SR800-D21A20

Military GPU Workstation with Intel Xeon D-2183IT processor, NVIDIA A2000 ML-STD-461 EMI 18-36V DC-In

Safety information

Electrical safety

- ▶ To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- ▶ When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
  - ▶ Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
  - ▶ Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- ▶ Make sure that your power supply is set to the correct voltage in your area.
  - ▶ If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
  - ▶ If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- ▶ Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- ▶ Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- ▶ To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- ▶ Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- ▶ Place the product on a stable surface.
- ▶ If you encounter any technical problems with the product, contact your local distributor

Statement

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- ▶ All product specifications are subject to change without prior notice

Revision History

Revision	Date (yyyy/mm/dd)	Changes
Version 1.0	2024/01/25	Initial release

Packing list

▶ **SR800-D21A20 Military GPU Workstation System**

▶ **CD (Driver + Quick Installation Guide)**

Ordering information

Model Number	[Scription]
SR800-D21A20	Military GPU Workstation with Intel Xeon D‑2183IT Processor, NVIDIA A2000 MIL-STD-D38999 Connectors, 18~36V DC-in, Extreme Rugged Operating Temperature ‑20 to 55°C

If any of the above items is damaged or missing, please contact your local distributor.

Table Contents

Chapter 1: Product Introduction

● **Key Features**

System	
CPU	Intel® Xeon® Processor D‑2183IT Processor (22M Smart Cache, 16 Cores/ 32 Threads, Base Frequency 2.2GHz; Max Turbo Frequency 3.0 GHz)
Memory Type	128GB DDR4-2400 ECC RDIMM
Graphics Card	Nvidia A2000m (8GB DDR6 128bit, 2560 CUDA Cores)
BIOS	AMI® BIOS
Storage Device	2x 2.5" 2TB MLC support Hardware secure erase SATA III SSD (Easy Swappable)
Side I/O	
DC In	1 x Amphenol TV07RW-13-04P (4PIN)
10Gb Ethernet	1 x Amphenol FSI MPOFTV70ZNN
1Gb Ethernet	1 x Amphenol RJFTV62A1N
USB 3.0	1 x Amphenol USB3FTV7AZNF312
Power Button	Power Switch with Dedicated LED
SSD Tray	2 x Dual 2.5" HDD/SSD Easy Swap Tray
Dedicated LED	1 x Red LED (OVHT), 1 x Green LED (SSD)
VGA	D-sub15 connector with waterproof cap
Secure Erase Button	1 x AES hardware erase button
Applications	
Applications	C4ISR, Commercial and Military Platforms Requiring Compliance to MIL-STD-810 Process Control, where Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions.
Operation System	
OS Support	Windows 10 64bit, Windows server 2019 64bit, Windows 2016 64bit, Hyper-V Server 2016 R2, Ubuntu 16.04.3 LTS/17.10/18.04.1 LTS, Fedora 25/26, RedHat Linux EL 6.8/6.9/7.3/7.4/7.6, VMware ESXi6.5u1, VMware ESXi6.7u2
Mechanical & Environment	
Chassis	Aluminum Alloy, Corrosion design
Finish	Anodic aluminum oxide
Cooling	Natural Passive Convection/Conduction. No Moving Parts
Ingress Protection	IP65
Power Requirements	MIL-STD-461 EMI Power Supply, 18-36V DC In 300W Max
Dimension (W x D x H)	281 x 432 x 138mm (11" x 17" x 5.4")
Operating Temp.	-20 to 55°C
Storage Temp.	‑40 to 85°C
Relative Humidity	5% to 95%, non‑condensing

* Specifications are subject to change without notice*

- **Dimensions**

281

432.05

138.17
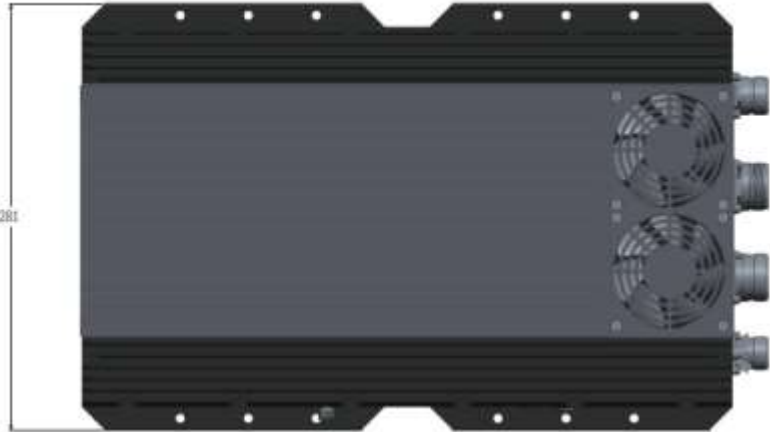
- **Panel Component**
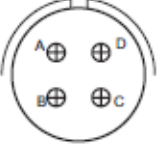
1	DC In label (X1)
2	10G LAN, label (X2)
3	1G LAN, label (X3)
4	USB 3.0, label (X4)
5	VGA
6	Isolated ground Plug
7	Dedicated LED
8	Power Button
9	AES Hardware Easer Button
10	2.5" HDD/SSD Easy Swap Tray
11	Remove COMS Battery

