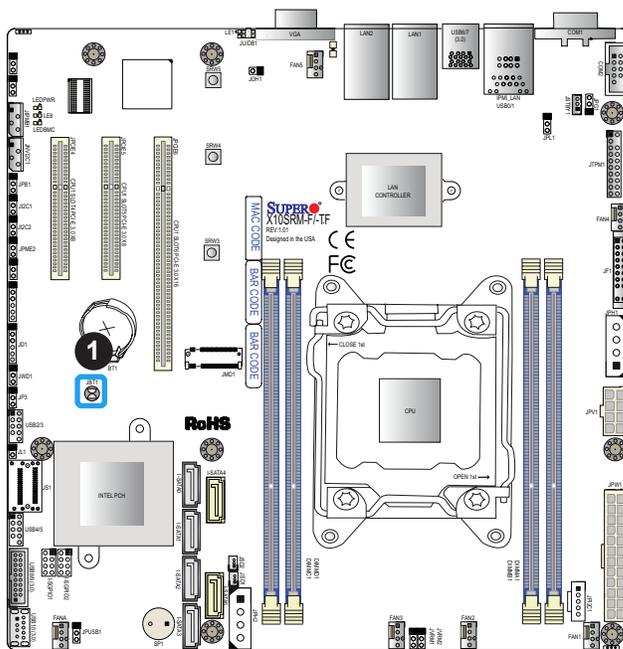
1. CMOS Clear

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. Refer to 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

LAN Port Enable/Disable

Jumper JPL1 enables or disables LAN ports 1 and 2 on the motherboard. Refer to the table below for jumper settings. The default setting is Enabled.

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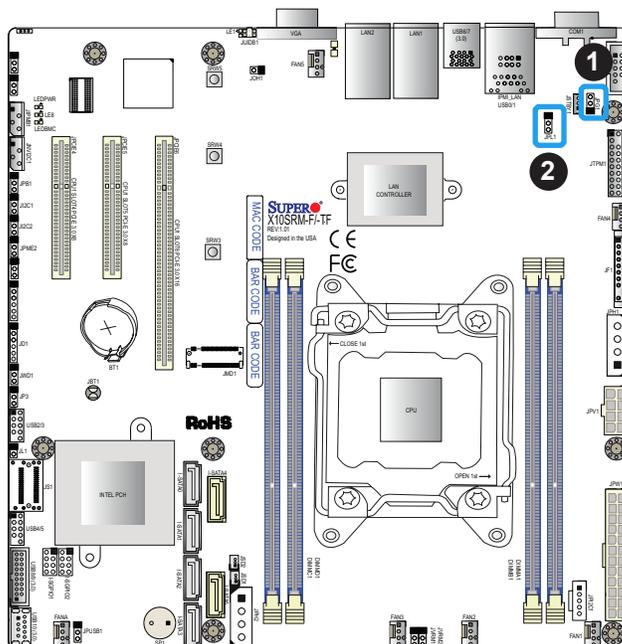
1. VGA Enable/Disable
2. LAN1 Enable/Disable

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.

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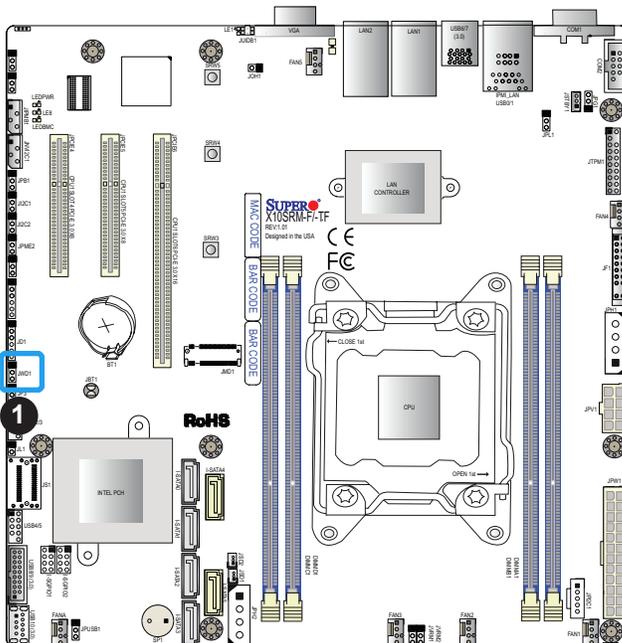
1. Watch Dog

SMBus to PCI Slots

Use jumpers JI²C1 and JI²C2 to connect the System Management Bus (I²C) 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 Disabled.

I²C for PCI-E Slots Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Enabled
Pins 2-3	Disabled

BMC Enabled

Jumper JPB1 allows you to enable the embedded ASpeed AST2400 Baseboard Management Controller (BMC) to provide IPMI 2.0/KVM support on the motherboard. Refer to 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	Normal (Default)
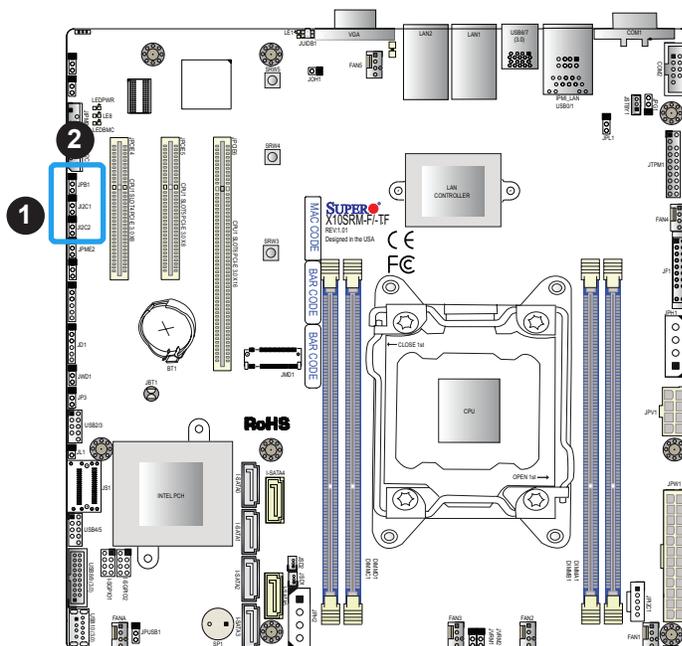
1. SMBus to PCI Slots
2. BMC Enabled

