

# Lanner

## Network Appliance Platform

Hardware Platforms for Industrial SD-WAN

# ISD-0370 User Manual

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## About this Document



This manual describes the overview of the various functionalities of this product and the information you need to get it ready for operation. It is intended for those who are:

- responsible for installing, administering and troubleshooting this system or information technology professionals.
- assumed to be qualified in the servicing of computer equipment, such as professional system integrators, or service personnel and technicians.

The latest version of this document can be found on Lanner's official website, available either through the product page or through the [Lanner Download Center](#) page with a login account and password.

## Icon Description

The icons are used in the manual to serve as an indication of interest topics or important messages.

Icon	Usage
 <p>Note or Information</p>	This mark indicates that there is something you should pay special attention to while using the product.
 <p>Warning or Important</p>	This mark indicates that there is a caution or warning and it is something that could damage your property or product.

## Online Resources

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## Documentation Feedback

Your feedback is valuable to us, as it will help us continue to provide you with more accurate and relevant documentation. To provide any feedback, comments or to report an error, please email [contact@lannerinc.com](mailto:contact@lannerinc.com). Thank you for your time.

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## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▶ Reorient or relocate the receiving antenna.
- ▶ Increase the separation between the equipment and receiver.
- ▶ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▶ Consult the dealer or an experienced radio/TV technician for help.

### FCC Caution

- ▶ Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- ▶ This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



#### Note

1. An unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



#### Important

1. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
2. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

## Safety Guidelines

Follow these guidelines to ensure general safety:

- ▶ Keep the chassis area clear and dust-free during and after installation.
- ▶ Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- ▶ Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- ▶ Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- ▶ Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- ▶ Do not work alone if potentially hazardous conditions exist.
- ▶ Never assume that power is disconnected from a circuit; always check the circuit.

## Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- ▶ Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- ▶ Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- ▶ Portez des lunettes de sécurité pour protéger vos yeux.
- ▶ N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- ▶ Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- ▶ Ne travaillez pas seul si des conditions dangereuses sont présentes.
- ▶ Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

## Lithium Battery Caution

- ▶ There is risk of explosion if the battery is replaced by an incorrect type.
- ▶ Dispose of used batteries according to the instructions.
- ▶ Installation should be conducted only by a trained electrician or only by an electrically trained person who knows all installation procedures and device specifications which are to be applied.
- ▶ Do not carry the handle of power supplies when moving to another place.
- ▶ Please conform to your local laws and regulations regarding safe disposal of lithium battery.
- ▶ Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- ▶ Leaving a battery in an extremely high temperature environment can result in an explosion or the leakage of flammable liquid or gas.
- ▶ A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

## Avertissement concernant la pile au lithium

- ▶ Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- ▶ Jetez les piles usagées conformément aux instructions.
- ▶ L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- ▶ Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.

## Operating Safety

- ▶ Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- ▶ Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- ▶ Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- ▶ Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- ▶ Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

## Sécurité de fonctionnement

- ▶ L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
- ▶ Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- ▶ Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- ▶ Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- ▶ Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

## Safety Warnings

- ▶ The device can only be used in a fixed location such as a lab or a machine room.  
L'appareil ne peut être utilisé que dans un lieu fixe, tel qu'un laboratoire ou une salle de machines.
- ▶ The PoE networks without routing to the outside plant that installation instructions clearly state, therefore, these circuits are not considered external circuit.
- ▶ The PoE ports load at maximum 30W per port. The unit has two ports with a total maximum 60W output power
- ▶ When selecting optional power supply, please use an UL listed power supply, suitable for use at Tma 70-degree C is rated 24/36Vdc, 6.25/4.17A min. and altitude during operation 5000m.
- ▶ Console ports are signal only.
- ▶ DC Input connector manufacturer: Tai Ming Electronic Co., Ltd/TM-18L-5M-K-K

The unit is only for skilled person to perform installation and maintenance.

Cette machine est réservée aux techniciens à installer et à entretenir

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# CHAPTER 1: PRODUCT OVERVIEW

The ISD-O370, an all-weather, fanless edge network appliance, featuring Intel Atom C3000 processor with crypto acceleration, supporting 5G and Wi-Fi 6 connectivity, and IP67 & MIL-STD-810G environmental compliance. Designed as an outdoor, waterproof uCPE device deployed at the rugged edge, ISD-O370 enables routing, security, industrial IoT and SD-WAN in the most demanding conditions.

ISD-O370 is IP67 rated ingress protection and MIL-STD-810G standard compliant resistant to shock and vibration. ISD-O370 is equipped with M12 connectors designed to ensure a correct sealing to achieve IP67 rating.



## Important

Warranty is void if the product's warranty seals are altered, defaced, or removed; and liquid submersion indicator has determined the product was submersed in water for over 30 minutes and/or submerged in water deeper than 1 meter. Warranty does not apply when damage was caused by improper opening or closure of the system or M12 connectors; or improper installation and maintenance.

## Package Content

Your package contains the following items:

- ▶ 1x IP67 Rugged SD-WAN Wireless Gateway

## Ordering Information

Model No.	Description
ISD-O370C	Intel® Atom® C3808, 64GB eMMC, 6x GbE LAN (2x PoE+), -40~60°C, Design Reserved for Thales/Telit/Quectel 5G Modules
ISD-O370D	Intel® Atom® C3708, 64GB eMMC, 6x GbE LAN (2x PoE+), -40~70°C, Design Reserved for Thales/Telit/Quectel 5G Modules
ISD-O370E	Intel® Atom® C3808, 64GB eMMC, 6x GbE LAN (2x PoE+), -40~60°C, Design Reserved for Sierra 5G Modules
ISD-O370F	Intel® Atom® C3708, 64GB eMMC, 6x GbE LAN (2x PoE+), -40~70°C, Design Reserved for Sierra 5G Modules
ISD-O370G	Intel® Atom® C3808, 128GB eMMC, 4x GbE LAN (2x PoE+), 2x 2.5GbE LAN, -40~60°C, Design Reserved for Thales/Telit/Quectel 5G Modules
ISD-O370H	Intel® Atom® C3708, 128GB eMMC, 4x GbE LAN (2x PoE+), 2x 2.5GbE LAN, -40~70°C, Design Reserved for Thales/Telit/Quectel 5G Modules
ISD-O370I	Intel® Atom® C3808, 128GB eMMC, 4x GbE LAN (2x PoE+), 2x 2.5GbE LAN, -40~60°C, Design Reserved for Sierra 5G Modules
ISD-O370J	Intel® Atom® C3708, 128GB eMMC, 4x GbE LAN (2x PoE+), 2x 2.5GbE LAN, -40~70°C, Design Reserved for Sierra 5G Modules
ISD-O370K	Intel® Atom® C3508, 128GB eMMC, 4x GbE LAN, -40~70°C, Design Reserved for Thales/Telit/Quectel 5G Modules
ISD-O370L	Intel® Atom® C3508, 128GB eMMC, 4x GbE LAN, -40~70°C, Design Reserved for Sierra 5G Modules

## Optional Accessories

Model No.	Description
020W000271000	DDR4 ECC So-DIMM 16GB RAM module with Wide Temp. (WT) 2400 MT/s
020W000379000	DDR4 ECC So-DIMM 32GB RAM module with Wide Temp. (WT) 2666MT/s
0TEW000614000	M.2 2242 SSD 256GB Storage with Wide Temp. (WT)
080W000894000	M12-USB Cable 8P USB 3.0 30CM 180°-180° PRODACONN TM-18L-M12-USB-03
080W000891000	M12-RJ45 LAN/Console Cable 8P RJ45 8P8C 30CM 180°-180° PRODACONN TM-18L-X-R6S-03
080W000595000	M12 Power Wire Cable M12 5P 100CM 180°-180° K-CODE TIMYN TM-18L-CABLE-5F-1MN
098W000192000	M12 IO cap. for Female CAPS0-12FP-000-F0
098W000193000	M12 IO cap. for Male CAPS0-12MP-000-F0
PSF9696-001	EM9191 5G KIT ISD-O370E FG (5G w/ Internal Cables & Antenna kit) Note: Recommend preinstallation by Lanner
PSF9697-001	MV31-W 5G KIT ISD-O370C FG (5G w/ Internal Cables & Antenna kit) Note: Recommend preinstallation by Lanner
PSF9698-001	WNFB-265AXI WI-FI-6 KIT ISD-O370 FG (Wi-Fi 6 w/ Internal Cables & Antenna kit) Note: Recommend preinstallation by Lanner



## System Specifications

<b>Form Factor</b>		Desktop
<b>Platform</b>	Processor Options	Intel® Atom® C3000 (Denverton)
	CPU Socket	Onboard
	Chipset	SoC
	Security Acceleration	Intel® QuickAssist Technology
<b>BIOS</b>		AMI SPI Flash BIOS
<b>System Memory</b>	Technology	DDR4 2133 MT/s ECC SODIMM
	Max. Capacity	Up to 64GB, Default ECC RAM 16GB
	Socket	2x 260-pin SODIMM
<b>Networking</b>	Ethernet Ports	4x or 6x Ethernet Ports Support SR-IOV, 6x GbE LAN (2x PoE+) (SKU C/D/E/F); 4x GbE LAN (2x PoE+), 2x 2.5GbE LAN (SKU G/H/I/J); 4x GbE LAN (SKU K/L) by M12 X-coded 8-pin Female Connector with Isolation 1.5KVAC
	Bypass	N/A
	NIC Module Slot	N/A
<b>I/O Interface</b>	LED Indicators	N/A
	Console Port	1x RS232 / 485 Console Port, by M12 X-coded 8-pin Female Connector with Isolation 1.5KVDC
	USB Port	1x USB 2.0 by M12 A-coded 8-pin Male Connector
<b>Storage</b>	HDD/SSD Support	1x M.2 2242 B-Key/ SATA3
	eMMC	Onboard eMMC 64/128GB TLC (By SKU)
<b>Expansion</b>	M.2 for 5G (USB 3.0)	1x M.2 304(5)2 B-Key for 5G Module
	M.2 for Wi-Fi 6	1x M.2 2230 E-Key for Wi-Fi 6 Module
	SIM Card Slot	1x Mini-SIM card slot; 1x eSIM (reserved)
<b>Miscellaneous</b>	Watchdog	Yes
	Internal RTC with Li Battery	Yes
	TPM	Onboard TPM 2.0
<b>Cooling</b>	Processor	Passive CPU Heatsink
	System	Fanless
<b>Environmental Parameters</b>	Temperature	-40°C~70°C Operating (SKU D/F/H/J/K/L); -40°C~60°C Operating (SKU C/E/G/I) -40°C~85°C Ambient Storage
	Humidity (RH)	5~90% Operating 5~95% Non-Operating
<b>System Dimensions</b>	(WxDxH)	370mm x 210mm x 83mm
	Weight	4.6 kg
<b>Package Dimensions</b>	(WxDxH)	450mm x 324mm x 195 mm
	Weight	5.2 kg
<b>Power</b>	Type/Watts	DC-IN, Up to 150W
	Input	Rated 24Vdc/36Vdc, Supports with Reverse Protection by M12 K-coded 5-pin Male Connector with Isolation 1.5KVDC
<b>Operating System (OS)</b>		Linux Kernel
<b>Approvals and Compliance</b>		CE/FCC Class A, UL 62368-1, CB, IP67, MIL-STD-810G

