Lanner

Network Computing

Hardware Platforms for Network Computing

FX-3810
User Manual

Version: 1.1

Date of Release: 2019-03-22

Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:

Note: This mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.

Warning: This icon indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

The listed websites are links to the on-line product information and technical support.

Resources	URL
Lanner	http://www.lannerinc.com
Product Resource	http://www.lannerinc.com/download-center
RMA	http://eRMA.lannerinc.com

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Compliances and Certification

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense. SS

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.
► The machine can only be used in a restricted access location, such as labs or computer facilities with the proper authorization.

Lithium Battery Caution:

▶ Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

▶ Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.

▶ Do not carry the handle of power supplies when moving to another place.

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).

Mounting Installation Precaution

Environment:

▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.

▶ If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

▶ Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of air flow required for safe operation of the equipment is not compromised.

▶ To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.

▶ Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

▶ Reliable earthing should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Installation & Operation:

► The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.

► Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.

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.

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.

► La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

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).

Consignes de sécurité électrique

► Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.

► Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.

► Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.

► Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm2 ou 10 AWG.

> This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.

Procédure de mise à la terre pour source d'alimentation CC

► Desserrez la vis du terminal de mise à la terre.

► Branchez le câble de mise à la terre à la terre.

► L'appareil de protection pour la source d'alimentation CC doit fournir 30 A de courant.

► Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation CC.
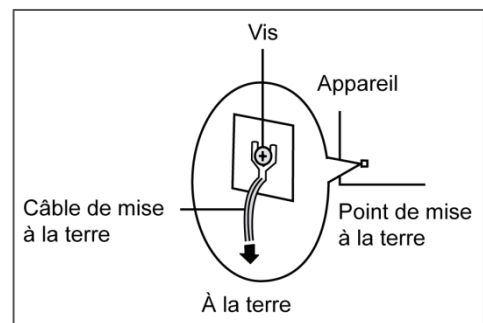
CAUTION: TO DISCONNECT POWER, REMOVE ALL POWER CORDS FROM UNIT.
注意：要断开电源，请将所有电源线从本机上拔下。
WARNUNG: Wenn Sie das Gerät zwecks Wartungsarbeiten vom Netz trennen müssen, müssen Sie beide Netzteile abnehmen.
ATTENTION: DÉBRANCHER LES TOUT CORDONS D'ALIMENTATION POUR DÉCONNECTER L'UNITÉ DU SECTEUR.

Battery Precautions

- Lithium Battery Caution: There is danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type. Dispose batteries according to manufacturer's instructions.
- 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 surrounding 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.

Revision History

Version	Date	Descriptions
1.0	2018/08/30	Official Release
1.1	2019/03/22	Updated BIOS Setup

Table of Contents

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CHAPTER 1: PRODUCT OVERVIEW

The FX-3810 is a high-performance and Open Compute appliance for today's telecommunication and data center deployment scenarios.

The FX-3810 is powered by dual Intel® Xeon® E5-2600 v3/v4 processors and can be configured with up to 128GB of DDR4 2133/2400 MHz REG DIMM; it comes with 1x GbE RJ45 LAN port, 1x RJ45 IO interface port, 1x OPMA slot and 1x RJ45 console port.

As an Open Compute appliance, the FX-3810's 4x PCI-E*16 FH/HL and 2x PCI-E*8 FH/HL can be leveraged for enabling network capabilities intended for various applications, most notably storage for hybrid or hot/cold data, data crypto/compression, video encoding/transcoding, and network acceleration.

Package Content

Your package contains the following items, if any component is missing or damaged, please contact your dealer immediately for assistance.

▶ 1x FX-3810 Network Appliance

▶ 1x Accessory Pack

▶ 2x Slide Rail

▶ 2x Heat Sink

Power Cable	Screw Packs	Power cable for PCI-e card	Ethernet Cable	Console Cable	Short Ear Brackets

Slide Rail

Heat Sink

Accessory Pack

Heat Sink

Slide Rail
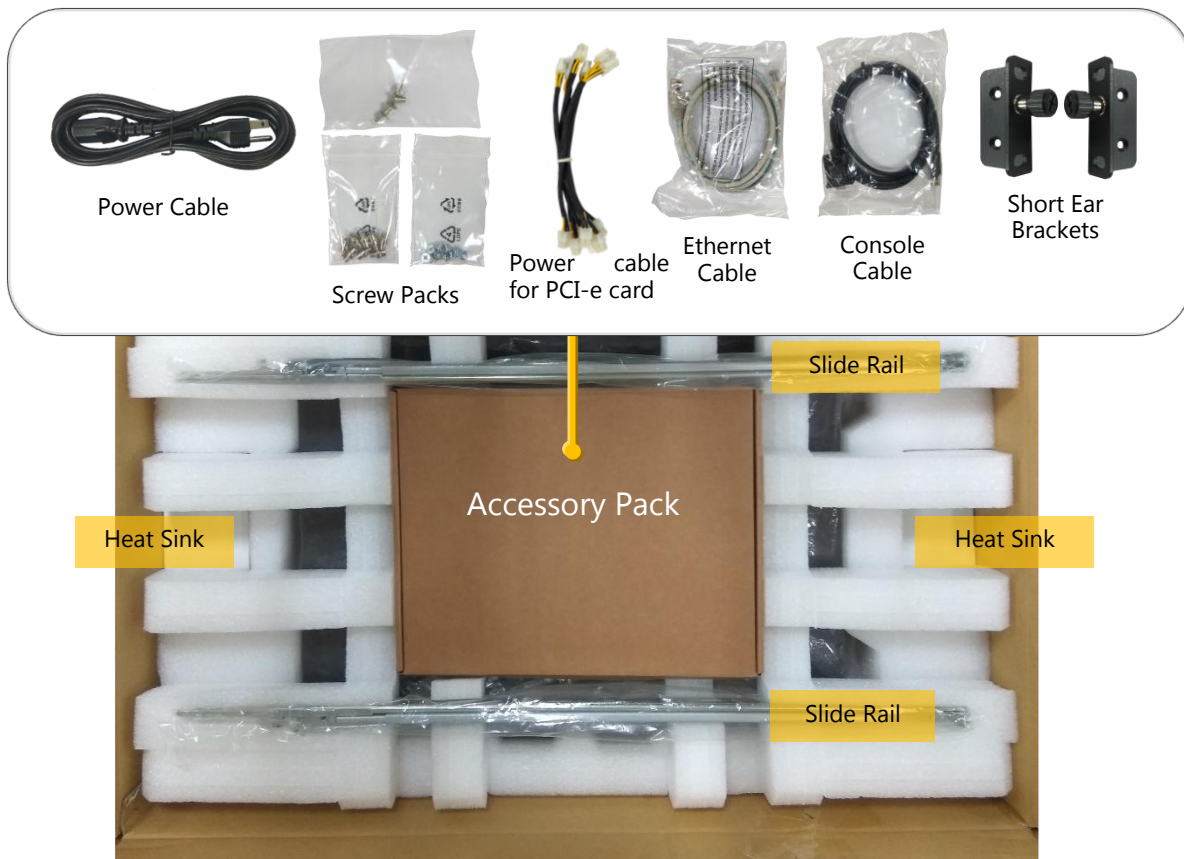
Ordering Information
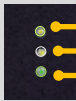
SKU No.	Specification
FX-3810	1x GbE, 4x PCI-E*16 FH/HL, 2x PCI-E*8 FH/HL, 6x NIC Slots, 2x 2.5" HDD/SSD Bays

System Specifications

Form Factor		3U 19" Rackmount
Platform	Processor Options	Intel® Xeon® E5-2600 v3/v4 (Haswell/Broadwell-EP)
	CPU Socket	2x LGA2011-R3
	Chipset	Intel® C612
	Security Acceleration	N/A
BIOS		AMI SPI Flash BIOS
System Memory	Technology	DDR4 2133/2400MHz REG DIMM
	Max. Capacity	512 GB
	Socket	8x 288pin DIMM
Networking	Ethernet Ports	1x GbE RJ45 Intel® 82574L
	Bypass	N/A
	NIC Module Slot	N/A
LOM	IO Interface	1x RJ45
	OPMA slot	Yes
I/O Interface	Reset Button	1
	LED	Power/Status/Storage
	Power Button	1x ATX Power Switch
	Console	1x RJ45
	USB	1x USB 2.0
	LCD Module	128x64 LCM with 7x Keypads
	Display	From OPMA Slot (Optional)
	Power input	AC Power Inlet on PSU
Storage	HDD/SSD Support	2x 2.5" External Bay
	Onboard Slots	1x mSATA
Expansion	PCIe	4x PCI-E*16 FH/HL, 2x PCI-E*8 FH/HL
	mini-PCIe	N/A
Miscellaneous	Watchdog	Yes
	Internal RTC with Li Battery	Yes
	TPM	Yes (Optional)
Cooling	Processor	Passive CPU heatsink
	System	8x Hot-swappable Cooling Fans
Environmental Parameters	Temperature	0 to 40°C Operating -20 to 70°C Non-Operating
	Humidity (RH)	5 to 90% Operating 5 to 95% Non-Operating
System Dimensions	(WxDxH)	438 x 609 x 132 mm
	Weight	35 kg
Package Dimensions	(WxDxH)	936 x 588 x 300 mm
	Weight	37 kg
Power *(PMbus signal)*	Type/Watts	1100W 1+1 ATX Redundant PSUs (As the deviation value is 0.125A, the current value might read zero (0) when its actual value is smaller than 0.125A.)
	Input	AC 100V~240V @47~63 Hz
Approvals and Compliance		RoHS, CE/FCC Class A

Front Panel

No.		Description
F1	PCI Riser Board Slot	PCI-E*16 FH/HL
F2	PCI Riser Board Slot	PCI-E*8 FH/HL
F3	PCI Riser Board Slot	PCI-E*16 FH/HL
F4	LED Indicators (System)	HDD Activity System Status System Power Please refer to Appendix A: LED Indicator Explanations for the description of the LED Indicators.
F5	LCM	With 7 control keys
F6	PCI Riser Board Slot	PCI-E*16 FH/HL
F7	PCI Riser Board Slot	PCI-E*8 FH/HL
F8	PCI Riser Board Slot	PCI-E*16 FH/HL
F9	HDD/SDD Slot	2x 2.5" HDD/SSD Bay
F10	USB Port	1x USB 2.0
F11	LAN Port	1x RJ45 Port
F12	RJ45 Console Port	RJ-45 Console Port
F13	LOM Port	1x dedicated management channel for device maintenance.

PCIe Power Consumption

	With **6** PCIe Card installed	With **1~5** PCIe Card installed
Maximum power consumption per PCIe slot	**≦100W**	**≦120W**
Maximum total power consumption of all six PCIe slots	**<600W**	

Note: Please supply power to the PCIe adapter which consumes over 75W via a power cable.

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Rear Panel

No.		Description
R1	Fans	8x Hot-swappable Fans
R2	Redundant PSUs	2x AC Power Inlet on PSU

CHAPTER 2: MOTHERBOARD INFORMATION

Block Diagram

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

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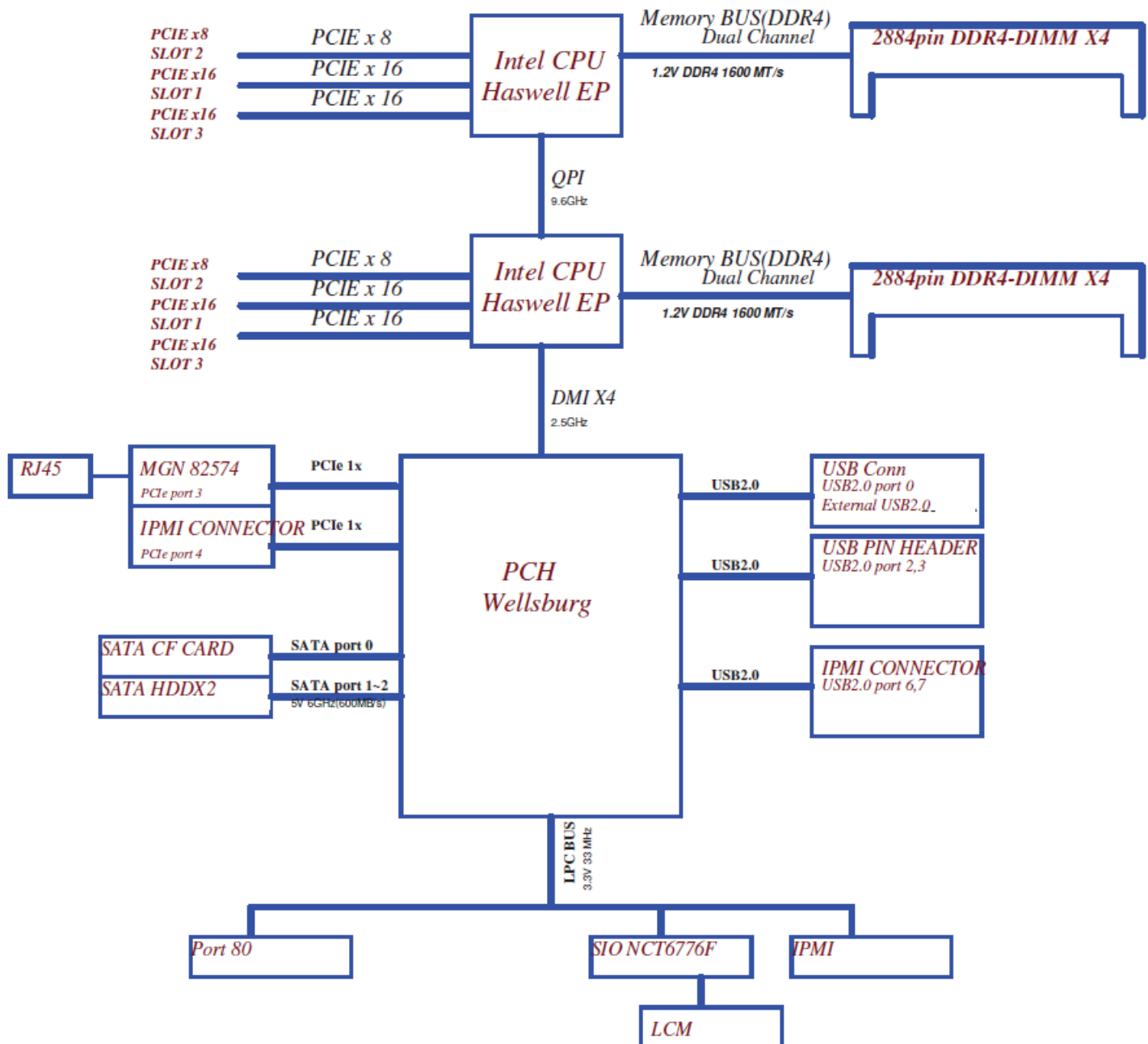
Motherboard Layout

