A2SAP-L1

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

Release Date: July 20, 2021

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 A2SAP-L1 motherboard.

About This Motherboard

The A2SAP-L1 motherboard provides powerful graphics and increased media processing performance with multi-frame technology. Paired with the Intel® Atom SoC (System-on-a-Chip) processor, the A2SAP-L1 delivers more computing power for faster memory speeds and bandwidth while maintaining energy efficiency. Utilizing Intel® TCC (Time Coordinated Computing) Technology, the A2SAP-L1 resolves latency issues in applications and improves determinism across connected devices. The motherboard features advanced technologies such as Intel® Virtualization to improve security and reliabity of systems, and Thermal Monitoring to reduce power consumption. It also comes with more I/O ports and high-speed connectivity.

Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, please refer to our website at http://www.supermicro.com/products/.

Conventions Used in the Manual

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

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

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

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

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

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Table of Contents

Chapter 1

Introduction

Congratulations on purchasing your computer motherboard from an industry leader. This board is designed to provide you with the highest standards in quality and performance.

In additon to the motherboard, several important parts that are included with the system are listed below. If anything listed is damaged or missing, please contact your retailer.

1.1 Checklist

Main Parts List		
Description	**Part Number**	**Quantity**
Supermicro Motherboard	A2SAP-L1	1
Heatsink (25mm height)	SNK-C0115L	1
SATA Data Cable (29cm)	CBL-SAST-0538	1
SATA Power Cable (20cm)	CBL-PWEX-1030	1
USB3.0 Cable (15cm)	CBL-CUSB-0826	1
USB2.0 Cable (20cm)	CBL-CUSB-0983	1
Power input cable (15cm)	CBL-PWEX-1029	1
Audio Cable (20cm)	CBL-OTHR-0986	1
RJ45 Ethernet Cable (10cm)	CBL-CDAT-0934	1
COM Port Cable (20cm)	CBL-CUSB-0984	1
Quick Referennce Guide	MNL-2427-QRG	1

Important Links

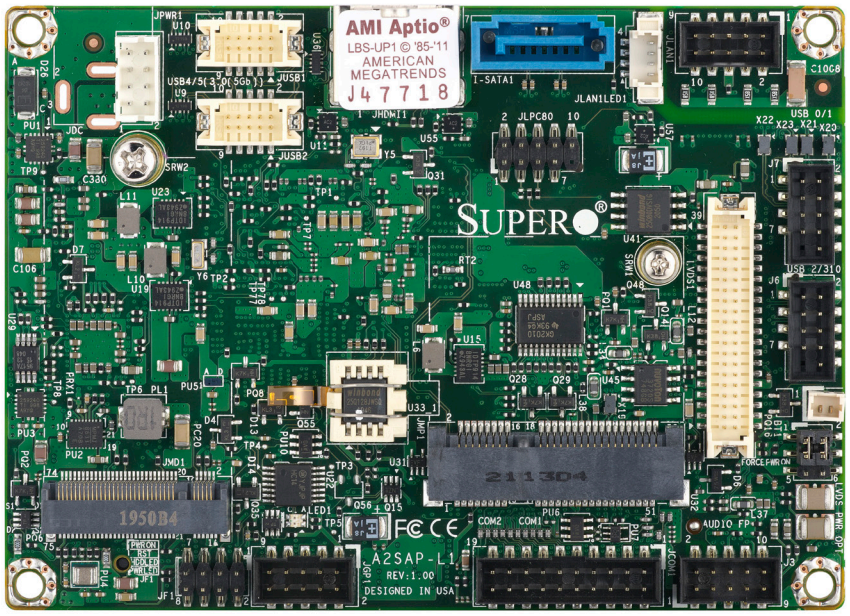
For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

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

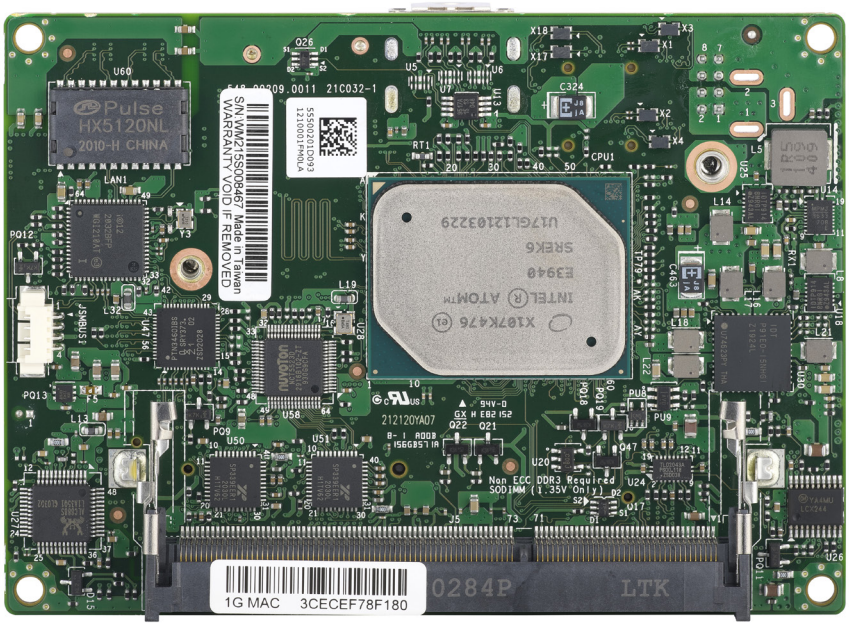
This manual may be periodically updated without notice. Check the Supermicro website for possible updates to the manual revision level.

Figure 1-1. A2SAP-L1Motherboard Images

Front Image



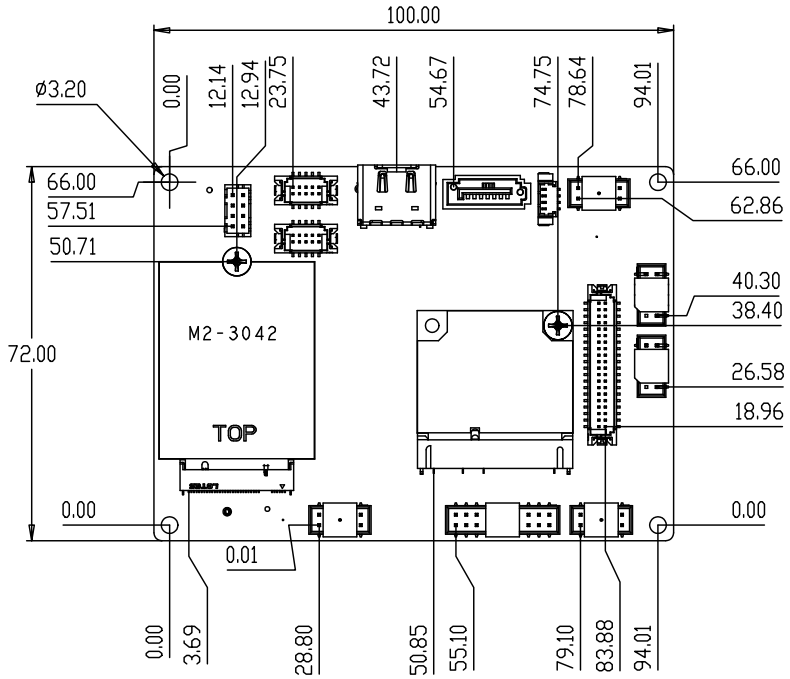
Back Image



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

Figure 1-2. Motherboard Mechanical Drawings

Top Side



Bottom Side

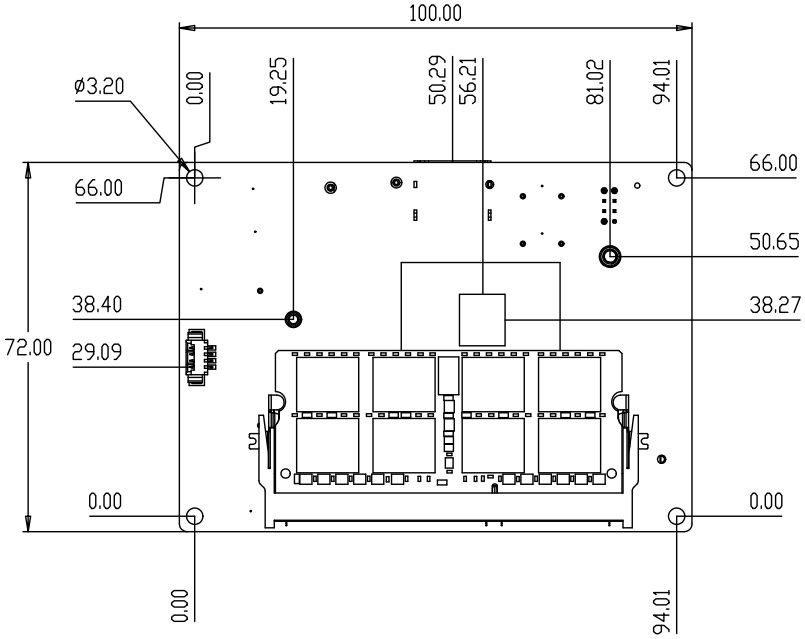
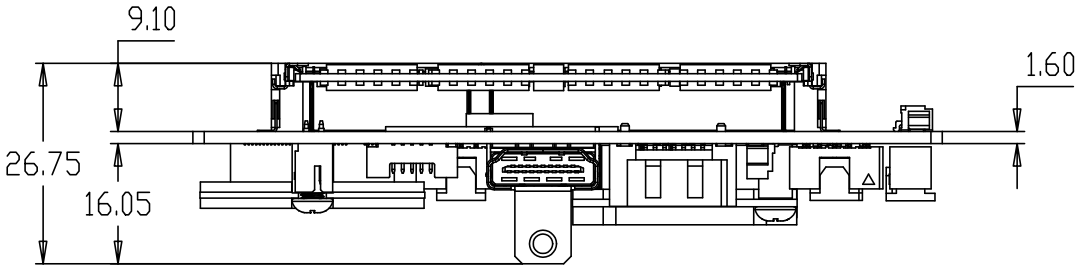


Figure 1-3. Motherboard Back Panel I/O Mechanical Drawings

Back Panel I/O without Heatsink



Back Panel I/O with Heatsink

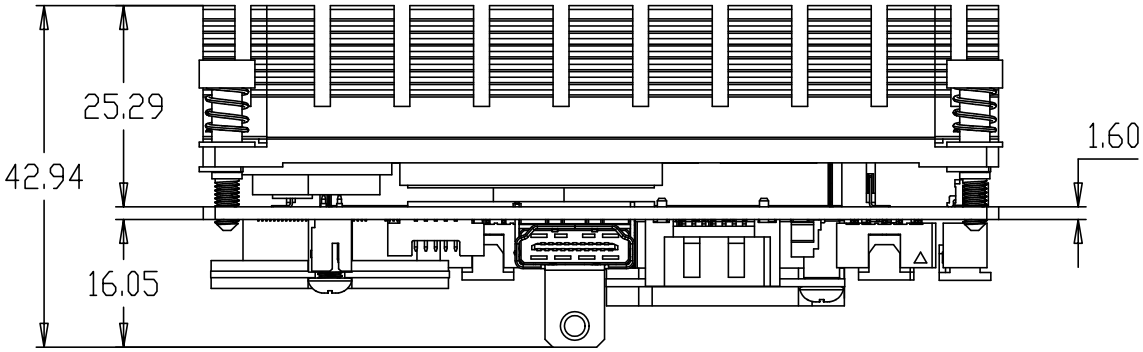
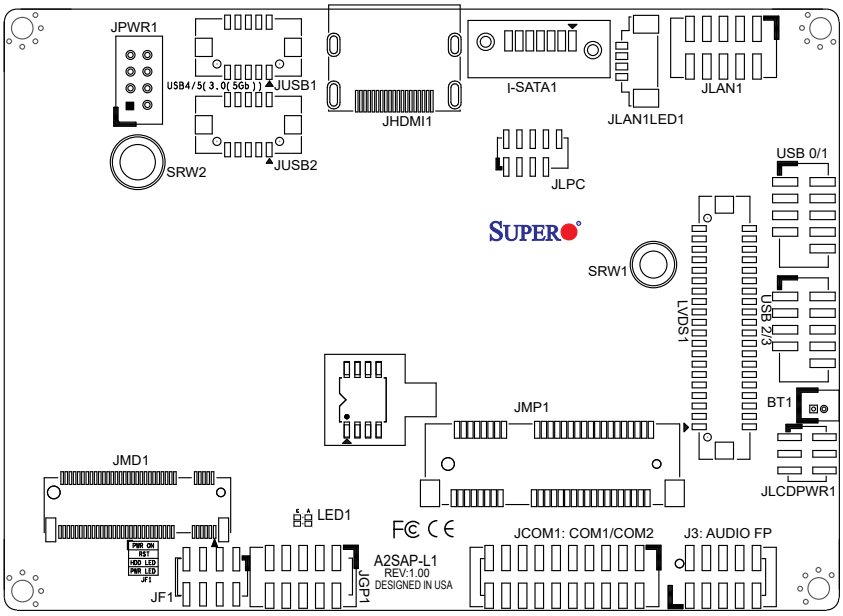


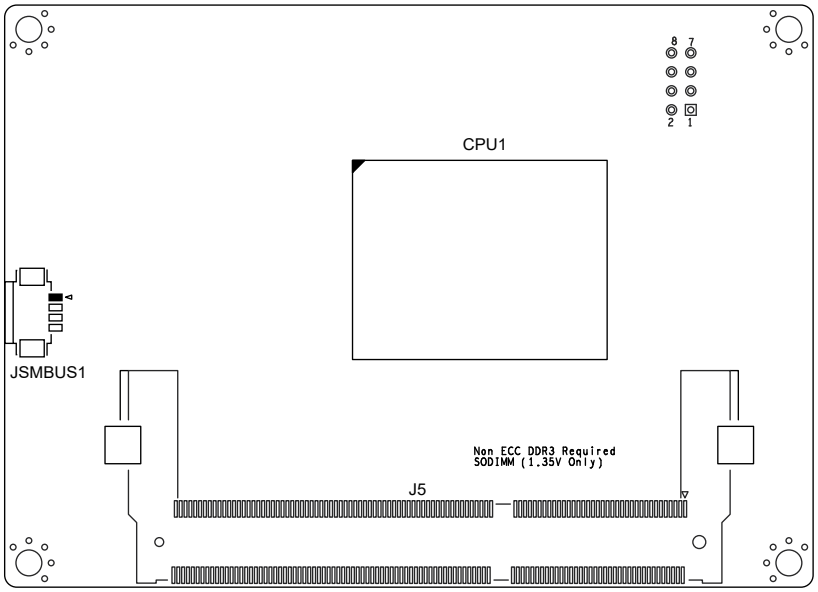
Figure 1-4. Motherboard Layouts

(not drawn to scale)

