NEXCOM International Co., Ltd.

Network and Communication Solutions

Desktop Network Appliance

DNA 130

User Manual

NEXCOM International Co., Ltd.
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PREFACE

Copyright

Disclaimer

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Acknowledgements

DNA 130 is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

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.

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 130 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	19L00013002X0	DNA 130 ASSY		1
2	7400040013X00	Power Adapter FSP:FSP040-RHAN2(9NA0404934)	DC 40W 12V/3.33A 110x50x32mm Plug:2.5/5.5/7.5(mm)	1
3	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
4	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
5	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
6	5044440031X00	Rubber Foot KANG YANG:RF20-5-4P	19.8x18x5.0mm	4
7	50311F0294X00	I Head Screw LONG FEI:I2x4 Nylok NIGP	I2x4 NI Nylok	4
8	6012200169X00	PE Bag for SG 105/115 Series VER:A FULPAK PE	300x320x0.08mm	1
9	6014605591X00	Outside Carton Label for DNA 130 VER:A LABEL JET	60x60mm ART Paper	1

Ordering Information

The following below provides ordering information for DNA 130.

Barebone

DNA 130 (P/N: 10L00013002X0)

Intel Atom® x5-E3930 Apollo Lake SoC, BGA type, 1 x DDR3L non-ECC memory slots, 5 copper LAN ports, eMMC flash 4GB, 1 x USB 2.0

DNA 130A (P/N: 10L00013003X0)

Intel Atom® x5-E3940 Apollo Lake SoC, BGA type, 1 x DDR3L non-ECC memory slots, 5 copper LAN ports, eMMC flash 4GB, 1 x USB 2.0

DNA 130B (P/N: 10L00013004X0)

Intel Atom® x5-E3930 Apollo Lake SoC, BGA type, 1 x DDR3L with ECC memory slots, 5 copper LAN ports, eMMC flash 4GB, 1 x USB 2.0

Chapter 1: Product Introduction

Overview

DNA 130

Key Features

- Intel Atom® processor x5-E3900 series SoC, BGA type
- DDR3L SO-DIMM memory, Max. 4GB
- Support 5 GbE LAN ports
- On-board eMMC 4GB
- Wi-Fi/LTE (optional)
- USB 2.0 connector
- HDMI type A connector

Hardware Specifications

Main Board

- DNB130
- Intel Atom® processor x5-E3900 series, BGA type

Main Memory

- 1 x DDR3L SO-DIMM ECC/Non ECC memory, Max. 4GB

LAN Features

- 5 x Copper ports
- LAN bypass: 2 pairs
- 5 x LAN controller: Intel® i211-AT
- Support 10/100/1000 link speed

I/O Interface-Front

- Power status/HDD status/LAN status/Wi-Fi status LED
- SIM slot

I/O Interface-Rear

- 1 x USB 2.0
- 1 x microUSB type console port (first priority)
- 1 x RJ45 type console port (secondary)
- 1 x RJ45 WAN port
- 4 x RJ45 copper ports
- 1 x Power button
- 1 x HDMI type A connector
- 1 x DC-in
- 1 x Reset button

Devices

- 1 x On-board eMMC flash 4GB
- 1 x mSATA connector

Power Input

- 40W power adapter

Dimensions

- Chassis dimension: 225mm (W) x 150mm (D) x 44mm (H)
- Carton dimension: 275mm (W) x 230mm (D) x 185mm (H)

Weight

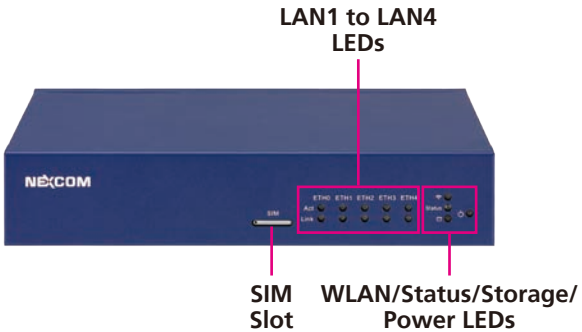
- Without packing: 1.1kg
- With packing: 2.1kg

Certifications

- CE approval
- FCC Class B
- UL

Knowing Your DNA 130

Front Panel



SIM Slot

Used to insert a SIM card.

LAN 1 to LAN 4 LEDs

LED	Behavior	Description
Act	Flashing Green	Network activity on the LAN.
	Off	No network activity.
Link	Steady Yellow	Network is connecting.
	Off	No link established.

WLAN LED

LED	Behavior	Description
WLAN	Steady Green	WLAN link is active.
	Flashing Green	Network activity on the WLAN. (Depends on the Wi-Fi/LTE module installed.)

Status LED

LED	Behavior	Description
Status	Steady Green	System has booted completely.

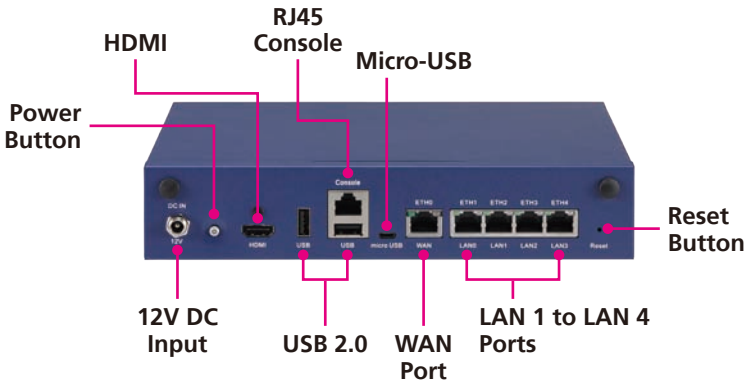
Storage LED

LED	Behavior	Description
Storage	Flashing Blue	Activity on the storage drive.

Power LED

LED	Behavior	Description
Power	Steady Green	System power is in S0 state.
	Off	System has failed or is in S5 state.

Rear Panel



12V DC Input
Used to plug a DC power cord.

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

HDMI
Used to connect an HDMI interface monitor.

USB 2.0 Ports
Used to connect USB 2.0 devices.

RJ45 Console Port
Used to connect RJ45 type console port.

Micro-USB
Used to connect a Micro-USB interface device.

WAN Port
Used to connect the system to a wide area network.

LAN 1 to LAN 4 Ports
Used to connect network devices.

Reset Button
Press this button to restart the system.