The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.
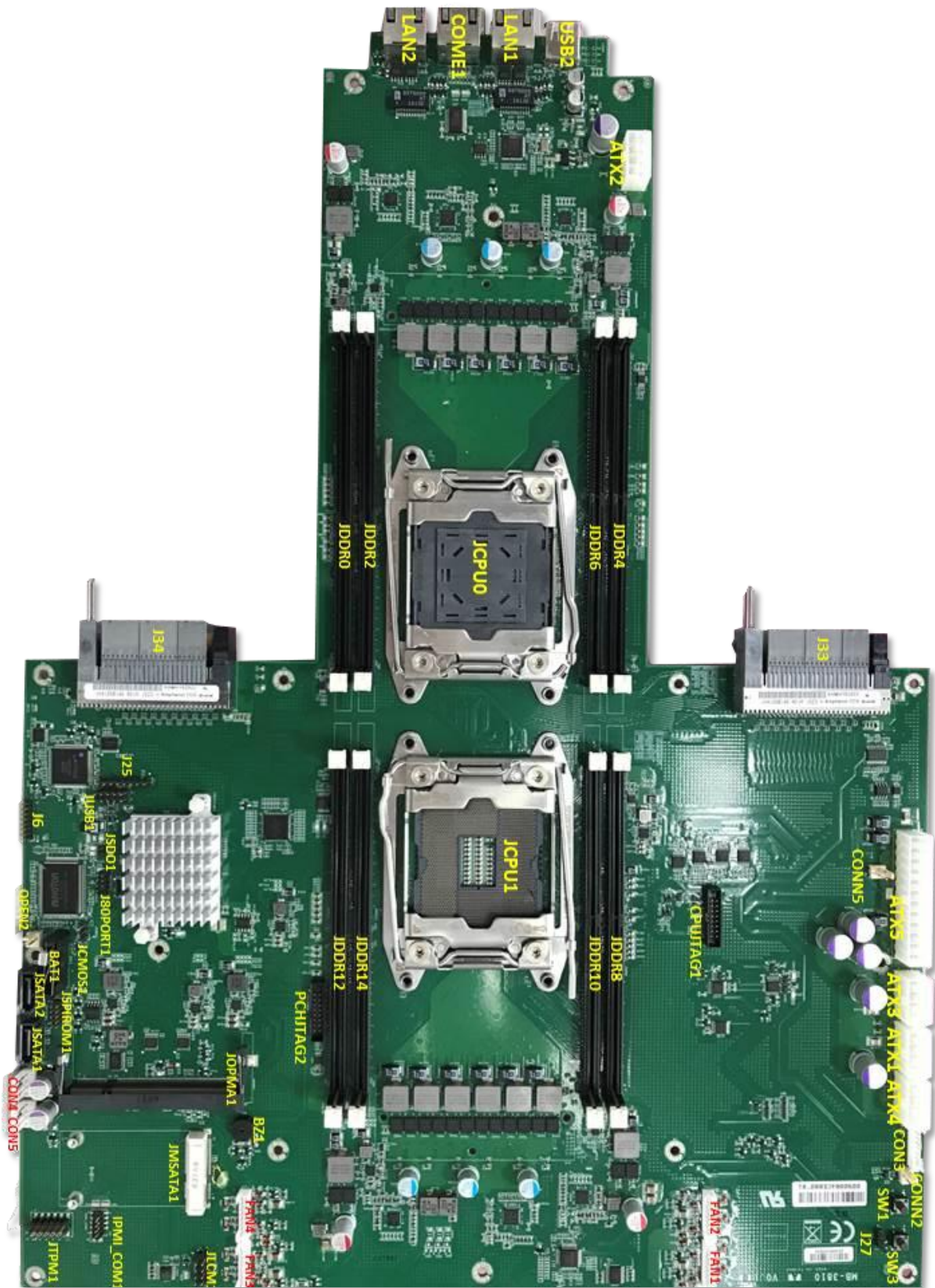
Internal Jumpers & Connectors

▲ATX1: ATX Power Connector 8P

Pin No.	Description	Pin No.	Description
1	P12V	2	GND
3	P12V	4	GND
5	P12V	6	GND
7	P12V	8	GND

▲ATX2: ATX Power Connector 8P

Pin No.	Description	Pin No.	Description
1	P12V	2	GND
3	P12V	4	GND
5	P12V	6	GND
7	P12V	8	GND

▲ATX3: ATX Power Connector 8P

Pin No.	Description	Pin No.	Description
1	P12V	2	GND
3	P12V	4	GND
5	P12V	6	GND
7	P12V	8	GND

▲ATX4: ATX Power Connector 8P

Pin No.	Description	Pin No.	Description
1	P12V	2	GND
3	P12V	4	GND
5	P12V	6	GND
7	P12V	8	GND

▲ATX5: ATX Power Connector 24P

Pin No.	Description	Pin No.	Description
1	P3V3	2	P3V3
3	P3V3	4	-12V
5	GND	6	GND
7	P5V	8	ATX_PSON#
9	GND	10	GND
11	P5V	12	GND
13	GND	14	GND
15	ATXPWGD	16	-5V
17	P5V_SB	18	P5V
19	P12V	20	P5V
21	P12V	22	P5V
23	P3V3	24	GND

▲CPUJTAG1: JTAG Debug Port

Pin No.	Description	Pin No.	Description
1	XDP_TRST#	2	GND
3	XDP_CPU_TDI	4	GND
5	XDP_CPU_TDO	6	GND
7	XDP_TMS	8	GND
9	XDP_CPU01_TCK	10	GND
11	XDP_PREQ#	12	GND
13	P3V3	14	GND
15	XDP_PRDY#	16	GND

▲FAN1: FAN Connector 8P

Pin No.	Description
1	FANT1_PWM
2	FAN1A_RPM
3	FAN1B_RPM
4	GND
5	GND
6	FAN2A_RPM
7	FAN2B_RPM
8	FANT2_PWM

▲FAN2: FAN Connector 8P

Pin No.	Description
1	FANT3_PWM
2	FAN3A_RPM
3	FAN3B_RPM
4	GND
5	GND
6	FAN4A_RPM
7	FAN4B_RPM
8	FANT4_PWM

▲FAN3: FAN Connector 8P

Pin No.	Description
1	FANB1_PWM
2	FAN5A_RPM
3	FAN5B_RPM
4	GND
5	GND
6	FAN6A_RPM
7	FAN6B_RPM
8	FANB2_PWM

▲FAN4: FAN Connector 8P

Pin No.	Description
1	FANB3_PWM
2	FAN7A_RPM
3	FAN7B_RPM
4	GND
5	GND
6	FAN8A_RPM
7	FAN8B_RPM
8	FANB4_PWM

▲J27: Front Panel Reset Pin Header 3P

Pin No.	Description
1	PCH_SYS_RESET#
2	GND
3	SW_RST_GP34#

▲Front Panel Jumper Setting

Jumper	Description
1-2	Hardware Reset
2-3	Software Reset (Default)

▲CON3: SMBUS Connector 8P

Pin No.	Description
1	NC
2	NC
3	NC
4	GND
5	NC
6	SMB_PS_CLK01
7	SMB_PS_DATA01
8	PMBUS_ALERT#

▲CONN2: PWRON Pin Header 2P

Pin No.	Description
1	PWRON#
2	GND

▲JLCM1: LCM Pin Header 2x5P

Pin No.	Description	Pin No.	Description
1	XDP_TRST#	2	GND
3	XDP_CPU_TDI	4	GND
5	XDP_CPU_TDO	6	GND
7	XDP_TMS	8	GND
9	XDP_CPU01_TCK	10	GND

▲CONN5: PSON Pin Header 2P

Pin No.	Description
1	ATX_PSON#
2	GND

▲IPMI_COM1: COM Pin Header 2x5P

Pin No.	Description	Pin No.	Description
1	NDCD2-	2	NDSR2-
3	NSIN2	4	NRTS2-
5	NSOUT2	6	NCTS2-
7	NDTR2-	8	NRI2-
9	COMGND2		

▲JTPM1: TPM Pin Header 2x6P

Pin No.	Description	Pin No.	Description
1	IRQ_SERIAL	2	LPC_FRAME#
3	LPC_LAD0	4	CLK_33M_PCI
5	LPC_LAD1	6	P3V3_AUX
7	LPC_LAD2	8	NC
9	LPC_LAD3	10	P3V3
11	PLT_RST#	12	GND

▲CON4: SATA POWER Connector 4P

Pin No.	Description
1	P12V
2	GND
3	GND
4	P5V

▲CON5: SATA POWER Connector 4P

Pin No.	Description
1	P12V
2	GND
3	GND
4	P5V

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▲JSPIROM1: SPI FLASH Pin Header 2x5P

Pin No.	Description	Pin No.	Description
1	SPI_HD1#	2	SPI_CS1#
3	SPI_CS0#	4	P3V3_SPI_ME
5	SPI_MISO	6	HOLD#
7	NC	8	SPI_CLK
9	GND	10	SPI_MOSI

▲CPEN2: CASE OPEN Pin Header 2P

Pin No.	Description
1	CSOPEN#
2	GND

▲J80PORT1: 80PORT Pin Header 2x5P

Pin No.	Description	Pin No.	Description
1	CLK_33M_PORT80	2	LPC_LAD1
3	80PORT_RST#	4	LPC_LAD0
5	LPC_FRAME#	6	P3V3
7	LPC_LAD3	8	NC
9	LPC_LAD2	10	GND

▲JSDO1: SECURITY OVERRIDE Pin Header 2P

Pin No.	Description
1	P3V3_AUX
2	HDA_SDO

▲J25: JTAG Pin Header 8P

Pin No.	Description
1	P3V3_AUX
2	JTAG_PLD_TDO
3	JTAG_PLD_TDI
4	NC
5	NC
6	JTAG_PLD_TMS
7	GND
8	JTAG_PLD_TCK

▲JUSB1: Front Panel USB2.0 Pin Header 2x5P

Pin No.	Description	Pin No.	Description
1	P5V_USB1	2	P5V_USB1
3	USB20_L_N2	4	USB20_L_N3
5	USB20_L_P2	6	USB20_L_P3
7	GND	8	GND
9	GND	10	GND

▲J6: JTAG Pin Header 8P

Pin No.	Description
1	P3V3_AUX
2	JTAG_PLD_TDO_1
3	JTAG_PLD_TDI_1
4	NC
5	NC
6	JTAG_PLD_TMS_1
7	GND
8	JTAG_PLD_TCK_1

CHAPTER 3: HARDWARE SETUP

To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power connections to completely shut down the device. Also, please wear ESD protection gloves when conducting the steps described hereafter.

DIMM Slot x8

support TPM V1.2 module

OPMA Slot   mSATA Slot
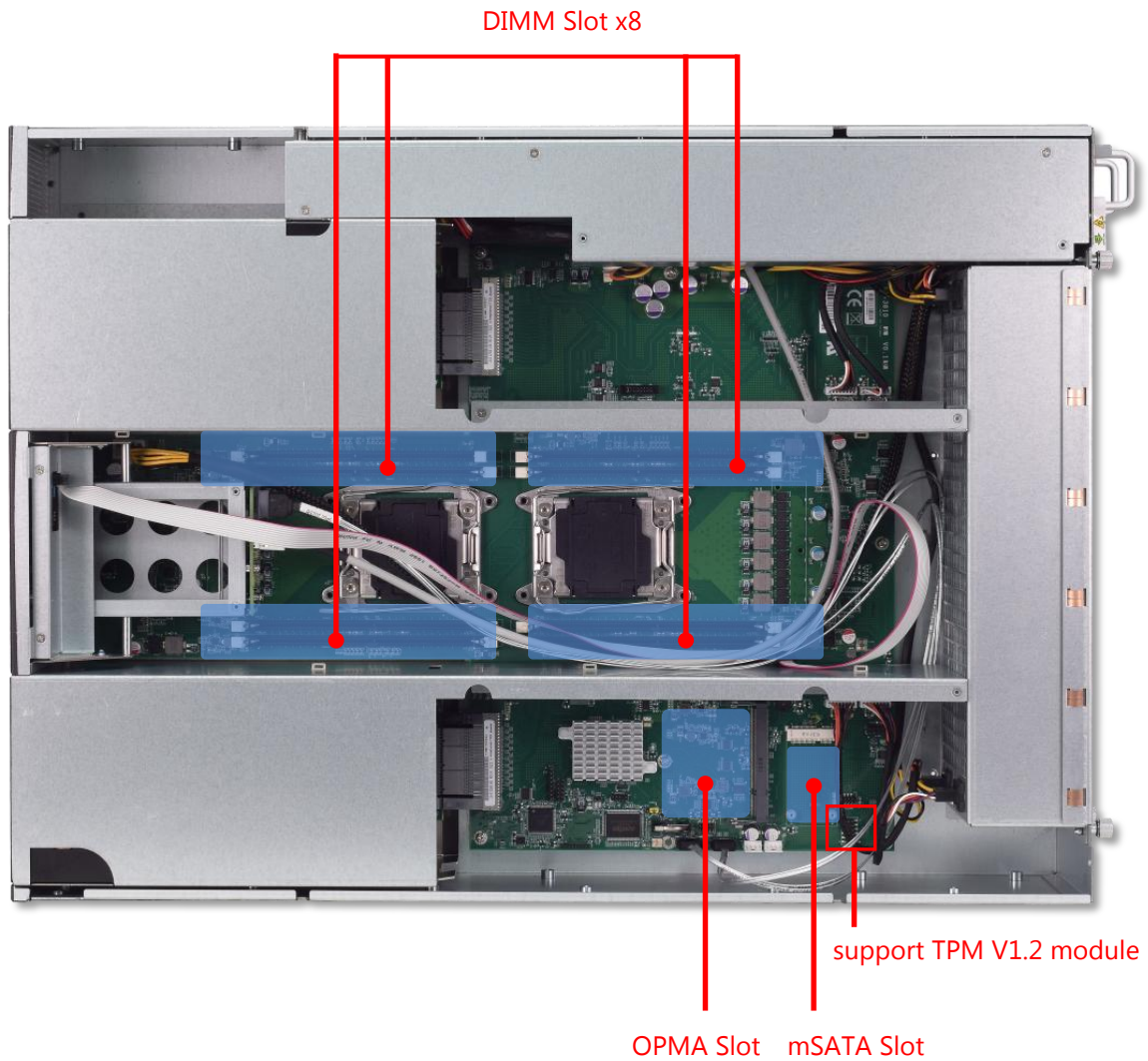
Opening the Chassis

1. Loosen the **two** screws (indicated in the photos) that fix this unit's cover.

2. Pull the cover open horizontally, and then lit it up remove it.
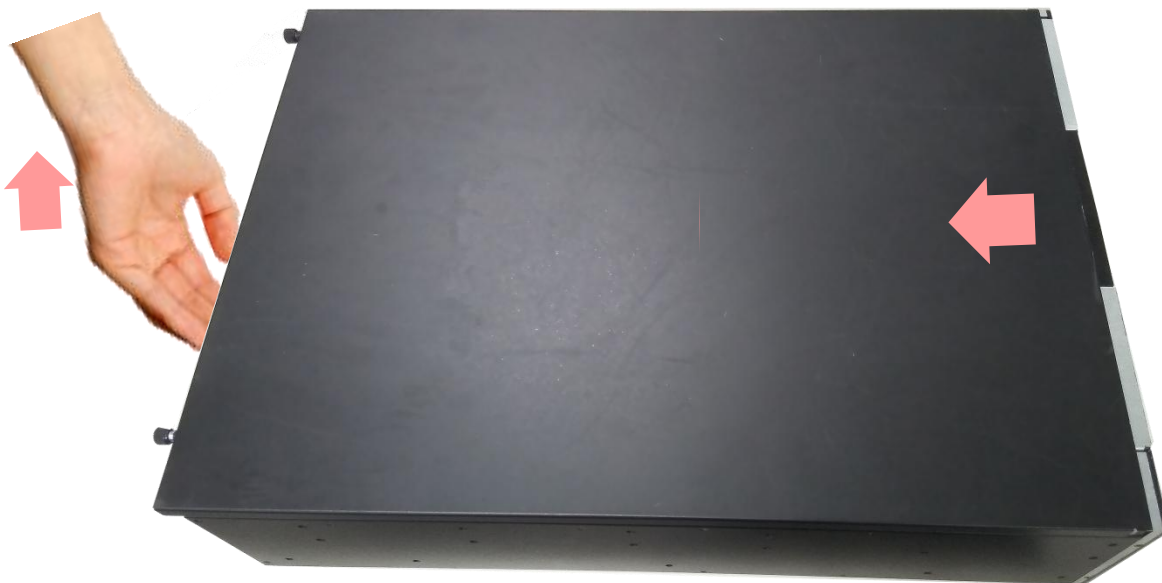
Removing / Attaching the Fan Duct

