



X12STN-H/-E/-L/-C
X12STN-H/-E/-L/-C-WOHS

USER'S MANUAL

Revision 1.0a

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Preface

About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the X12STN series motherboards.

About This Motherboard

The X12STN motherboard is a 3.5" Single Board Computer size 4.01" x 5.75" (102mm x 146mm) powered by the 11th generation of Intel® Core™ U series processor, which operates on low power and features a TDP of 15~28W to provide high performance computing and multimedia capabilities.

X12STN adopts the latest 64-bit, quad/dual-core processors built on 10nm process technology for improvements in CPU processing, graphics, security and I/O flexibility.

In addition, X12STN is equipped with the latest generation graphics core (Intel Iris® Xe / UHD for 11th Gen processor Graphics) with DirectX 12, OpenGL 4.5, OpenCL 2.2, and 4K encoding/decoding, which increases the possibility for multimedia application development.

X12STN with Intel Core i7 and Core i5 supports Intel vPro™ Technology to support Intel Active Management Technology (AMT), Intel Virtualization Technology (VT-x/-d) and Trusted Execution Technology. It enhances business-class performance, hardware-enhanced security features, modern remote manageability, and PC fleet stability.

X12STN supports not only quadruple independent displays, including HDMI 1.4, 2.0, DP1.4a (from Type-C), and 48-bit LVDS interfaces, but also low power dual channel 3200MHz DDR4 Non-ECC SODIMM of up to 64GB and TPM 2.0, as well as trendy technology built in with USB3.1 Gen2 type-C.

X12STN also supports a wide range of 12-24V (10% margin) DC input power supply in order to meet various embedded requirement. Based on numerous demands from embedded applications, Supermicro developed an optimized thermal solution for X12STN producing a fanless design on a high performance platform. It is ideal for embedded networking and storage systems. It features rich I/O interface including two 2.5Gigabit Ethernet, three M.2 M-Key/B-Key/E-Key connections, four COM ports (two RS232/422/485, two RS232), eight USB ports (4 x USB3.1 Gen2, 4 x USB2.0), and an audio speaker output with 3W amplifier to help customer develop their embedded application easily.

Note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, refer to <https://www.supermicro.com/products/>.

Manual Organization

Chapter 1 describes the features, specifications, and performance of the motherboard, and provides detailed information on the processor.

Chapter 2 provides hardware installation instructions. Read this chapter carefully when installing the processor, memory modules, and other hardware components into the system.

Chapter 3 describes troubleshooting procedures for video, memory, and system setup stored in the CMOS.

Chapter 4 includes an introduction to the BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS Error Codes information.

Appendix B lists software program installation instructions.

Appendix C lists standardized warning statements in various languages.

Appendix D provides UEFI BIOS Recovery instructions.

Conventions Used in the Manual

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



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



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



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



Note: Additional information given to differentiate various models or to ensure proper 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 addition to the motherboard, several important parts that are included with the system are listed below. If anything listed is damaged or missing, contact your retailer.

1.1 Checklist

Main Parts List (Retail Single Package)		
Description	Part Number	Quantity
Supermicro Motherboard with passive heatsink	X12STN-H/-E/-L/-C	1
Audio cable	CBL-OTHR-0986	1
COM cable	CBL-CDAT-0665	1
SATA power cable	CBL-PWEX-1030	1
USB cable	CBL-CUSB-0983	1
SATA cable	CBL-SAST-0881	1
DC IN power cable	CBL-PWEX-1029	1
Quick Reference Guide	MNL-2395-QRG	1

Main Parts List (Bulk Package)		
Description	Part Number	Quantity
Supermicro Motherboard with passive heatsink (-WOHS SKU does not include a heatsink)	X12STN-H/-E/-L/-C X12STN-H/-E/-L/-C-WOHS	1
DC IN power cable	CBL-PWEX-1029	1

Optional Parts List		
Description	Part Number	Quantity
Power adapter	MCP-250-10137-0N	1
Heat Spreader	MCP-350-00008-0N	1
12V/5V SATA power cable	CBL-PWEX-1032	1
DC IN Power Cable (DC Jack)	CBL-PWEX-1110-15	1

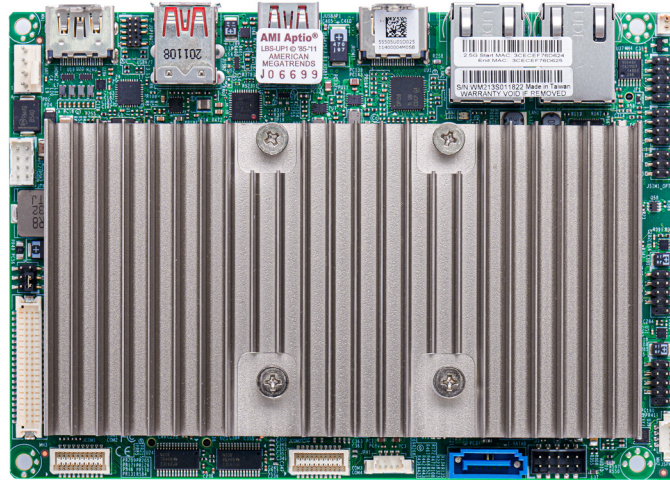
Important Links

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

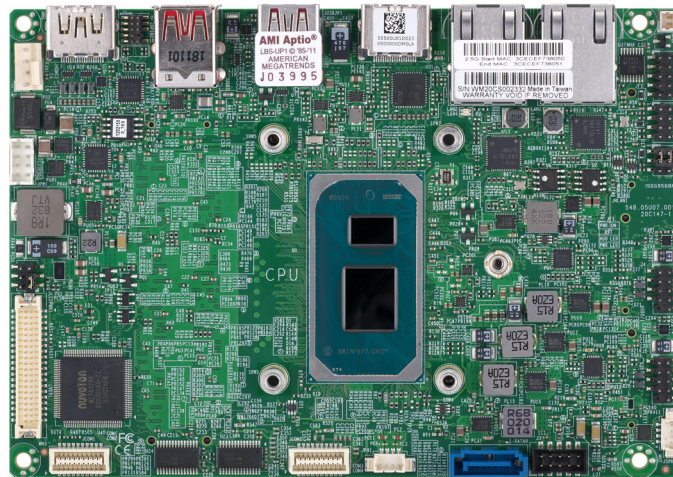
- Supermicro product manuals: <https://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wdl/driver/>
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/
- If you have any questions, contact our support team at: support@supermicro.com

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

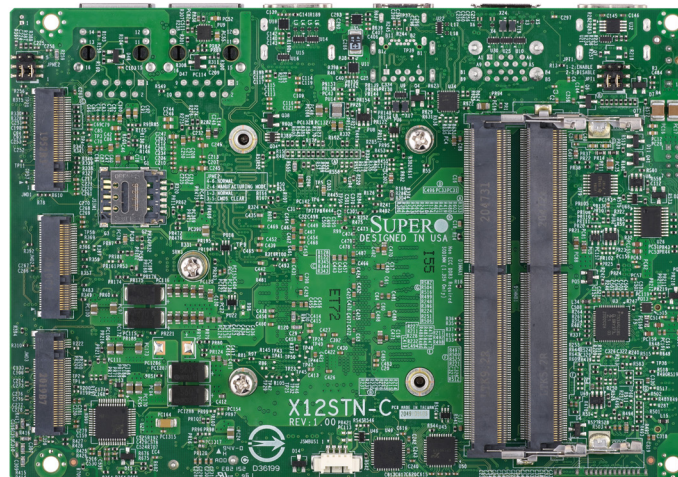
Figure 1-1. X12STN-H/-E/-L/-C Series Motherboards Motherboard Images



Top Side Motherboard Image (X12STN-H/-E/-L/-C Series)



Top Side Motherboard Image (X12STN-H/-E/-L/-C-WOHS Series)



Bottom Side Motherboard Image


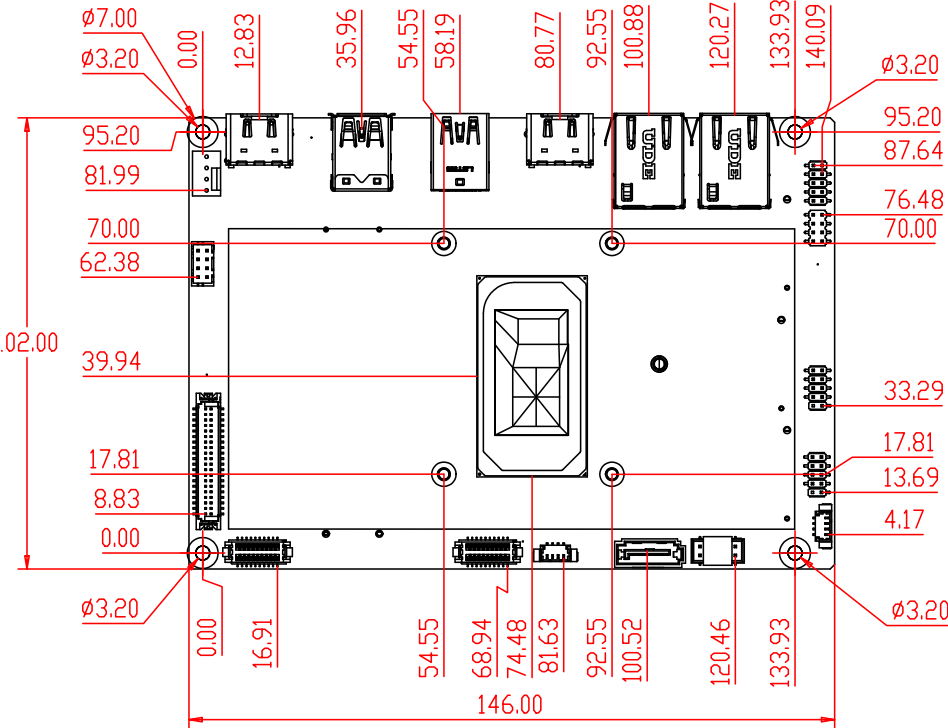
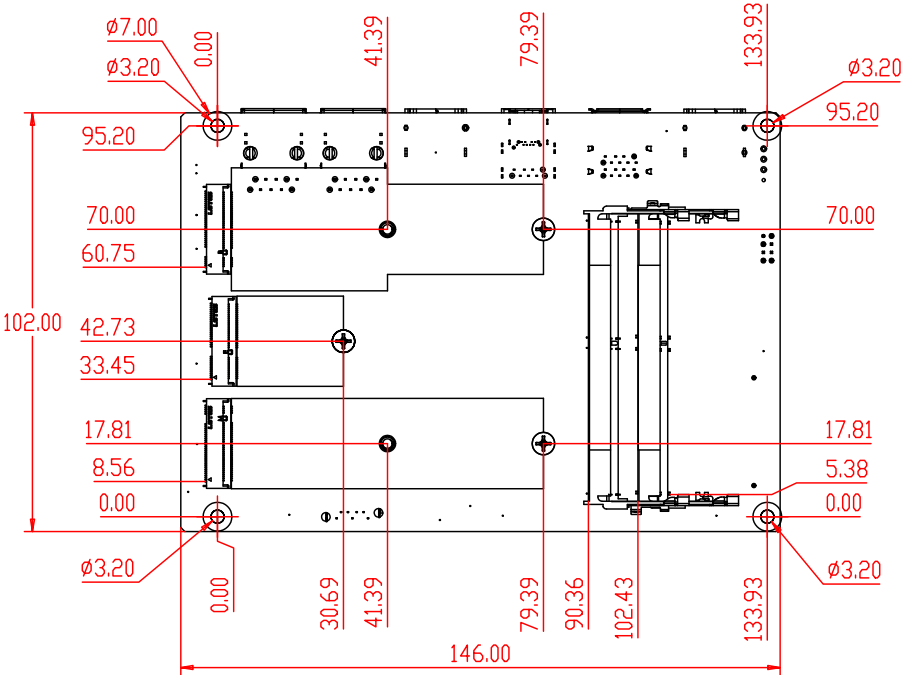
 **Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

Figure 1-4. Motherboard Mechanical Drawings
(Not drawn to scale)

Top Mechanical Drawing



Bottom Mechanical Drawing




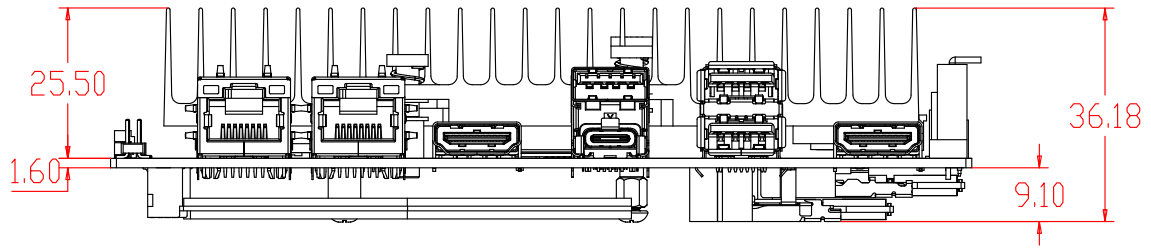
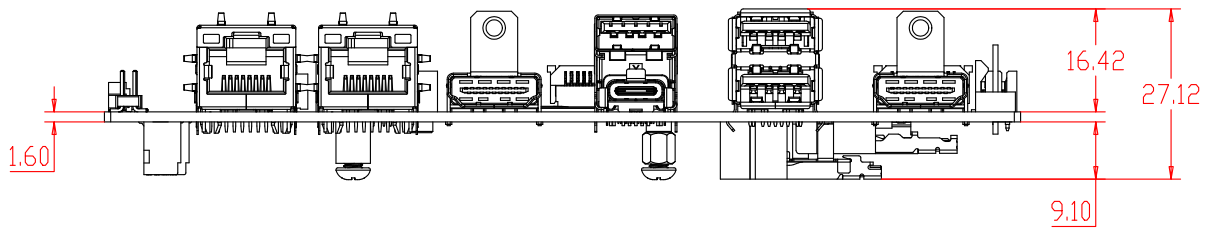
 **Note:** Components not documented are for internal testing only.

Figure 1-4. Back Panel I/O Mechanical Drawings
(Not drawn to scale)

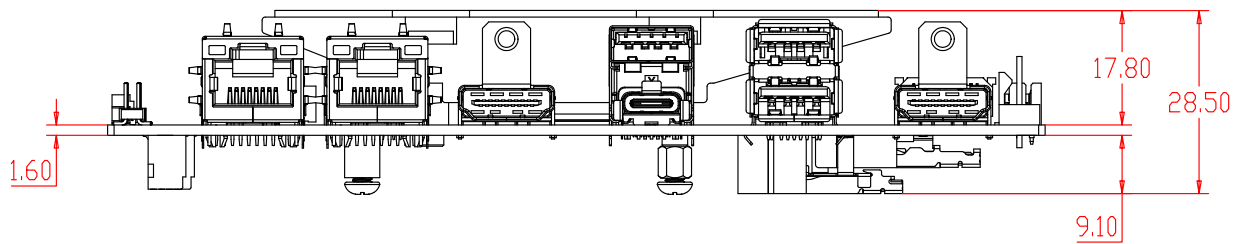
Back Pane I/O with Heatsink



Back Pane I/O without Heatsink

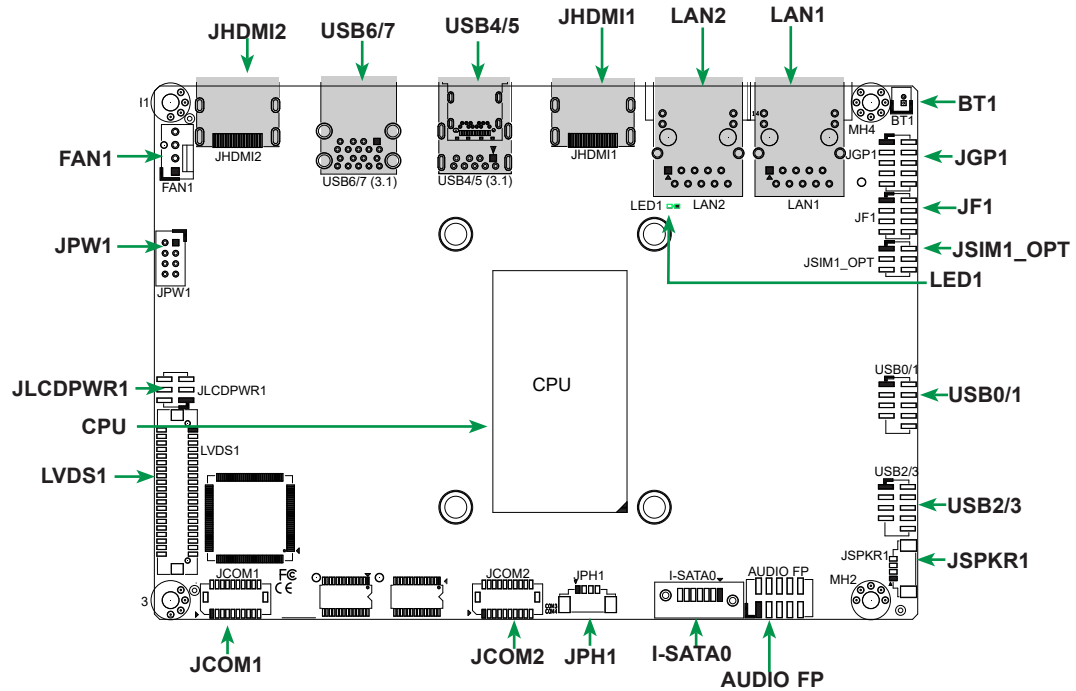


Back Pane I/O with Heat Spreader

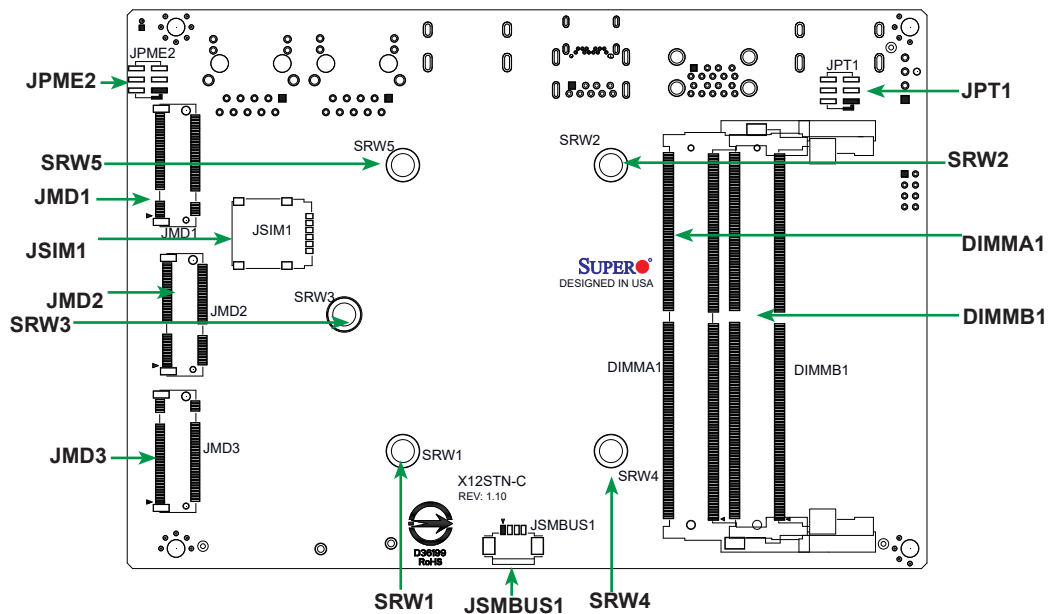


Quick Reference

Top Layout



Bottom Layout



Notes:

- See [Chapter 2](#) for detailed information on jumpers, I/O ports, and JF1 front panel connections. Jumpers and LED indicators not indicated are used for testing only.