USB Wake-Up

Use the JPUSB1 jumper to enable the function of "System Waking-Up via USB devices" for USB4/5 and USB10/11. This jumper allows you to "wake-up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. The JPUSB1 jumper is used together with the USB Wake-Up function in the BIOS. Enable both the jumper and the BIOS setting to enable this function. See the table on the right for jumper settings and connections.

USB Wake-up Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Manufacture Mode Select

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

Manufacture Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacture Mode
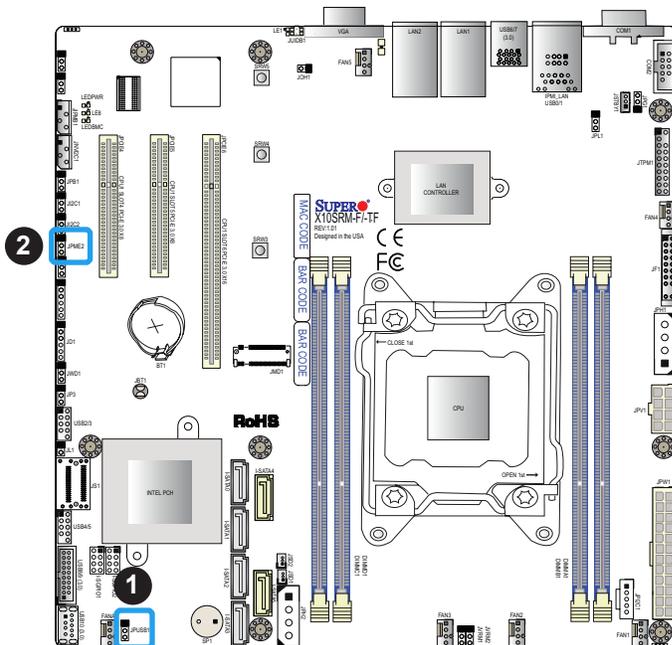
1. USB Wake-up
2. Manufacture Mode

M.2 Slots I²C Enable/Disable

Jumper JP3 is used to enable or disable I²C for the M.2 connector located at JMD1. Refer to the table below for jumper settings.

M.2 Slots I²C Pin Definitions	
Pin#	Definition
1-2	Normal
2-3	Disable

I²C Bus for VRM

Jumpers JVRM1 and JVRM2 allow the BMC or the PCH to access the CPU and memory voltage regulator modules (VRM) controllers. Refer to the table below for jumper settings.

VRM Pin Definitions	
Pin#	Definition
1-2	BMC (Default)
2-3	PCH
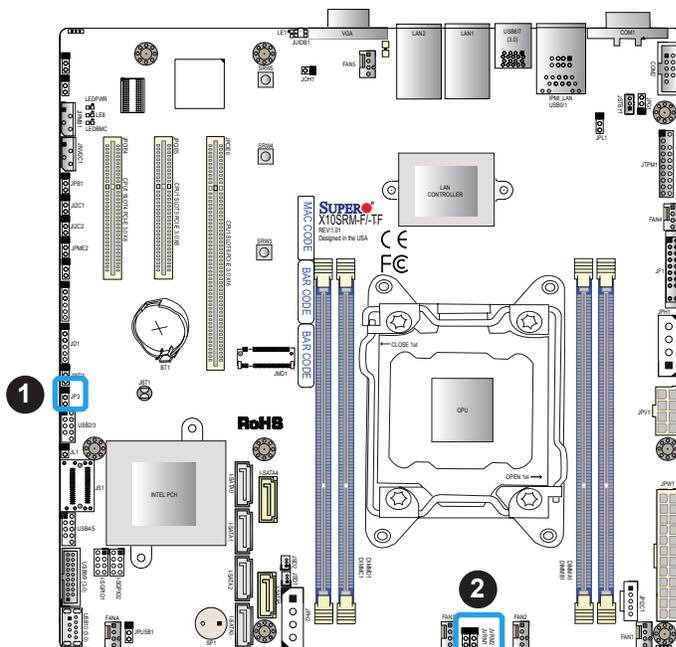
1. M.2 I²C Enable/Disable
2. JVRM1/JVRM2

2.9 LED Indicators

LAN LEDs

Two LAN ports (LAN 1 and LAN 2) 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. Refer to the tables below for more information.

X10SRM-TF LAN1/2 Activity LED (Right) LED State		
Color	Status	Definition
Green	Flashing	Active

X10SRM-TF LAN1/2 Link LED (Left) LED State	
LED Color	Definition
Green	10Gbps
Yellow/Amber	1Gbps
Off	100Mbps

X10SRM-F LAN1/2 Activity LED (Right) LED State		
Color	Status	Definition
Yellow/Amber	Flashing	Active

