NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

DNA 1160

User Manual

NEXCOM International Co., Ltd.
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PREFACE

Copyright

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: http://www.nexcom.com. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

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System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the DNA 1160 package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Description	Qty
1	19L00116000X0	DNA 1160 ASSY		1
2	50311F0107X00	I Head Bolts Screw Long Fei: M3x14ISO	I3 x 14 AXIS x 10mm Screw x 4mm (Black)	4
3	5044440031X00	Rubber Foot Kang Yang: RF20-5-4P	19.8 x 18 x 5.0mm	4
4	5060100012X00	High-End Damper Inside DIA. Kitagawa: HED-1111-ALS20ABK	11.1mm H:10.8mm TPS (Black)	4
5	60110A0159X00	Pizza Box for DNA 1160 VER: A FULPAK	347 x 254 x 142mm B Flute	1
6	60111A0409X00	Outer Carton for DNA 1160 VER: A FULPAK	508 x 426 x 363mm AB Flute	1
7	6012200052X00	PE Zipper Bag #8	170 x 240mm, w/China RoHS Symbol	1
8	6012200053X00	PE Zipper Bag #3	100 x 70mm, w/China RoHS Symbol	1
9	6013300839X00	EPE for DNA 1150-PEX VER: B FULPAK	247 x 135 x 114mm	2
10	6013300844X00	EPE for DNA 1150-PEX w/1 PC Power Cord VER: A FULPAK	190 x 60 x 40mm	1
11	60233AT123X00	SATA Cable ST: MD-6102043	SATA 7P 180D (Lock) to 7P 180D (Lock) L=70mm	1
12	60233PW197X00	SATA Power Cable Best: 900-0415-070R	Female Connector 15P to Housing 4P PIT: 2.54mm L: 70mm	1
13	7400040013X00	Power Adapter FSP: FSP040-RHAN2 (9NA0404934)	DC 40W 12V/3.33A 110 x 50 x 32mm Plug:2.5/5.5/7.5(mm)	1

Ordering Information

The following below provides ordering information for DNA 1160.

Barebone

DNA 1160 (P/N: 10L00116000X0)

Intel Denverton SoC Atom® C3000 series, BGA type, 2 x DDR4 memory slots, 8 Copper LAN ports, CFast socket, 1 x USB 2.0, 1 x USB 3.0, mini-PCIe slot

Chapter 1: Product Introduction

Overview

Key Features

- Next gen. Intel Atom® processor C3000 series supporting 2 & 4 cores, BGA type
- 2x DDR4-2133 Long-DIMM ECC memory, Max. 32GB
- Support 8 GbE LAN ports
- One internal 2.5" HDD Bay and one internal CFast socket
- USB 3.0 connector
- Backup power supported (by project)

Hardware Specifications

Main Board

- DNB 1160
- Next gen. Intel Atom® processor C3000 series supporting 2 & 4 cores, BGA type

Main Memory

- 2x DDR4-2133 Long-DIMM ECC memory, Max. 32GB

LAN Features

- 4x LAN controller: Intel® i211-AT
- 4x MARVELL PHY: 88E1543
- Support 10/100/1000 link speed
- 8x Copper ports

Expansion

- 2x Mini-PCIe slots (One with SIM Socket for 3G/4G Module)
- 3x Antenna holes

I/O Interface-Front

- Power status/HDD status/LAN status

I/O Interface-Rear

- 1x USB 2.0 + 1x USB 3.0
- 1x RJ45 type console port
- 8x Copper ports
- 1x Power button
- 1x VGA port

Devices

- 1x Onboard CFast socket
- 1x Internal 2.5" HDD bay

Power Input

- 40W power adapter

Dimensions

- Chassis Dimension: 288mm x 186.8mm x 44mm
- Carton Dimension: 347mm x 254mm x 142mm

Weight

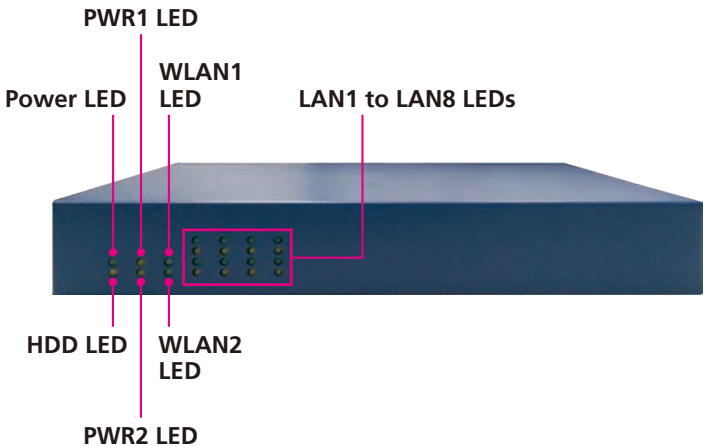
- Without Packing: 2.5kg
- With Packing: 5kg

Certifications

- CE approval
- FCC Class B
- UL

Knowing Your DNA 1160

Front Panel



Power LED

LED	Behavior	Description
Power	Steady Green	System power is on.

HDD LED

LED	Behavior	Description
HDD	Flashing Yellow	Read and write activity on the HDD.

PWR1 and PWR2 (DC Power Status) LEDs

LED	Behavior	Description
PWR1	Steady Orange	DC Input 1 power failure due to unplugged cable.
PWR2	Steady Orange	DC Input 2 power failure due to unplugged cable. (Optional)

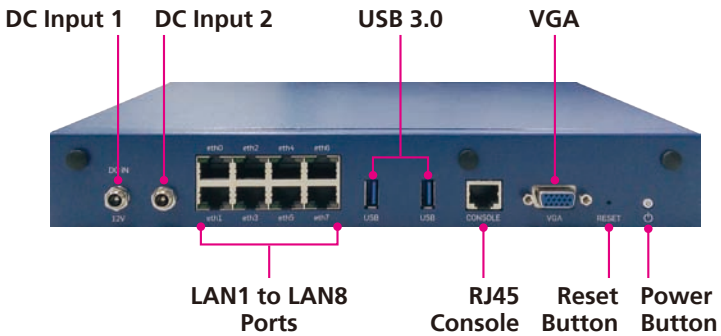
WLAN1 and WLAN2 (WLAN Status) LEDs

LED	Behavior	Description
WLAN1	Steady Green	WLAN1 ready. (Mini-PCIe1)
WLAN2	Steady Green	WLAN2 ready. (Mini-PCIe2)

LAN 1 to LAN 8 LEDs

LED	Behavior	Description
Act	Flashing Green	Network activity on the LAN.
Link	Steady Green	1G network link.
	Steady Yellow	100Mbps network link.

Rear Panel



12V DC Input 1 and 12V DC Input 2 (Optional)
Used to plug a DC power cord.

Note: DC Input 2 is optional.

LAN 1 (ETH0) to LAN 8 (ETH7) Ports
Used to connect network devices.

USB 3.0 Ports
Used to connect USB 3.0/2.0 devices.

RJ45 Console Port
Used to connect RJ45 type console port.

VGA
Used to connect an analog VGA monitor.

Reset Button
Press to restart the system.

Power Button
Press to power-on or power-off the system.

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the DNA 1160 motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

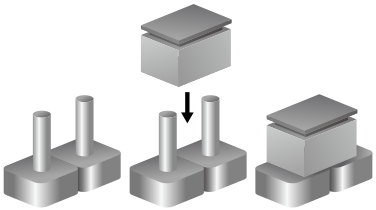
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

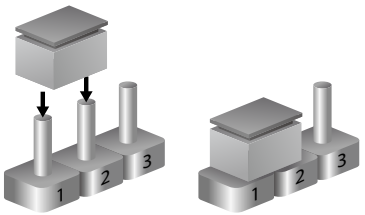
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

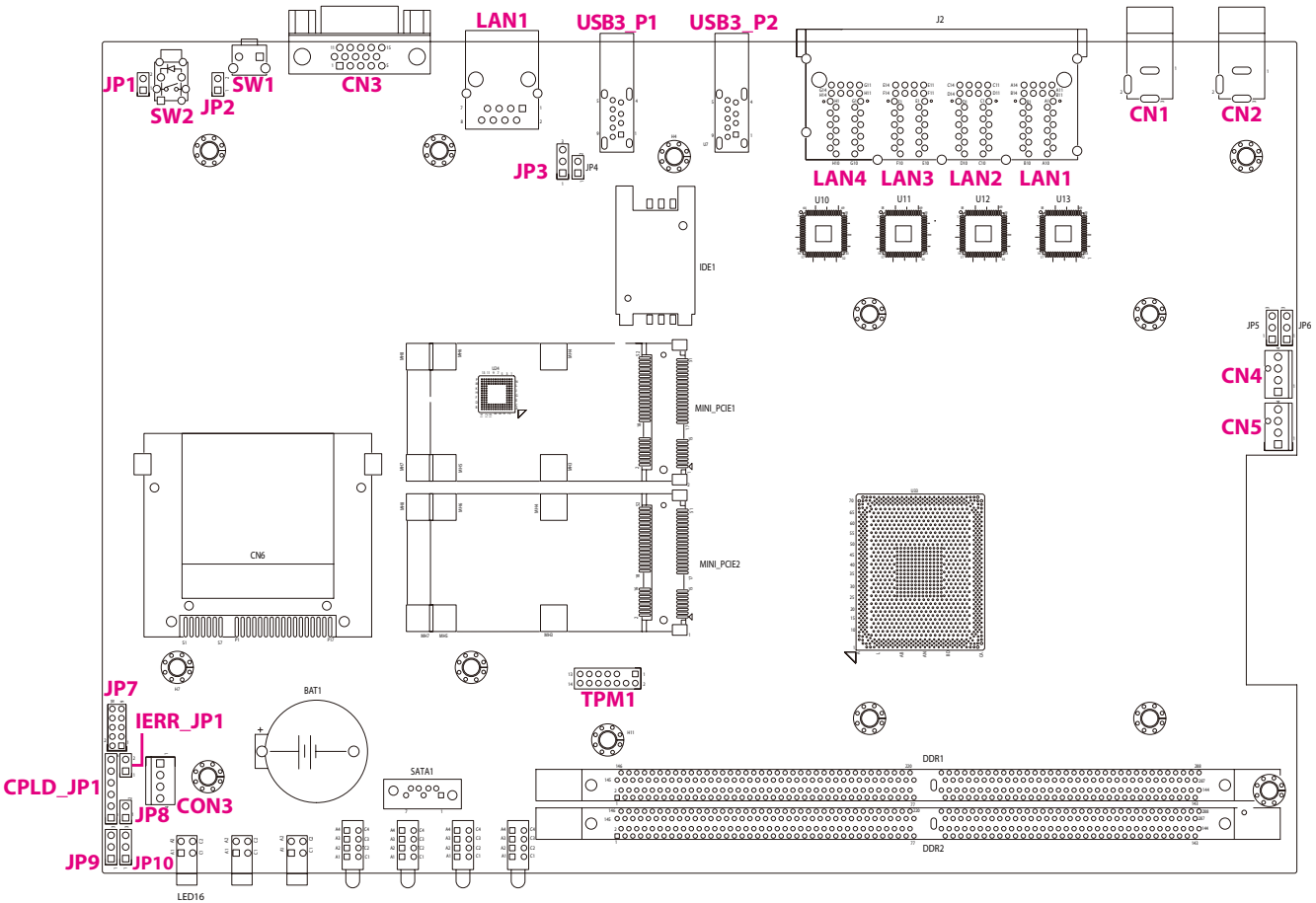


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.