Before you can access the motherboard, remove the fan duct by lifting it up.
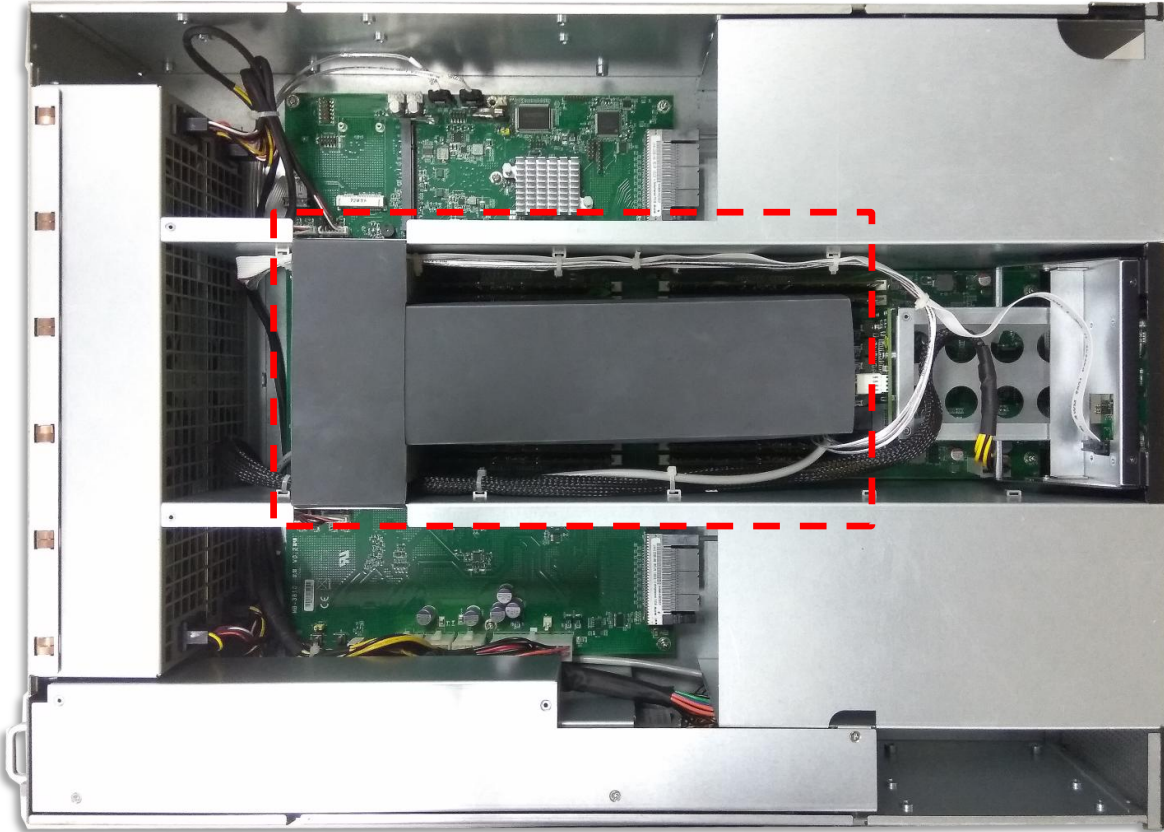
To install it after you finish servicing the components, simply place it back into the original position, and make sure the tabs on both duct sides are properly inserted into the slots shown in the picture below.

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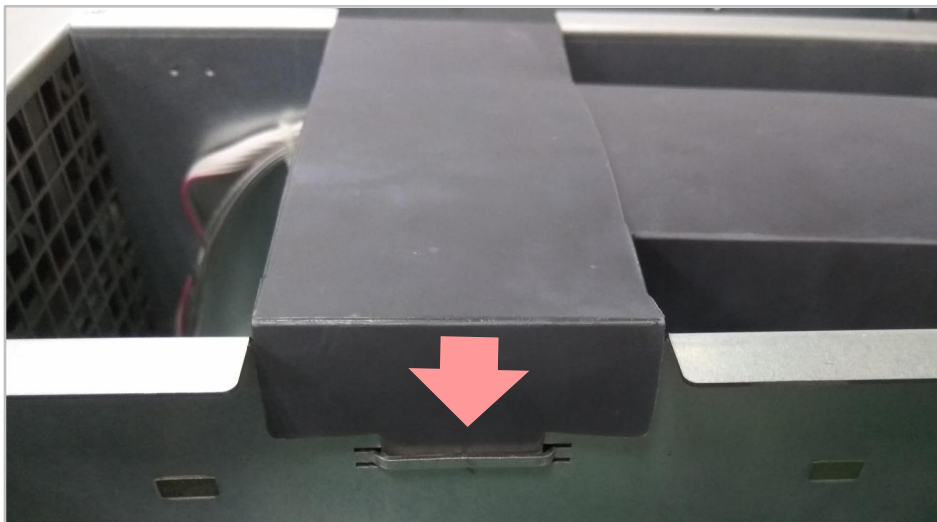
Installing System Memory

The motherboard supports 8 memory slots for DDR4 registered DIMM, organized in 4 pairs. Each CPU requires at least 1 memory module to boot and run from.

- Supported Capacities: 8/16/32/64 GB
- Maximum RAM: 512 GB (64GB per slot)
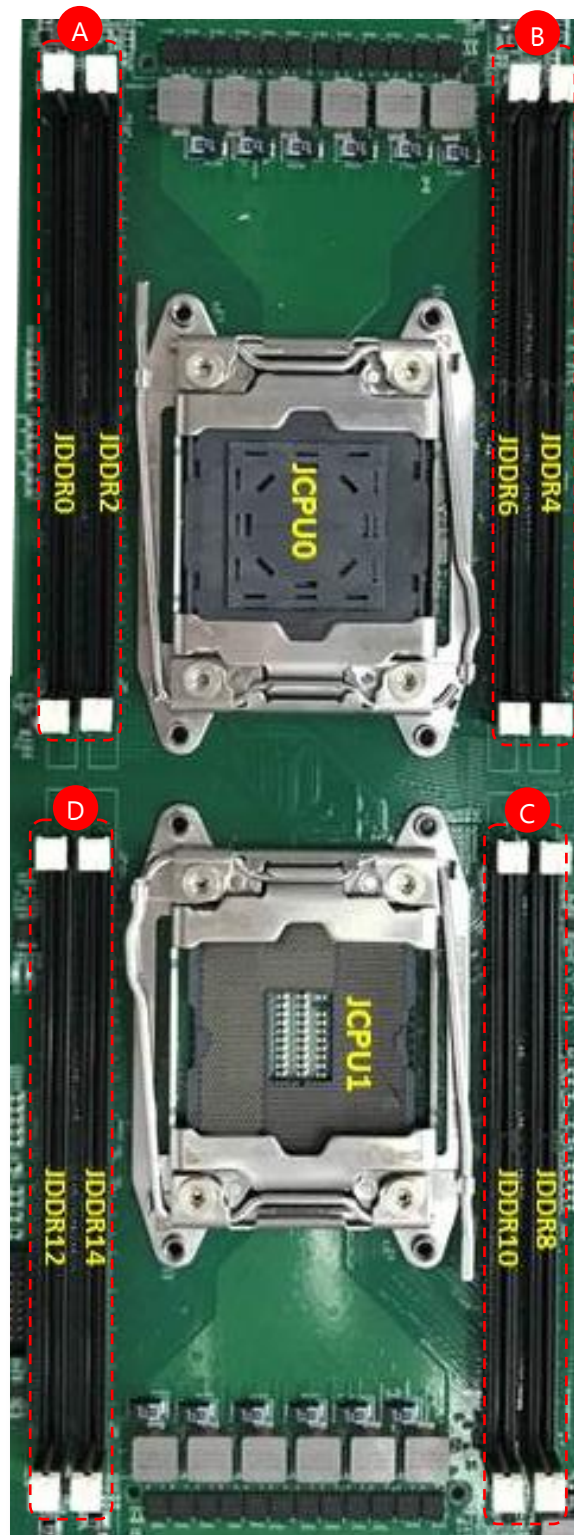
DIMM slots in Pair A and B are assigned to **CPU0**.

DIMM slots in Pair C and D are assigned to **CPU1**.

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DIMM Population Guidelines

Please do follow the memory module installation instructions to install the DIMM, and make sure the DIMM population guidelines are met:

- Populate at least one DIMM for each CPU.
- Try to split the DIMMs evenly across the CPU channels(A~D); this is to maximize the system performance by balancing the total memory capacity between both installed processors and utilizing as many channels as possible.
- When installing the DIMMs, in each channel, always start with the socket with smaller number (e.g. JDDR0→JDDR2, JDDR8→JDDR10).
- Please use memory modules of the same capacity, speed and from the same manufacturer to avoid compatibility issues.

The table shows the recommended order (the numbers in red) of DIMM population that conforms to the general DIMM population guidelines.

Number of DIMMs	Channel A		Channel B		Channel C		Channel D	
	JDDR0	JDDR 2	JDDR 4	JDDR R	JDDR8	JDDR10	JDDR12	JDDR14
2	1				2			
3	1		3		2			
4	1		3		2		4	
5	1	5	3		2		4	
6	1	5	3		2	6	4	
7	1	5	3	7	2	6	4	
8	1	5	3	7	2	6	4	8

<DIMM Population Order Example>

Memory Module Installation Instructions

Please follow the steps below to install the DIMM memory modules.

1. Pull open the DIMM slot latches.
2. Align the notch of the module with the socket key in the slot and carefully insert the card into the slot.
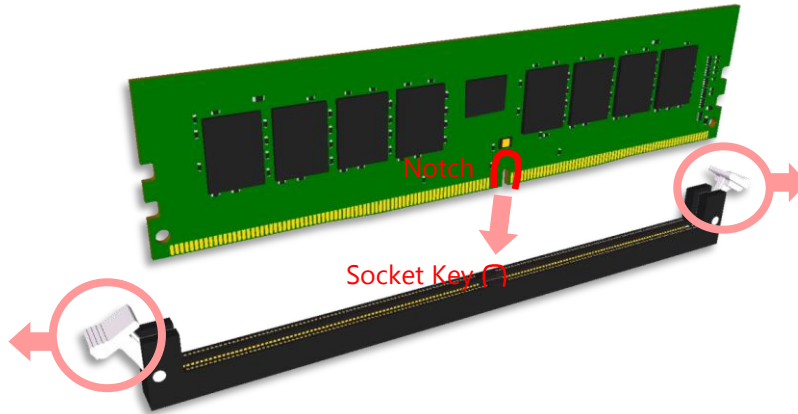
3. Push the module down into the slot until it is firmly seated. Press vertically on both corners of the card until it clicks into place.
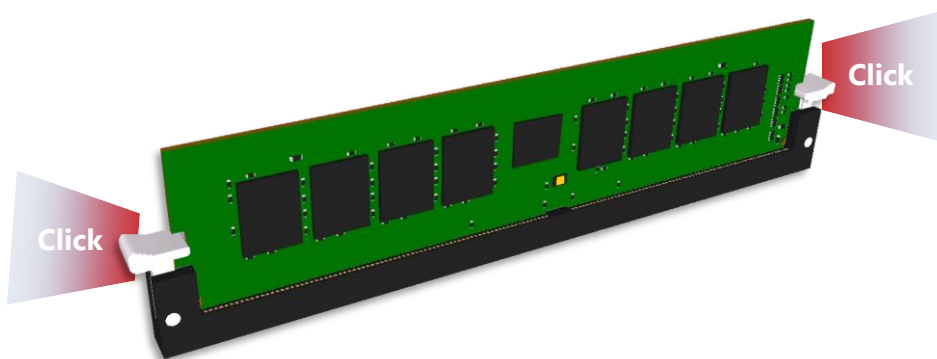
Installing IPMI Card

1. Align the IPMI card and make sure the notch of the card aligns with the socket key in the OPMA slot. Tilt the end of gold fingers down while carefully inserting the card into the slot.
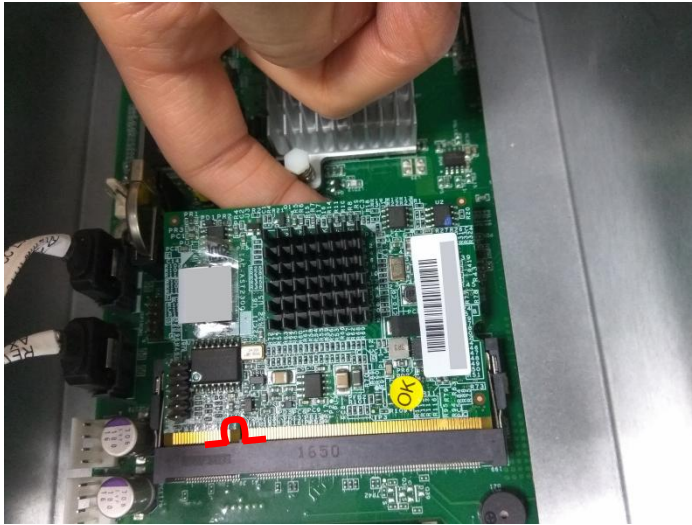
2. Press on both corners of the module until it clicks into place.

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Installing MSATA SSD Card

1. Align the notch of the mSATA card with the socket key in the slot. Tilt the end of the gold fingers down while carefully inserting the card into the slot.

2. Fix the card with the dedicated screw provided in the accessory pack.
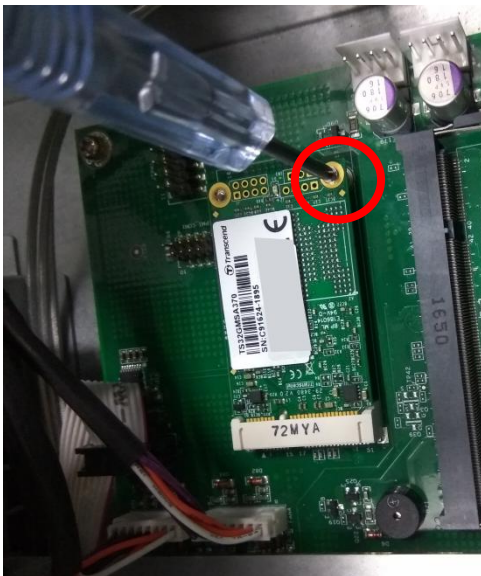
Installing 2.5" Hard Disk

1. Pull out a hard disk tray, and mount the disk onto the empty tray with four disk screws. Please mind the direction of the SATA port, which should be facing outward.