- "■" indicates the location of Pin 1.

Quick Reference Table

Jumper	Description	Jumper Setting (Default *)
JLCDPWR1	LVDS Panel VCC Power Source Selection	Pin 1-3* (3.3V), Pin 3-5 (5V), Pin 3-4 (12V)
JPME2	CMOS	Pin 1-3* (Normal), Pin 3-5 (Clear CMOS)
JPME2	Manufacturing Mode	Pin 2-4 (Manufacturing Mode) Pin 4-6* (Normal)
JPT1	TPM Enable	Pin 1-3* (Enable), Pin 3-5 (Disable)
JPT1	Force Power On	Pin 2-4* (Force power on) Pin 4-6 (Power button power on)
JSIM1_OPT	SIM Detect Option	Pin 2-4* (Normal) Pin 4-6 (Low Activity)

LED	Description	Status
LED1	Onboard Power LED	Green: System On Red: S5 or main power fail Off: System Off (power cable not connected)

Connector	Description
AUDIO FP	Front Panel Audio Header (Mic-In/Line-Out)
BT1	Battery Connector (To Clear CMOS, remove the battery, short pins 1-2 and install the battery.)
FAN1	System Fan Header
I-SATA0	SATA 3.0 Port
JCOM1: COM1/COM2	COM Header (two RS232/RS422/RS485)
JCOM2: COM3/COM4	COM Header (two RS232 ports)
JF1	Front Control Panel Header (Power/HDD LED, Reset, Power button)
JGP1	8-bit General Purpose I/O Header
JHDMI1	Back Panel HDMI 2.0b Port
JHDMI2	Back Panel HDMI 1.4b Port
JMD1	M.2 Slot B-KEY 2280/2242/3042 (SATA 3.0 or PCIe / USB 3.1 /USB 2.0)
JMD2	M.2 Slot E-KEY 2230 (PCIe / USB 2.0 / CVNi)
JMD3	M.2 Slot M-KEY 2280/2242 (PCIe Gen4 x4)
JPH1	4-pin HDD Power Connector
JPW1	8-pin 12-24V Power Connector
JSIM1	JSIM1 Nano SIM Card Slot (bottom side)
JSMBUS1	System Management Bus Header
JSPKR1	Audio Speaker Output with 3W Amplifier
LAN1, LAN2	2.5 Gigabit Ethernet Ports
LVDS1	Dual Channel 48-bit LVDS Connector
SRW1 ~ SRW5	M.2 Mounting holes
USB0/1	Front accessible USB 2.0 Headers
USB2/3	Front accessible USB 2.0 Headers
USB5	Back Panel USB 3.1 Type C Port (Supports DP1.4a with Alt. Mode)
USB4/6/7	Back Panel USB 3.1 Type A Ports

Motherboard Features

Motherboard Features	
CPU	
<ul style="list-style-type: none"> • X12STN-H/-H-WOHS supports 11th Generation Intel Core™ i7-1185GRE • X12STN-E/-E-WOHS supports 11th Generation Intel Core™ i5-1145GRE • X12STN-L/-L-WOHS supports 11th Generation Intel Core™ i3-1115GRE • X12STN-C/-C-WOHS supports 11th Generation Intel CELERON 6305E 	
Memory	
<ul style="list-style-type: none"> • Supports up to 64GB of Non-ECC SO-DIMM (32GB per SO-DIMM) DDR4 memory with speeds of up to 3200MHz 	
DIMM Size	
<ul style="list-style-type: none"> • Up to 32GB 	
Expansion Slots	
<ul style="list-style-type: none"> • One M.2 B-Key 3042/2242/2280 (PCIe or SATA/USB3/USB2) with nano SIM holder • One M.2 E-Key 2230 (PCIe/USB2/CNVi) • One M.2 M-Key 2242/2280 (PCIe 4.0 x4) 	
Network	
<ul style="list-style-type: none"> • Dual LAN with Intel 2.5G Ethernet Controller i225IT with RJ45 	
Graphics	
<ul style="list-style-type: none"> • Intel UHD Graphics for 11th Gen (X12STN-L/-C) • Intel Iris® Xe Graphics (X12STN-H/-E) <p>(Up to 96 graphics execution units, four independent display pipes, capable of up to two channels of four channels of 4K60)</p>	<ul style="list-style-type: none"> • Features: OpenGL 4.5, DirectX 12, OpenCL 2.2, Intel Built-in Visuals, Intel Quick Sync Video, PlayReady 3, SGX-CP • Hardware Decode: 5K60 10b 4:4:4 HEVC/VP9/SCC, 8K60 12b 4:2:0 HEVC/VP9/SCC, 8K30 10b 4:2:0 AV1, 4K60 8b 4:2:0 AVC • Hardware Encode: 4K60 10b 4:4:4 HEVC/VP9/SCC, 8K30 or 5K60 8b/10b 4:2:0 HEVC/VP9/SCC, 4K60 8b 4:2:0 AVC
I/O Devices	
<ul style="list-style-type: none"> • Video • COM Ports • SATA Ports • Audio Header • GPIO Header • SMBus Header • Audio Speaker Output • Fan • TPM 	<ul style="list-style-type: none"> • One HDMI2.0b port (max. resolution up to 4096x2304 at 60Hz). • One HDMI 1.4 port (max. resolution up to 4096x2160 at 30Hz). • One DP1.4a port (Type-C Alt mode, max. resolution up to 7680×4320 at 30Hz). • One Dual channel 48-bit LVDS (max. resolution up to 1920x1200 at 60Hz). • Four front accessible ports (JCOM1 supports two RS232/433/485, JCOM2 supports two RS232) • One SATA (6Gb/s) port (I-SATA1) • One HD Audio header with Mic-In/Headphone-out (Realtek ALC888S) (Audio only supports 0-60°C) • One 8-bit General Purpose Input/Output Header • One SMBus box header • One Audio Speaker Output with 3W Amplifier Header • One System Fan • One Onboard TPM 2.0 SPI Chip

Motherboard Features

Peripheral Devices

- Three USB 3.1 ports on the rear I/O panel (USB4 and USB6/7 are Type A)
- One USB 3.1 port on the rear I/O panel (USB5 is Type-C, supports DP1.4a with Alt. Mode)
- Four USB 2.0 headers (USB0/1 and USB2/3 are pin headers)

BIOS

- 256Mb SPI AMI BIOS®
- ACPI 6.3, SMBIOS 3.4, UEFI 2.7, PCI F/W 3.0, BIOS rescue hotkey, RTC (Real Time Clock) wakeup

Power Management

- ACPI power management
- S3, S4, S5
- Power-on mode for AC power recovery
- Wake On LAN
- Management Engine
- Force Power On by Jumper
- RTC Battery (typical voltage: 3.0V, normal discharge capacity: 210mAh)

System Health Monitoring

- Onboard voltage monitoring for +12V, +5V, +3.3V, +3.3V standby, +1.2V, VCGI, VBAT, and system temperature
- CPU switching phase voltage regulator
- CPU thermal trip support

Fan Control

- Fan status monitoring with firmware
- Multi-speed fan control via SIO

System Management

- Intel vPro™ (X12STN-H/-E only)
- Trusted Platform Module (TPM) 2.0
- SuperDoctor® 5, Watch Dog, NMI, RoHs

LED Indicators

- Power/Suspend-state indicator LED

Mechanical Specification

- Dimensions: 4" (L) x 5.75" (W) (102mm x 146mm) SBCs
- Total Height: 32.88mm

Environment

- Operating Temperature Range: X12STN-H/-E/-L supports -40°C ~ 60°C (-40°F ~ 140°F), X12STN-H/-E/-L-WOHS supports -40°C ~ 85°C (-40°F ~ 185°F), X12STN-C supports 0°C ~ 60°C (32°F ~ 140°F), X12STN-C-WOHS supports 0°C ~ 85°C (32°F ~ 185°F)
- Non-Operating Temperature Range: -40°C ~ 85°C (-40°F ~ 185°F)
- Operating Relative Humidity Range: 8% ~ 90% (non-condensing)
- Non-Operating Relative Humidity Range: 10% ~ 95% (non-condensing)



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

Figure 1-5.
System Block Diagram

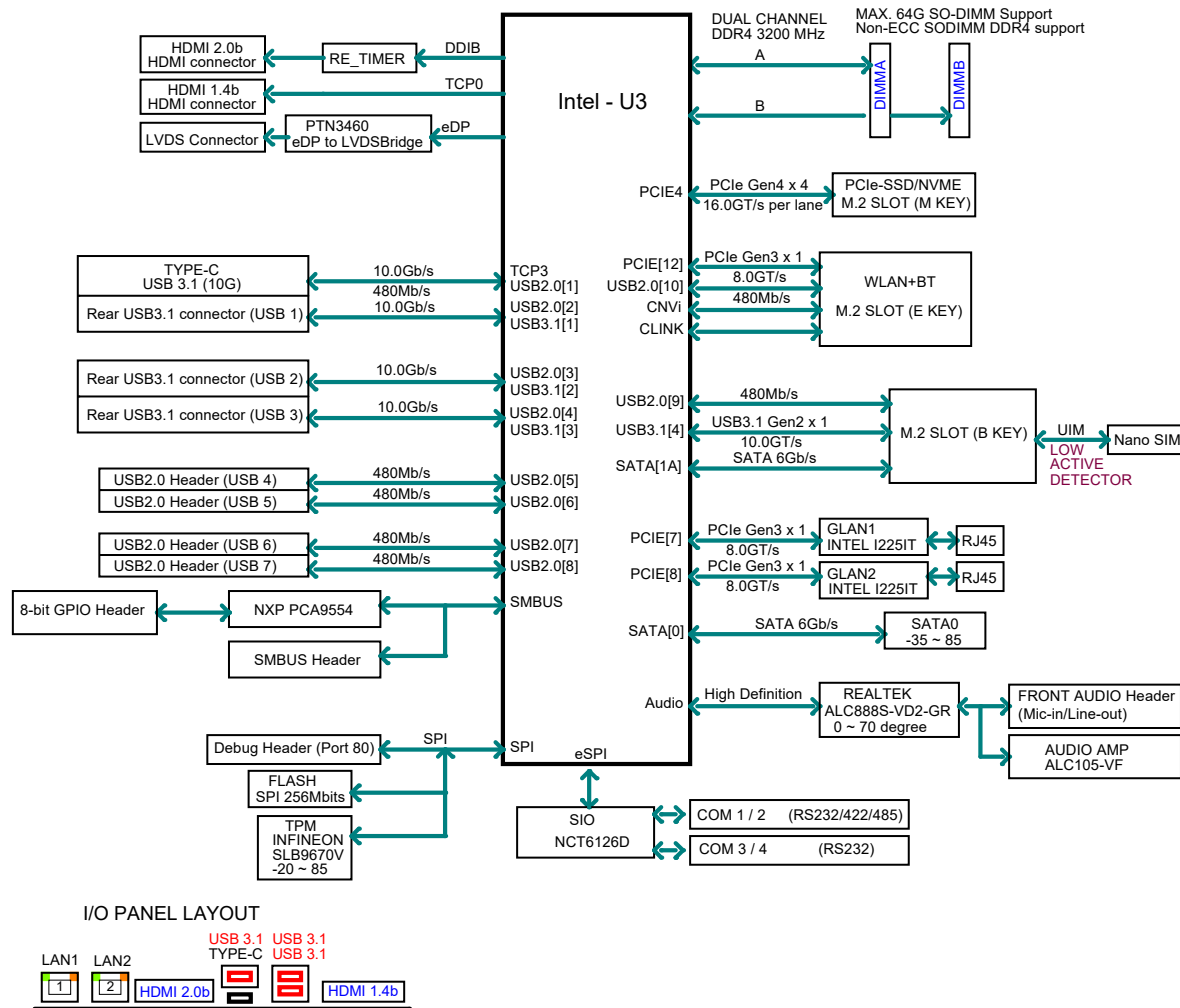


Figure 1-6.

X12STN Series Specification Chart

Model	CPU	Base Freq	Turbo Freq	CPU TDP	2.5GbE	HDMI	LVDS	USB 3.1 Gen2	USB 2.0	GPIO	TPM	vPro	Temp
X12STN-H/ X12STN-H-WOHS	i7-1185GRE	1.8	4.4	15W	2	2	48-bit	4	4	8-bit	2.0	Yes	-40-60C/ -40-85C
X12STN-E/ X12STN-E-WOHS	i5-1145GRE	1.5	4.1	15W	2	2	48-bit	4	4	8-bit	2.0	Yes	-40-60C/ -40-85C
X12STN-L/ X12STN-L-WOHS	i3-1115GRE	2.2	3.9	15W	2	2	48-bit	4	4	8-bit	2.0	No	-40-60C/ -40-85C
X12STN-C/ X12STN-C-WOHS	Celeron 6305E	1.8	N/A	15W	2	2	48-bit	4	4	8-bit	2.0	No	0-60C/ 0-85C

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

1.2 Processor Overview

The 11th Gen Intel Core™ processors deliver high-performance CPU/GPU compute with integrated AI acceleration, plus capabilities for applications that demand high-speed processing, computer vision, and low-latency deterministic computing.

The X12STN motherboard supports the following features:

- Intel Boot GuardYes
- Enhanced Intel SpeedStep® Technology
- Mode-based Execute Control (MBE)
- Intel Control-Flow Enforcement Technology
- Intel Total Memory Encryption

1.3 Special Features

This section describes the health monitoring features of the X12STN motherboard. The motherboard has an onboard System Hardware Monitor chip that supports system health monitoring.

Recovery from AC Power Loss

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

1.4 ACPI Features

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

In addition to enabling operating system-directed power management, ACPI 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® 10.

1.5 Power Supply

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

1.6 Super I/O

The Super I/O (NCT6106D chip) provides four high-speed, 16550 compatible universal asynchronous receiver-transmitter (UART) serial communication ports, one of which supports IrDA serial infrared communication. Each UART includes a 128 byte send/receive FIFO, a programmable baud rate generator, complete modem control capability, and a processor interrupt system. UARTs provide legacy speed with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

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

The IRQs, DMAs and I/O space resources of the Super I/O can be flexibly adjusted to meet ISA PnP requirements, which support ACPI and APM (Advanced Power Management).

Chapter 2

Installation

2.1 Static-Sensitive Devices

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

Precautions

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

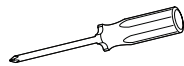
Unpacking

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, we highly recommend metal ones because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or tightly are screwed in.

Tools Needed



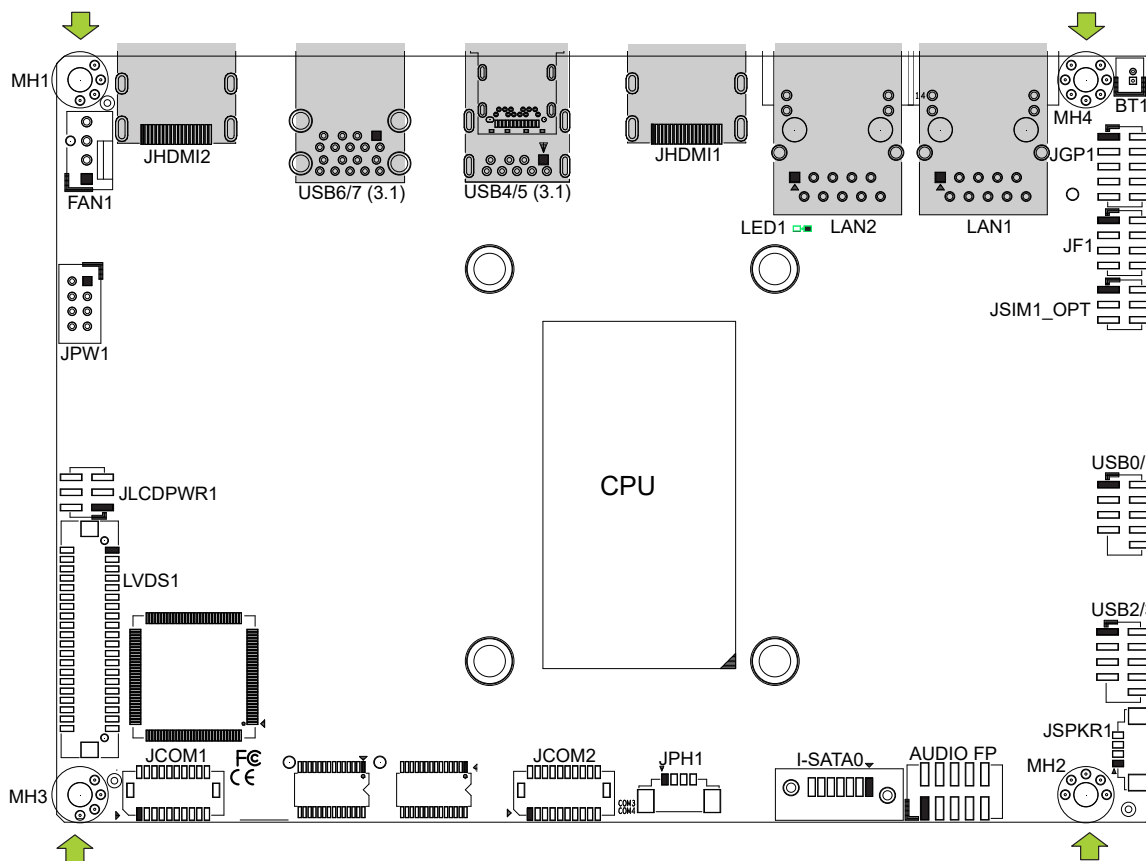
Phillips Screwdriver (1)



Phillips Screws (4)



Standoffs (4)
Only if Needed



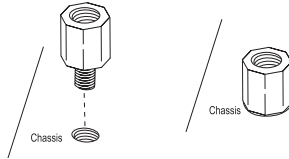
Location of Mounting Holes



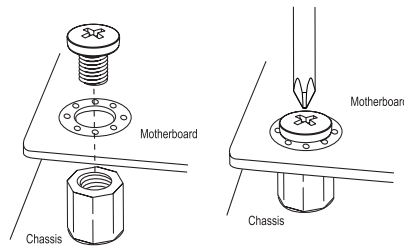
Note: 1) To avoid damaging the motherboard and its components, do not use a force greater than 8 lbf/in on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Take precautionary measures to avoid damaging these components when installing the motherboard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

Installing the Motherboard


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



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



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

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

2.3 Memory Support and Installation



Note: Check the Supermicro website for recommended memory modules.