Jumpers

RTC Clear

Connector type: 1x3 3-pin header
Connector location: JP9

Pin	Function
1-2	Normal
2-3	Clear CMOS

PMC Clear

Connector type: 1x3 3-pin header
Connector location: JP10

Pin	Function
1-2	Normal
2-3	Clear PMC

Flash Security Override (IERR)

Connector type: 1x2 2-pin header
Connector location: IERR_JP1

Pin	Function
NC	Flash descriptor security locked (Default)
1-2	Flash descriptor security unlocked - requires external pull-up

ME Recover Mode

Connector type: 1x2 2-pin header
Connector location: JP8

Pin	Function
NC	Normal (Default)
1-2	ME Recover Mode

Console CTS Strap Pin Header

Connector type: 1x3 3-pin header
Connector location: JP3

Pin	Function
1-2	RTS to CTS
2-3	Normal

Connector Pin Definitions

External I/O Interfaces

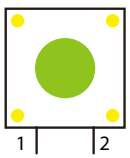
Power Button

Connector location: SW2

Pin	Definition	Pin	Definition
1	PWR_BTN_CAL_N	2	GND
3	PWR_BTN_CAL_N	4	GND

Reset Button

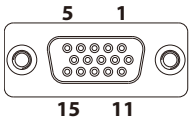
Connector location: SW1



Pin	Definition
1	GND
2	RST_BTN_CAL_N

VGA Connector

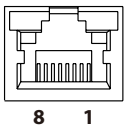
Connector type: DB-15 port, 15-pin D-Sub
Connector location: CN3



Pin	Definition	Pin	Definition
1	DACROA_B	2	DACGOA_B
3	DACBOA_B	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	NC	12	AVSYNCO_B
13	AHSYNCO_B	14	AVSYNCO_B
15	DDC_CLKO_B		
MH1	NC	MH2	NC

RJ45 Console Port (RS232)

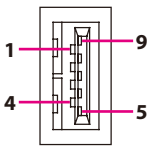
Connector type: RJ45 port
Connector location: LAN1



Pin	Definition	Pin	Definition
1	SP_RTS1_R	2	SP_DTR1_R
3	SP_TXD1_R	4	GND
5	SP_DCD1_R	6	SP_RXD1_R
7	SP_DSR1_R	8	SP_CTS1_CON

USB 3.0 Port 1

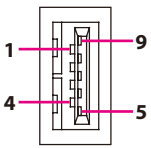
Connector type: USB 3.0 port, Type A
Connector location: USB3_P1



Pin	Definition	Pin	Definition
1	P5V_USB	2	USB2_P0-
3	USB2_P0+	4	GND
5	USB3_RX_D0-	6	USB3_RX_D0+
7	GND	8	USB3_TX_D0-
9	USB3_TX_D0+		

USB 3.0 Port 2

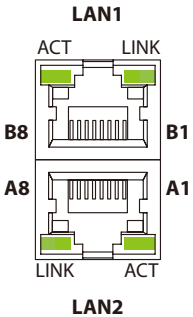
Connector type: USB 3.0 port, Type A
Connector location: USB3_P2



Pin	Definition	Pin	Definition
1	P5V_USB	2	USB2_P1-
3	USB2_P1+	4	GND
5	USB3_RX_D1-	6	USB3_RX_D1+
7	GND	8	USB3_TX_D1-
9	USB3_TX_D1+		

LAN 1 and LAN 2 Ports (ETH0 and ETH1)

Connector type: RJ45 with LEDs
Connector location: LAN1



Act	Status
Flashing Green	Data activity
Off	No activity

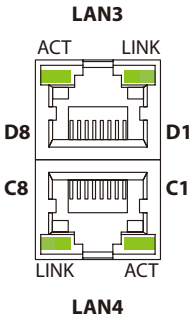
Link	Status
Steady Green	1G network link
Off	100Mbps, 10Mbps or no network link

Pin	Definition	Pin	Definition
A1	LAN2_TX0N	A2	LAN2_TX0P
A3	LAN2_TX1N	A4	LAN2_TX1P
A5	LAN2_TX2N	A6	LAN2_TX2P
A7	LAN2_TX3N	A8	LAN2_TX3P
A9		A10	CGND
A11	P3V3_AUX	A12	LAN2_LED_ACT#
A13	LAN2_LED_LINK1000#	A14	LAN2_LED_LINK100#

Pin	Definition	Pin	Definition
B1	LAN1_TX0N	B2	LAN1_TX0P
B3	LAN1_TX1N	B4	LAN1_TX1P
B5	LAN1_TX2N	B6	LAN1_TX2P
B7	LAN1_TX3N	B8	LAN1_TX3P
B9		B10	CGND
B11	P3V3_AUX	B12	LAN1_LED_ACT#
B13	LAN1_LED_LINK1000#	B14	LAN1_LED_LINK100#

LAN 3 and LAN 4 Ports (ETH2 and ETH3)

Connector type: RJ45 with LEDs
Connector location: LAN2



Act	Status
Flashing Green	Data activity
Off	No activity

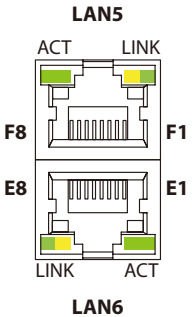
Link	Status
Steady Green	1G network link
Off	100Mbps, 10Mbps or no network link

Pin	Definition	Pin	Definition
C1	LAN4_TX0N	C2	LAN4_TX0P
C3	LAN4_TX1N	C4	LAN4_TX1P
C5	LAN4_TX2N	C6	LAN4_TX2P
C7	LAN4_TX3N	C8	LAN4_TX3P
C9		C10	CGND
C11	P3V3_AUX	C12	LAN4_LED_ACT#
C13	LAN4_LED_LINK1000#	C14	LAN4_LED_LINK100#

Pin	Definition	Pin	Definition
D1	LAN3_TX0N	D2	LAN3_TX0P
D3	LAN3_TX1N	D4	LAN3_TX1P
D5	LAN3_TX2N	D6	LAN3_TX2P
D7	LAN3_TX3N	D8	LAN3_TX3P
D9		D10	CGND
D11	P3V3_AUX	D12	LAN3_LED_ACT#
D13	LAN3_LED_LINK1000#	D14	LAN3_LED_LINK100#

LAN 5 and LAN 6 Ports (ETH4 and ETH5)

Connector type: RJ45 with LEDs
Connector location: LAN3



Act	Status
Flashing Green	Data activity
Off	No activity

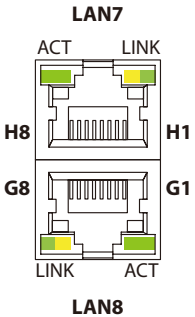
Link	Status
Steady Green	1G network link
Steady Yellow	100Mbps network link
Off	10Mbps or no link

Pin	Definition	Pin	Definition
E1	Port2_TX0N	E2	Port2_TX0P
E3	Port2_TX1N	E4	Port2_TX1P
E5	Port2_TX2N	E6	Port2_TX2P
E7	Port2_TX3N	E8	Port2_TX3P
E9		E10	CGND
E11	P3V3_AUX	E12	P1_LED2
E13	P1_LED1	E14	P1_LED0

Pin	Definition	Pin	Definition
F1	Port1_TX0N	F2	Port1_TX0P
F3	Port1_TX1N	F4	Port1_TX1P
F5	Port1_TX2N	F6	Port1_TX2P
F7	Port1_TX3N	F8	Port1_TX3P
F9		F10	CGND
F11	P3V3_AUX	F12	P0_LED2
F13	P0_LED1	F14	P0_LED0

LAN 7 and LAN 8 Ports (ETH6 and ETH7)

Connector type: RJ45 with LEDs
Connector location: LAN4



Act	Status
Flashing Green	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Yellow	100Mbps network link
Off	10Mbps or no link

Pin	Definition	Pin	Definition
G1	Port4_TX0N	G2	Port4_TX0P
G3	Port4_TX1N	G4	Port4_TX1P
G5	Port4_TX2N	G6	Port4_TX2P
G7	Port4_TX3N	G8	Port4_TX3P
G9		G10	CGND
G11	P3V3_AUX	G12	P3_LED2
G13	P3_LED1	G14	P3_LED0

Pin	Definition	Pin	Definition
H1	Port3_TX0N	H2	Port3_TX0P
H3	Port3_TX1N	H4	Port3_TX1P
H5	Port3_TX2N	H6	Port3_TX2P
H7	Port3_TX3N	H8	Port3_TX3P
H9		H10	CGND
H11	P3V3_AUX	H12	P2_LED2
H13	P2_LED1	H14	P2_LED0

12V DC Input 1 (Optional)

Connector type: 3-pin DC Jack
Connector location: CN1

Pin	Definition
1	GND
2	GND
3	DC_IN2

12V DC Input 2

Connector type: 3-pin DC Jack
Connector location: CN2

Pin	Definition
1	GND
2	GND
3	DC_IN1

Internal Connectors

Internal Reset Connector

Connector type: 1x2 2-pin header
Connector location: JP2

Pin	Definition
1	RW_SW_RST
3	GND

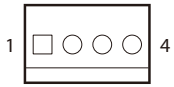
Internal Power Connector

Connector type: 1x2 2-pin header
Connector location: JP1

Pin	Definition
1	PWR_BTN_CAL_N
2	GND

CPU Fan Connector

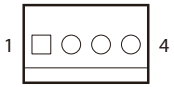
Connector type: 1x4 4-pin wafer
Connector location: CN5



Pin	Definition	Pin	Definition
1	GND	2	P12V
3	TACH	4	PWM

System Fan Connector

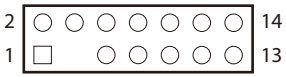
Connector type: 1x4 4-pin wafer
Connector location: CN4



Pin	Definition	Pin	Definition
1	GND	2	P12V
3	TACH	4	PWM

TPM Header

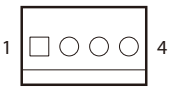
Connector type: 2x7 14-pin header
Connector location: TPM1