X10SRM-F LAN1/2 Link LED (Left) LED State	
LED Color	Definition
Yellow/Amber	1Gbps
Green	100Mbps
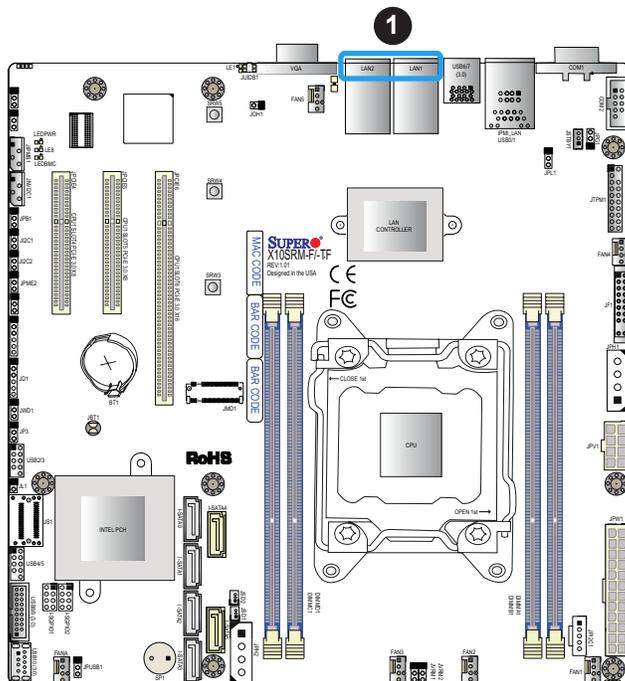
1. LAN 1/2 LED

IPMI LAN LEDs

In addition to LAN1 and LAN2, an 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. Refer to the table below for more information.

IPMI LAN

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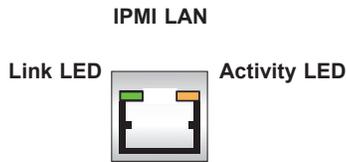
IPMI LAN LEDs		
	Color/State	Definition
Link (left)	Green: Solid	100 Mbps
	Amber: Solid	1Gbps
Activity (Right)	Amber: Blinking	Active

Hard Drive (HDD) LED

A HDD LED is located at LE8 on the motherboard. When this LED is on, the hard drive is detected. Refer to the table below for more information.

Onboard Power LED Indicator	
LED Color	Definition
Green	HDD detected
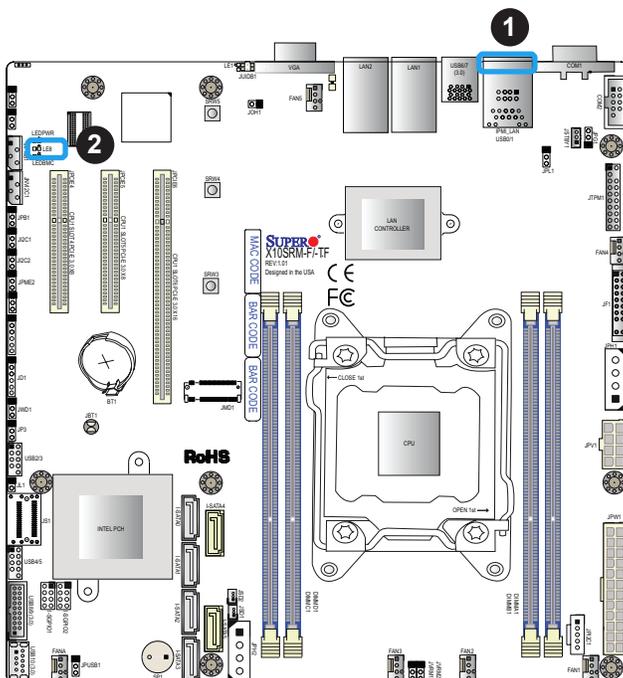
1. Dedicated IPMI LAN LED

2. HDD LED

Onboard Power LED

The Onboard Power LED is located at LEDPWR 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. Refer to the table below for more information.

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

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDBMC on the motherboard. When LEDBMC is blinking, the BMC is functioning normally. Refer to the table below for more information.

BMC Heartbeat LED Indicator	
LED Color	**Definition**
Green: Blinking	BMC Normal
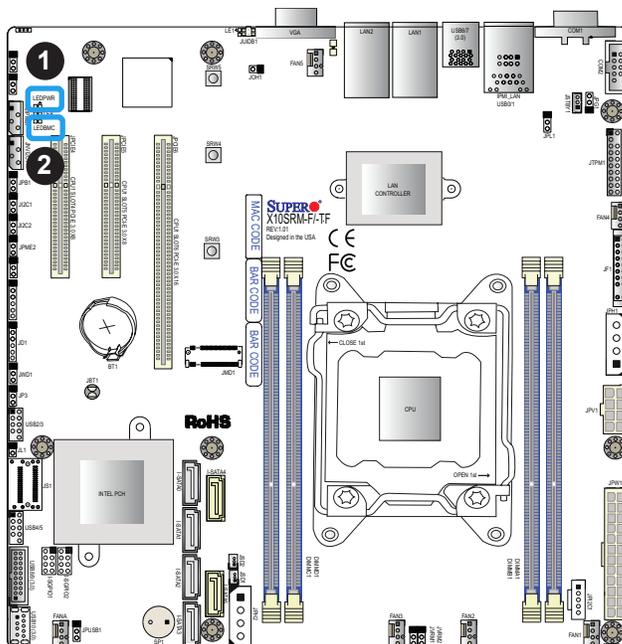
1. Onboard Power LED
2. BMC Heartbeat LED

Chapter 3

Troubleshooting

3.1 Troubleshooting Procedures

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

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.

2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.

3. Remove all add-on cards.

4. Install the CPU (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Make sure that the ATX power connectors are properly connected.

3. Check that the 115V/230V switch, if available, on the power supply is properly set.

4. Turn the power switch on and off to test the system, if applicable.

5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on and LE6 is green 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 (Power-On-Self-Test) 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 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 Chapter 2 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.

3. 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 and CD/DVD-ROM.

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.