SATA Contact

Disk Screws

2. To install the mounted disk tray, push the tray into position in the chassis. Press on the hinge tab to close it.
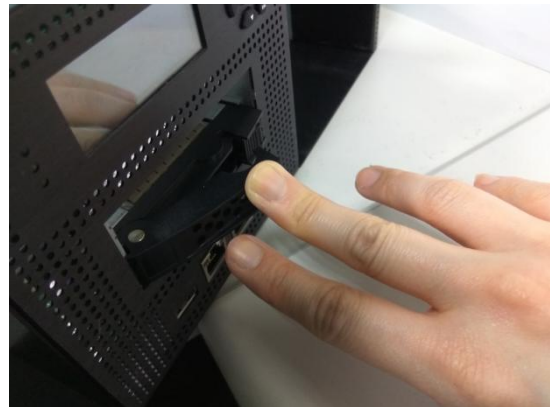
Servicing the PCIe Riser Board Drawer

To service the riser board drawer:

1. Pull open the **Hinge Lock**.

2. Drag out the entire drawer by the **Handle**.
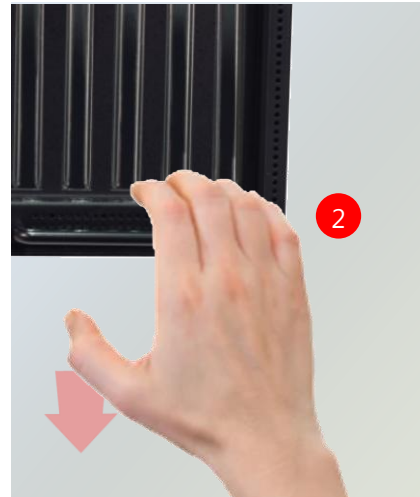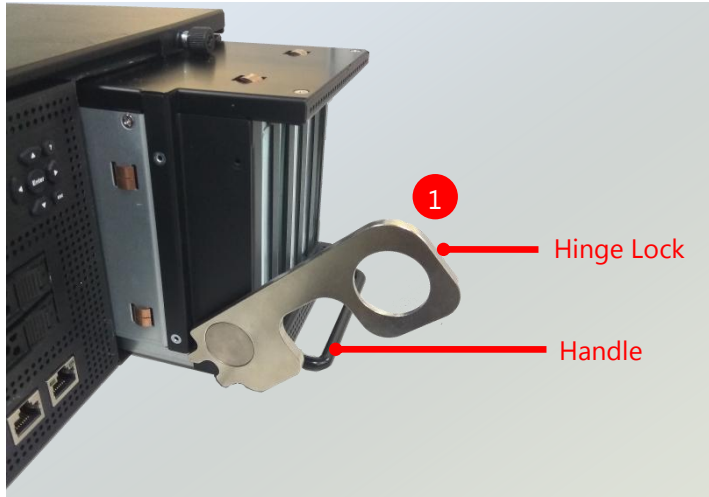
To install the board drawer:

1. Push it back into the chassis by the **Handle**.

2. Close the **Hinge Lock**.

33
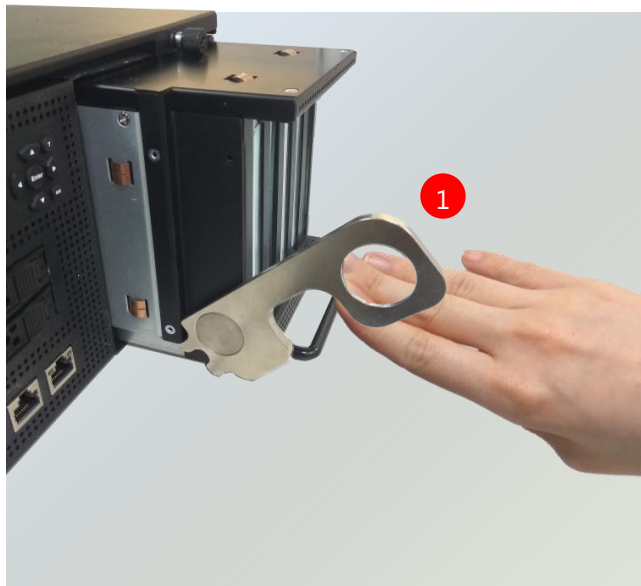
Installing PCIe Adapter

1. Remove the screws that fix the top cover of the riser board module to reveal the slots.

Slots
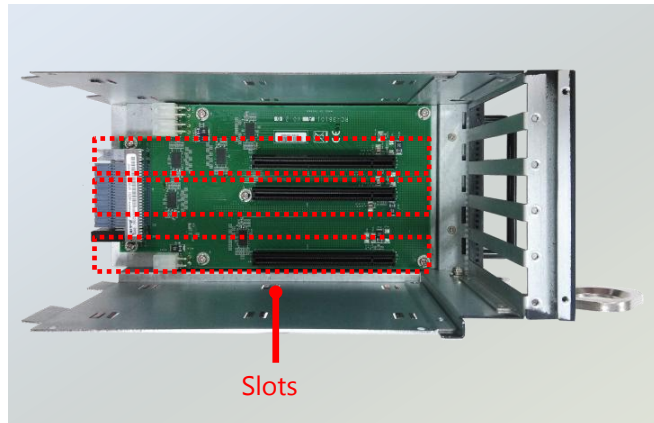
2. Vertically insert the PCIe adapter into the slot. Make sure the gold-plated connector sits well in the slot.
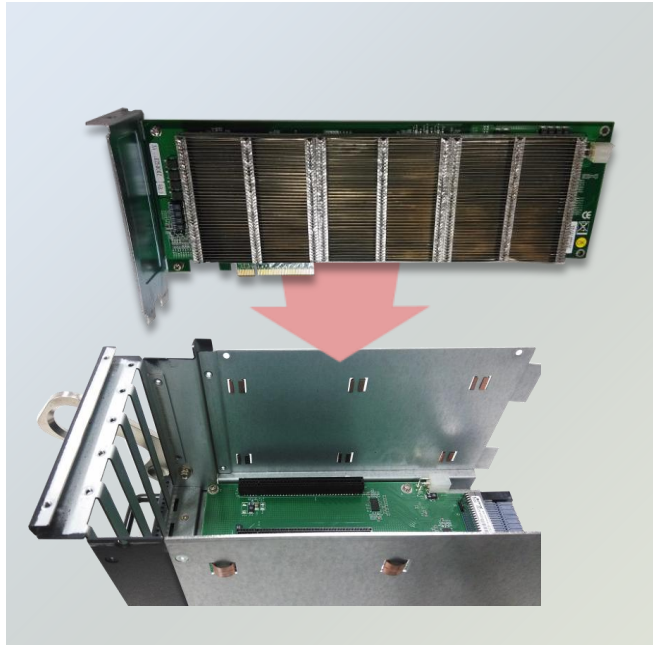
3. Fix the adapter on the riser board with screws.

34
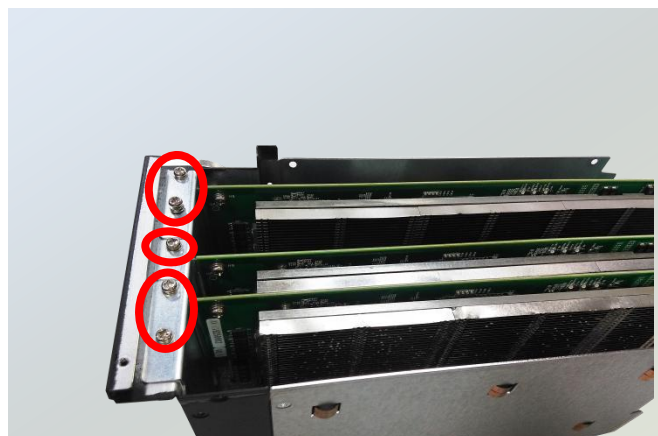
4. If this PCIe adapter draws more than 75W, connect the PCIe adapter power cable to the connector on the riser board as well as to the PCIe adapter.

Power
Connectors

PCIe card
power cable
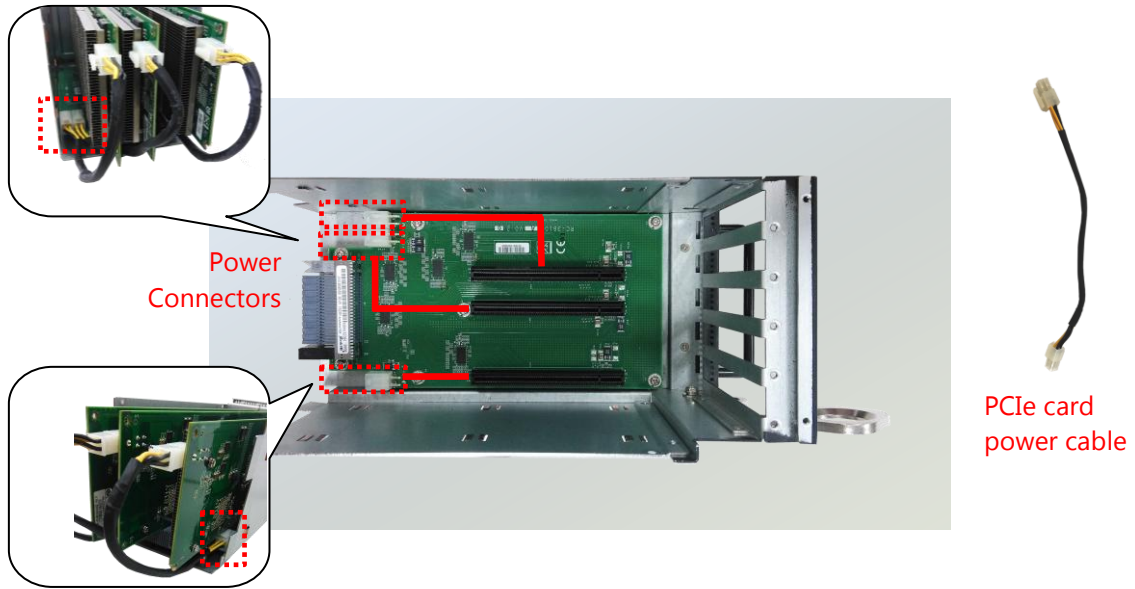
Mounting the System

▶ With **Slide Rail Kit + Short Mounting Ear Brackets**
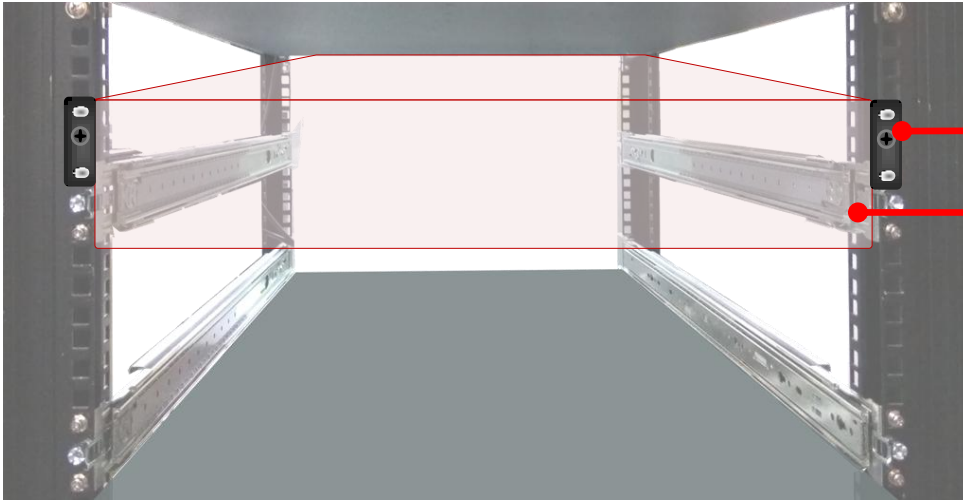
The Ear Brackets fix the system onto the front rack posts.

The Slide Rails can secure the system while providing sufficient weight support for the device.

Installing the System Using the Slide Rail Kit (with Short Mounting Ear Brackets)

1. Check the package contents of the Slide Rail Kit. The kit shall include the following items:

    ▶ 1x pack of M4X4L screws (for securing the sliding rail on the system)

    ▶ 2 x Slide Rails

A rail consists of the following parts:

Rail Lock   Release Tab

Rail Bracket

Inner Channel   Outer Channel

Attaching the Rail Brackets

2. Unpack a slide rail and slide the Inner Channel all the way to the end.

3. Stretch the Rail Bracket to the fullest.
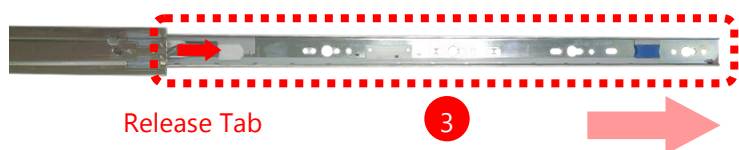
    Release Tab

4. Remove the Rail Bracket from the Inner Channel by pushing the Release Tab on the Rail Bracket outwards while sliding it out.

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5. Align the Rail Bracket to the side of the chassis and make sure the screw-holes are matched, and then secure the Rail Bracket onto the chassis with **four** provided M4X4L screws.

6. Repeat Steps 2~5 to attach the Rail Bracket to the other side of the chassis.

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Assembling the Ear Brackets

7. Check the package contents. The supplied mounting kit shall include the items below:

▸ 1x pack of screws

▸ 2x Ear Brackets

For securing the Ear Brackets on the unit

Right Ear   Left Ear

8. Install the Ear Brackets on both sides of the system using the provided screws.

Right Ear

Left Ear

Installing the Slide Rails

Now, you shall install the slide rail assemblies onto the rack.

9. This slide-rail kit does NOT require screw-fixing. Simply aim at **3** available screw holes on the rack front and snap the rail front into the rack post as shown in the image. You should hear a "click" sound once it is firmly attached.

Click

Use this clamp to fix the front end of the rail onto the post.
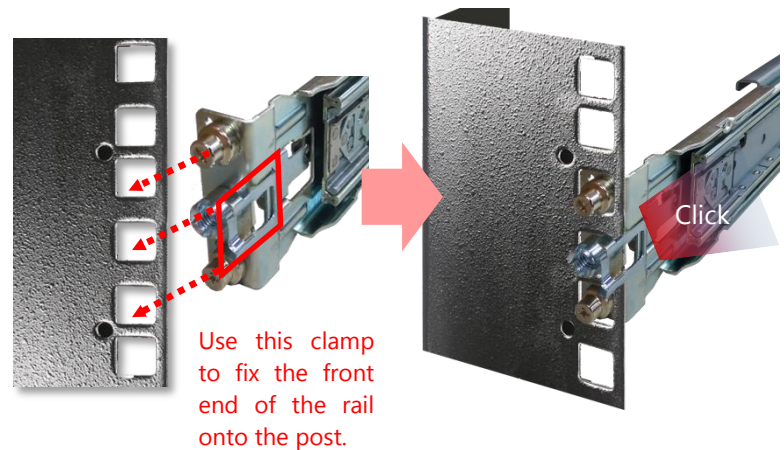
10. For the rear rack installation, slide the rail to aim and engage the bolts on the rail's rear end with the 2 available holes on the post, and the rail assembly will click into place.
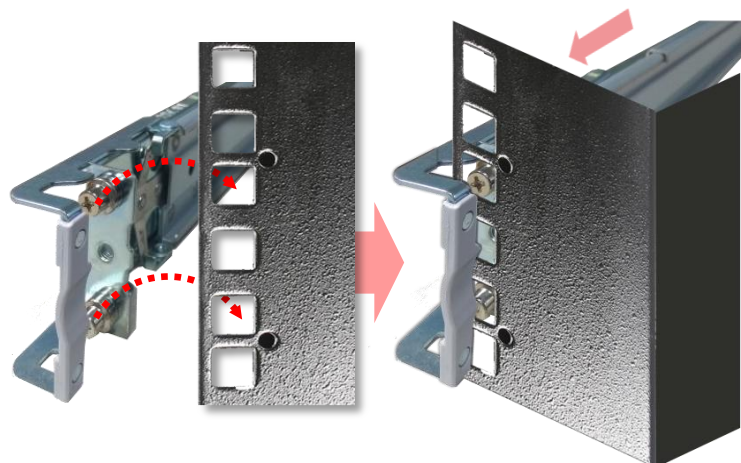
Installing the System into the Rack

1. Stretch both of the Inner Channels out to their fullest extent. You will hear a click sound when they are fully stretched and stop.