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the DNA 130 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:

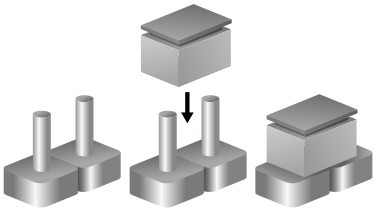
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal 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

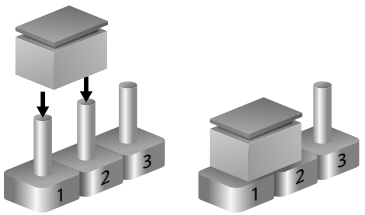
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

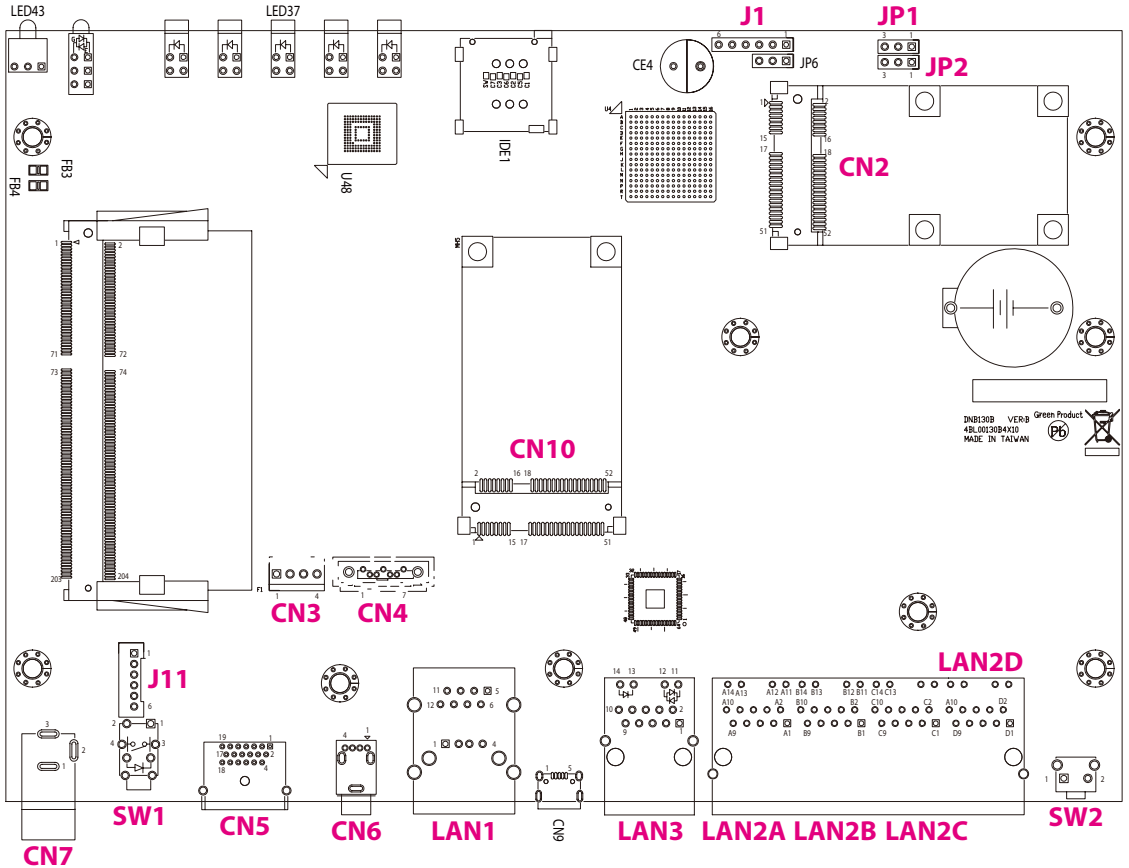


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

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



Jumpers

AT/ATX Mode Function Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP1

Pin	Definition
1	GND
2	GND
3	AT_ATX_SEL

Clear CMOS Function

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP2

Pin	Definition
1	NC
2	RST_RTCRST_N
3	GND

Connector Pin Definitions

External Connectors

12V DC Power Input

Connector location: CN7

Pin	Definition
1	GND
2	GND
3	P12V

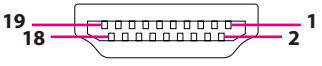
Power Button

Connector location: SW1

Pin	Definition	Pin	Definition
1	PWR_BTN_CAL_N	2	GND
3	GND	4	PWR_BTN_CAL_N
A1	PWRON_R	C1	PWRON_R2
MH1	GND	MH2	GND

HDMI

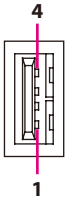
Connector type: HDMI port
Connector location: CN5



Pin	Definition	Pin	Definition
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2–	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1–
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0–	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock–
13	CEC	14	NC
15	SCL	16	SDA
17	PGND	18	+5V Power
19	Hot Plug Detect		

USB 2.0 Connector

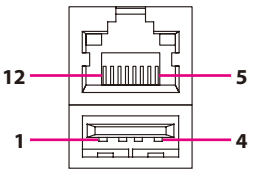
Connector type: USB port, Type A
Connector location: CN6



Pin	Definition	Pin	Definition
1	+5V	2	USB_0N_C
3	USB_0P_C	4	GND
MH1	LAN_GND	MH2	LAN_GND
MH3	LAN_GND	MH4	LAN_GND

Console and USB Port

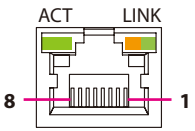
Connector type: RJ45 port for RS-232 and USB 2.0, Type A
Connector location: LAN1



Pin	Definition	Pin	Definition
1	+5V	2	USB_1N_C
3	USB_1P_C	4	GND
5	RTS (console)	6	DTR (console)
7	TXD (console)	8	DCD (console)
9	GND	10	RXD (console)
11	DSR (console)	12	CTS (console)
MH1	LAN_GND	MH2	LAN_GND
MH3	LAN_GND	MH4	LAN_GND
MH5	LAN_GND	MH6	LAN_GND

WAN Port

Connector type: RJ45 with LEDs
Connector location: LAN3



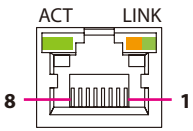
Act	Status
Steady Green	Connected
Flashing Green	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	Eth0_MDI0P	2	Eth0_MDI0N
3	Eth0_MDI1P	4	Eth0_MDI1N
5	ESD path	6	ESD path
7	Eth0_MDI2P	8	Eth0_MDI2N
9	Eth0_MDI3P	10	Eth0_MDI3N
11	Eth0 100M_ACT_N	12	Eth0 1000M_ACT_N
13	Eth0_LINK_N	14	3.3V power
MH1	LAN_GND	MH2	LAN_GND
NH1	No connect	NH2	No connect

LAN1 Port

Connector type: RJ45 with LEDs
Connector location: LAN2A



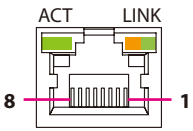
Act	Status
Steady Green	Connected
Flashing Green	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
A1	Eth1_MDI0P	A2	Eth1_MDI0N
A3	Eth1_MDI1P	A4	Eth1_MDI1N
A5	ESD path	A6	ESD path
A7	Eth1_MDI2P	A8	Eth1_MDI2N
A9	Eth1_MDI3P	A10	Eth1_MDI3N
A11	3.3V power	A12	Eth1_LINK_N
A13	Eth1 100M_ACT_N	A14	Eth1 1000M_ACT_N
MH1	LAN_GND	MH2	LAN_GND