Chapter 2: Jumpers and Connectors Locations

- **D38999 Connector Pin Definitions**

X1 DC IN

I/O		D38999(A1)	Pin define	A2 Y pin	D38999(B1)	B2
Amphenol TV07RW-13-04P (**DC IN**) Amphenol TV06RW-13-04S (**DC IN**)	DC IN	A	V+(Y)	V+(Y)	+	1
		B	V+(Y)		+	2
		C	V-(B)	V-(B)	-	3
		D	V-(B)		-	4
		G	Weave	Ground ring	Weave	Ground ring

3. **BIOS Setup**

This chapter describes the AMIBIOS™ Setup utility for the motherboard.

The BIOS is stored on a chip and can be easily upgraded using a flash program.

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

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

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

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

3 **Main Setup**

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

System Date/System Time

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

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

SR800-D21A20 BIOS Version

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

Build Date

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

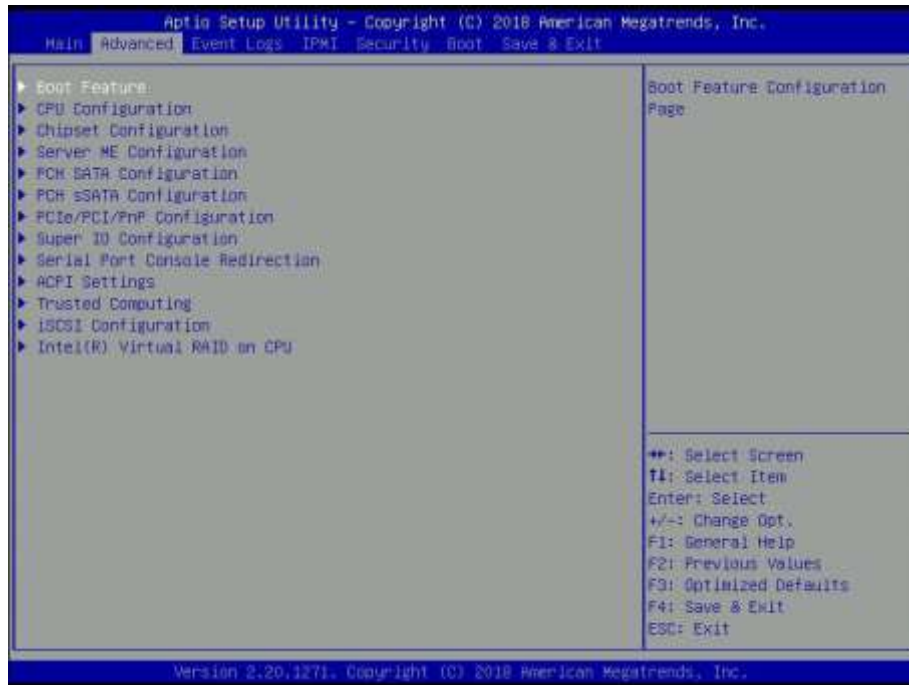**Memory Information**

Total Memory

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

Memory Speed

This feature displays the default speed of the memory modules installed in the system.