Top Layout

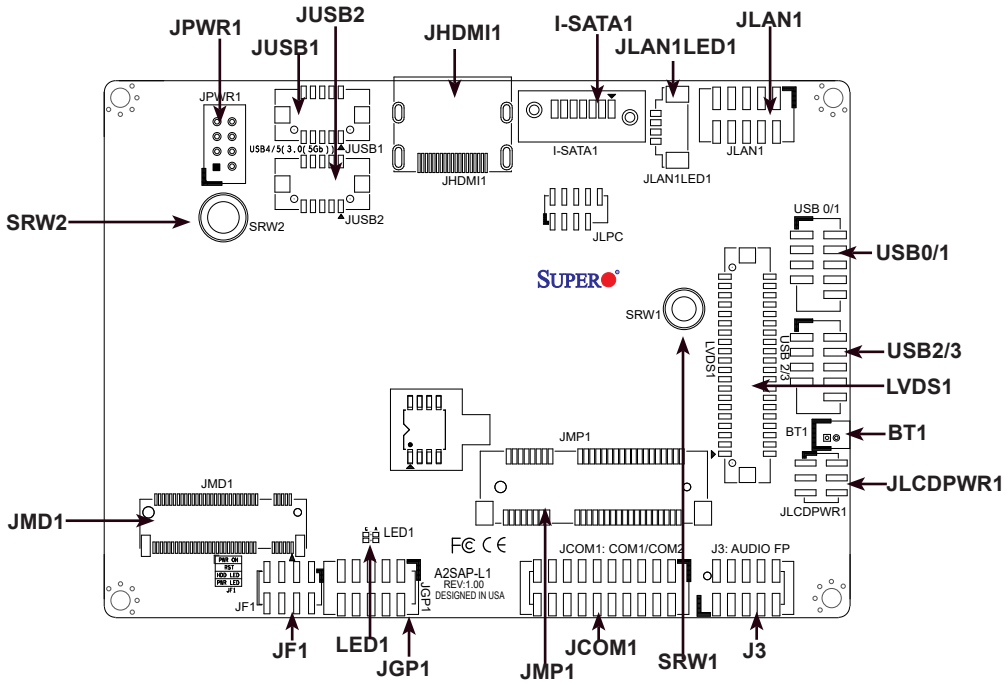


Bottom Layout

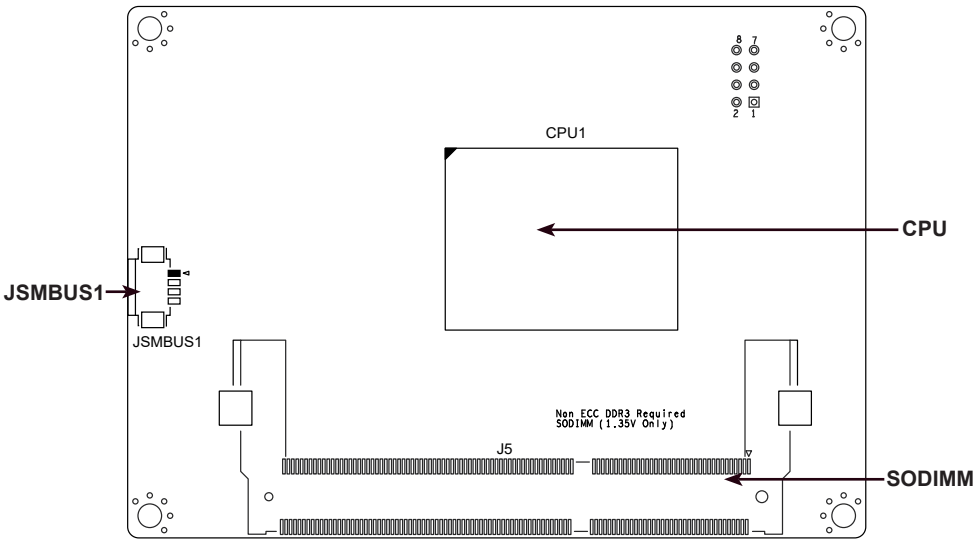


Quick Reference

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	FORCE POWER ON	Pins 2-4* (FORCE POWER ON) Pins 4-6 (POWER BUTTON ON)
	LVDS Panel Power Source Selection	Pins 1-3* (3.3V) Pins 3-5 (5V)

LED	Description	Status
LED1	Power LED	Solid Green: S0 mode Solid Red: S3/S4/S5 modes

Connector	Description
BT1	Battery Connector (To Clear CMOS, remove the battery, short pins 1-2 for more than 10 seconds and install the battery.)
I-SATA1	Intel® PCH SATA 3.0 Port
J3	Front Panel Audio via one box header (Mic-In/Headphone-out)
JCOM1	COM Box Headers (two RS232/422/485)
JF1	Front Control Panel via one box header (Power/HDD LED, Reset, Power button
JGP1	8-bit General Purpose I/O via one box header
JHDMI1	High Definition Multimedia Interface (HDMI) Port
JLAN1	1GbE LAN Port with Box Header and Transformer (Intel I210)
JLAN1LED1	GbE LAN Port ACT/LINK LED via one box header
JMD1	M.2 Slot (B-KEY 2242/3042) (SATA 3.0/PCIe x1 Gen2/one USB 2.0)
JMP1	Half-Size Mini PCIe Slot (supports PCIe x1 Gen2/one USB 2.0)
JPWR1	One 2x4-Pin 12V Power Connector
JSMBUS1	SMBus and 5V/1A SATA Power Box Header
JUSB1/JUSB2	Two USB3.0 ports via two box headers
LVDS1	Dual Channel 48-bit LVDS Connector
SRW1 - SRW2	M.2 and Mini PCIe Mounting Holes
USB0/1, USB2/3	Four USB2.0 ports via two box headers

Note: Components not documented are for internal testing only.

Motherboard Features

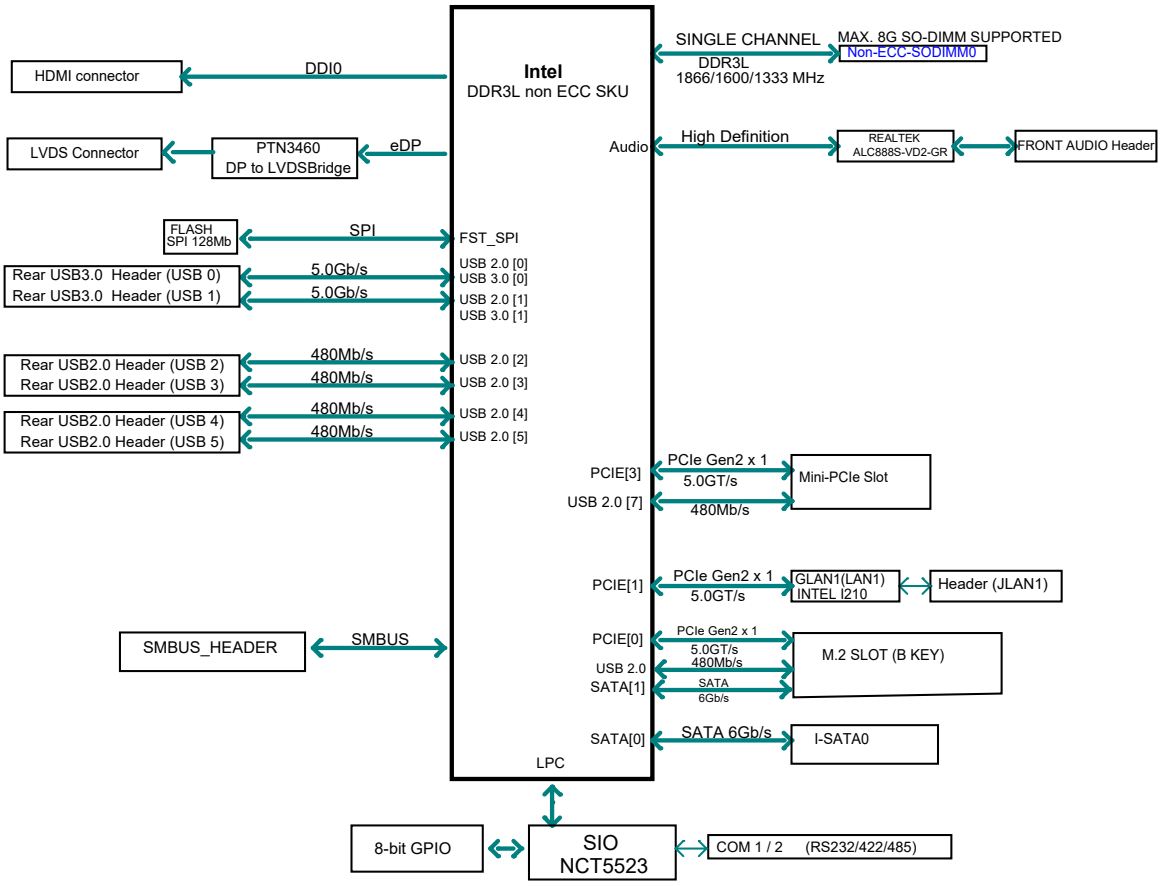
Motherboard Features	
CPU	
• A2SAP-L1: Intel® Atom SoC E3940 Processor, Quad Core, 2 MB L2 Cache, 1.6GHz-1.8GHz, 9.5W	
Memory	
• Integrated memory controller supports up to 8GB of DDR3L 1867MHz Non-ECC 204-pin SO-DIMM	
DIMM Size	
• Single channel Non-ECC SO-DIMM, DDR3L 1333/1600/1867MHz up to 8GB	
Expansion Slots	
• One Half-Size Mini PCIe Slot (supports PCIe x1 Gen2 / one USB 2.0) • One M.2 Slot (B-KEY 2242/3042) (SATA 3.0 / PCIe x1 Gen2 / USB 2.0)	
Network	
• Dual Intel I210 controller	
Graphics	
• Intel® HD Graphics GT Series	• Features: OpenGL 5.0, DirectX 12, OpenCL 2.1 • Hardware Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC • Hardware Encode: AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC • Display: HDMI 1.4 (resolution up to 3840x2160 at 30Hz), LVDS (dual channel 48-bit, resolution up to 1920x1200 at 60Hz)
I/O Devices	
• COM Port • SATA Port • Audio Port • SMBus Box Header • 8-bit GPIO	• Two COM ports via one box header (JCOM1 supports two RS232/RS422/RS485) • One SATA 3.0 port (I-SATA1) • One HD Audio box header with Mic-in/Headphone-out (Realtek ALC888S) • One SMBus box header • One 8-bit GPIO box header
Peripheral Devices	
• Two USB 3.0 ports on two box headers (JUSB1/JUSB2) • Four USB 2.0 ports on two box headers (USB0/1, USB2/3)	
BIOS	
• 128Mb SPI AMI BIOS® • ACPI 6.0, SMBIOS 3.0, PCI F/W 3.0, UEFI 2.5, BIOS rescue hot-key, RTC (Real Time Clock) wakeup	

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

Motherboard Features
Power Management
• ACPI power management • S3, S4, S5 • Power button override mechanism • Power-on mode for AC power recovery • Wake-On-LAN • TXE Management Engine • Force Power On by Jumper • RTC Battery (typical voltage: 3.0V, normal discharge capacity: 220mAh)
System Health Monitoring
• Onboard voltage monitoring for +3.3V,+3.3V standby, VBAT, Vcore, system temperature, and memory voltage • CPU switching phase voltage regulator • CPU thermal trip support
System Management
• SuperDoctor® 5, Watch Dog, NMI, RoHS
LED Indicators
• Power/Suspend State Indicator LED, LAN Port LED via box header
Dimensions
• 2.83" (L) x 3.94" (W) (72mm x 100mm) SBCs
Environment
• Operating Temperature Range: -30°C ~ 75°C (-22°F ~ 167°F). (Note: The audio function operating temperature is 0~60°C.)

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

Figure 1-6.
System Block Diagram



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

1.2 Processor Overview

Built upon the functionality and capability of the Intel Atom SoC processor, the A2SAP-L1 motherboard offers maximum I/O expandability, energy efficiency, and data reliability in a 14-nm process architecture, and is optimized for embedded storage solutions, networking applications, or cloud-computing platforms. The A2SAP-L1 drastically increases system performance for a multitude of server applications.

The A2SAP-L1 supports the following features:

- Intel Virtualization Technology for Directed I/O (Intel VT-d)
- Enhanced Intel SpeedStep® Technology
- Video Connectors: HDMI and LVDS
- Adaptive Thermal Management/Monitoring
- Mini-PCIe slot with PCIe Gen2 X1 with transfer rates of up to 5Gb/s
- SATA port with SATA Gen3 with transfer rates of up to 6Gb/s
- System Management Bus (SMBus) Specification, Version 2.0
- M.2 slot with B-key 2242/3042 module
- Integrated Sensor Hub (ISH)
- Intel® Identity Protection Technology

1.3 Special Features

This section describes the health monitoring features of the A2SAP-L1 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.

Note: Before setting the Recovery from AC Power Loss function in the BIOS, please adjust force power on jumper JLCDPWR1 to pins 4-6 to disable the force power-on function.

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 also provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows® 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 that you also install a power surge protector to help avoid problems caused by power surges.

1.6 Super I/O

The Super I/O (NCT5523 chip) provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with 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 (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

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).

1.7 Advanced Power Management

The following new advanced power management features are supported by the motherboard.

Management Engine (ME)

Intel Atom SoC only supports the TXE function, also called Converged Security Engine(CSE), which is the lite ME function.

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 that your chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the 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

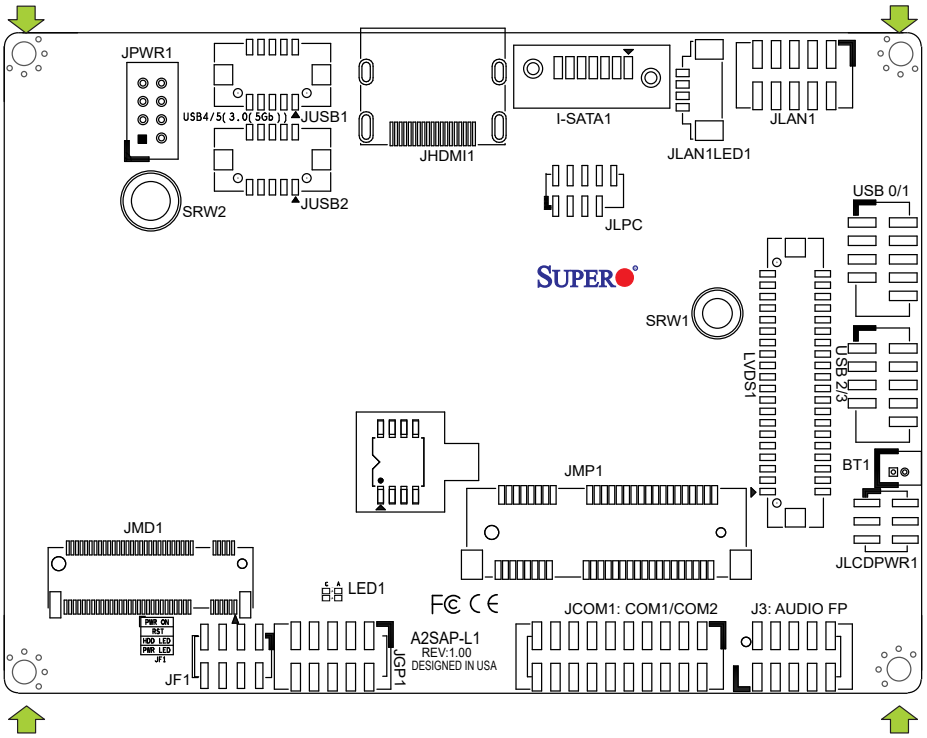
All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they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

Phillips Screwdriver (1)

Phillips Screws (4)

Standoffs (4)
Only if Needed

Tools Needed

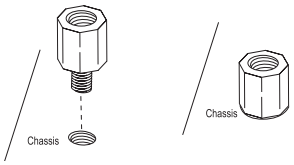


Location of Mounting Holes

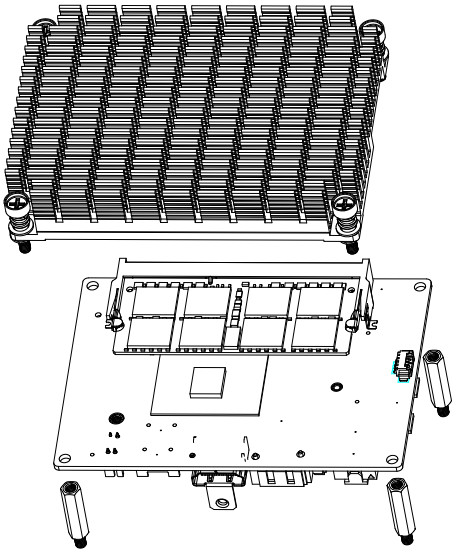
Note: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing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

Installing the Motherboard

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



2. Install standoffs in the chassis.
3. Install the memory. Follow section 2.3 - Memory Support and Installation
4. After the memory installation is complete, install the heatsink.
5. The thermal solution kit that comes with the motherboard includes one heatsink with thermal grease and four copper standoffs that are 19mm in height. The copper standoff type is determined by the customer's chassis design. The copper standoffs that are 19mm in height are recommended only.
6. To install the heatsink, remove the plastic cover on the bottom of the heatsink to expose the thermal grease. Then place the heatsink directly on the CPU and make sure the thermal grease is in contact with the CPU.
7. Turn the motherboard over and tighten the standoffs on the chassis with the corresponding screws by using the Phillips screwdriver. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.