Pin	Definition	Pin	Definition
1	GND	2	LPC_CLKOUT1_BK
3	Key	4	LPC_FRAME_N
5	LPC_LAD2	6	CPLD_TPM_PLTRST_N
7	LPC_LAD1	8	LPC_LAD3
9	GND	10	LPC_LAD0
11	IRQ_ILB_SEIRQ_AVN	12	P3V3
13	GND	14	GND

SATA Power Connector

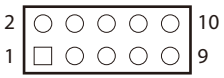
Connector type: 1x4 4-pin wafer
Connector location: CON3



Pin	Definition	Pin	Definition
1	P12V	2	GND
3	GND	4	P5V

GPIO Connector

Connector type: 2x5 10-pin header
Connector location: JP7



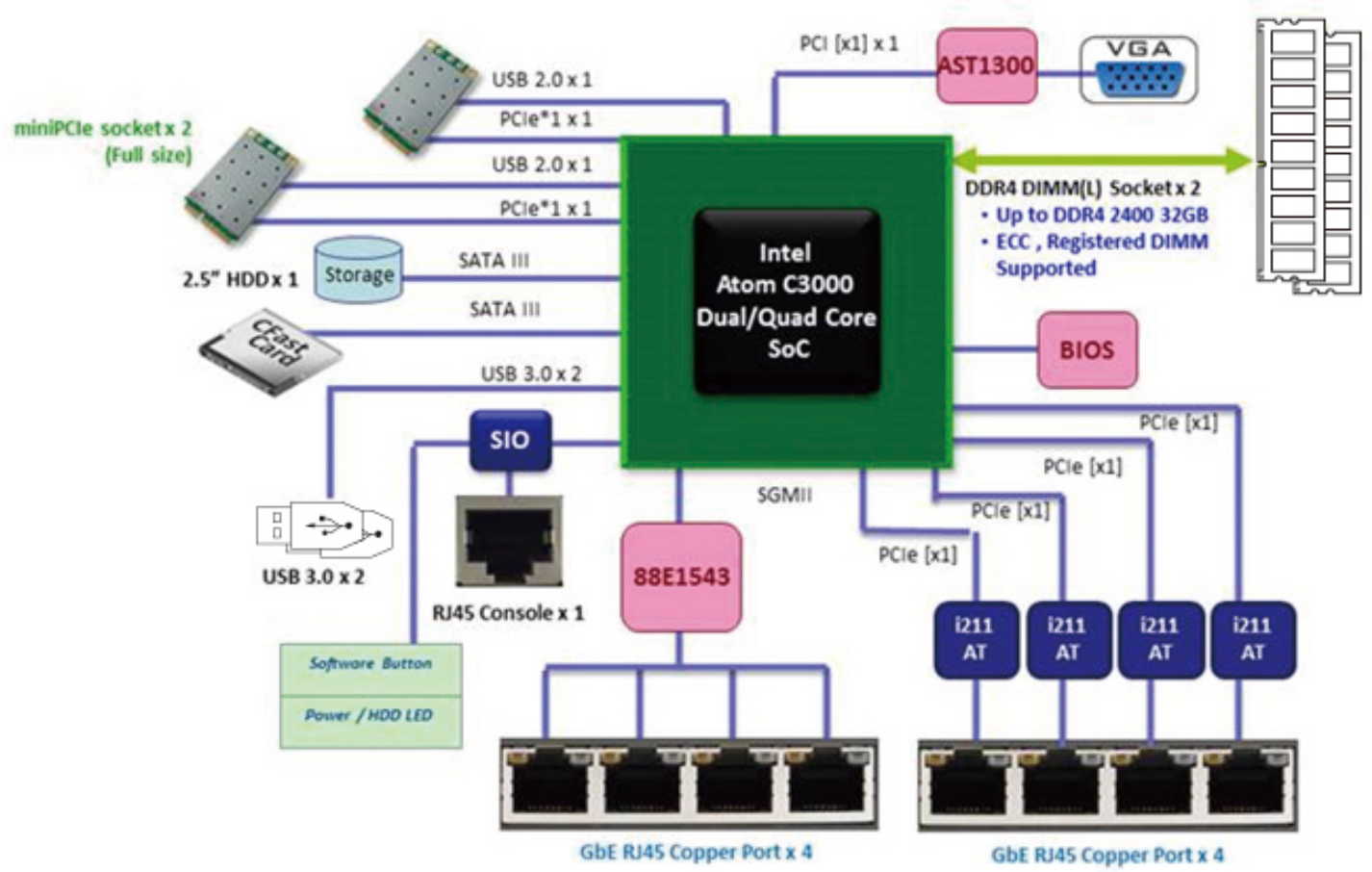
Pin	Definition	Pin	Definition
1	P5V	2	GND
3	SIO_GPIN1	4	SIO_GPOUT1
5	SIO_GPIN2	6	SIO_GPOUT2
7	SIO_GPIN3	8	SIO_GPOUT3
9	SIO_GPIN4	10	SIO_GPOUT4

CPLD JTAG Pin Header

Connector type: 1x6 6-pin header
Connector location: CPLD_JP1

Pin	Definition	Pin	Definition
1	P3V_STBY	2	GND
3	JTAG_ TCK	4	JTAG_TDO
5	JTAG_TDI	6	JTAG_TMS

Block Diagram

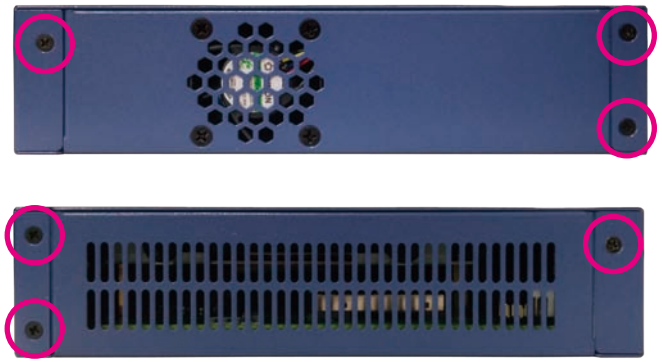


Chapter 3: System Setup

Removing the Chassis Cover

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. The screws around the cover are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

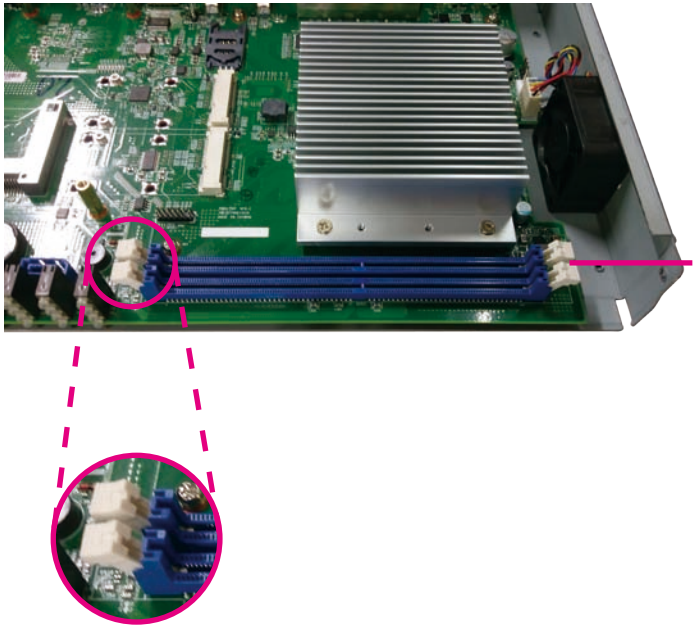


Screws on the sides

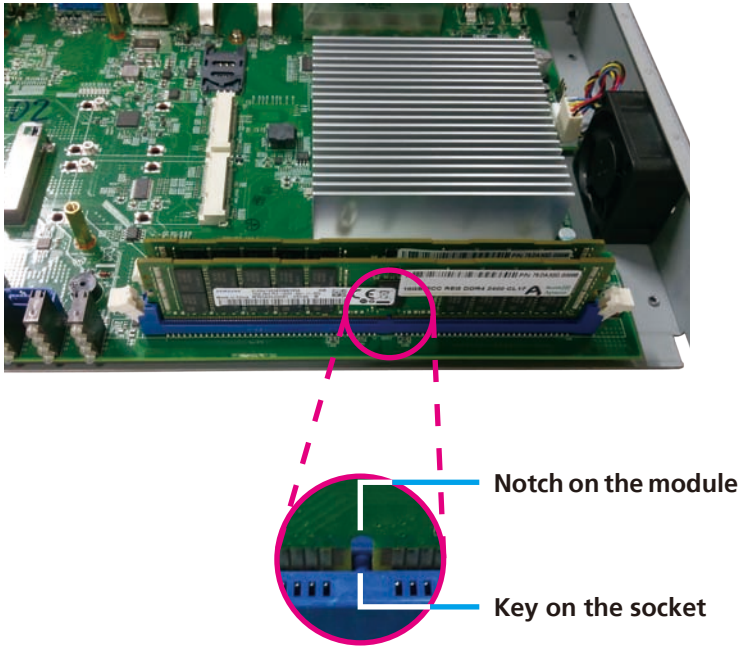
2. Gently slide the cover outwards, then lift up the cover to remove it.

Installing DIMM Memory Modules

1. Push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.



2. Note how the module is keyed to the socket. Grasping the module by its edges, align the module with the socket so that the "notch" on the module is aligned with the "key" on the socket. The key ensures the module can be plugged into the socket in only one direction.