4   Advanced

Use this menu to configure advanced settings.

```
                 Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

  ▶ Boot Feature                                              Boot Feature Configuration
  ▶ CPU Configuration                                         Page
  ▶ Chipset Configuration
  ▶ Server ME Configuration
  ▶ PCH SATA Configuration
  ▶ PCH sSATA Configuration
  ▶ PCIe/PCI/PnP Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ ACPI Settings
  ▶ Trusted Computing
  ▶ iSCSI Configuration
  ▶ Intel(R) Virtual RAID on CPU

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

                 Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```

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 to default manufacturer settings.

▶ Boot Feature

Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at 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**.

Option ROM Messages

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

Bootup NumLock State

Use this feature to set the Power-on state for the Numlock key. The options are 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 (Interrupt 19) Trap Response

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

Re-try Boot

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

Port 61h bit-4 Emulation

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

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to reboot when it is inactive 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 soonas the user presses the power button. The options are 4 Seconds Override and **Instant Off.**

Restore on AC Power Loss

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

▶ CPU Configuration

The following CPU information will display:

- Processor BSP Revision
- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio

- Microcode Revision

- L1 Cache RAM

- L2 Cache RAM

- L3 Cache RAM

- Processor 0 Version

Hyper-Threading (ALL)

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

Cores Enabled

Set a numeric value to enable the number of cores. Refer to Intel's website for moreinformation. Enter **0** to enable all cores.

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

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

Intel Virtualization Technology

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

PPIN Control

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

▶ Advanced Power Management Configuration

Power Technology

This feature allows the user to configure CPU power management settings. The options are Disable, **Energy Efficient**, and Custom.

If the feature above is set to Custom, the following features will be available for configuration:

Power Performance Tuning

This feature allows the user to set whether the operating system or the BIOS controls the Energy Performance BIAS (EPB). The options are **OS Controls EPB** and BIOS Controls EPB.

If the feature above is set to BIOS Controls EPB, the following features will be available for configuration:

ENERGY_PERF_BIAS_CFG Mode

The Energy Performance BIAS (EPB) feature allows the user to configure CPU power and perfomance settings. Select Maximum Performance to set the highest performance. Select Performance to optimize performance over energy efficiency. Select Balanced Performance to prioritize performance optimization while conserving energy. Select Bal- anced Power to prioritize energy conservation while maintaining good performance. Select Power to optimize energy efficency over performance. The options are Maximum Performance, Performance, **Balanced Performance,** Balanced Power, and Power.

▶**CPU P State Control**

This feature allows the user to configure the following CPU power settings:

SpeedStep (Pstates)

Intel SpeedStep Technology allows the system to automatically adjust processor volt- age and core frequency to reduce power consumption and heat dissipation. The options are Disable and **Enable**. If this feature is set to Disabled, the next two features are not available for configuration.

Config TDP

Use this feature to configure the Thermal Design Power (TDP) level. The options are **Nominal**, Level 1, and Level 2.

EIST PSD Function

This feature allows the user to choose between Hardware and Software to control the processor's frequency and performance (P-state). In HW_ALL mode, the processor hard-ware is responsible for coordinating the P-state, and the OS is responsible for keeping the P-state request up to date on all Logical Processors. In SW_ALL mode, the OS Power Manager is responsible for coordinating the P-state, and must initiate the transition on all Logical Processors. In SW_ANY mode, the OS Power Manager is responsible for coordinating the P-state and may initiate the transition on any Logical Processors. The options are **HW_ALL**, SW_ALL, and SW_ANY.

Energy Efficient Turbo

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

Turbo Mode

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

►Hardware PM State Control

Hardware P-States

This setting allows the user to select between OS and hardware-controlled P-states. Selecting Native Mode allows the OS to choose a P-state. Selecting Out of Band Mode allows the hardware to autonomously choose a P-state without OS guidance. Selecting Native Mode with No Legacy Support functions as Native Mode with no support for older hardware. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

►CPU C State Control

Autonomous Core C-State

Enabling this setting allows the hardware to autonomously choose to enter a C-state based on power consumption and clock speed. The options are **Disable** and Enable. This feature must be set to Disable to be able to configure the next two features.

CPU C6 Report

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

Enhanced Halt State (C1E)

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

►Package C State Control

Package C State

This feature allows the user to set the limit on the C State package register. The options are C0/C1 State, C2 State, C6 (Non-Retention) State, C6 (Retention) State, No Limit, and **Auto.**

►CPU T State Control

Software Controlled T-States