8. Make sure that the motherboard is securely placed in the chassis.

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

2.3 Memory Support and Installation

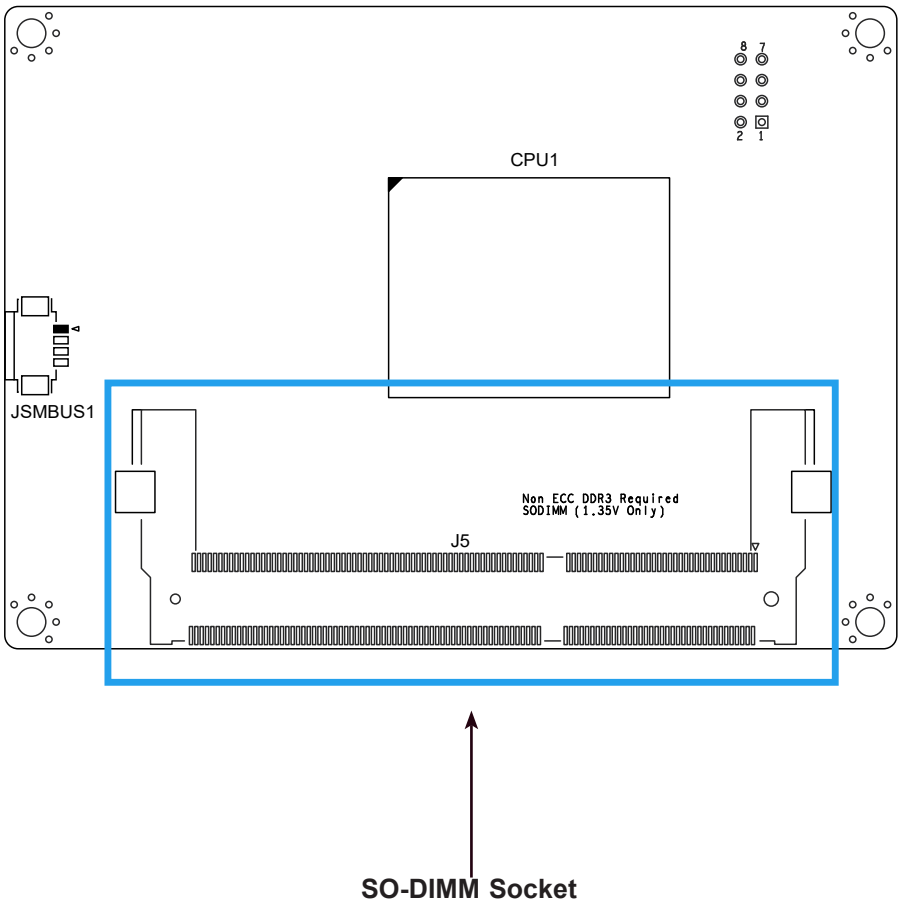
Note: Check the website for recommended memory modules.

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

Memory Support

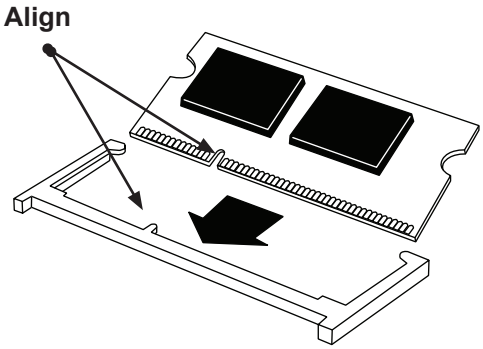
The A2SAP-L1 supports up to 8GB of DDR3L Non-ECC SO-DIMM with speeds of 1333/1600/1867MHz in one memory slot on the bottom side of the motherboard.

Bottom Layout

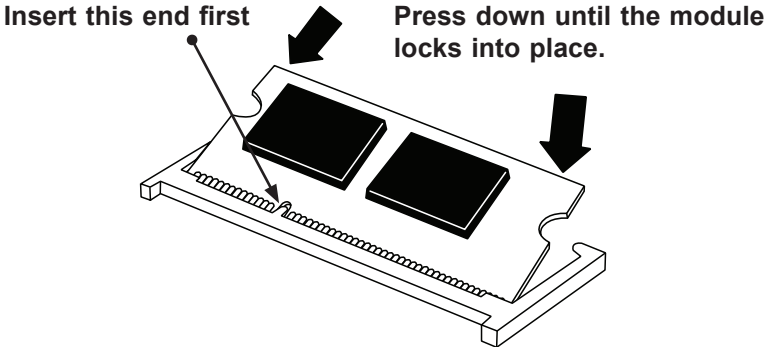


SO-DIMM Installation

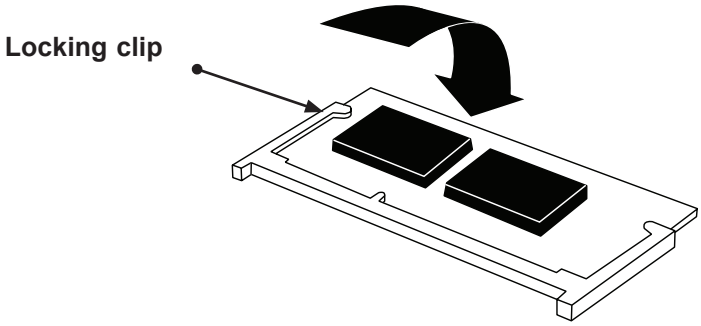
1. Position the SO-DIMM module's bottom key so it aligns with the receptive point on the slot.



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 will automatically secure the SO-DIMM module, locking it into place.



SO-DIMM Removal

1. Push the side clips at the end of the 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.

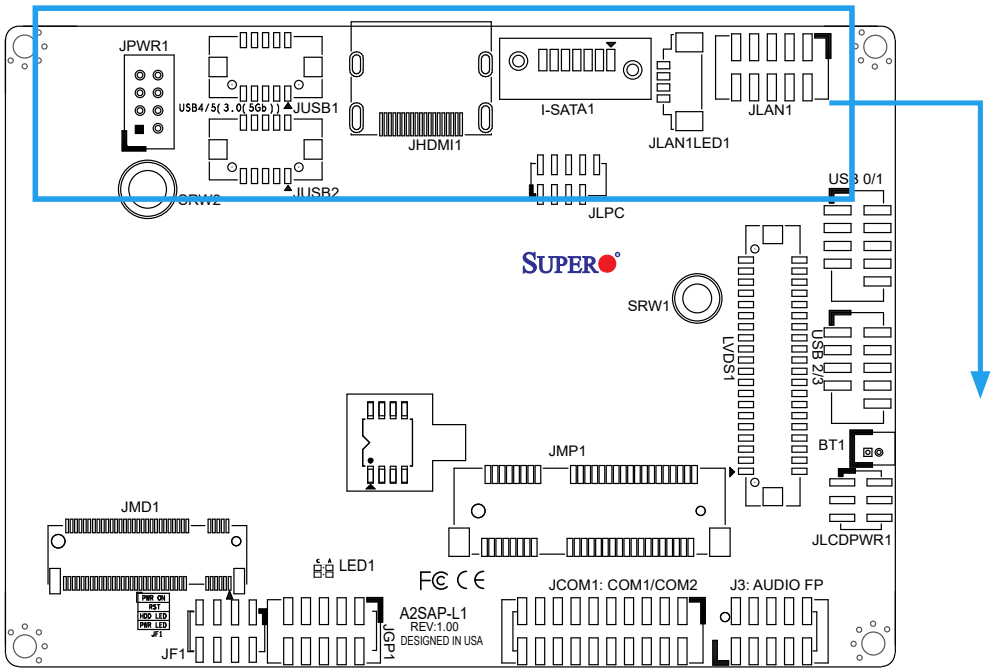
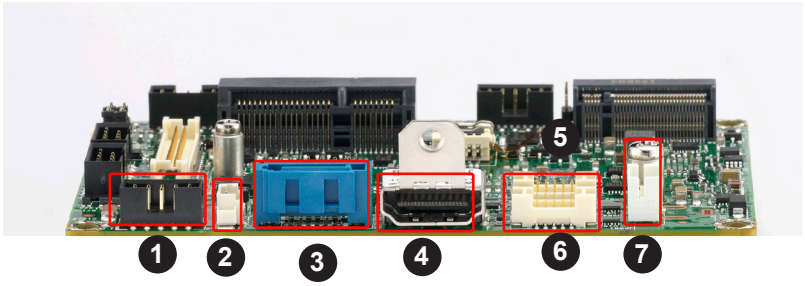


Figure 2-1. Rear I/O Port Locations and Definitions



Rear I/O Ports			
#	Description	#	Description
1.	LAN1	5.	USB1
2.	LAN1LED1	6.	USB2
3.	I-SATA1	7.	PWR1
4.	HDMI		

LAN Port

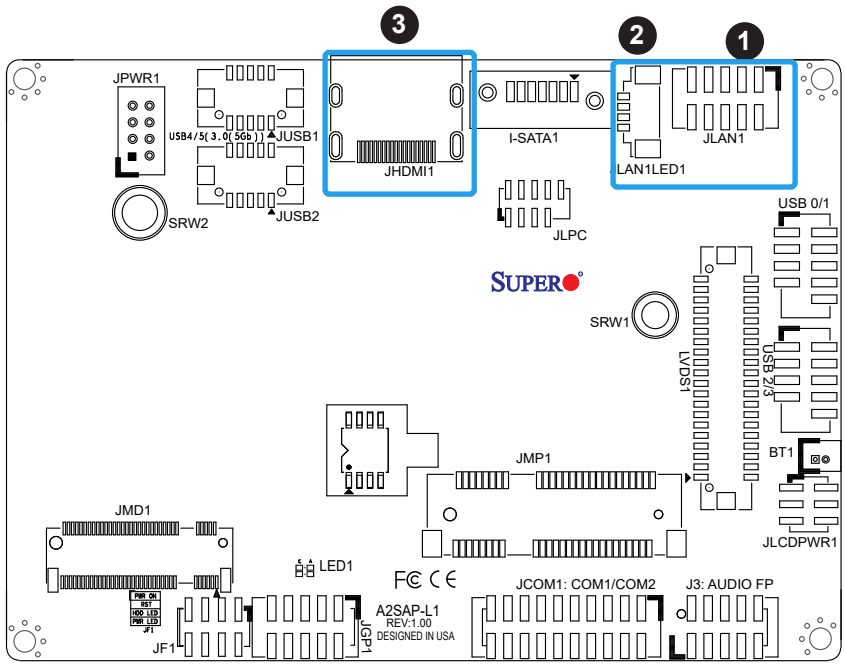
One communication port (JLAN1) is located on the I/O back panel. The port supports RJ45 type cables. The LAN port has one two LEDs (located at JLAN1LED1) right next to it. Please refer to the LED Indicator section for LAN LED information. Refer to the table below for pin defintions.

JLAN1 Port
Pin Definition

Pin#	Definition	Pin#	Definition
1	I210_MDI1_T_P0	2	I210_MDI1_T_N0
3	I210_MDI1_T_P1	4	I210_MDI1_T_N1
5	GND_IO	6	GND_IO
7	I210_MDI1_T_P2	8	I210_MDI1_T_N2
9	I210_MDI1_T_P3	10	I210_MDI1_T_N3

HDMI Port

The High-Definition Multimedia Interface (HDMI) port is used to display both high definition video and digital sound through an HDMI-capable display, using the same cable.



1. JLAN1
2. LAN LED
3. HDMI

Universal Serial Bus (USB) Ports

There are two USB 3.0 ports (JUSB1/JUSB2) via two box headers. The motherboard has four additional USB 2.0 via two box headers (USB0/1, USB2/3) onboard which can be used to provide front side USB access.

Back Panel USB 3.0 (JUSB1)
Pin Definition

Pin#	Definition	Pin#	Definition
1	P5V_DUAL_R_USB01	2	USB3_CON_P1_SS_TX_DN
3	USB_CON_P1_DN	4	USB3_CON_P1_SS_TX_DP
5	USB_CON_P1_DP	6	GND_IO
7	GND	8	USB3_CON_P1_SS_RX_DN
9	GND	10	USB3_CON_P1_SS_RX_DP

Back Panel USB 3.0 (JUSB2)
Pin Definition

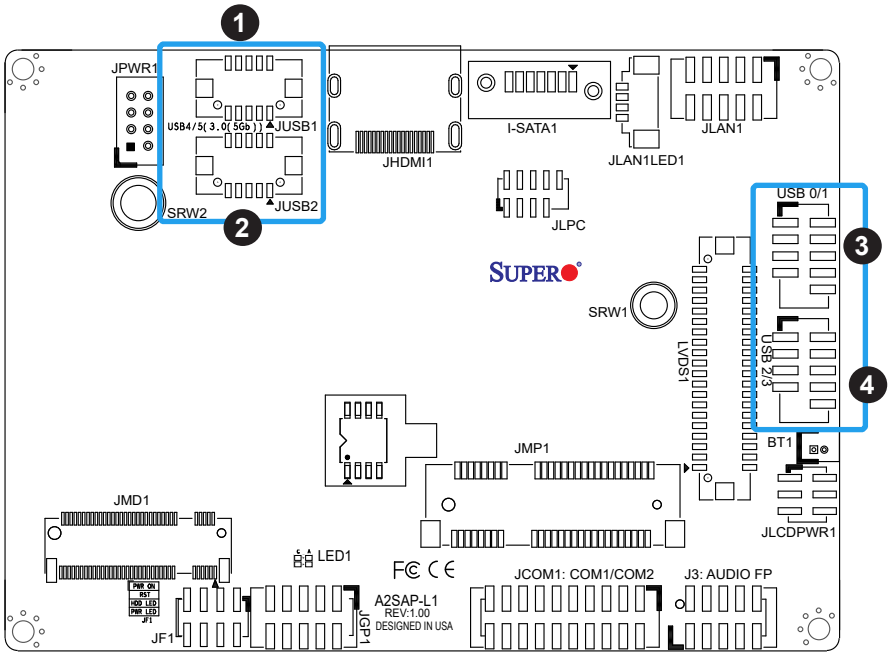
Pin#	Definition	Pin#	Definition
1	P5V_DUAL_R_USB01	2	USB3_CON_P0_SS_TX_DN
3	USB_CON_P0_DN	4	USB3_CON_P0_SS_TX_DP
5	USB_CON_P0_DP	6	GND_IO
7	GND	8	USB3_CON_P0_SS_RX_DN
9	GND	10	USB3_CON_P0_SS_RX_DP

Front Panel USB 2.0 Header (USB2/3)
Pin Definition

Pin#	Definition	Pin#	Definition
1	P5V_DUAL_F	2	P5V_DUAL_F
3	USBCON_N2	4	USBCON_N3
5	USBCON_P2	6	USBCON_P3
7	GND	8	GND
9	N/A	10	N/A

Front Panel USB 2.0 Header (USB0/1)
Pin Definition

Pin#	Definition	Pin#	Definition
1	P5V_DUAL_F	2	P5V_DUAL_F
3	USBCON_N0	4	USBCON_N1
5	USBCON_P0	6	USBCON_P1
7	GND	8	GND
9	Key Pin	10	GND



1. JUSB1
2. JUSB2
3. USB0/1
4. USB2/3

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 a custom chassis. Refer to the figure below for the descriptions of the front control panel buttons and LED indicators.