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The motherboard supports ECC DDR4 RDIMM or LRDIMM 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. 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

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

Battery Installation

1. To install an onboard battery, follow steps 1 & 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.

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

LITHIUM BATTERY

BATTERY HOLDER

OR

LITHIUM BATTERY

BATTERY HOLDER
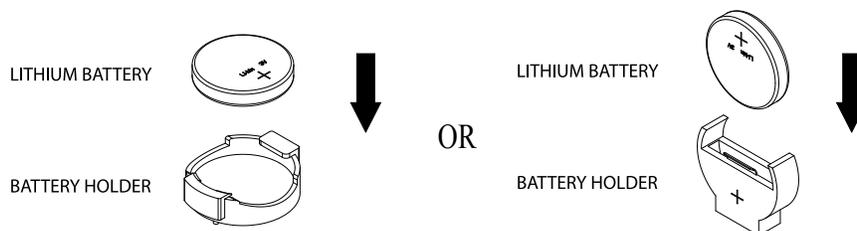
3.5 Returning Merchandise for Service

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 the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is 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, you can also request a RMA authorization online (http://www.supermicro.com/RmaForm/).

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

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

Chapter 4

UEFI BIOS

4.1 Introduction

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

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

```
                Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
      Main  Advanced  Event Logs   IPMI   Security   Boot   Save & Exit

                                                        ▲  Set the Date. Use Tab to
                                                           switch between Date
      System Date                      [Thu 01/01/2015]    elements.
      System Time                      [11:46:36]

      Supermicro X10SRM-TF
      BIOS Version                     1.0
      Build Date                       05/13/2016
      CPLD Version                     04.a1.00




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
      Memory Information                                   F3: Optimized Defaults
      Total Memory                     8192 MB          ▼  F4: Save & Exit
      Memory Speed                     2133 MT/s           ESC: Exit

                 Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

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 01/01/2015 after RTC reset.

Supermicro X10SRM-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.

```
                  Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Main   Advanced   Event Logs   IPMI   Security   Boot   Save & Exit

   ▶ Boot Feature                                          Boot Feature Configuration
   ▶ CPU Configuration                                     Page
   ▶ Chipset Configuration
   ▶ SATA Configuration
   ▶ sSATA Configuration
   ▶ Server ME Configuration
   ▶ PCIe/PCI/PnP Configuration
   ▶ Super IO Configuration
   ▶ Serial Port Console Redirection
   ▶ ACPI Settings
   ▶ Trusted Computing



   ▶ iSCSI Configuration                                   ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

                  Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

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

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.

▶Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when it is expired for more than 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

The following CPU information will display:

- Processor Socket

- Processor ID

- Processor Frequency

- Processor Max Ratio

- Processor Min Ratio

- Microcode Revision

- L1 Cache RAM

- L2 Cache RAM

- L3 Cache RAM

- CPU1 Version

Clock Spread Spectrum

If this feature is set to Enabled, the BIOS utility will monitor the level of Electromagnetic Interference caused by the components and will attempt to reduce the interference whenever needed. The options are **Disabled** and Enabled.

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

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

Cores Enabled

Set a numeric value to enable the number of cores. (Please refer to Intel's website for more information.) Enter **0** to enable all cores.

Monitor/Mwait

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

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

Select Enabled to enable the Execute-Disable Bit 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 damage the system during an attack. The default is **Enable**. (Refer to the Intel® and Microsoft® websites for more information.)

PPIN Control

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

Hardware Prefetcher (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 Disable and **Enable**.

Adjacent Cache 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 **Enable**.

DCU Streamer Prefetcher (Available when supported by the CPU)

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

DCU IP Prefetcher (Available when supported by the CPU)

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

Direct Cache Access (DCA)

Select Enabled to use Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The options are Disable, Enable, and **Auto**.

X2APIC

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

AES-NI

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

Intel® Virtualization Technology (Available when supported by the CPU)

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

> **Note**: If a change is made to this setting, you will need to reboot the system for the change to take effect. Refer to Intel's website for detailed information.

►Advanced Power Management Configuration

This section is used to configure the following CPU Power Management settings.

Power Technology

Use this feature to enable the processor power management features. The options are Disable, **Energy Efficient**, and Custom.

Energy Performance Tuning

When enabled, this item selects whether the BIOS or Operating System can turn on the energy performance bias tuning. The options are Enable and **Disable**.

Energy Performance BIAS Setting

This feature allows balancing Power Efficiency vs Performance. This will override whatever setting is in the Operating System. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Energy Efficient Turbo

Use this feature to enable energy efficient turbo mode. The options are **Enable** and Disable.

If the Power Technology feature is set to Custom, CPU P State/CPU HWPM State/CPU C State/CPU T State will display:

►CPU P State Control

EIST (P-States)

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

Turbo Mode

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

P-State Coordination

This feature allows the user to change the P-State (Power-Performance State) coordination type. P-State is also known as "SpeedStep" for Intel processors. Select HW_ALL to change the P-State coordination type for hardware components only. Select SW_ALL to change the P-State coordination type for all software installed in the system. Select SW_ANY to change the P-State coordination type for a software program in the system. The options are **HW_All,** SW_ALL, and SW_ANY.

▶CPU HWPM State Control

This feature is supported with the use of an intel Xeon E5-1600/E5-2600 v4 series processor.

Enable CPU HWPM

Select Enable for better CPU energy performance. The options are **Disable**, HWPM NATIVE MODE, and HWPM OOB MODE.

Enable CPU Autonomous Cstate

Use this feature to enable CPU Autonomous C State, which converts HALT instructions to Mwait. The options are **Disable** and Enable.

▶CPU C State Control

Package C State Limit

This feature allows the user to set the limit on the C State package register. The options are C0/C1 State, C2 State, C6 (Non Retention) State**,** and **C6 (Rentention) state.**

CPU C3 Report

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are **Disable** and Enable**.**

CPU C6 Report

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

Enhanced Halt State (C1E)

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

▶ CPU T State Control

ACPI (Advanced Configuration Power Interface) T-States

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

▶Chipset Configuration

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

▶North Bridge

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

▶IIO Configuration

EV DFX (Device Function On-Hide) Features

When this feature is set to Enable, the EV_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

Snoop Response Hold Off

Use this feature to set the snoop response hold-off value. Use the keyboard to enter a value. The default value is 9.