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

► Chipset Configuration

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

▶ **North Bridge Configuration**

▶ **Memory Configuration**

Enforce POR

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

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 2133, 2400, and 2666.

Data Scrambling for DDR4

Use this feature to enable or disable data scrambling for DDR4 memory. The optionsare **Auto**, Disable, and Enable.

tCCD_L Relaxation

Select Auto to get TCDD settings from SPD (Serial Presence Detect) and implement into memory RC code to improve system reliability. Select Disable for TCCD to follow Intel POR. The options are Disable and **Auto**.

Enable ADR

Select Enable for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are **Disable** and Enable**.**

2X REFRESH

Use this feature to select the memory controller refresh rate to 2x refresh mode. The options are **Auto** and Enable.

▶ **Memory Topology**

This feature displays the information of onboard memory modules detected by theBIOS.

▶ **Memory RAS Configuration**

Static Virtual Lockstep Mode

Select Enable to run the system's memory channels in lockstep mode to minimize memory access latency. The options are **Disable** and Enable.

Mirror mode

This feature allows memory to be mirrored between two channels, providing 100% redundancy. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM.

Memory Rank Sparing

Select Enable to enable memory-sparing support for memory ranks to improve memoryperformance. The options are **Disable** and Enable.

*If the feature above is set to Enable, Multi Rank Sparing will be available for configuration:

Multi Rank Sparing

Use this feature to indicate how many memory ranks to reserve in case of memory failure. The options are One Rank and **Two Rank**.

Correctable Error Threshold

Use this feature to specify the threshold value for correctable memory error logging, which sets a limit on the maximum number of events that can be logged in the memoryerror log at a given time. The default setting is **100**.

SDDC

Single device data correction +1 (SDDC Plus One) organizes data in a single bundle (x4/x8 DRAM). If any or all the bits become corrupted, corrections occur. The x4 con- dition is corrected on all cases. The x8 condition is corrected only if the system is in Lockstep Mode. The options are **Disable** and Enable.

ADDDC Sparing

Adaptive Double Device Data Correction (ADDDC) Sparing detects when the prede- termined threshold for correctable errors is reached, copying the contents of the failing DIMM to spare memory. The failing DIMM or memory rank will then be disabled. The options are **Disable** and Enable.

Patrol Scrub

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

If the feature above is set to Enable, Patrol Scrub Interval will be available for configuration:

Patrol Scrub Interval

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

▶ **IIO Configuration**

EV DFX Features

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

▶ **CPU Configuration**

IOU0 (II0 PCIe Br1)

Use this feature configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II0 PCIe Br2)

Use this feature configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU2 (II0 PCIe Br3)

Use this feature configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

▶**CPU SLOT6 PCI-E 3.0 X16**

Link Speed

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

PCI-E Port Link Status

This feature shows the status of the device plugged into this slot.

PCI-E Port Link Max

This feature shows the status of the device plugged into this slot.

PCI-E Port Link Speed

This feature shows the status of the device plugged into this slot.

PCI-E Port Max Payload Size

Use this feature to select the maximum payload size for this port. The options are128B, 256B, and **Auto.**

▶ **CPU SLOT7 PCI-E 3.0 X8**

Link Speed

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

PCI-E Port Link Status

This feature shows the status of the device plugged into this slot.

PCI-E Port Link Max

This feature shows the status of the device plugged into this slot.

PCI-E Port Link Speed

This feature shows the status of the device plugged into this slot.

PCI-E Port Max Payload Size

Use this feature to select the maximum payload size for this port. The options are128B, 256B, and **Auto.**

▶ **IOAT Configuration**

Disable TPH

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

If the feature above is set to No, Relaxed Ordering will be available for configure- ration:

Prioritize TPH

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

Relaxed Ordering

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

▶ **Intel® VT for Directed I/O (VT-d)**

Intel® VT for Directed I/O (VT-d)

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

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

Interrupt Remapping

Use this feature to enable Interrupt Remapping support, which detects and controls external interrupt requests. The options are **Enable** and Disable.

Passthrough DMA

Use this feature to allow devices such as network cards to access the system memory without using a processor. Select Enable to use the Non-Isoch VT_D Engine Pass Through Direct Memory Access (DMA) support. The options are **Enable** and Disable.

ATS

Use this feature to enable non-Isoch VT-d Engine Address Translation Services (ATS) support. ATS translates virtual addresses to physical addresses. The options are **Enable** and disable.

Posted Interrupt

Use this feature to enable VT_D Posted Interrupt. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

Use this feature to maintain setting coherency between processors or other devices. Select Enable for the Non-Isoch VT-d engine to pass through DMA to enhance systemperformance. The options are **Enable** and Disable.

▶ **Intel® VMD Technology**

▶Intel® VMD for Volume Management Device on CPU

VMD Config for PStack0

Intel® VMD for Volume Management Device

Select Enable to use the Intel Volume Management Device Technology for this stack.The options are **Disable** and Enable.