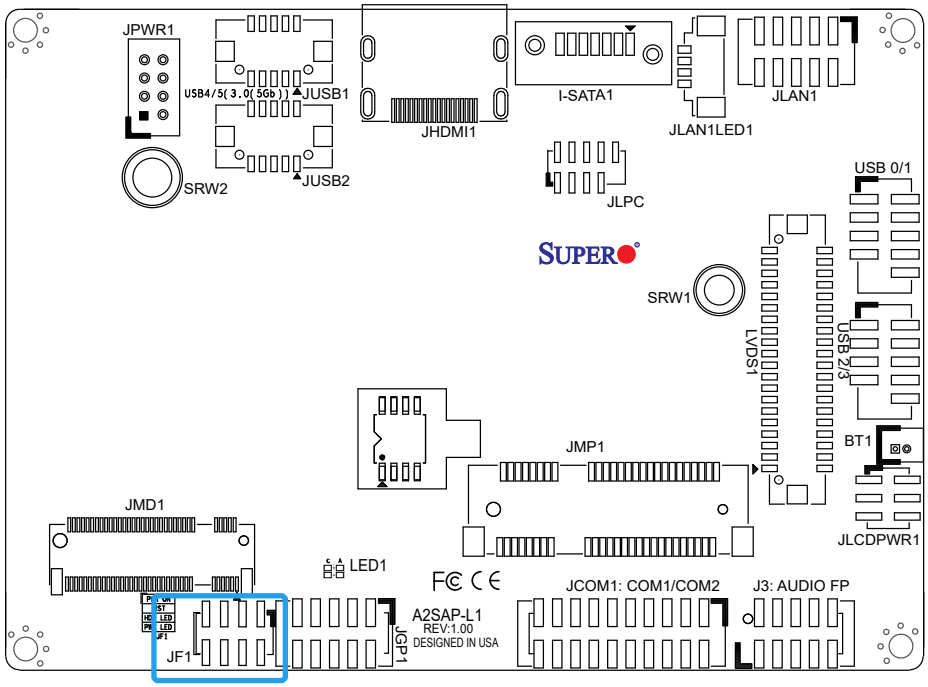
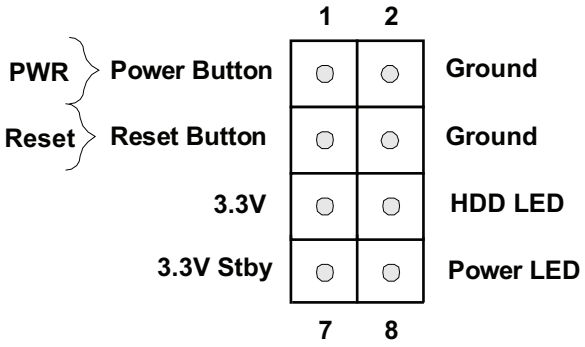


Figure 2-2. JF1 Header Pins



Power Button

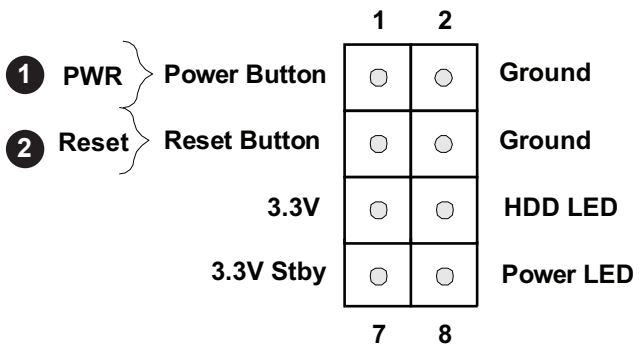
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power in the suspend mode, press the button for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

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



1. Power Button
2. Reset Button

HDD LED

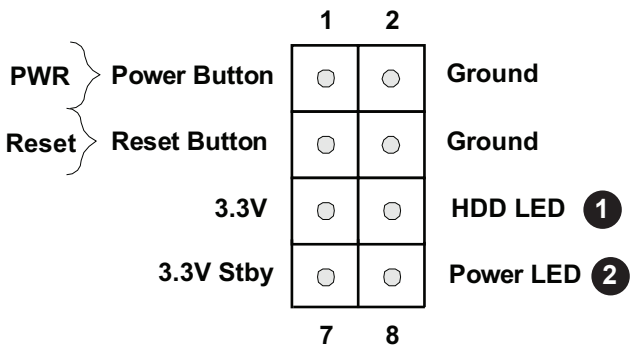
The HDD LED connection is located on pins 5 and 6 of JF1. Attach a cable here to indicate the status of HDD-related activities, including SATA activities. Refer to the table below for pin definitions.

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



1. HDD LED
2. Power LED

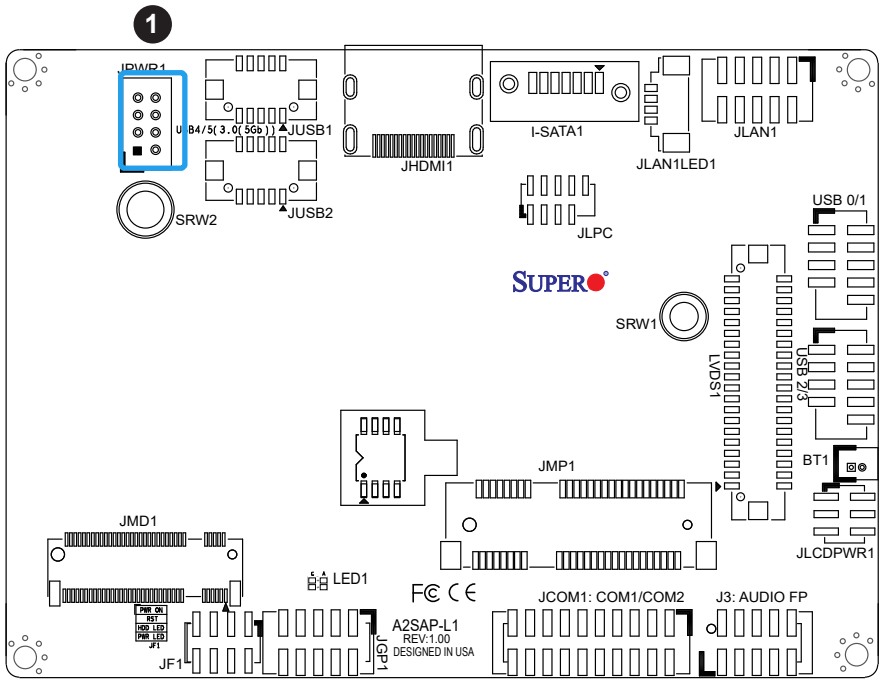
2.6 Connectors

Power Connections

12V DC Power Connector

JPWR1 is a 2x4-pin, 2.0mm pitch box header, 12V DC power source for the motherboard. The cable package includes a 2x4-pin to 2x2-pin power cable.

12V DC Power Pin Definition	
Pin#	Definition
1-4	P12VSB
5-8	GND



1. 12V DC Power (JPWR1: 2x4 pin box header)

Headers and Connectors

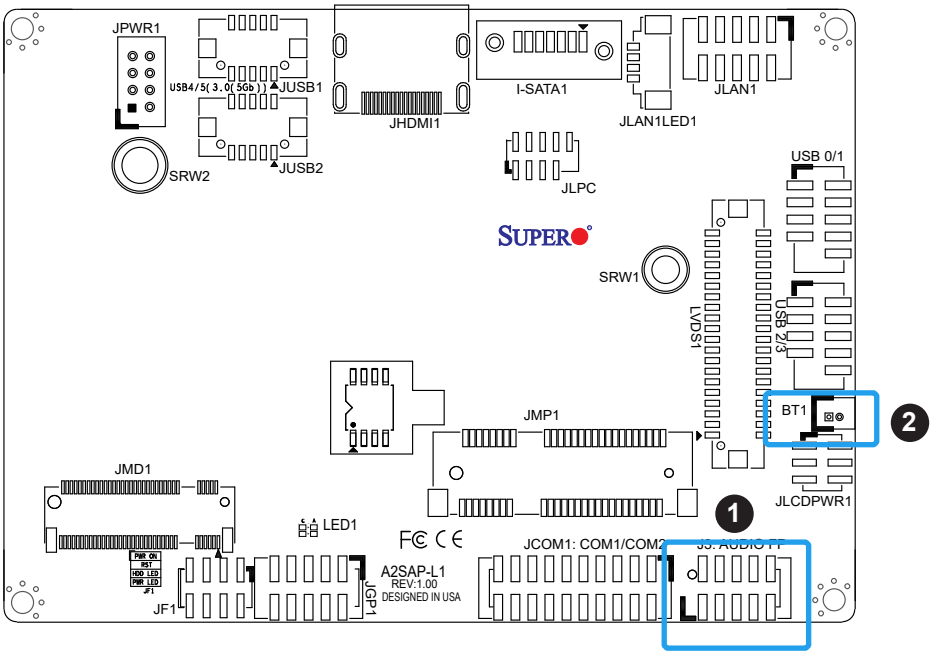
Front Panel Audio Header

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 this header to use this feature. Refer to the table below for pin definitions.

Audio Header Pin Definition			
Pin#	**Definition**	**Pin#**	**Definition**
1	MIC_Left	2	AUDIO_GND
3	MIC_Right	4	AUDIO_Detect
5	LINE2_Right	6	MIC2_JD
7	Front AUDIO_JD	8	NC
9	LINE2_Left	10	LINE2_JD

Battery Connector

BT1 is a two-pin connector for an external CMOS battery. Refer to Chapter 3 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.



1. Audio Header
2. Battery connector

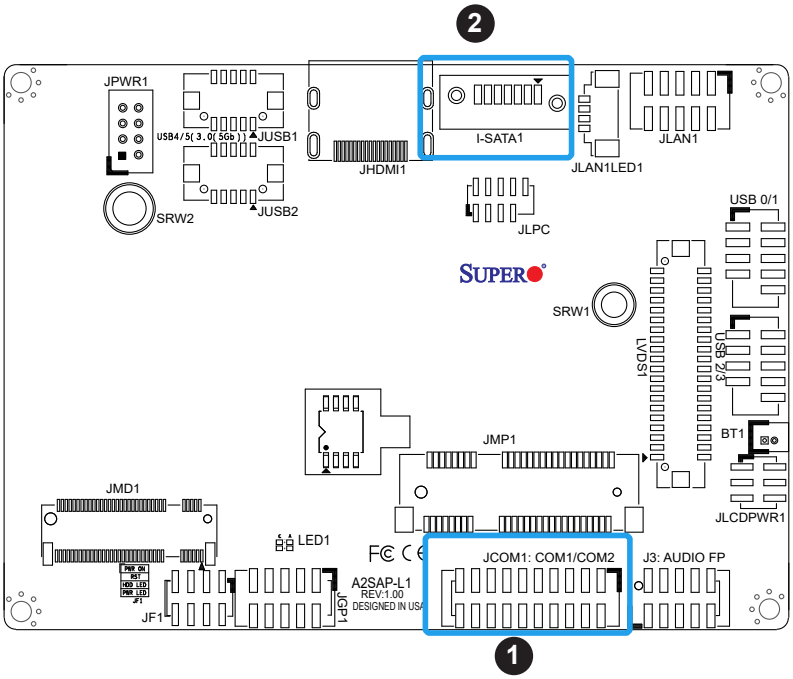
COM Headers

The JCOM1 header provides two RS232/422/485 COM connections. Refer to the table below for pin definitions. Refer to pins 1 - 10 for COM1 and pins 11 - 20 for COM2.

Serial COM Ports Pin Definition			
Pin#	**Definition**	**Pin#**	**Definition**
1	DCD or RS-485/422_COM1_TX- (Full Duplex) or RS-485_COM1_Data- (Half Duplex)	2	DSR
3	RXD or RS-485/422_COM1_TX+ (Full Duplex) or RS-485_COM1_Data+ (Half Duplex)	4	RTS
5	TXD or RS-485/422_COM1_RX+ (Full Duplex)	6	CTS
7	DTR or RS-485/422_COM1_RX- (Full Duplex)	8	RI_N
9	GND	10	N/A
11	DCD or RS-485/422_COM2_TX- (Full Duplex) or RS-485_COM2_Data- (Half Duplex)	12	DSR
13	RXD or RS-485/422_COM2_TX+ (Full Duplex) or RS-485_COM2_Data+ (Half Duplex)	14	RTS
15	TXD or RS-485/422_COM2_RX+ (Full Duplex)	16	CTS
17	DTR or RS-485/422_COM2_RX- (Full Duplex)	18	RI_N
19	GND	20	N/A

SATA Ports

The A2SAP-L1 has one SATA 3.0 port (I-SATA1) that is supported by the Intel Atom SoC.