▶IIO1 Configuration

IOU2 (II01 PCIe Port 1)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, X8, and **Auto**.

CPU1 SLOT4 PCI-E 3.0 X8 Link Speed

This feature allows the user to select PCI-E support for the device installed on SLOT4. The options are Auto, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and **Gen 3 (8 GT/s)**.

IOU0 (II01 PCIe Port 2)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, X8, and **Auto**.

CPU1 SLOT6 PCI-E 3.0 X16 Link Speed

This feature allows the user to select PCI-E support for the device installed on SLOT6. The options are Auto, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and **Gen 3 (8 GT/s)**.

IOU1 (II01 PCIe Port 3)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, X8, and **Auto**.

CPU1 SLOT5 PCI-E 3.0 X8 Link Speed

This feature allows the user to select PCI-E support for the device installed on SLOT5. The options are Auto, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and **Gen 3 (8 GT/s)**.

Onboard LAN Link Speed

This feature allows the user to select the link speeds for the onboard LAN ports. The options are Auto, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and **Gen 3 (8 GT/s)**.

IIO1 IOU0 Non-Posted Prefetch

Use this feature to disable non-posted prefetch for IOU0 ports 2A and 2B. The IIO will make prefetches to read streams of data ahead of the I/O device. Set this feature to Disabled to keep the bit to the default value 1. Set this feature to Enabled to keep the bit value at 0, a negative logic. The options are Enable and **Disable**.

IIO1 IOU1 Non-Posted Prefetch

Use this feature to disable non-posted prefetch for IOU0 ports 3A and 3B. The IIO will make prefetches to read streams of data ahead of the I/O device. Set this feature to Disabled to keep the bit to the default value 1. Set this feature to Enabled to keep the bit value at 0, a negative logic. The options are Enable and **Disable**.

IIO1 IOU2 Non-Posted Prefetch

Use this feature to disable non-posted prefetch for IOU0 port 1. The IIO will make prefetches to read streams of data ahead of the I/O device. Set this feature to Disabled to keep the bit to the default value 1. Set this feature to Enabled to keep the bit value at 0, a negative logic. The options are Enable and **Disable**.

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

Select Enable to enable Intel I/OAT (I/O Acceleration Technology) support, which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are Disable and **Enable**.

No Snoop

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and Enable.

Relaxed Ordering

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

▶Intel® VT for Directed I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

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

Interrupt Remapping

Select Enable for Interrupt Remapping support to enhance system performance. The options are **Enable** and Disable.

▶QPI Configuration

▶QPI General Configuration

- Number of CPU

- Number of IIO

COD Enable (Available when the OS and the CPU support this feature)

Select Enabled for Cluster-On-Die support to enhance system performance in cloud computing. The options are **Disable** and Enable.

Early Snoop

Select Enabled for Early Snoop support to enhance system performance. The options are Disable, Enable, and **Auto.**

Home Dir Snoop with IVT-Style OSB

Use this feature to enable the memory snoop directory to improve latency for memory access. This feature improves memory and cache latency. The options are Disable, Enable, and **Auto.**

Isoc Mode

Use this feature to enable or disable the isochronous mode to reduce or increase the credits availabe for memory traffic. The options are **Disable** and Enable.

▶Memory Configuration

Enforce POR

Select Enable to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **Enabled** and Disabled.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1600, 1867, 2133, and 2400.

Data Scrambling

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are **Disabled** and Enabled.

tCCD_L Relaxation

If this feature is enabled, SPD (Serial Presence Detect) will override tCCD_L ("Column to Column Delay Long" or "Command to Command Delay-Long" on the column side). If this feature is set to disabled tCCD_L will be enforced based on the memory frequency. The options are Disable and **Auto**.

Enable ADR

Select Enabled for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The option are Enabled and **Disabled.**

Erase-Arm NVDIMMs

The option are Disabled and **Enabled**.

Restore NVDIMMs

The options are Disabled and **Enabled**.

Interleave NVDIMMs

The options are **Disabled** and Enabled.

S5 Trigger ADR

The original feature, ACPI Shutdown trigger ADR, has been changed to "S5 Trigger ADR." When this feature is Enabled, the BIOS will send a command to the BMC for it to do a 4-second power button override to trigger ADR (Automatic Diagnostic Repository). The options are **Disabled** and Enabled.

DRAM RAPL Baseline

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are Disable, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

Set Throttling Mode

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

A7 Mode

Select Enabled to support the A7 (Addressing) mode to improve memory performance. The options are Disable and **Enable**.

▶DIMM Information

This item displays the status of a DIMM module specified by the user.

- DIMMA1

- DIMMB1

- DIMMC1

- DIMMD1

▶Memory RAS (Reliability, Availability, and Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

RAS Mode

When Independent is selected, all the memory channels operate independently. When Mirror is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel to boost performance. The options are **Independent**, Mirror, and Lockstep Mode.

Memory Rank Sparing

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

Patrol Scrub

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

Patrol Scrub Interval

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

Demand Scrub

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

Device Tagging

Select Enable to support device tagging. The options are **Disable** and Enable.

▶**South Bridge**

The following South Bridge information will display:
- USB Configuration
- USB Module Version
- USB Devices

Legacy USB Support

This feature enables support for legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disable to have USB devices available only for EFI applications. The options are **Enabled,** Disabled, and Auto.

XHCI Hand-Off

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

EHCI Hand-Off

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

Port 60/64 Emulation

This feature enables or disables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB-aware Operating Systems. The options are Disabled and **Enabled**.