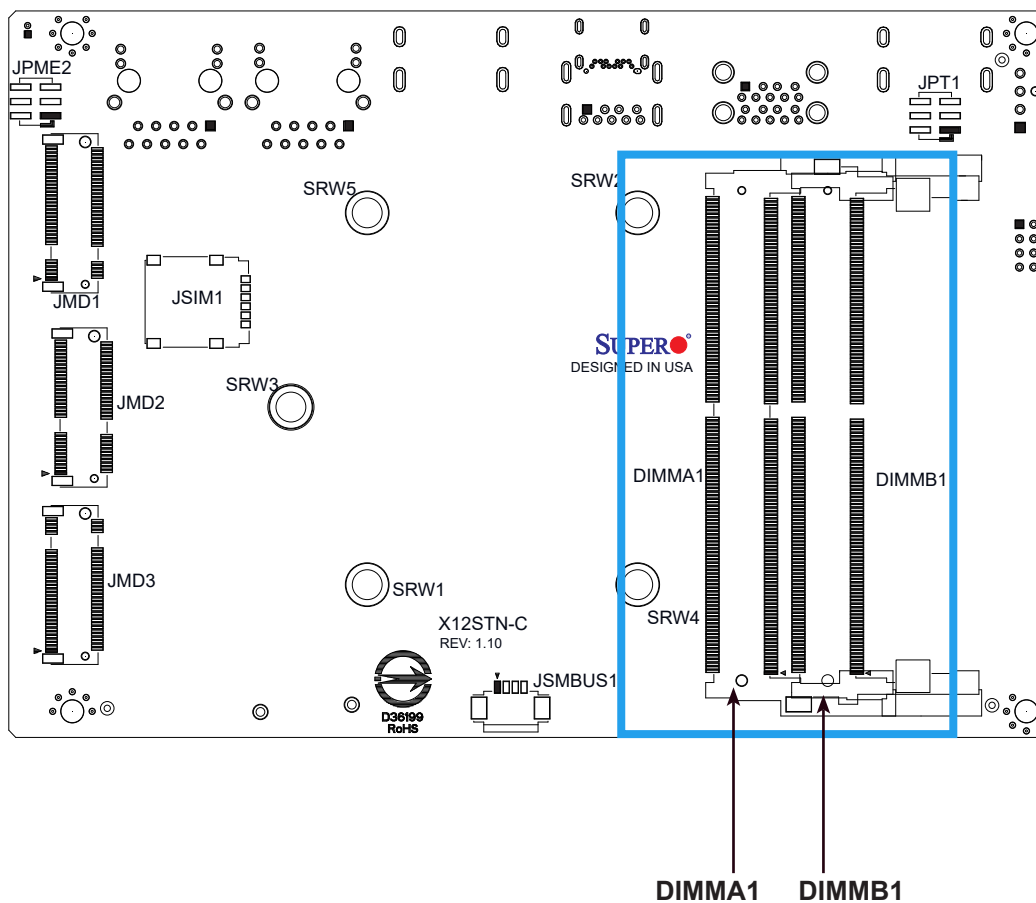


Important: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Memory Support

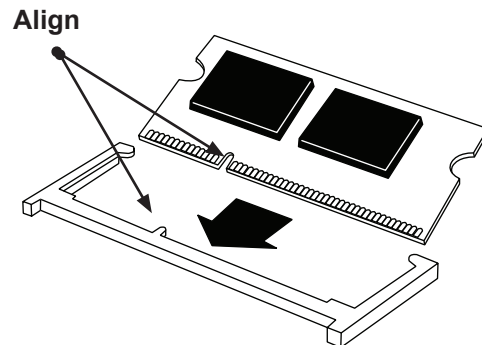
The X12STN supports up to 64GB of 3200MHz DDR4 Non-ECC/ECC SODIMM in two memory slots on the bottom side of the motherboard.

Bottom Layout

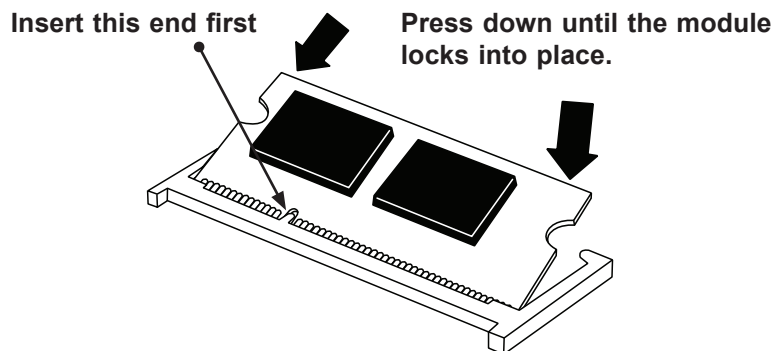


SO-DIMM Installation

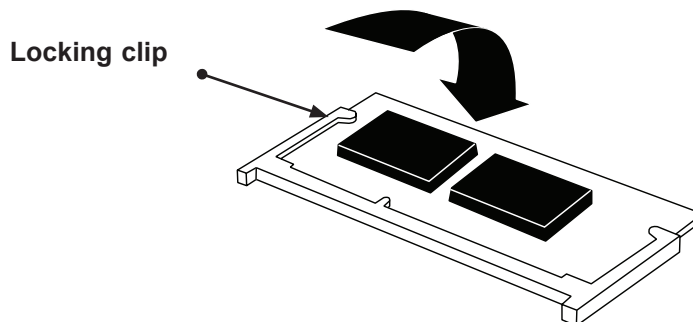
1. Position the SO-DIMM module's bottom key so it aligns with the receptive point on the slot.



2. Insert the SO-DIMM module vertically at about a 45-degree angle. Press down until the module locks into place.



3. The side clips automatically secure the SO-DIMM module, locking it into place.



SO-DIMM Removal

1. Push the side clips at the end of slot to release the SO-DIMM module. Pull the SO-DIMM module up to remove it from the slot.

2.4 Rear I/O Ports

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

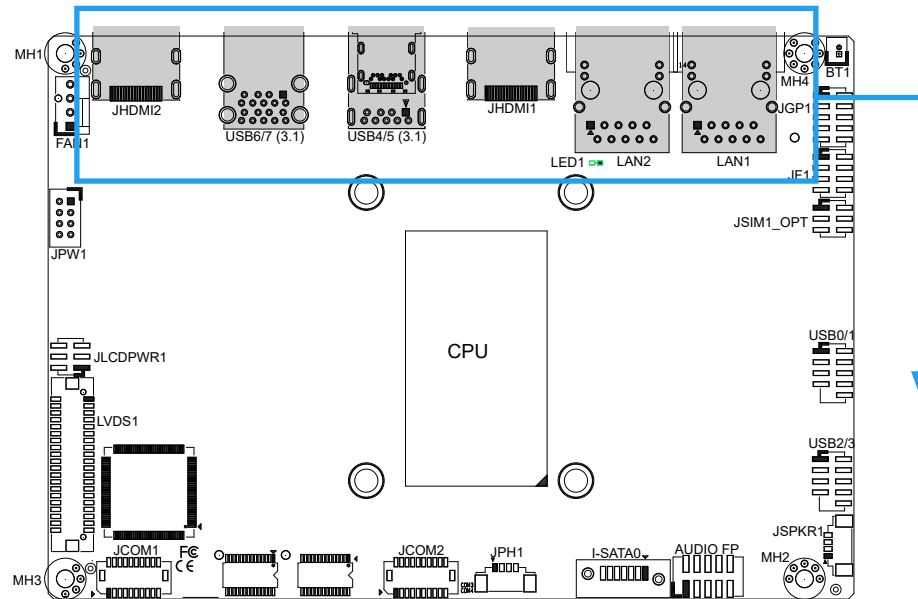
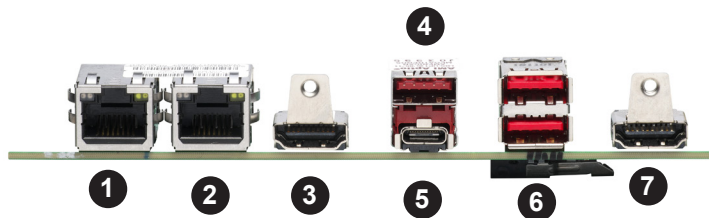


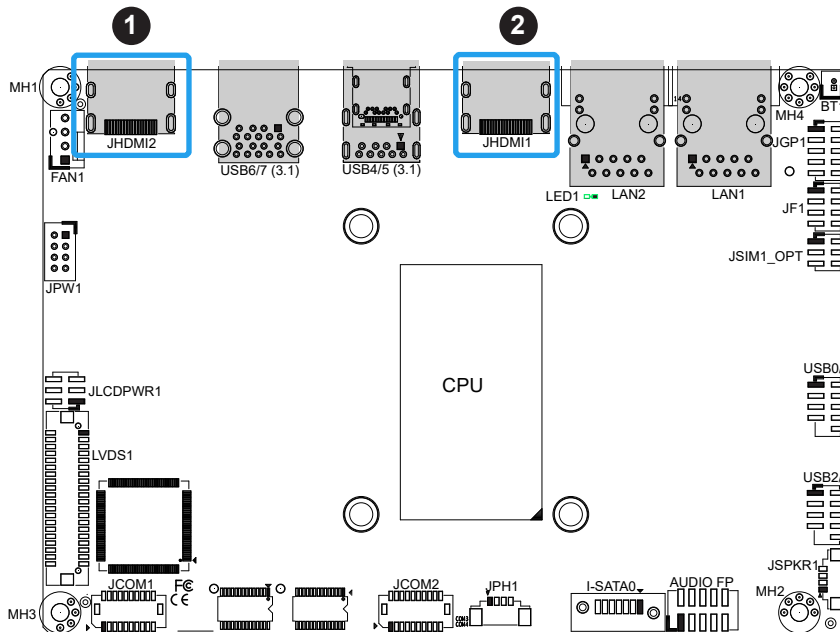
Figure 2-1. I/O Port Locations and Definitions



Rear I/O Ports			
#	Description	#	Description
1.	LAN1	5	USB5 Type C (3.1)
2.	LAN2	6	USB6/7 (3.1)
3	HDMI 2.0 Port	7	HDMI 1.4 Port
4	USB4 (3.1)		

HDMI Ports

There is one High Definition Multimedia Interface (HDMI) 2.0b port and one HDMI 1.4b port on the I/O back panel. These connectors are used to display both high definition video and digital sound through an HDMI-capable display, using a single HDMI cable (not included). HDMI 2.0 allows faster frame rates and is backward compatible with previous HDMI versions. The HDMI 2.0b port provides Intel HD Graphics digital output with resolution up to 4096x2160 at 60Hz Refresh Rate with HDR. The HDMI 1.4b port provides a resolution up to 4096x2160 at 30Hz.

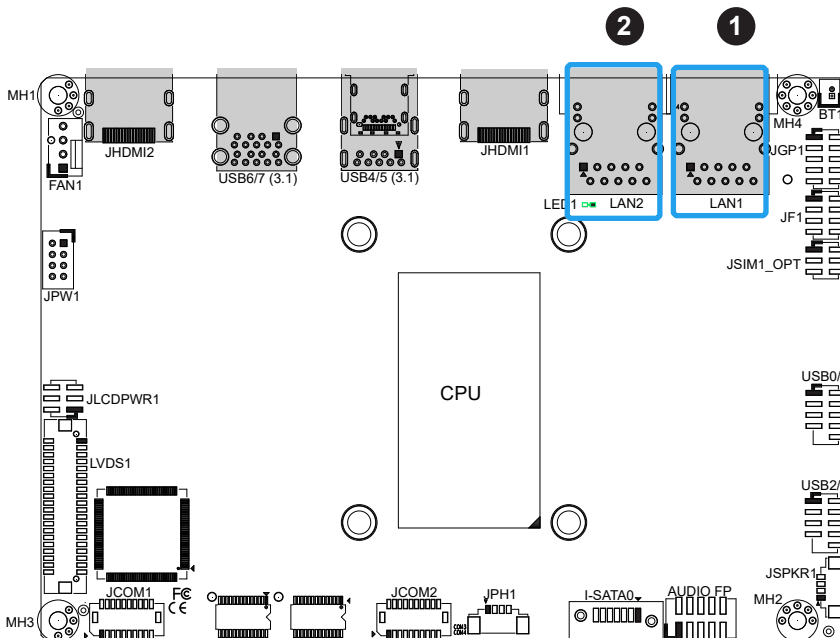


- 1. HDMI 1.4b Port
- 2. HDMI 2.0b Port

LAN Ports

Two LAN ports (LAN1/LAN2) are located on the I/O back panel. These ports accept RJ45 type cables. Refer to the LED Indicator section for LAN LED information. Refer to the table below for pin definitions.

LAN Port Pin Definition			
Pin#	Definition	Pin#	Definition
A1	TD1+	A11	YEL+
A2	TD1-	A12	YEL-
A3	TD2+	A13	GRN+/ORG-
A4	TD2-	A14	GRN-/ORG+
A5	GND	A15	GND
A6	GND	A16	GND
A7	TD3+	A17	NA
A8	TD3-	A18	NA
A9	TD4+	A19	NA
A10	TD4-	A20	NA



1. LAN1
2. LAN2

Universal Serial Bus (USB) Ports

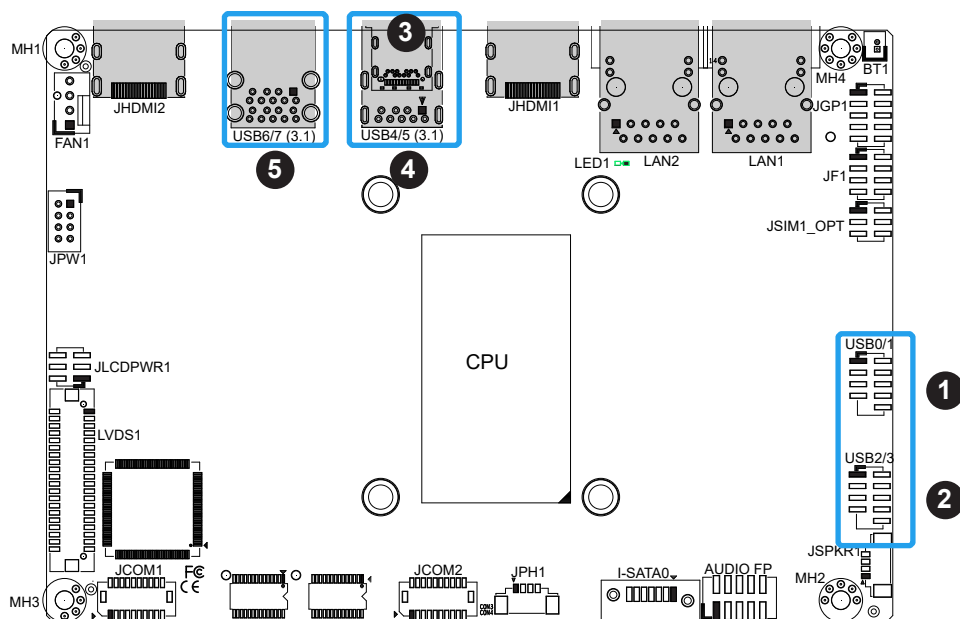
There are three USB 3.1 Type A ports (USB4 and USB6/7) and one USB 3.1 Type C port (USB5) on the I/O back panel. The motherboard also has four front access USB 2.0 headers (USB0/1 and USB2/3). The onboard headers can be used to provide front side USB access with a cable. Two USB 2.0 cables for front panel support are included with the motherboard. USB 3.1 cables are optional.

Back Panel USB 3.1 Type A (USB6/7) Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	VBUS	B1	VBUS
A2	D6-N	B2	D7-N
A3	D6-P	B3	D7-P
A4	GND	B4	GND
A5	Stda_SSRX6-N	B5	Stda_SSRX7-N
A6	Stda_SSRX6-P	B6	Stda_SSRX7-P
A7	GND	B7	GND
A8	Stda_SSTX6-N	B8	Stda_SSTX7-N
A9	Stda_SSTX6-P	B9	Stda_SSTX7-P

Back Panel USB 3.1 Type C (USB5) Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	GND	B12	GND
A2	USB31_SW1_TXP	B11	USB31_SW1_RXP
A3	USB31_SW1_TXM	B10	USB31_SW1_RXN
A4	P5VSB_TYPEC	B9	P5VSB_TYPEC
A5	A_CC1	B8	NC
A6	NC	B7	NC
A7	NC	B6	NC
A8	NC	B5	A_CC2
A9	P5VSB_TYPEC	B4	P5VSB_TYPEC
A10	USB31_SW2_RXN	B3	USB31_SW2_TXN
A11	USB31_SW2_RXP	B2	USB31_SW2_TXP
A12	GND	B1	GND

Front Panel USB 2.0 Headers 0/1 and 2/3 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	P5V_DUAL_F	2	P5V_DUAL_F
3	USBCON_N0/ USBCON_N2	4	USBCON_N1/ USBCON_N3
5	USBCON_P0/ USBCON_P2	6	USBCON_P1/ USBCON_P3
7	Ground	8	Ground
9	Key	10	NC

Back Panel USB 3.1 Type A (USB4) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	2	D4-N
3	D4-P	4	GND
5	SSRXN	6	SSRXP
7	GND	8	SSTXN
9	SSTXP	10	



1. USB0/1
2. USB2/3
3. USB4
4. USB5
5. USB6/7

2.5 Front Control Panel

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

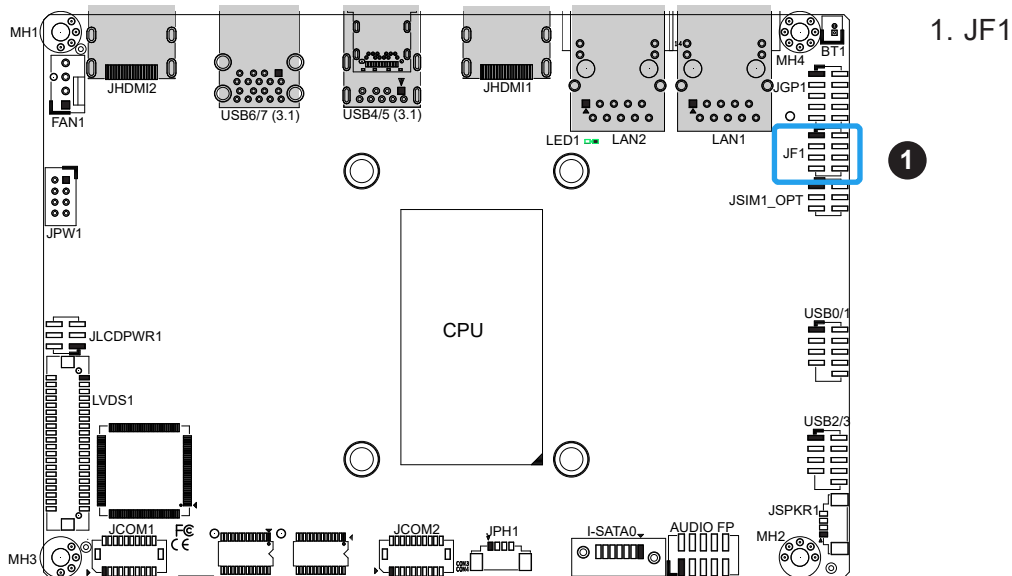
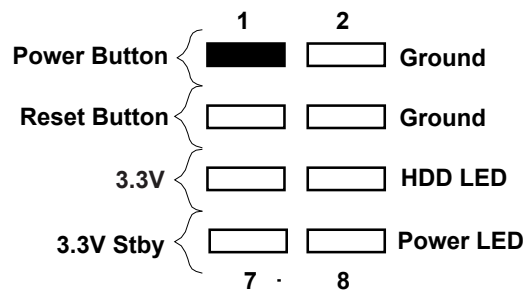


Figure 2-2. JF1 Header Pins



Power Button

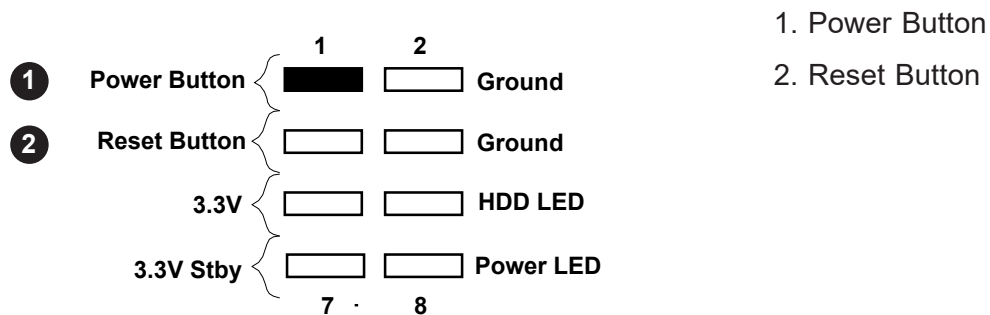
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power in the suspend mode, press the button for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

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Power Button
2	GND

Reset Button

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

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



HDD LED

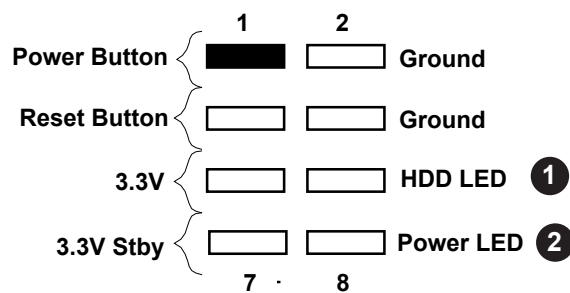
The HDD LED connection is located on pins 5 and 6 of JF1. Attach a cable here to indicate the status of HDD-related activities, including SATA activities. Refer to the table below for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
5	+3.3V
6	HDD Active LOW

Power LED

The Power LED connection is located on pins 7 and 8 of JF1. Refer to the table below for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
7	+3.3VSB
8	Power LED LOW



1. HDD LED
2. Power LED

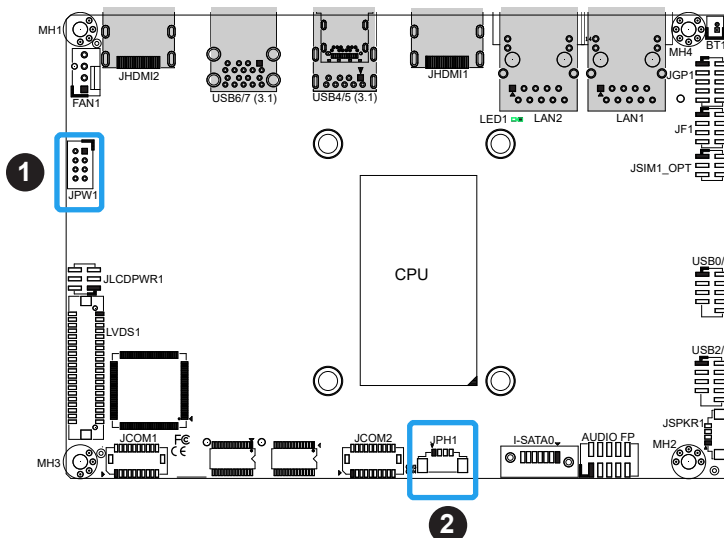
2.6 Connectors

Power Connections

JPW1 is the 12-24V DC power connector that provides power to the motherboard. JPH1 is a 4-pin HDD power connector that provides power to the hard disk drives.