LAN2 Port

Connector type: RJ45 with LEDs
Connector location: LAN2B



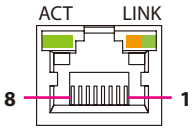
Act	Status
Steady Green	Connected
Flashing Green	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
B1	Eth2_MDI0P	B2	Eth2_MDI0N
B3	Eth2_MDI1P	B4	Eth2_MDI1N
B5	ESD path	B6	ESD path
B7	Eth2_MDI2P	B8	Eth2_MDI2N
B9	Eth2_MDI3P	B10	Eth2_MDI3N
B11	3.3V power	B12	Eth2_LINK_N
B13	Eth2 100M_ACT_N	B14	Eth2 1000M_ACT_N
NH1	No Connect	NH2	No Connect

LAN3 Port

Connector type: RJ45 with LEDs
Connector location: LAN2C



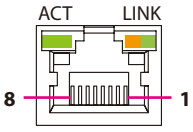
Act	Status
Steady Green	Connected
Flashing Green	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
C1	Eth3_MDI0P	C2	Eth3_MDI0N
C3	Eth3_MDI1P	C4	Eth3_MDI1N
C5	ESD path	C6	ESD path
C7	Eth3_MDI2P	C8	Eth3_MDI2N
C9	Eth3_MDI3P	C10	Eth3_MDI3N
C11	3.3V power	C12	Eth3_LINK_N
C13	Eth3 100M_ACT_N	C14	Eth3 1000M_ACT_N

LAN4 Port

Connector type: RJ45 with LEDs
Connector location: LAN2D



Act	Status
Steady Green	Connected
Flashing Green	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
D1	Eth4_MDI0P	D2	Eth4_MDI0N
D3	Eth4_MDI1P	D4	Eth4_MDI1N
D5	ESD path	D6	ESD path
D7	Eth4_MDI2P	D8	Eth4_MDI2N
D9	Eth4_MDI3P	D10	Eth4_MDI3N
D11	3.3V power	D12	Eth4_LINK_N
D13	Eth4 100M_ACT_N	D14	Eth4 1000M_ACT_N

Reset Button

Connector location: SW2

Pin	Definition
1	GND
2	RW_SW_RST

Connector Pin Definitions

Internal Connectors

CPLD Burn-in Header

Connector type: 1x6 6-pin Wafer, 2.54mm pitch
Connector location: J1

Pin	Definition	Pin	Definition
1	P3V3_CPLD	2	GND
3	JTAG_PLD_TCK	4	JTAG_PLD_TDO
5	JTAG_PLD_TDI	6	JTAG_PLD_TMS

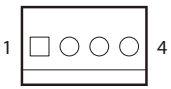
Internal USB Header (For Debugging)

Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J11

Pin	Definition	Pin	Definition
1	5V power	2	USB port2 N
3	USB port2 P	4	USB port4 N
5	USB port4 P	6	GND

SATA Power Connector

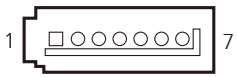
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CN3



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

SATA Connector

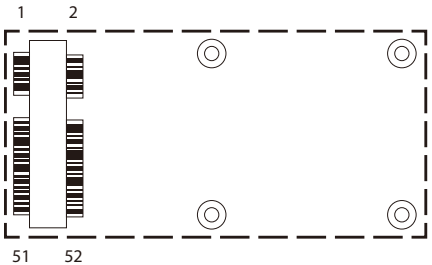
Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: CN4



Pin	Definition	Pin	Definition
1	GND1	2	TXP
3	TXN	4	GND2
5	RXN	6	RXP
7	GND3		

Mini-PCIe Connectors

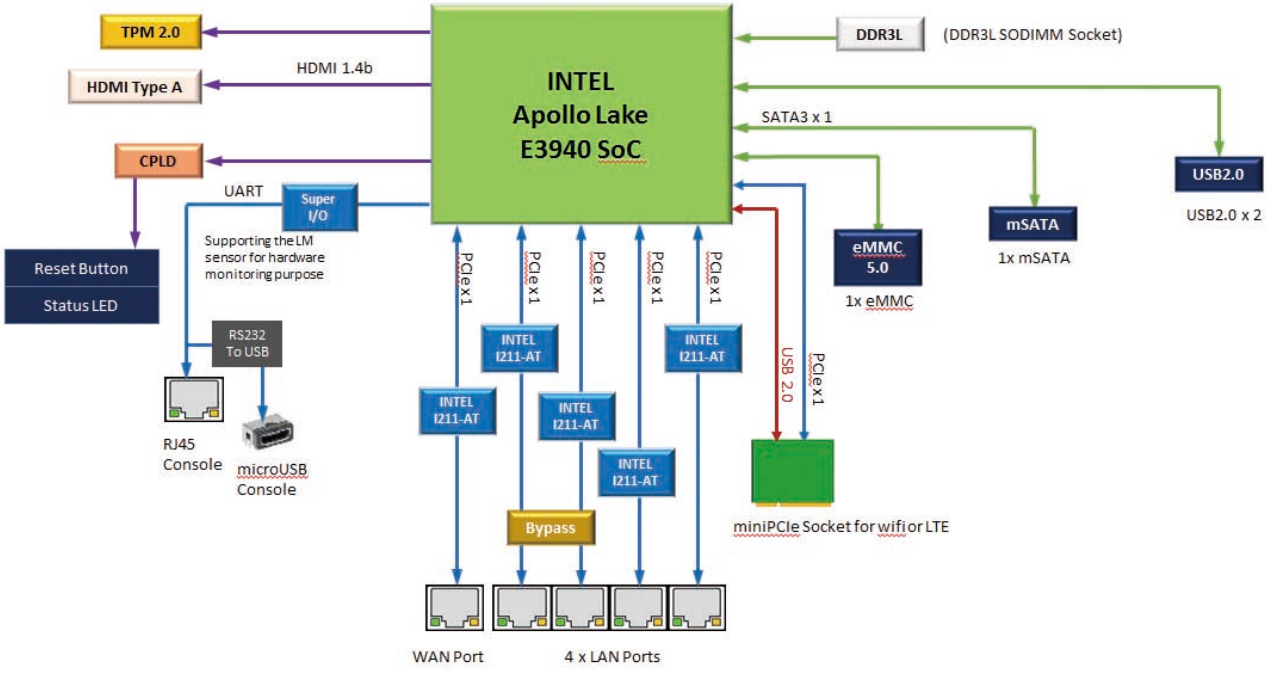
Connector location: CN2 & CN10



Pin	Definition	Pin	Definition
1	WAKE#	2	3.3Vaux
3	COEX1	4	GND
5	COEX2	6	1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DAT
11	REFCLK-	12	UIM_CLOCK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	Reserved (UIM_C8)	18	GND
19	Reserved (UIM_C4)	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	3.3Vaux
25	PERp0	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	3.3Vaux	40	GND
41	3.3Vaux	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	Reserved	46	LED_WPAN#
47	Reserved	48	1.5V
49	Reserved	50	GND
51	Reserved	52	3.3Vaux

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.