If the feature above is set to Enable, the following features will be available for configuration:

CPU SLOT6 PCI-E 3.0X16 VMD

Use this feature to enable or disable Volume Management Device (VMD) Technologyfor this port. The options are Disable and **Enable**.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The optionsare **Disable** and Enable.

PCI-E Completion Timeout Disable

Use this feature to enable PCI-E Completion Timeout support for electric tuning. The options are Yes, **No**, and Per-Port.

▶ **South Bridge Configuration**

The following South Bridge information will display:

- USB Module Version

- USB Devices

Legacy USB Support

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only. The options are **Enabled,** Disabled, and Auto.

XHCI Hand-off

This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI

ownership change should be claimed by the XHCI driver. The settings are Enabled and **Disabled**.

Port 60/64 Emulation

Select Enabled for I/O port 60h/64h emulation support, which in turn, will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

▶ **Server ME Configuration**

- General ME Configuration

- Oper. Firmware Version

- Backup Firmware Version

- Recovery Firmware Version

- ME Firmware Status #1

- ME Firmware Status #2

- Current State

- Error Code

▶ **PCH SATA Configuration**

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 features:

SATA Controller

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

Configure SATA as

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

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The options are **Enable** and Disable.

Aggressive Link Power Management

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

If the feature "Configure SATA as" above is set to RAID, the following features will be available for configuration:

SATA RSTe Boot Info

Select Enable to provide full int13h support for the devices attached to SATA controller. The options are Disable and **Enable**.

SATA RAID Option ROM/UEFI Driver

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

SATA Port 0~7

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

- Model number of drive and capacity

- Software Preserve Support

Port 0~7 Hot Plug

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

Port 0~7 Spin Up Device

On an edge detect from 0 to 1, set this feature to allow the PCH to initialize the device.The options are **Disable** and Enable.

Port 0~7 SATA Device Type

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

▶ **PCH sSATA Configuration**

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

sSATA Controller

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

Configure sSATA as

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

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The optionsare Disable and **Enable**.

Aggressive Link Power Management

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

If the feature "Configure sSATA as" above is set to RAID, the following features will display:

sSATA RSTe Boot Info

Select Enable to provide full int13h support for the devices attached to sSATA controller. Theoptions are Disable and **Enable**.

sSATA RAID Option ROM/UEFI Driver

Select UEFI to load the EFI driver for system boot. Select Legacy to load a legacy driver forsystem boot. The options are Disable, EFI, and **Legacy**.

sSATA Port 0 ~ Port 5

This feature displays the information detected on the installed sSATA drive on the particularsSATA port.

- Model number of drive and capacity

- Software Preserve Support

Port 0 ~ Port 5 Hot Plug

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

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this feature to allow the PCH to initialize the device.The options are **Disable** and Enable.

Port 0 ~ Port 5 sSATA Device Type

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

▶ **PCIe/PCI/PnP Configuration**

The following information will display:

- PCI Bus Driver Version

- PCI Devices Common Settings:

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

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

SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization Support. The options are
Disabled and Enabled.

BME DMA Mitigation

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

MMIO High Base

Use this feature to select the base memory size according to memory-address mapping for the IO hub. The options are **56T**, 40T, 24T,
16T, 4T, and 1T.

MMIO High Granularity Size

Use this feature to select the high memory size according to memory-address mapping for
the IO hub. The options are 1G, 4G, 16G, 64G, **256G**, and 1024G.

Maximum Read Request

Use this feature to select the Maximum Read Request size of the PCI-Express device, or select Auto to allow the System BIOS to
determine the value. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

MMCFG Base

Use this feature to select the low base address for PCIE adapters to increase base memory.
The options are 1G, 1.5G, 1.75G, **2G**, 2.25G, and 3G.

NVMe Firmware Source

Use this feature to select the NVMe firmware to support booting. The options are **Vendor Defined Firmware** and AMI Native Support.
The default option, Vendor Firmware, is pre- installed on the drive and may resolve errata or enable innovative functions for the drive.
Theother option, AMI Native Support, is offered by the BIOS with a generic method.

Note: If you are using a PCIe NVMe SSD as a boot device, configure the following BIOS
steps below:

1. Enable AMI Native Support in the Advanced > NVME Firmware Source menu.

2. After the installation is complete, enable Boot Option 1 for the NVMe device. Go to
Boot > UEFI Hard Disk Drive BBS Priorities > Boot Option # 1 > NVMe device.

3. Boot > Boot Option #1 > NVMe device.

VGA Priority

Use this feature to select VGA priority when multiple VGA devices are detected. Select On- board to give priority to your onboard video
device. Select Offboard to give priority to your graphics card. The options are **Onboard** and Offboard.

Note: The default setting for VGA Priority is onboard display. If you want to select Offboard