8-pin 12-24V Power Pin Definitions	
Pins	Definition
1 - 4	+12-24V
5 - 8	Ground

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



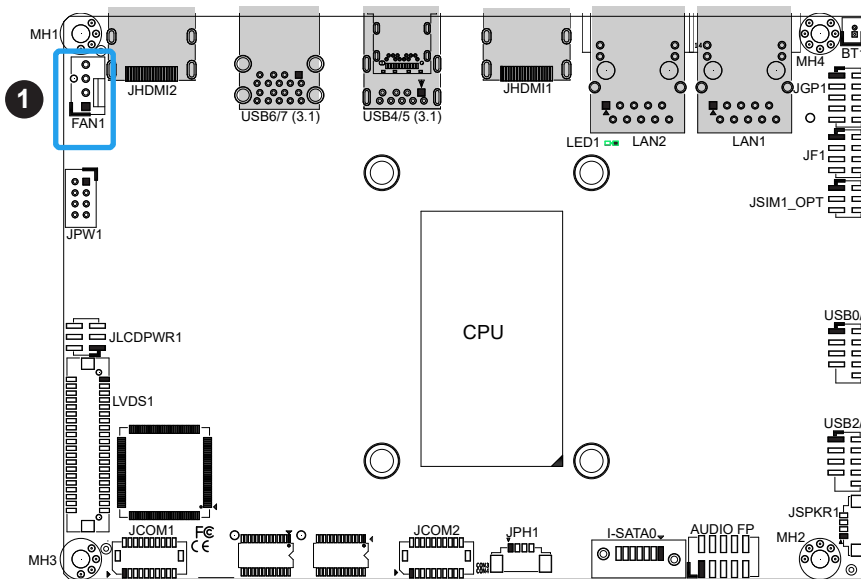
1. 8-Pin 12-24V Power
2. 4-pin HDD Power

Headers

Fan Header

There is one 4-pin fan header on the motherboard. Pins 1-3 are backward compatible with traditional 3-pin fans. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) in the BIOS.

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



1. FAN1


Front Panel Audio Header

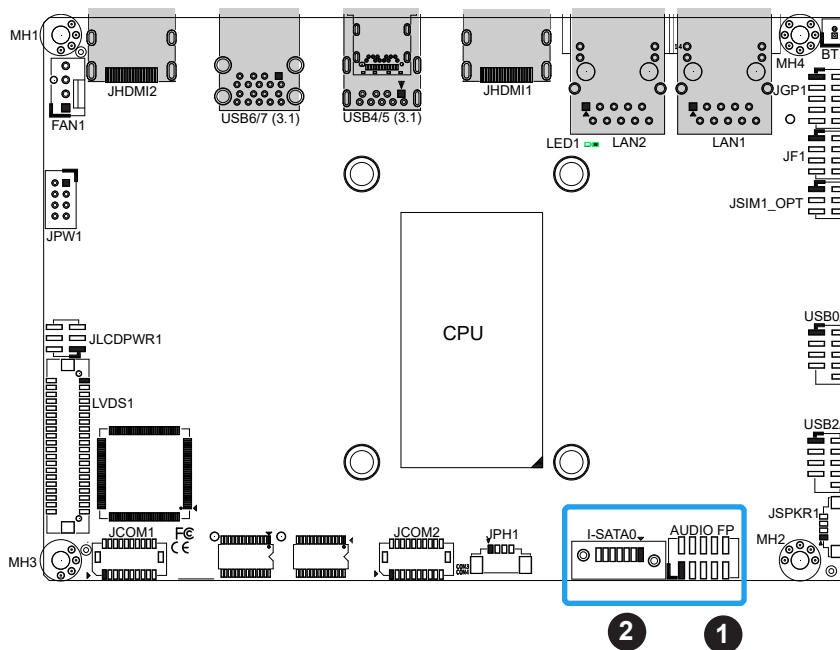
A 10-pin front panel audio header located on the motherboard allows you to use the onboard sound for audio playback. Connect an audio cable to the header to use this feature. Refer to the table below for pin definitions.

Audio Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	Microphone_Left	2	Audio_Ground
3	Microphone_Right	4	Audio_Detect
5	Line_2_Right	6	Ground
7	Jack_Detect	8	Key
9	Line_2_Left	10	Ground

SATA

There is one SATA 3.0 port (I-SATA0) supported by the Intel W480E chipset. SATA ports provide serial-link signal connections, which are faster than legacy Parallel ATA. Supermicro SuperDOMs are backward compatible with regular SATA HDDs or SATA DOMs that need external power cables.

 **Note:** For more information on the SATA HostRAID configuration, refer to the Intel SATA HostRAID user's guide posted at <https://www.supermicro.com/support/manuals/>.



1. Audio Header
2. I-SATA0

COM Ports

There are four COM ports: COM1/COM2 (**JCOM1**) with support for two RS232/RS422/RS485, and COM3/COM4 (**JCOM2**) with support for two RS232. The manufacturer of the header is ACES Electronics, MPN 50419-02001. The mapping plug header for cable assembly is 50420-020HKH0-001.

Below are the pin definition tables for the onboard header and D-SUB of CBL-CDAT-0665. Refer to the corresponding table based on design requirement.

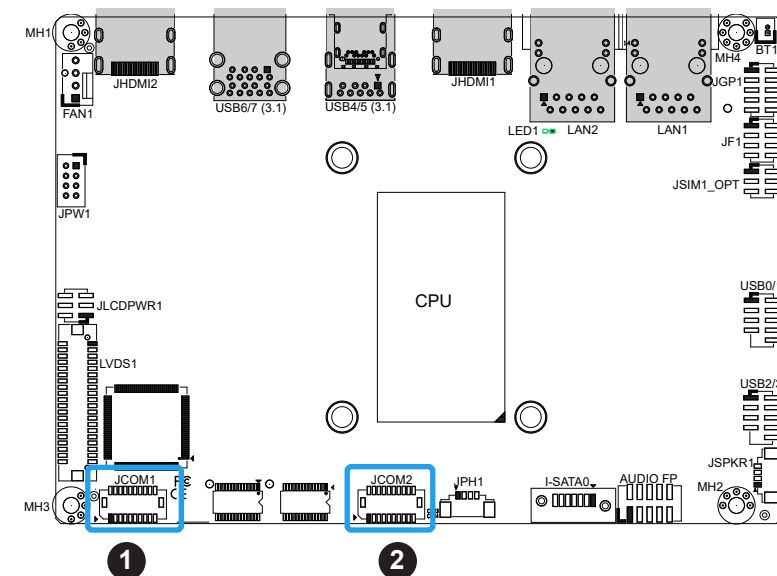
COM Port Pin Definitions (JCOM1)			
Pin#	RS-232	RS-422/485 Full Duplex	RS-485 Half Duplex
1	SP_DCD1	TX-1	Data-1
2	SP_DSR1		
3	SP_RXD1	TX+1	Data+1
4	SP_RTS		
5	SP_TXD1	RX+1	
6	SP_CTS1		
7	SP_DTR1	RX-1	
8	SP_RI1		
9	GND		
10	NC		
11	SP_DCD2	TX-2	Data-2
12	SP_DSR2		
13	SP_RXD2	TX+2	Data+2
14	SP_RTS2		
15	SP_TXD2	RX+2	
16	SP_CTS2		
17	SP_DTR2	RX-2	
18	SP_RI2		
19	GND		

COM Port Pin Definitions (JCOM2)	
Pin#	RS-232
1	SP_DCD3
2	SP_DSR3
3	SP_RXD3
4	SP_RTS3
5	SP_TXD3
6	SP_CTS3
7	SP_DTR3
8	SP_RI3
9	GND
10	NC
11	SP_DCD4
12	SP_DSR4
13	SP_RXD4
14	SP_RTS4
15	SP_TXD4
16	SP_CTS4
17	SP_DTR4
18	SP_RI4
19	GND
20	NC

(See the next page for pin definitions of D-SUB of CBL-CDAT-0665.)

COM Port Pin Definitions (D-SUB from CBL-CDAT-0665)			
Pin#	RS-232	RS-422/485 Full Duplex	RS-485 Half Duplex
1	SP_DCD1	TX-1	Data-1
2	SP_RXD1	TX+1	Data+1
3	SP_TXD1	RX+1	
4	SP_DTR1	RX-1	
5	GND		
6	SP_DSR1		
7	SP_RTS1		
8	SP_CTS1		
9	SP_RI1		
10	NC		
11	SP_DCD2	TX-2	Data-2
12	SP_RXD2	TX+2	Data+2
13	SP_TXD2	RX+2	
14	SP_DTR2	RX-2	
15	GND		
16	SP_DSR2		
17	SP_RTS2		
18	SP_CTS2		
19	SP_RI2		
20	NC		

COM Port Pin Definitions (D-SUB from CBL-CDAT-0665)	
Pin#	RS-232
1	SP_DCD3
2	SP_RXD3
3	SP_TXD3
4	SP_DTR3
5	GND
6	SP_DSR3
7	SP_RTS3
8	SP_CTS3
9	SP_RI3
10	NC
11	SP_DCD4
12	SP_RXD4
13	SP_TXD4
14	SP_DTR4
15	GND
16	SP_DSR4
17	SP_RTS4
18	SP_CTS4
19	SP_RI4
20	NC




1. JCOM1
2. JCOM2

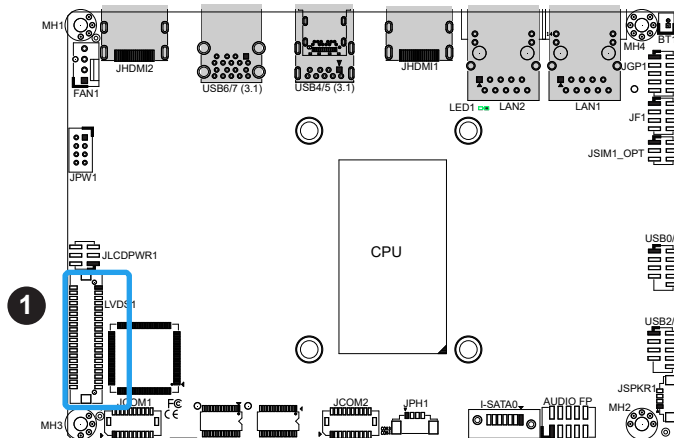
LVDS Connector

LVDS1 is the LVDS connector. Low-Voltage Differential Signaling (LVDS) is a high-speed digital interface that operates at low power. It is a type of connection that is used with a LVDS LCD panel. The connector combines LCD VCC Power (pins 9-10), LVDS high speed digital interface, backlight power 3.3V (pin 7) and 12V (pins 1-5), backlight enable (pin 15), and dimming control (pin 13). Select the correct LCD VCC power according to the LCD specification by JLCDPWR1 (3.3V/5V) before enabling the LVDS panel. Refer to the tables below for vendor part number, mating, and crimping contact connector information before making the LVDS/backlight cable.

LVDS Connector			
Connector	Vendor	Manufacture P/N	Description
Onboard LVDS Connector	HIROSE	DF13E-40DP-1.25V(51)	BOX HEADER, BOARD TO WIRE, 2X20, PITCH 1.25MM, VERT, 1A/PIN, WHITE, 0.2UM GOLD, PA9T, MATING HEIGHT 5.8MM
Mating Connector	HIROSE	DF13-40DS-1.25C	Headers and Wire Housings 1.25MM RECEPT HSNQ 40P DUAL ROW CRIMP
Crimping Contact Connector	HIROSE	DF13G-2630SCFA	Headers and Wire Housings SOCKET CONTACT/ REEL AWG26-30

 **Note:** Enable the LVDS Panel Support feature in the BIOS to use the LVDS panel display. Advanced->Chipset->System Agent (SA) Configuration->Graphics Configuration->LVDS Panel Support [Enabled]

1. LVDS Connector

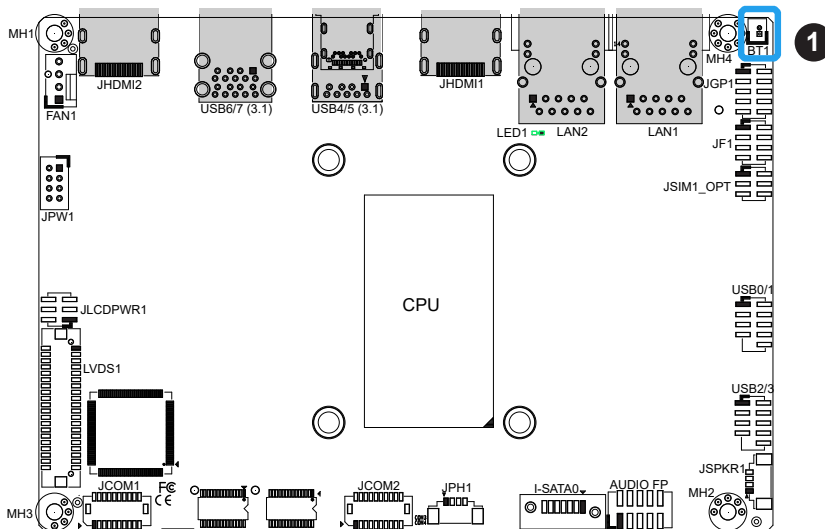


LVDS Connector Pin Definitions			
Pin#	Definition	Pin#	Definition
39	GND	40	GND
37	LVDSB D3N	38	LVDSB D3P
35	LVDSB CLKN	36	LVDSB CLKP
33	LVDSB D2N	34	LVDSB D2P
31	LVDSB D1N	32	LVDSB D1P
29	LVDSB D0N	30	LVDSB D0P
27	GND	28	GND
25	LVDSA D3N	26	LVDSA D3P
23	LVDSA CLKN	24	LVDSA CLKP
21	LVDSA D2N	22	LVDSA D2P
19	LVDSA D1N	20	LVDSA D1P
17	LVDSA D0N	18	LVDSA D0P
15	BKLTEN	16	GND
13	BKLTCTL	14	PVCCEN
11	DDC CLK	12	DDC DATA
9	LCDVCC	10	LCDVCC
7	3.3V	8	GND
5	12V	6	GND
3	12V	4	12V
1	12V	2	12V

Battery Connector

BT1 is a two-pin connector for an external CMOS battery. Refer to section 3.4 for battery installation instructions. This connector is also used to clear the CMOS. To clear the CMOS, remove the battery, short pins 1-2 for more than 10 seconds and then install the battery.

Battery Connector Pin Definitions			
Pin#	Definition	Pin#	Definition
1	P3V_BATTERY	2	GND



1. Battery connector

General Purpose I/O Header

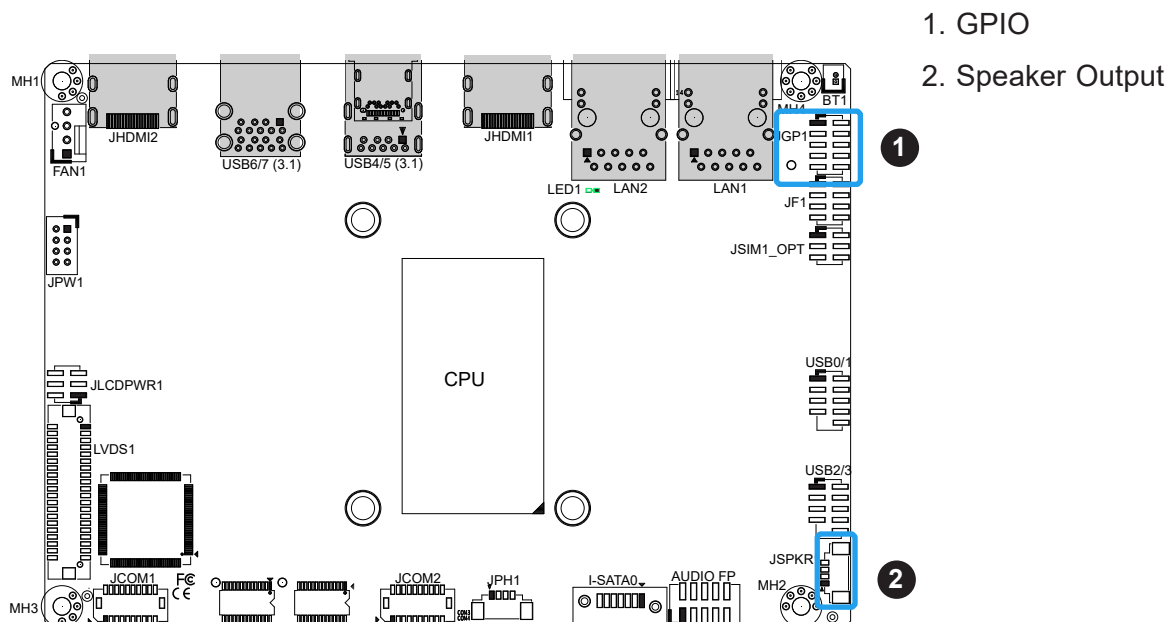
The JGP1 General Purpose Input/Output (GPIO) header is a general purpose I/O expander on a pin header via the SMBus. Each pin can be configured to be an input pin or output pin in 2.54mm pitch. The GPIO is controlled via the PCA9554APW 8-bit GPIO expansion from the PCH SMBus. The base address is 0xF040. The expander slave address is 0x4C for WRITE and READ. See the table below for pin definitions.

GPIO Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	P3V3SB	2	GND
3	GP_P3V3_GP0	4	GP_P3V3_GP4
5	GP_P3V3_GP1	6	GP_P3V3_GP5
7	GP_P3V3_GP2	8	GP_P3V3_GP6
9	GP_P3V3_GP3	10	GP_P3V3_GP7

Audio Speaker Output

The Audio Speaker Output (JSPKR1) is used to amplify low-power electronic audio signals to a level that is high enough for current driving of loudspeakers or headphones.