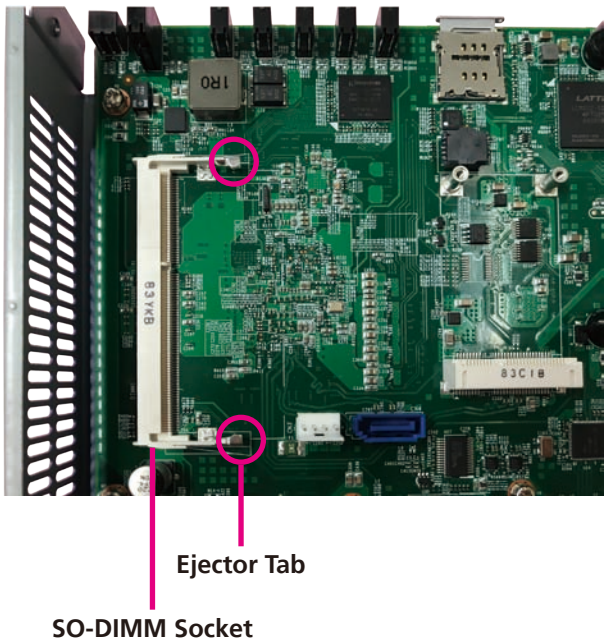
1. The screws on the bottom and sides are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

Screws on the sides

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

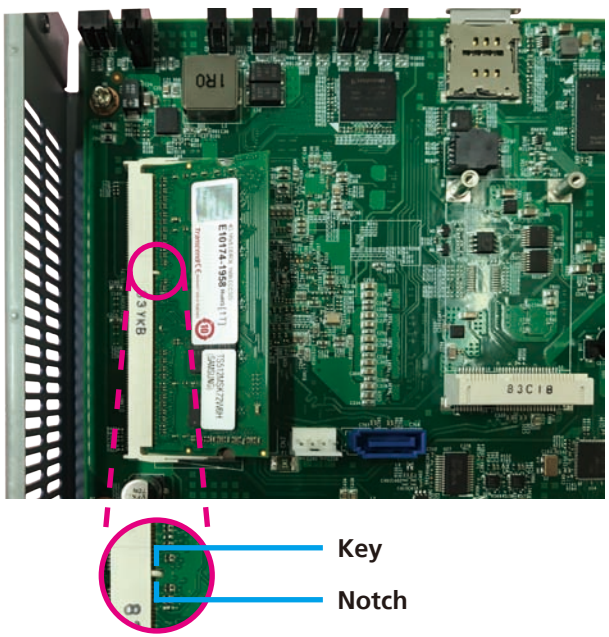
Installing a SO-DIMM Memory Module

1. Locate the SO-DIMM socket on the motherboard and push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.

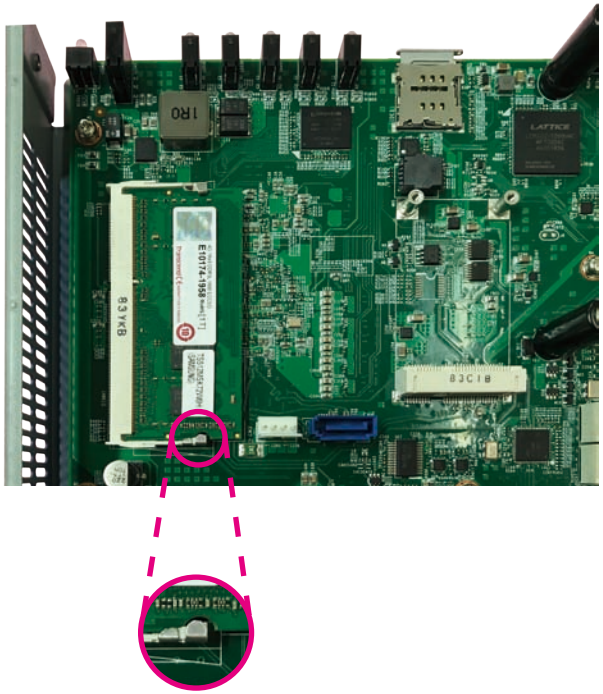


2. Insert the module into the socket at an approximately 30 degree angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.

   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.

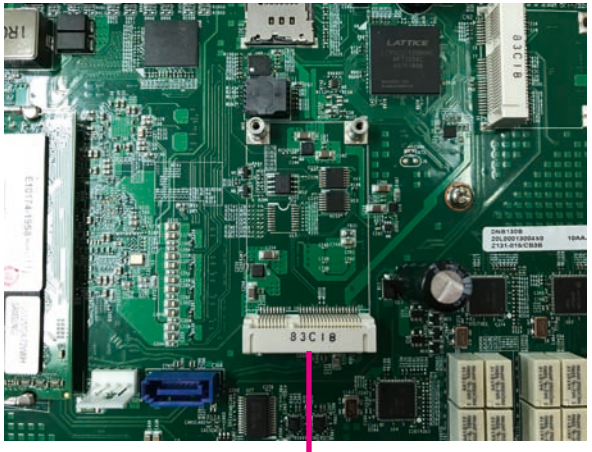


3. Push the module down until the ejector tabs at the ends of the socket automatically snap into the locked position to hold the module in place.

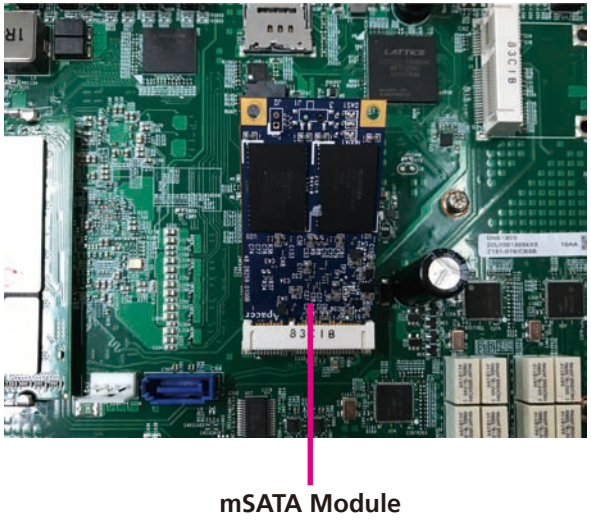


Installing an mSATA Module

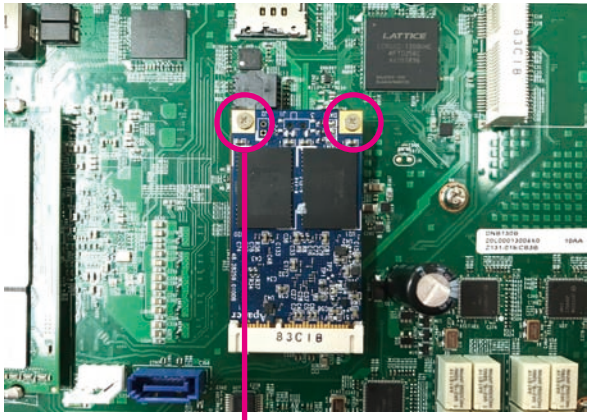
1. Remove the chassis cover and locate the mSATA slot.



