nexCOBOT

NexCOBOT Co., Ltd.

IoT Automation Solutions Business Group
Industrial Robot Controller
RCB 100-L4
User Manual

CONTENTS

Chapter 3: BIOS Setup

PREFACE

Copyright

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Acknowledgements

RCB 100-L4 is a trademark of Nexcobot 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 A 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 A 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

NexCOBOT RoHS Environmental Policy and Status Update

NexCOBOT 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, NexCOBOT 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 NexCOBOT development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NexCOBOT 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 NexCOBOT 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 NexCOBOT naming convention.

Warranty and RMA

NexCOBOT Warranty Period

NexCOBOT manufactures products that are new or equivalent to new in accordance with industry standard. NexCOBOT warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NexCOBOT.

NexCOBOT Return Merchandise Authorization (RMA)

▪ Customers shall enclose the "NexCOBOT 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 "NexCOBOT 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, NexCOBOT 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 NexCOBOT 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

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

System Level

▪ Component fee: NexCOBOT 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 NexCOBOT 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, NexCOBOT will return it to the customer without any charge.

Board Level

▪ Component fee: NexCOBOT 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, NexCOBOT 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 the equipment from any AC outlet before cleaning or installing a component inside the chassis. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. To prevent electrostatic build-up, leave the board in its anti-static bag until you are ready to install it.

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

6. Keep the board away from humidity.

7. Put the board on a stable surface. Dropping it or letting it fall may cause damage.

8. Wear anti-static wrist strap.

9. Do all preparation work on a static-free surface.

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

11. Hold the board only by its edges. Be careful not to touch any of the components, contacts or connections.

12. All cautions and warnings on the board should be noted.

13. Use the correct mounting screws and do not over tighten the screws.

14. Keep the original packaging and the anti-static bag; in case the board has to be returned for repair or replacement.

Technical Support and Assistance

1. For the most updated information of NexCOBOT products, visit NexCOBOT's website at www.nexcobot.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.

Global Service Contact Information

Asia

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Email: sales@nexcobot.com
www.nexcobot.com.cn

Package Contents

Before continuing, verify that the RCB 100-L4 package that you received is complete. Your package should have all the items listed in the following table.

Item	Name	Qty
1	RCB 100-L4	1

Optional Accessories

Item	Part Number	Name	Description
1	4NCPM00302X00	3-pin Terminal Block Phoenix Contact	3-pin Terminal Block Phoenix Contact:1777992 5.08mm Male DIP Green
2	603VGA0045X00	Int VGA Cable	VGA Cable ST:MD-5107112 HD 15P/F TO 2x10H.S PIT:1.25mm L=120mm (w/GND CABLE)
3	603POW0391X00	DC-IN Power Cable	Power Cable ST:ST-1906022 ATX 2x2P PIT:4.2mm to 3-pin Terminal Block PIT: 5.08mm L=230mm

Heat Spreader:
Please note that the heat spreader is a thermal coupling device that comes in contact with the CPU through thermal gap fillers. It is designed to transfer the heat away from the CPU and is different to a heatsink in terms of cooling properties. Please do not consider it as a heatsink.

Additional thermal gap fillers can be used on other components on the module to allow them to come in contact with the heat spreader for heat dissipation.

Ordering Information

The following below provides ordering information for RCB 100-L4.

RCB 100-L4 (P/N: 10J200RCB07X0)

Mini-ITX, 6th/7th Gen Skylake Core I (65W/35W), LGA1151, H110, 2 x DDR4 SO-DIMM up to 32GB, 1 x HDMI, 1 x VGA, 4 x USB 3.1 (Gen1), 4 x USB 2.0, 4 x GbE LAN, SATA x1, 1 x RS232/422/485, 1 x 2x10 box header on-board isolated I/O, 1 x PCIe x16 slot, Mini-PCIe, 24V DC.

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CHAPTER 1: PRODUCT INTRODUCTION

Overview
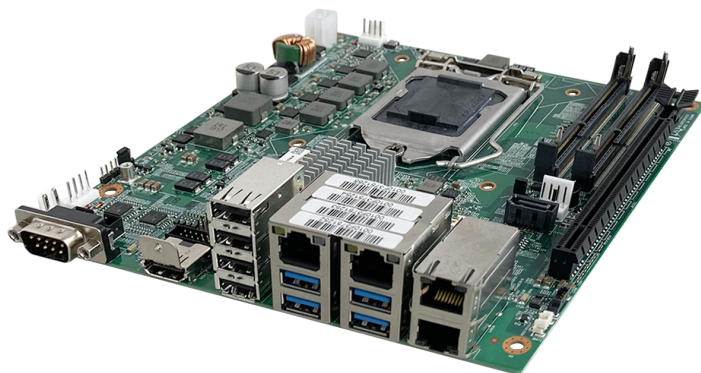
Key Features

- 6th/7th generation Intel® Core™ i7/i5/i3, LGA1151 socket processor, max. 65W TDP, H110

- Support two DDR4 SO-DIMM sockets

- Support dual display HDMI, VGA

- 4 x Intel® GbE LAN ports (2 x ECAT)

- 4 x USB 3.1 (Gen1), 4 x USB 2.0, 1 x RS232/485/422, 1 x SATAIII, onboard isolated I/O

- 1 x PCIe x16, 1 x Mini-PCIe

- 1 x 2x2 4P ATX-12V connector, 24V DC input

Hardware Specifications

CPU Support

- Socket LGA1151, 6th/7th generation Intel® Core™ i7/i5/i3 processors, Intel® Pentium® and Intel® Celeron® processors, max. 65W

Chipset

- Intel® H110 Express Chipset

Main Memory

- 2 x SO-DIMM DDR4 with non-ECC SO-DIMM, up to 32GB

BIOS

- AMI (UEFI)

Display

- 1 x Int-VGA connector (resolution up to 1920 x 1080 @ 60Hz)
- 1 x HDMI connector (resolution up to 4096 x 2160 @ 24Hz)

System

- 4 x USB 3.1 (Gen1), 4 x USB 2.0
- 1 x COM port (supports RS232/485/422)
- 1 x Front panel header
- Onboard isolated I/O 12-in (sink/source type), 4-out (sink type),
- Watchdog timeout can be programmed by software from 1 second to 255 seconds and from 1 minute to 255 minutes
- 2 x Fan connectors

Storage

- 1 x SATA III (6.0Gb/s) port
- 1 x SATA power connector

Expansion

- 1 x PCIe x16
- 1 x Full size mini-PCIe (PCIe & USB for Wi-Fi & Albooster card)