Click

① The inner rail will click when it is fully stretched.
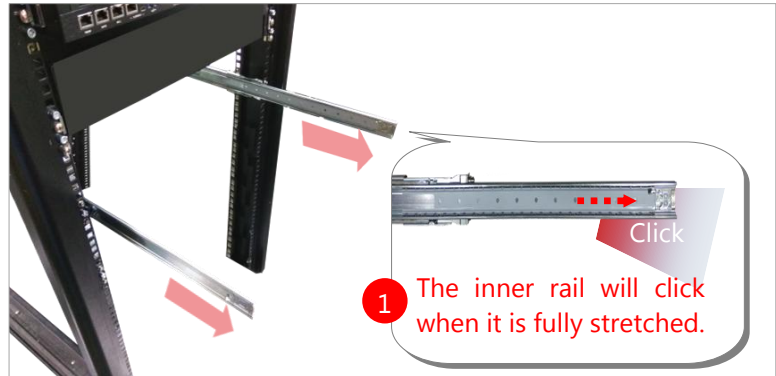
2. Hold the system with its front facing you, lift the chassis and gently engage the Rail Brackets on the model while aligning them with the slide-rail assemblies as shown in the image, and then push the system into the cabinet.

②
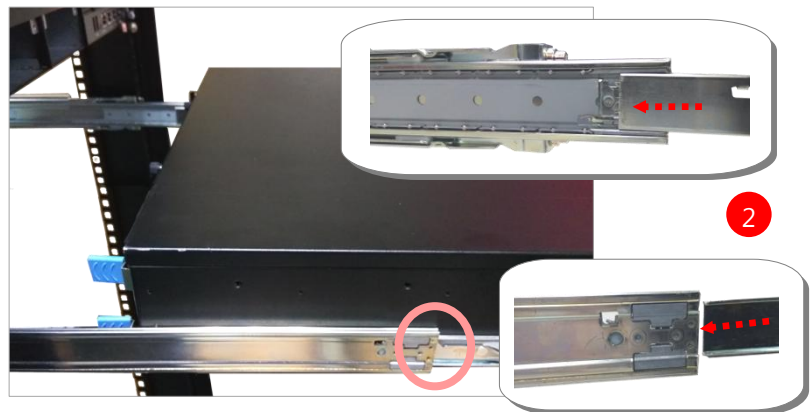
While pushing in the system, please also push and hold the Rail Lock tab on both Rail Brackets.

Rail Lock
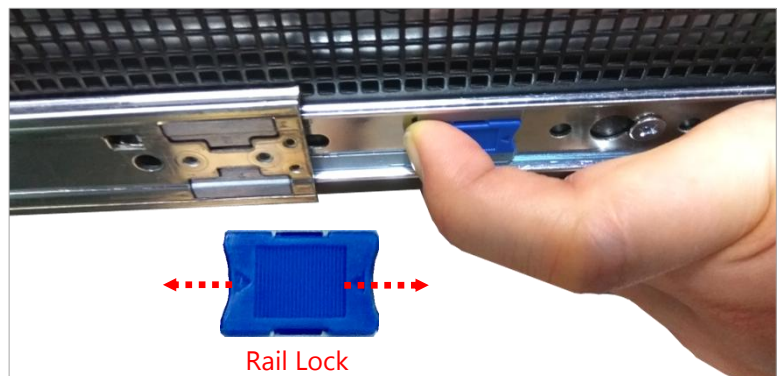
3. Fix the lock-screws on the Ear Brackets to both front posts.

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4. To remove the system from the rack, gently pull the system outwards towards you while pushing the Release Tab on both sides of the Rail Brackets.

Release Tab
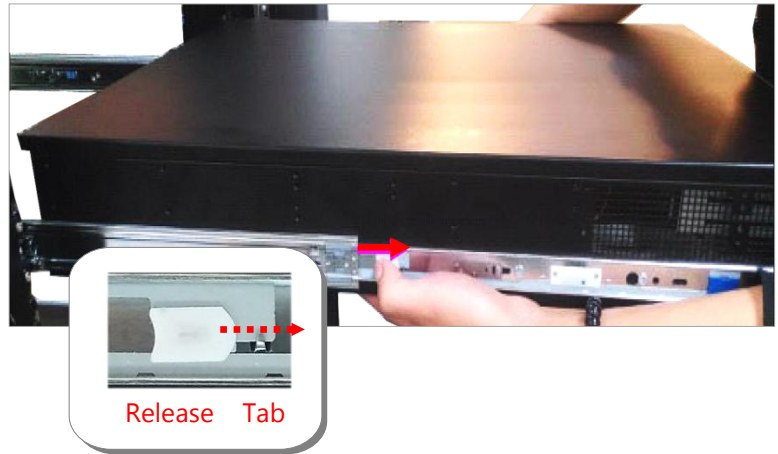
CHAPTER 4: BIOS SETUP

Enter BIOS Setup

To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. Press <Delete> during the boot-up if you connect a keyboard to this unit. But if you connect a PC to this unit through console USB/Serial connection, then press <Tab>. Your system should be running POST (Power-On-Self-Test) upon booting up.
3. Then you will be directed to the BIOS main screen.
4. Instructions for BIOS navigations:

Control Keys	Description
→←	select a setup screen, for instance, [Main], [Advanced], [IntelRCSetup], [Server Mgmt], [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>	to exit the current screen

Main Page

Setup main page is description BIOS information and project version information.

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit
/---------------------------------------------------+------------------------\
| BIOS Information                                   |Choose the system       |
| BIOS Vendor             American Megatrends        |default language        |
| Core Version            5.11                       |                        |
| Compliancy              UEFI 2.4; PI 1.3           |                        |
| Project Version         0ACFL 0.23 x64            |                        |
| Build Date and Time     10/22/2018 10:21:26        |                        |
| Access Level            Administrator              |                        |
|                                                    |                        |
| Memory Information                                 |                        |
| Total Memory            233472 MB                  |------------------------|
|                                                    |><: Select Screen       |
| System Language         [English]                  |^v: Select Item         |
|                                                    |Enter: Select           |
| System Date             [Fri 03/22/2019]           |+/-: Change Opt.        |
| System Time             [02:47:18]                 |F1: General Help        |
|                                                    |F2: Previous Values     |
|                                                    |F3: Optimized Defaults  |
|                                                    |F4: Save & Exit         |
|                                                    |ESC: Exit               |
\---------------------------------------------------+------------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Description
BIOS Information	BIOS Version: BIOS release version Build Date and Time: MM/DD/YYYY
System Language	English
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 Date, use **<Tab>** to switch between Date 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.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit
/------------------------------------------------------+-----------------------\
|> Trusted Computing                                   |Trusted Computing      |
|> NCT6776 Super IO Configuration                      |Settings               |
|> NCT7904D HW Monitor                                 |                       |
|> Serial Port Console Redirection                     |                       |
|> USB Configuration                                   |                       |
|> Lan boot select                                     |                       |
|                                                      |                       |
|                                                      |                       |
|                                                      |                       |
|                                                      |-----------------------|
|                                                      |><: Select Screen      |
|                                                      |^v: Select Item        |
|                                                      |Enter: Select          |
|                                                      |+/-: Change Opt.        |
|                                                      |F1: General Help        |
|                                                      |F2: Previous Values     |
|                                                      |F3: Optimized Defaults  |
|                                                      |F4: Save & Exit         |
|                                                      |ESC: Exit               |
\------------------------------------------------------+-----------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Trusted Computing

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced
/----------------------------------------------------+-----------------------\
|  Configuration                                      |Enables or Disables    |
|     Security Device Sup     [Disable]               |BIOS support for       |
|      NO Security Device                             |security device. O.S.  |
|                                                     |will not show Security  |
|                                                     |Device. TCG EFI        |
|                                                     |protocol and INT1A     |
|                                                     |interface will not be   |
|                                                     |available.             |
|                                                     |                       |
|                                                     |-----------------------|
|                                                     |><: Select Screen      |
|                                                     |^v: Select Item        |
|                                                     |Enter: Select          |
|                                                     |+/-: Change Opt.       |
|                                                     |F1: General Help       |
|                                                     |F2: Previous Values    |
|                                                     |F3: Optimized Defaults |
|                                                     |F4: Save & Exit        |
|                                                     |ESC: Exit              |
\----------------------------------------------------+-----------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

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NCT6776 Super IO Configuration

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
            Advanced
/-----------------------------------------------------+----------------------\
|  NCT6776 Super IO Configuration                      |Set Parameters of     |
|                                                      |Serial Port 1 (COMA)  |
|  Super IO Chip          NCT6776                      |                      |
|> Serial Port 1 Configuration                         |                      |
|> Serial Port 2 Configuration                         |                      |
|> Parallel Port 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 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Serial port 1 Configuration

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
            Advanced
/-----------------------------------------------------+----------------------\
|  Serial Port 1 Configuration                         |Enable or Disable     |
|                                                      |Serial Port (COM)     |
|  Serial Port           [Enabled]                     |                      |
|  Device Settings       IO=3F8h; IRQ=4;               |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |----------------------|
|                                                      |><: Select Screen     |
|                                                      |^v: Select Item       |
|                                                      |Enter: Select         |
|                                                      |+/-: Change Opt.      |
|                                                      |F1: General Help      |
|                                                      |F2: Previous Values   |
|                                                      |F3: Optimized Defaults|
|                                                      |F4: Save & Exit       |
|                                                      |ESC: Exit             |
\-----------------------------------------------------+----------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 1.
Device Settings	NA	IO=3F8h; IRQ = 4

Serial port 2 Configuration
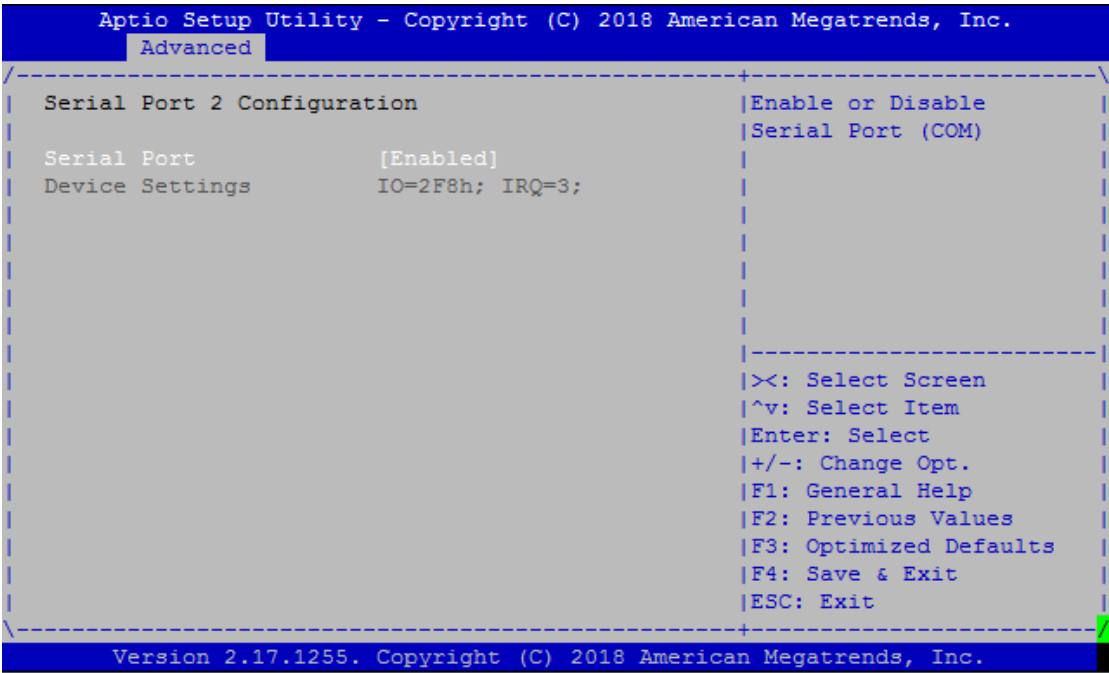
```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
               Advanced
/--------------------------------------------------------+------------------------\
|  Serial Port 2 Configuration                           |Enable or Disable        |
|                                                        |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 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

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

Parallel Port Configuration

```
      Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
            Advanced
/------------------------------------------------+-----------------------\
| Parallel Port Configuration                    |Enable or Disable        |
|                                                |Parallel Port (LPT/LPTE) |
|  Parallel Port          [Enabled]              |                         |
|  Device Settings        IO=378h; IRQ=5;        |                         |
|                                                |                         |
|                                                |                         |
|                                                |                         |
|                                                |                         |
|                                                |                         |
|                                                |-------------------------|
|                                                |><: Select Screen        |
|                                                |^v: Select Item          |
|                                                |Enter: Select            |
|                                                |+/-: Change Opt.         |
|                                                |F1: General Help         |
|                                                |F2: Previous Values      |
|                                                |F3: Optimized Defaults   |
|                                                |F4: Save & Exit          |
|                                                |ESC: Exit                |
\------------------------------------------------+-----------------------/
      Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
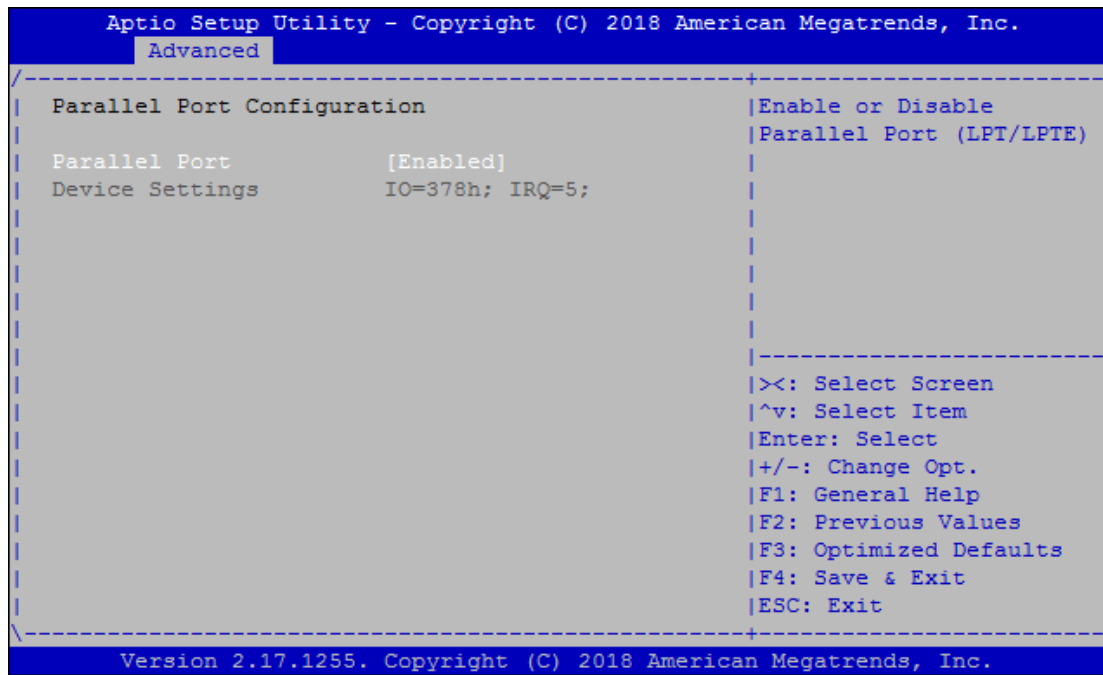
Feature	Options	Description
Parallel Port	Enabled / Disabled	Enable or Disable Parallel Port (LPT/LPTE)
Device Settings	NA	IO=378h; IRQ = 5