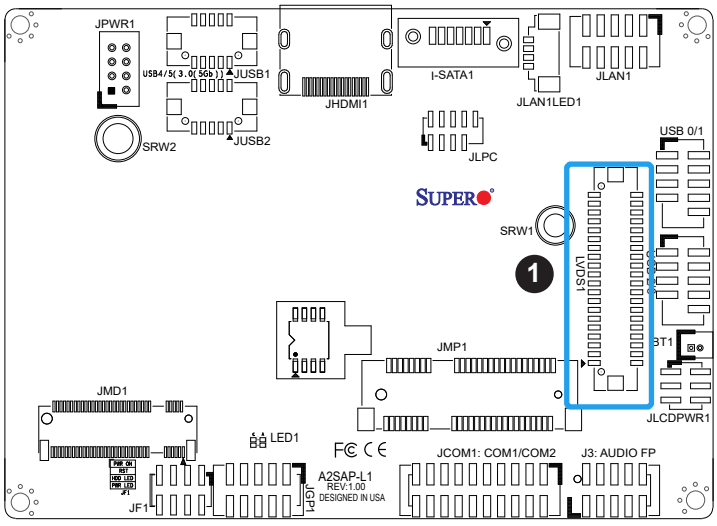
1. JCOM1
2. I-SATA1

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 (short pins 1-3 for 3.3V, short pins 3-5 for 5V) before enabling the LVDS panel. The choose the LCD VCC power, short JLCDPWR1 pins 1-3 for 3.3V or short pins 3-5 for 5V. 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(52)	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 HSNG 40P DUAL ROW CRIMP
Crimping Contact Connector	HIROSE	DF13G-2630SCFA	Headers and Wire Housings SOCKET CONTACT/REEL AWG26-30

1. LVDS Connector

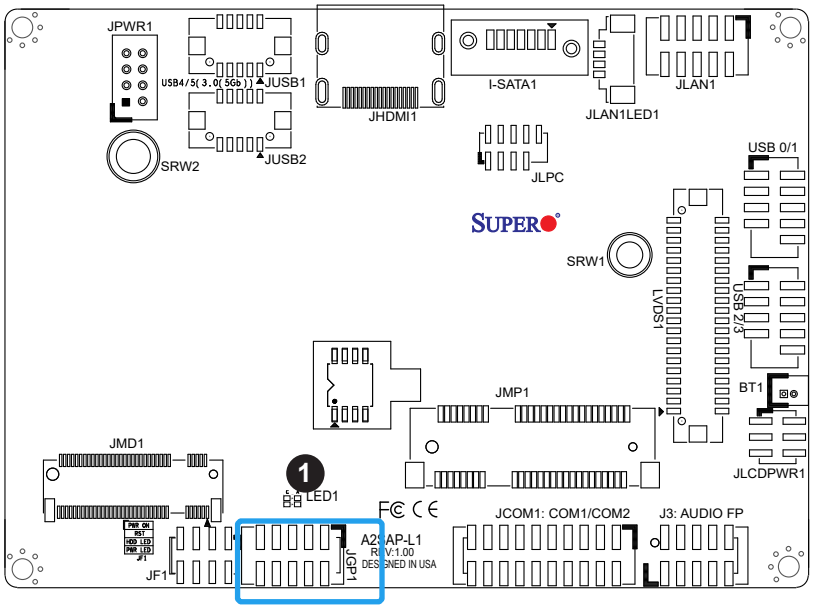


LVDS Connector Pin Definitions			
Pin#	**Definition**	**Pin#**	**Definition**
39	GND	40	GND
37	LVDSB D3N	38	LVDSB D3P
35	LVDSB CLKN	36	LVDSB CLKP
33	LVDSB D2N	34	LVDSB D2P
31	LVDSB D1N	32	LVDSB D1P
29	LVDSB D0N	30	LVDSB D0P
27	GND	28	GND
25	LVDSA D3N	26	LVDSA D3P
23	LVDSA CLKN	24	LVDSA CLKP
21	LVDSA 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

General Purpose I/O Header

The JGP1 (General Purpose Input/Output) header is an 8-bit general purpose I/O expander on a pin header via the SMBus. Refer to the table below for pin definitions. The base address is 0xF040.

GPIO Header Pin Definition			
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

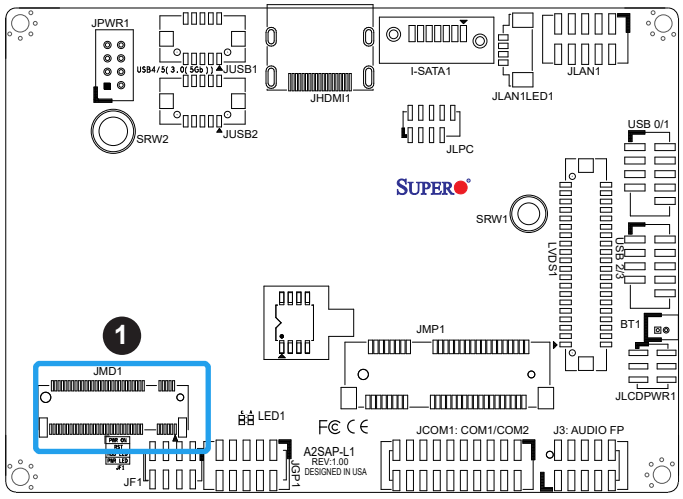


1. General Purpose Header

M.2 Slot

M.2 is formerly known as Next Generation Form Factor (NGFF) and is located at JMD1 on the motherboard. The M.2 slot is designed for internal mounting devices. The A2SAP-L1 motherboard deploys a B-KEY for SATA/PCIe SSD devices or USB/PCIe WWAN or GNSS card. The A2SAP-L1 deploys a 2242/3042 screw hole location for a 2242/3042 M.2 module.

1. M.2 Slot

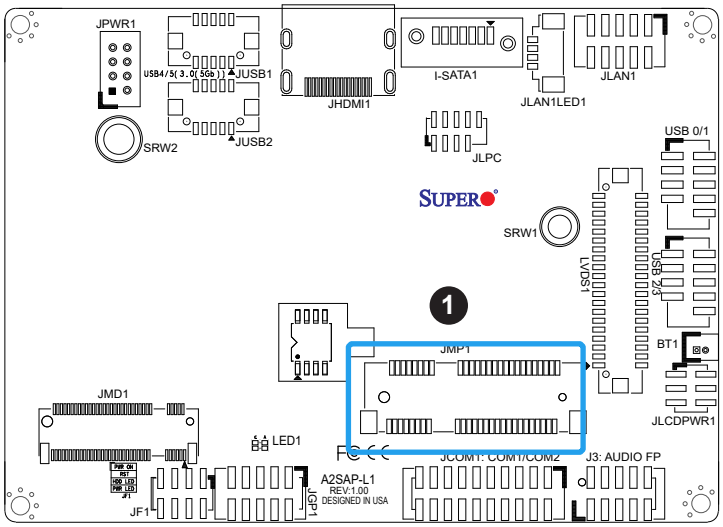


M.2 Slot Pin Definitions			
Pin#	**Definition**	**Pin#**	**Definition**
1	NC	2	P3V3SB
3	GND	4	P3V3SB
5	GND	6	FULL_CARD_POWER_OFF#(PU to P1V8SB only)
7	USB_D+	8	W_DISABLE1#(PU to P3V3SB only)
9	USB_D-	10	LED
11	GND	12	
13		14	
15		16	
17		18	
19		20	NC
21	NC	22	NC
23	WWAN_ WAKE_N(PU to P1V8SB only)	24	NC
25	NC	26	RF_KILL_ GPS_1P8_N(PU to P1V8SB only)
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	DEVSLP (reserved)
39	GND	40	SMB_CLK (reserved)
41	PERn0/SATARX+	42	SMB_DATA (reserved)
43	PERp0/SATARX-	44	ALERT(PU to P1V8SB only)
45	GND	46	NC
47	PETn0/SATATX-	48	NC
49	PETn0/SATATX+	50	PERST (PLTRST)
51	GND	52	CLK_REQ_N
53	REFCLK-	54	PE_WAKE_N
55	REFCLK+	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	SYSCLK (reserved)
69	PE_DET	70	P3V3SB
71	GND	72	P3V3SB
73	GND	74	P3V3SB
75	NC		

Mini PCIe Slot

The Mini PCIe slot, located at JMP1 on the bottom side of the motherboard, is used to install a compatible Mini PCIe device. The Mini PCIe slot supports modules which are USB or PCIe x1 devices, such as wireless, GNSS, and Bluetooth modules. See the table below for pin definitions.

1. Mini PCIe



Mini PCIe Pin Definition			
Pin#	**Definition**	**Pin#**	**Definition**
52	+3.3Vaux	51	NC
50	GND	49	NC
48	+1.5V	47	NC
46	NC	45	NC
44	NC	43	NC
42	NC	41	+3.3Vaux
40	GND	39	NC
38	USB_D+	37	GND
36	USB_D-	35	GND
34	GND	33	PETp0
32	SMB_DATA	31	PETn0
30	SMB_CLK	29	GND
28	+1.5V	27	GND
26	GND	25	PERp0
24	+3.3Vaux	23	PERn0
22	PERST#	21	DET_CARD_PLUG
20	NC	19	NC
18	GND	17	NC
16	NC	15	GND
14	NC	13	REFCLK+
12	NC	11	REFCLK-
10	NC	9	GND
8	NC	7	CLKREQ#
6	1.5V	5	NC
4	GND	3	NC
2	3.3Vaux	1	WAKE#

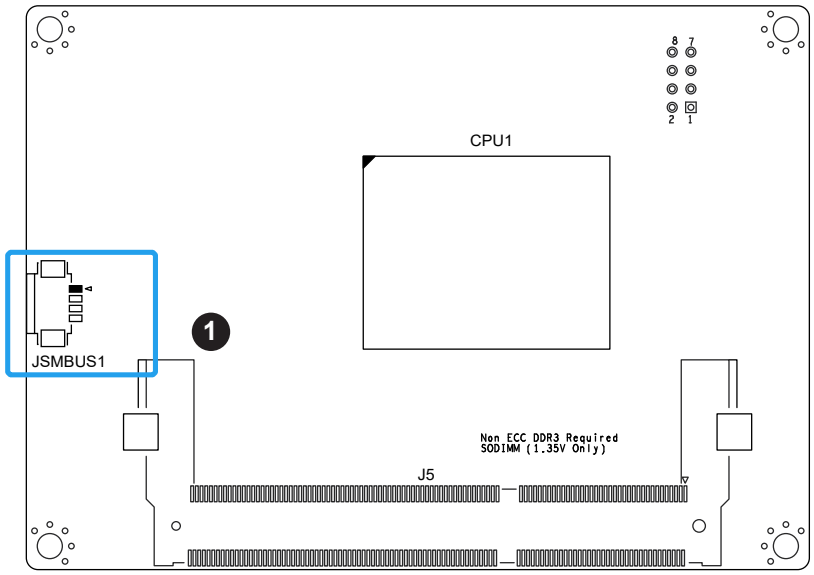
System Management Bus Header and SATA Power

A System Management Bus header for additional slave devices or sensors is located at JSMBUS1 on the bottom side of the motherboard. This header also serves as a 5V/1A SATA power box header. Refer to the table below for pin definitions.

Note: The SATA power cable is included in the retail package. The part number is CBL-PWEX-1030.

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

Bottom Layout



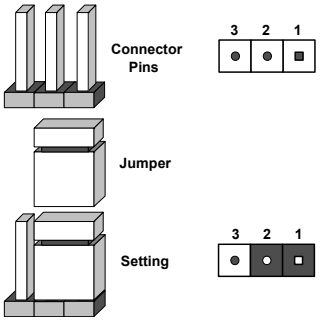
1. SMBus Header

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.



JLCDPWR1

LVDS VCC Power Source Selection

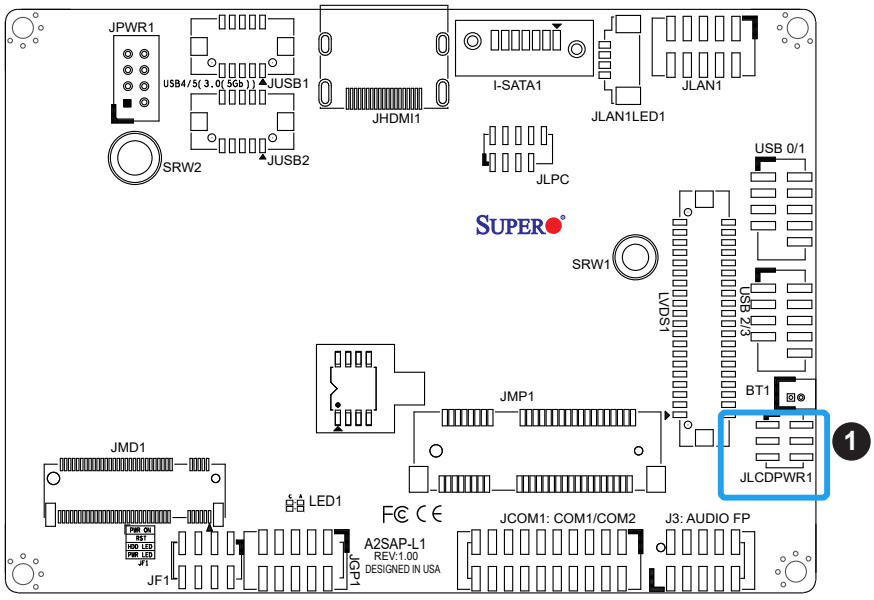
Use this jumper to select the power voltage for the LVDS panel. Make sure that the specifications of the cable is compatible with the panel to prevent damage. See the table below for jumper setting information.

Force power on

Use jumper JLCDPWR1 (Pins 2-4/4-6) 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. See the table below for jumper setting information.

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

FORCE POWER ON Jumper Settings	
Jumper Setting	**Definition**
Pins 2-4	FORCE POWER ON (Default) (when the AC power cord is plugged)
Pins 4-6	POWER BUTTON ON (when the AC power cord is plugged)



1. JLCDPWR1

2.8 LED Indicators

LAN Port LED

There is one LAN port (JLAN1) on the I/O back panel of the motherboard. The LAN port has two LEDs (located at JLAN1LED1) right next to it. The green LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection.

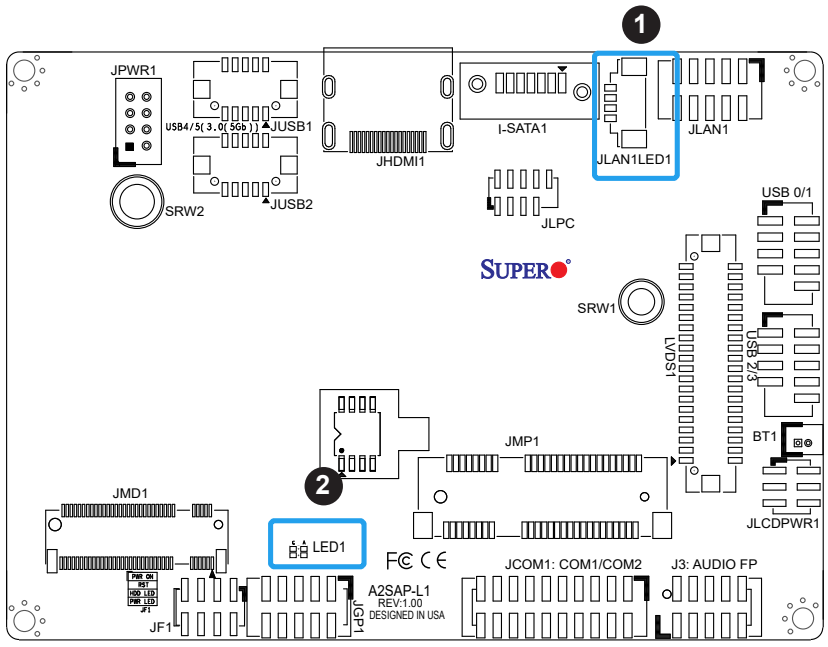
LAN1 LED (Connection Speed Indicator)	
LED Color	**Definition**
Off	10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

JLAN1LED1 Pin Definition	
Pin	**Definition**
1	I210ATX1_ACT_N
2	P3V35B_I210ATX1
3	I210ATX1_1000_N
4	I210ATX1_100_N

Power LED

LED1 is the Power LED. In S0 mode, this LED will be solid green. In S3/S4/S5 modes, this LED will be solid red.