Rear I/O

- 1 x COM port
- 1 x 4 deck USB 2.0
- 1 x HDMI
- 2 x RJ45 (2 x Intel® I211AT GbE LANs)
- 4 x USB 3.1 (Gen1)
- 1 x Double deck RJ45 (2 x Intel® I210AT GbE LANs, support ECAT)

Internal I/O

- 1 x Int-VGA connector
- 1 x USB 2.0 (pin header)
- 1 x 12-in (sink/source type), 4-out (sink type) / 2x10 2.00mm box header
- 2 x Fan connectors

Power Requirements

- 1 x 4 pin ATX-12V power connector
- 24V DC input
- Support both AT and ATX power supply mode

Form Factor

▪ Dimensions: Mini-ITX (17cm x 17cm)

Environment

▪ Board level operating temperature: -0°C to 60°C
▪ Storage temperature: -40°C to 85°C
▪ Relative humidity:
  – 10% to 95% (operating, non-condensing)
  – 5% to 95% (non-operating, non-condensing)

Certifications

▪ Meet CE/FCC Class A

Knowing Your RCB 100-L4

Top View

DC Input   CPU FAN   DIMM1   DIMM2

PCIe x16

RTC Clear
SATA Power
SATA

Mini-PCIe

VGA

AT/ATX Select
Power
Reset

USB

System Fan

GPIO   RTC Battery

COM

I/O Interfaces

LAN1 LAN2 LAN3

COM   HDMI   USB 2.0   USB 3.0   USB 3.0   LAN4
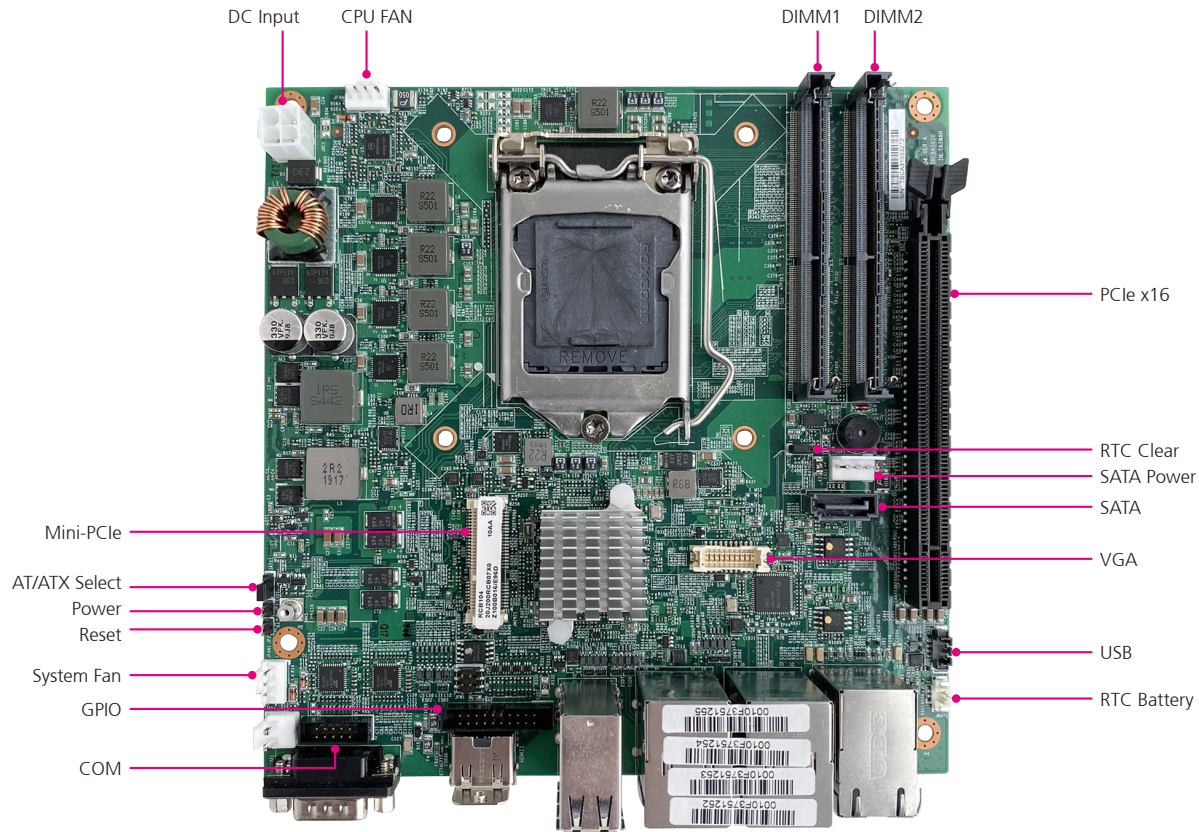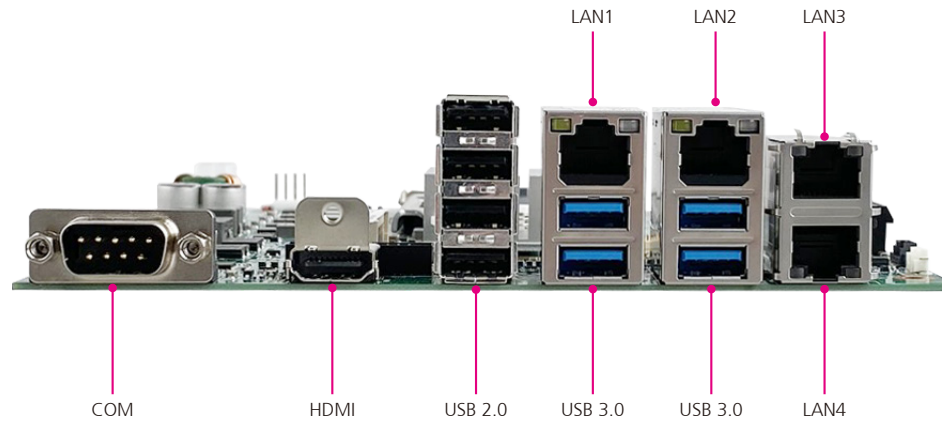
CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the RCB 100-L4 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)
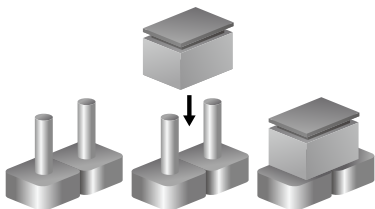
Three-Pin Jumpers: Pins 1 and 2 are Short
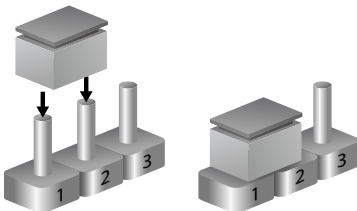
Locations of the Jumpers and Connectors