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NCT7904D HW Monitor

```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
           Advanced
/----------------------------------------------------+------------------------\
|  Pc Health Status                                  ^|Smart Fan Mode Select  |
|                                                    *|                       |
|> Smart Fan Mode Configuration                      *|                       |
|  CPU0 Temp                 : +52 C                 *|                       |
|  CPU1 Temp                 : +60 C                 *|                       |
|  System Temp1              : +39 C                 *|                       |
|  System Temp2              : +25 C                 *|                       |
|  Fan1A Speed               : 5532 RPM              *|                       |
|  Fan1B Speed               : 6650 RPM              *|                       |
|  Fan2A Speed               : 5487 RPM              *|-----------------------|
|  Fan2B Speed               : 6553 RPM              *|><: Select Screen      |
|  Fan3A Speed               : 5487 RPM              +|^v: Select Item        |
|  Fan3B Speed               : 6553 RPM              +|Enter: Select          |
|  Fan4A Speed               : 5357 RPM              +|+/-: Change Opt.        |
|  Fan4B Speed               : 6617 RPM              +|F1: General Help        |
|  Fan5A Speed               : 5378 RPM              +|F2: Previous Values     |
|  Fan5B Speed               : 6958 RPM              +|F3: Optimized Defaults  |
|  Fan6A Speed               : 5378 RPM              +|F4: Save & Exit         |
|  Fan6B Speed               : 6852 RPM              v|ESC: Exit               |
\----------------------------------------------------+------------------------/
         Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Smart Fan Configuration

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
              Advanced
/-----------------------------------------------------+----------------------\
|  Smart Fan Mode Configuration                        |Fan Mode Select       |
|                                                      |                      |
|  Fan Out Mode            [Smart Fan Mode]            |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |                      |
|                                                      |----------------------|
|                                                      |><: Select Screen     |
|                                                      |^v: Select Item       |
|                                                      |Enter: Select         |
|                                                      |+/-: Change Opt.       |
|                                                      |F1: General Help      |
|                                                      |F2: Previous Values   |
|                                                      |F3: Optimized Defaults|
|                                                      |F4: Save & Exit       |
|                                                      |ESC: Exit             |
\-----------------------------------------------------+----------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
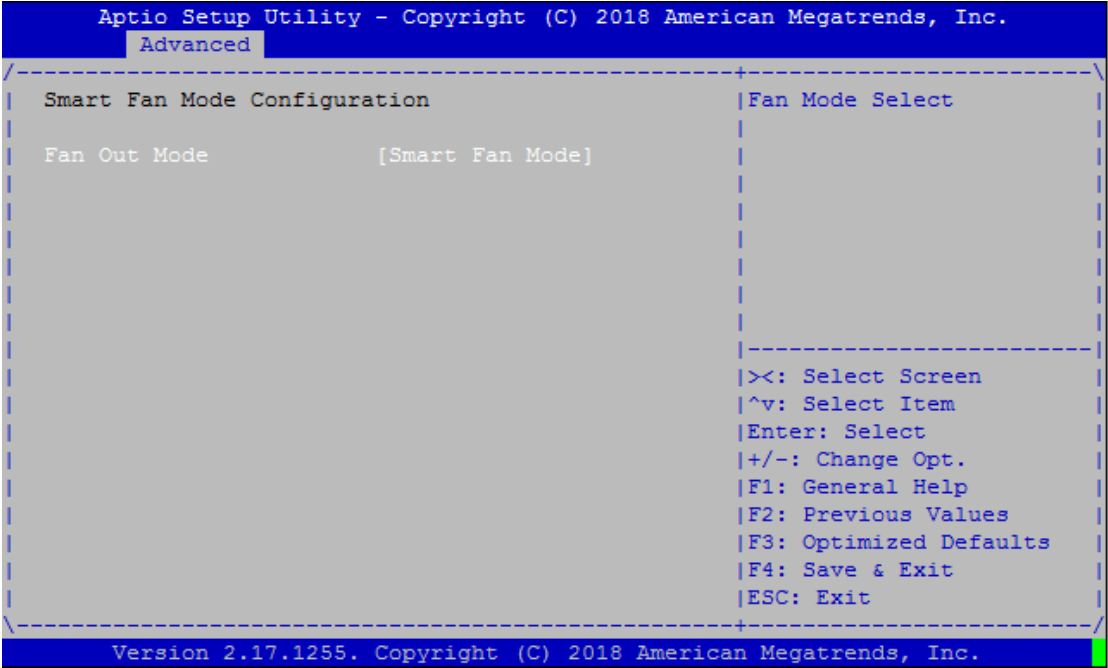
Feature	Options	Description
Fan Out Mode	Full Speed Mode SMART FAN Mode	Fan Mode select

Serial Port Console Redirection

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
          Advanced
/---------------------------------------------------+-----------------------\
|                                                   |Console Redirection     |
|  COM0                                             |Enable or Disable.      |
|  Console Redirection     [Enabled]                |                        |
|> Console Redirection Settings                     |                        |
|                                                   |                        |
|                                                   |                        |
|                                                   |                        |
|                                                   |                        |
|                                                   |                        |
|                                                   |------------------------|
|                                                   |><: Select Screen       |
|                                                   |^v: Select Item         |
|                                                   |Enter: Select           |
|                                                   |+/-: Change Opt.        |
|                                                   |F1: General Help        |
|                                                   |F2: Previous Values     |
|                                                   |F3: Optimized Defaults  |
|                                                   |F4: Save & Exit         |
|                                                   |ESC: Exit               |
\---------------------------------------------------+-----------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
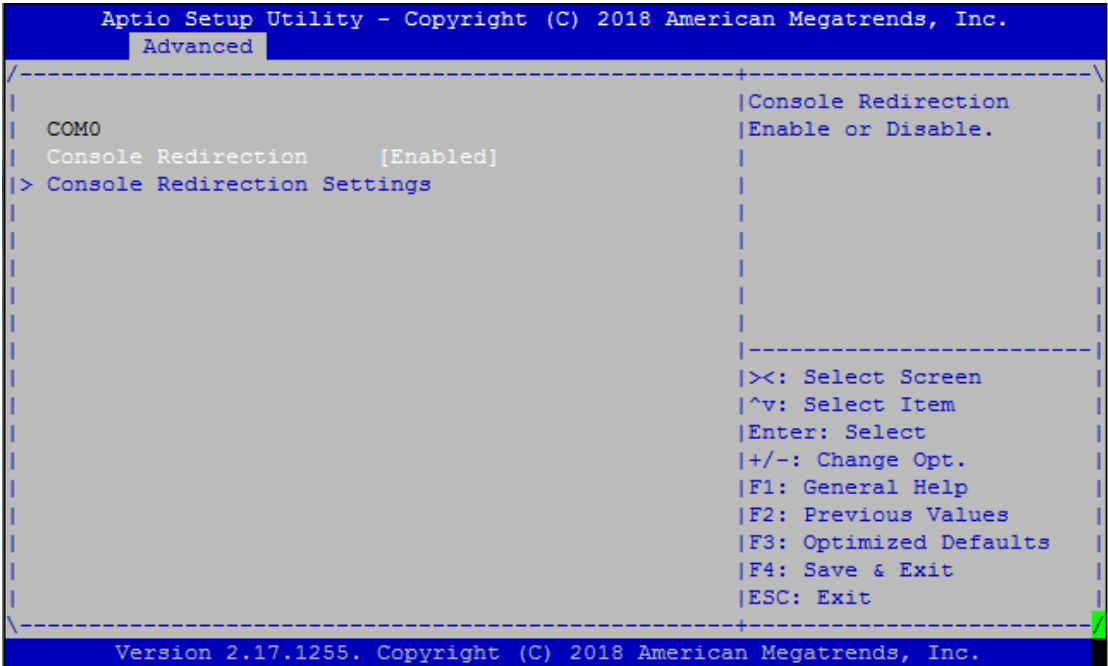
Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection

Console Redirection Settings

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
              Advanced
/-----------------------------------------------+------------------------\
| COM0                                           |Emulation: ANSI:        |
| Console Redirection Settings                   |Extended ASCII char     |
|                                                |set. VT100: ASCII char  |
| Terminal Type            [VT100+]              |set. VT100+: Extends    |
| Bits per second          [115200]              |VT100 to support color, |
| Data Bits                [8]                   |function keys, etc.      |
| Parity                   [None]                |VT-UTF8: Uses UTF8       |
| Stop Bits                [1]                   |encoding to map Unicode  |
| Flow Control             [None]                |chars onto 1 or more     |
| VT-UTF8 Combo Key Sup    [Enabled]             |------------------------|
| Recorder Mode            [Disabled]            |><: Select Screen       |
| Legacy OS Redirection    [80x24]               |^v: Select Item         |
| Putty KeyPad             [VT100]               |Enter: Select           |
| Redirection After BIO    [Always Enable]       |+/-: Change Opt.        |
|                                                |F1: General Help        |
|                                                |F2: Previous Values     |
|                                                |F3: Optimized Defaults  |
|                                                |F4: Save & Exit         |
|                                                |ESC: Exit               |
\-----------------------------------------------+------------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	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 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	1 2	Indicates the end of a serial data packet.
Flow Control	None Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.

52

Legacy OS Redirection Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects FunctionKey and KeyPad on Putty.
Redirection After BIOS POST	Always Enable BootLoader	The Settings specify if BootLoader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: Extended ASCII char set

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USB Configuration

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced
/--------------------------------------------------------+------------------------\
|  USB Configuration                                     |Enables Legacy USB      |
|                                                        |support. AUTO option    |
|  USB Module Version       11                           |disables legacy support |
|                                                        |if no USB devices are   |
|  USB Controllers:                                      |connected. DISABLE      |
|        2 EHCIs, 1 XHCI                                 |option will keep USB    |
|        1 Keyboard, 2 Hubs                              |devices available only  |
|                                                        |for EFI applications.   |
|  Legacy USB Support       [Enabled]                    |                        |
|                                                        |------------------------|
|                                                        |><: Select Screen       |
|                                                        |^v: Select Item         |
|                                                        |Enter: Select           |
|                                                        |+/-: Change Opt.        |
|                                                        |F1: General Help        |
|                                                        |F2: Previous Values     |
|                                                        |F3: Optimized Defaults  |
|                                                        |F4: Save & Exit         |
|                                                        |ESC: Exit               |
\--------------------------------------------------------+------------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
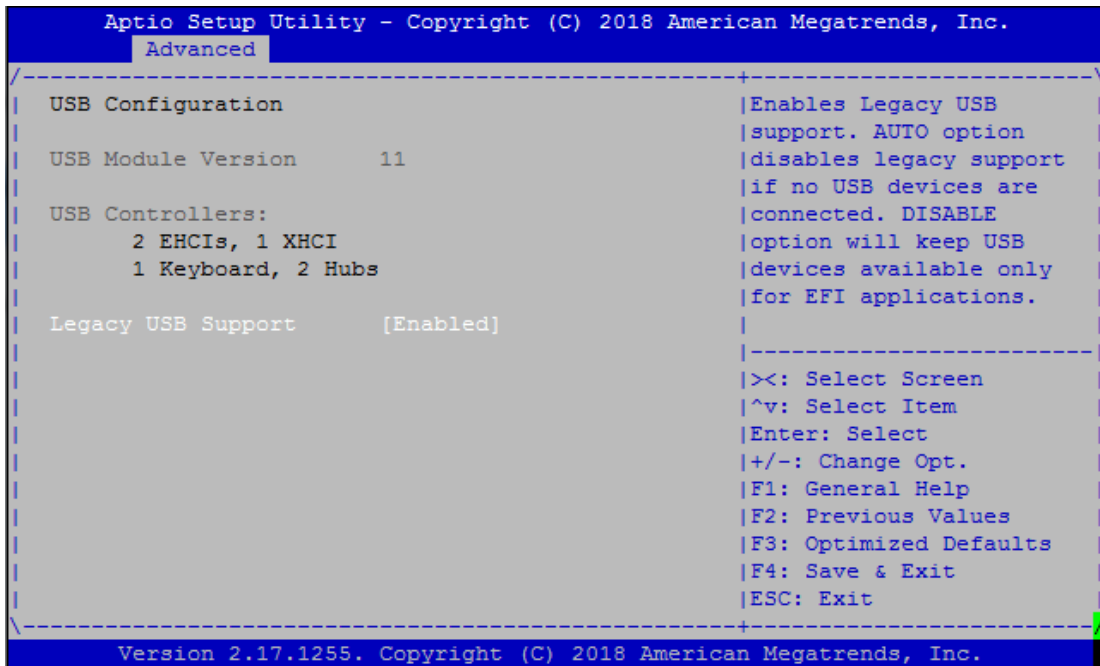
Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.

Lan boot select

```
          Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
          Advanced
/------------------------------------------------+------------------------\
|  On Board LAN Boot                              |Select On Board LAN#    |
|                                                 |Boot                    |
|  On Board LAN Boot         [Disabled]           |                        |
|                                                 |                        |
|                                                 |                        |
|                                                 |                        |
|                                                 |                        |
|                                                 |                        |
|                                                 |                        |
|                                                 |------------------------|
|                                                 |><: Select Screen       |
|                                                 |^v: Select Item         |
|                                                 |Enter: Select           |
|                                                 |+/-: Change Opt.        |
|                                                 |F1: General Help        |
|                                                 |F2: Previous Values     |
|                                                 |F3: Optimized Defaults  |
|                                                 |F4: Save & Exit         |
|                                                 |ESC: Exit               |
\------------------------------------------------+------------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
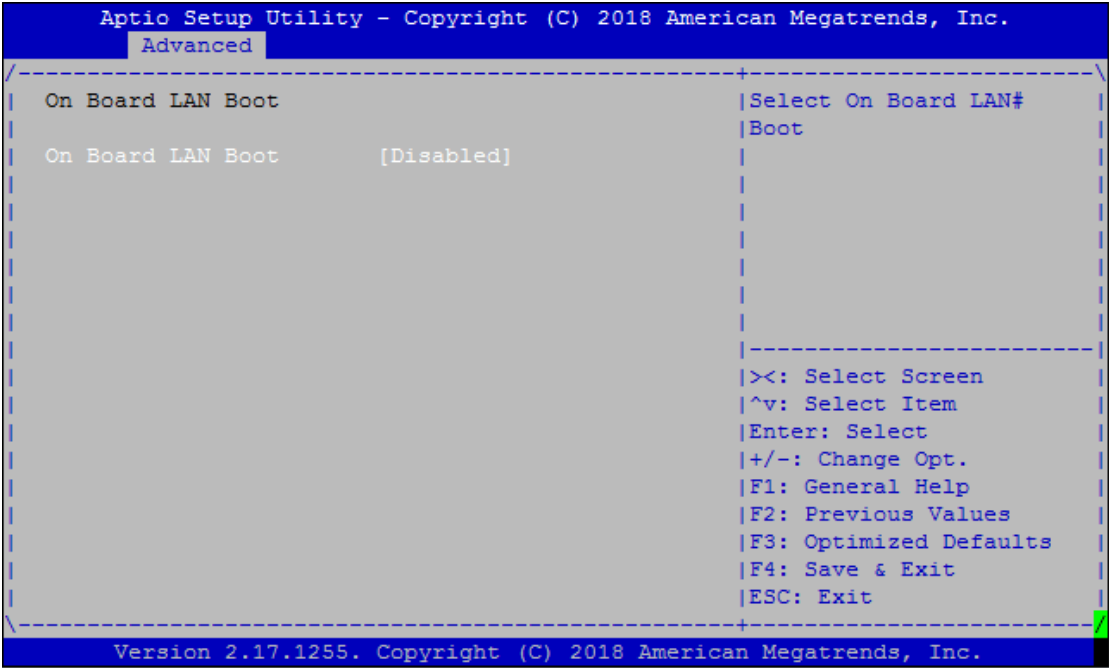
Feature	Options	Description
On Board LAN Boot	Disabled MGT2	Select On Board LAN# Boot