## Front Panel

### ISD-O370C/D/E/F/G/H/I/J



No.	Description																																					
F1	DC Input 	1x M12 K-coded 5-pin Male Connector with Isolation for Power Source, (1.5KV DC)																																				
		<table border="1"> <thead> <tr> <th>Pin</th> <th>Signals</th> <th>Pin</th> <th>Signals</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G</td> <td>2</td> <td>V-in</td> </tr> <tr> <td>3</td> <td>G</td> <td>4</td> <td>n/a</td> </tr> <tr> <td>5(PE)</td> <td>Chassis_GND</td> <td></td> <td></td> </tr> </tbody> </table>	Pin	Signals	Pin	Signals	1	G	2	V-in	3	G	4	n/a	5(PE)	Chassis_GND																						
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F10	Wallmount Holes	Wall mount holes																																				

# Front Panel

## ISD-O370K/L



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F7	Console Port 	RS 232/422/485 Console Port by M12 X-coded 8-pin Female Connector with Isolation <table border="1"> <thead> <tr> <th>Pin</th> <th>RS232</th> <th>RS422</th> <th>RS485 (HALF)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>C_RTS</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>C_DTR_RN</td> <td>C_DTR_RN</td> <td></td> </tr> <tr> <td>3</td> <td>C_TXD_RP</td> <td>C_TXD_RP</td> <td></td> </tr> <tr> <td>4</td> <td>C_RXD_TP</td> <td></td> <td>C_RXD_TP</td> </tr> <tr> <td>5</td> <td>C_DSR</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>C_CTS</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>2_GND</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>2_GND</td> <td></td> <td></td> </tr> </tbody> </table>	Pin	RS232	RS422	RS485 (HALF)	1	C_RTS			2	C_DTR_RN	C_DTR_RN		3	C_TXD_RP	C_TXD_RP		4	C_RXD_TP		C_RXD_TP	5	C_DSR			6	C_CTS			7	2_GND			8	2_GND		
Pin	RS232	RS422	RS485 (HALF)																																			
1	C_RTS																																					
2	C_DTR_RN	C_DTR_RN																																				
3	C_TXD_RP	C_TXD_RP																																				
4	C_RXD_TP		C_RXD_TP																																			
5	C_DSR																																					
6	C_CTS																																					
7	2_GND																																					
8	2_GND																																					
F8	Wallmount Holes	Wall mount holes																																				

## Rear Panel & Side Panel

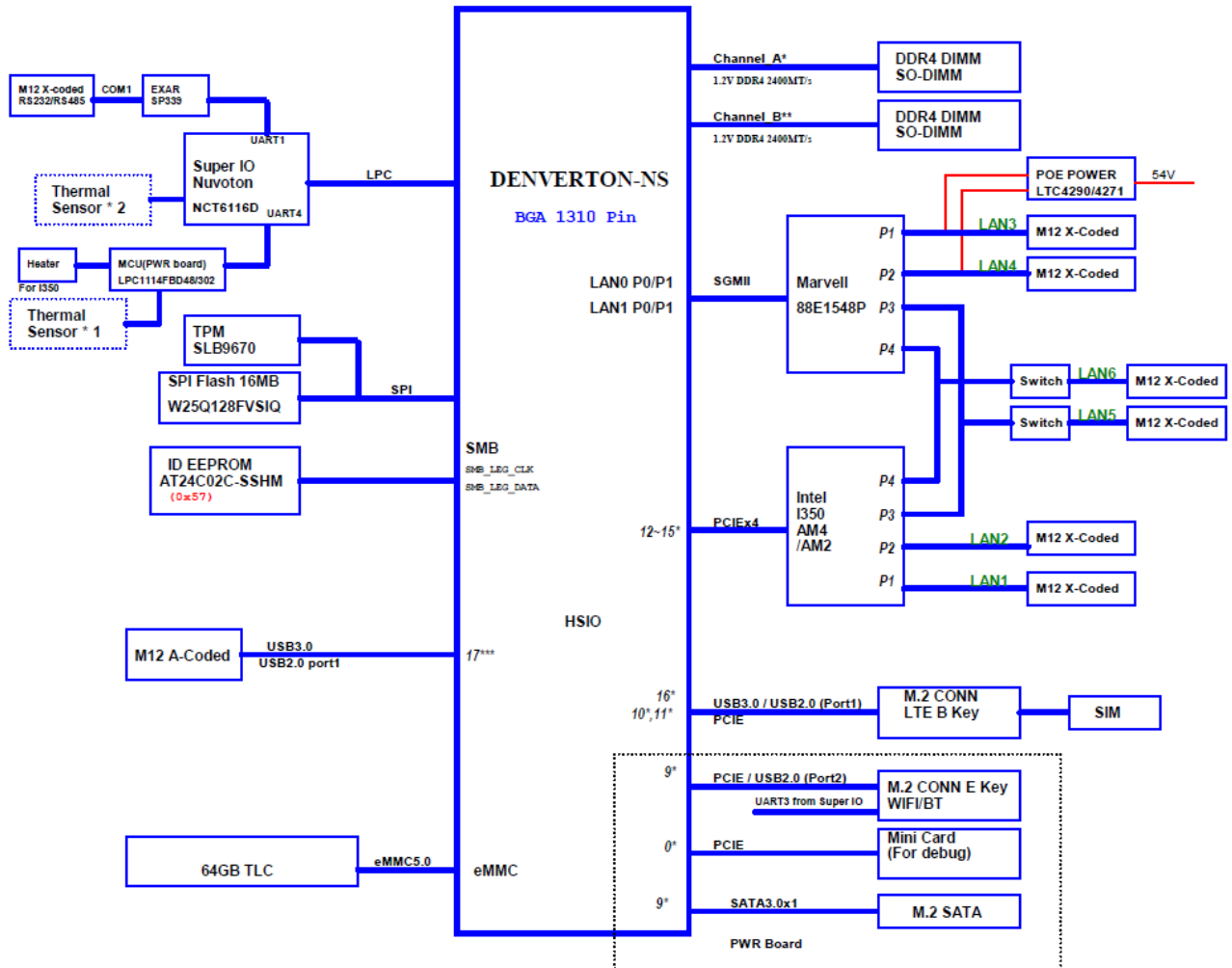


No.	Description	
R1	5G Antennas	4x SMA connector for 5G module
R2	Wi-Fi Antennas	2x SMA connector for Wi-Fi module

# CHAPTER 2: MOTHERBOARD INFORMATION

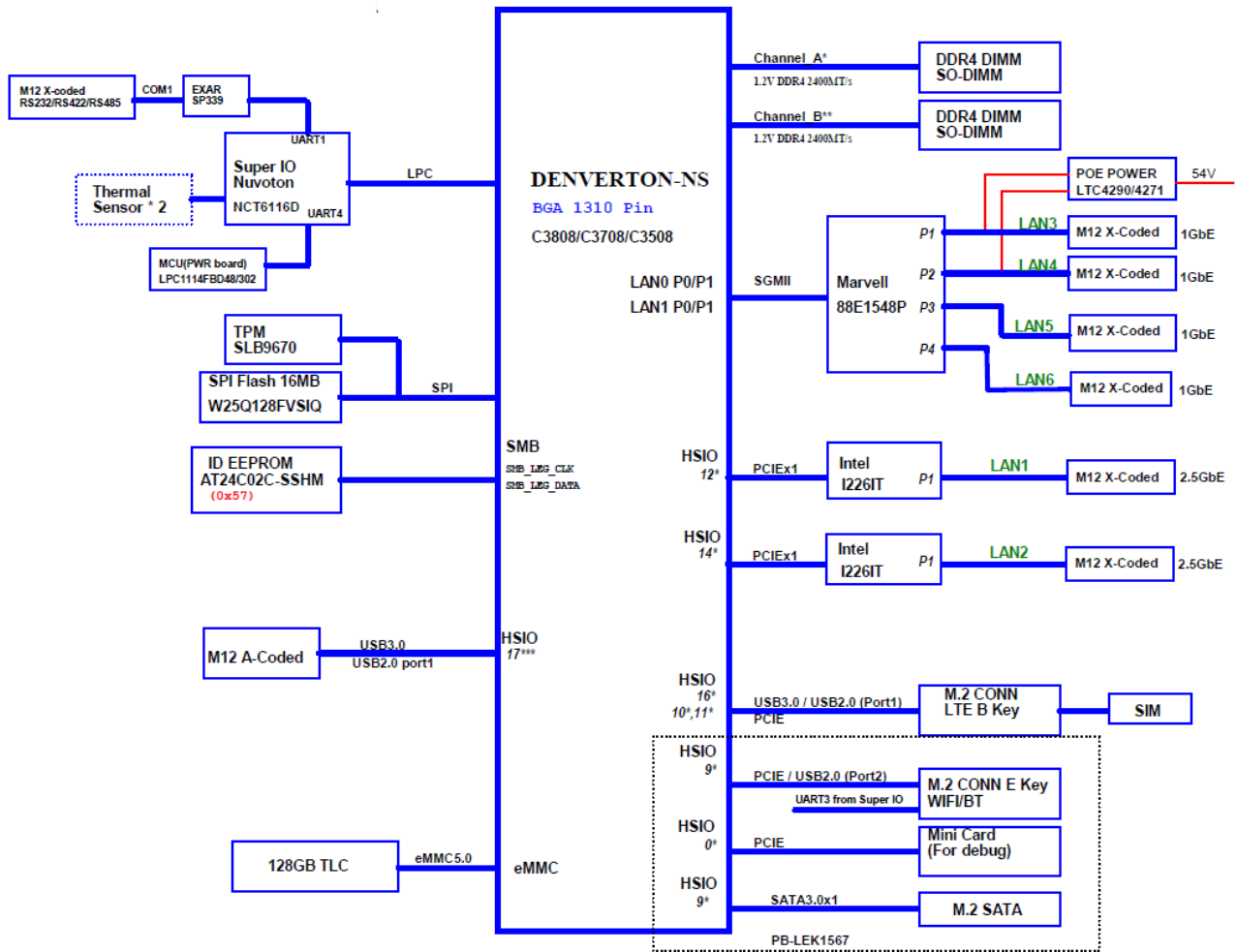
## Block Diagram (SKU C/D/E/F)

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.



## Block Diagram (SKU G/H/I/J/K/L)

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.