Onboard Power LED Indicator	
LED Color	**Definition**
Off	System Off (power cable not connected)
Solid Green	S0 mode
Solid Red	S3/S4/S5 modes



1. JLAN1 Port LED
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. Make sure that the power connector is connected to your power supply.
3. Make sure 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. Make sure 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.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. Confirm that you are using the correct memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system. See Section 2.4 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.
4. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Please refer to our website for more information on the minimum power requirements.
5. Proper software support: Make sure that the correct drivers are used.

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD and CD/DVD-ROM.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Using the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with 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. Identifying bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, 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. Please 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 at http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html. **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, please 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 A2SAP-L1 motherboard supports up to 8GB of DDR3L 1867MHz Non-ECC SO-DIMM. 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. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading.

Follow the steps below to update the BIOS:

1. Save this BIOS update package to your computer.
2. Extract the files to a USB stick. The USB stick doesn't have to be bootable, but it has to be formatted with the FAT/FAT32 file system.
3. Plug the USB stick into a USB port, boot to the Build-In UEFI Shell, and type FLASH.nsh BIOSname#.### to start the BIOS update:
   - Shell> fs0:
   - fs0:\> flash.nsh A2SAP#.###
4. Do not interrupt the process until the BIOS update is complete.
5. When a message indicates that the BIOS update is complete, do the A/C power cycle.
6. Go to the BIOS setup screen and press F3 to load the default and then press F4 to save and exit.

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:

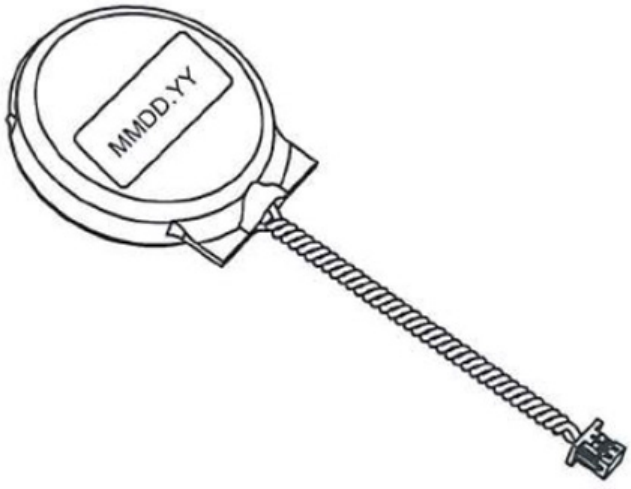
1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

Proper Battery Disposal

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

Battery Installation

1. 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 a proper location in the system. DO NOT place the battery on the heatsink.



3.5 Returning Merchandise for Service

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

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

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

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

Chapter 4

BIOS

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the A2SAP-L1 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.

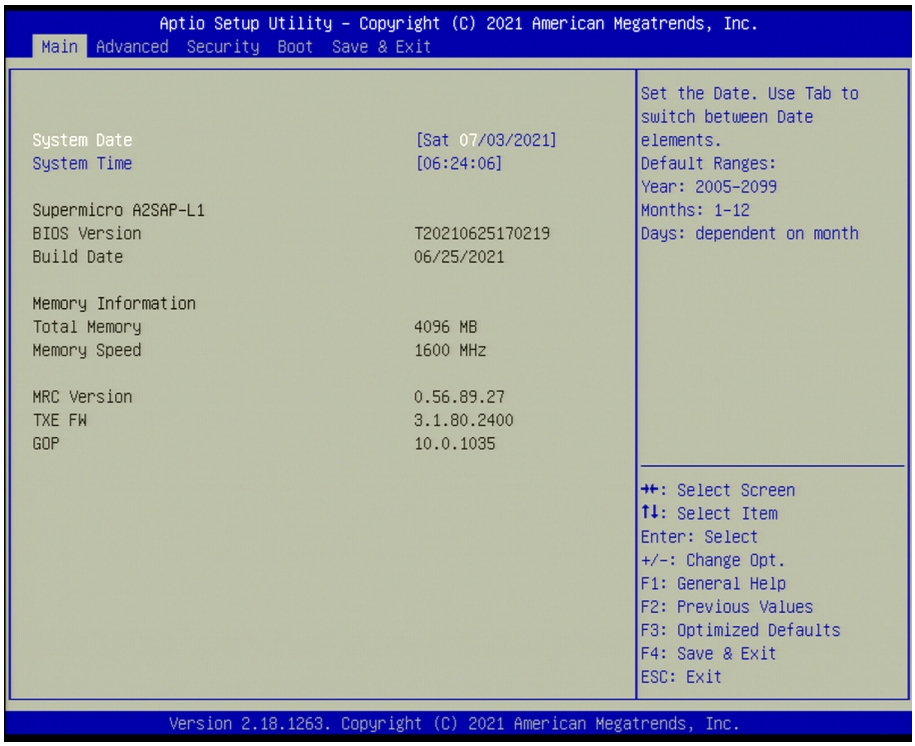
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is 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. 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 A2SAP-L1

BIOS Version

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

Build Date

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

Memory Information

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

Memory Speed: This displays the memory speed.

MRC Version

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

TXT FW

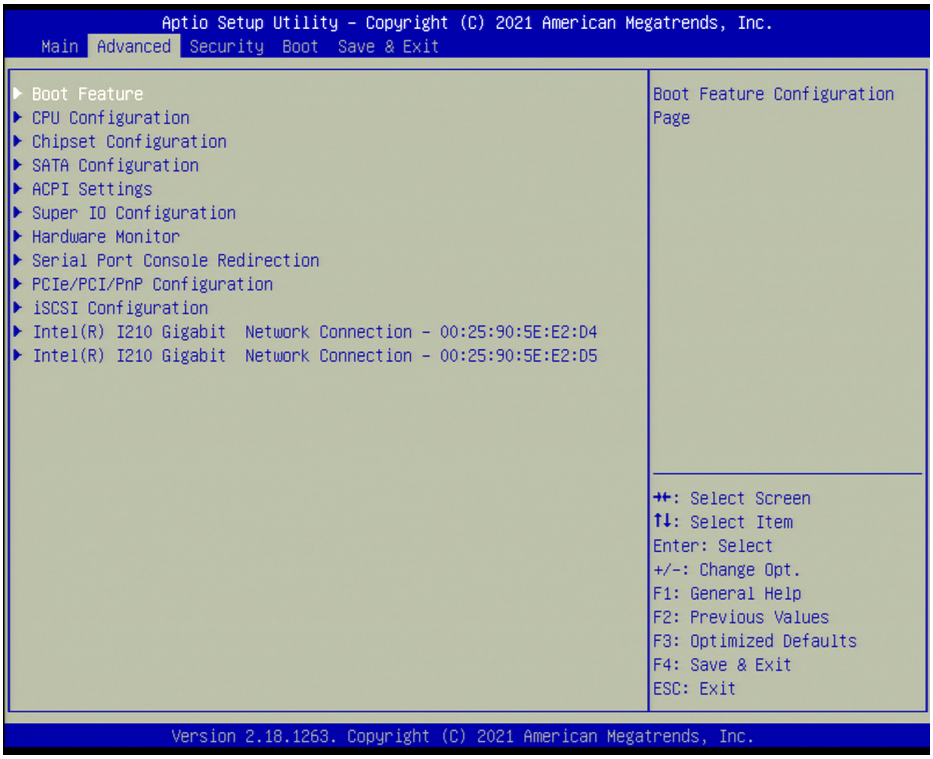
This displays the TXT FW of the BIOS ROM used in the system.

GOP

This displays the GOP of the BIOS ROM used in the system.

4.3 Advanced

Use the arrow keys to select Advanced setup and press <Enter> to access the submenu items:



Warning: Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect 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**

AddOn ROM Display Mode

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

Bootup NumLock State

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**.

INT19 Trap Response

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

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

Watch Dog Function

If enabled, the Watch Dog Timer allows the system to reset or generate NMI based on jumper settings when it is expired for more than five minutes. The options are **Disabled** and Enabled.

Power Button Function

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

Restore on AC Power Loss

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

▶CPU Configuration

The following CPU information is displayed:

- Intel (R) Atom (TM) Processor E3940 @ 1.60GHz
- CPU Signature
- Microcode Patch
- Max CPU Speed

- Min CPU Speed
- Processor Cores
- Intel HT Technology
- Intel VT-X Technology
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache
- Speed
- 64-bit

▶ CPU Power Management Configuration

EIST

Enhanced Intel SpeedStep Technology (EIST) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. Please refer to Intel's website for detailed information. 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**.

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 Power Saving and **Max Performance**.

Power Limit 1 Eanble

Use this feature to enable or disable Power Limit 1. The options are Disabled and **Enabled**.

Power Limit 1

Use this feature to set the power limit 1, in milliwatts. When the limit is exceeded, the CPU ratio is lowered after a period of time (see Power Limit 1 Time Window below). A lower limit can save power and protect the CPU, while a higher limit improves performance. This value must be between Min Power Limit TDP limit. Use the number keys on your keyboard to enter the value. The default setting is **9**.

Power Limit 1 Clamp Mode

Use this feature to enable or disable Power Limit 1 Clamp Mode. The options are Disabled and **Enabled**.

Power Limit 1 Power

Use this feature to select Power Limit 1 power (in watts). Auto will program Power Limit 1 based on silicon default support value. The options are **Auto**, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, and 25. .

Power Limit 1 Time Window

Use this feature to select Power Limit 1 time window (in seconds). Auto will program Power Limit 1 time window based on silicon default support value. The options are **Auto**, 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.

Active Processor Cores

Use this feature to select the number of cores to enable for each processor. The options are **Disabled** and Enabled.

Intel 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**.

VT-d

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

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**, Enabled and Auto.

P-STATE Coordination

Use this feature to change P-STATE Coordination type. The options are **HW_ALL**, SW_ ANY, and SW_ALL.

▶Chipset Configuration

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

▶North Bridge

▶Graphics Configuration

GOP driver

Enable GOP Diver will unload VBIOS; disable it will load VBIOS. The options are Disable and **Enable**.

LVDS Panel Support

Use this feature to select the supported IGFX graphics device ouput to the LVDS panel. The options are **Disabled** and Enabled.

IGD Configuration

Integrated Graphics Device

This feature allows you to enable or disable Integrated Graphics Device (IGD).The options are Disable and **Enable**.

Primary Display

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

RC6 (Render Standby)

Select Enable to enable render standby support.The options are Disable and **Enable.**

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 default setting is **256MB**.

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 **64M**, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, and 512M.

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.

GT PM Support

Use this feature to enable the IGFX Power Management function. The options are **Enable** and Disable.

PAVP Enable

Use this feature to enable or disable the protected audio video path (PAVP). The options are Disable or **Enable**.

Memory Information

Memory Slot0: 4096 MB (DDR3L)

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 **2 GB**, 2.25 GB, 2.5 GB, 2.75 GB, and 3 GB.

▶South Bridge

▶HD-Audio Configuration

This menu allows you to configure HD-Audio settings.

HD-Audio Support

Use this feature to enable or disable HD-Audio Support The options are Disable and **Enable**.

▶PCI Express Configuration

PCI Express Configuration

Advanced Error Reporting

Use this feature to enable or disable Advanced Error Reporting. The options are **Disable** and Enable.

▶M.2 Slot B-key

ASPM

Use this feature to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disable, L0s, L1, L0sL1, and **Auto**.

PCIe Speed

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

▶I210

ASPM

Use this feature to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disable, L0s, L1, L0sL1, and **Auto**.

PCIe Speed

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

▶Mini PCIe

ASPM

Use this feature to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are **Disable**, L0s, L1, L0sL1, and Auto.

PCIe Speed

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

▶USB Configuration

USB3.0 Support

This feature enables support for USB 2.0 and older. The options are **Enable** and Disable.

XHCI Pre-Boot Driver

Use this feature to enable or disable XHCI Pre-Boot Driver support. The options are **Disable** and Enable.

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 options are **Enabled** and Disabled.

USB Mass Storage Driver Support

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

▶SATA Configuration

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

Chipset SATA

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

Aggressive LPM Support

Use this feature to enable PCH to aggressively enter link power state. The options are **Enabled** and Disabled.

SATA Frozen

Use this feature to enable or disable the Freeze Lock Security feature. The options are **Disable** and Enable.

I-SATA1

Software Preserve

I-SATA1 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.

I-SATA1 DevSlp

Use this feature to enable or disable I-SATA1 DevSlp. The options are **Disabled** and Enabled.

▶ACPI Settings

ACPI Sleep State

This feature selects 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 Timer

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

Headless Support

Use this feature to enable or disable ACPI OS which can indicate the system cannot detect the monitor or keyboard/mouse devices. The options are **Disabled** and Enabled.

▶Super IO Configuration

Super IO Configuration

Super IO Chip: NCT5523D

▶Serial Port 1 Configuration

Serial Port 1

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of 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).

COM Port Mode

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

Baud Rate from different PRE-DIVIDER

Use this feature to select the Baud Rate from Different PRE-DIVIDER. The options are **PRE-DIV: 13, 1,8461M Hz**, PRE-DIV: 12, 2M Hz, PRE-DIV: 1, 24M Hz, and PRE-DIV: 1.625, 14.769M Hz.

▶Serial Port 2 Configuration

Serial Port 2

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of 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/ RS485 Full Duplex Mode, and RS485 Half Douplex Mode.

Baud Rate from different PRE-DIVIDER

Use this feature to select the Baud Rate from Different PRE-DIVIDER. The options are **PRE-DIV: 13, 1,8461M Hz**, PRE-DIV: 12, 2M Hz, PRE-DIV: 1, 24M Hz, and PRE-DIV: 1.625, 14.769M Hz.

▶Hardware Monitor

Click on this menu to see the monitored hardware status:

- PC Health Status
- Peripheral temperature
- System temperature
- VCORE
- VDIMM
- 3VCC
- 3VSB
- VBAT
- AVSB

▶Serial Port Console Redirection

COM1

COM1 Console Redirection

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

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

▶Com1 Console Redirection Settings

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

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 Legacy OS Redirection Resolution

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

Com1 Putty KeyPad

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

Com1 Redirection After BIOS POST

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

COM2

Com2 Console Redirection

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

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

▶Com2 Console Redirection Settings

Use this feature to specify how the host computer exchanges data with the client computer, which is the remote computer used by the user. 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 Legacy OS Redirection Resolution

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

Com2 Putty KeyPad

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

Com2 Redirection After BIOS POST

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

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

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

EMS Console Redirection

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

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

▶EMS Console Redirection Settings

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

Out-of-Band Mgmt Port

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

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use

UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, VT100+, **VT-UTF8,** and ANSI.

Bits Per Second

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

Flow Control

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

Data Bits: 8

Parity: None

Stop Bits: 1

▶PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Devices Common Settings

Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled.**

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.

M.2 Slot B-Key (JMD1 OPROM)

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

Mini PCIe OPROM (JMP1 OPROM)

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

Onboard LAN Option ROM

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

Onboard Video Option ROM

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

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**.