2. Insert the mSATA module into the mSATA slot at a 45 degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



3. Push the module down and secure it with mounting screws.



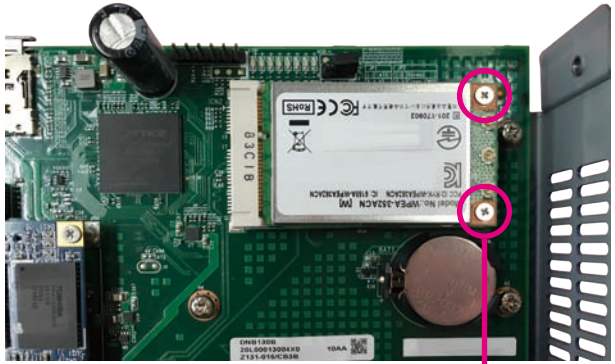
Installing a Wi-Fi Module

Please note that a LTE module cannot be installed after installing a Wi-Fi module. Only one can be installed at a time.

1. Locate the mini-PCIe slot on the motherboard.

2. Insert the module into the slot at a 45 degree angle until the gold plated connector on the edge of the module completely disappears inside the slot.

3. Push the module down and fasten screws into the mounting holes to secure the module.



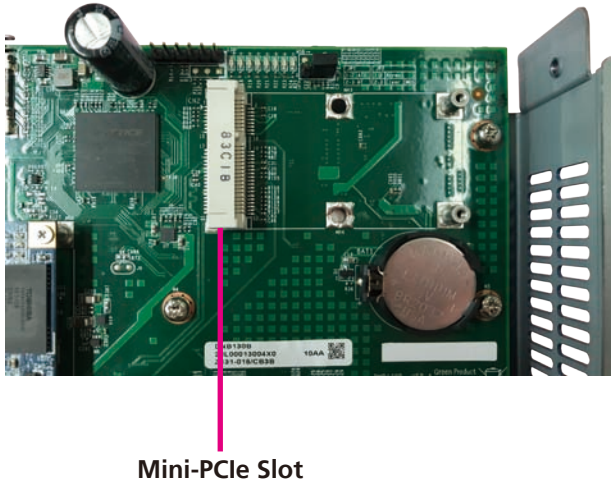
Mounting Screw

4. Attach the RF cables onto the module and mount the other ends of the cables to the antenna holes on the chassis.

Installing a LTE Module

Please note that a Wi-Fi module cannot be installed after installing a LTE module. Only one can be installed at a time.

1. Locate the mini-PCIe slot on the motherboard.



2. Insert the module into the slot at a 45 degree angle until the gold plated connector on the edge of the module completely disappears inside the slot.

3. Push the module down and fasten screws into the mounting holes to secure the module.

4. Attach the RF cables onto the module and mount the other ends of the cables to the antenna holes on the chassis.

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the DNA 130. 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.
Esc	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.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	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.

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.

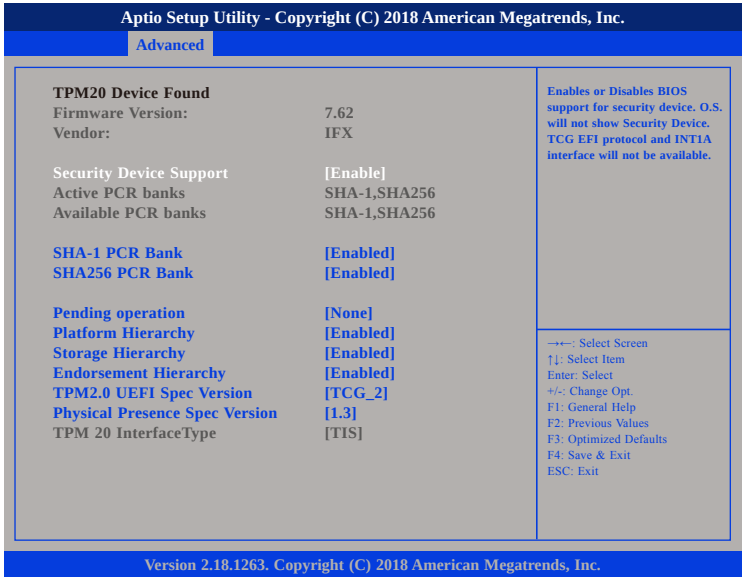
Advanced

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.

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.

SHA-1 PCR Bank

Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank

Enables or disables SHA256 PCR Bank.

Pending operation
Schedules an operation for the security device.

Platform Hierarchy
Enables or disables platform hierarchy.

Storage Hierarchy
Enables or disables storage hierarchy.

Endorsement Hierarchy
Enables or disables endorsement hierarchy.

TPM2.0 UEFI Spec Version
Configures the TPM2.0 UEFI spec version.

Physical Presence Spec Version
Configures the physical presence spec version.

NCT6776 Super IO Configuration

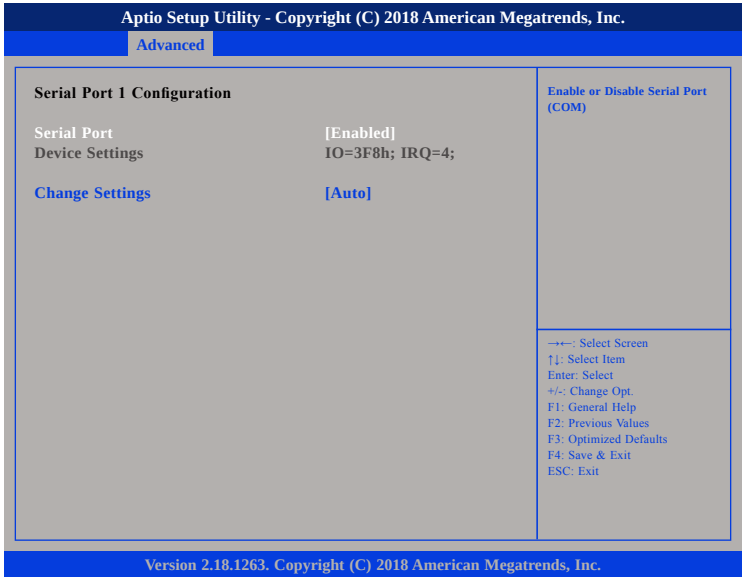
This section is used to configure the serial ports.

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

Serial Port 1 Configuration
Configuration settings for serial port 1.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

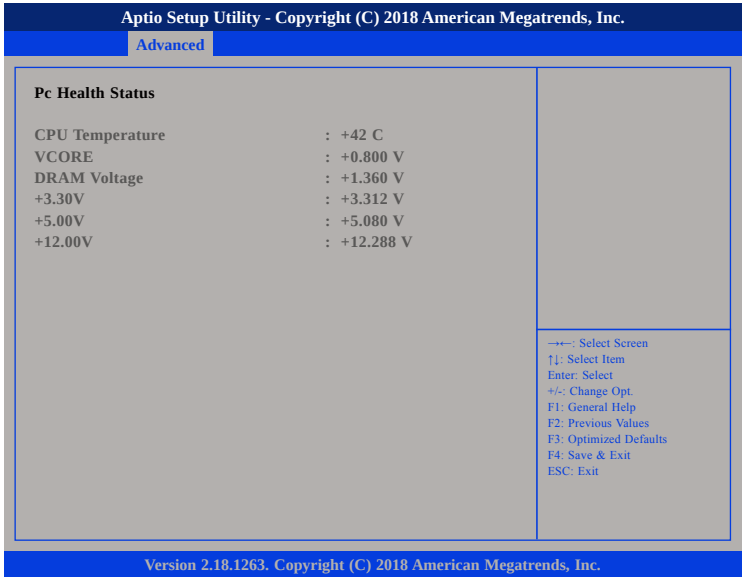
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