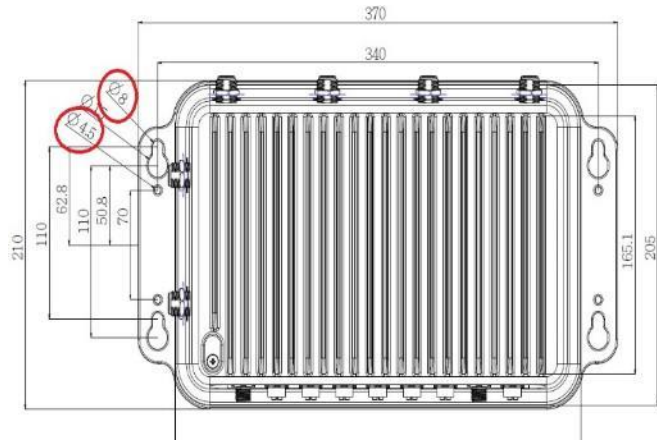




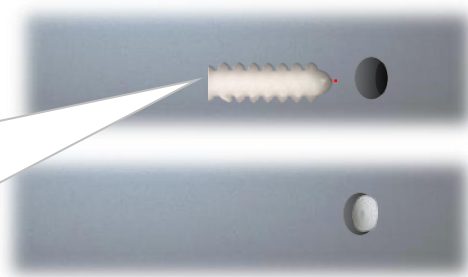
## CHAPTER 3: WALL MOUNTING

The system can be mounted on a flat surfaced wall. Please take the following into considerations when mounting the system onto the wall. Please note anchoring wall plugs and screws are not included in the package content, and the recommended screw sizes are as below.

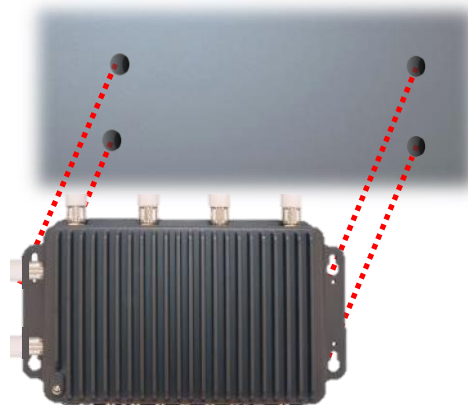
1. On the wall, measure the exact place where you want to hang the system, and drill four holes that match the four mounting holes on both brackets.



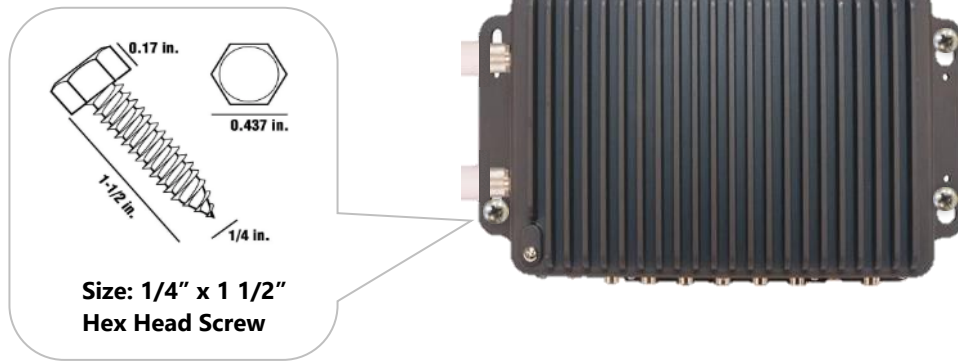
2. Insert **four** (4) anchoring wall plugs into the holes.



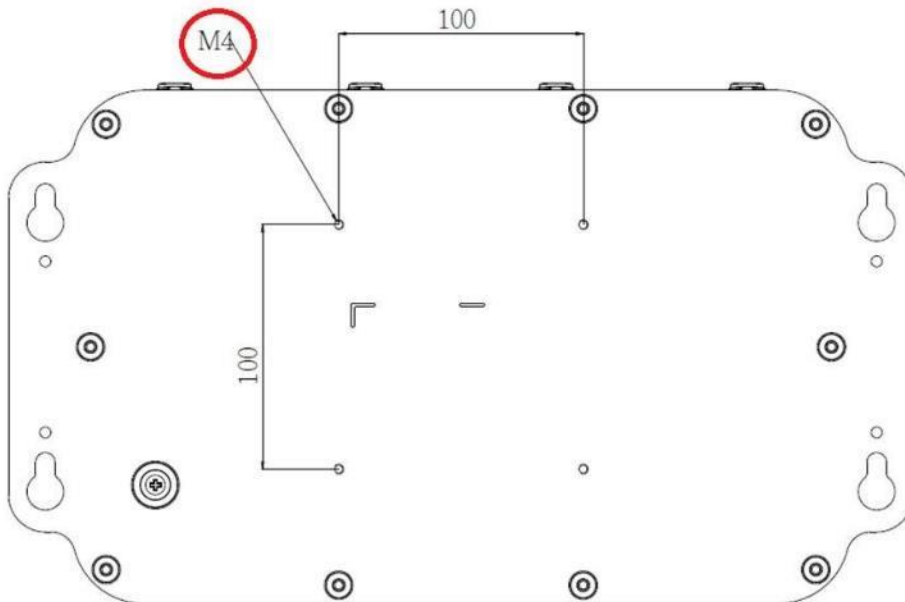
3. Align the four mounting holes on the system's brackets with the four anchoring wall plugs you just installed on the wall.



4. Drive **four** (4) hex head lag screws into the anchoring wall plugs to secure the system.



## VESA Mount



## CHAPTER 4: BIOS SETUP

### Enter BIOS Setup

The system has AMI BIOS built-in, with a SETUP utility that allows users to configure required settings or to activate certain system features. Pressing the <Tab> or <Del> key immediately allows you to enter the Setup utility.

Control Keys	Description
→←	select a setup screen, for instance, [Main], [Advanced], [IntelRCSetup], [Security], [Boot], and [Save & Exit]
↑↓	select an item/option on a setup screen
<Enter>	select an item/option or enter a sub-menu
+/-	to adjust values for the selected setup item/option
F1	to display General Help screen
F2	to retrieve previous values, such as the parameters configured the last time you had entered BIOS.
F3	to load optimized default values
F4	to save configurations and exit BIOS
<Esc>	exit the current screen

## Main Page

Setup main page contains BIOS information and project version information.

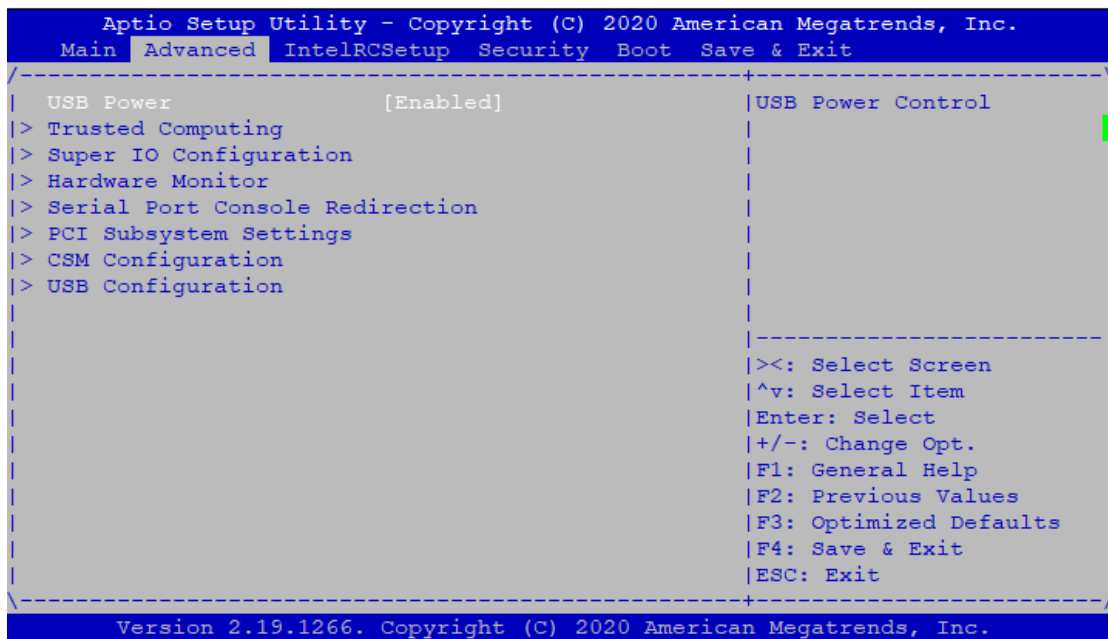
```

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
Main  Advanced  IntelRCSetup  Security  Boot  Save & Exit
-----
| BIOS Information                                     | Set the Date. Use Tab
| BIOS Vendor           American Megatrends          | to switch between Date
| Core Version          5.13   0.45 x64              | elements.
| Compliancy            UEFI 2.6; PI 1.4             | Default Ranges:
| Project Version       FNCR1567A00006T003          | Year: 2005-2099
| Build Date and Time   10/16/2020 11:25:03          | Months: 1-12
| Access Level          Administrator                | Days: dependent on month
|
| System Date          [Sat 10/11/2008]              |
| System Time          [15:40:10]                    |
|
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
    
```

Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use <Tab> to switch between Date elements. Default Range of Year: 2005-2099 Default Range of Month: 1-12 Days: dependent on Month.
System Time	To set the Time, use <Tab> to switch between Time elements.

## Advanced Page

Select the **Advanced** menu item from the BIOS setup screen to enter the “Advanced” setup screen. Users can select any of the items in the left frame of the screen.



Feature	Options	Description
USB Power	Enabled Disabled	Enables or disables USB port power.

## Trusted Computing

```

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
  Advanced
-----+-----
TPM20 Device Found          ^| Enables or Disables
Vendor: IFX                 *| BIOS support for
Firmware Version: 13.11    *| security device. O.S.
                            *| will not show Security
                            *| Device. TCG EFI
Security Device Support    *| protocol and INT1A
                            *| interface will not be
Active PCR banks           SHA-1,SHA256          *| available.
Available PCR banks       SHA-1,SHA256          *|
                            *| -----
SHA-1 PCR Bank            [Enabled]             *| ><: Select Screen
SHA256 PCR Bank          [Enabled]             *| ^v: Select Item
                            *| Enter: Select
Pending operation         [None]                +| +/-: Change Opt.
Platform Hierarchy       [Enabled]             +| F1: General Help
Storage Hierarchy        [Enabled]             +| F2: Previous Values
Endorsement Hierarchy    [Enabled]             +| F3: Optimized Defaults
                            v| F4: Save & Exit
                            |ESC: Exit
-----+-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
  
```

```

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
  Advanced
-----+-----
Active PCR banks           SHA-1,SHA256          ^| Select to Tell O.S.
Available PCR banks       SHA-1,SHA256          +| to support PPI Spec
                            +| Version 1.2 or 1.3.
SHA-1 PCR Bank            [Enabled]             +| Note some HCK tests
SHA256 PCR Bank          [Enabled]             +| might not support 1.3.
                            *|
Pending operation         [None]                *|
Platform Hierarchy       [Enabled]             *|
Storage Hierarchy        [Enabled]             *|
Endorsement Hierarchy    [Enabled]             *| -----
Hierarchy                 *| ><: Select Screen
TPM2.0 UEFI Spec         [TCG_2]              *| ^v: Select Item
Version                   *| Enter: Select
Physical Presence        [1.3]                 *| +/-: Change Opt.
Spec Version              *| F1: General Help
TPM 20                    [TIS]                 *| F2: Previous Values
InterfaceType             v| F3: Optimized Defaults
                            |ESC: Exit
-----+-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
  
```

Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.
Pending operation	None TPM Clear	Schedules an Operation for the Security Device. <b>NOTE:</b> Your computer will reboot during restart in order to change State of Security Device.