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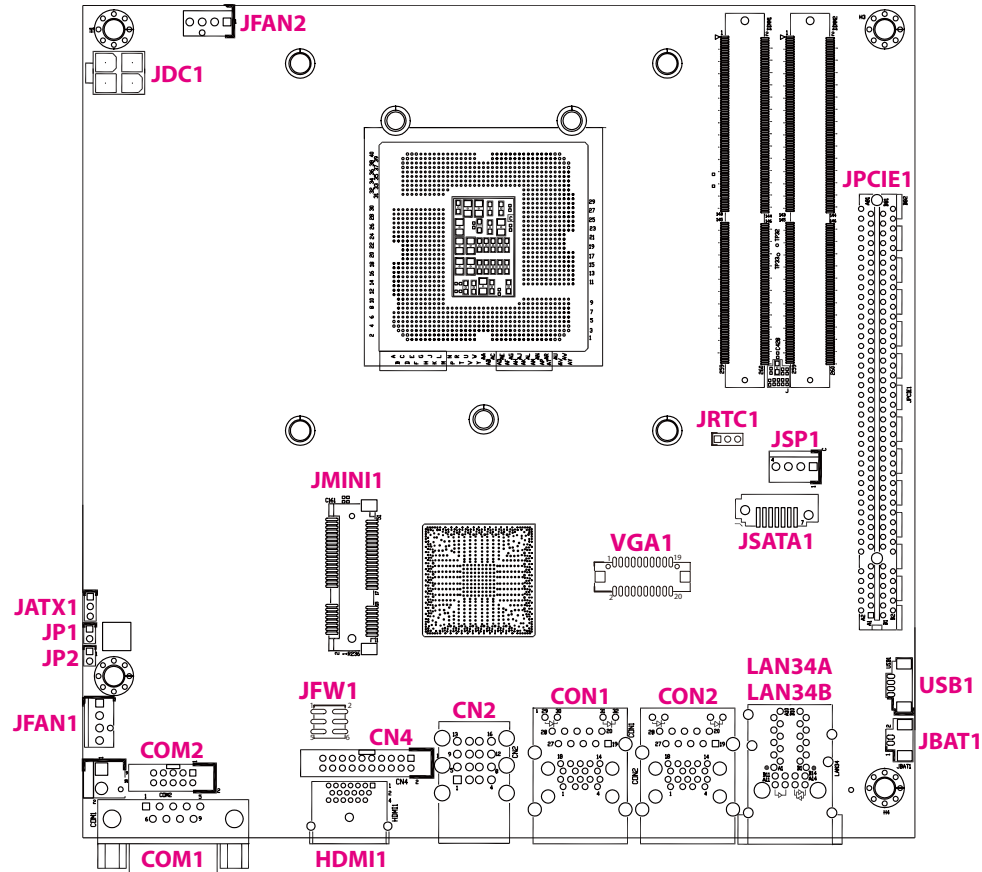
Jumpers

AT/ATX Power Type Selection

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JATX1

1 □ ○ ○ 3

Pin	Function
1-2 On	ATX Mode
2-3 On	AT Mode

2-3 On: default

Pin	Definition
1	Manual (ATX MODE)
2	PWRBT In
3	AUTO (AT MODE)

RTC Clear

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JRTC1

1 □ ○ ○ 3

Pin	Definition
1	VCCRTC
2	VCCRTC_R
3	GND

1-2 On: default

Connector Pin Definitions

External I/O Interfaces

COM Port

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM1

HDMI

Connector type: HDMI port
Connector location: HDMI1
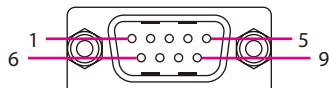
Pin	Definition	Pin	Definition
1	COM_DCD#1	2	COM_RXD#1
3	COM_TXD#1	4	COM_DTR#1
5	COM_GND	6	COM_DSR#1
7	COM_RTS#1	8	COM_CTS#1
9	COM_RI#1		
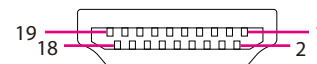
Pin	Definition	Pin	Definition
1	HDMI_D2+_C	2	GND
3	HDMI_D2-_C	4	HDMI_D1+_C
5	GND	6	HDMI_D1-_C
7	HDMI_D0+_C	8	GND
9	HDMI_D0-_C	10	HDMI_CK+_C
11	GND	12	HDMI_CK-_C
13	NC	14	NC
15	HDMI_SCL_C	16	HDMI_SDA_C
17	GND	18	VCC5
19	HDMI_HPD		

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LAN1 and USB 3.0 Ports

Connector type: RJ45 port with LEDs
Dual USB 3.0 ports, Type A
Connector location: CON1
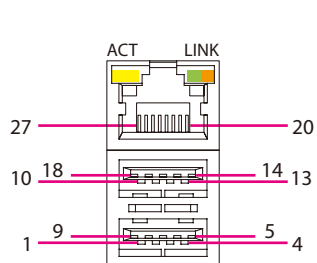
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	P5V_USB_P01	2	USB2N1_C
3	USB2P1_C	4	GND
5	USB3RN1_C	6	USB3RP1_C
7	GND	8	USB3TN1_C
9	USB3TP1_C	10	P5V_USB_P01
11	USB2N2_C	12	USB2P2_C
13	GND	14	USB3RN2_C
15	USB3RP2_C	16	GND

Pin	Definition	Pin	Definition
17	USB3TN2_C	18	USB3TP2_C
19	LAN1_VCC	20	LAN1_MDI0P
21	LAN1_MDI0N	22	LAN1_MDI1P
23	LAN1_MDI1N	24	LAN1_MDI2P
25	LAN1_MDI2N	26	LAN1_MDI3P
27	LAN1_MDI3N	28	GND
29	LAN1_ACT_P	30	LAN1_LED_ACT#
31	LAN1_LINK100#	32	LAN1_1000_P

LAN2 and USB 3.0 Ports

Connector type: RJ45 port with LEDs
Dual USB 3.0 ports, Type A
Connector location: CON2
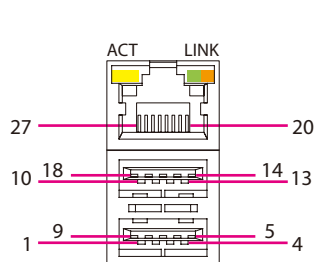
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	P5V_USB_P02	2	USB2N3_C
3	USB2P3_C	4	GND
5	USB3RN3_C	6	USB3RP3_C
7	GND	8	USB3TN3_C
9	USB3TP3_C	10	P5V_USB_P02
11	USB2N4_C	12	USB2P4_C
13	GND	14	USB3RN4_C
15	USB3RP4_C	16	GND