to give priority to your graphics card, please follow the steps below:

BIOS > Advanced > PCIe/PCI/PnP Configuration > VGA Priority > Offboard > CPU SLOT6
PCI-E 3.0 X16 or CPU SLOT6 PCI-E 3.0 X8.

JMD2: M.2-H PCI-E 3.0 X2 lane 1 Type

Use this feature to select which option for the add-on card in this slot. The options are **PCIE**
and USB 3.0.

Note 1: The default setting for M.2 B key is PCIE. If you want to support M.2 B key with USB
3.0 signal, please follow the steps below:

BIOS > Advanced > PCIe/PCI/PnP Configuration > JMD2:M.2-H PCI-E 3.0 X2 lane 1 Type
> USB3.0.

Notes 2: SATA devices can be supported regardless of the BIOS setting (USB3.0 or PCIE).

CPU SLOT6 PCI-E 3.0 X16 OPROM

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

CPU SLOT7 PCI-E 3.0 X8 OPROM

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

JMD1: M.2-HC PCI-E 3.0 X4 OPROM

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

JMD2: M.2-H PCI-E 3.0 X2 OPROM

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

PCI-E 3.0 X1 OPROM

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

Onboard LAN Option ROM Type

Use this feature to select which option for onboard LAN devices. The options **Legacy** and
EFI. Select Legacy to display and configure the Onboard LAN1 ~ LAN8 Option ROM features.

Onboard LAN1 Option ROM

Use this feature to select which option for LAN Port 1 used for system boot. The options areDisabled, **PXE**, and iSCSI.

Onboard LAN2 ~ LAN4 Option ROM

Use this feature to select which option for the specified LAN ports used for system boot. The
options are **Disabled** and PXE.

Onboard LAN5 ~ LAN8 Option ROM

Use this feature to select which option for the specified LAN ports used for system boot. The
options are **Disabled** and Legacy.

Onboard Video Option ROM

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

▶ Network Stack Configuration

Network Stack

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

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

Ipv4 PXE Support

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

Ipv4 HTTP Support

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

Ipv6 PXE Support

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

Ipv6 HTTP Support

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

PXE Boot Wait Time

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

Media Detect Count

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

▶ **Super IO Configuration**

Super IO Chip AST2500

▶ Serial Port 1 Configuration

Serial Port 1

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled. Enable this feature for the next two features to display and onlythe Change Settings feature is available for configuration.

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** for 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=2F8h; IRQ=4), (IO=3E8h; IRQ=4), and (IO=2E8h; IRQ=4).

▶ Serial Port 2 Configuration

Serial Port 2

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled. Enable this feature for the next two features to display and onlythe Change Settings feature is available for configuration.

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 for 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), (IO=3E8h; IRQ=3), and (IO=2E8h; IRQ=3).

▶ **Serial Port Console Redirection**

COM1

Console Redirection

Select Enabled to enable COM Port 1 for Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

If the feature above is set to Enabled, the following features will become available for configuration:

▶ Console Redirection Settings

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII

Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty Keypad

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

Redirection After BIOS POST

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

SOL Console Redirection

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

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

▶ Console Redirection Settings

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

SOL

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS POST

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

Legacy Console RedirectionRedirection COM Port

Use this feature to select a COM port to display redirection of Legacy OS and Legacy OPROMmessages. The options are **COM1** and SOL.

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

The submenu allows the user to configure Console Redirection settings to support Out-of-

Band Serial Port management.

EMS (Emergency Management Services) Console Redirection

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

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

▶ Console Redirection Settings

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

Out-of-Band Mgmt Port

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

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

Parity Stop

Bits

▶ **ACPI Settings**

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

Headless Support

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

WHEA Support

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

High Precision Event Timer

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

▶ **Trusted Computing**

The features in the Trusted Computing section on this page are displayed if a TPM 1.2 module is detected:

Configuration

Security Device Support

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

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are Disabled and **Enabled**.

Pending Operation

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

Note: Your system will reboot to carry out a pending TPM operation.

Device Select

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

Current Status Information

This feature displays the status of the TPM support on this motherboard.

- TPM Enabled Status
- TPM Active Status
- TPM Owner Status

SMCI BIOS-Based TPM Provision Support

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

TXT Support

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks and ensures protection, confidentiality and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disabled** and Enabled.