Audio Speaker Output JSPKR1 Pin Definitions	
Pin#	Definition
1	SPEAKER_LN_OUT
2	SPEAKER_LP_OUT
3	SPEAKER_RN_OUT
4	SPEAKER_RP_OUT



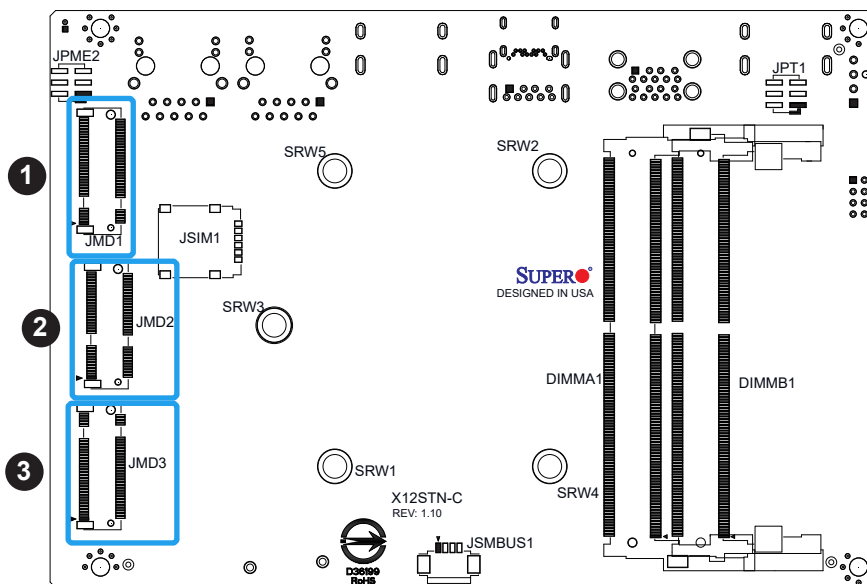
M.2 Slot

M.2 slots (formerly known as Next Generation Form Factor or NGFF) are located at JMD1-JMD3 on the bottom side of the motherboard. The M.2 slots are designed for internal mounting devices.

The X12STN motherboard contains:

- One M.2 B-Key 3042/2242/2280 (PCIe or SATA/USB3/USB2) with nano SIM holder
 - One M.2 E-Key 2230 (PCIe /USB2/CNVi)
 - One M.2 M-Key 2242/2280 (PCIe x 4)
- (The modules are supported by copper standoffs for M.2 and mounting holes.)

Bottom Layout



1. JMD1 - M.2 B-Key
2. JMD2 - M.2 E-Key
3. JMD3 - M.2 M-Key

M.2 B-Key Pin Definition (JMD1)			
Pin#	Definition	Pin#	Definition
1	N/C	2	P3V3SB
3	GND	4	P3V3SB
5	GND	6	FULL_CARD_POWER_OFF#(PU TO P1V8SB only)
7	USB_D+	8	W_DISABLE1#(PU TO P3V3SB only)
9	USB_D-	10	MD2_B-KEY_LED_N
11	GND	12	KEY B
13	KEY B	14	KEY B
15	KEY B	16	KEY B
17	KEY B	18	KEY B
19	KEY B	20	N/C
21	N/C	22	N/C
23	WAKE_ON_WWAN#(PU TO P1V8SB only)	24	N/C
25	N/C	26	W_DISABLE2#(PU TO P1V8SB only)
27	GND	28	N/C
29	USB3.0-Rx-	30	UIM-RESET
31	USB3.0-Rx+	32	UIM-CLK
33	GND	34	UIM-DATA
35	USB3.0-Tx-	36	UIM-PWR
37	USB3.0-Tx+	38	N/C
39	GND	40	N/C
41	PERN0/SATA-B+	42	N/C
43	PERP0/SATA-B-	44	Alert# (PU to P1V8SB only)
45	GND	46	N/C
47	PETN0/SATA-A-	48	N/C
49	PETP0/SATA-A+	50	PERST# (P3V3SB only)
51	GND	52	CLKREQ#
53	REFCLKn	54	PEWAKE#
55	REFCLKp	56	N/C
57	GND	58	N/C
59	N/C	60	COEX3
61	N/C	62	COEX_RXD
63	N/C	64	COEX_TXD
65	N/C	66	SIM_DETECT
67	RESET# (PU to P1V8SB only)	68	N/C
69	SATA_PCIE_SEL	70	P3V3SB
71	GND	72	P3V3SB
73	GND	74	P3V3SB
75	N/C		



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

M.2 E-Key Pin Definition (JMD2)			
Pin#	Definition	Pin#	Definition
1	GND	2	P3V3SB
3	USB_D+	4	P3V3SB
5	USB_D-	6	N/C
7	GND	8	CNV_BT_I2S_SCLK
9	CNV_WR_LANE1_DN	10	CNV_RF_RESET_N
11	CNV_WR_LANE1_DP	12	CNV_BT_I2S_SDO
13	GND	14	MODEM_CLKREQ
15	CNV_WR_LANE0_DN	16	N/C
17	CNV_WR_LANE0_DP	18	GND
19	GND	20	UART_BT_WAKE_N
21	CNV_WR_CLK_DN	22	CNV_BRI_RSP
23	CNV_WR_CLK_DP	24	KEY E
25	KEY E	26	KEY E
27	KEY E	28	KEY E
29	KEY E	30	KEY E
31	KEY E	32	CNV_RGI_DT
33	GND	34	CNV_RGI_RSP
35	PETp0	36	CNV_BRI_DT
37	PETn0	38	CLINK_RST_N
39	GND	40	CLINK_DATA
41	PERp0	42	CLINK_CLK
43	PERn0	44	CNV_PA_BLANKING
45	GND	46	CNV_MFUART2_TXD
47	REFCLKp0	48	CNV_MFUART2_RXD
49	REFCLKn0	50	SUSCLK
51	GND	52	PERST0#
53	CLKREQ0#	54	BT_DISABLE2#
55	PEWAKE0#	56	WIFI_DISABLE2#
57	GND	58	N/C
59	CNV_WT_LANE1_DN	60	N/C
61	CNV_WT_LANE1_DP	62	N/C
63	GND	64	NC
65	CNV_WT_LANE0_DN	66	N/C
67	CNV_WT_LANE0_DP	68	N/C
69	GND	70	N/C
71	CNV_WT_CLK_DN	72	P3V3SB
73	CNV_WT_CLK_DP	74	P3V3SB
75	GND		



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

M.2 M-Key Pin Definition (JMD3)			
Pin#	Definition	Pin#	Definition
1	GND	2	P3V3
3	GND	4	P3V3
5	PERn3	6	N/C
7	PERp3	8	N/C
9	GND	10	MD2_M-KEY_LED_N
11	PETn3	12	P3V3
13	PETp3	14	P3V3
15	GND	16	P3V3
17	PERn2	18	P3V3
19	PERp2	20	N/C
21	GND	22	N/C
23	PETn2	24	N/C
25	PETp2	26	N/C
27	GND	28	N/C
29	PERn1	30	N/C
31	PERp1	32	N/C
33	GND	34	N/C
35	PETn1	36	N/C
37	PETp1	38	N/C
39	GND	40	N/C
41	PERn0	42	N/C
43	PERp0	44	N/C
45	GND	46	N/C
47	PETn0	48	N/C
49	PETp0	50	PERST#
51	GND	52	CLKREQ#
53	REFCLKn	54	PEWAKE#
55	REFCLKp	56	N/C
57	GND	58	N/C
59	KEY M	60	KEY M
61	KEY M	62	KEY M
63	KEY M	64	KEY M
65	KEY M	66	KEY M
67	N/C	68	SUSCLK
69	PEDET	70	P3V3
71	GND	72	P3V3
73	GND	74	P3V3
75	GND		

System Management Bus Header

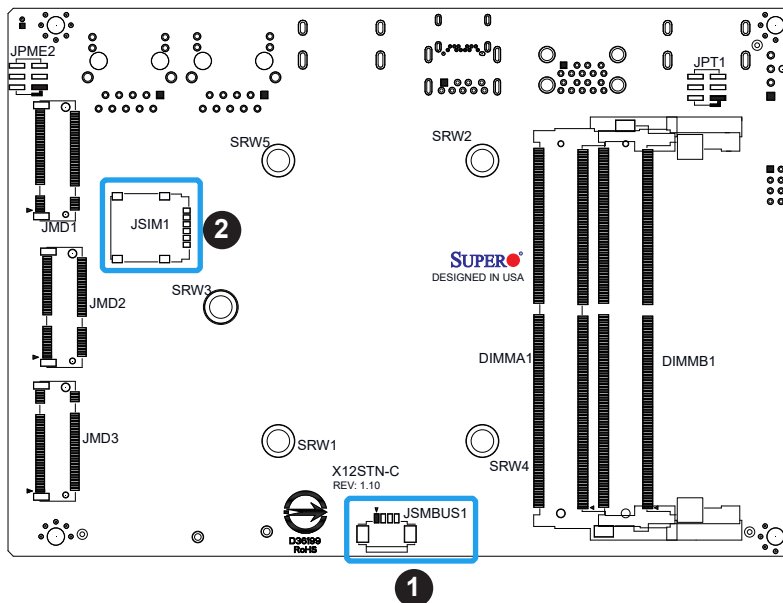
A System Management Bus header for additional slave devices or sensors is located at JSMBUS1 on the bottom side of the motherboard. Refer to the table below for pin definitions.

SMBus Header Pin Definitions	
Pin#	Definition
1	SMB_CLK
2	SMB_DATA
3	GND
4	P5V

Nano SIM Slot

The JSIM1 slot supports a Nano SIM card.

Bottom Layout




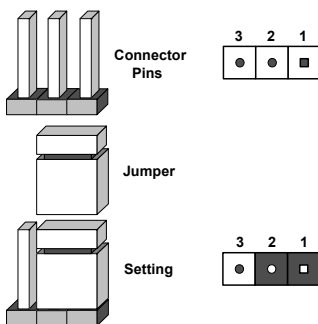
1. SMBus Header
2. Nano SIM Slot

2.7 Jumper Settings

How Jumpers Work

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

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



SIM Detection

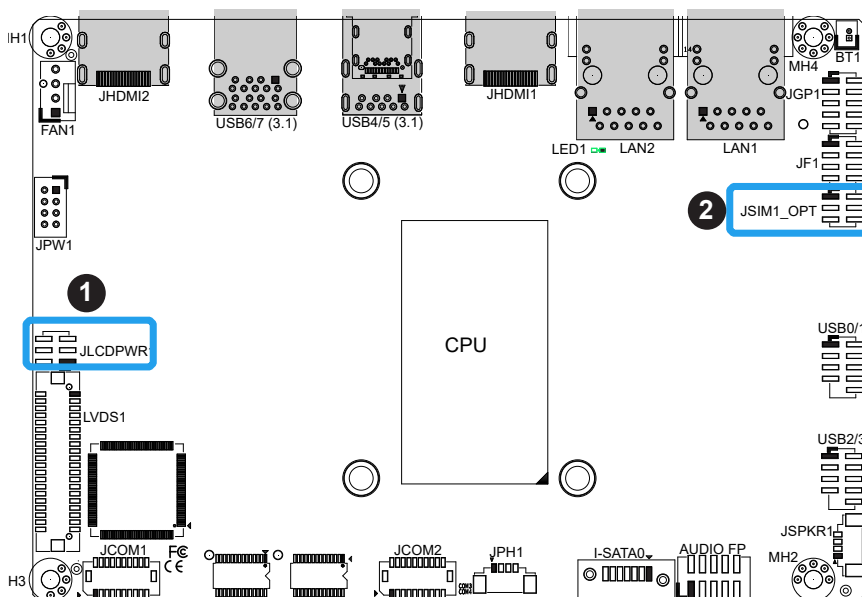
This jumper is for wireless WAN module detection. Since each wireless WAN module vendor has a different condition of detection, check with the vendor for the correct detection type and set the JSIM1_OPT jumper before installing the module.

SIM Detection Jumper Settings	
Jumper Setting	Definition
Pins 2-4	High Activity (Default)
Pins 3-4	Low Activity

JLCDPWR1

Use this jumper to select the power voltage for the LVDS panel. Make sure that the specification of the cable is compatible with the panel to prevent damage.

LVDS Panel Power Source Selection Jumper Settings	
Jumper Setting	Definition
Pins 1-3	3.3V (Default)
Pins 3-5	5V




1. JLCDPWR1
2. JSIM1_OPT

Manufacturing Mode Select

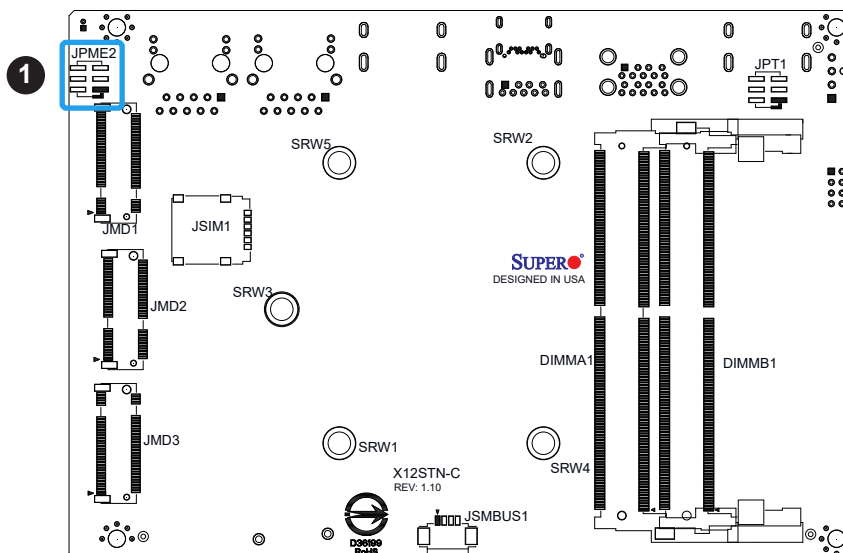
Close pins 2-4 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow you to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings.

JPME2 is also used to clear CMOS, which clears all passwords. Shut down the system before clearing the CMOS by closing pins 3-5.

 **Note:** Clearing CMOS also clears all passwords.

CMOS Clear / Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Pins 4-6	Normal (Default)
Pins 2-4	Manufacturing Mode
Pins 1-3	Normal (Default)
Pins 3-5	CMOS Clear

Bottom Layout



1. Manufacturing Mode

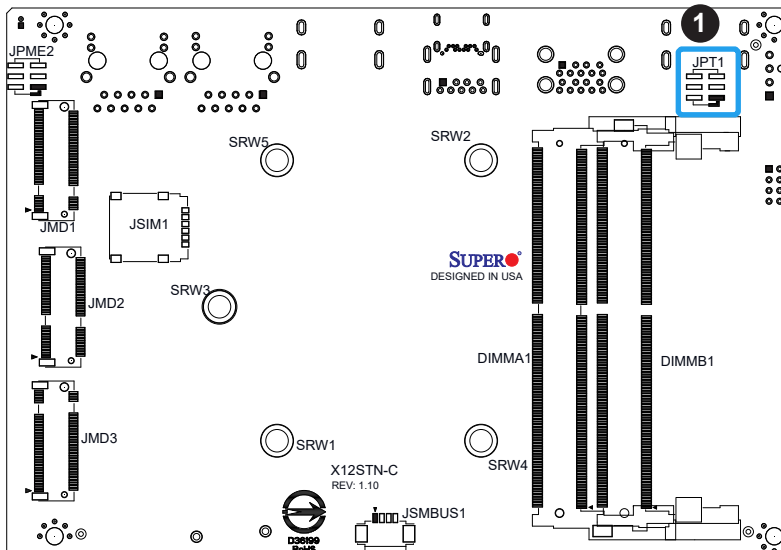
TPM Enable / Force Power On

Use JPT1 to enable or disable support for the TPM module. Refer to the table below for jumper settings.

Use JPT1 to select the FORCE POWER ON function when the AC power cord is plugged in. When enabling force power on and AC power recovery, the system will boot up automatically without pressing the power button.

TPM Enable/Force Power On Jumper Settings	
Jumper Setting	Definition
Pins 1-3	TPM Enabled (Default)
Pins 3-5	TPM Disabled
Pins 2-4	Force power on (Default) (when AC power cord is plugged)
Pins 4-6	Power button power on (when AC power cord is plugged)

Bottom Layout



1. TPM Enable

2.8 LED Indicators

LAN Port LEDs

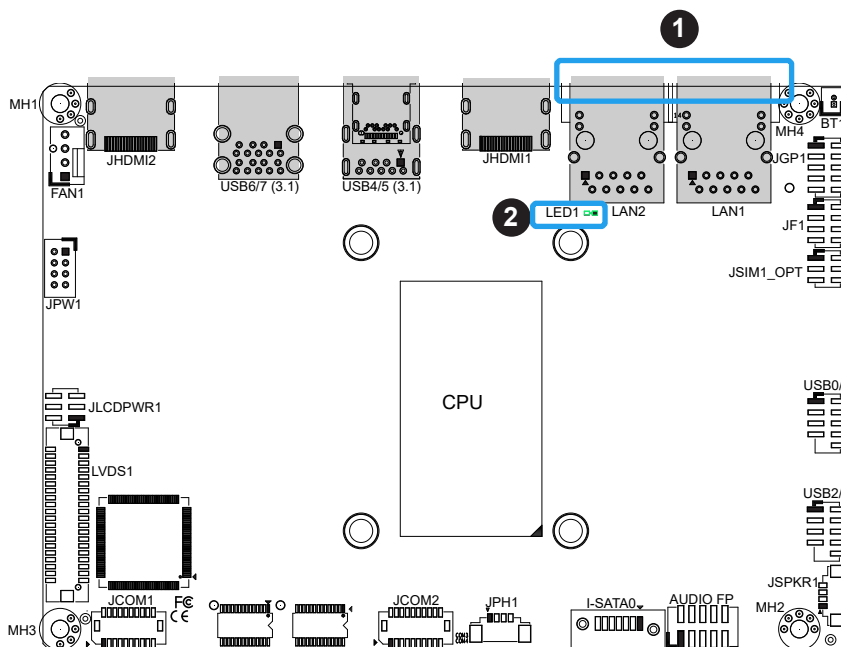
There are two LAN ports (LAN1 and LAN2) on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection.

LAN1/2 LED (Connection Speed Indicator)	
LED Color	Definition
Off	100 Mb/s or below
Green	2.5 Gb/s
Amber	1 Gb/s

Onboard Power LED

LED1 is the onboard Power LED. 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.

Power LED Indicator	
LED1	Definition
Green	System On
Red	S5 or main power fail
Off	System Off (power cable not connected)



1. LAN Port LEDs
2. Power LED

Chapter 3

Troubleshooting

3.1 Troubleshooting Procedures

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

Before Power On

1. Check that the power LED on the motherboard is on.
2. Check that the power connector is connected to your power supply.
3. Check that no short circuits exist between the motherboard and chassis.
4. Disconnect all cables from the motherboard, including those for the keyboard and mouse.
5. Remove all add-on cards.
6. Install a heatsink and connect the power to the motherboard. Make sure that the heatsink is fully seated. Check all jumper settings as well.
7. Use the correct type of CMOS battery (CR2032) as recommended by the manufacturer.

No Power

1. Check that no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions.
3. Turn the power switch on and off to test the system.
4. 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

If the power is on but you have no video, remove all the add-on cards and cables.



Note: If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to [Appendix B](#).

Memory Errors

1. Confirm that the DIMM modules are properly and fully installed.
2. Confirm that you are using the correct memory. In addition, it is recommended that you use the same memory type and speed for all DIMMs in the system. See '[Memory Support and Installation](#)' for memory details.
3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1.5 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. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.