Pin	Definition	Pin	Definition
17	USB3TN4_C	18	USB3TP4_C
19	LAN2_VCC	20	LAN2_MDI0P
21	LAN2_MDI0N	22	LAN2_MDI1P
23	LAN2_MDI1N	24	LAN2_MDI2P
25	LAN2_MDI2N	26	LAN2_MDI3P
27	LAN2_MDI3N	28	GND
29	LAN2_ACT_P	30	LAN2_LED_ACT#
31	LAN2_LINK100#	32	LAN2_1000_P

USB 2.0 Ports

Connector type: Four USB 2.0 ports, Type A
Connector location: CN2
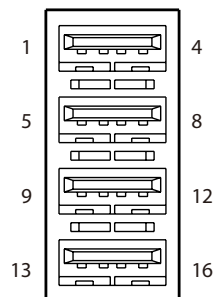
Pin	Definition	Pin	Definition
1	P5V_USB_P56	2	USB2N5_C
3	USB2P5_C	4	GND
5	P5V_USB_P56	6	USB2N6_C
7	USB2P6_C	8	GND
9	P5V_USB_P78	10	USB2N7_C
11	USB2P7_C	12	GND
13	P5V_USB_P78	14	USB2N8_C
15	USB2P8_C	16	GND

LAN3 Port

Connector type: RJ45 port with LEDs
Connector location: LAN34A
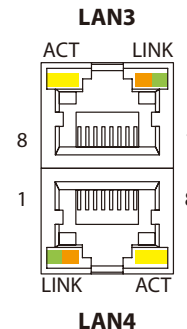
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	LAN3_MDI0P	2	LAN3_MDI0N
3	LAN3_MDI1P	4	LAN3_MDI1N
5	LAN3_MDI2P	6	LAN3_MDI2N
7	LAN3_MDI3P	8	LAN3_MDI3N
9	LAN3_VCC	10	GND
11	LAN3_ACTPW	12	LAN3_ACT#_LED
13	LAN3_LINK	14	LAN3_LINK1G#_LED

LAN4 Port

Connector type: RJ45 port with LEDs
Connector location: LAN34B
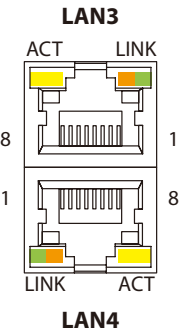
LAN3

ACT   LINK

8   1

1   8

LINK   ACT

LAN4

Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	LAN4_MDI0P	2	LAN4_MDI0N
3	LAN4_MDI1P	4	LAN4_MDI1N
5	LAN4_MDI2P	6	LAN4_MDI2N
7	LAN4_MDI3P	8	LAN4_MDI2N
9	LAN4_VCC	10	GND
11	LAN4_ACTPW	12	LAN4_ACT#_LED
13	LAN4_LINK	14	LAN4_LINK1G#_LED

Internal Connectors

DC-in Connector

Connector type: 2x2 Aux power connector
Connector location: JDC1
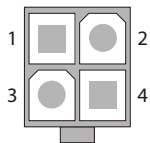
Pin	Definition
1	GND
2	GND
3	+24V
4	+24V

Power Connector

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: JP1

Pin	Definition
1	PWRBTN#_C
2	GND

Reset Connector

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: JP2

1 ▢ ◯ 2

Pin	Definition
1	RESET
2	GND

BIOS Programming (for debugging only)

Connector type: 2x3 6-pin header, 2.0mm pitch
Connector location: JFW1

2 ◯ ◯ ◯ 6
1 ▢ ◯ ◯ 5
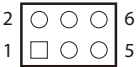
Pin	Definition	Pin	Definition
1	3.3V	2	GND
3	SPI_CS#	4	SPI_CK
5	SPI_SO	6	SPI_SI

Internal USB 2.0 Connector

Connector type: 1x4 4-pin header, 1.25mm pitch
Connector location: USB1

SATA Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: JSATA1
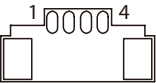
Pin	Definition	Pin	Definition
1	P5V_USB_P9_P4	2	USB2N9_C
3	USB2P9_C	4	GND

Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP1_C
3	SATA_TXN1_C	4	GND
5	SATA_RXN1_C	6	SATA_RXP1_C
7	GND		

SATA Power Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: JSP1

Pin	Definition	Pin	Definition
1	VCC12	2	GND
3	GND	4	VCC5

RS232/RS422/RS485 Serial Port Box Header

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM2
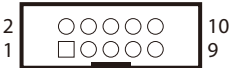
Pin	Definition	Pin	Definition
1	COM_DCD#2	2	COM_RXD#2
3	COM_TXD#2	4	COM_DTR#2
5	COM_GND	6	COM_DSR#2
7	COM_RTS#2	8	COM_CTS#2
9	COM_RI#2		

RTC Battery Connector

Connector type: 1x2 JST, 2-pin header, 1.25mm pitch
Connector location: JBAT1

Pin	Definition
1	BATT-
2	BATT+

System Fan Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: JFAN1

Pin	Definition	Pin	Definition
1	GND	2	FAN2_12V_C
3	FAN_TAC2_C	4	FAN_CTL2_C

CPU Fan Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: JFAN2

VGA Connector

Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: VGA1
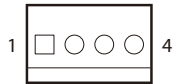
Pin	Definition	Pin	Definition
1	GND	2	FAN1_12V_C
3	FAN_TAC1_C	4	FAN_CTL1_C
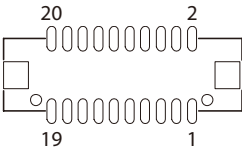
Pin	Definition	Pin	Definition
1	GND	2	RED_VGA
3	GND	4	GREEN_VGA
5	GND	6	BLUE_VGA
7	NC	8	GND
9	NC	10	VSYNC_VGA
11	GND	12	HSYNC_VGA
13	VGA_SCL_C	14	GND
15	VGA_SDA_C	16	GND
17	GND	18	NC
19	NC	20	VGA_+5V

GPIO Connector

Connector type: 2x10 20-pin header, 2.0mm pitch
Connector location: CN4
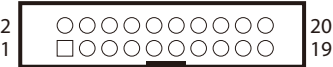
Pin	Definition	Pin	Definition
1	GPIO_I0	2	GPIO_I8
3	GPIO_I1	4	GPIO_I9
5	GPIO_I2	6	GPIO_I10
7	GPIO_I3	8	GPIO_I11
9	GPIO_I4	10	GPIO_O0
11	GPIO_I5	12	GPIO_O1
13	GPIO_I6	14	GPIO_O2
15	GPIO_I7	16	GPIO_O3
17	GPIO_GND	18	GPIO_GND
19	VCC5_GPIO	20	VCC5_GPIO