55

IntelRCSetup

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

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit
/-----------------------------------------------------+----------------------\
|  RC Revision          03.01.00                      |Displays and provides |
|> Processor Configuration                            |option to change the  |
|> Memory Configuration                               |Processor Settings    |
|> PCH Configuration                                  |                      |
|                                                     |                      |
|                                                     |                      |
|                                                     |                      |
|                                                     |                      |
|  ------------------------------------------...      |                      |
|  Setup Warning:                                     |----------------------|
|  Setting items on this Screen to incorrect          |><: Select Screen     |
|  may cause system to malfunction!                   |^v: Select Item       |
|                                                     |Enter: Select         |
|                                                     |+/-: Change Opt.      |
|                                                     |F1: General Help      |
|                                                     |F2: Previous Values   |
|                                                     |F3: Optimized Defaults|
|                                                     |F4: Save & Exit       |
|                                                     |ESC: Exit             |
\-----------------------------------------------------+----------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Processor Configuration	None	Displays and provides option to change the Processor Settings
Memory Configuration	None	Displays and provides option to change the Memory Settings
PCH Configuration	None	Displays and provides option to change the PCH Setting

Processor Configuration

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                        IntelRCSetup
/---------------------------------------------------+------------------------\
|  Processor Configuration                          |When disabled, forces   |
|  -----------------------------------------...     |the XD feature flag to  |
|  Processor Socket          Socket 0     Socket 1  |always return 0.        |
|  Processor ID              000406F1* |  000406F1  |                        |
|  Processor Frequency       2.200GHz  |  2.200GHz  |                        |
|  Processor Max Ratio       16H  |  16H            |                        |
|  Processor Min Ratio       0CH  |  0CH            |                        |
|  Microcode Revision        0B000014  |  0B000014  |                        |
|  L1 Cache RAM                 1408KB  |    1408KB  |                        |
|  L2 Cache RAM                 5632KB  |    5632KB  |------------------------|
|  L3 Cache RAM                56320KB  |   56320KB  |><: Select Screen       |
|  Processor 0 Version       Intel(R) Xeon(R) CPU E5|^v: Select Item         |
|                            -2699 v4 @ 2.20GHz     |Enter: Select           |
|  Processor 1 Version       Intel(R) Xeon(R) CPU E5|+/-: Change Opt.        |
|                            -2699 v4 @ 2.20GHz     |F1: General Help        |
|                                                   |F2: Previous Values     |
|  Execute Disable Bit       [Enable]               |F3: Optimized Defaults  |
|  X2APIC                    [Disable]              |F4: Save & Exit         |
|                                                   |ESC: Exit               |
\---------------------------------------------------+------------------------/
            Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Execute Disable Bit	Enabled Disabled	When disabled, forces the XD feature flag to always return 0.
X2APIC	Enabled Disabled	Enable/disable extended APIC support

Memory Configuration

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                        IntelRCSetup
/--------------------------------------------------+------------------------\
|> Memory Topology                                 |Displays memory         |
|                                                  |topology with Dimm      |
|                                                  |population information.  |
|                                                  |Each socket has 2       |
|                                                  |Nodes/iMC's(numbered    |
|                                                  |from 0-7),each node     |
|                                                  |supports upto 2         |
|                                                  |channels(0&1) and 3     |
|                                                  |DIMM's per              |
|                                                  |------------------------|
|                                                  |><: Select Screen       |
|                                                  |^v: Select Item         |
|                                                  |Enter: Select           |
|                                                  |+/-: Change Opt.        |
|                                                  |F1: General Help        |
|                                                  |F2: Previous Values     |
|                                                  |F3: Optimized Defaults  |
|                                                  |F4: Save & Exit         |
|                                                  |ESC: Exit               |
\--------------------------------------------------+------------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                        IntelRCSetup
/--------------------------------------------------+------------------------\
|   --------------------------------------...    ^|                         |
|  Socket0.Ch0.Dimm0: 2133MT/s Samsung DRx4 32G... *|                        |
|  Socket0.Ch1.Dimm0: 2133MT/s Samsung DRx4 32G... *|                        |
|  Socket0.Ch2.Dimm0: 2133MT/s Samsung DRx4 32G... *|                        |
|  Socket0.Ch3.Dimm0: 2133MT/s Samsung DRx4 32G... +|                        |
|  Socket1.Ch0.Dimm0: 2133MT/s Samsung DRx4 32G... +|                        |
|  Socket1.Ch1.Dimm0: 2133MT/s Transcend SRx8 4... +|                        |
|  Socket1.Ch2.Dimm0: 2133MT/s Samsung DRx4 32G... +|                        |
|  Socket1.Ch3.Dimm0: 2133MT/s Samsung DRx4 32G... +|                        |
|                                                  +|------------------------|
|                                                  +|><: Select Screen       |
|                                                  +|^v: Select Item         |
|                                                  +|Enter: Select           |
|                                                  +|+/-: Change Opt.        |
|                                                  +|F1: General Help        |
|                                                  +|F2: Previous Values     |
|                                                  +|F3: Optimized Defaults  |
|                                                  +|F4: Save & Exit         |
|                                                  v|ESC: Exit               |
\--------------------------------------------------+------------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

PCH Configuration

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                    IntelRCSetup
/--------------------------------------------------+-----------------------------\
| PCH Configuration                                |Select S0/S5 for ACPI        |
| -------------------------------------------...   |state after a G3             |
| PCH state after G3      [Last State]             |                             |
|> PCH SATA 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 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
PCH state after G3	S0 S5 Last State	Select S0/S5 for ACPI state after a G3

PCH SATA Configuration

```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                          IntelRCSetup
/------------------------------------------------+----------------------\
| PCH SATA Configuration                         ^|Enable or Disable SATA |
| ------------------------------------------...  *|Controller             |
| SATA Controller          [Enabled]            *|                        |
| Configure SATA as        [AHCI]               *|                        |
|                                               *|                        |
| SATA Port 0              TS64EPTMM1600L - 64.0... *|                    |
| Software Preserve        Unknown              *|                        |
|   Port 0                 [Enabled]            +|                        |
|   Hot Plug               [Disabled]           +|                        |
|   Configure as eSATA     [Disabled]           +|------------------------|
|   Configured as eSATA    Hot Plug supported   +|><: Select Screen       |
|   Spin Up Device         [Disabled]           +|^v: Select Item         |
|   SATA Device Type       [Hard Disk Drive]    +|Enter: Select           |
| SATA Port 1              INTEL SSDSC2BB - 80.0... +|+/-: Change Opt.     |
| Software Preserve        Unknown              +|F1: General Help        |
|   Port 1                 [Enabled]            +|F2: Previous Values     |
|   Hot Plug               [Disabled]           +|F3: Optimized Defaults  |
|   Configure as eSATA     [Disabled]           +|F4: Save & Exit         |
|   Configured as eSATA    Hot Plug supported   v|ESC: Exit               |
\------------------------------------------------+----------------------/
         Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
SATA controller	Enabled Disabled	Enables/Disables SATA controller
Configure SATA as	IDE AHCI RAID	This will configure SATA as IDE ,RAID or AHCI.
port 0/1/2/3/4/5	Enabled Disabled	Enables or Disables SATA Port
Hot plug	Enabled Disabled	Designates this port as Hot Pluggable.
Configure as eSATA	Enabled Disabled	Configures port as External SATA (eSATA)
Spin Up Device	Enabled Disabled	If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive

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Server Mgmt

Select the Server Mgmt menu item from the BIOS setup screen to enter the Server Mgmt Setup screen.

Users can select any of the items in the left frame of the screen.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main   Advanced   IntelRCSetup   Server Mgmt   Security   Boot   Save & Exit
/--------------------------------------------------------+----------------------\
|  BMC Self Test Status    PASSED                        |Enable/Disable        |
|  BMC Device ID           Unknown                       |interfaces to         |
|  BMC Device Revision     Unknown                       |communicate with BMC  |
|  BMC Firmware Revision   Unknown                       |                      |
|  IPMI Version            Unknown                       |                      |
|                                                        |                      |
|  BMC Support             [Enabled]                     |                      |
|  Wait For BMC            [Disabled]                     |                      |
|> BMC network 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 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```
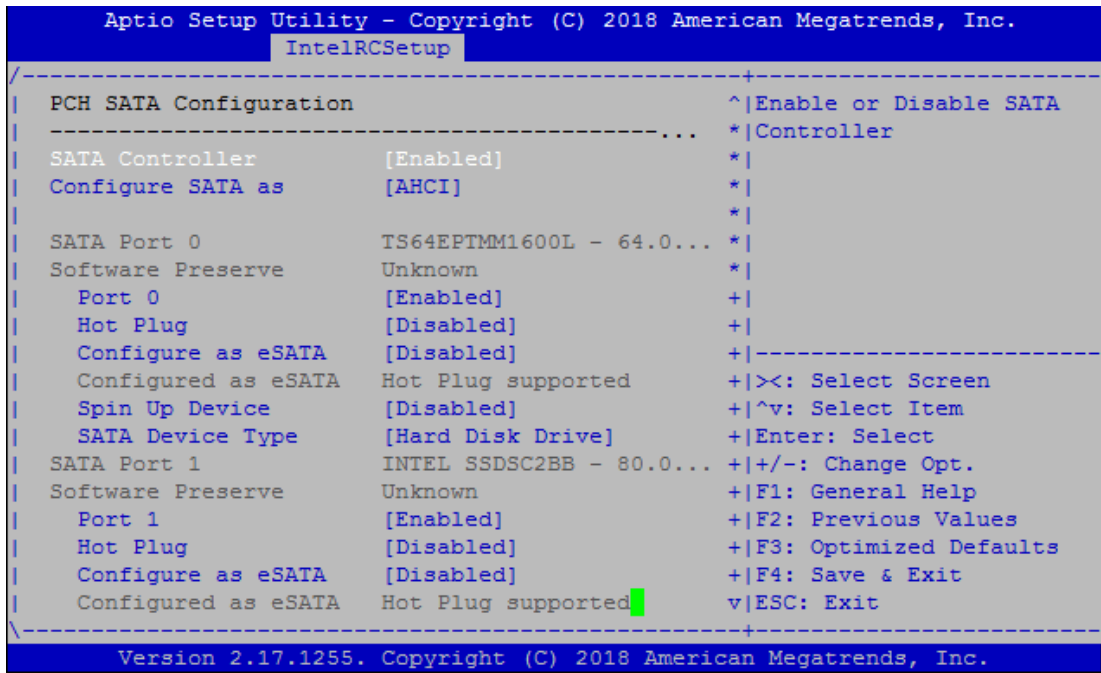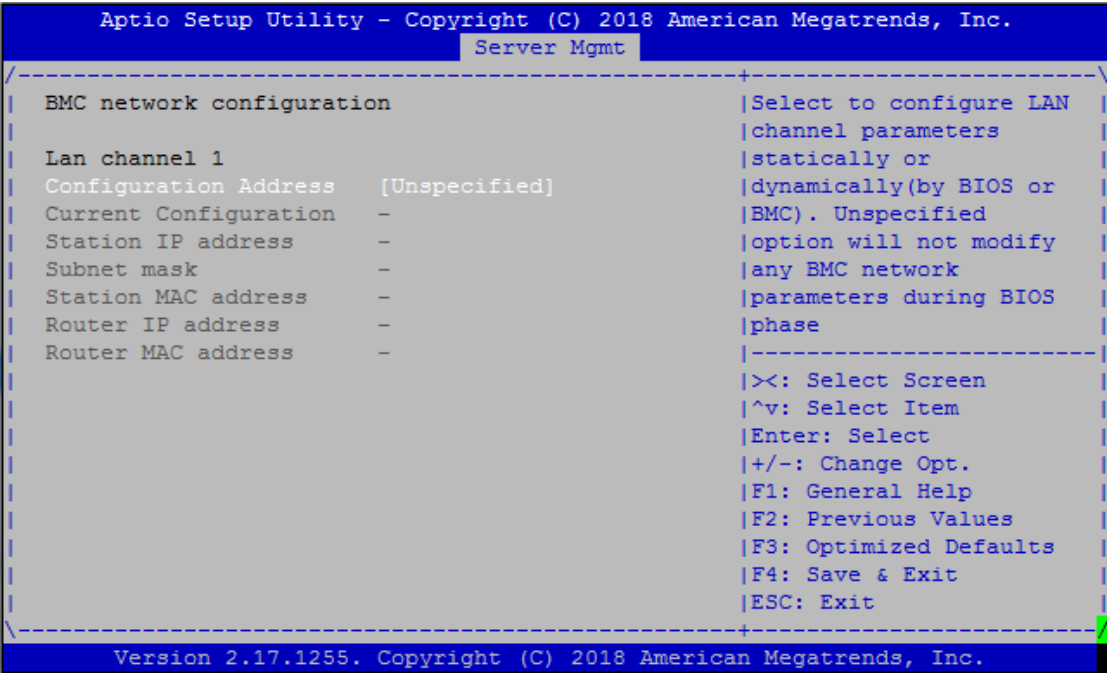
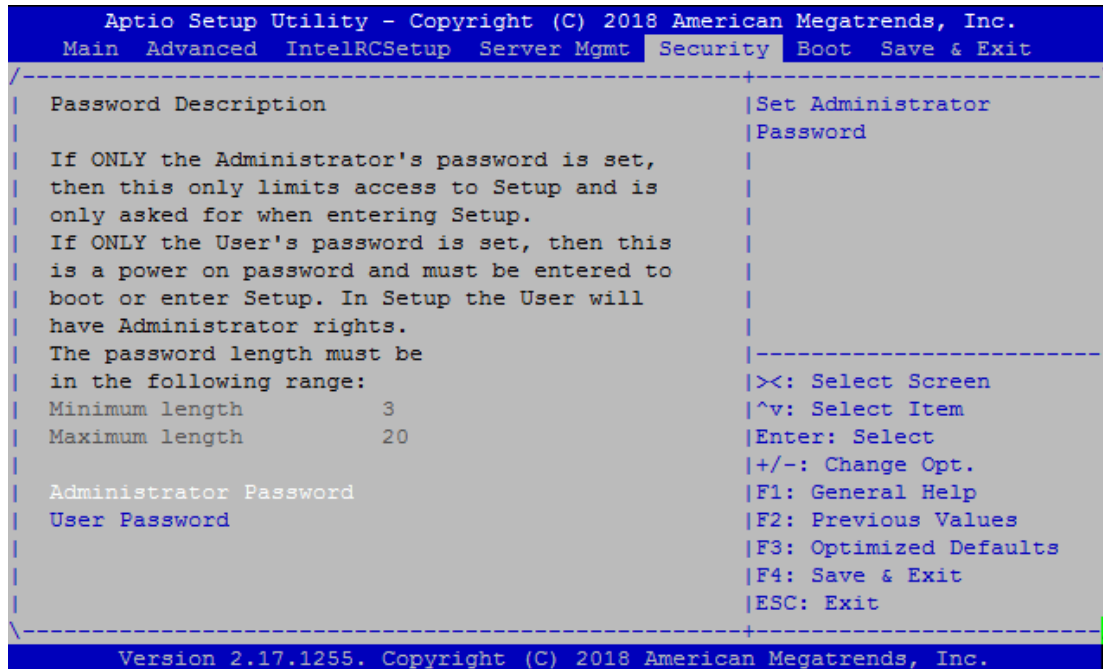| Feature	Options	Description
BMC Support	Enabled Disabled	Enable/Disable interfaces to communicate with BMC
Wait For BMC	Enabled Disabled	Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.

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BMC network configuration

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                                 Server Mgmt
/---------------------------------------------------+------------------------\
|  BMC network configuration                        |Select to configure LAN |
|                                                   |channel parameters       |
|  Lan channel 1                                    |statically or            |
|  Configuration Address    [Unspecified]           |dynamically(by BIOS or   |
|  Current Configuration    -                       |BMC). Unspecified        |
|  Station IP address       -                       |option will not modify   |
|  Subnet mask              -                       |any BMC network          |
|  Station MAC address      -                       |parameters during BIOS   |
|  Router IP address        -                       |phase                    |
|  Router MAC address       -                       |-------------------------|
|                                                   |><: Select Screen        |
|                                                   |^v: Select Item          |
|                                                   |Enter: Select            |
|                                                   |+/-: Change Opt.         |
|                                                   |F1: General Help         |
|                                                   |F2: Previous Values      |
|                                                   |F3: Optimized Defaults   |
|                                                   |F4: Save & Exit          |
|                                                   |ESC: Exit                |
\---------------------------------------------------+------------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

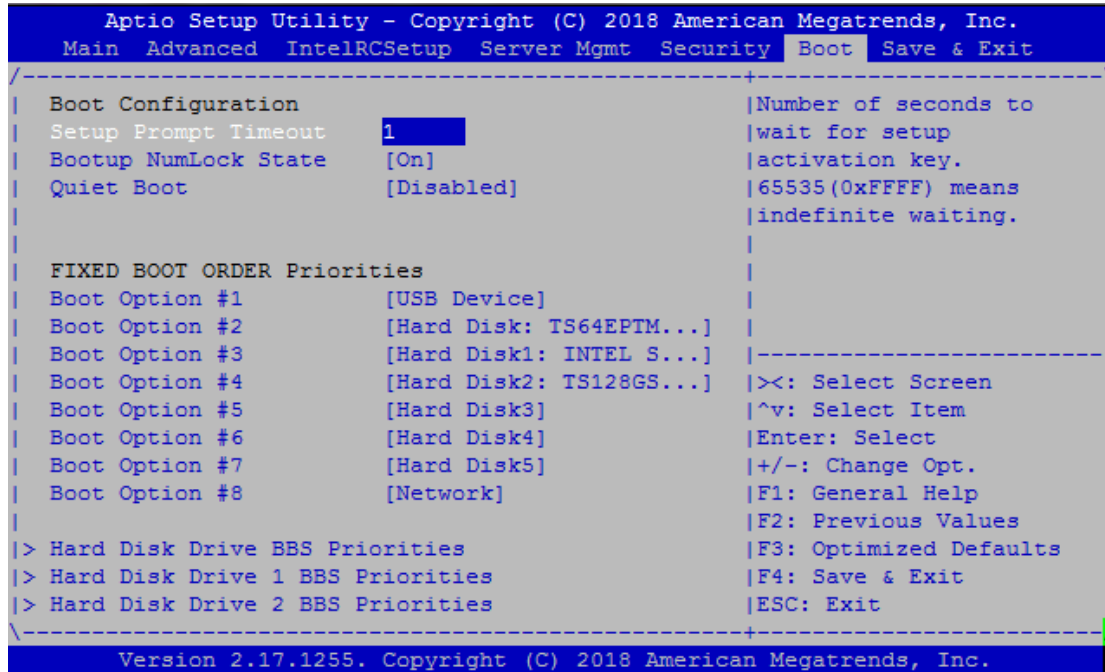| Feature	Options	Description
Configuration Address source	Unspecified Static DynamicBmcDhcp DynamicBmcNonDhcp	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase

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.

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit
/-------------------------------------------------------+------------------------\
|  Password Description                                 |Set Administrator       |
|                                                       |Password                |
|  If ONLY the Administrator's password is set,         |                        |
|  then this only limits access to Setup and is         |                        |
|  only asked for when entering Setup.                  |                        |
|  If ONLY the User's password is set, then this        |                        |
|  is a power on password and must be entered to        |                        |
|  boot or enter Setup. In Setup the User will          |                        |
|  have Administrator rights.                           |                        |
|  The password length must be                          |------------------------|
|  in the following range:                              |><: Select Screen       |
|  Minimum length          3                            |^v: Select Item         |
|  Maximum length          20                           |Enter: Select           |
|                                                       |+/-: Change Opt.        |
|  Administrator Password                               |F1: General Help        |
|  User Password                                        |F2: Previous Values     |
|                                                       |F3: Optimized Defaults  |
|                                                       |F4: Save & Exit         |
|                                                       |ESC: Exit               |
\-------------------------------------------------------+------------------------/
        Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

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.

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Boot

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.
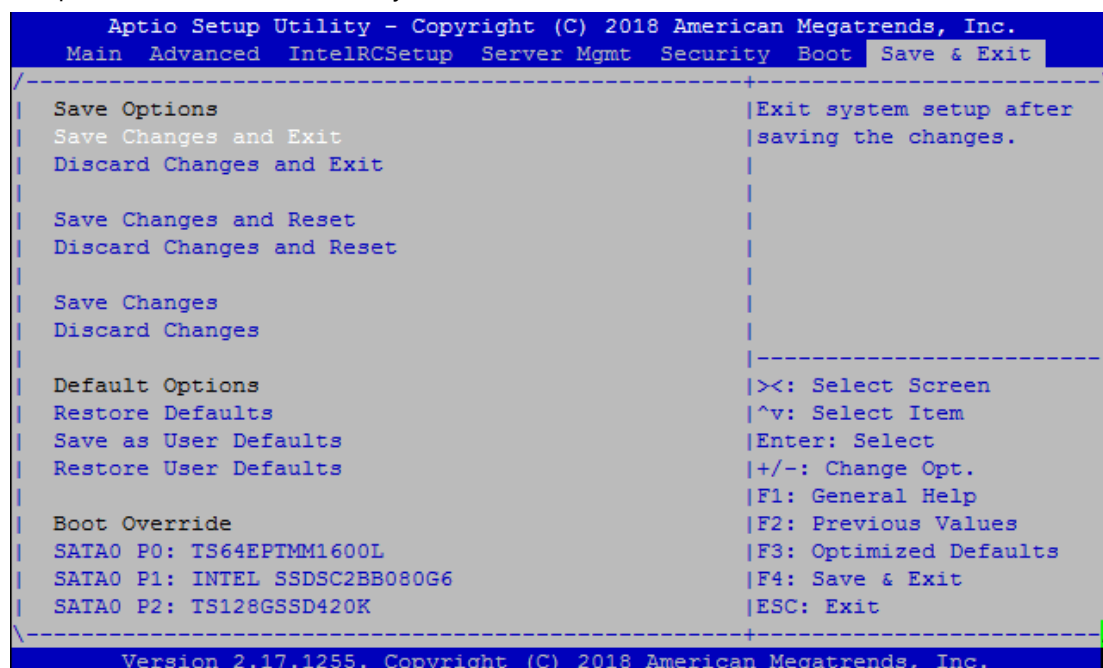
```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Main   Advanced   IntelRCSetup   Server Mgmt   Security   Boot   Save & Exit
/----------------------------------------------------------+--------------------------\
|  Boot Configuration                                      |Number of seconds to      |
|  Setup Prompt Timeout        1                           |wait for setup            |
|  Bootup NumLock State        [On]                        |activation key.           |
|  Quiet Boot                  [Disabled]                  |65535(0xFFFF) means        |
|                                                          |indefinite waiting.        |
|                                                          |                          |
|  FIXED BOOT ORDER Priorities                             |                          |
|  Boot Option #1            [USB Device]                  |                          |
|  Boot Option #2            [Hard Disk: TS64EPTM...]      |                          |
|  Boot Option #3            [Hard Disk1: INTEL S...]      |--------------------------|
|  Boot Option #4            [Hard Disk2: TS128GS...]      |><: Select Screen          |
|  Boot Option #5            [Hard Disk3]                  |^v: Select Item            |
|  Boot Option #6            [Hard Disk4]                  |Enter: Select              |
|  Boot Option #7            [Hard Disk5]                  |+/-: Change Opt.           |
|  Boot Option #8            [Network]                     |F1: General Help           |
|                                                          |F2: Previous Values        |
|> Hard Disk Drive BBS Priorities                          |F3: Optimized Defaults     |
|> Hard Disk Drive 1 BBS Priorities                        |F4: Save & Exit            |
|> Hard Disk Drive 2 BBS Priorities                        |ESC: Exit                  |
\----------------------------------------------------------+--------------------------/
         Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Setup Prompt Timeout	1	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.