IPv6 PXE Support

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

PXE boot wait time

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

Media detect count

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

▶iSCSI Configuration

iSCSI Initiator Name

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

▶Add an Attempt

▶Delete Attempts

▶Change Attempt Order

▶Intel I210 Gigabit Network Connection - 3C:EC:EF:31:7E:1E

▶Intel I210 Gigabit Network Connection - 3C:EC:EF:31:7E:1F

▶NIC Configuration

Link Speed

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

Wake On LAN

Select Enabled for Wake_On_LAN support, which will allow the system to "wake up" when an onboard device receives an incoming signal. The options are Disabled and **Enabled**.

Blink LEDs

Use this feature to identify the physical network port by blinking the associated LED. Use the keybaord to select a value. The default setting is **0**.

UEFI Driver

This feature displays the UEFI driver version.

Adapter PBA

This feature displays the Processor Bus Adapter (PBA) model number. The PBA number is a nine digit number (i.e., 010B00-000) located near the serial number.

Device Name

This feature displays the adapter device name.

Chip Type

This feature displays the network adapter chipset name.

PCI Device ID

This feature displays the device ID number.

PCI Address

This feature displays the PCI address for this computer. PCI addresses are 3 two-digit hexadecimal numbers.

Link Status

This feature displays the connection status.

MAC Address

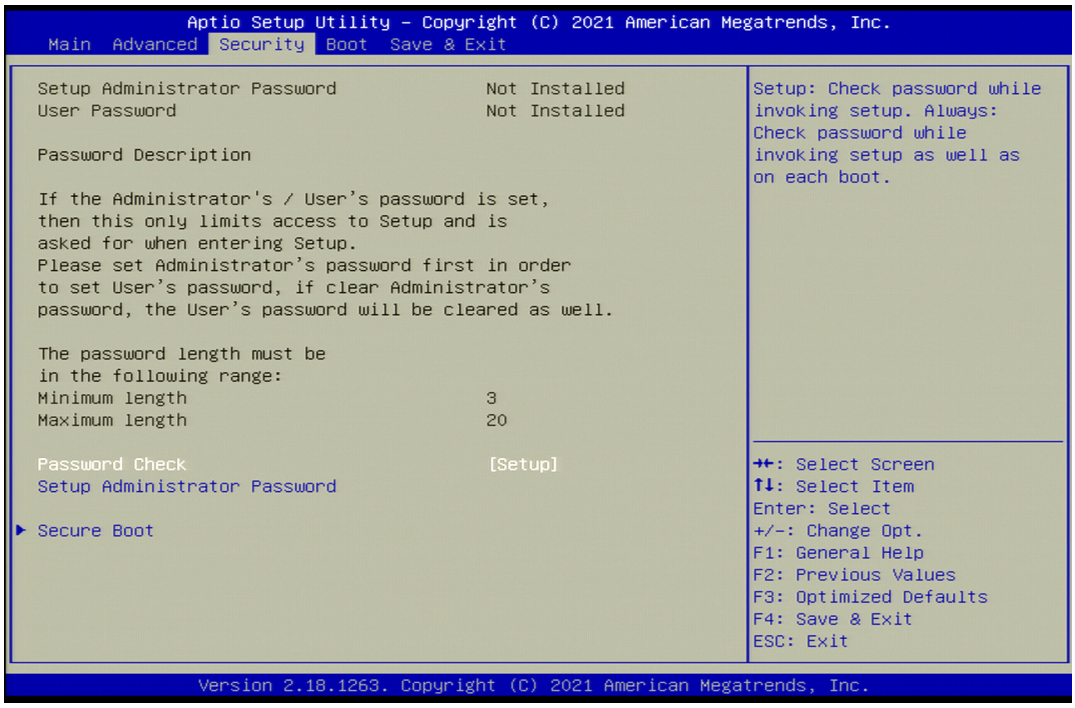
This feature displays the MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Virtual MAC Address

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

4.4 Security

Use this menu to configure Security settings.



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.

Setup 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.

▶Secure Boot

- System Mode
- Secure Boot
- Vendor Keys

Secure Boot Support

Use this feature to enable or disable secure boot support. 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**.

CSM Support

This feature is for manufacturing debugging purposes. The options are **Disabled** and Enabled.

▶Key Management

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

Provision Factory Key Default Keys

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 items are available for configuration:

▶Restore Factory Keys

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

▶Enroll Efi Image

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

▶Save all Secure Boot variables

Secure Boot variable I Size I Keys I Key Source

▶Platform Key (PK)

Click on this menu and follow the instruction to configure the setting for platform keys.

Save to File

Use this option to save the PK keys to the key database.

Set New Var

Use this option to set new variables to configure the setting for PK keys.

Delete Var

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

▶Key Exchange Keys

Use this feature to configure the setting for key exchange keys. The options are Set New Var and Append Key.

Save to File

Use this option to save the key exchange keys to the key database.

Set New Var

Use this option to set new variables to configure the setting for key exchange keys.

Append Key

Use this option to load the KEK from factory default or No to load from a file or external media.

Delete Var

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

▶Authorized Signatures

Use this feature to configure the setting for db keys. The options are Set New Var and Append Key.

Save to File

Use this option to save the db keys to the key database.

Set New Var

Use this option to set new variables to configure the setting for db keys.

Append Key

Use this option to load the db keys from factory default or No to load from a file or external media.

Delete Var

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

▶Forbidden Signatures

Use this feature to configure the setting for dbx keys. The options are Set New Var and Append Key.

Save to File

Use this option to save the dbx keys to the key database.

Set New Var

Use this option to set new variables to configure the setting for dbx keys.

Append Key

Use this option to load the dbx keys from factory default or No to load from a file or external media.

Delete Var

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

▶Authorized TimeStamps

Use this feature to configure the setting for dbt keys. The options are Set New Var and Append Key.

Save to File

Use this option to save the dbt keys to the key database.

Set New Var

Use this option to set new variables to configure the setting for dbt keys.

Append Key

Use this option to load the dbt keys from factory default or No to load from a file or external media.

Delete Var

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

▶OsRecovery Signature

Use this feature to configure the setting for dbr keys. The options are Set New Var and Append Key.

Set New Var

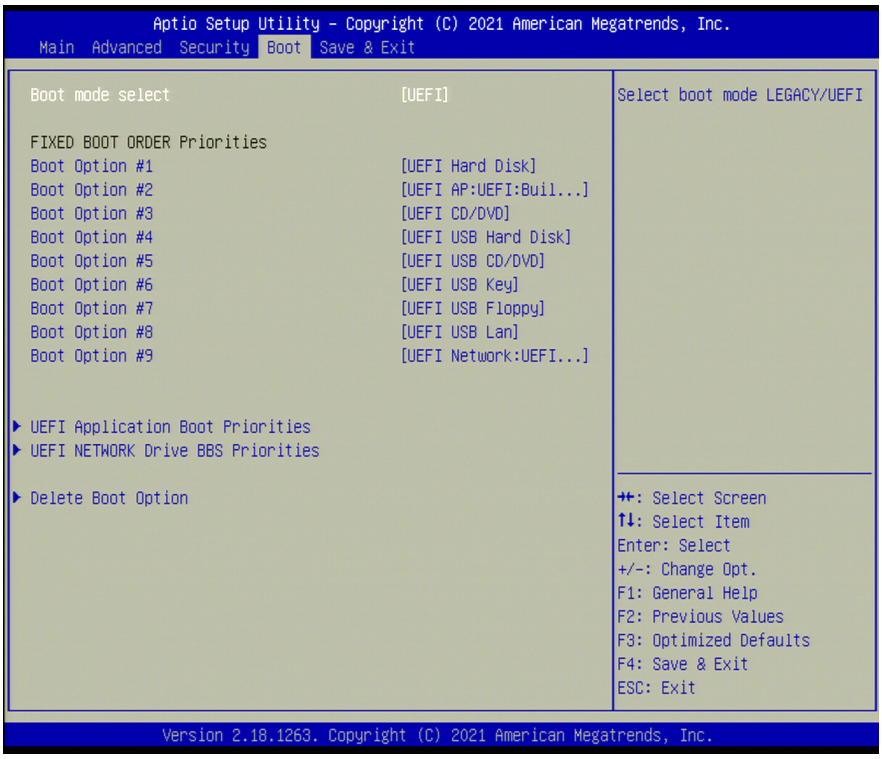
Use this option to set new variables to configure the setting for dbr keys.

Append Key

Use this option to load the dbr keys from factory default or No to load from a file or external media.

4.5 Boot

Use this menu to configure Boot settings:



Boot Mode Select

Use this feature to select the type of device that the system is going to boot from. The options are Legacy, **UEFI**, and Dual**.**

FIXED BOOT ORDER Priorities

This 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

▶UEFI Application Boot Priorities

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

- Boot Option #1

▶UEFI NETWORK Drive BBS Priorities

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

- Boot Option #1

▶Delete Boot Option

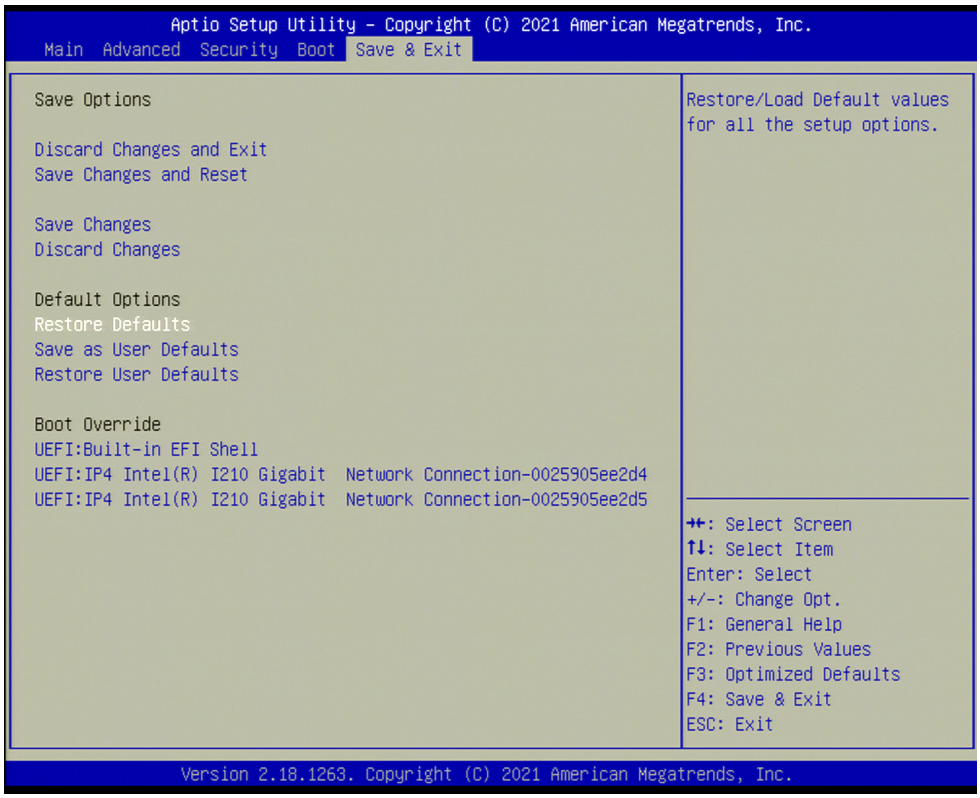
This feature allows you to select a boot device to delete from the boot priority list.

Delete Boot Option

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

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 you 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.

UEFI: Built-in EFI Shell

UEFI: IP4 Intel(R) I210 Gigabit Network Connection-0025905ee2d4

Appendix A

Software

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

A.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, or the IPMI KVM console.
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.

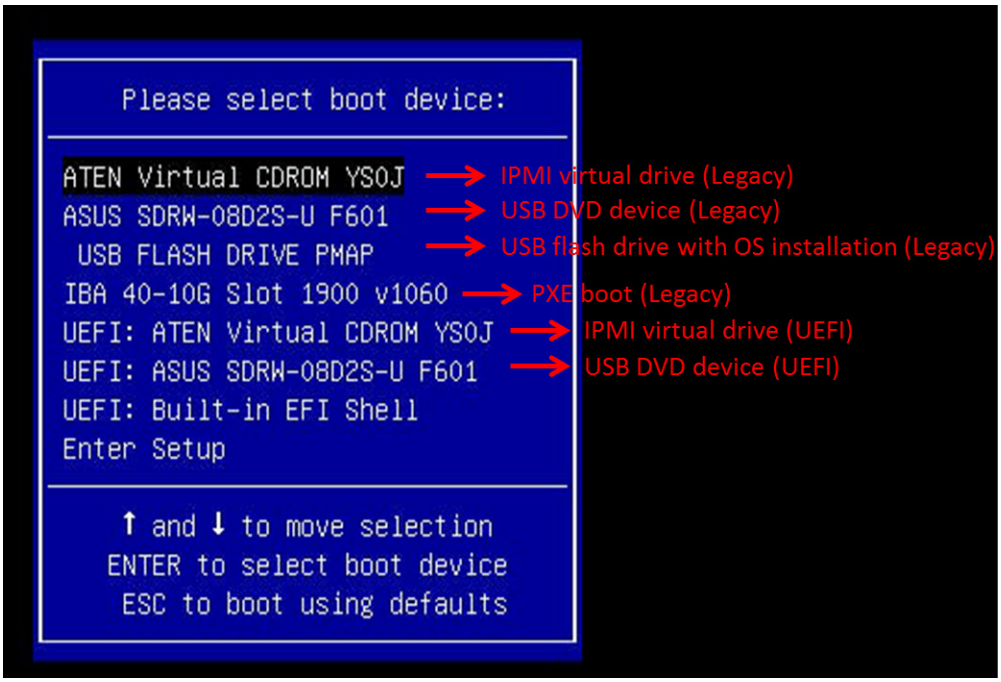


Figure A-1. Select Boot Device

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.

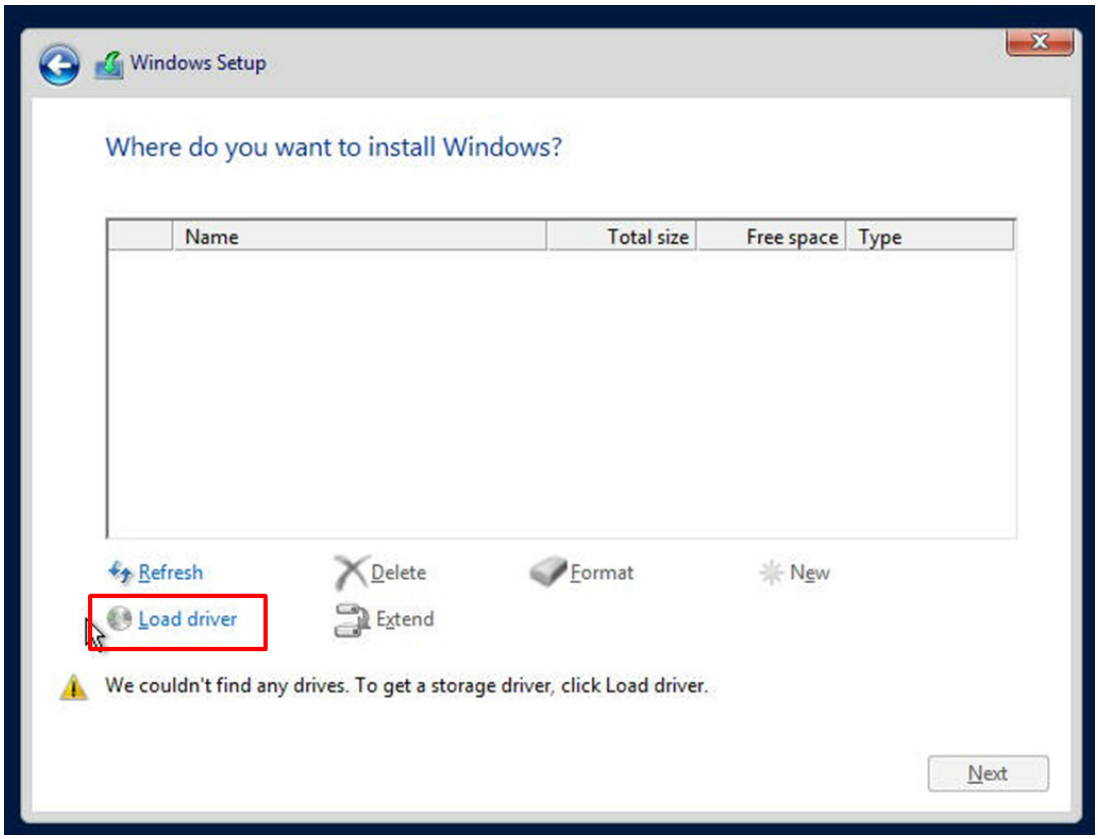


Figure A-2. Load Driver Link

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.