The features in the Trusted Computing section on this page and the next aredisplayed if a TPM 2.0 module is detected:

TPM20 Device Found

Vendor: IFX

Firmware Version: 7.62

Security Device Support

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

The following TPM information will be displayed:

- Active PCR banks
- Available PCR banks

If the feature "Security Device Support" is enabled, the following features are available for

configuration:

SHA256 PCR Bank

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

Pending Operation

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

Platform Hierarchy

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

Storage Hierarchy

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

Endorsement Hierarchy

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

PH Randomization

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

SMCI BIOS-Based TPM Provision Support

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

TXT Support

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks and ensures protection, confidentiality and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disabled** and Enabled.

▶ iSCSI Configuration

iSCSI Initiator Name

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

▶ Add an Attempt

▶ Delete Attempts

▶ Change Attempt Order

▶ Intel(R) Virtual RAID on CPU

Intel(R) VROC with VMD Technology 5.2.4.1039

RAID volumes and Intel VMD Controllers information will be displayed if they are detected by the system.

5. Event Logs

Use this menu to configure event log settings.

▶ **Change SMBIOS Event Log Settings**

Enabling/Disabling Options SMBIOS Event

Log

Change this feature to enable or disable all features of the SMBIOS Event Logging during system boot. The options are **Enabled** and Disabled.

Erasing Settings

Erase Event Log

Select Enabled to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No,** Yes, Next reset, andYes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

Select Enabled to log system boot events. The options are Enabled and **Disabled**.

MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number between 1 to 255.The default setting is **1**.

METW (Multiple Event Count Time Window)

This feature is used to determine how long (in minutes) should the multiple event counter waitbefore generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

> **Note**: Reboot the system for the changes to take effect.

▶ View SMBIOS Event Log

This feature allows the user to view the event in the SMBIOS event log. The followingcategories are displayed:

DATE/TIME/ERROR CODE/SEVERITY

6. IPMI

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

BMC Firmware Revision

This feature indicates the IPMI firmware revision in your system.

IPMI STATUS

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

▶ System Event Log

Enabling/Disabling OptionsSEL Components

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

Erase SEL

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

When SEL is Full

This feature allows the user to determine what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

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

▶ BMC Network Configuration

BMC network configurationConfigure IPV4

support IPMI LAN Selection

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

IPMI Network Link Status

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

Update IPMI LAN Configuration

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

If the feature above is set to Yes, the Configuration Address Source and VLAN features are available for configuration:

Configuration Address Source

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

If the feature above is set to Static, the Station IP Address/Subnet Mask/Gateway IP Address features are available for configuration:

Station IP Address

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

Subnet Mask

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

Station MAC Address

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

Gateway IP Address

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

VLAN

This feature is configurable if the Update IPMI LAN Configuration feature is set to Yes. Use this feature to enable or disable the IPMI VLAN function. The options are **Disable**and Enable.

If the feature above is set to Enable, the VLAN ID feature below is available for configuration:

VLAN ID

Use this feature to select a value for VLAN ID.

Configure IPV6 support

IPV6 Support

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

Configuration Address Source

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

If the feature above is set to Static, the Station IP Address/Prefix Length/IPV6 Router1 IP Address features are available for configuration:

Station IPV6 Address

Use this feature to enter the IPV6 address.

Prefix Length

Use this feature to change the prefix length.

IPV6 Router1 IP Address

Use this feature to change the IPV6 Router1 IP address.

IPMI Extended Instruction

The options of this feature are **Enabled** and Disabled. When this feature is Disabled, the system powers on quickly by removing BIOS support for IPMI extended instruction features. The boot up time is faster when the option is Disabled. When this feature is disabled, the user cannot use Supermicro Update Manager (SUM) OOB (out of band) to update the BIOS, nor utilize the extended IPMI features such as AOC and PCIe sensor readings, and the BMC network configuration in the BIOS setup is also disabled. The general BMC function like fan control and motherboard health monitor that offer the basic sensor reading of the CPU, system memory, and some onboard devices still function. The user can use Supermicro IPMI utilities such as IPMICFG and IPMIVIEW for sensor readings and to know what the normal sensor output information is. The user needs to wait for one minute after the system powers on completely to obtain readings from those two sensors.

7. Security

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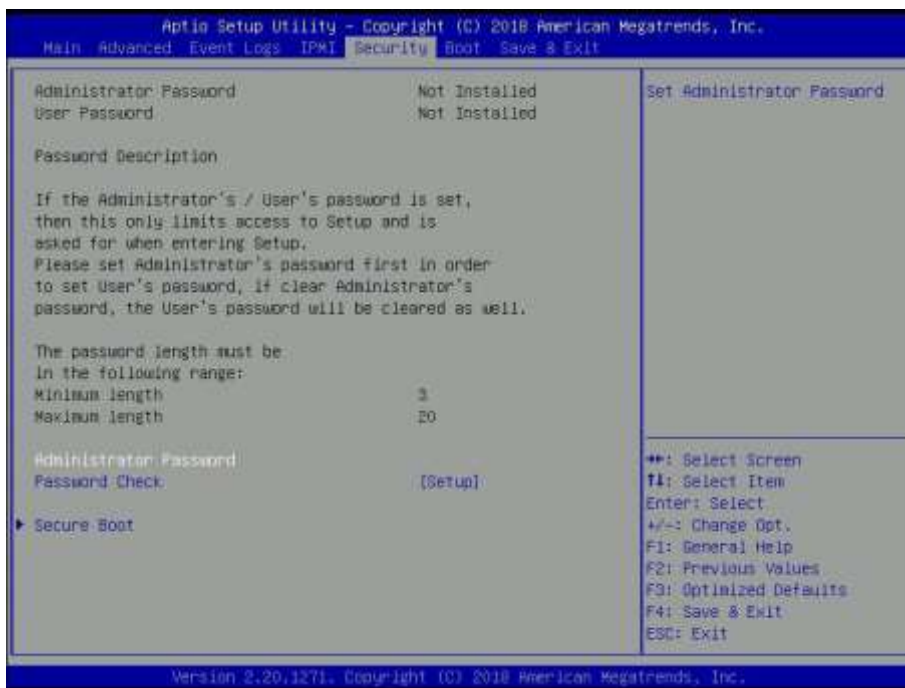