USB 3.0 Support

Select disabled to use USB 3.0 ports of the EHCI controller, or select the other options to use the XHCI controller. The options are Smart Auto, **Auto**, Enabled, and Disabled.

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #1 (at least one USB 2.0 connector should be enabled for EHCI support). The options are Disabled and **Enabled**.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #2 (at least one USB 2.0 connector should be enabled for EHCI support). The options are Disabled and **Enabled**.

XHCI Pre-Boot Driver

Select Enabled to enable XHCI (Extensible Host Controller Interface) support on a pre-boot drive specified by the user. The options are **Enabled** and Disabled.

▶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

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

Configure SATA as

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

Support Aggressive Link Power Mgmt

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

If the item above "Configure SATA as" is set to RAID, the following items will display:

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 Disabled, EFI, and **Legacy**.

SATA/sSATA RAID Boot Select

Use this feature to select the boot capability for SATA and sSATA RAID contollers. The options are SATA Contoller, **sSATA Controller,** and Both.

SATA 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

Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA 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.

▶sSATA Configuration

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

sSATA Controller(s)

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

Configure sSATA as

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

sSupport Aggressive Link Power Mgmt

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

*If the item above "Configure sSATA as" is set to RAID, the following items will display:

> **sSATA RAID Option ROM/UEFI Driver**
>
> Select UEFI to load the EFI drvier for system boot. Select Legacy to load a legacy driver for system boot. The options are **Legacy ROM** and UEFI Driver.
>
> **sSATA/sSATA RAID Boot Select**
>
> Use this feature to select the boot capability for SATA and sSATA RAID controllers. The options are SATA Contoller, **sSATA Controller,** and Both.

sSATA Port 0 ~ Port 3

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 3 Hot Plug**
>
> Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are Disabled and **Enabled**.
>
> **Port 0 ~ Port 3 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 3 sSATA 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.

▶Server ME Configuration

The following Server ME Configuration information will display:

- Operational Firmware Version

- ME Firmware Type

- Recovery Firmware Version

- ME Firmware Features

- ME Firmware Status #1

- ME Firmware Status #2

  - Current state
  - Error Code

▶PCIe/PCI/PnP Configuration

The following information will display:

- 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.

Maximum Payload

Use this feature to select the setting for the PCI Express maximum payload size. The options are **Auto**, 128 Bytes, and 256 Bytes

Maximum Read Request

This item manually sets the maximum read request size of the PCI Express device or allows the system BIOS to choose the value (Auto). The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes and 4096 Bytes

ASPM Support

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

MMIOHBase

Use this item to select the base memory size according to memory-address mapping for the IO hub. The options are **56 TB**, 40 TB, 24 TB, 3 TB, 2 TB, and 1 TB.

MMIO High Size

Use this item to select the high memory size according to memory-address mapping for the IO hub. The options are **256 GB**, 128 GB, 512 GB, and 1024 GB.

MMCFG BASE

Use this feature to select the low base address for PCIE adapters to increase base memory. The options are **Auto**, 0x30000000, 0x40000000, 0x60000000, 0x80000000, 0x90000000, 0xA0000000, 0xB0000000, 0xC0000000, 0xD0000000, and 0xE0000000.

CPU1 SLOT4 PCI-E 3.0 X8 SLOT 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.

CPU1 SLOT5 PCI-E 3.0 X8 SLOT 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.

CPU1 SLOT6 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.

Onboard LAN OPROM Type (X10SRM-F only)

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 OPROM (X10SRM-F only)

Use this option to select the type of device installed in LAN Port1 used for system boot. The default setting for LAN1 Option ROM is **PXE**.

Onboard LAN2 OPROM (X10SRM-F only)

Use this option to select the type of device installed in LAN Port2 used for system boot. The default setting for LAN2 Option ROM is **Disabled**.

Onboard 10G LAN Option ROM Type (X10SRM-TF only)

Use this feature to select which firmware type to be loaded for the onboard 10G LAN OPROM option. The options are Disabled, **Legacy**, and EFI.

Onboard Video Option ROM

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

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard** and Offboard.

Network Stack

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

IPv4 PXE Support

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

IPv6 PXE Support

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

▶Super IO Configuration

The following Super IO information will display:

- Super IO Chip 2400

Super IO Chip Logical Device(s) Configuration

▶Serial Port 1

Serial Port 1 Configuration

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 Configuration

This submenu allows the user the configure settings of Serial Port 1.

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.

▶**Serial Port Console Redirection**

COM1 Console Redirection

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

If the item above set to Enabled, the following items will become available for user's 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.

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS POST

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

SOL/COM2

SOL/COM2 Console Redirection

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

If the item above set to Enabled, the following items will become available for user's 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.

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 ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS POST

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

EMS (Emergency Management Services) Console Redirection

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

If the item above 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.

Data Bits

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

Parity

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

Stop Bits

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

▶ACPI Settings

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**.

High Precision Event Timer

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

▶Trusted Computing Configuration

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM (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 Disabled and **Enabled**.

*If the item above set to Enabled, the following items will become available for user's configuration:

The following Platform Configuration Register information will display:

   Active PCR banks

   Available PCR banks

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**.

TPM State

This feature changes the TPM State. The options are **Disabled** and Enabled. Note: The system will restart to change the TPM State.

Pending TPM 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 Win2012, Win8, and Win10. TCG 2 has support for Win10 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.

```
            Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
      Main   Advanced  Event Logs  IPMI   Security   Boot   Save & Exit

  ▶ Change SMBIOS Event Log Settings                    Press <Enter> to change the
  ▶ View SMBIOS Event Log                               SMBIOS Event Log
                                                        configuration.


















                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

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```

▶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 **Enabled** and Disabled.

Runtime Error Logging Support

Select Enable to support Runtime Error Logging. The options are **Enable** and Disable. If this item is set to Enable, the following item will be available for configuration:

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 Long Standard Settings

Log System Boot Event

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

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurences 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 section displays the contents of the SMBIOS Event Log.

4.5 IPMI

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

```
                 Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

    BMC Firmware Revision                3.32                  Press <Enter> to change the
    IPMI STATUS                          Working               SEL event log configuration.