Mini-PCIe Connector

Connector location: JMINI1
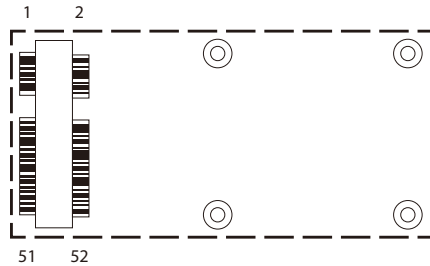
Pin	Definition	Pin	Definition
1	WAKE_N	2	3VSB_MINI2
3	NC	4	GND
5	NC	6	1V5_MINI2
7	PCIE_CLKREQ6#	8	NC
9	GND	10	NC
11	CLK_PCIE_MINI_N	12	NC
13	CLK_PCIE_MINI_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	W_DISABLE#
21	GND	22	PCIE_RST#
23	PCIE_RN6_MINI_C	24	3VSB_MINI2
25	PCIE_RP6_MINI_C	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1V5_MINI2
29	GND	30	SMB_CLK
31	PCIE_TN6_MINI_C	32	SMB_DAT
33	PCIE_TP6_MINI_C	34	GND
35	GND	36	USB2N10_C
37	GND	38	USB2P10_C
39	3VSB_MINI2	40	GND
41	3VSB_MINI2	42	NC
43	GND	44	NC
45	CL_CLK_C	46	NC
47	CL_DAT_C	48	1V5_MINI2
49	CL_RST#_C	50	GND
51	PCIE_mSATA_SEL	52	3VSB_MINI2

PCIe x16 Slot

Connector location: JPCIE1

Pin	Definition	Pin	Definition
A1	PCIE_PRSNT1	B1	12V
A2	12V	B2	12V
A3	12V	B3	12V
A4	GND	B4	GND
A5	TCK	B5	SMB_CLK
A6	TDI	B6	SMB_DATA
A7	NC	B7	GND
A8	TMS	B8	3.3V
A9	3.3V	B9	GND
A10	3.3V	B10	3.3V standby
A11	RESET#	B11	Wake#
A12	GND	B12	NC
A13	CLK+	B13	GND
A14	CLK-	B14	PET0+
A15	GND	B15	PET0-
A16	PER0+	B16	GND
A17	PER0-	B17	PCIECLKRQ8#
A18	GND	B18	GND

Pin	Definition	Pin	Definition
A19	NC	B19	PET1+
A20	GND	B20	PET1-
A21	PER1+	B21	GND
A22	PER1-	B22	GND
A23	GND	B23	PET2+
A24	GND	B24	PET2-
A25	PER2+	B25	GND
A26	PER2-	B26	GND
A27	GND	B27	PET3+
A28	GND	B28	PET3-
A29	PER3+	B29	GND
A30	PER3-	B30	NC
A31	GND	B31	NC
A32	NC	B32	GND
A33	NC	B33	PET4+
A34	GND	B34	PET4-
A35	PER4+	B35	GND
A36	PER4-	B36	GND

Pin	Definition	Pin	Definition
A37	GND	B37	PET5+
A38	GND	B38	PET5-
A39	PER5+	B39	GND
A40	PER5-	B40	GND
A41	GND	B41	PET6+
A42	GND	B42	PET6-
A43	PER6+	B43	GND
A44	PER6-	B44	GND
A45	GND	B45	PET7+
A46	GND	B46	PET7-
A47	PER7+	B47	GND
A48	PER7-	B48	NC
A49	GND	B49	GND
A50	NC	B50	PET8+
A51	GND	B51	PET8-
A52	PER8+	B52	GND
A53	PER8-	B53	GND
A54	GND	B54	PET9+
A55	GND	B55	PET9-
A56	PER9+	B56	GND
A57	PER9-	B57	GND
A58	GND	B58	PET10+
A59	GND	B59	PET10-

Pin	Definition	Pin	Definition
A60	PER10+	B60	GND
A61	PER10-	B61	GND
A62	GND	B62	PET11+
A63	GND	B63	PET11-
A64	PER11+	B64	GND
A65	PER11-	B65	GND
A66	GND	B66	PET12+
A67	GND	B67	PET12-
A68	PER12+	B68	GND
A69	PER12-	B69	GND
A70	GND	B70	PET13+
A71	GND	B71	PET13-
A72	PER13+	B72	GND
A73	PER13-	B73	GND
A74	GND	B74	PET14+
A75	GND	B75	PET14-
A76	PER14+	B76	GND
A77	PER14-	B77	GND
A78	GND	B78	PET15+
A79	GND	B79	PET15-
A80	PER15+	B80	GND
A81	PER15-	B81	NC
A82	GND	B82	NC