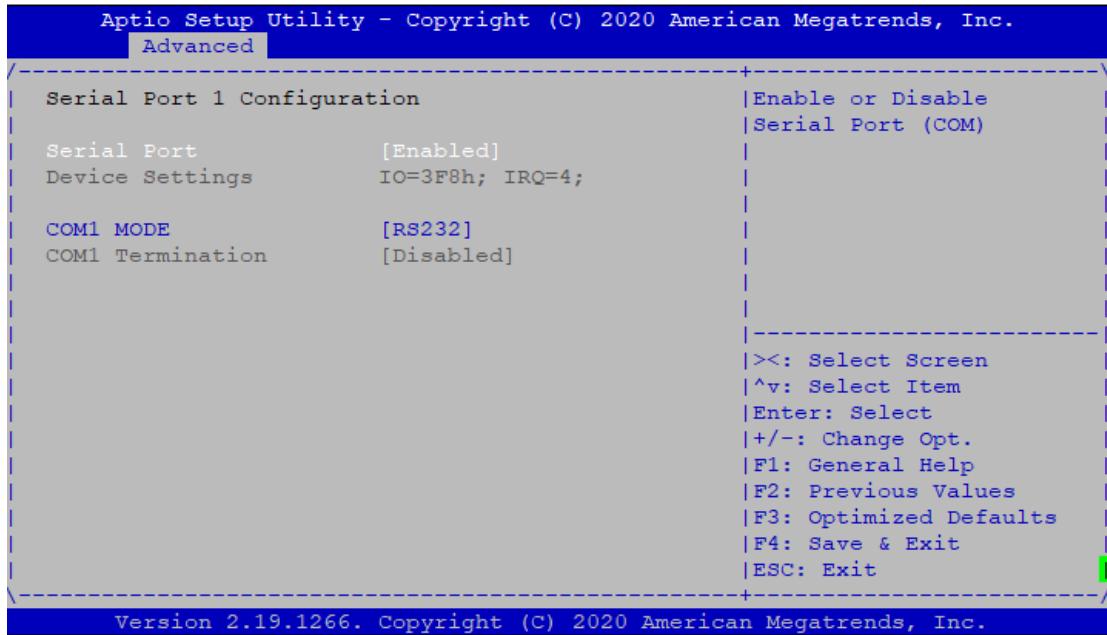
Platform Hierarchy	Enabled Disabled	Enables or disables Platform Hierarchy.
Storage Hierarchy	Enabled Disabled	Enables or disables Storage Hierarchy.
Endorsement Hierarchy	Enabled Disabled	Enables or disables Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	TCG_1_2 TCG_2	Select the TCG2 Spec Version, <b>TCG_1_2</b> : Supports the Compatible mode for Win8/Win10 <b>TCG_2</b> : Supports new TCG2 protocol and event format for Win10 or later.
Physical Presence Spec Version	1.2 1.3	Select to tell OS to support PPI Spec Version 1.2 or 1.3. <b>NOTE</b> : Some HCK tests might not support 1.3.
TPM 20 Interface Type	TIS	Select <b>TPM 20 Device</b> for the Communication Interface.

## Super IO Configuration

```
Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
  Advanced
-----+-----
| Super IO Configuration                               |Set Parameters of
|                                                       |Serial Port 1 (COMA)
|> Serial Port 1 Configuration                         |
|> Serial Port 2 Configuration                         |
|                                                       |
|                                                       |-----+-----
|                                                       |><: Select Screen
|                                                       |^v: Select Item
|                                                       |Enter: Select
|                                                       |+/-: Change Opt.
|                                                       |F1: General Help
|                                                       |F2: Previous Values
|                                                       |F3: Optimized Defaults
|                                                       |F4: Save & Exit
|                                                       |ESC: Exit
|                                                       |
|-----+-----
Version 2.19.1266. Copyright (C) 2021 American Megatrends, Inc.
```



## Serial port 1 Configuration



Feature	Options	Description
Serial Port	Enabled Disabled	Enables or disables Serial Port 1.
Device Settings	NA	IO=3F8h; IRQ = 4
COM1 MODE	RS232 RS485 RS422	Select COM mode as RS232/485/422.

## Serial port 2 Configuration

```

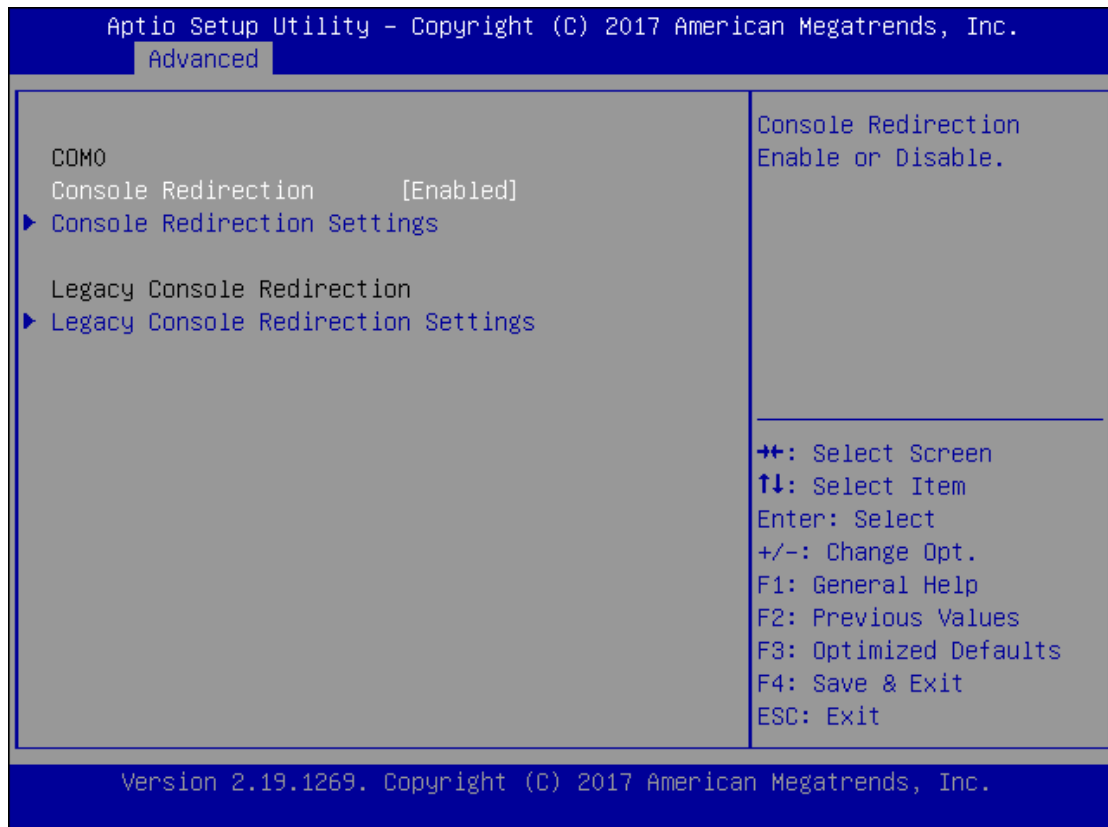
Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
  Advanced
-----
Serial Port 2 Configuration | Enable or Disable
                             | Serial Port (COM)
Serial Port                 | [Enabled]
Device Settings             | IO=2F8h; IRQ=3;
                             |
                             |-----
                             | ><: Select Screen
                             | ^v: Select Item
                             | Enter: Select
                             | +/-: Change Opt.
                             | F1: General Help
                             | F2: Previous Values
                             | F3: Optimized Defaults
                             | F4: Save & Exit
                             | ESC: Exit
-----
Version 2.19.1266. Copyright (C) 2021 American Megatrends, Inc.
    
```

Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 2.
Device Settings	NA	IO=2F8h; IRQ = 3

## H/W Monitor

```
Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
  Advanced
-----
Pc Health Status
SYS1 Temp      : +29 C
SYS2 Temp      : +23 C
12V            : +11.904 V
VSB5V          : +4.979 V
VDIMM          : +1.200 V
VSB3.3V        : +3.360 V
CPU VCORE      : +0.872 V
3.3V           : +3.360 V
VBAT           : +3.120 V
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
```

## Serial Port Console Redirection



Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection

## Console Redirection Settings

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.

Advanced

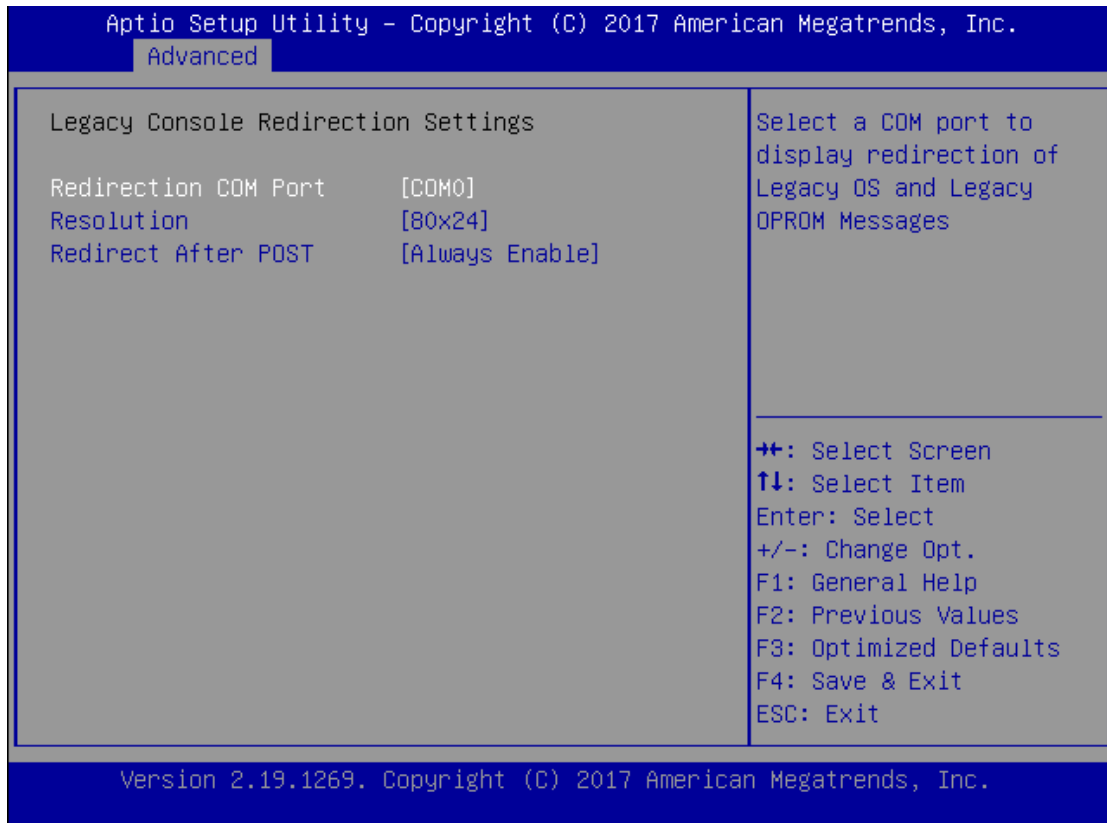
Console Redirection Settings		Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode
Terminal Type	[VT100+]	
Bits per second	[115200]	
Data Bits	[8]	
Parity	[None]	
Stop Bits	[1]	
Flow Control	[None]	
VT-UTF8 Combo Key Support	[Enabled]	
Recorder Mode	[Disabled]	
Putty KeyPad	[VT100]	

Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.

Feature	Options	Description
Terminal Type	VT100 <b style="color: red;">VT100+</b> VT-UTF8 ANSI	<b>VT100:</b> ASCII char set <b>VT100+:</b> Extends VT100 to support color, function keys, etc. <b>VT-UTF8:</b> Uses UTF8 encoding to map Unicode chars onto 1 or more bytes <b>ANSI:</b> Extended ASCII char set
Bits per second	9600 19200 38400 57600 <b style="color: red;">115200</b>	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 <b style="color: red;">8</b>	Data Bits
Parity	<b style="color: red;">None</b> Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	<b style="color: red;">1</b> 2	Indicates the end of a serial data packet.
Flow Control	<b style="color: red;">None</b> Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo	Disabled	Enables VT-UTF8 Combination Key Support for

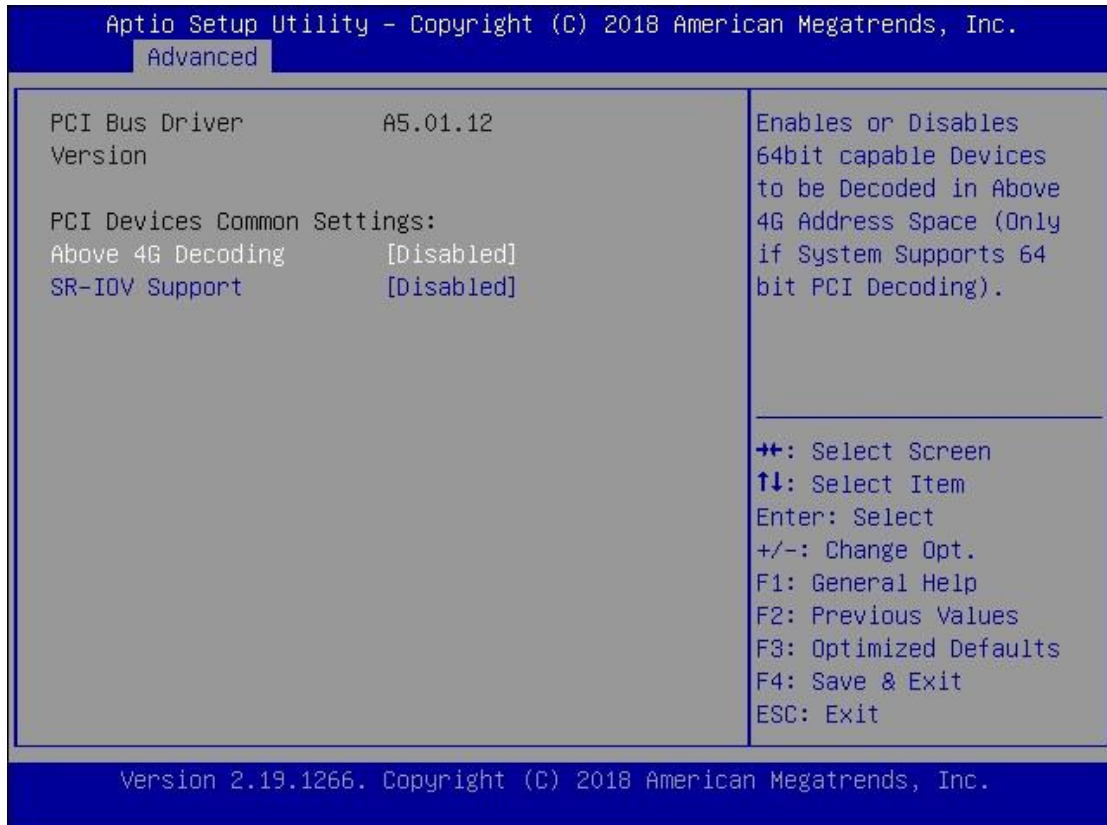
Key Support	Enabled	ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects FunctionKey and KeyPad on Putty.

## Console Redirection Settings



Feature	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages.
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Redirection After BIOS POST	Always Enable BootLoader	When <b>Bootloader</b> is selected, Legacy Console Redirection is disabled before booting to legacy OS. When <b>Always Enable</b> is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to <b>Always Enable</b> .

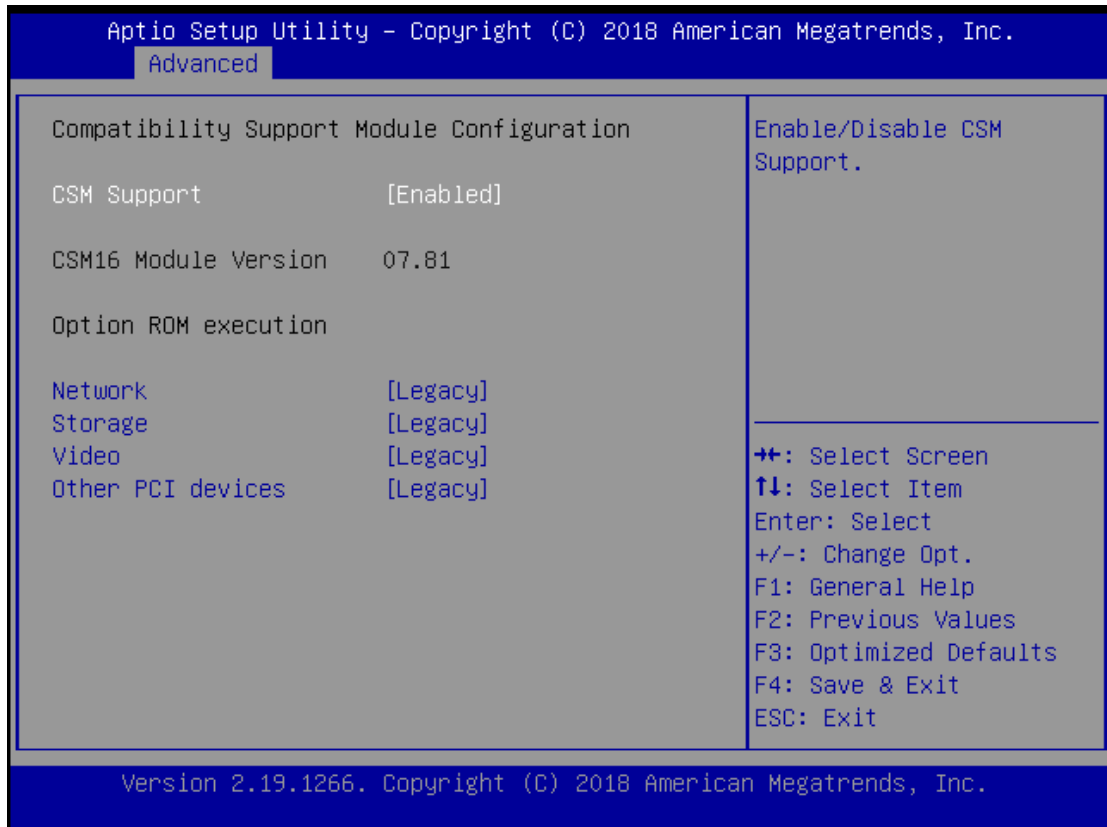
## PCI Subsystem Settings



Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Enable or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System supports 64 bit PCI decoding).
SR-IOV Support	Disabled Enabled	If the system has SR-IOV capable PCIe Devices, this option enables or disables Single Root IO Virtualization Support.

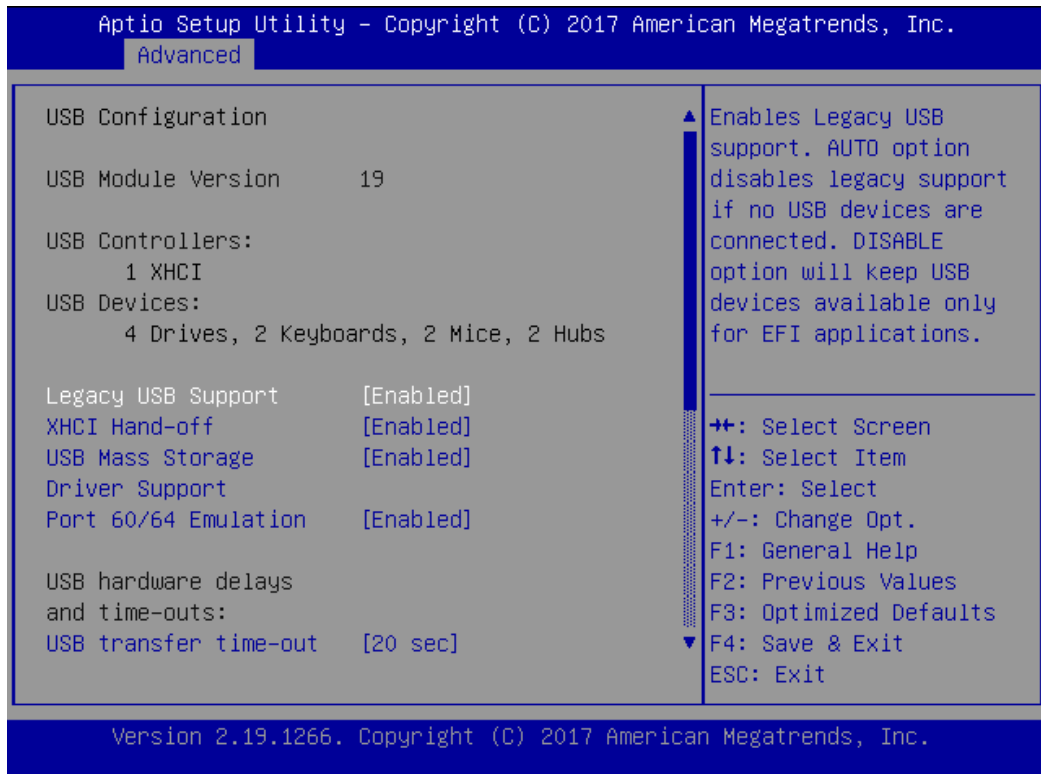


## CSM Configuration



Feature	Options	Description
CSM Support	Disabled <b>Enabled</b>	Enables or disables CSM Support
Network	Do Not Launch UEFI <b>Legacy</b>	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI <b>Legacy</b>	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI <b>Legacy</b>	Controls the execution of UEFI and Legacy Video OpROM
Other PCI device	Do Not Launch UEFI <b>Legacy</b>	Determines OpROM execution policy for devices other than Network, Storage, or Video