■ Choose boot priority from boot option group.

■ Choose specifies boot device priority sequence from available Group device.

Save and Exit

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.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
            Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit
/------------------------------------------------+-----------------------\
|  Save Options                                  |Exit system setup after |
|  Save Changes and Exit                         |saving the changes.      |
|  Discard Changes and Exit                      |                         |
|                                                |                         |
|  Save Changes and Reset                        |                         |
|  Discard Changes and Reset                     |                         |
|                                                |                         |
|  Save Changes                                  |                         |
|  Discard Changes                               |                         |
|                                                |-------------------------|
|  Default Options                               |><: Select Screen        |
|  Restore Defaults                              |^v: Select Item          |
|  Save as User Defaults                         |Enter: Select            |
|  Restore User Defaults                         |+/-: Change Opt.         |
|                                                |F1: General Help         |
|  Boot Override                                 |F2: Previous Values      |
|  SATA0 P0: TS64EPTMM1600L                      |F3: Optimized Defaults   |
|  SATA0 P1: INTEL SSDSC2BB080G6                 |F4: Save & Exit          |
|  SATA0 P2: TS128GSSD420K                       |ESC: Exit                |
\------------------------------------------------+-----------------------/
          Version 2.17.1255. Copyright (C) 2018 American Megatrends, Inc.
```

■ 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.

```
/---------- Save & reset ----------\
|                                   |
|  Save configuration and reset?    |
|                                   |
|-----------------------------------|
|         Yes          No           |
\-----------------------------------/
```
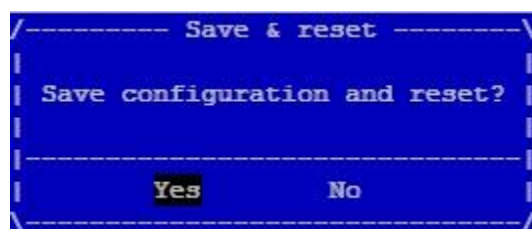
■ Discard Changes and Exit

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.
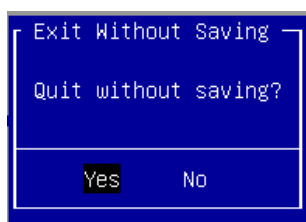
■ **Restore Defaults**

Restore default values for all setup options. Select "**Yes**" to load Optimized defaults.
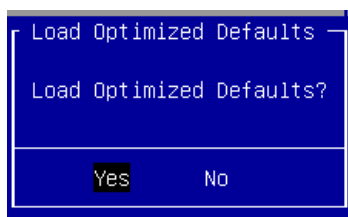
PS: The items under Boot Override were not same with image. It should depend on devices connected to this system.

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APPENDIX A: LED INDICATOR EXPLANATIONS

The status explanations of LED indicators on Front Panel are as follows:

HDD Activity
System Status
System Power
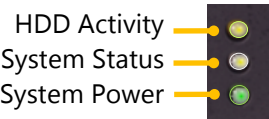
▶ **HDD Activity Status**

Blinking Amber	*Data access activities*
Off	*No data access activities*

▶ **System Status**

This LED indicator is <u>programmable</u>. You could program it to display the operating status with the behaviors described below:

Solid Green	*Controlled by GPIO*
Blinking Green	*Controlled by GPIO*
Solid Amber	*Controlled by GPIO*
Blinking Amber	*Controlled by GPIO*
Off	*Controlled by GPIO*

▶ **System Power**

Solid Green	*The system is powered on*
Off	*The system is powered off*

Link Activity
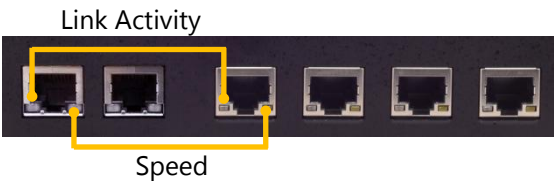
Speed

▶ **RJ45 LAN Status**

Left LED (Link Status)	*Solid Amber*	*Link has been established and there is no activity on this port*
	Blinking Amber	*Link has been established and there is activity on this port*
	Off	*No link has been established*
Right LED (Speed)	*Solid Green*	*Operating as a 100 Mbps connection*
	Solid Amber	*Operating as a Gigabit connection (1000 Mbps)*
	Off	*No link has been established*

▶ **SFP Port**

Solid Amber	*Link has been established and there is no activity on this port*
Blinking Amber	*Link has been established and there is activity on this port*
Off	*No link has been established*

SFP1

SFP2
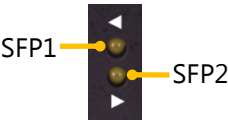
APPENDIX B: SETTING UP CONSOLE REDIRECTIONS

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. The following steps illustrate how to use this feature. The BIOS of the system allows the redirection of the console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port.

1. Connect one end of the console cable to console port of the system and the other end to the serial port of the Remote Client System.

2. Configure the following settings in the BIOS Setup menu:

   BIOS > **Advanced** > **Serial Port Console Redirection** > **Console Redirection Settings**, select **115200** for the Baud Rate, **None**. for Flow control, **8** for the Data Bit, **None** for Parity Check, and **1** for the Stop Bit.

3. Configure console redirection related settings on the client system. You can use a terminal emulation program that features communication with serial COM ports such as *TeraTerm* or *Putty*. Make sure the serial connection properties of the client conform to those for the server.

APPENDIX C: PROGRAMMING GENERATION 3 LAN BYPASS

The bypass function is used to link two independent Ethernet ports when the system crashes or powers off. This means if your system is equipped with a LAN Bypass function, a condition in your system will not interrupt your network traffic. Different from the previous two generations (Gen1 and Gen2), the Lanner Bypass Gen 3 employs a programming method to control the bypass function by software. There are typically two types of communication status for the bypass function, one is "**Normal**" and another is "Bypass " status. Furthermore, the Lanner Bypass software is capable of controlling the bypass status in the following 3 instances.

▶ When the system powers off, it can be forced to enable the LAN Bypass function.

▶ When the system is in the just-on state which is a brief moment when it powers up.

The Lanner bypass possesses the following features:

1. Communication through SMBUS (I2C)

2. Independent bypass status control for each pair up to a total of 4 pairs

3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), system off, or upon software request (during run-time).

4. Software programmable bypass or normal mode

5. Software programmable timer interval:

    - **JUST-ON** watchdog timer, used during JUST-ON, has timer setting of 5~1275 seconds of timer interval.

    - **Run-Time** watchdog timer, used during run-time, with of 1~255 seconds of timer interval.

6. Multiple Watchdog Timers:

    -**Two for run-time**: It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of the bypass, you have the flexibility to manage the bypass status for them differently.

    -**One for just-on**: It is designed to give you the precise control of the bypass during this phase. You can use this timer to delay enabling the bypass in just-on state.

▶ For a reference utility that contains sample code for LAN Bypass function programming, please visit http://www.lannerinc.com/support/download-center/drivers, enter the product category and download the utility package.

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APPENDIX D: 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 or inadequate maintenance by the customer

   ▶ Unauthorized modification, misuse, or reversed engineering of the product

   ▶ Operation outside of the environmental specifications for the product.

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.

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RMA Service Request Form

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

RMA No:	Reasons to Return: □ Repair(Please include failure details) □ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:

Return Shipping Address: _____
Shipping by: □ Air Freight □ Sea □ Express_____
□ 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
	09: Cache RMA Problem	15: PS2	21: Shut Down
03: CMOS Data Lost	10: Memory Socket Bad	16: LAN	22: Panel Fail
04: FDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
05: HDC Fail	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)
06: Bad Slot			

Request Party   **Confirmed By Supplier**

_____   _____

Authorized Signature / Date   **Authorized Signature / Date**

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