Block Diagram
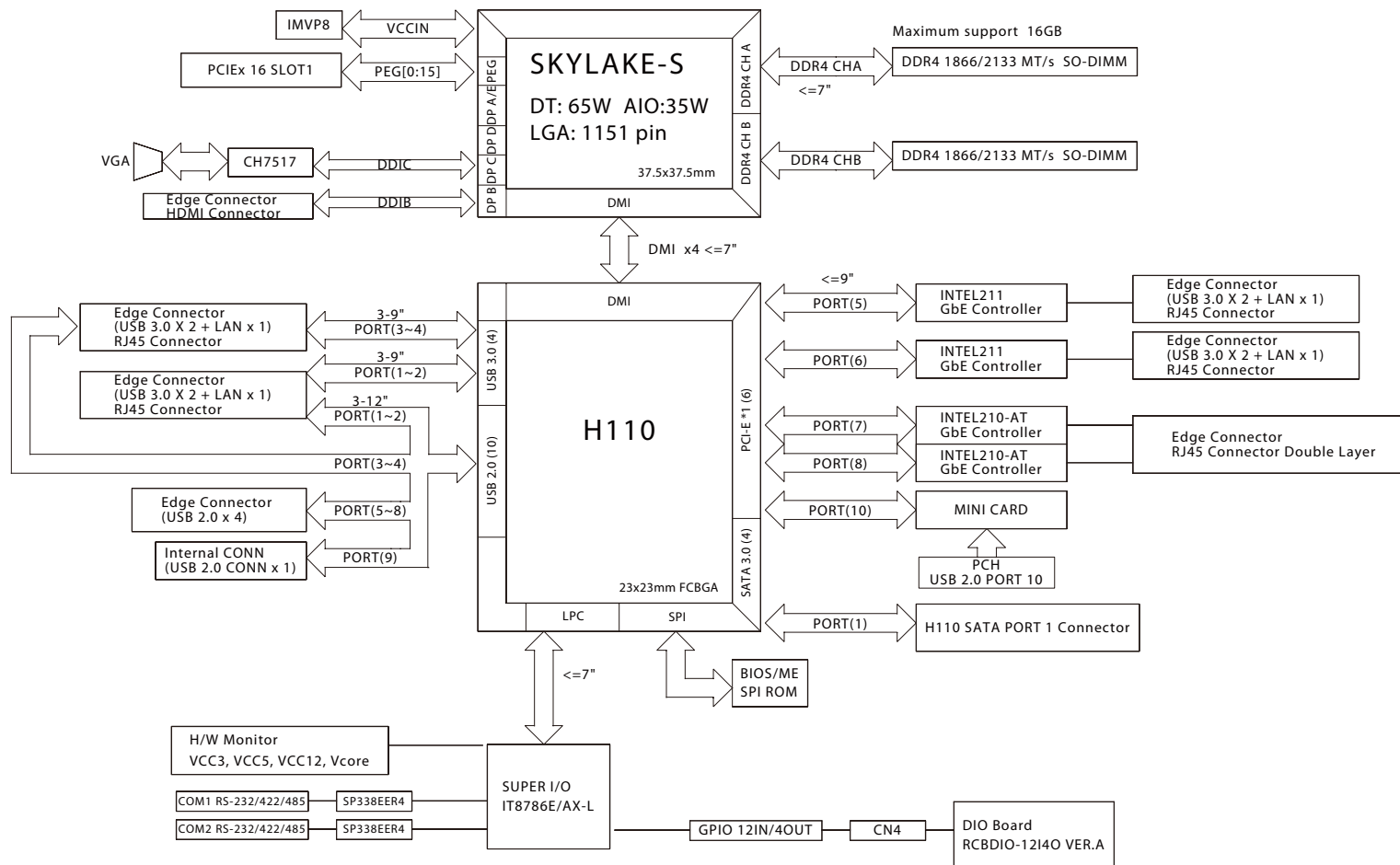
CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for RCB 100-L4. 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 NexCOBOT website at www.nexcobot.com.

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 <Del> allows you to enter Setup.

Press the [Del] key to enter Setup:

Legends

Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub-menus 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 `Enter,` .

![nexCOBOT](logo)

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.

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

  BIOS Information                                    Choose the system default
  Project Version          Z104T003 x64              language
  Build Date and Time      04/07/2018 21:36:12
  Access Level             Administrator

  Processor Information
  Name                     Kabylake DT
  Type                     Intel(R) Core(TM)
                           i5-7500T CPU @ 2.70GHz
  Speed                    2700 MHz
  ID                       0x906E9
  Stepping                 B0/S0/M0
  Number of Processors     4Core(s) / 4Thread(s)

  Memory RC Version        1.5.0.0                   →←: Select Screen
  Total Memory             32768 MB                  ↑↓: Select Item
  Memory Frequency          2400 MHz                 Enter: Select
                                                     +/-: Change Opt.
  ME FW Version            11.6.10.1196              F1: General Help
  ME Firmware SKU          Consumer SKU              F2: Previous Values
                                                     F3: Optimized Defaults
  System Language          [English]                 F4: Save & Exit
                                                     ESC: Exit
  System Date              [Tue 05/12/2018]
  System Time              [06:12:10]


          Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

System Language
Selects the language of the system.

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 1999 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.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.	
Main Advanced Chipset Security Boot Save & Exit	
► CPU Configuration	CPU Configuration Parameters.
► Power & Performance	
► IT8786 Super IO Configuration	
► Hardware Monitor	
► CSM Configuration	
► USB Configuration	
	→←: Select Screen
	↑↓: Select Item
	Enter: Select
	+/-: Change Opt.
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit
Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.	

CPU Configuration

This section is used to configure the CPU.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Advanced		
CPU Configuration		When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Type	Intel(R) Core(TM) i5-6500 CPU @ 3.20GHz	
ID	0x506E3	
Speed	3200 MHz	
L1 Data Cache	32 KB x 4	
L1 Instruction Cache	32 KB x 4	
L2 Cache	256 KB x 4	
L3 Cache	6 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Supported	
		→←: Select Screen
Intel (VMX) Virtualization Technology	[Enabled]	↑↓: Select Item
		Enter: Select
Active Processor Cores	[All]	+/-: Change Opt.
Hyper-Threading	[Disabled]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.		

Intel® (VMX) Virtualization Technology
Enables or disables Intel Virtualization technology.

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

Hyper-Threading
Enables or disables hyper-threading technology.

Power & Performance

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

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

  Power & Performance                          CPU - Power Management
                                               Control Options
▶ CPU - Power Management Control




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

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```

CPU - Power Management Control
Enters the CPU - Power Management Control submenu.

CPU - Power Management Control

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

  CPU - Power Management Control                Allows more than two frequency
                                                ranges to be supported.
  Intel(R) SpeedStep(tm)        [Disabled]
  C states                      [Disabled]




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

        Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Intel® SpeedStep™
Enables or disables Intel SpeedStep technology.

C states
Enables or disables CPU C states support for power saving.