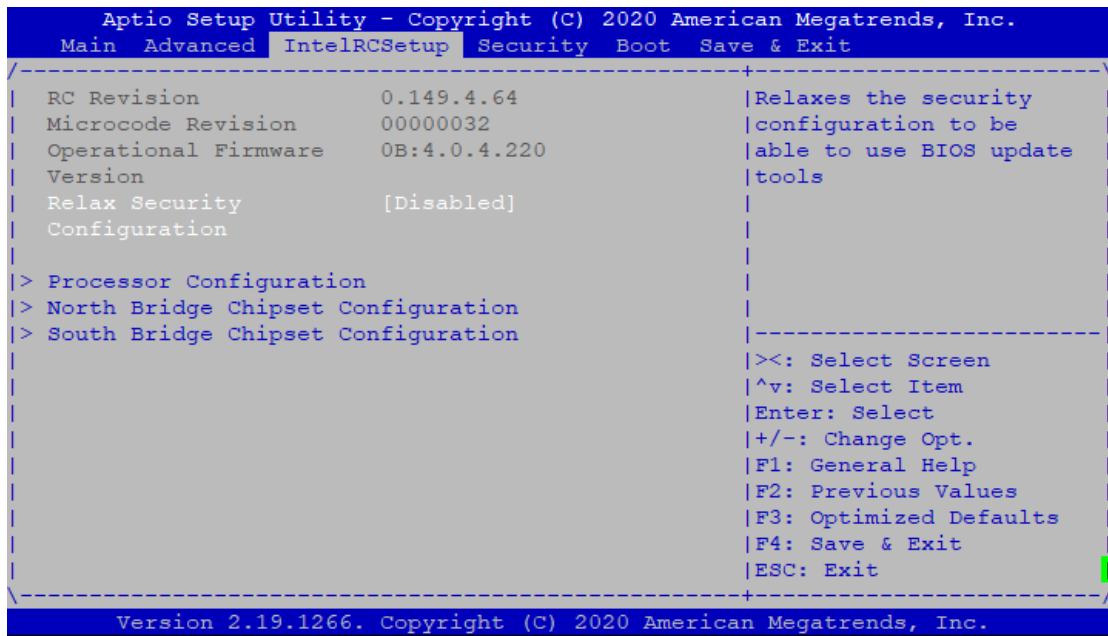
## USB Configuration



Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. <b>Auto</b> option disables legacy support if no USB devices are connected; <b>Disabled</b> option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled Disabled	This is a workaround for Oses without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	1 sec 5 sec 10 sec 20 sec	USB mass storage device Start Unit command time-out
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. <b>Auto</b> uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

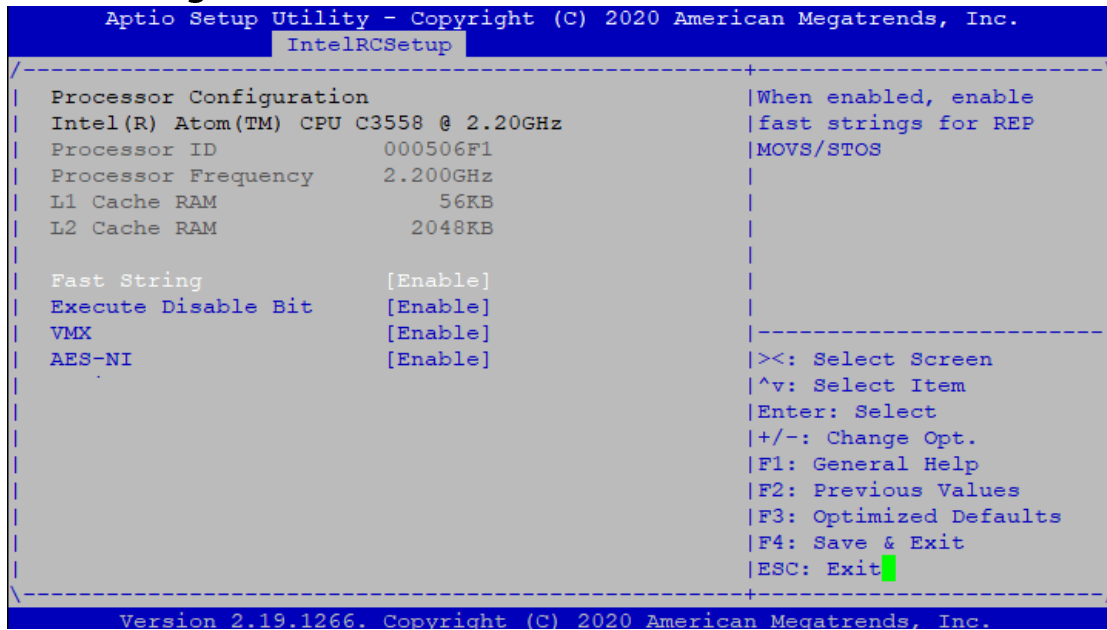
## IntelRCSetup

Select the IntelRCSetup menu item from the BIOS setup screen to enter the Platform Setup screen. Users can select any of the items in the left frame of the screen.



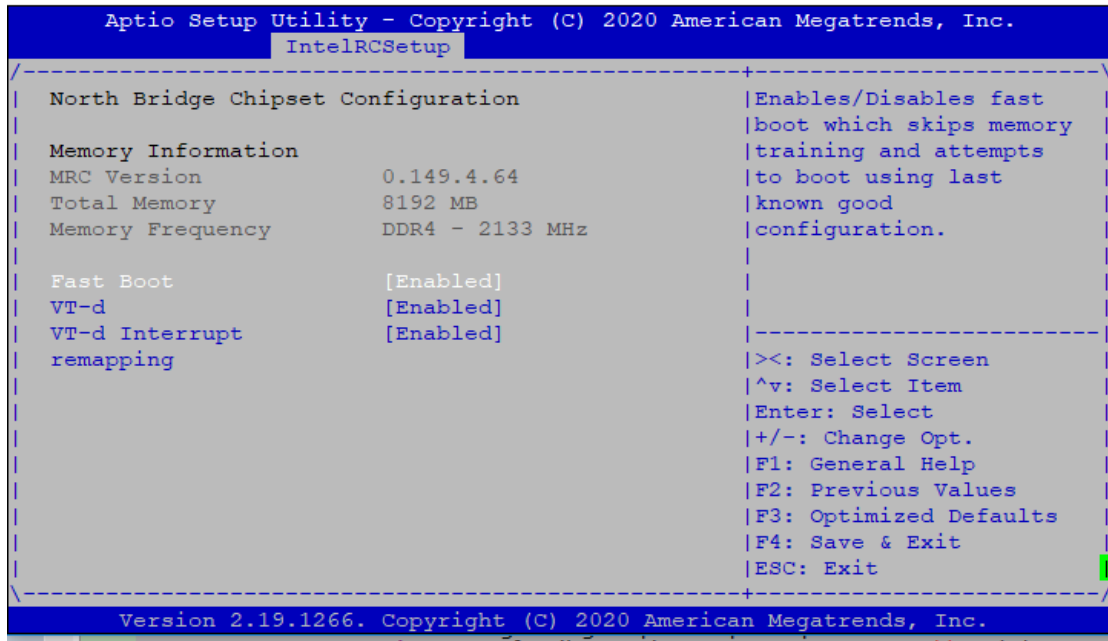
Feature	Options	Description
Relax Security Configuration	Disable Enabled	Relaxes the security configuration to be able to use BIOS update tool.

## Processor Configuration



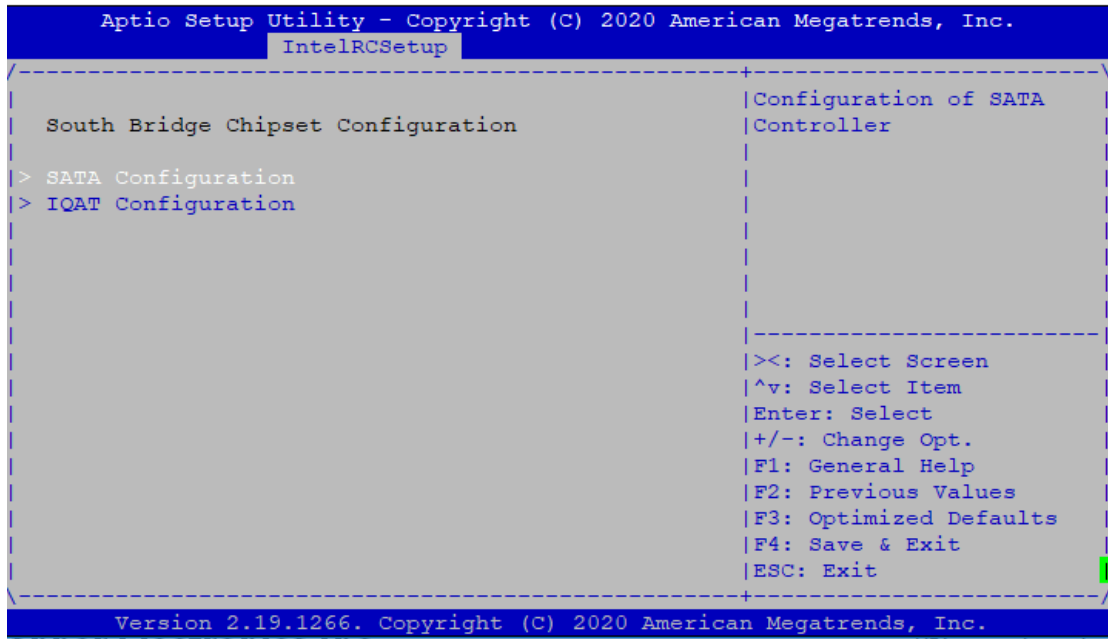
Feature	Options	Description
Fast String	Disable Enable	When enabled, enable fast strings for REP MOVSB/STOS.
Execute Disable Bit	Disable Enable	When disabled, forces the XD feature flag to always return 0.
VMS	Disable Enable	Enables the Vanderpool Technology, takes effect after reboot.
AES-NI	Disable Enable	Enable/disable AES-NI support.