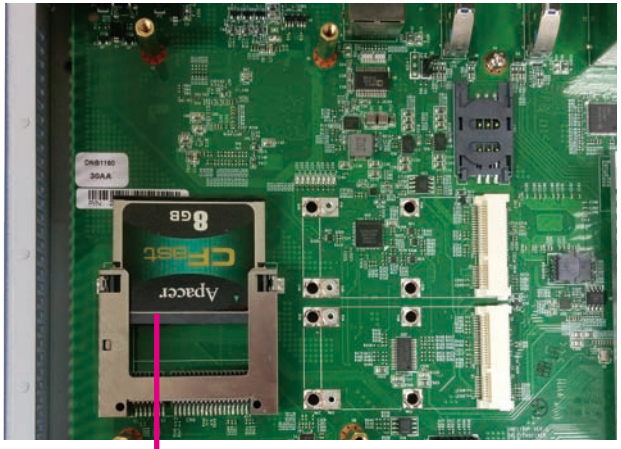


3. Seat the module vertically, pressing it down firmly until it is completely seated in the socket. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

Installing a CFast Module

1. Locate the CFast slot on the motherboard.

2. Position the module to the slot.

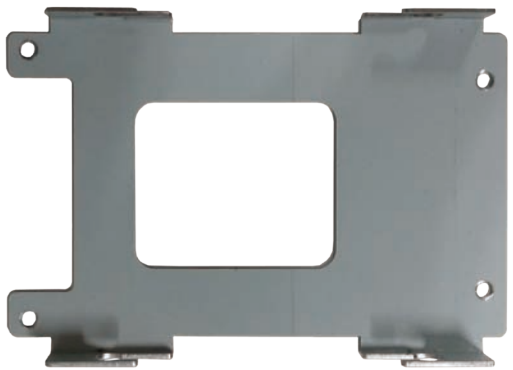


3. Insert the module until it is completely seated into the slot.

Installing a 2.5” SATA Hard Drive

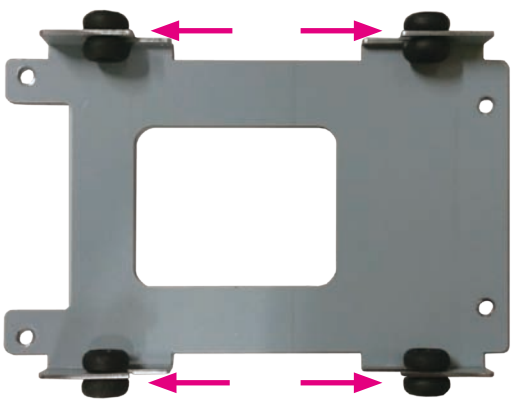
Please correctly follow the below instructions and noted items to avoid making unnecessary damages.

1. The hard drive bracket is used to secure the hard drive to the system.



2. Install the anti-vibration dampers to the mounting holes on the hard drive bracket.

Anti-vibration Dampers



3. Place the SATA hard drive onto the hard drive bracket with the SATA data and power connector facing outwards.

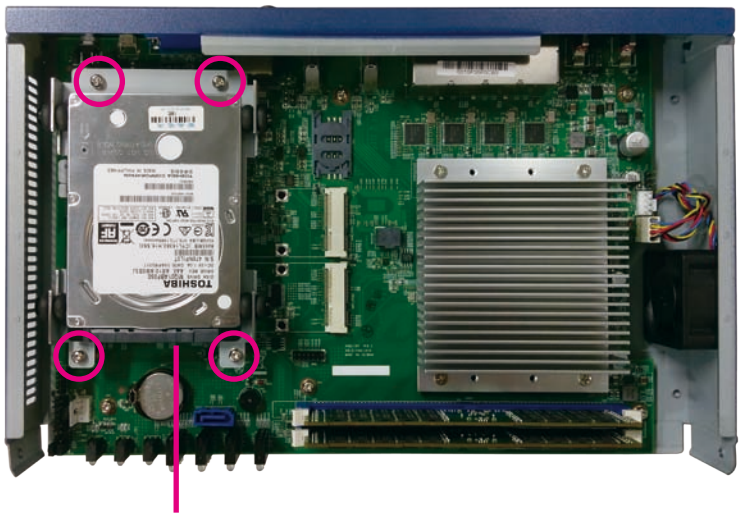
SATA data and power connector

4. Align the mounting holes that are on the sides of the SATA hard drive with the mounting holes on the hard drive bracket. Then use the mounting screws to secure the SATA hard drive in place.

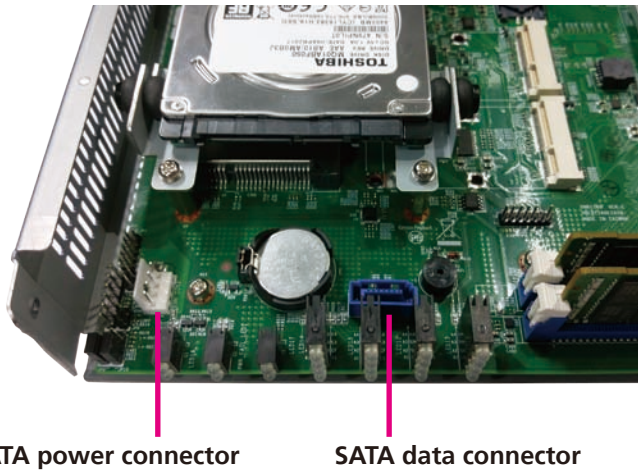
Screws

5. Repeat step 4 for securing the screws on the other side of the hard drive bracket.

6. Place the hard drive bracket back in the chassis with the connector side facing the board, and then use the mounting screws to secure the bracket in place.



7. Locate the SATA data and power connector on the board.



8. Connect the SATA data and power cables to the respective connectors on the board and the other ends of the cables to the connectors on the hard drive.

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for DNA 1160. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

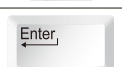
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing 

allows you to enter Setup.

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press 

.

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Access Level

Displays the access level of the current user in the BIOS.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

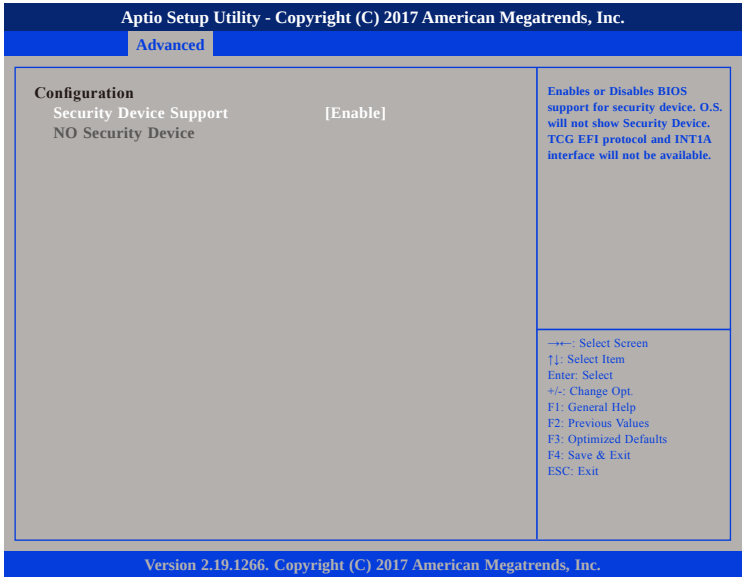
Setting incorrect field values may cause the system to malfunction.

MINI_PCIE1 and MINI_PCIE2 Slot

Enables or disables mini-PCIe slot 1 and 2.

Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



Security Device Support

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.

NCT6683D Super IO Configuration

This section is used to configure the serial port of the super IO.

Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

Configures the IO/IRQ settings of serial port 1.

Serial Port 1 Configuration

This section is used to configure serial port 1.

Serial Port

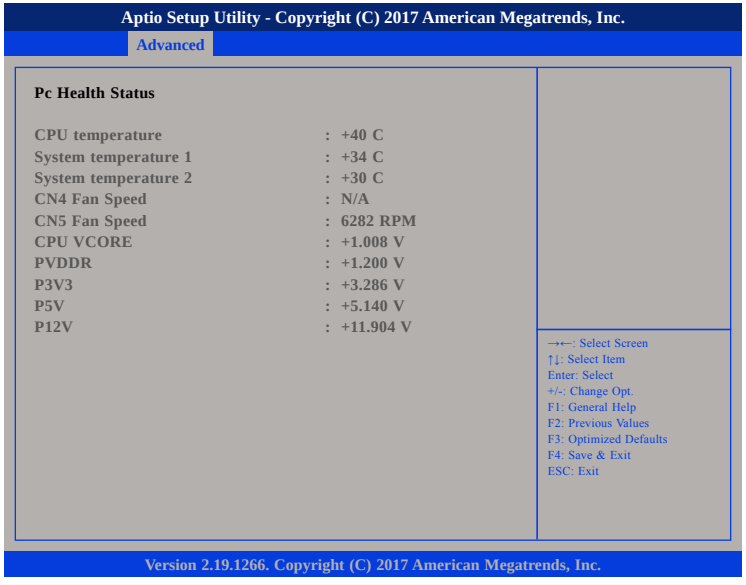
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Hardware Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature
Detects and displays the current CPU temperature.

System Temperature 1 and System Temperature 2
Detects and displays the current temperature of the system.

CN4 Fan Speed and CN5 Fan Speed
Detects and displays the fan speed of CN4 and CN5.

CPU VCORE to P12V
Detects and displays the output voltages.

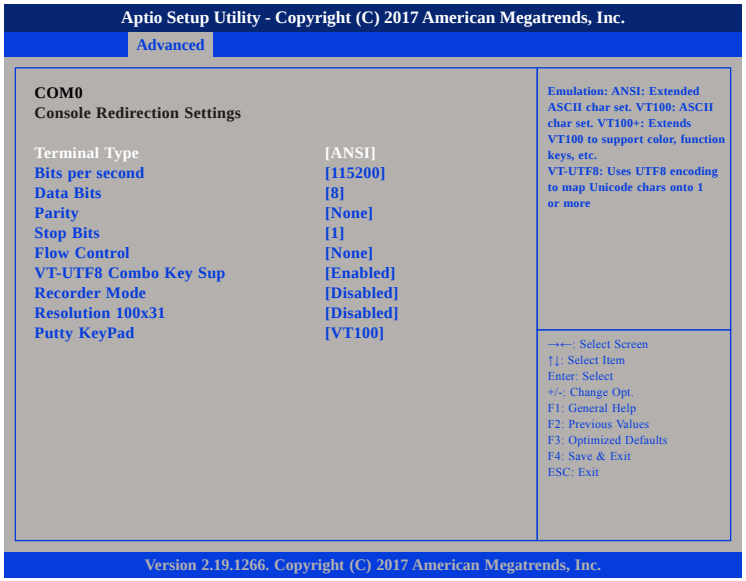
Serial Port Console Redirection

This section is used to configure the serial port that will be used for console redirection.

Console Redirection
Enables or disables the console redirection.

Console Redirection (Serial Port for Out-of-Band Management)
Enables or disables the console redirection. When enabled, Console Redirection Settings will be available.

COM0 Console Redirection Settings



Terminal Type

ANSI Extended ASCII character set.
VT100 ASCII character set.
VT100+ Extends VT100 to support color, function keys, etc.
VT-UTF8 Uses UTF8 encoding to map Unicode characters onto 1 or more bytes.

Bits Per Second

Selects the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed.

Data Bits

The options are 7 and 8.

Parity

A parity bit can be sent with the data bits to detect some transmission errors.

Even Parity bit is 0 if the number of 1's in the data bits is even.
Odd Parity bit is 0 if number of 1's in the data bits is odd.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data and the receiving buffers are full, a "stop" signal can be sent to stop the data flow.

VT-UTF8 Combo Key Support

Enables or disables VT-UTF8 combo key support.

Recorder Mode

When this field is enabled, only text will be sent. This is to capture the terminal data.