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

2. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
3. Heatsink: Check that the heatsink is installed properly.

1. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to our website for more information on the minimum power requirements.

2. 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. Minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with a CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.

4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.

5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.

6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

Before contacting Technical Support, take the following steps. Also, note that as a motherboard manufacturer, we do not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Review the 'Troubleshooting Procedures' and 'Frequently Asked Questions' (FAQs) sections in this chapter or see the FAQs on our website at <http://www.supermicro.com/FAQ/index.php> before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website. **Note:** Not all BIOS can be flashed depending on the modifications to the boot block code.
3. If you still cannot resolve the problem, include the following information when contacting us 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

An example of a Technical Support form is posted on our website.

Distributors: For immediate assistance, have your account number ready when contacting our technical support department by e-mail.

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The X12STN-H/-E/-L/-C Series Motherboards motherboard supports up to 64GB of dual channel Non-ECC DDR4 SODIMM with speeds up to 3200MHz in two SODIMMs. See [Section 2.3](#) for details on installing memory.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html. Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, 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.

Question: Why can't I turn off the power using the momentary power on/off switch?

Answer: The instant power off function is controlled in BIOS by the Power Button Mode setting. When the On/Off feature is enabled, the motherboard will have instant off capabilities as long as the BIOS has control of the system. When the Standby or Suspend feature is enabled or when the BIOS is not in control such as during memory count (the first screen that appears when the system is turned on), the momentary on/off switch must be held for more than four seconds to shut down the system. This feature is required to implement the ACPI features on the motherboard.

3.4 Battery Removal and Installation

Battery Removal

To remove the battery, follow the steps below:

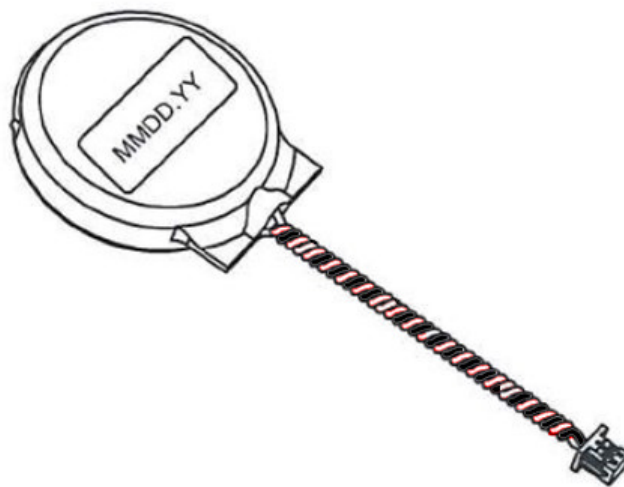
1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

Proper Battery Disposal

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. Comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Battery Installation

1. Unplug the power cord.
2. Connect the battery cable into the battery connector (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
3. Use the foam tape on the back side of the battery to secure the battery to a flat surface on the bottom of the motherboard or proper location in the system. **DO NOT** place the battery on the heat sink.



3.5 Returning Merchandise for Service

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

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

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

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

Chapter 4

BIOS

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the X12STN 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. 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 accompanies 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 opens 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>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

When entering the AMI BIOS setup utility, you start the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below and the following Main menu items are displayed:



System Date/System Time

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



Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro X12STN-L

BIOS Version: 1.0

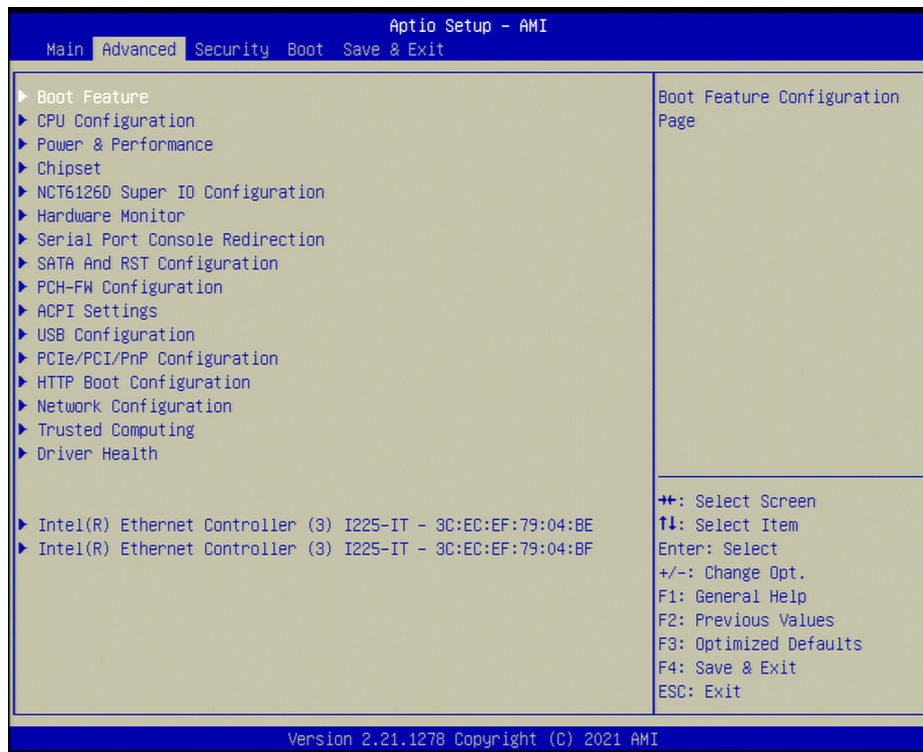
Build Date: 08/17/2021

Memory Information

Total Memory: This displays the total size of memory available in the system.

4.3 Advanced

Use this menu to configure the Advanced settings.



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

► 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**.

Bootup NumLock State

This feature selects the Power-on state for the Numlock key. The options are Off and **On**.

Wait For "F1" If Error

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

Re-try Boot

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

Power Configuration

Restore on AC Power Loss

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

Power Button Function

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

► CPU Configuration

The following CPU information is displayed:

- 11th Gen Intel (R) Core (TM) i3-1115GRE
- Microcode Patch
- ID
- Speed
- L1 Data Cache
- L1 Instruction Cache
- L2 Cache
- L3 Cache
- L4 Cache
- VMX
- SMX/TXT

CPU Flex Ratio Override

Use this feature to enable or disable CPU Flex Ratio Programming. The options are **Disabled** and Enabled.

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

CPU Core Flex Ratio

Use this feature to set the non-turbo mode processor core ratio multiplier. The default value is **22**.

Hardware Prefetcher

If this feature is set to Enable, the hardware prefetcher prefetches streams of data and instructions from the main memory to the Level 2 (L2) cache to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disabled and **Enabled**.

Intel® (VMX) Virtualization Technology

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

AVX

Use this feature to enable or disable the AVX 2/3 instructions. The options are Disabled and **Enabled**.

AVX3

Use this feature to enable or disable the AVX 3 instructions. The options are Disabled and **Enabled**.

Active Processor Cores

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

Hyper-Threading

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

Boot Performance Mode

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

AES

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

Monitor Mwait

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

RaceConditionResponse Policy

Use this feature to enable or disable Race Condition Response discovered. The options are Disabled and **Enabled**.

► Power & Performance Configuration

► CPU - Power Management Control

Use this feature to enable or disable processor power management features.

Intel® SpeedStep™

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

Turbo Mode

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

Intel® Speed Shift Technology

Use this feature to enable or disable Intel Speed Shift Technology support. When this feature is enabled, the Collaborative Processor Performance Control (CPPC) version 2 interface will be available to control CPU P-States. The options are Disabled and **Enabled**.

HwP Autonomous Per Core P State

Disabling Autonomous PCPS will request the same value for all cores all the time. The options are Disabled and **Enabled**.

HwP Autonomous EPP Grouping

Enable EPP grouping autonomous will request the same values for all cores with EPP. Disabling EPP grouping autonomous will not necessarily request the same values for all cores with EPP. The options are Disabled and **Enabled**.

C States

Use this feature to enable or disable CPU power management and allows CPU to go to C states when it is not 100% utilized. The options are Disabled and **Enabled**.

Enhanced C-states

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

C-State Auto Demotion

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

C-State Un-Demotion

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

Package C-State Demotion

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

Package C-State Un-Demotion

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

C-State Pre-Wake

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

IO MWait Redirection

This feature maps IO_read instructions sent to the IO registers. The options are **Disabled** and Enabled.

Package C-State Limit

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7s, C8, C9, C10, Cpu Default, and **Auto**.

► Config TDP Configurations**Config TDP Configurations****Enable Configurable TDP**

Applying TDP initialization settings is based on non-cTDP or cTDP. The default setting is 1 (Applies to cTDP); if the setting is 0, then it applies to non-cTDP and BIOS will pass the cTDP initialization flow. The options are **Applies to cTDOP** and Applies to non-cTDOP.

Configurable TDP Boot Mode

Use this feature to set the TDP boot mode. The options are Nominal, Down, **Up** and Deactivate.

ConfigTDP Levels (- this option is grayed out)

This option allows you to configure TDP levels. The default setting is 3.

ConfigTDP Turbo Activation Ratio (- this option is grayed out)

Use this option to define TDP Turbo Activation Ratio. The default setting is 21 (Unlocked).

Power Limit 1 (- this option is grayed out)

Use this option to configure the value for Power Limit 1. (15.0W (MSR:28.0))

Power Limit 2 (- this option is grayed out)

Use this option to configure the value for Power Limit 2. (15.0W (MSR:15.0))

Custom Settings Nominal

ConfigTDP Nominal

This feature displays the TDP PL1 status. (Ratio:22 TAR:21 PL1:28.0W)

Power Limit 1

Use this option to configure the value for Power Limit 1. The value is in milli watts and the step size is 125mW. Enter 0 to use the manufacture default setting.

Power Limit 2

Use this option to configure the value for Power Limit 2. The value is in milli watts and the step size is 125mW. The default setting is **15000**.

Power Limit 1 Time Window

Use this feature to configure the value for Power Limit 1 Time Window. The options are 0, 1, 2, 3, 4, 5, 6, 7, 8, 10, 12,14, 16, 20, 24, 28, 32, 40, 48, 56, 64, 80, 96, 112, and 128. The default setting is **0**.

Custom Settings Down

ConfigTDP Level1

This feature displays the TDP Level 1 status. (Ratio:17 TAR:16 PL1:12.0W)

Power Limit 1

Use this option to configure the value for Power Limit 1. The value is in milli watts and the step size is 125mW. Enter 0 to use the manufacture default setting.

Power Limit 2

Use this option to configure the value for Power Limit 2. The value is in milli watts and the step size is 125mW. The default setting is **15000**.

Power Limit 1 Time Window

Use this feature to configure the value for Power Limit 1 Time Window. The options are 0, 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, 28, 32, 40, 48, 56, 64, 80, 96, 112, and 128. The default setting is **0**.

Custom Settings Up

ConfigTDP Level2 (Ratio:22 TAR:21 PL1:15.0W)

This feature displays the TDP Level 1 status.

Power Limit 1

Use this option to configure the value for Power Limit 1. The value is in milli watts and the step size is 125mW. Enter 0 to use the manufacture default setting.

Power Limit 2

Use this option to configure the value for Power Limit 2. The value is in milli watts and the step size is 125mW. The default setting is **15000**.

Power Limit 1 Time Window

Use this feature to configure the value for Power Limit 1 Time Window. The options are 0, 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, 28, 32, 40, 48, 56, 64, 80, 96, 112, and 128. The default setting is **0**.

▶ GT - Power Management Control

RC6 (Render Standby)

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

Maximum GT frequency

Use this feature to define the Maximum GT frequency. Choose between 33MHz (RPN) and 1200Mhz (RP0). Any value beyond this range will be clipped to its min/max supported by the CPU. The options are **Default Max Frequency**, 100Mhz, 150Mhz, 200Mhz, 250Mhz, 300Mhz, 350Mhz, 400Mhz, 450Mhz, 500Mhz, 550Mhz, 600Mhz, 650Mhz, 700Mhz, 750Mhz, 800Mhz, 8520Mhz, 900Mhz, 950Mhz, 1000Mhz, 1050Mhz, 1100Mhz, 1150Mhz, and 1200Mhz.

Disable Turbo GT frequency

Use this feature to disable Turbo GT frequency. If set to Enabled, Turbo GT frequency becomes disabled. If set to Disabled, GT frequency limiters will be removed. The options are Enabled and **Disabled**.

► Chipset

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

► System Agent (SA) Configuration

- VT-d Supported

► Memory Configuration

- Memory RC Version
- Memory Frequency
- Memory Timings (tCL-tRCD-tRP-tRAS)
- DIMMA1
- DIMMB1

Maximum Memory Frequency

Use this feature to select the memory frequency. The options are **Auto**, 1067, 1200, 1333, 1467, 1600, 1733, 1867, 2133, 2267, 2533, 2667, 2933, 3067, 3333, 1600, 2000, 2400, 2800, and 3200.

Max TOLUD

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

Enable RH Prevention

Use this feature to prevent row hammer. The options are **Disabled** and Enabled.

Memory Scrambler

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

Force ColdReset

Use this feature to enable or disable a cold boot during a MRC execution. The options are Enabled and **Disabled**.

Force Single Rank

Select enabled to use only Rank 0 in each DIMM. The options are **Disabled** and Enabled.

MRC Fast Boot

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

► Graphics Configuration

Graphics Configuration

- IGFX GOP Version

Graphics Turbo IMON Current

Use this feature to set the graphics turbo IMON value. The default setting is **31**.

Internal Graphics

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are **Auto**, Disabled, and Enabled.

IGFX Graphic Output

Use this feature to select how to output IGFX graphics. The options are **VGA** and Embedded Display.

GTT Size

Use this feature to set the memory size to be used by the graphics translation table (GTT). The options are 2MB, 4MB, and **8MB**.

Aperture Size

Use this feature to set the Aperture size, which is the size of system memory reserved by the BIOS for graphics device use. The options are 128MB, **256MB**, 512MB, and 1024MB.

DVMT Pre-Allocated

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory to be used for video devices to ensure best use of available system memory based on the DVMT 5.0 platform. The options are 0M, 32M, 64M, 96M, 128M, 160M, 4M, 8M, 12M, 16M, 20M, 24M, 28M, **32M/F7**, 36M, 40M, 44M, 48M, 52M, 56M, and 60M.

DVMT Total Gfx Mem

Use this feature to set the total memory size to be used by internal graphics devices based on the DVMT 5.0 platform. The options are **128MB**, 256MB, and Max.

VDD Enable

Use this feature to enable or disable the forcing of VDD in the BIOS. The options are Disabled and **Enabled**.

PAVP Enable

Protected Audio Video Path (PAVP) decodes Intel integrated graphics encrypted video. The options are **Enabled** and Disabled.

Graphics Clock Frequency

Use this feature to set the internal graphics clock frequency. The options are 192Mhz, 307.2Mhz, 326.4Mhz, 556.8Mhz, 652.8Mhz, and **Max Frequency**.

► **M.2 Slot M-key**

PCI Express Root Port 1

Use this feature to control the PCIe root port. The options are Disabled and **Enabled**.

PCIe Speed

Use this to configure PCIe speed. The options are **Auto**, Gen1, Gen2, Gen3 and Gen4.

VT-d

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

GNA Device (B0:D8:F0)

Use this feature to enable or disable SA GNA device. The options are **Enabled** and Disabled.

► **PCH-IO Configuration**

PCH-IO Configuration

- PCH SKU
- Stepping

► M.2 Slot E-key

ASPM

Use this feature to set the Active State Power Management (ASPM) level for a PCIe 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, L0s, L1, L0sL1, and **Auto**.

L1 Substates

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

PCIe Speed

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

► M.2 Slot B-key

ASPM

Use this feature to set the Active State Power Management (ASPM) level for a PCIe 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, L0s, L1, L0sL1, and **Auto**.

L1 Substates

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

PCIe Speed

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

DMI Link ASPM Control

Use this feature to set the Active State Power Management (ASPM) state on the System Agent (SA) side of the DMI Link. The options are Disabled, L0s, **L1**, L0sL1, and Auto.

Peer Memory Write Enable

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

PCIe PLL SSC

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

► NCT6126D Super IO Configuration

NCT6126D Super IO Configuration

Super IO Chip NCT6126D

► Serial Port 1 Configuration

Serial Port 1

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

Device Settings

This feature displays the base I/O port address and the Interrupt Request address of the specified serial port.

Change Settings

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

COM1 Port Mode

Use this feature to select the COM port mode. The options are **RS232 Mode**, RS422 Mode/RS485 Full Duplex Mode, and RS485 Half Duplex Mode.

► Serial Port 2 Configuration

Serial Port 2

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

Device Settings

This feature displays the base I/O port address and the Interrupt Request address of the specified serial port specified.

Change Port Settings

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

COM2 Port Mode

Use this feature to select the COM port mode. The options are **RS232 Mode**, RS422 Mode/RS485 Full Duplex Mode, and RS485 Half Duplex Mode.

▶ Serial Port 3 Configuration

Serial Port 3

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

Device Settings

This feature displays the base I/O port address and the Interrupt Request address of the specified serial port.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 3. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address to a serial port specified. The options are **Auto**, (IO=3E8h; IRQ=7), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=220h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=228h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

▶ Serial Port 4 Configuration

Serial Port

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

Device Settings

This feature displays the base I/O port address and the Interrupt Request address of the specified serial port.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 4. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address to a serial port specified. The options are **Auto**, (IO=2E8h; IRQ=7), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=220h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=228h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

► Hardware Monitor

The following firmware information is displayed:

PC Health Status

Fan Speed Control Mode

Use this feature to set fan speed control mode. The options are **Standard**, Quiet, and Full Speed.

- CPU Temperature
- Front T-sensor
- Rear T-sensor
- Fan1 Speed
- PVDDQ
- P12V
- P5V
- PVCC
- P3V3
- P3V3SB
- P3V_BATTERY
- P1V8SB

► Serial Port Console Redirection

COM1

Console Redirection

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

**If the feature above is enabled, the following features are available for configuration:*

► Console Redirection Settings

This feature allows you to specify how the host computer exchanges data with the client computer.

COM1 Terminal Type

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

COM1 Bits per second

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

COM1 Data Bits

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

COM1 Parity

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

COM1 Stop Bits

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

COM1 Flow Control

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

COM1 VT-UTF8 Combo Key Support

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

COM1 Recorder Mode

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

COM1 Resolution 100x31

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

COM1 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, SCO, ESCN, and VT400.

COM2

Console Redirection

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

**If the feature above is enabled, the following features are available for configuration:*

► Console Redirection Settings

Use this feature to specify how the host computer exchanges data with the client computer. The options are Enabled and **Disabled**.

COM2 Terminal Type

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

COM2 Bits per second

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

COM2 Data Bits

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

COM2 Parity

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

COM2 Stop Bits

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

COM2 Flow Control

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

COM2 VT-UTF8 Combo Key Support

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

COM2 Recorder Mode

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

COM2 Resolution 100x31

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

COM2 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.

COM3

Console Redirection

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

**If the feature above is enabled, the following features are available for configuration:*

► Console Redirection Settings

Use this feature to specify how the host computer exchanges data with the client computer. The options are Enabled and **Disabled**.

COM3 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.

COM3 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).

COM3 Data Bits

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

COM3 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.

COM3 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.

COM3 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.

COM3 VT-UTF8 Combo Key Support

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

COM3 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.

COM3 Resolution 100x31

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

COM3 Putty KeyPad

Use this feature to select 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.

COM4

Console Redirection

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

****If the feature above is enabled, the following features are available for configuration:***

Console Redirection

► Console Redirection Settings

Use this feature to specify how the host computer exchanges data with the client computer. The options are Enabled and **Disabled**.

COM4 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.

COM4 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).