A.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-A1-A2-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.

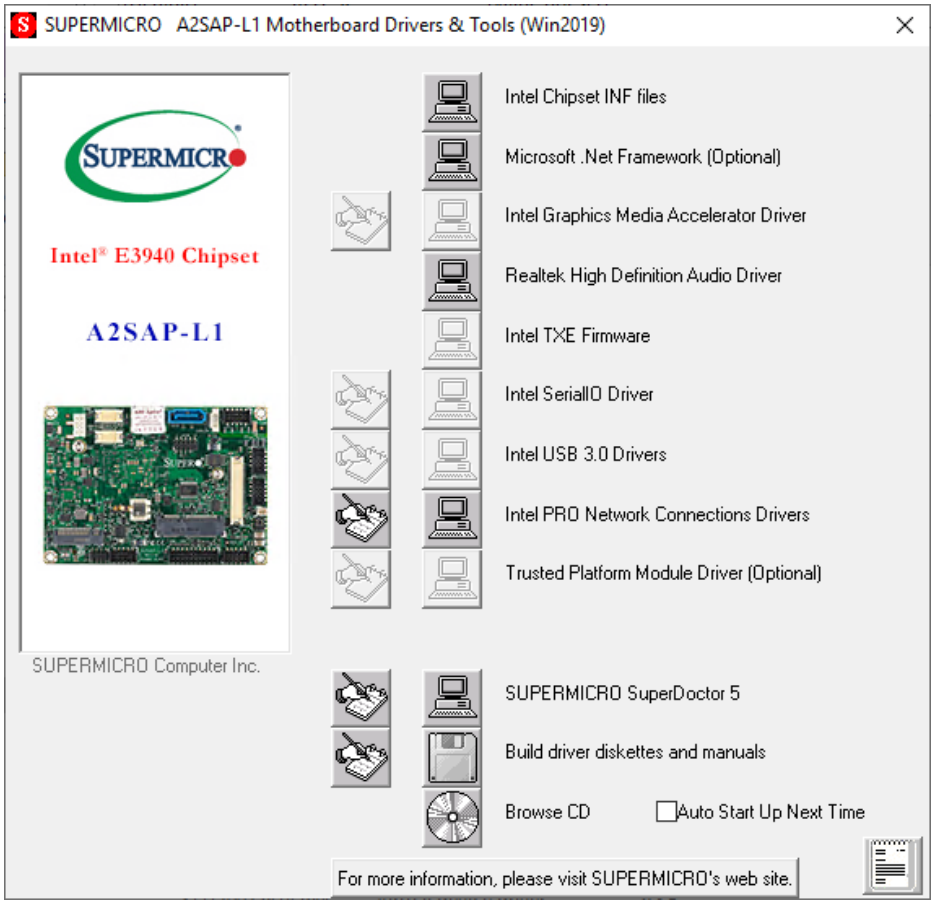


Figure A-3. Driver & Tool Installation Screen

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 the bottom) one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

A.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 or IPMI. SuperDoctor 5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

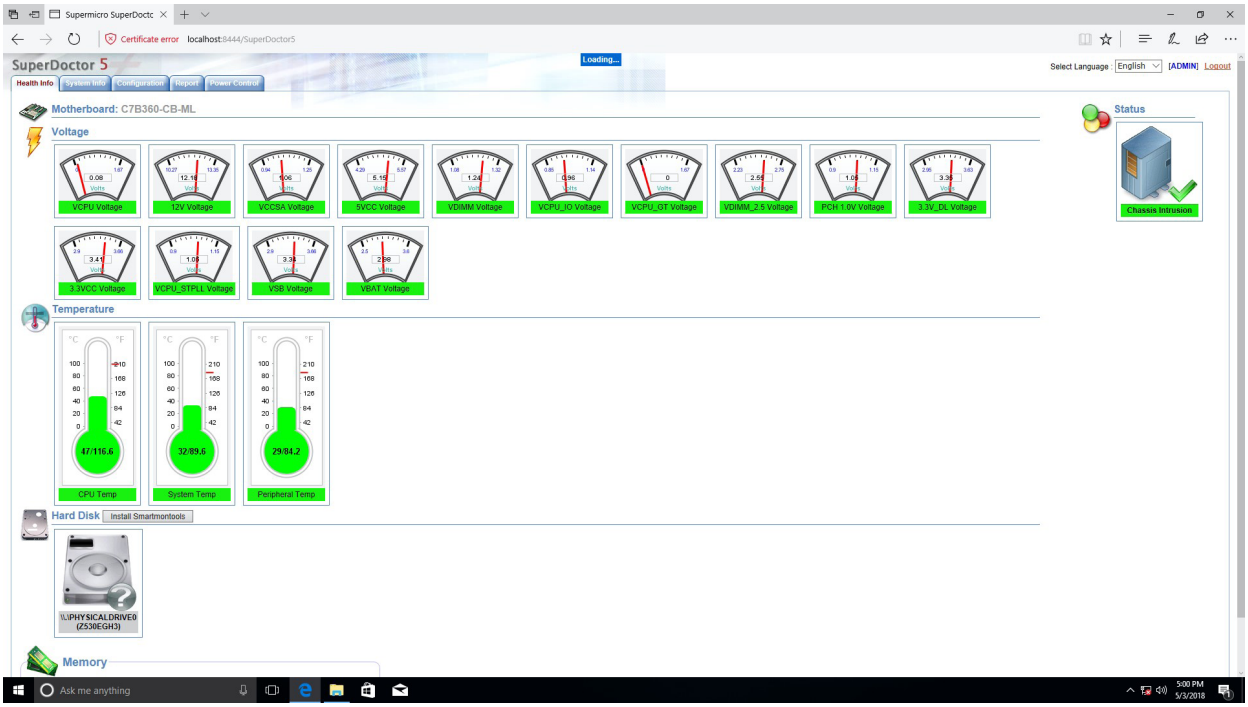


Figure A-4. SuperDoctor 5 Interface Display Screen (Health Information)

A.4 IPMI

The A2SAP-L1 supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

For general documentation and information on IPMI, please visit our website at: http://www.supermicro.com/products/nfo/IPMI.cfm.

Appendix B

Standardized Warning Statements

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

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

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

Battery Handling

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

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 اسحبذال البطارية بطريقة غير صحيحة فعليل
اسحبذال البطارية
فقط بنفس النبع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

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

Waarschuwing

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

Product Disposal

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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

אזהרה!

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

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القانين واللائح البطنية

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 C

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.

C.1 Overview

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

C.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 will continue with system initialization and the remaining POST (Power-On Self-Test) routines.

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

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

C.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.

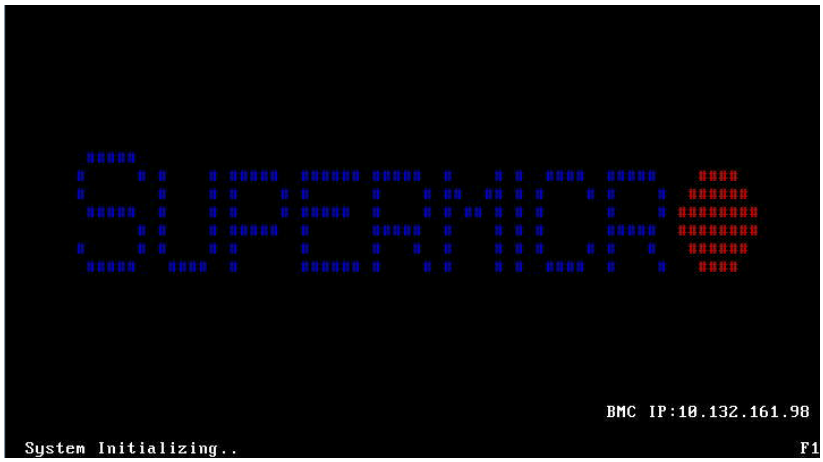
The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32), which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders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

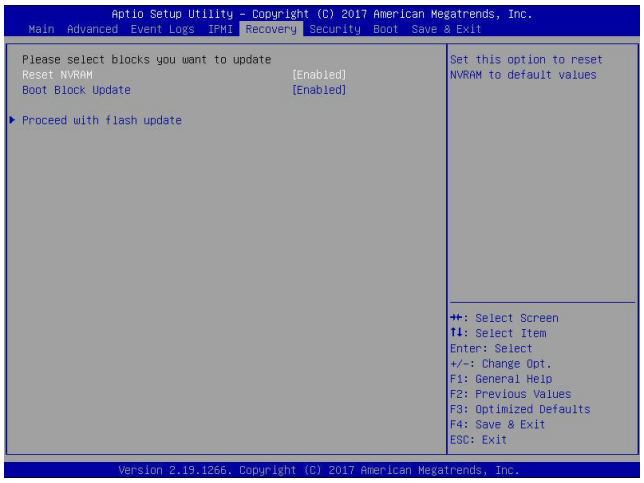
To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below:

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.

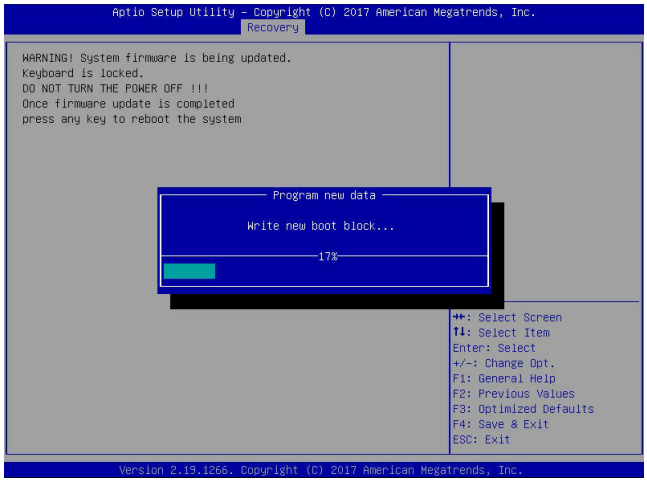




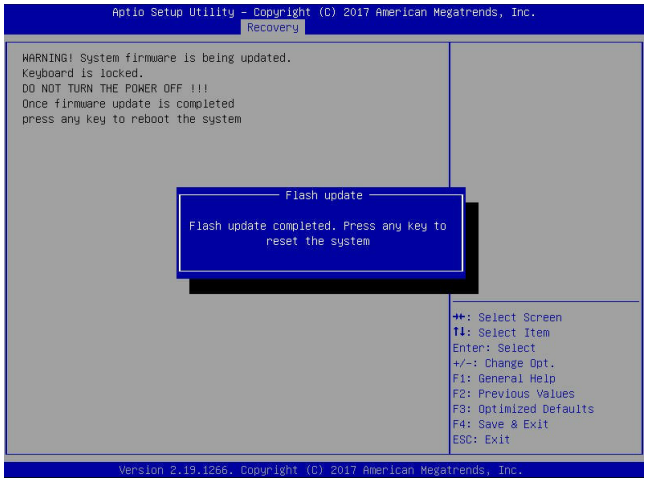
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB port and reset the system until the following screen appears:

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

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



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

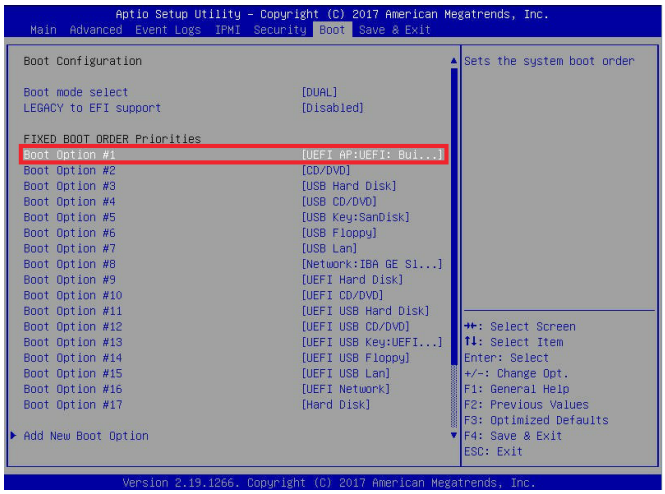


Note: *Do not interrupt the BIOS flashing process until it has completed*.

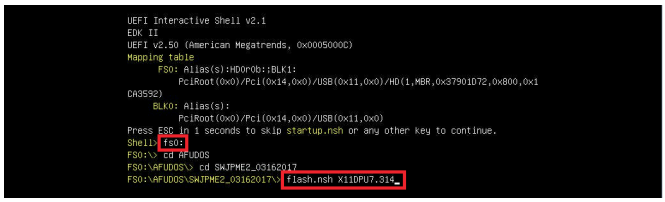
5. After the BIOS recovery process is completed, press any key to reboot the system.

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

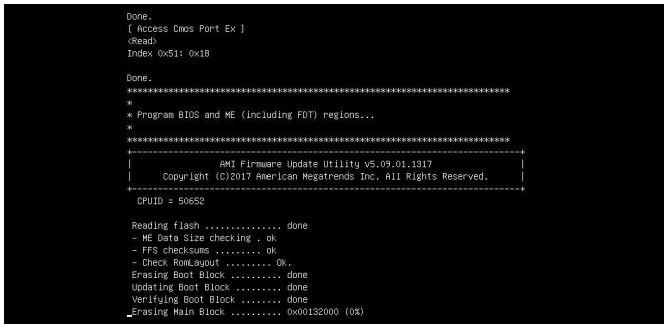
7. Press <Del> during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the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

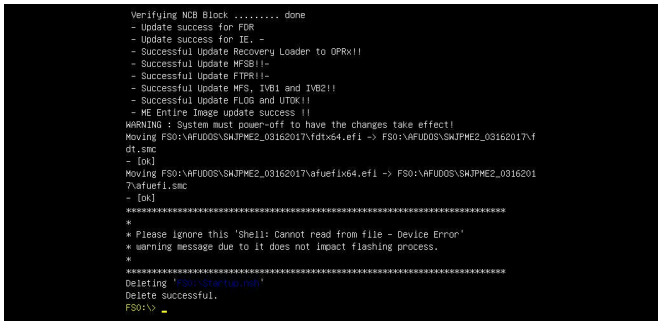


8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.



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





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

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

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

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