EXOR International

Industrial Computing Solutions

Fanless Computer

eCC104

User Manual

www.exorint.net

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PREFACE

Copyright

Disclaimer

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

Acknowledgements

eCC104 is a trademark of EXOR International S.p.A. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section describes how to keep the system CE compliant.

Declaration of Conformity

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

EXOR RoHS Environmental Policy and Status Update

EXOR 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 2002/95/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, EXOR 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 EXOR development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which EXOR 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.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual EXOR naming convention.

Warranty and RMA

EXOR Warranty Period

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

EXOR Return Merchandise Authorization (RMA)

- Customers shall enclose the "EXOR 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 "EXOR 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, EXOR 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 EXOR 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

EXOR 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: EXOR 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 EXOR 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, EXOR will return it to the customer without any charge.

Board Level

- Component fee: EXOR 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, EXOR will return it to the customer without any charge.

Warnings

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

Cautions

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

Safety Information

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

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

Installation Recommendations

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

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

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

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

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

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

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

5. Keep this equipment away from humidity.

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

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

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

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

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

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

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

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

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

15. Do not place heavy objects on the equipment.

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

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

Technical Support and Assistance

1. For the most updated information of EXOR products, visit EXOR's website at www.exorint.net.

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.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

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.

Safety Warning: This equipment is intended for installation in a Restricted Access Location only.

Package Contents

Before continuing, verify that the eCC104 package that you received is complete. Your package should have all the items listed in the following table.

Item	Description	Qty
1	2 Pin Phoenix Contact: (1777989), 5.08mm pitch	1
2	FLAT HEAD SCREW LONG F3x5ISO+NYLOK NIGP	4
3	I HEAD SCREW LONG I2x4 NYLOK NIGP	2
4	COPPER POST LONG 15x5xM3	1
5	DVI-I Y cable for DVI-D & VGA	1

Ordering Information

The following provides ordering information for eCC104.

- **Barebone**

  eCC104
  - Intel® Atom™ Dual Core D2550 Fanless System

Chapter 1: Product Introduction

Overview

Key Features

- On-board Intel® Atom™ Dual Core D2550 processor, 1.86 GHz
- Intel® NM10 Express chipset
- 1x DVI-I & 1x HDMI display output
- Dual Intel® 82574L GbE LAN ports
- 2x RS232/422/485 and 2x RS232
- 6x USB2.0
- 1x external CFast socket
- 1x mini-PCIe with two antenna holes
- Support 10-28V DC input
- Supports ATX power mode, WoL, LAN teaming and PXE function

Hardware Specifications

CPU Support

- On-board Intel® Atom™ Dual Core processor D2550, 1.86 GHz, 1M L2 cache
- Intel® NM10 Express chipset

Main Memory

- 1x DDR3 SO-DIMM sockets, support up to 4G DDR3-800/1066 SDRAM, un-buffered and non-ECC

I/O Interface-Front

- ATX power on/off switch
- HDD access/power status LEDs
- 4x COM ports (COM2 & 3: RS232/422/485)
- 2x USB2.0 port
- Audio jack (speaker-out & mic-in)
- 2x antenna holes

I/O Interface-Rear

- 2x Intel® 82574L GbE LAN port
- 4x USB2.0 port
- 1x HDMI
- 1x DVI-I (support VGA & DVI-D display via cable)
- 1x 2-pin DC input, Support 9-36V DC input
- 1x external screwed type CFast socket

Device

- 1x 2.5" HDD drive bay
- 1x External CFast Socket
- 1x mini-PCIe socket (support optional Wi-Fi or 3.5G module)

Power Requirements

- Support 10-28V DC input
- 1x optional 12V, 60W power adapter

Dimensions

- 185mm(W) x 131mm(D) x 54mm(H) (7.28"x 5.2"x 2.13")