  ▶ System Event Log
  ▶ BMC Network Configuration




                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit

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```

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 **Enabled** and Disabled.

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

IPMI LAN Selection

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

IPMI Network Link Status

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

Update IPMI LAN Configuration

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

If the item above set to Yes, the following item will become available for user's 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 **DHCP** and Static.

Subnet Mask

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

Station MAC Address

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

Gateway IP Address

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

IPV6 Support

Use this feature to enable IPV6 Support. The options are **Enabled** and Disabled.

Configuration Address Source

This item displays the current configuration address for this computer.

Station IPV6 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).

Prefix Length

Use this feature to change the prefix length.

IPV6 Router1 IP Address

Use this feature to change the IPV6 Router1 IP address.

4.6 Security

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

```
                    Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
         Main   Advanced  Event Logs   IPMI   Security   Boot   Save & Exit

       Password Description                                      Setup: Check password while
                                                                 invoking setup. Always:
       If ONLY the Administrator's password is set,              Check password while
       then this only limits access to Setup and is             invoking setup as well as
       only asked for when entering Setup.                       on each boot.
       If ONLY the User's password is set, then this
       is a power on password and must be entered to
       boot or enter Setup. In Setup the User will
       have Administrator rights.
       The password length must be
       in the following range:
       Minimum length                      3
       Maximum length                     20


       Password Check                   [Setup]
       Administrator Password                                    →←: Select Screen
                                                                 ↑↓: Select Item
     ▶ Secure Boot Menu                                          Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit

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```

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 Menu

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

- System Mode

- Secure Boot

- Vendor Keys

Secure Boot

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

Secure Boot Mode

Use this item to configure Secure Boot variables without authentication. 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 **Enabled** and Disabled.

▶**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.

▶**Enroll All Factory Default Keys**

Select Yes to install all default secure keys set by the manufacturer. 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.

▶**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 Key**

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.

▶**Forbiden 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.

4.7 Boot

Use this feature to configure Boot Settings:

```
           Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Boot Configuration                                       ▲  Number of seconds to wait
   Setup Prompt Timeout                    1                   for setup activation key.
                                                              65535(0xFFFF) means
   Boot Mode Select                        [DUAL]             indefinite waiting.


   FIXED BOOT ORDER Priorities
   Dual Boot Order #1                      [Hard Disk]
   Dual Boot Order #2                      [CD/DVD]
   Dual Boot Order #3                      [USB Hard Disk]
   Dual Boot Order #4                      [USB CD/DVD]
   Dual Boot Order #5                      [USB Key]
   Dual Boot Order #6                      [USB Floppy]
   Dual Boot Order #7                      [Network:IBA XE S1...]
   Dual Boot Order #8                      [UEFI Hard Disk]
   Dual Boot Order #9                      [UEFI CD/DVD]
   Dual Boot Order #10                     [UEFI USB Hard Disk]  _____
   Dual Boot Order #11                     [UEFI USB CD/DVD]   ↔: Select Screen
   Dual Boot Order #12                     [UEFI USB Key]      ↑↓: Select Item
   Dual Boot Order #13                     [UEFI USB Floppy]   Enter: Select
   Dual Boot Order #14                     [UEFI Network]      +/-: Change Opt.
   Dual Boot Order #15                     [UEFI AP:UEFI: Bui...]  F1: General Help
                                                              F2: Previous Values
 ▶ Delete Boot Option                                         F3: Optimized Defaults
                                                           ▼  F4: Save & Exit
                                                              ESC: Exit

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```

Setup Prompt Timeout

Use this feature to specify the number of seconds to wait for setup activation keys. Use the keypad to enter the value. The default value is **1**.

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.** The default setting is 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 above set to Legacy, UEFI/Dual the following items will be displayed:

- Legacy/UEFI/Dual/Boot Order #1

- Legacy/UEFI/Dual/Boot Order #2

- Legacy/UEFI/Dual/Boot Order #3

- Legacy/UEFI/Dual/Boot Order #4

- Legacy/UEFI/Dual/Boot Order #5

- Legacy/UEFI/Dual/Boot Order #6

- Legacy/UEFI/Dual/Boot Order #7

- Legacy/UEFI/Dual/Boot Order #8

- Legacy/UEFI/Dual/Boot Order #9

- Legacy/UEFI/Dual/Boot Order #10

- Legacy/UEFI/Dual/Boot Order #11

- Legacy/UEFI/Dual/Boot Order #12

- Legacy/UEFI/Dual/Boot Order #13

- Legacy/UEFI/Dual/Boot Order #14

- Legacy/UEFI/Dual/Boot Order #15

▶Add New Boot Option

This feature allows the user to add a new boot option to the boot priority features for your system.

Add Boot Option

Use this featire to specify the name for the new boot option.

Path for Boot Option

Use this feature to enter the path for the new boot option in the format fsx:\path\filename.efi.

Boot Option File Path

Use this feature to specify the file path for the new boot option.

Create

Use this feature to set the name and the file path of the new boot option.

▶Delete Boot Option

Use this feature to remove a pre-defined boot device from which the system will boot during startup.

The settings are [any pre-defined boot device].

▶Hard Disk Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Legacy Boot Option #1

▶**NETWORK Drive BBS Priorities**

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

- Legacy Boot Order #1

▶**UEFI Hard Disk Drive BBS Priorities**

This feature sets the system boot order of detected devices.