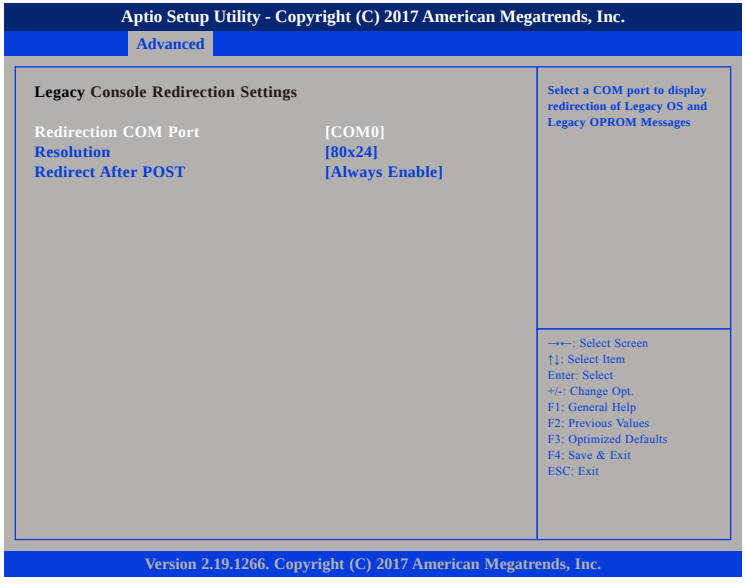
Resolution 100x31

Enables or disables extended terminal resolution.

Putty Keypad

Selects the Putty keyboard emulation type.

Legacy Console Redirection Settings



Redirection COM Port
Selects a COM port to display redirection of Legacy OS and Legacy OPROM messages.

Resolution
Configures the legacy OS redirection resolution.

Redirect After POST
Enables or disables redirection after POST.

Serial Port for Out-of-Band Management

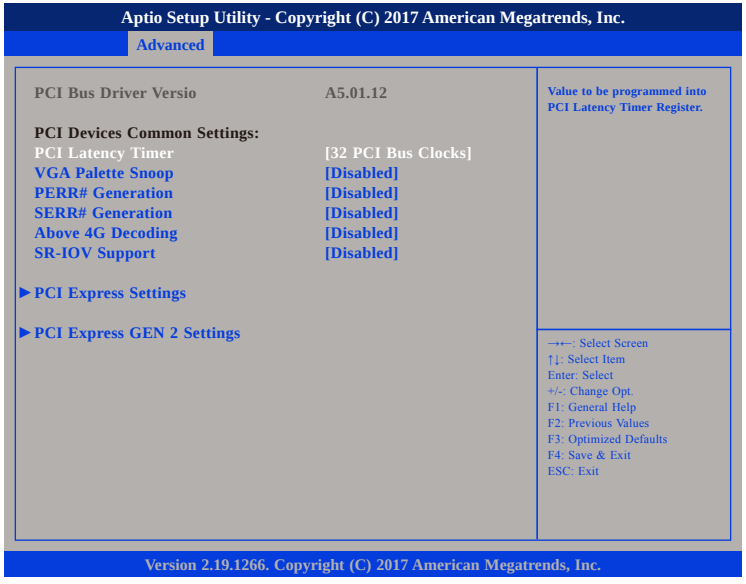
Terminal Type
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings

Bits Per Second
Selects the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed.

Flow Control
Flow control can prevent data loss from buffer overflow. When sending data and the receiving buffers are full, a "stop" signal can be sent to stop the data flow.

PCI Subsystem Settings

This section is used to configure the PCI.



PCI Latency Timer

Configures the length of time allowed for the PCI device to control the bus before another takes over.

VGA Palette Snoop

Enables or disables the VGA palette registers snooping.

PERR# Generation

Enables or disables the PCI device to generate PERR#.

SERR# Generation

Enables or disables the PCI device to generate SERR#.

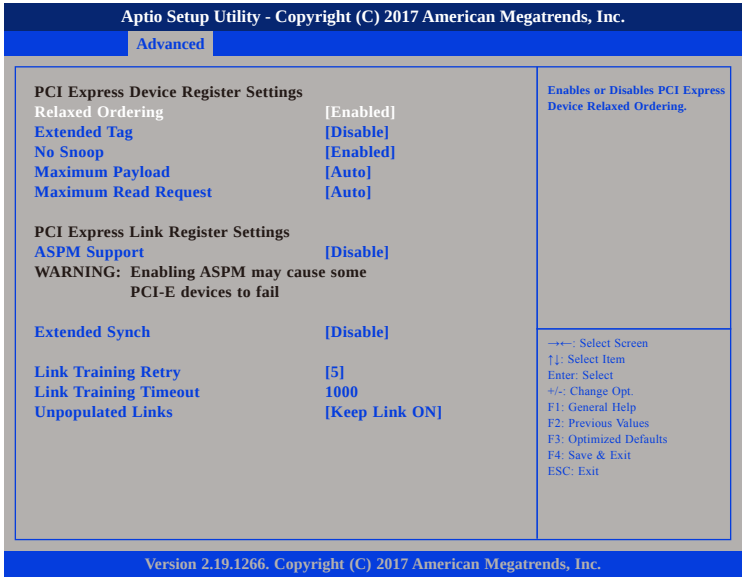
Above 4G Decoding

Enables or disables decoding of 64-bit devices in 4G address space.

SR-IOV Support

Enables or disables SR-IOV support.

PCI Express Settings



Relaxed Ordering
Enables or disables the PCI Express device's relaxed ordering.

Extended Tag
When this function is enabled, it allows a device to use 8-bit tag field as a request.

No Snoop
Enables or disables the PCI Express device's no snoop option.

Maximum Payload
Selects the maximum TLP payload size of the PCI Express devices.

Maximum Read Request
Selects the maximum read request size of the PCI Express devices.

ASPM Support
Selects the ASPM level.

Force	L0 Forces all links to L0 state.
Auto	The BIOS automatically selects an ASPM level.
Disable	Disables ASPM.

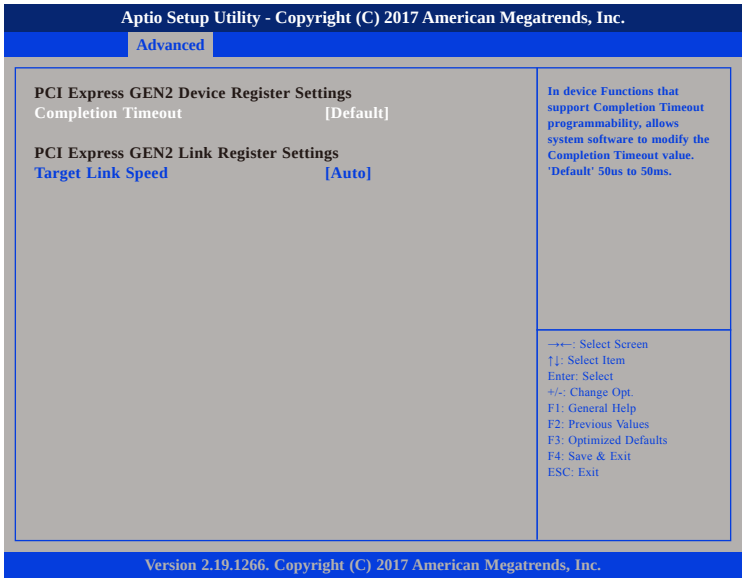
Extended Synch
When this function is enabled, it allows generation of extended synchronization patterns.

Link Training Retry
Selects the number of retry attempts.

Link Training Timeout
Selects the timeout period of link training in microseconds.

Unpopulated Links
Enables or disables unpopulated PCI Express links.

PCI Express GEN 2 Settings



Completion Timeout

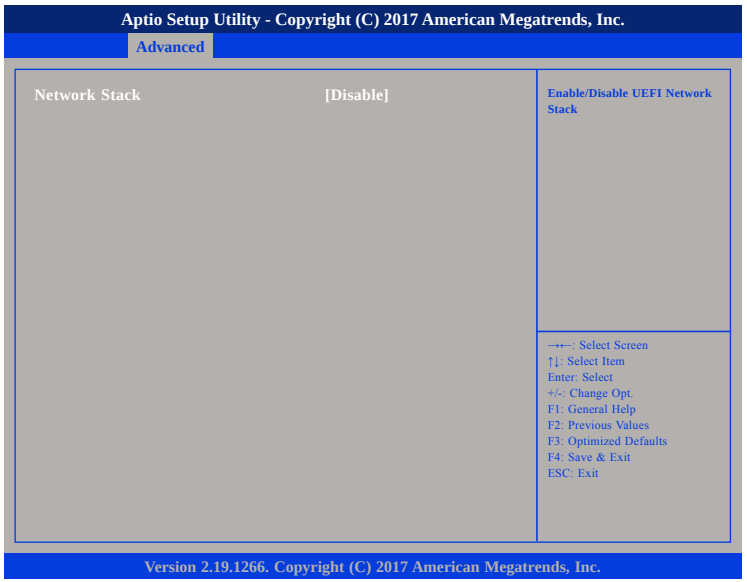
Configures the completion timeout value.

Target Link Speed

Configures the PCIe link speed.

Network Stack

This section is used to configure the network stack.

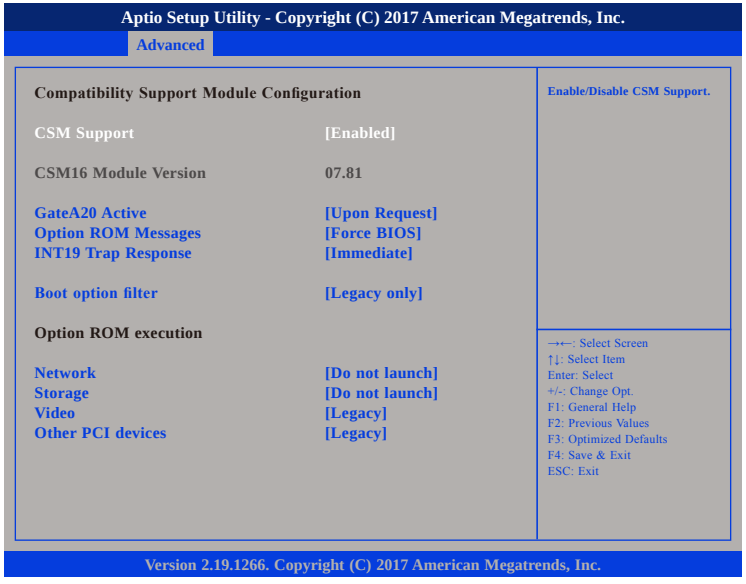


Network Stack

Enables or disables UEFI network stack.

CSM Configuration

This section is used to configure the compatibility support module features.



CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

GateA20 Active

Upon Request	GA20 can be disabled using BIOS services.
Always	Do not allow disabling of GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

This field is used to set display mode for Option ROM. The options are Force BIOS and Keep Current.

INT19 Trap Response

Allows Option ROMs to trap Interrupt 19 when enabled.

Immediate	Execute the trap right away.
Postponed	Execute the trap during legacy boot.

Boot Option Filter

Configures which drives the system can boot from.

Network

Enables or disables the boot option for legacy network devices.

Storage

Enables or disables the boot option for legacy storage devices.

Video

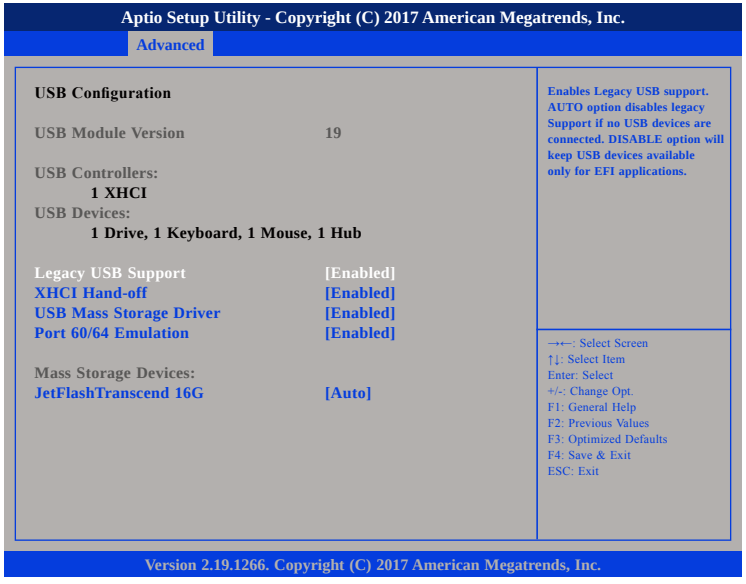
Enables or disables the boot option for legacy video devices.

Other PCI Devices

Enables or disables the boot option for legacy PCI devices.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

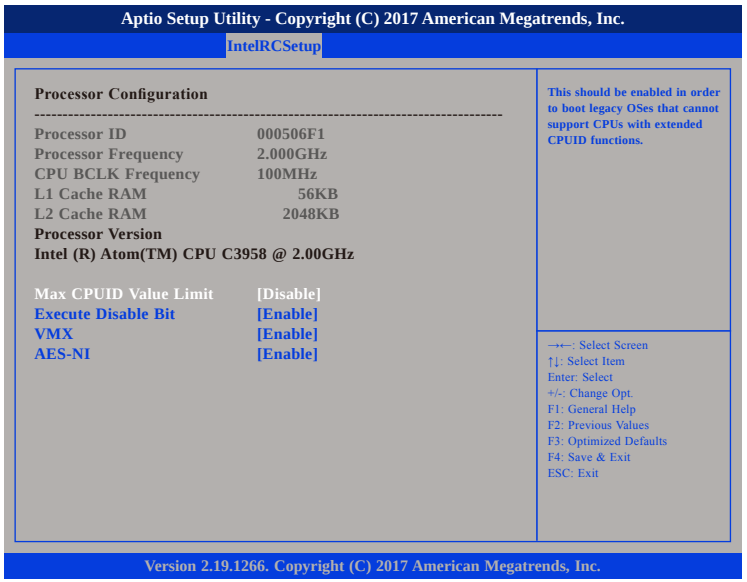
Port 60/64 Emulation

Enables the 60h/64h I/O port emulation. You must enable this to fully support USB keyboard legacy for non-USB OSes.

Intel RC Setup

This section is used to configure the processor and chipset settings.

Processor Configuration



Max CPUID Value Limit

Set this field to Disable when using Windows XP. Set this field to Enable when using legacy operating systems so that the system will boot even when it doesn't support CPUs with extended CPUID function.

Execute Disable Bit

When this field is set to Disable, it will force the XD feature flag to always return to 0.

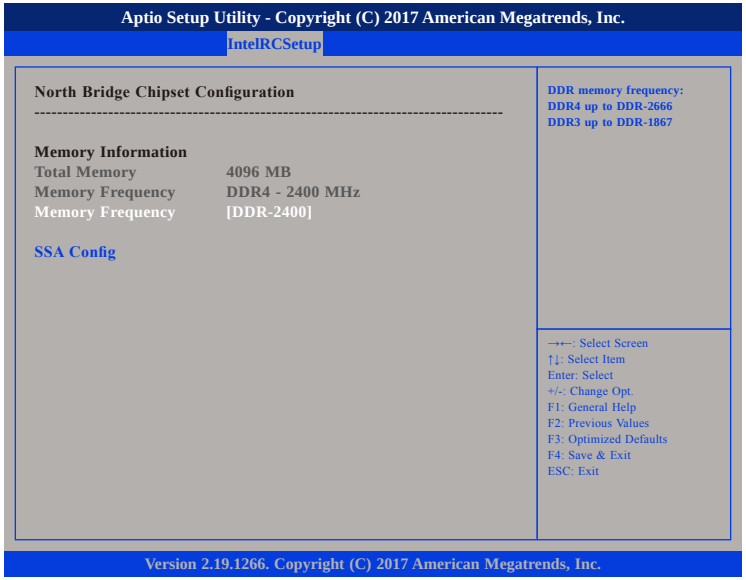
VMX

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

AES-NI

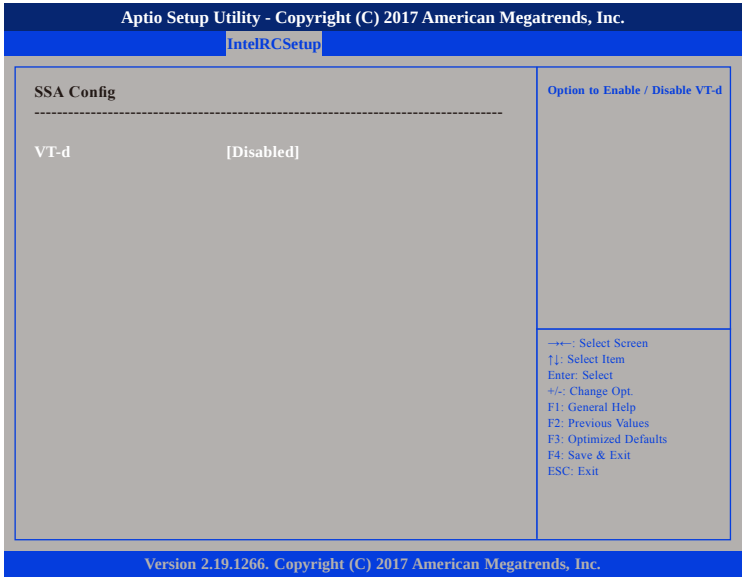
Enables or disables Intel® AES-NI support.

North Bridge Chipset Configuration



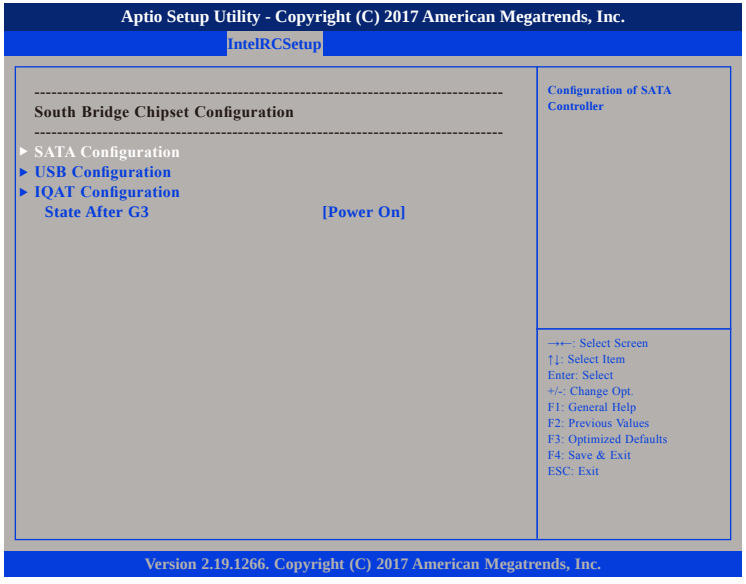
Memory Frequency
Configures the DDR memory frequency.

SSA Config



VT-d
Enables or disables Intel® VT-d technology.

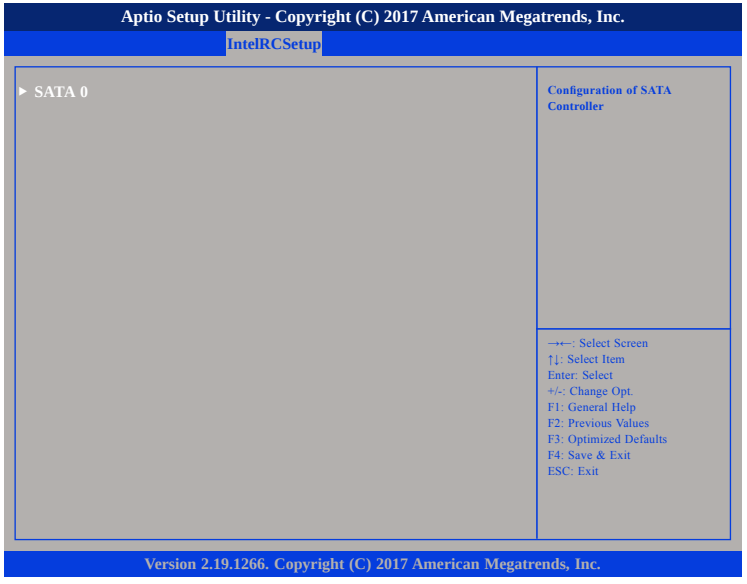
South Bridge Chipset Configuration



State After G3

Configures which state to use when power is re-applied after a power failure (G3 state).

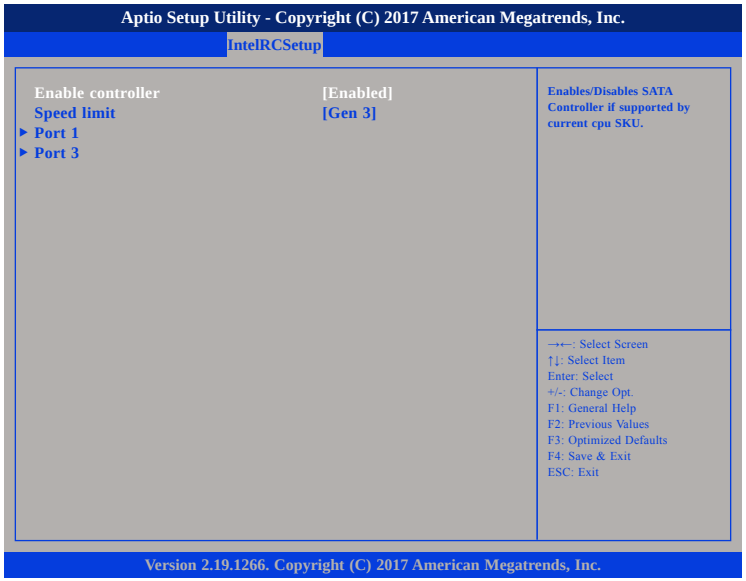
SATA Configuration



SATA 0

Enters the sub-menu of SATA 0 configuration.