## North Bridge Chipset Configuration



Feature	Options	Description
Fast Boot	Disabled Enabled	Enables/Disables fast boot which skips memory training and attempts to boot using fast known good configuration.
VT-d	Disable Enable	Option to enable /Disable VT-d.
VT-d Interrupt remapping	Disable Enable	Option to enable /Disable VT-d Interrupt remapping.

## South Bridge Chipset Configuration



## SATA Configuration

```

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
  IntelRCSetup
-----
| Enable controller      [Enabled]      | Enables/Disables SATA
| > SATA Port          | Controller if supported
|                       | by current cpu SKU.
|
|
|
|
|-----|
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
|
|-----|
Version 2.19.1266. Copyright (C) 2021 American Megatrends, Inc.
    
```

Feature	Options	Description
Enable controller	Enabled Disabled	Enables/Disables SATA Controller if supported by current CPU sku

## SATA Port Configuration

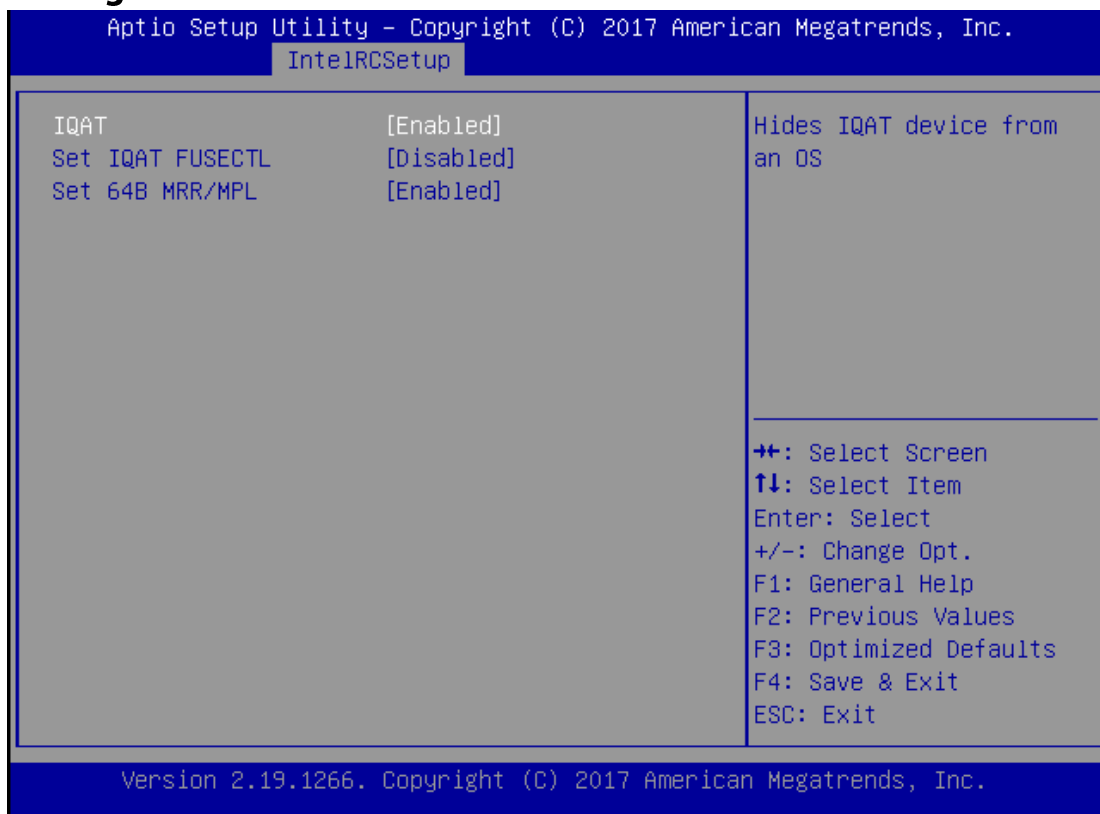
```

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
IntelRCSetup
-----
SATA M.2
Device Information: [Not Installed]
Device Size: [Unknown]
Enable/disable port [Enabled]
-----
| Enables/Disables SATA
| Controller port if
| supported by current
| cpu SKU.
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
    
```

Feature	Options	Description
Enable/disable port	Enabled Disabled	Enables/Disables SATA Controller port.



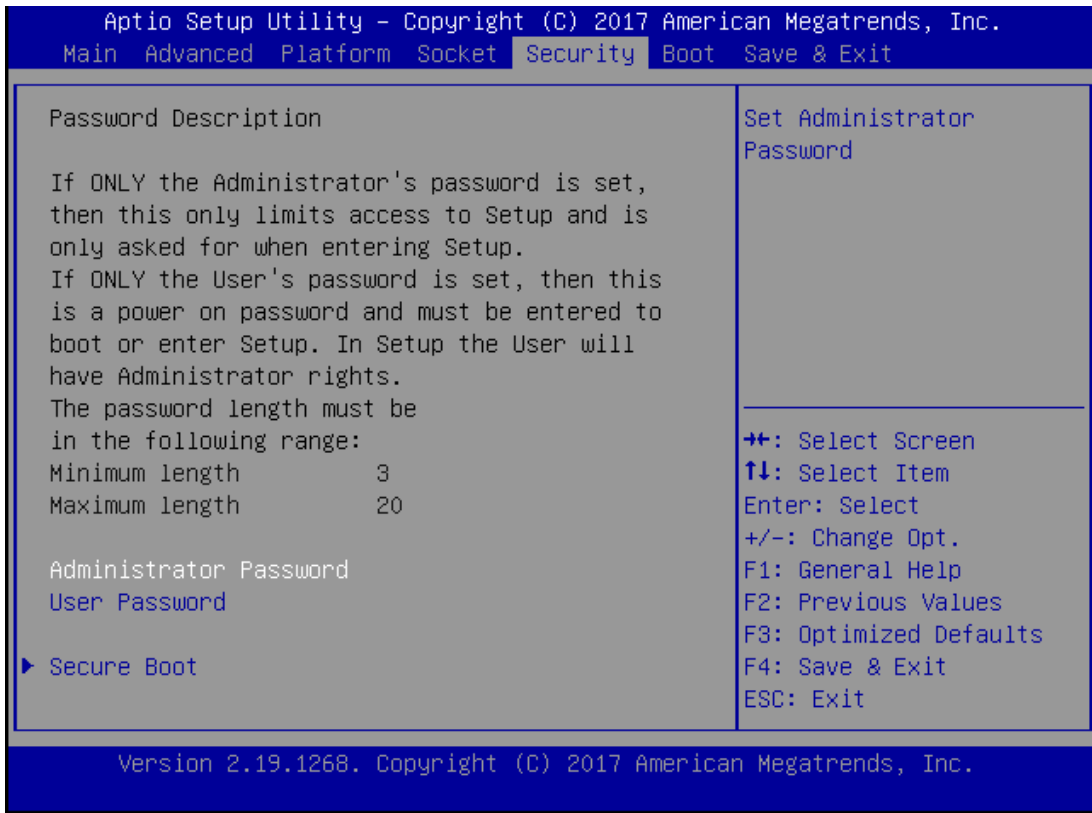
## IQAT Configuration



Feature	Options	Description
IQAT	Enabled Disabled	Hides IQAT device from and OS..
Set IQAT FUSECTL	Enabled Disabled	Enable/Disable the setting of IQAT FUSECTL Register
Set 64B MRR/MPL	Enabled Disabled	Enable the setting of 64B MRR/MPL in IQAT DevCtl Register

## Security

Select the Security menu item from the BIOS setup screen to enter the Security Setup screen. Users can select any of the items in the left frame of the screen.



Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

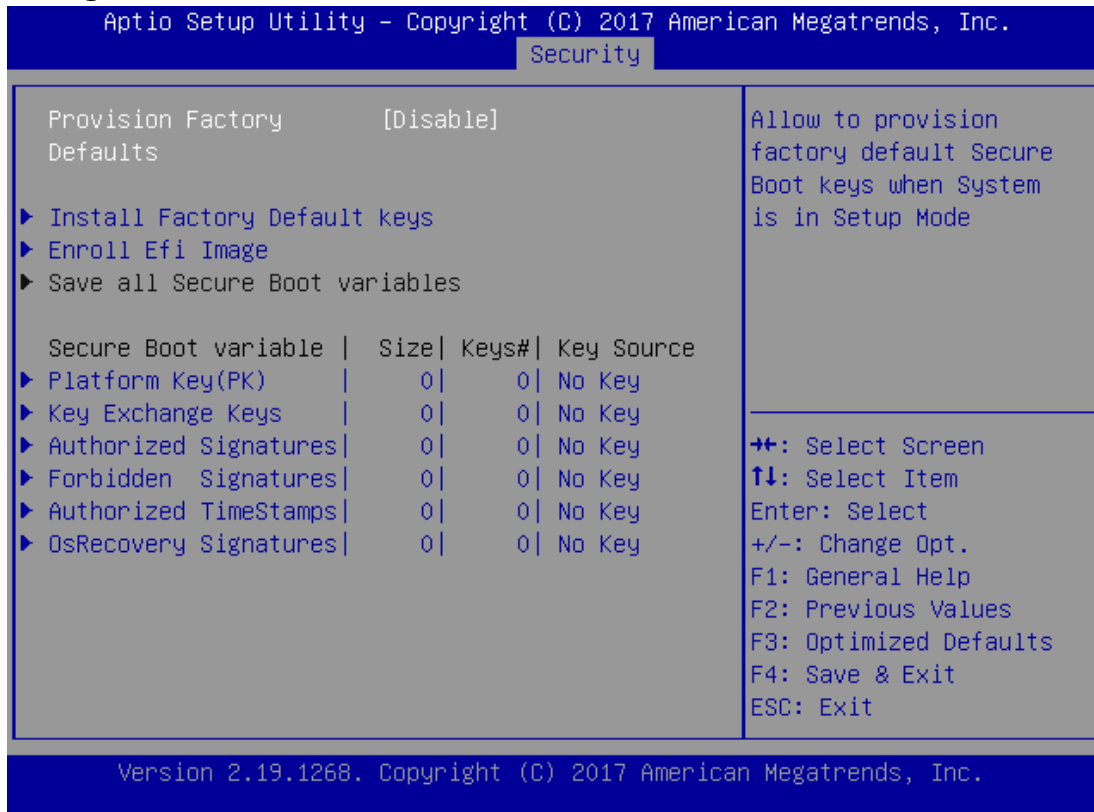
## Secure Boot

```

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
Security
-----+-----
Platform Mode          Setup          |Secure Boot activated
Secure Boot           Not Active    |when
Vendor Keys           Active        | Platform Key(PK) is
                    |enrolled,
Enable Secure Boot    [Disabled]   | System mode is
                    |User/Deployed,
Secure Boot Mode      [Custom]     | and CSM function is
> Reset to Setup Mode |disabled
> Restore Factory Keys |
> Key Management      |
                    |><: Select Screen
                    |^v: Select Item
                    |Enter: Select
                    |+/-: Change Opt.
                    |F1: General Help
                    |F2: Previous Values
                    |F3: Optimized Defaults
                    |F4: Save & Exit
                    |ESC: Exit
-----+-----
Version 2.19.1266. Copyright (C) 2020 American Megatrends, Inc.
    
```