IT8786 Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

```
Advanced

IT8786 Super IO Configuration              Set Parameters of Serial Port
                                           1 (COMA)
Super IO Chip              IT8786
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration


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

Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```
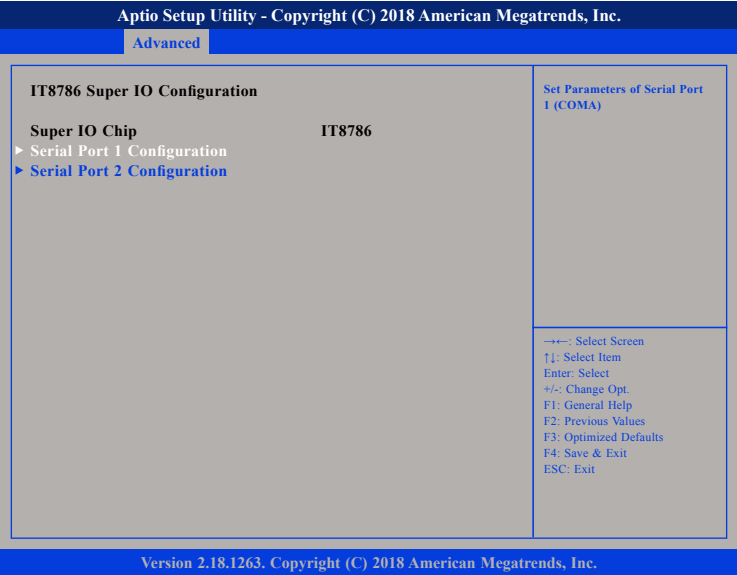
Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.
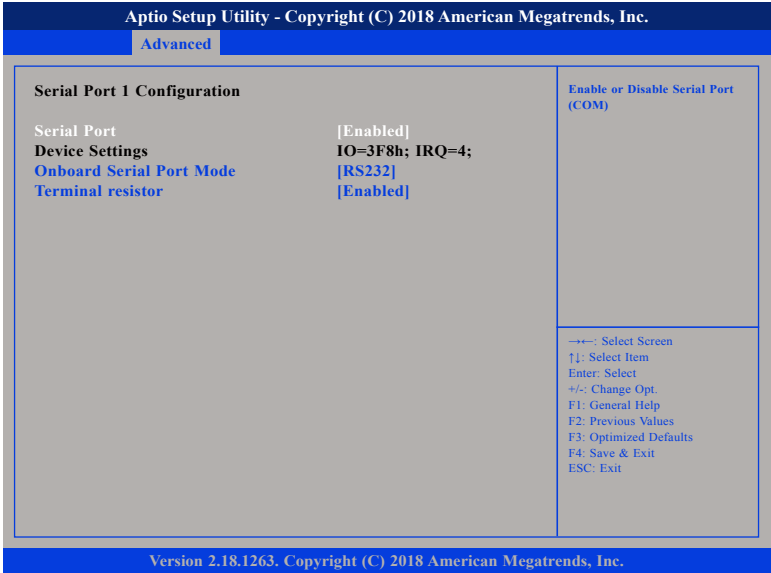
```
Advanced

Serial Port 1 Configuration                Enable or Disable Serial Port
                                           (COM)
Serial Port                [Enabled]
Device Settings            IO=3F8h; IRQ=4;
Onboard Serial Port Mode   [RS232]
Terminal resistor          [Enabled]


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

Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Serial Port

Enables or disables the serial port.

Onboard Serial Port Mode

Select this to change the serial port mode to RS232, RS422, RS485 or RS485 AUTO.

Terminal resistor

Enables or disables the terminal resistor.

Serial Port 2 Configuration

This section is used to configure serial port 2.
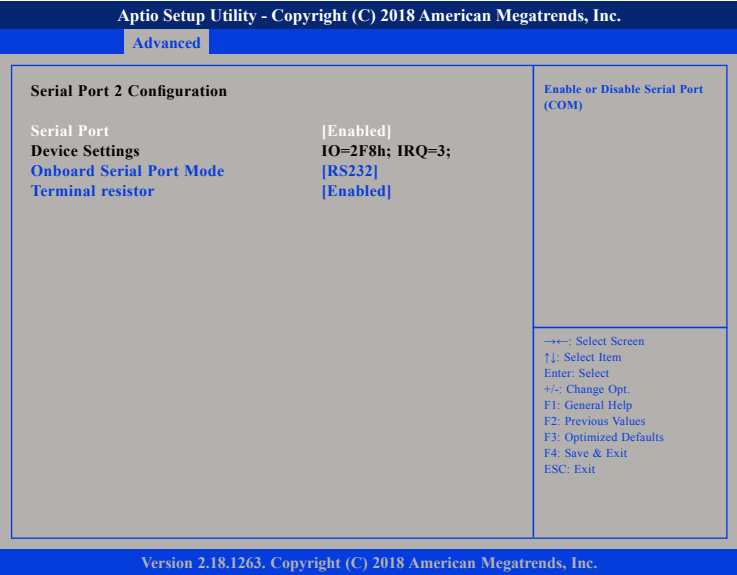
```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Advanced

   Serial Port 2 Configuration                                    Enable or Disable Serial Port
                                                                  (COM)
   Serial Port                      [Enabled]
   Device Settings                  IO=2F8h; IRQ=3;
   Onboard Serial Port Mode         [RS232]
   Terminal resistor                [Enabled]




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


                Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

Serial Port
Enables or disables the serial port.

Onboard Serial Port Mode
Select this to change the serial port mode to RS232, RS422, RS485 or RS485 AUTO.

Terminal resistor
Enables or disables the terminal resistor.

Hardware Monitor

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

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
       Advanced

   Pc Health Status                                               Enable or Disable System wake
                                                                  on alarm event. When enabled,
   RTC wake system from S5          [Enabled]                     System will wake on the
       Wake up hour                 0                             hr::min::sec specified
       Wake up minute               0
       Wake up second               0

   Watch Dog Timer Configuration    [Disabled]

   FAN Setting                      [Enable Smart Fan]
   Set Temp.-active S.F.            [35 C/ 95 F]
   Set Temp.-active full run        [75 C/167 F]
   Initial FAN speed (S.F.)         [32 %]

   System Temperature             : +30 °c
   CPU Temperature                : +27 °c                        →←: Select Screen
   CPU FAN SPEED                  : 1541 RPM                      ↑↓: Select Item
   SYSTEM FAN SPEED               : N/A                           Enter: Select
   CPU:Vcore                      : +0.936 V                      +/-: Change Opt.
   +3V                            : +3.284 V                      F1: General Help
   +12V                           : +11.952 V                     F2: Previous Values
   +5V                            : +5.010 V                      F3: Optimized Defaults
                                                                  F4: Save & Exit
                                                                  ESC: Exit

                Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.
```

RTC wake system from S5
Enables or disables system wake up from an alarm event. When enabled, the system will wake on the hr:min:sec specified.

Watch Dog Timer Configuration
Enables or disables the watchdog timer.

FAN Setting
Configures the operating mode of the fan.

Set Temp.-active S.F.

Configures the temperature threshold to activate smart fan.

Set Temp.-active full run

Configures the temperature threshold to activate the fan in full speed.

Initial FAN Speed (S.F.)

Configures the starting fan speed of smart fan.

System Temperature

Detects and displays the current system temperature.

CPU Temperature

Detects and displays the current CPU temperature.

CPU FAN SPEED

Detects and displays the current CPU fan speed.

SYSTEM FAN SPEED

Detects and displays the current system fan speed.

CPU:Vcore

Detects and displays the Vcore voltage.

+3V

Detects and displays the 3.3V voltage.

+12V

Detects and displays the 12V voltage.

+5V

Detects and displays the 5V voltage.