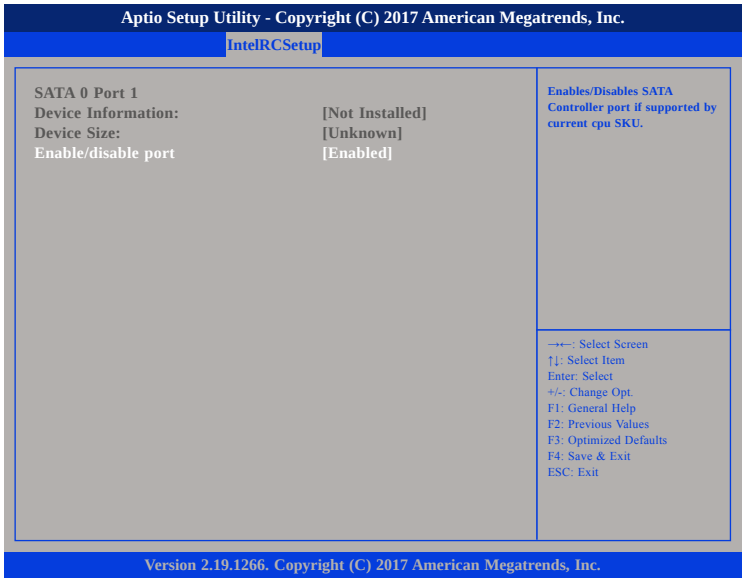
SATA 0



Enable controller
Enables or disables the SATA controller if supported by the current CPU SKU.

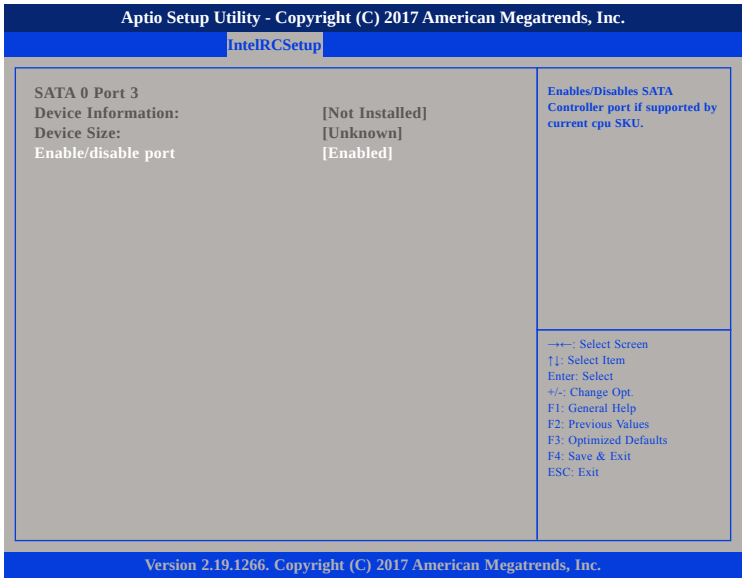
Speed limit
Configures the speed limit of the SATA controller.

Port 1



Enable/disable port
Enables or disables the SATA controller port if supported by the current CPU SKU.

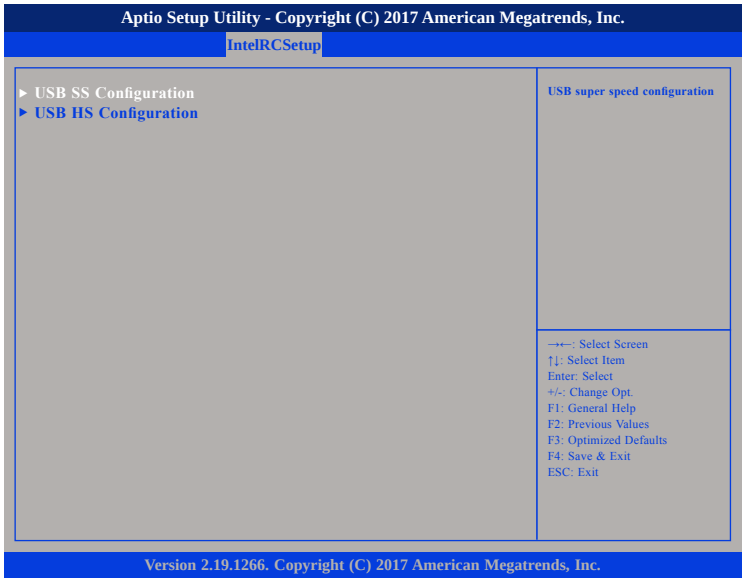
Port 3



Enable/disable port

Enables or disables the SATA controller port if supported by the current CPU SKU.

USB Configuration



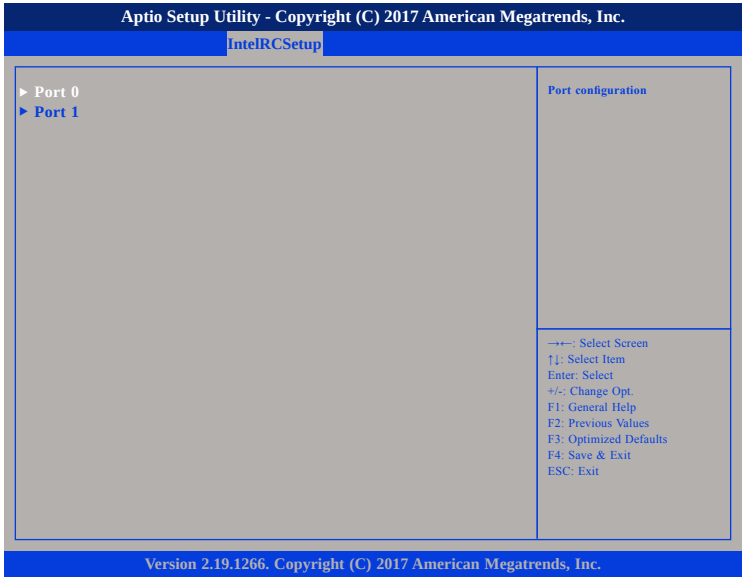
USB SS Configuration

Enters the sub-menu for USB super speed configuration.

USB HS Configuration

Enters the sub-menu for USB high speed configuration.

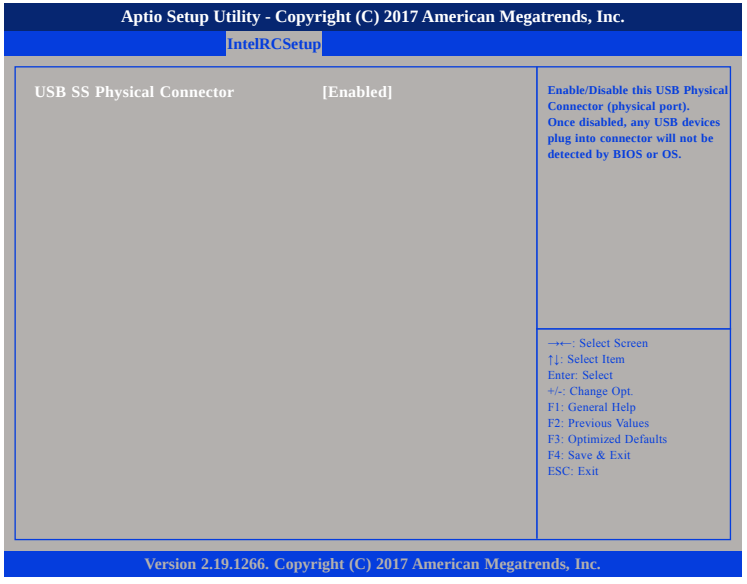
USB SS Configuration



Port 0 and Port 1

Enters the sub-menu for port 0 and port 1 configuration.