NCT6776 HW Monitor

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



CPU Temperature

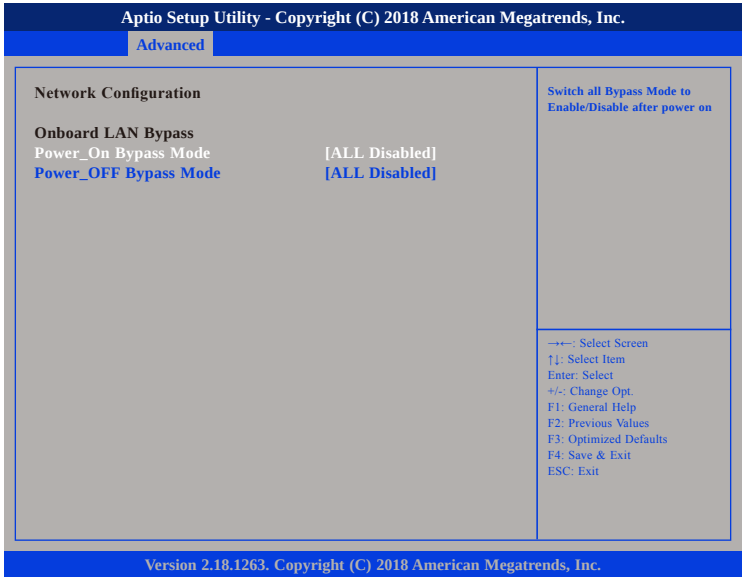
Detects and displays the current CPU temperature.

VCORE to +12.00V

Detects and displays the output voltages.

Network Configuration

This section is used to configure LAN bypass function.



Power_On Bypass Mode

Enables or disables the LAN module bypass mode after the system powers on.

Power_OFF Bypass Mode

Enables or disables the LAN module bypass mode after the system powers off.

Serial Port Console Redirection

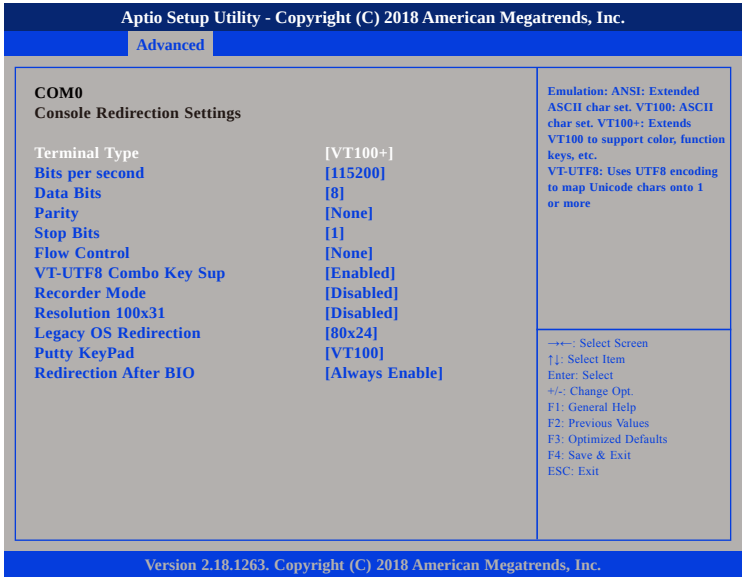
This section is used to configure the serial port that will be used for console redirection.

Console Redirection

Enables or disables the console redirection.

Console Redirection Settings

Specifies how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible 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.

Legacy OS Redirection

Selects the number of rows and columns that support redirection.

Putty Keypad

Selects the Putty keyboard emulation type.

Redirection After BIOS POST

Enables or disables redirection after BIOS POST.

CPU Configuration

This section is used to configure the CPU.

Active Processor Core

Select the number of cores to enable in each processor package.

Intel® Virtualization Technology

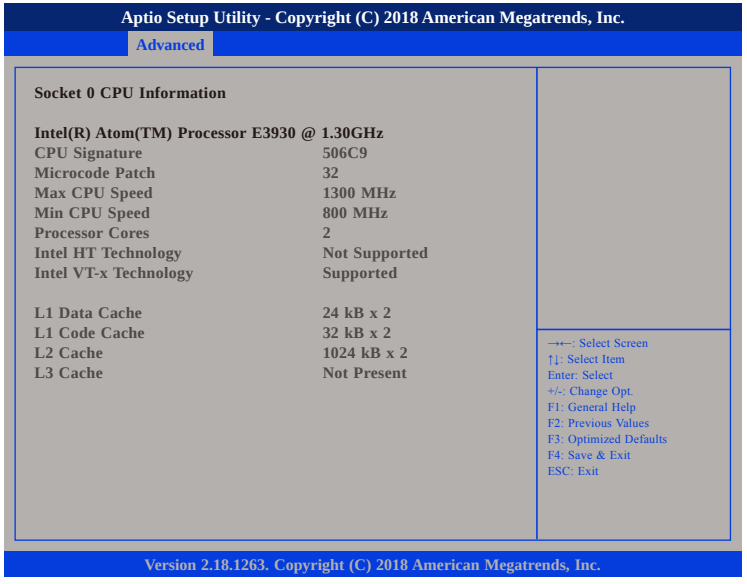
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

VT-d

Enables or disables Intel® VT-d technology.

Socket 0 CPU Information

This section displays the information of the CPU installed in Socket 0.



CPU Power Management

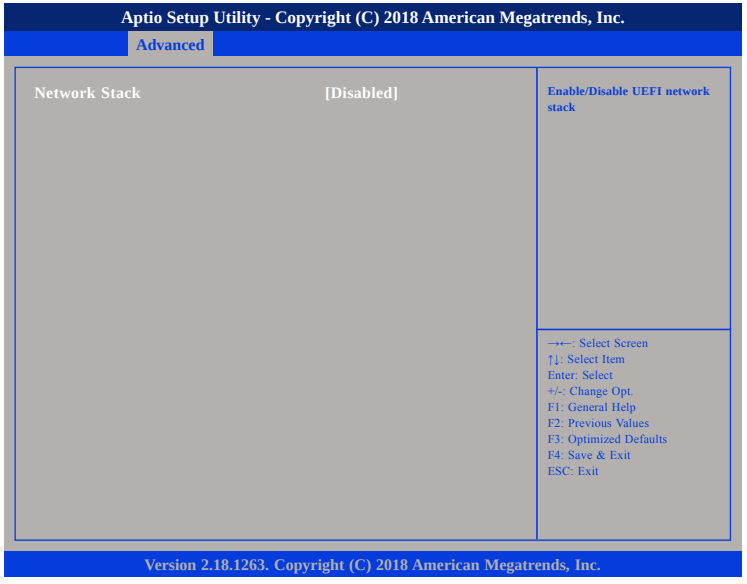
This section is used to configure the CPU power management settings.

EIST

Enables or disables Intel® SpeedStep.