CSM Configuration

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

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.	
Advanced	

Compatibility Support Module Configuration		Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.80	
GateA20 Active	[Upon Request]	
Option ROM Messages	[Force BIOS]	
INT19 Trap Response	[Immediate]	
Boot option filter	[Legacy only]	
Option ROM execution		
PXE LAN Boot	[Disabled]	→←: Select Screen
Onboard LAN PXE	[Disabled]	↑↓: Select Item
Storage	[Legacy]	Enter: Select
Video	[Legacy]	+/-: Change Opt.
Other PCI devices	[Legacy]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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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.

Boot option filter
Configures which devices the system will boot from.

PXE LAN Boot
Controls the execution of UEFI and Legacy PXE OpROM.

Onboard LAN PXE
Enables or disables onboard LAN PXE ROM.

Storage
Controls the execution of UEFI and Legacy Storage OpROM.

Video
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI Devices
Configures the OpROM execution policy for devices other than Storage or Video.

USB Configuration

This section is used to configure the USB.

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Advanced	
USB Configuration	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB Module Version 17	

USB Controllers:
      1 XHCI
USB Devices:
      1 Keyboard, 1 Mouse	

Legacy USB Support [Enabled] XHCI Hand-off [Enabled]	
USB hardware delays and time-outs: Device reset time-out [20 sec]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Legacy USB Support
Enabled   Enables Legacy USB.
Auto   Disables support for Legacy when no USB devices are connected.
Disabled   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.

Device reset time-out
Selects the USB mass storage device's start unit command timeout.

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.

```
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   Main      Advanced    Chipset    Security     Boot     Save & Exit

▶ System Agent (SA) Configuration              System Agent (SA) Parameters
▶ PCH-IO Configuration




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

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```

⚠ Setting incorrect field values may cause the system to malfunction.

System Agent (SA) Configuration

This section is used to configure the System Agent (SA) configuration.

```
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                             Chipset

   System Agent (SA) Configuration                   Graphics Configuration

   SA PCIe Code Version            1.5.0.0
   VT-d                            Supported

▶ Graphics Configuration
▶ PEG Port Configuration

   VT-d                            [Enabled]


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

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```

VT-d
Enables or disables VT-d function on MCH.

Graphics Configuration

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Chipset	

Graphics Configuration		Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Primary Display	[IGFX]	
DVMT Total Gfx Mem	**[256M]**	
		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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Primary Display
Selects which IGFX/PEG/PCI graphics device should be the primary display.

DVMT Total Gfx Mem
Configures the DVMT 5.0 total graphic memory size used by the IGD.

PEG Port Configuration

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Chipset	

PEG Port Configuration		Enable or Disable the Root Port
PEG 0:1:0	Not Present	
Enable Root Port	[Enabled]	
Max Link Speed	**[Auto]**	
		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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Enable Root Port
Enables or disables the root port.

Max Link Speed
Select the maximum link speed of the PEG device.

nexCOBOT

PCH-IO Configuration

```
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                          Chipset

   PCH-IO Configuration                                    SATA Device Options Settings

 ► SATA and RST Configuration
 ► Security Configuration

   State After G3                      [S0 State]



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


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```

State After G3
Configures the state the system will enter when power is reapplied after a power failure (G3 state).

SATA And RST Configuration

```
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                          Chipset

   SATA And RST Configuration                             Enable/Disable SATA Device.

   SATA Controller(s)                 [Enabled]
   SATA Mode Selection                [AHCI]

   SATA0                              Empty



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


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```

SATA Controller(s)
Enables or disables SATA device.

SATA Mode Selection
Configures the SATA controller as AHCI mode.

Security Configuration

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Chipset

Security Configuration		Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM
RTC Lock	[Enabled]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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RTC Lock

Enables or disables bytes 38h-3Fh in the lower and upper 128-byte bank of RTC RAM lockdown.

Security

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Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

Password Description	Set Administrator Password
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User Will have Administrator rights. The password length must be in the following range: Minimum length 3 Maximum length 20	
Administrator Password **User Password**	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Administrator Password

Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.

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Boot

```
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    Main      Advanced    Chipset    Security      Boot      Save & Exit

    Boot Configuration                                    Number of seconds to wait for
    Setup Prompt Timeout             1                    setup activation key.
    Bootup NumLock State             [On]                 65535(0xFFFF) means indefinite
    Quiet Boot                       [Enabled]            waiting.

    Boot Option Priorities

    Fast Boot                        [Disabled]

    Driver Option Priorities




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



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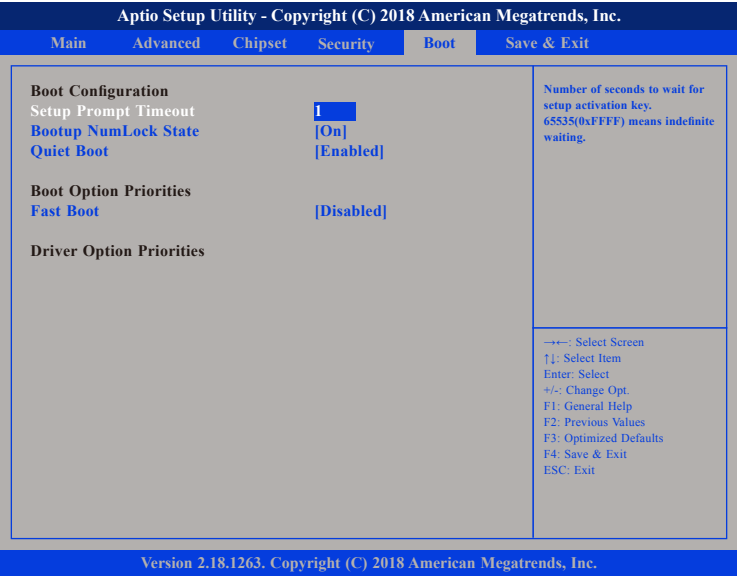
Setup Prompt Timeout
Selects the number of seconds to wait for the setup activation key.
65535(0xFFFF) denotes indefinite waiting.

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

Fast Boot
Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Save & Exit

```
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   Main      Advanced    Chipset    Security     Boot    Save & Exit

 Save Options                                    Exit system setup after saving
 Save Changes and Exit                           the changes.
 Discard Changes and Exit

 Save Changes and Reset
 Discard Changes and Reset

 Save Changes
 Discard Changes

 Default Options
 Restore Defaults
 Save as User Defaults                           →←: Select Screen
 Restore User Defaults                           ↑↓: Select Item
                                                 Enter: Select
 Boot Override                                   +/-: Change Opt.
 Launch EFI Shell from filesystem device         F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

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```

Save Changes and Exit
To save the changes and exit the Setup utility, 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 Exit
To exit the Setup utility 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.

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.

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

Discard Changes
To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

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

Save as User Defaults
To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Restore User Defaults
To restore the BIOS to user 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>.