Feature	Options	Description
Secure Boot Enable	Disabled Enabled	Secure Boot is activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.
Secure Boot Mode	Standard Custom	Customizable Secure Boot mode: In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

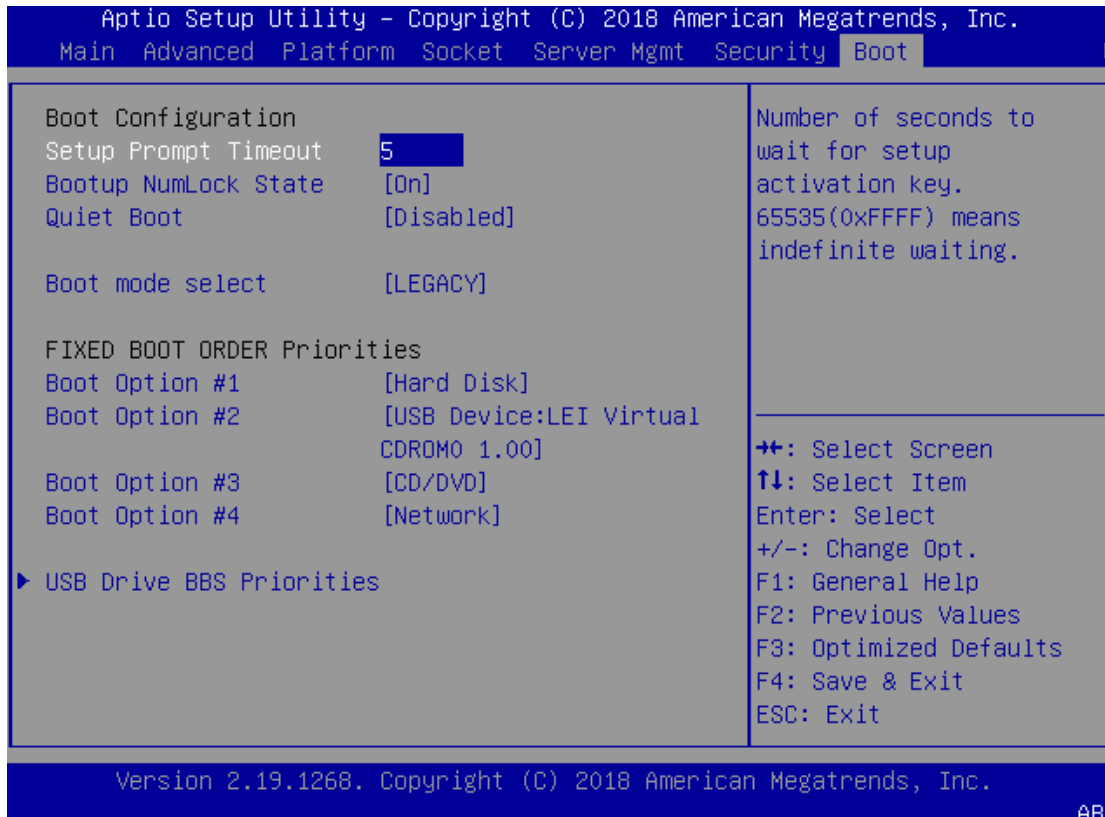
## Key Management



Feature	Options	Description
Factory Key Provision	Disabled Enabled	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory keys	None	Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot keys.
Enroll Efi Image	None	Allows the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db)

## Boot Menu

Select the Boot menu item from the BIOS setup screen to enter the Boot Setup screen. Users can select any of the items in the left frame of the screen.

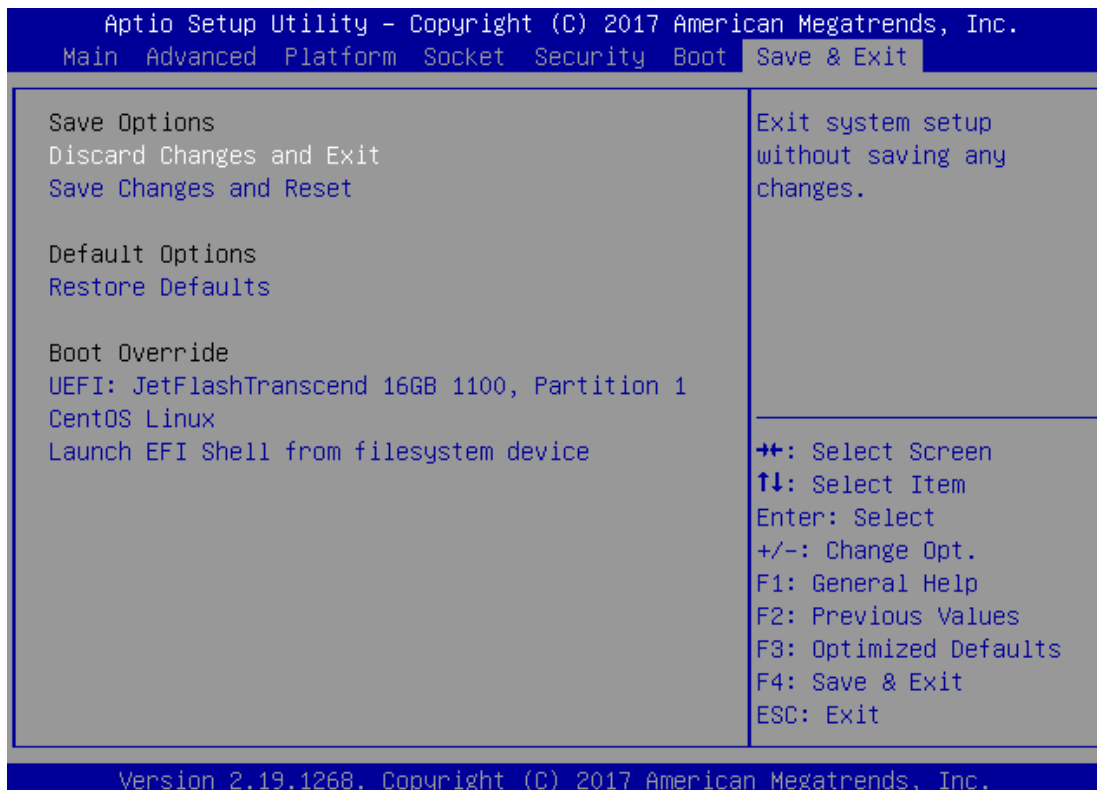


Feature	Options	Description
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Boot mode select	LEGACY UEFI DUAL	Select boot mode for LEGACY or UEFI.

- Choose boot priority from boot option group.
- Choose specifies boot device priority sequence from available Group device.

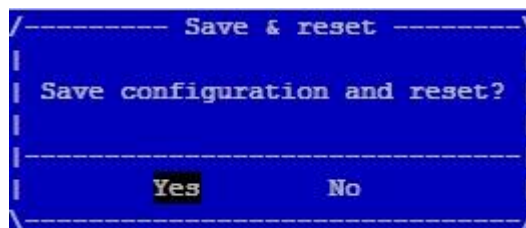
## Save and Exit Menu

Select the Save and Exit menu item from the BIOS setup screen to enter the "Save and Exit" Setup screen. Users can select any of the items in the left frame of the screen.



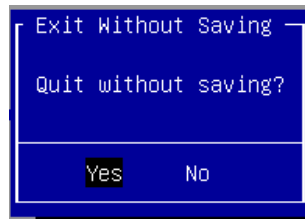
### ■ Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and exit from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the "Save Changes and Exit" option is selected. Select "Yes" to Save Changes and Exit Setup.



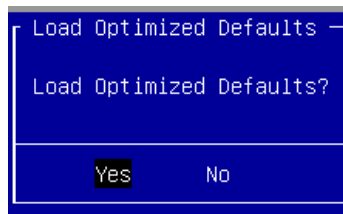
### ■ Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. The following window will appear after the “**Discard Changes and Exit**” option is selected. Select “**Yes**” to Discard changes and Exit Setup.



### ■ Restore Defaults

Restore default values for all setup options. Select “**Yes**” to load Optimized defaults.



Note: The items under Boot Override were not same with image. It should depend on devices connect on system.

# APPENDIX A: TERMS AND CONDITIONS

## Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for the repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:
  - ▶ Improper opening or closure of the system
  - ▶ Improper installation of the M12 connectors
  - ▶ Submersion of the system in water for 30 minutes or more
  - ▶ Submersion of the system in water deeper than 1 m
  - ▶ Improper installation or inadequate maintenance
  - ▶ Unauthorized modification, misuse, or reversed engineering of the product
  - ▶ Use of non-authorized/non-standard, defective or incompatible parts
  - ▶ Operation outside of the environmental specifications for the product.
  - ▶ Adverse external conditions such as power surges and dips, thunderstorm activity, acts of God, acts of terrorism, damage caused by vermin or any other act or circumstances beyond Lanner's control.

## RMA Service

### Requesting an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.



**Note:** Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.



# RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

<b>RMA No:</b>	Reasons to Return: <input type="checkbox"/> Repair(Please include failure details) <input type="checkbox"/> Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____	
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____	
<input type="checkbox"/> Others: _____	

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

**\*Problem Code:**

- |                        |                              |                    |                          |
|------------------------|------------------------------|--------------------|--------------------------|
| 01: D.O.A.             | 07: BIOS Problem             | 13: SCSI           | 19: DIO                  |
| 02: Second Time R.M.A. | 08: Keyboard Controller Fail | 14: LPT Port       | 20: Buzzer               |
| 03: CMOS Data Lost     | 09: Cache RMA Problem        | 15: PS2            | 21: Shut Down            |
| 04: FDC Fail           | 10: Memory Socket Bad        | 16: LAN            | 22: Panel Fail           |
| 05: HDC Fail           | 11: Hang Up Software         | 17: COM Port       | 23: CRT Fail             |
| 06: Bad Slot           | 12: Out Look Damage          | 18: Watchdog Timer | 24: Others (Pls specify) |

**Request Party**

**Confirmed By Supplier**

\_\_\_\_\_  
Authorized Signature / Date

\_\_\_\_\_  
Authorized Signature / Date