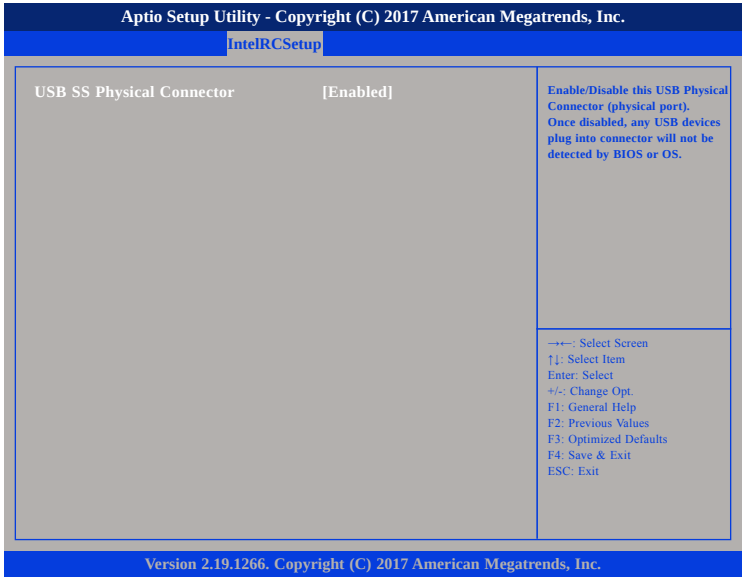
USB SS Port 0



USB SS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

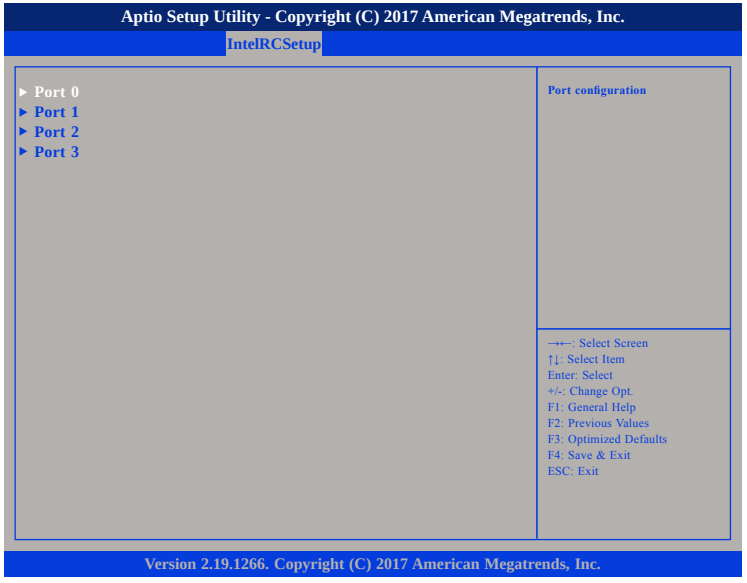
USB SS Port 1



USB SS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

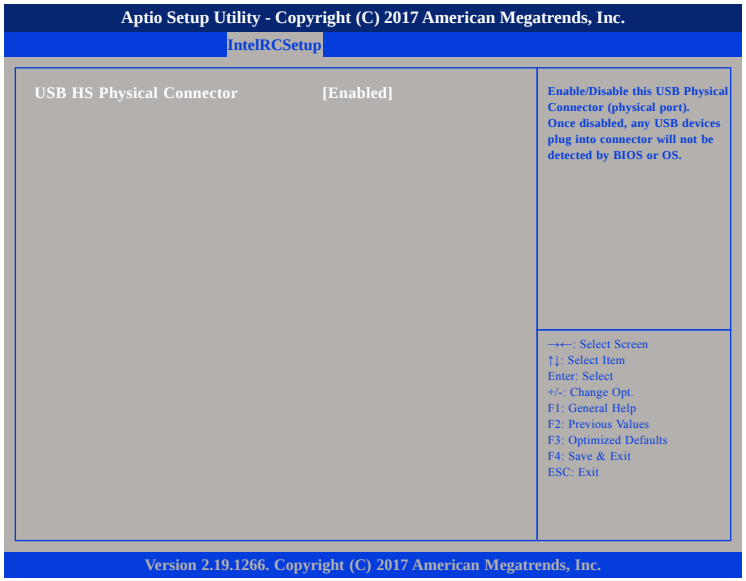
USB HS Configuration



Port 0 to Port 3

Enters the sub-menu for port 0 to port 3 configuration.

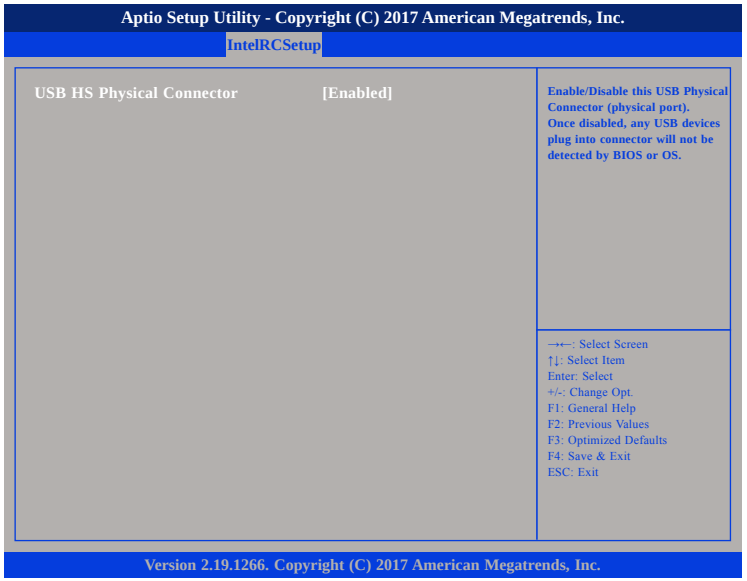
USB HS Port 0



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

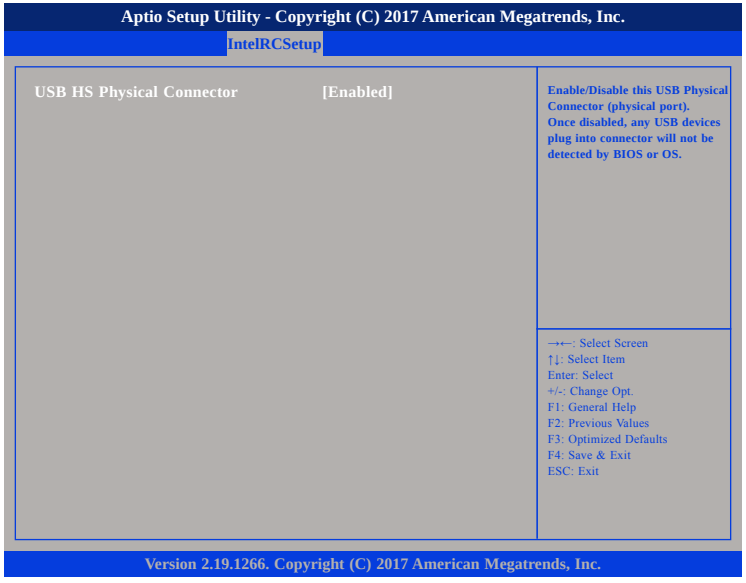
USB HS Port 1



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

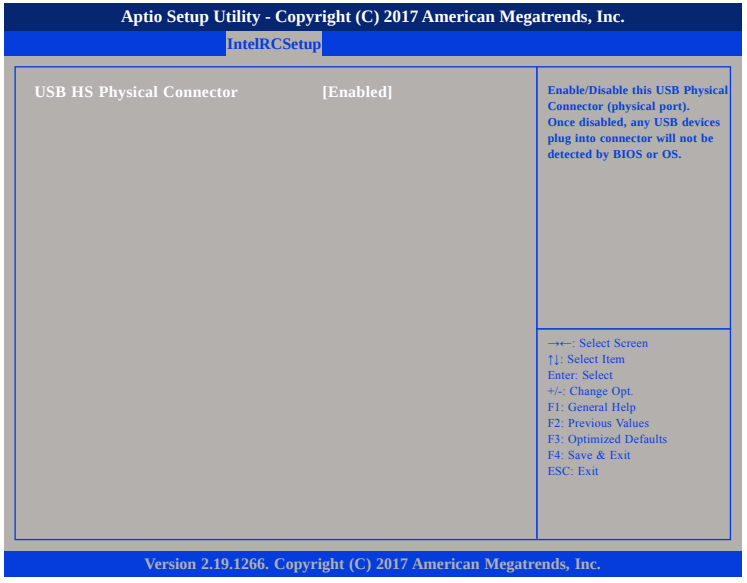
USB HS Port 2



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

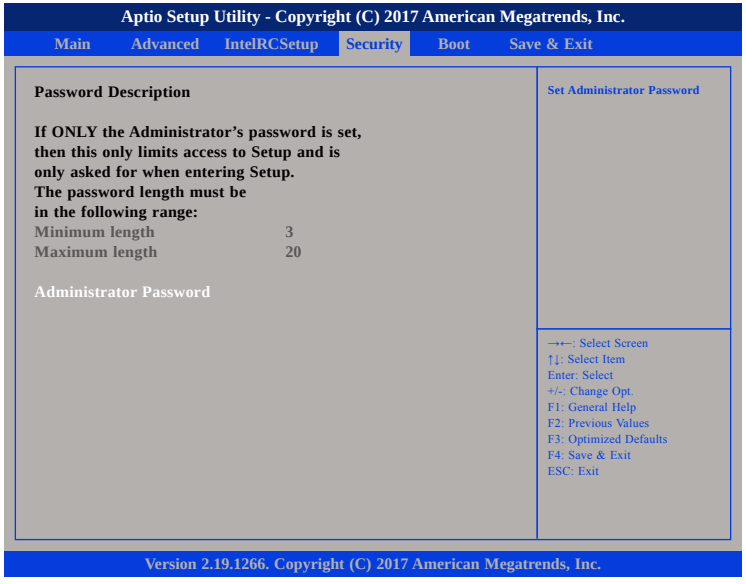
USB HS Port 3



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

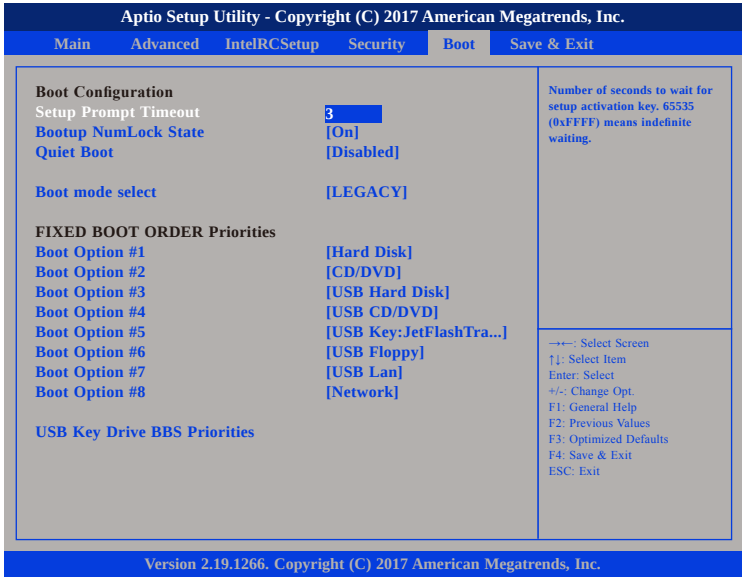
Security



Administrator Password

Select this to reconfigure the administrator's password.

Boot



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

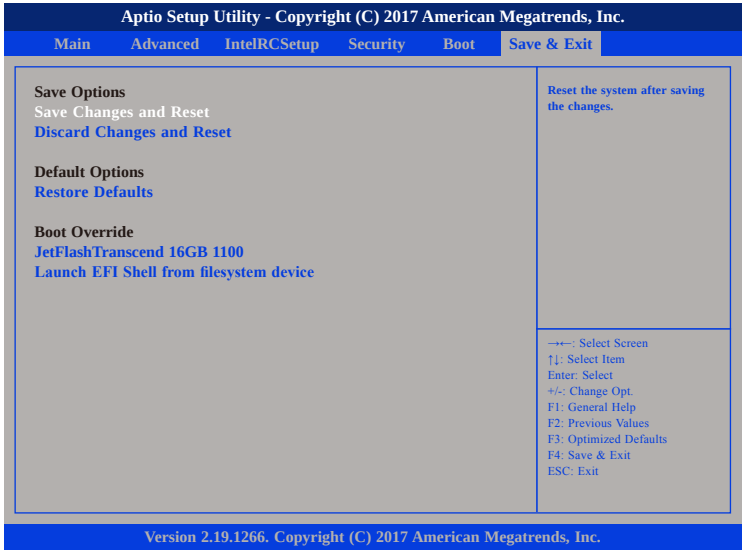
Boot Mode Select

Configures the boot mode option.

Boot Option #1 to Boot Option #8

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be Boot Option #2 and so forth.

Save & Exit



Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset

To exit the Setup utility and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Launch EFI Shell from filesystem device
To launch EFI shell from a filesystem device, select this field and press <Enter>.