COM4 Data Bits

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

COM4 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.

COM4 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.

COM4 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.

COM4 VT-UTF8 Combo Key Support

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

COM4 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.

COM4 Resolution 100x31

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

COM4 Putty KeyPad

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

SOL Console Redirection

SOL Console Redirection Port is Disabled.

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

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

Console Redirection EMS

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

**If the feature above is enabled, the following features are available for configuration:*

► Console Redirection Settings

This feature allows you to specify how the host computer exchanges data with the client computer.

Out-of-Band Mgmt Port

The feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1**, COM2, COM3, and COM4.

Terminal Type EMS

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

Bits Per Second EMS

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

Flow Control EMS

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

Data Bits EMS: 8 **Parity EMS: None** **Stop Bits EMS: 1**

► SATA And RST Configuration

SATA Controller(s)

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

Aggressive LPM Support

When this feature is set to 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**.

I-SATA0

Software Preserve

Hot Plug

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

Spin Up Device

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

SATA Device Type

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

M.2 Slot B-Key

Software Preserve

► PCH-FW Configuration

The following firmware information is displayed:

- ME Firmware Version
- ME Firmware Mode
- ME Firmware SKU

ME FW Image Re-Flash

Use this feature to update the Management Engine firmware. The options are **Disabled** and Enabled.

Manageability Features State

Use this feature to enable Manageability Features State. The options are Disabled and **Enabled**.

AMT BIOS Features

Disable this feature to deny access to the MEBx setup. The options are Disabled and **Enabled**.

**If the feature "AMT BIOS Features" is set to Enabled, the AMT Configuration submenu is available for configuration:*

▶ AMT Configuration

USB Provisioning of AMT

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

MAC Pass Through

The MAC Pass Through feature allows a device on the LAN to have a public address assigned to it. The options are **Disabled** and Enabled.

▶ CIRA Configuration

CIRA Configuration

Activate Remote Assistance Process

Use this feature to activate Remote Assistance. Enabling this feature will also trigger the CIRCA boot. The options are **Disabled** and Enabled.

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

CIRA Timeout

Use this feature to set the timeout value for MPS connection. Use 0 for the default timeout value of 60 seconds.

▶ ASF Configuration

PET Progress

Use this feature to enable or disable PET Events Progress to receive PET Events alerts. The options are Disabled and **Enabled**.

WatchDog

Select Enabled to allow AMT to reset or power down the system if the operating system or BIOS hangs or crashes. The options are **Disabled** and Enabled.

OS Timer / BIOS Timer

These options are available if Watch Dog (above) is enabled. This is a timed delay in seconds, before a system powerdown or reset after a BIOS or operating system failure is detected. Enter the value in seconds.

ASF Sensors Table

Enable this feature for the ASF Sensor Table to be added into the ASF! ACPI table. The options are **Disabled** and Enabled.

► Secure Erase Configuration

Secure Erase mode

Select Real to securely erase a solid state drive. The options are **Simulated** and Real.

Force Secure Erase

Select Enabled to force a secure erase of the solid state drive on the next boot. The options are **Disabled** and Enabled.

► OEM Flags Settings

MEBx Hotkey Pressed

Use this feature to specify whether the MEBx hotkey should be enabled during the system boot. The options are **Disabled** and Enabled.

MEBx Selection Screen

Use this feature to select the type of MEBx selection screen. Press 1 to enter the ME Configuration screen and 2 to initiate a remote connection. Network access must be activated for a remote connection. The options are **Disabled** and Enabled.

Hide Unconfigure ME Confirmation Prompt

Use this feature to hide the unconfigure ME confirmation prompt. The options are **Disabled** and Enabled.

MEBx OEM Debug Menu Enable

Use this feature to enable or disable the OEM debug menu in MEBx. The options are **Disabled** and Enabled.

Unconfigure ME

Use this feature to reset the MEBx password to default. The options are **Disabled** and **Enabled**.

►MEBx Resolution Settings

Non-UI Mode Resolution

Use this feature to specify the resolution for the non-UI text mode. The options are **Auto**, 80x25, and 100x31.

UI Mode Resolution

Use this feature to specify the resolution for the UI text mode. The options are **Auto**, 80x25, and 100x31.

Graphics Mode Resolution

Use this feature to specify the resolution for the graphics mode. The options are **Auto**, 640x480, 800x600, and 1024x768.

►ACPI Settings

ACPI Sleep State

Use this feature to select the ACPI Sleep State that the system will enter into when the suspend button is activated. The options are Suspend Disabled and **S3 (Suspend to RAM)**.

High Precision Event Timer

Select **Enabled** to activate the High Precision 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**.

Native PCIE Enable

Enable this feature to grant control of PCI Express Native hot plug, PCI Express Power Management Events, and PCI Express Capability Structure Control. The options are **Disabled** and **Enabled**.

Native ASPM

Select **Enabled** for the operating system to control the ASPM or **Disabled** for the BIOS to control the ASPM. The options are **Auto**, **Enabled**, and **Disabled**.

Headless Mode Support

Use this feature to enable or disable the headless mode. The headless mode means that the system has been configured to operate without a monitor (the missing "head"), keyboard, and mouse. The options are **Disabled** and Enabled.

Wake System From S5 Via RTC

Use this feature to enable or disable system wake on alarm event. When enabled, the system will wake on the time (hr:min:sec) specified. The options are **Disabled** and Enabled.

S5 Wake On Lan

This is a workaround to enable the S5 wake from Lan. The options are **Disabled** and Enabled.

► USB Configuration

- USB Configuration
- USB Module Version
- USB Controllers
- USB Devices

XHCI Hand-off

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

USB Mass Storage Driver Support

Select Enabled for USB mass storage device support. The options are Disabled and **Enabled**.

► PCIe/PCI/PnP Configuration

Above 4GB MMIO BIOS Assignment (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.

BME DMA Mitigation

Enable this feature to help block DMA attacks. The options are **Disabled** and Enabled.

NVMe Firmware Source

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

Consistent Device Name Support

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

PCIe/PCI/PnP Configuration

M.2 Slot M-Key OPROM

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

M.2 Slot E-Key OPROM

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

M.2 Slot B-Key OPROM

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

Onboard LAN Option ROM

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

► HTTP Boot Configuration

HTTP BOOT Configuration

HTTP Boot Policy

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

HTTP Boot Checks Hostname

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

Priority of HTTP Boot

Instance of Priority 1:

Enter a value to set the rank target port. The default setting is **1**.

Select IPv4 or IPv6

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

Boot Description

Highlight the feature and press enter to create a description.

Boot URI

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

Instance of Priority 2

Enter a value to set the rank target port. The default setting is **0**.

► Network Configuration

Network Stack

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

IPv4 PXE Support

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

IPv4 HTTP Support

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

IPv6 PXE Support

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

IPv6 HTTP Support

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

PXE Boot Wait Time

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

Media Detect Count

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

- ▶ **MAC:3CECEF7904BE-IPv4 Network Configuration**
- ▶ **MAC:3CECEF7904BF-IPv4 Network Configuration**

Configured

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

Save Changes And Exit

Use this feature to save changes and exit.

- ▶ **MAC:3CECEF7904BE-IPv6 Network Configuration**
- ▶ **MAC:3CECEF7904BF-IPv6 Network Configuration**

▶ Enter Configuration Menu

- Interface Name
- Interface Type
- MAC address
- Host addresses
- Route Table
- Gateway addresses
- DNS addresses

Interface ID

This feature shows the interface ID for the specified network device.

DAD Transmit Count

This feature sends Neighbor Solicitation messages while performing a Duplicate Address Detection (DAD) to make sure there is no IP address duplication. A value of zero means a DAD has not been performed.

Policy

Use this feature to select an automatic or manual policy. The options are **Automatic** and **Manual**.

Save Changes And Exit

When you have completed the changes for this section, select this option to save all changes made and exit.

► Trusted Computing

The following TPM information is displayed:

- TPM2.0 Device Found
- Firmware Version: 7.85
- Vendor: IFX

Security Device Support

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

****If the feature above is enabled, the following features are available for configuration:***

The following Platform Configuration Register information is displayed:

- Active PCR banks SHA256
- Available PCR banks SHA-1,SHA256

SHA-1 PCR Bank

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

SHA256 PCR Bank

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

Pending operation

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

Platform Hierarchy

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

Storage Hierarchy

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

Endorsement Hierarchy

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

PH Randomization

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

SMCI BIOS-Based TPM Provision Support

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

▶ Driver Health

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

▶ Intel(R) Gigabit 0.0.29

▶ Intel(R) Gigabit 0.9.02

- Controller 996bb118 Child 0: Healthy
- Intel(R) Ethernet Controller (3) I225-IT: Healthy

▶ Intel(R) Gigabit 0.9.02

- Controller 996ba018 Child 0
- Intel(R) Ethernet Controller (3) I225-IT

▶ Intel(R) Ethernet Connection (3) I225-IT - 3C:EC:EF:79:04:BE

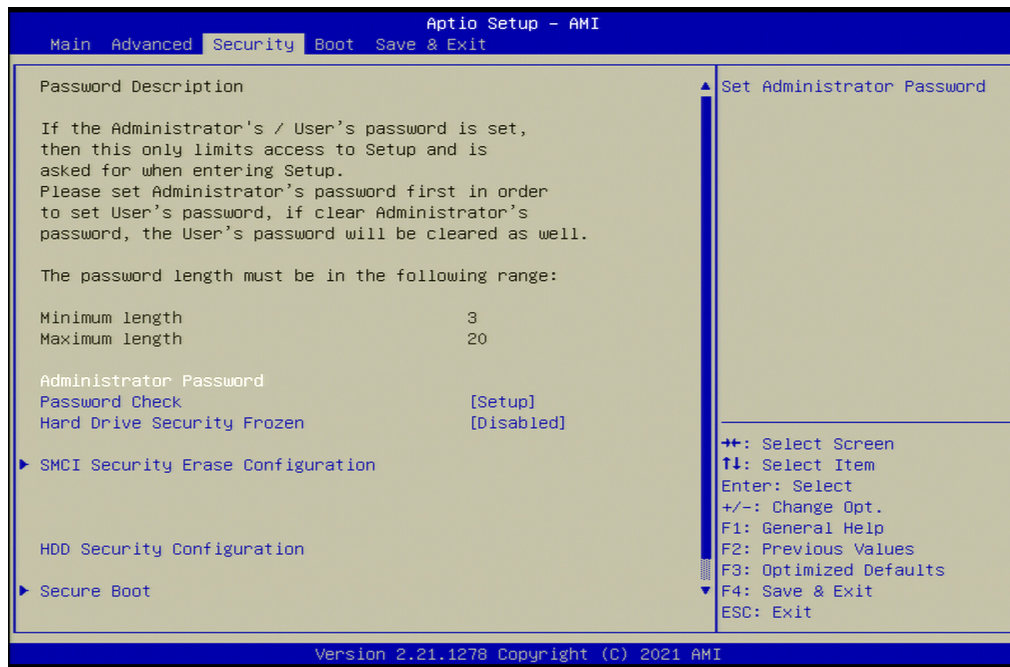
- UEFI Driver
- Device Name
- PCI Device ID
- Link Status
- MAC Address

▶ Intel(R) Ethernet Connection (3) I225-IT - 3C:EC:EF:79:04:BF

- UEFI Driver
- Device Name
- PCI Device ID
- Link Status
- MAC Address

4.4 Security

Use this menu to configure Security settings.



Administrator Password

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

Password Check

Use this feature to determine when a password entry is required. Select Setup to require the password only when entering setup. Select Always to require the password when entering setup and at each bootup. The options are **Setup** and Always.

Hard Drive Security Frozen

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

▶ SMCI Security Erase Configuration

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

- HDD Name
- HDD Serial Number
- Security Mode
- Estimated Time
- HDD User Pwd Status

Security Function

Select Password to set an HDD/SATA password which will allow you to configure the security settings of the HDD/SATA device. Select Security Erase - Password to enter a SATA user password to erase the password and the contents previously stored in the HDD/SATA device. Select Security Erase - Without Password to use the manufacturer default password "111111111" as the SATA user password and to erase the contents of the HDD/SATA device by using this default password. The options are **Disable**, Set Password, Security Erase-Password, Security Erase-PSID*, and Security Erase-Without Password.



Note: *The option Security Erase-PSID is only supported by the M.2 TCG function.

Password

Use this feature to set the SATA user password which will allow you to configure the SMC Security Erase settings by using the SATA user password.

HDD Security Configuration

This section is available for configuration if a storage device is detected by the system.

HDD Password Description:

Use this feature to set, modify, and clear both HDD User Password and HDD Master Password. An installed HDD User Password is required to enable HDD security features.

HDD Master Password can be modified only when it is successfully unlocked in POST. If the 'Set HDD Password' option is grayed out, do a power cycle to enable it.

HDD PASSWORD CONFIGURATION:

P0: INTEL SSDSC2BB240G7

Security Supported: Yes

Security Enabled: No

Security Locked: No

Security Frozen: No

HDD Password Pwd Status: Not INSTALLED

HDD Master Pwd Status: INSTALLED

Set User Password

Use this option to set up HDD User Password. It is advisable to Power Cycle System after Setting Hard Disk Password.

P1: INTEL SSDSCKHB080G4

Security Supported: Yes

Security Enabled: No

Security Locked: No

Security Frozen: No

HDD Password Pwd Status: Not INSTALLED

HDD Master Pwd Status: INSTALLED

Set User Password

This option allows you to set up HDD User Password. It is advisable to Power Cycle System after Setting Hard Disk Password.

▶ Secure Boot

- System Mode
- Vendor Keys
- Secure Boot

Secure Boot

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

Secure Boot Mode

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

If Secure Boot Mode is set to Custom, Key Management features are available for configuration:

▶ Restore Factory Keys

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

▶ Reset to Setup Mode

This feature deletes all Secure Boot key databases from NVRAM.

▶ Key Management

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

Provision Factory Default

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

****If the feature above is enabled, the following features are available for configuration:***

▶ **Restore Factory Keys**

Select Yes to restore Secure Boot keys to factory default. The options are Yes and No.

▶ **Reset to Setup Mode**

Select Yes to delete NVRAM content from all of UEFI Secure Boot key databases. The options are Yes and No.

▶ **Export Secure Boot variables**

Select Yes to copy NVRAM content to a file in the root folder. The options are Yes and No.

▶ **Enroll Efi Image**

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

Device Guard Ready

▶ **Remove 'UEFI CA' from DB**

Select Yes to remove UEFI CA from the list of Microsoft Certified DB database. The options are Yes and No.

▶ **Restore DB defaults**

Select Yes to restore DB variables to factory default. The options are Yes and No.

Secure Boot variable | Size | Keys | Key Source

▶ **Platform Key (PK)**

Use this submenu to enter and configure a set of values to be used as platform firmware keys for the system. If provision factory default is enabled, the available options are: Details, Export, Update, and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update option is available.

Details

Select this option to view PK information.

Export

Select this option to export the PK from a file system.

Update

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

Delete

Select ok to remove the PK. Reset the system for it to enter Setup/Audit Mode.

► Key Exchange Keys

Use this submenu to enter and configure a set of values to be used as Key-Exchange-Keys for the system. If provision factory default is enabled, the available options are: Details, Export, Update, Append and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update and Append options are available.

Details

Select this feature to view KEK information.

Export

Select this option to export the KEK from a file system.

Update

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

Append

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

Delete

Select Yes to delete the variable or No to delete a certificate from the key database.

► Authorized Signatures

Use this submenu to enter and configure a set of values to be used as Authorized Signatures for the system. If provision factory default is enabled, the available options are: Details, Export, Update, Append and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update and Append options are available.

Details

Select this option to view authorized signatures information.

Export

Select this option to export the db from a file system.

Update

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

Append

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

Delete

Select Yes to delete the variable or No to delete a certificate from the key database.

► **Forbidden Signatures**

Use this submenu to enter and configure a set of values to be used as Forbidden Signatures for the system. If provision factory default is enabled, the available options are: Details, Export, Update, Append and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update and Append options are available.

Details

Select this option to view forbidden signatures information.

Export

Select this option to export the dbx from a file system.

Update

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

Append

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

Delete

Select Yes to delete the variable or No to delete a certificate from the key database.

► **Authorized TimeStamps**

Use this submenu to set and save the timestamps for the authorized signatures which will indicate the time when these signatures are entered into the system. If provision factory default is enabled, the available options are: Details, Export, Update, Append and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update and Append options are available.

Details

Select this option to view authorized time stamp information.

Export

Select this option to export the dbt from a file system.

Update

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

Append

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

Delete

Select Yes to delete the variable or No to delete a certificate from the key database.

► OsRecovery Signature

Use this submenu to set and save the authorized signatures used for OS recovery. If provision factory default is enabled, the available options are: Details, Export, Update, Append and Delete. Select the applicable option to proceed. If provision factory default is disabled, only the Update and Append options are available.

Details

Select this option to view authorized time stamp information.

Export

Select this option to export the dbr from a file system.

Update

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

Append

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

Delete

Select Yes to delete the variable or No to delete a certificate from the key database.

TCG Storage Security Configuration:

► CT250P2SSD8

TCG Storage Password Description:

Use this feature to set, modify, and clear both TCG Storage device Admin and User passwords. An installed Admin Password is required to enable TCG Storage security features and to create the User Password.

Using Admin Password alone can lock and unlock the TCG storage device while User Password acts as an optional credential to unlock the device in POST.

The options, 'Set Admin Password' and 'Set User Password', are grayed out when the system detects a security freeze lock caused by the boot failure.

Perform a cold boot (power off and then power on) on the system and press the hot key to enter BIOS.

PASSWORD CONFIGURATION:

Security Subsystem Class: Pyrite 1.0

Security Supported: Yes

Security Enabled: No

Security Locked: No

Security Frozen: No

User Pwd Status: Not INSTALLED

Admin Pwd Status: INSTALLED

Set Admin Password

This feature allows you to set the administrator password, which is required to enter the BIOS setup utility. The length of the password should be three to 20 characters.

Set User Password

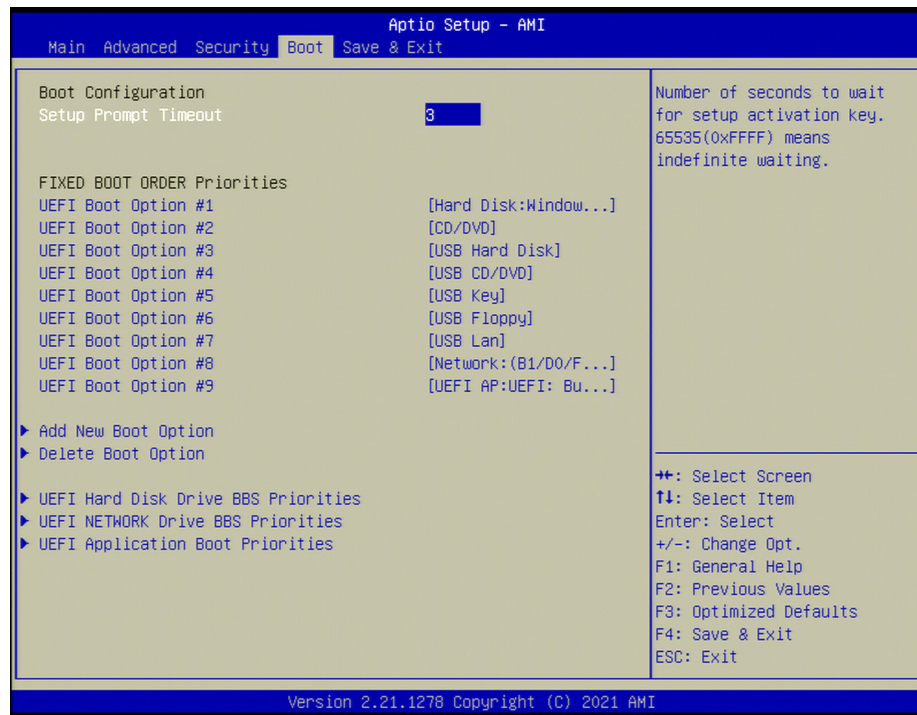
This feature allows you to set up the user password which is required to enter the BIOS setup utility. It is grayed out by default but will be available for setup when the admin password is entered. The length of the password should be three to 20 characters.