Network Stack Configuration

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 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.

Network

Enables or disables the boot option for legacy network devices.

Storage

Enables or disables the boot option for legacy storage devices.

Video

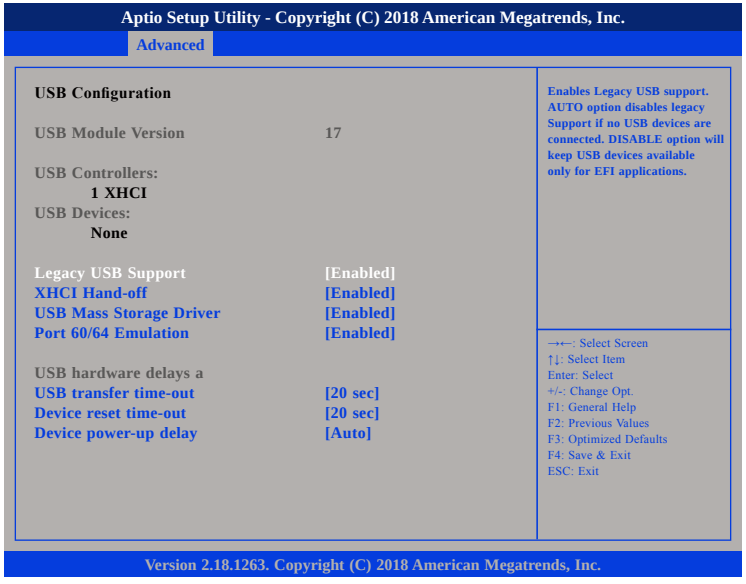
Enables or disables the boot option for legacy video devices.

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

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.

USB Transfer Time-out

The time-out value for control, bulk, and Interrupt transfers.

Device Reset Time-out

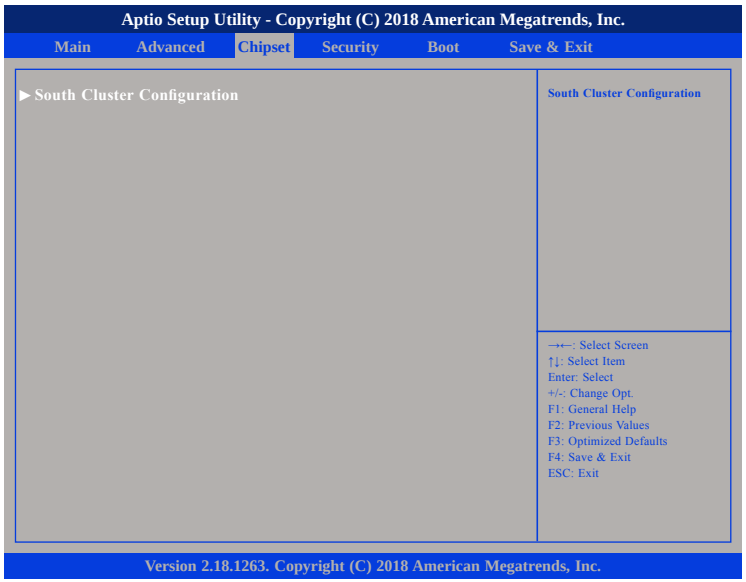
Selects the USB mass storage device's start unit command timeout.

Device Power-up Delay

Maximum time the value will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

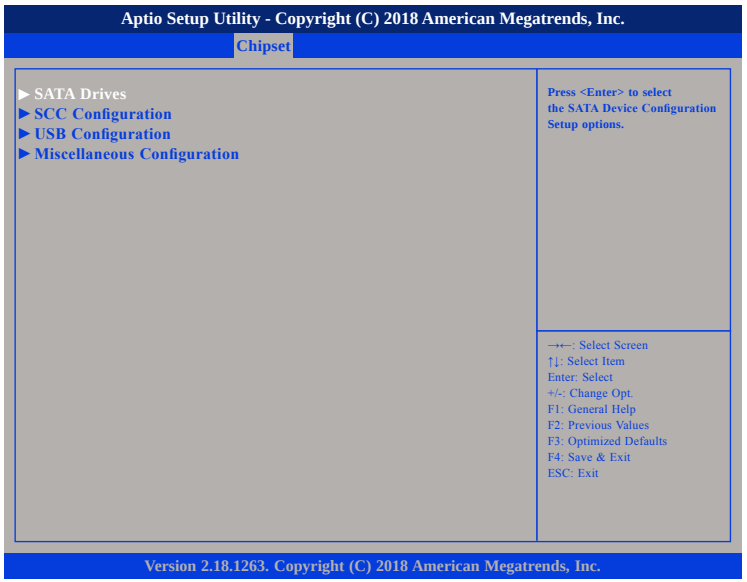
Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



South Cluster Configuration
Enters the South Cluster Configuration submenu.

South Cluster Configuration



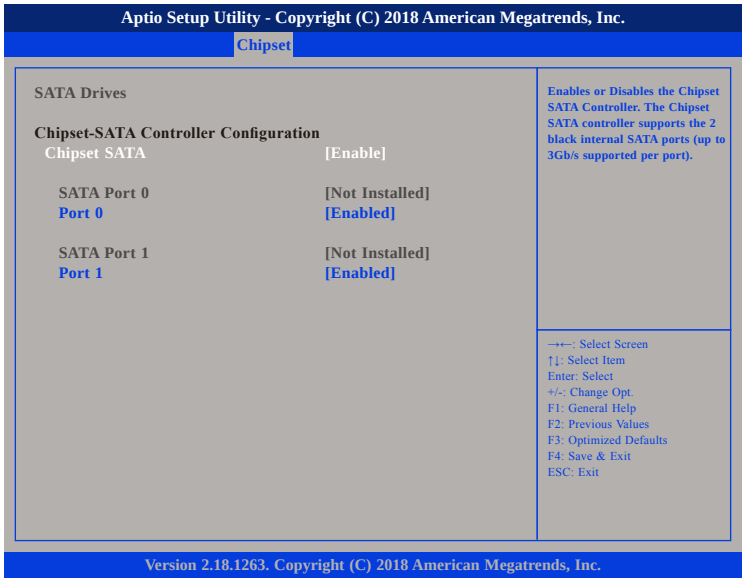
SATA Drives
Enters the SATA Drives submenu.

SCC Configuration
Enters the SCC Configuration submenu.

USB Configuration
Enters the USB Configuration submenu.

Miscellaneous Configuration
Enters the Miscellaneous Configuration submenu.