- UEFI Boot Option #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.

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Discard Changes and Exit                      Exit system setup without
   Save Changes and Reset                        saving any changes.

   Save Options
   Save Changes
   Discard Changes

   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   UEFI: Built-in EFI Shell
   UEFI: Built-in EFI Shell
   IBA XE Slot 0300 v2358
   IBA XE Slot 0301 v2358
                                                 →←: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

          Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

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, so the new system configuration parameters can 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

UEFI BIOS Codes

BIOS Error POST (Beep) Codes

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

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

Fatal errors will not allow the system to continue to 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.

For more information, please refer to the BIOS Error Post (Beep) Codes at https://www.supermicro.com/manuals/other/AMI_BIOS_POST_Codes_for_Grantley_Motherboards.pdf.

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

Notes

Appendix B

Software Installation

B.1 Installing Software Programs

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

After accessing the 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 the 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.

B.2 SuperDoctor® 5

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

Appendix C

Standardized Warning Statements

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

Read this section in its entirety before installing or configuring components.

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

Battery Handling

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

קיים סכנת פיצוץ של הסוללה במידה והחלפתה איה נעשית נכון. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצ.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من التفجار في حالة استبدال البطارية بطريقة غير صحيحة قطعاك استبدل البطارية

قط ينفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقا لتعليمات الشركة المصنعة

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 צריך להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج يتعين 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.

Notes

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. Doing so may cause a boot failure.

D.1 Overview

The Unified Extensible Firmware Interface (UEFI) specification provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot up the system. UEFI offers a clean, hand-off control to a computer system at bootup.

D.2 Recovering the UEFI BIOS Image

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

> **Note:** Follow the BIOS Recovery instructions below for BIOS recovery when the main BIOS block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repair.

D.3 Recovering the BIOS Block with a USB Device

This feature allows the user to recover a 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.

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

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

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

2. Insert the USB device that contains the new BIOS image ("Super.Rom") into your USB drive and power on the system

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your PS2 or USB keyboard until your hear two short beeps. This may take from a few seconds to one minute.

4. After locating the new BIOS binary image, the system will enter the BIOS Recovery page as shown below.


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

5. 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.
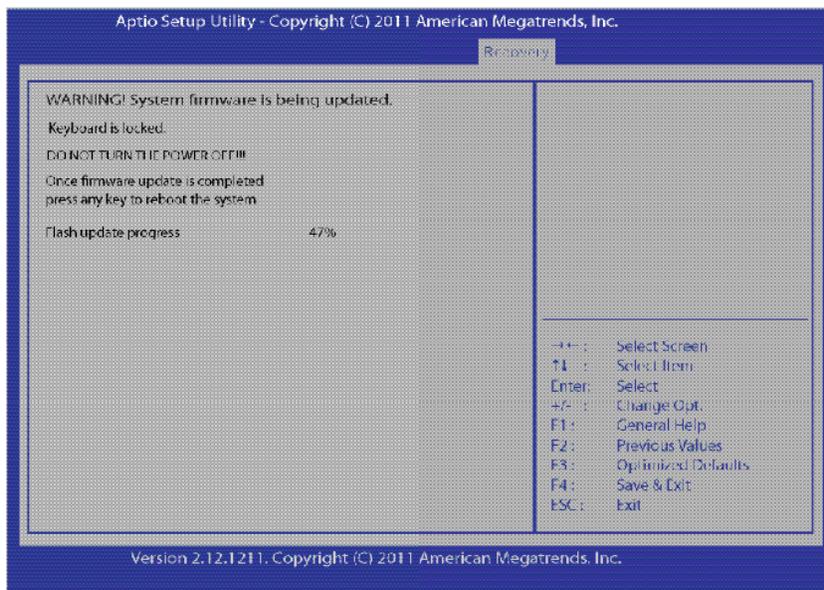
   Note: *Do not interrupt the BIOS flashing process until it has completed*.
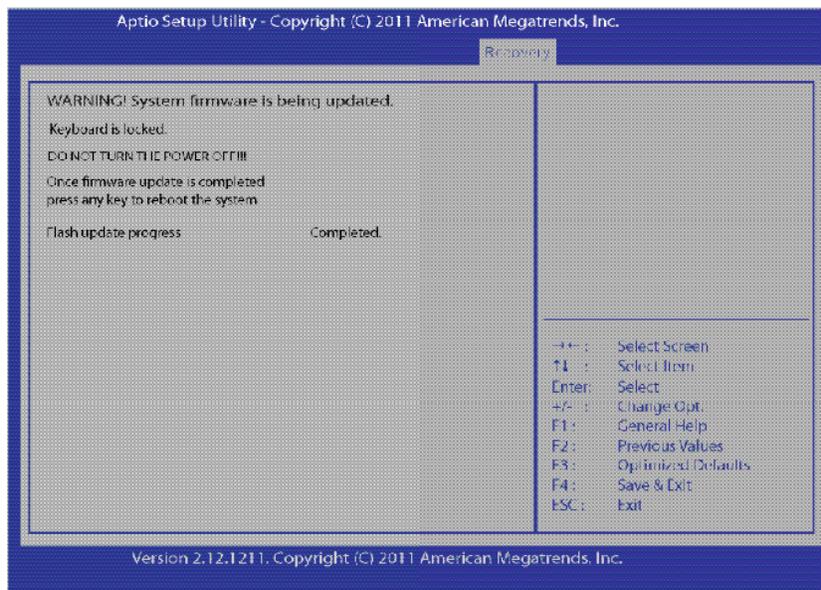
6. After the BIOS recovery process has completed, press any key to reboot the system.

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

8. When a DOS prompt appears, enter FLASH.BAT BIOSname.### at the prompt.

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

9. After seeing the message that 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.

10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load the default settings.

12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.

(Disclaimer Continued)

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