Administrator Password

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 3 characters to 20 characters long.

Password Check

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

▶   Secure Boot

System Mode Vendor Keys

Secure Boot Enable

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

Secure Boot Mode

This feature allows the user to select the desired secure boot mode for the system. Theoptions are Standard and **Custom**.

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

CSM Support

This feature is for manufacturing debugging purposes.

▶ Key Management

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

Factory Key Provision

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

If the feature above is set to Enabled, the next four features are available for configuration:

▶**Restore Factory Keys**

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

▶**Reset to Setup Mode**

Select Yes to delete all Secure Boot key databases and force the system to Setup Mode.The options are Yes and No.

▶ **Export Secure Boot variables**

Use this feature to copy the NVRAM contents of the secure boot variables to a file.

▶ **Enroll Efi Image**

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

Device Guard Ready

▶**Remove 'UEFI CA' from DB**

Use this feature to remove the Microsoft UEFI CA certificate from the database. The options are Yes and No.

▶**Restore DB defaults**

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

▶ **Save All Secure Boot Variables**

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

▶ **Platform Key (PK)**

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

Details

Select this feature to view the details of the Platform Key.

Export

Select Yes to export a PK from a file on an external media.

Update

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

Delete

Select Ok to remove the PK and then the system will reset to Setup/Audit Mode.

▶ **Key Exchange Keys (KEK)Details**

Select this feature to view the details of the Key Exchange Key.

Export

Select Yes to export a KEK from a file on an external media.

Update

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

Append

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

Delete

Select Ok to remove the KEK and then the system will reset to Setup/Audit Mode.

▶ **Authorized SignaturesDetails**

Select this feature to view the details of the db.

Export

Select Yes to export a db from a file on an external media.

Update

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

Append

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

Delete

Select Ok to remove the db and then the system will reset to Setup/Audit Mode.

▶ **Forbidden SignaturesDetails**

Select this feature to view the details of the dbx.

Export

Select Yes to export a dbx from a file on an external media.

Update

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

Append

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

Delete

Select Ok to remove the dbx and then the system will reset to Setup/Audit Mode.

▶ **Authorized TimeStampsDetails**

Select this feature to view the details of the dbt.

Export

Select Yes to export a dbt from a file on an external media.

Update

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

Append

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

Delete

Select Ok to remove the dbt and then the system will reset to Setup/Audit Mode.

▶ **OsRecovery SignaturesDetails**

Select this feature to view the details of the dbr.

Export

Select Yes to export a dbr from a file on an external media.

Update

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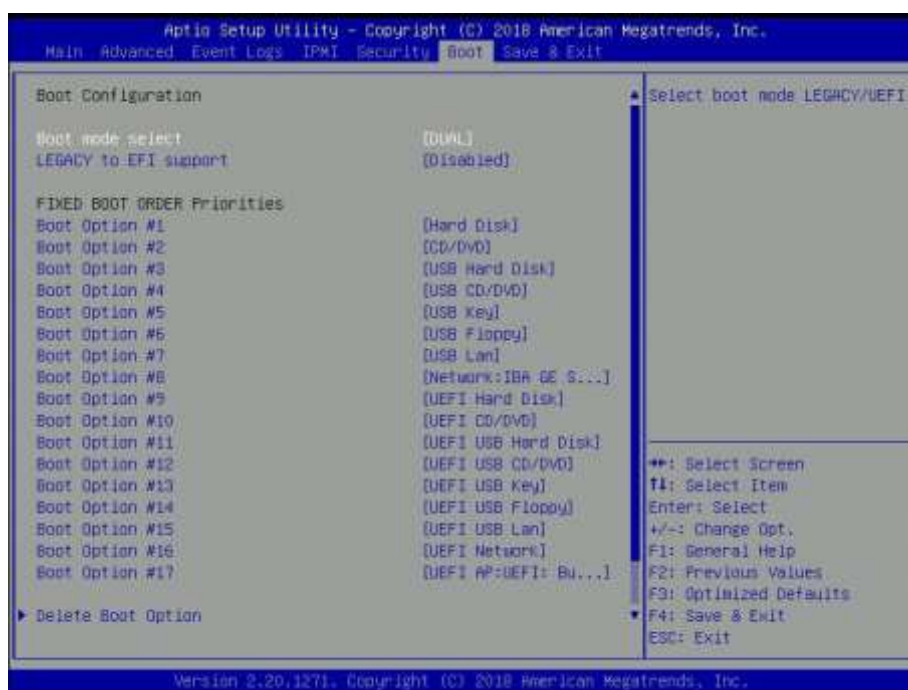
Append

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

Delete

Select Ok to remove the dbr and then the system will reset to Setup/Audit Mode.

8. Boot

Use this menu to configure boot settings:

Boot mode select

Use this feature to select the boot mode. The options are LEGACY, UEFI, and **DUAL**.

Legacy to EFI Support

Select Enabled to boot EFI OS support after Legacy boot order has failed. The options are **Disabled** and Enabled.

Fixed BOOT ORDER Priorities

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

- 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

- Boot Option #10

- Boot Option #11

- Boot Option #12

- Boot Option #13

- Boot Option #14

- Boot Option #15

- Boot Option #16

- Boot Option #17

▶ **Delete Boot Option**

Use this feature to select a boot device to delete from the boot priority list.

▶ **UEFI Application Boot Priorities**

- Boot Option # - This feature sets the system boot order of detected devices. The optionsare **[the list of detected boot device(s)]** and Disabled.

▶ **NETWORK Drive BBS Priorities**

- Boot Option # - This feature sets the system boot order of detected devices. The optionsare **[the list of detected boot device(s)]** and Disabled.

9. Save & Exit

Use this menu to configure save and exit settings.

Save Options

Discard Changes and Exit

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

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 will not reset (reboot) the system.

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

Default Options

Restore Defaults

To set this feature, select Restore Optimized Defaults and press <Enter>. These are factorysettings 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>. Thisenables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

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

Boot Override

Other boot options are listed in this section. The system will boot to the selected boot option.

IBA GE Slot 6500 v1584

UEFI: Built-in EFI Shell

Launch EFI Shell from filesystem device

Appendix ABIOS

Codes

BIOS Error POST (Beep) Codes

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The tablebelow lists some common errors and their corresponding beep codes encountered by users.

BIOS Beep (POST) Codes		
Beep Code	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 long, 2 short	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

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