Device Reset

This feature allows you to reset the device to the Original Factory State and it will completely erase the user data from the hard drive.

4.5 Boot

Use this menu to configure Boot settings:



Boot Configuration

Setup Prompt Timeout

Number of seconds to wait for the setup activation key. 65535(0xFFFF) means indefinite waiting. The default setting is 3.

Fixed Boot Order Priorities

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

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

► Add New Boot Option

This option allows you to add a new boot option to the boot priority features for system boot.

Add Boot Option

This feature allows you 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

This feature allows you to specify the file path for the new boot option.

Create

After the name and the file path for the boot option are set, press <Enter> to create the new boot option in the boot priority list.

► Delete Boot Option

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

Delete Boot Option

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

► UEFI Hard Disk Drive BBS Priorities

This feature allows you to specify which network drives are boot devices.

- Boot Option #1
- Boot Option #2

► UEFI NETWORK Drive BBS Priorities

This feature allows you to specify which network drives are boot devices.

- Boot Option #1
- Boot Option #2
- Boot Option #3
- Boot Option #4

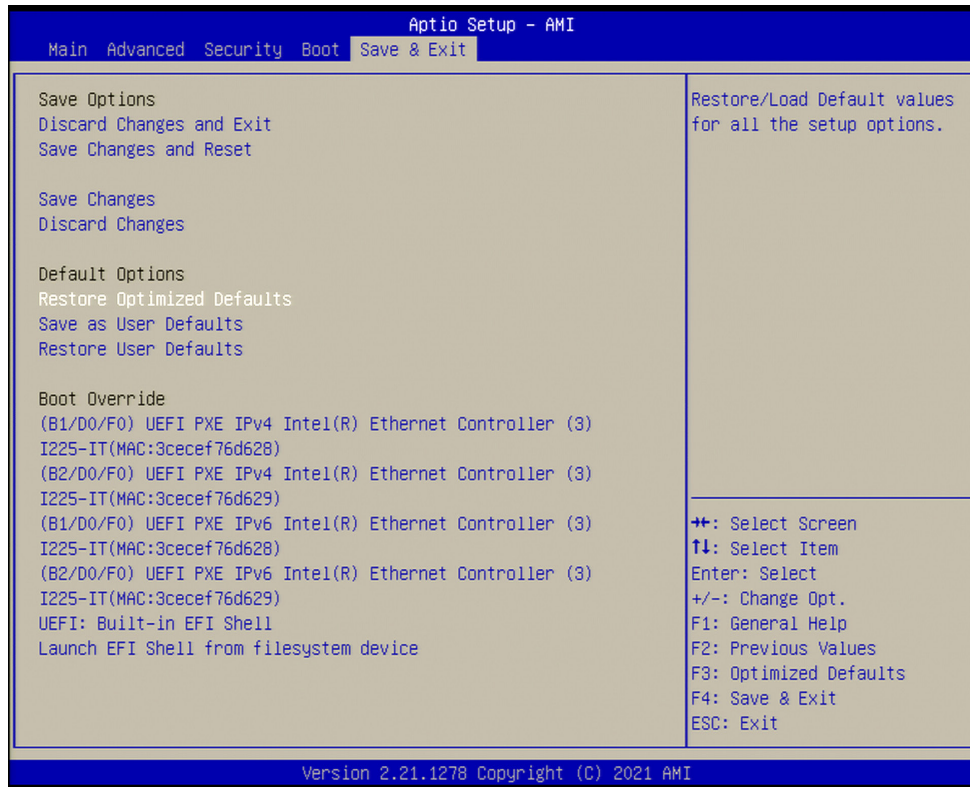
► UEFI Application Boot Priorities

This feature allows you to specify which UEFI application devices are boot devices.

- Boot Option #1

4.6 Save & Exit

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



Save Options

Discard Changes and Exit

Select this feature to exit the BIOS without saving any changes.

Save Changes and Reset

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

Save Changes

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

Discard Changes

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

Default Options

Restore Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override

This feature allows you to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified by the user instead of the one specified in the boot list. This is a one-time override.

Appendix A

BIOS Codes

A.1 BIOS Error POST Codes

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

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

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

A.2 Additional BIOS POST Codes

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

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

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

Appendix B

Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

B.1 Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the MS Windows installation ISO file. That might be a DVD, perhaps using an external USB/SATA DVD drive or a USB flash drive.
2. Retrieve the proper RST/RSTe driver. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities", select the proper driver, and copy it to a USB flash drive.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **F11** during the system startup.

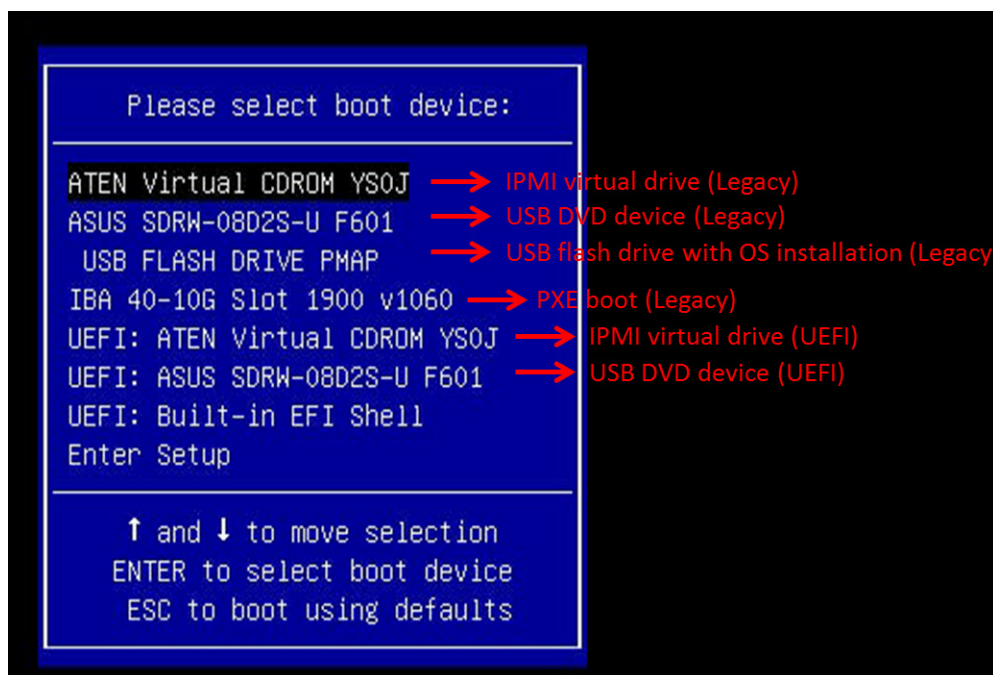


Figure B-1. Select Boot Device

4. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on “Load driver” link at the bottom left corner.

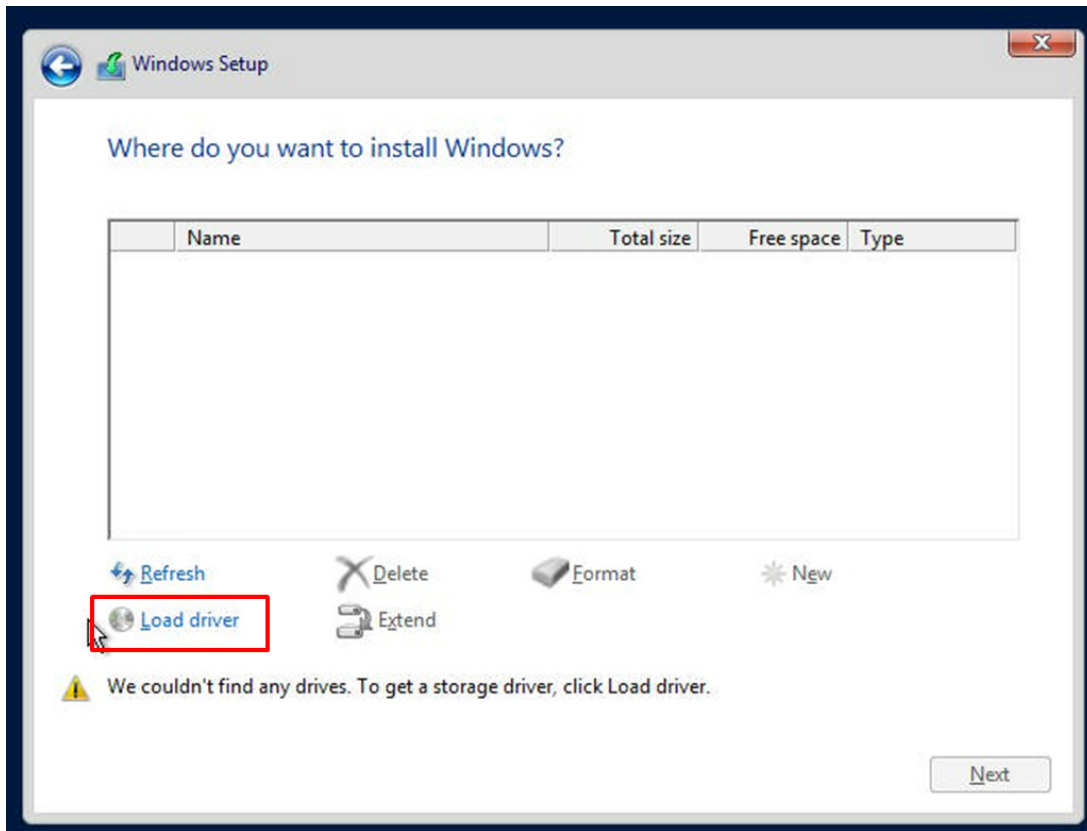


Figure B-2. Load Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.
 - For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.
5. Once all devices are specified, continue with the installation.
 6. After the Windows OS installation has completed, the system will automatically reboot multiple times.

B.2 Driver Installation

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

After accessing the website, go to https://www.supermicro.com/wdl/CDR_Images/CDR-X12-UP/ to locate the ISO file for your motherboard. Download this file to a USB flash drive or a DVD and mount the ISO file as virtual media using the iKVM console for access. You may also use a utility to extract the ISO file if preferred.

Another option is to go to the Supermicro website and search for the motherboard. Find the product page for your motherboard and download the latest drivers and utilities.

Insert the flash drive or disk and the screenshot shown below should appear.

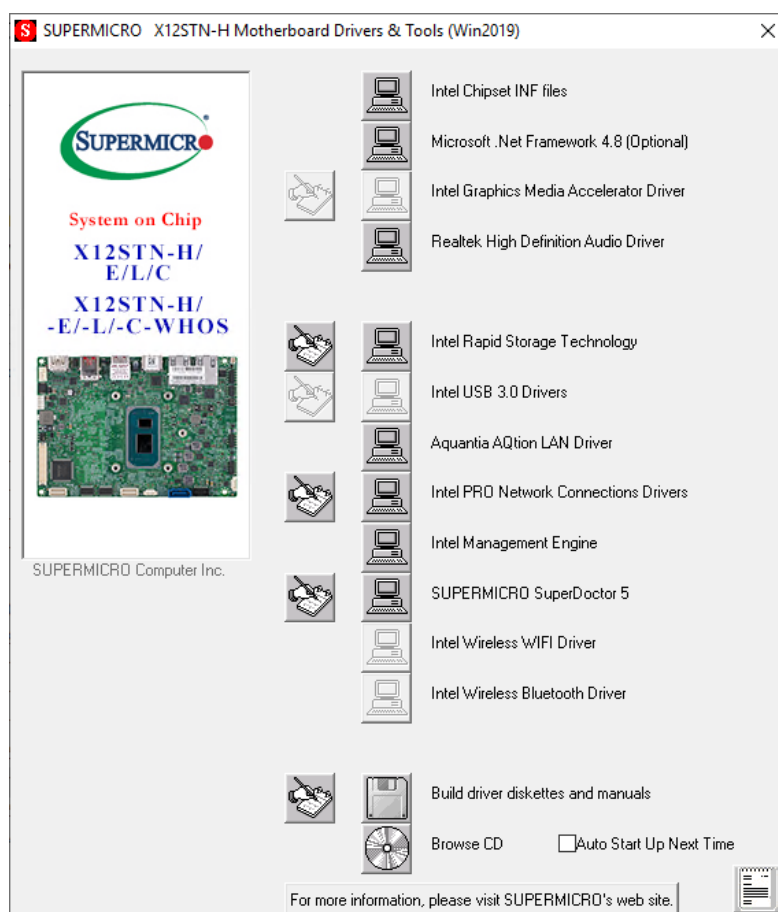


Figure B-3. Driver & Tool Installation Screen

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to 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.

B.3 SuperDoctor® 5

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

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

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

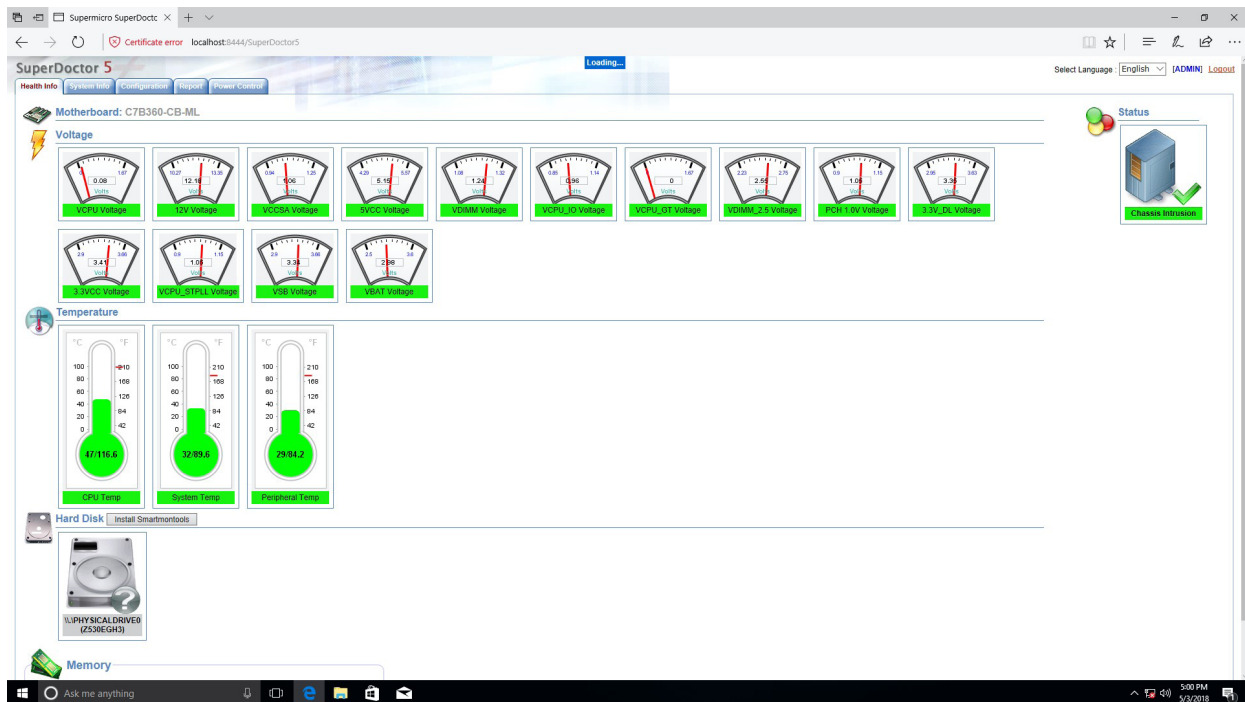


Figure B-4. SuperDoctor 5 Interface Display Screen (Health Information)

Appendix C

Standardized Warning Statements

The following industry standard warnings are 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 the appropriate section in its entirety before installing or configuring components.

These warnings are also found on the Supermicro website at https://www.supermicro.com/about/policies/safety_information.

Battery Handling



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

電池の取り扱い

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

警告

電池更換不當會有爆炸危險。請只使用同類電池或制造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

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

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فعلي
اسبدال البطارية فقط بنفس النع أو ما يعادلها مما أوصت به الشركة المصنعة
جخلص من البطاريات المسعملة وفقا لعمليات الشركة الصانعة

경고!

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

Waarschuwing

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

Product Disposal



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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

אזהרה!

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

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

경고!

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

Waarschuwing

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

Appendix D

UEFI BIOS Recovery



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

D.1 Overview

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

D.2 Recovering the UEFI BIOS Image

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

-  **Note 1:** Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS block crashes.
-  **Note 2:** When the BIOS recovery block crashes, you must follow the procedures to make a Returned Merchandise Authorization (RMA) request. (For a RMA request, see section 3.5 for more information).


D.3 Recovering the BIOS Block with a USB Device


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

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

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

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

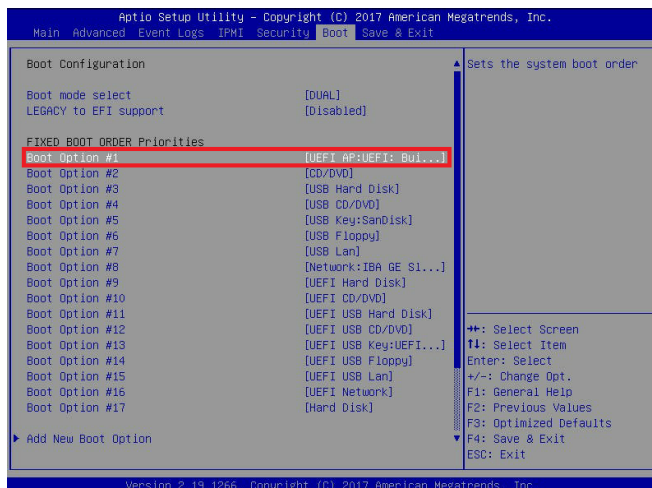
 **Note 1:** If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

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

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



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



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

```

UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000C)
Mapping table
FS0: Alias(s):HD0r0b;BLK1:
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x3791D72,0x800,0x1
D43592)
BLK0: Alias(s):
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press F8 in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> cd AFUD05
FS0:\AFUD05> cd SKUPME2_03162017
FS0:\AFUD05\SKUPME2_03162017> flash.nsh X110PU7.314_

```

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

```

Done.
[ Access Cmos Port Ex ]
<Read>
Index 0x51: 0x18
Done.
*****
*
* Program BIOS and ME (including FDT) regions...
*
*****
|
| AMI Firmware Update Utility v5,09.01.1317
| Copyright (C)2017 American Megatrends Inc. All Rights Reserved.
|
+-----+
CPUID = 50652
Reading flash ..... done
- ME Data Size checking - ok
- FES Checksums ..... ok
- Check Rom Layout ..... Ok
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... 0x00132000 (0x)

```

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

```
Verifying NDB Block ..... done
- Update success for FDR
- Update success for IE. -
- Successful Update Recovery Loader to GPRx!!
- Successful Update MFSB!!
- Successful Update FTPE!!
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTOK!!
- HE Entire Image update success !!
WARNING : System must power-off to have the changes take effect!
Moving FS0:\AFUDOS\SHJPM2_03162017\fdt\64.efi -> FS0:\AFUDOS\SHJPM2_03162017\fdt\shc
- [ok]
Moving FS0:\AFUDOS\SHJPM2_03162017\afuefi\64.efi -> FS0:\AFUDOS\SHJPM2_03162017\afuefi\shc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*****
Deleting 'FS0:\AFUDOS\SHJPM2_03162017\afuefi\64.efi'
Delete successful.
FS0:\>
```

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