SATA Drives



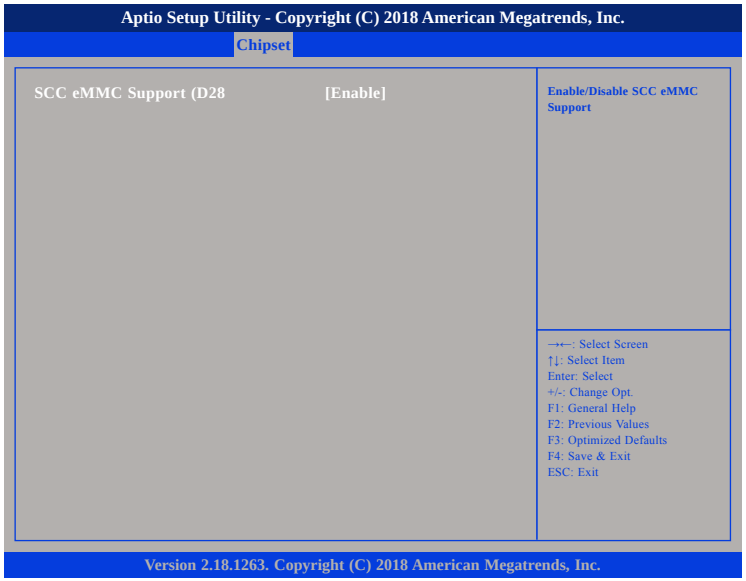
Chipset SATA

Enables or disables the chipset SATA controller.

Port 0 and Port 1

Enables or disables SATA port 0 and SATA port 1.

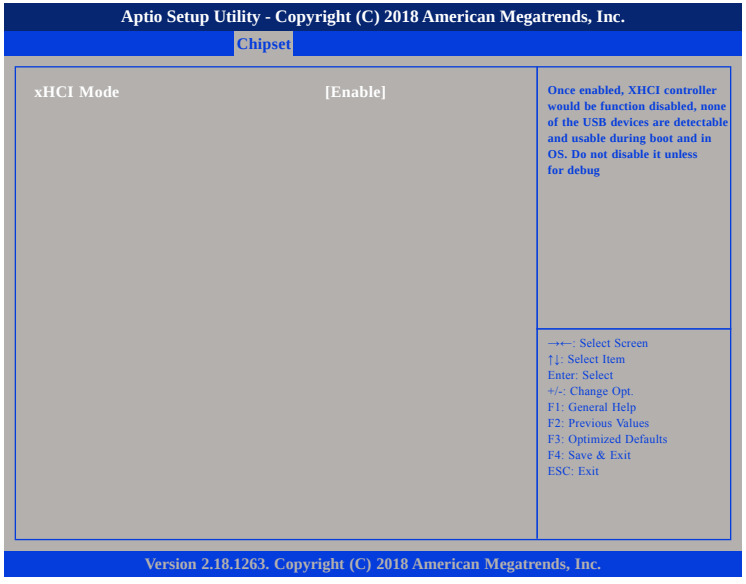
SCC Configuration



SCC eMMC Support

Enables or disables SCC eMMC support.

USB Configuration



xHCI Mode

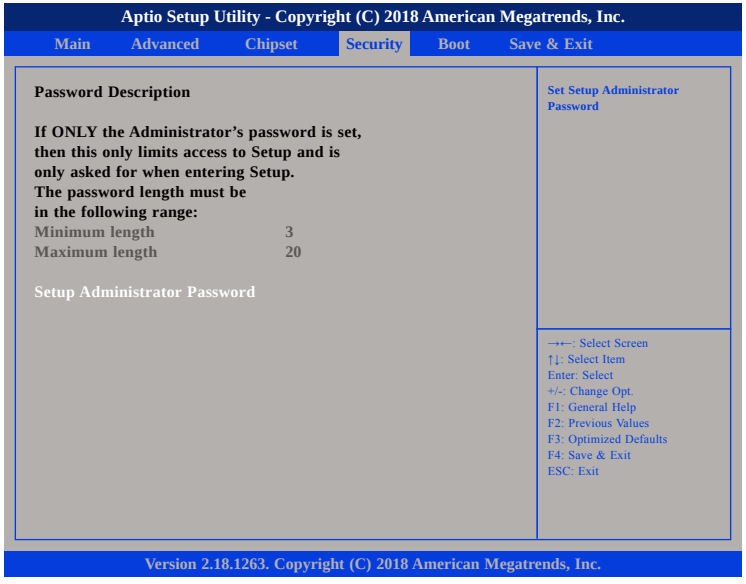
Enables or disables XHCI mode. When enabled, XHCI controller would be disabled and none of the USB devices are detectable and usable during boot and in OS. Do not disable it unless for debugging purposes.

Miscellaneous Configuration

State After G3

Configures the power state when power is re-applied after a power failure (G3 state).

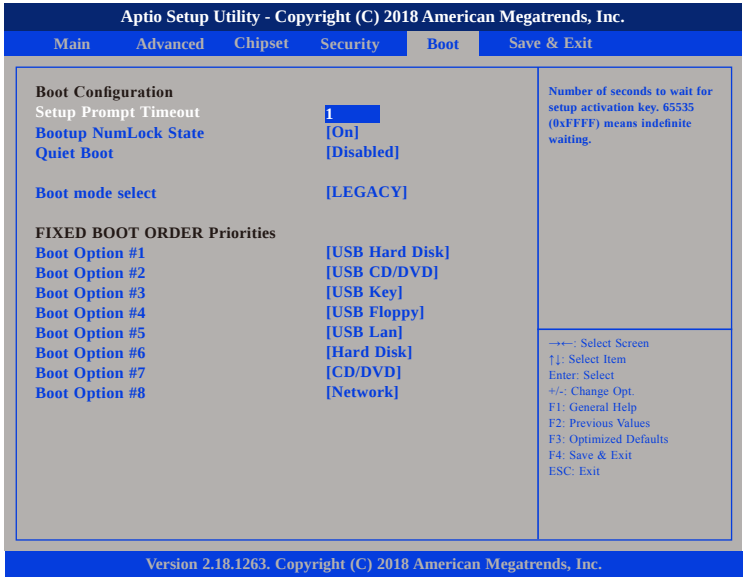
Security



Setup 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.

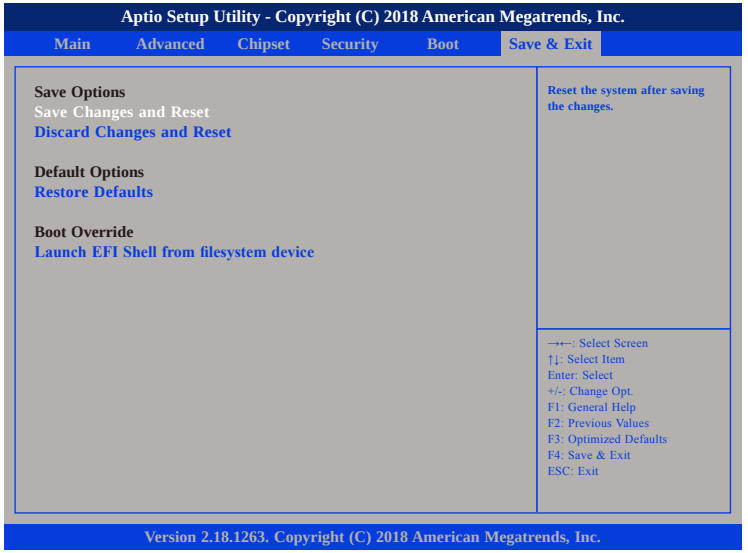
Boot Mode Select

Configures the boot mode option.

Boot Option #1 to Boot Option #7

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. You can also press <F4> to save and exit Setup.

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. You can also press <ESC> to exit without saving the changes.

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