Construction

- Aluminum chassis with fanless design

Environment

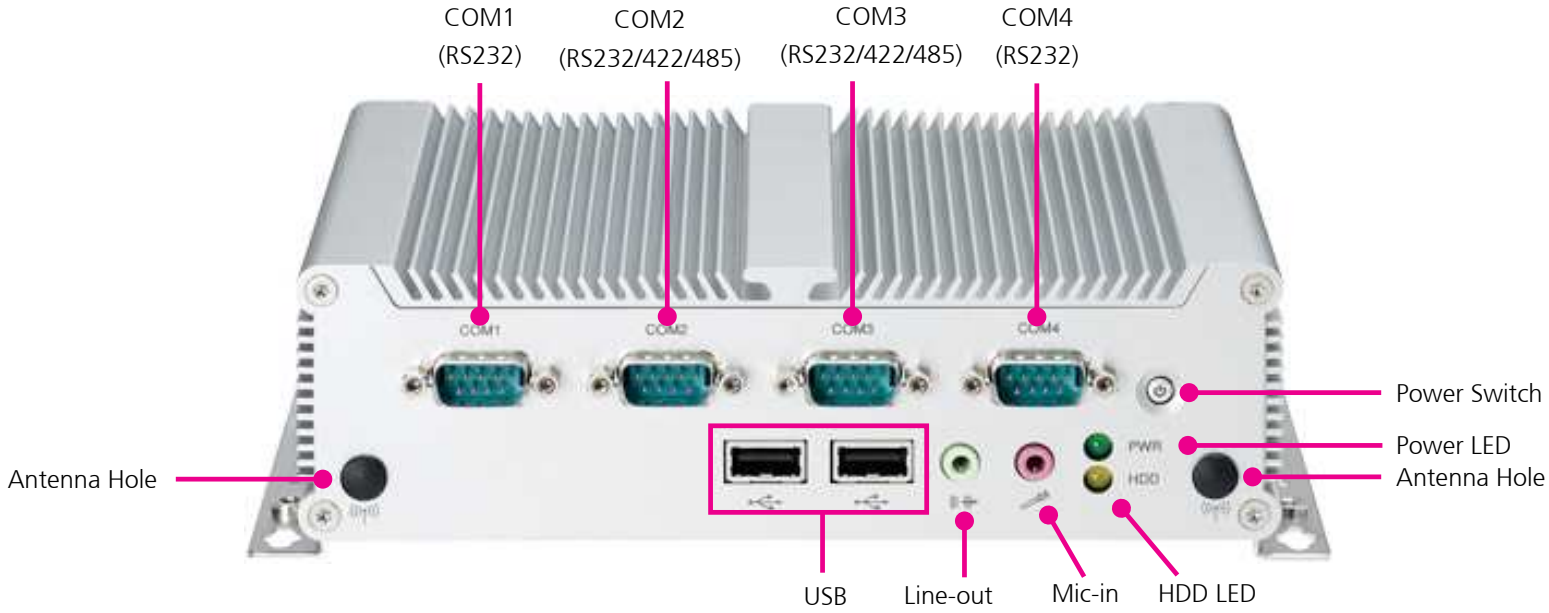
- Operating temperature: Ambient with air flow: -5°C ~ 55°C (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C ~ 80°C
- Relative humidity: 10% to 93% (non-Condensing)
- Shock protection: 20G, half sine, 11ms, IEC60068-2-27
- Vibration protection
  Random: 0.5Grms @5~500 Hz according to IEC68-2-64
  Sinusoidal: 0.5Grms @5~500 Hz according to IEC68-2-6

Certifications

- CE approval

Knowing Your eCC104

Front Panel



Power Switch

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

Power Status LED

Indicates the system's power status.

HDD Activity LED

Indicates the hard drive's activity.

COM1 and COM4 RS232

Used to connect RS232 compatible devices.

COM2 and COM3 RS232/RS422/RS485

Used to connect RS232/422/485 compatible serial devices.

USB2.0 Ports

Two USB2.0 ports to connect the system with USB2.0/1.1 devices.

Line-out

Line-out jack to connect speakers or headphones.

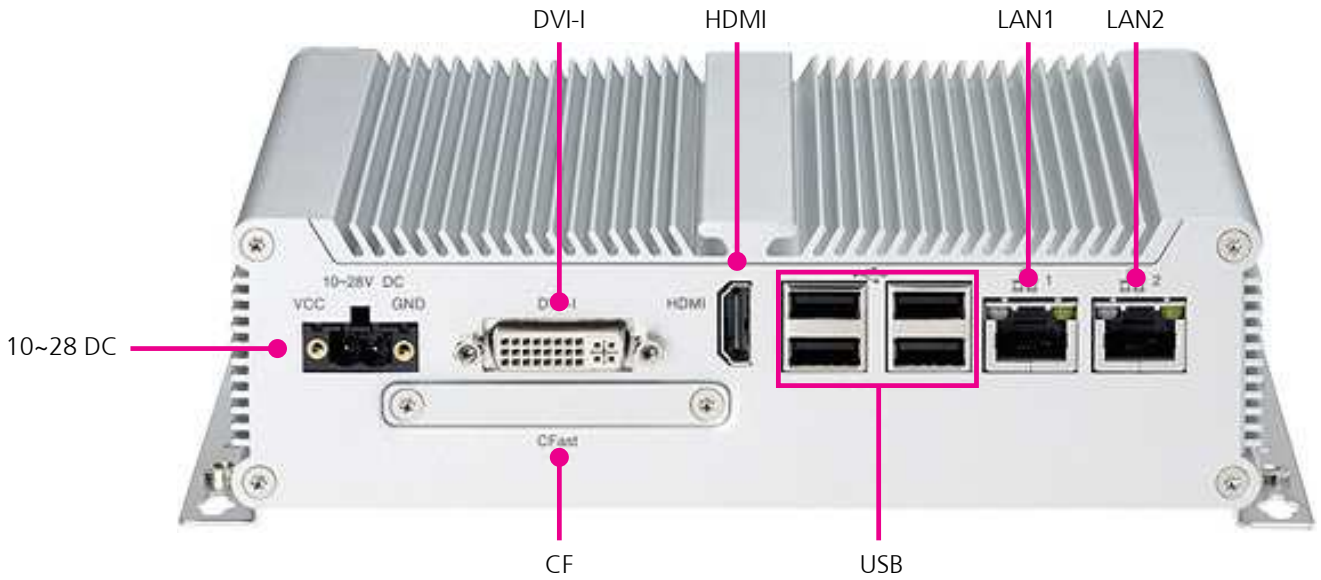
Mic-in

Mic-in jack to connect microphones.

Antenna Holes

Empty antenna holes reserved for installing optional Mini-PCIe Wi-Fi module.

Rear Panel



10~28V DC Input

Used to plug a DC power cord.

DVI-I

Used to connect a digital LCD panel.

HDMI

Used to connect a high-definition display.

USB2.0 Ports

Four USB2.0 ports to connect the system with USB2.0/1.1 devices.

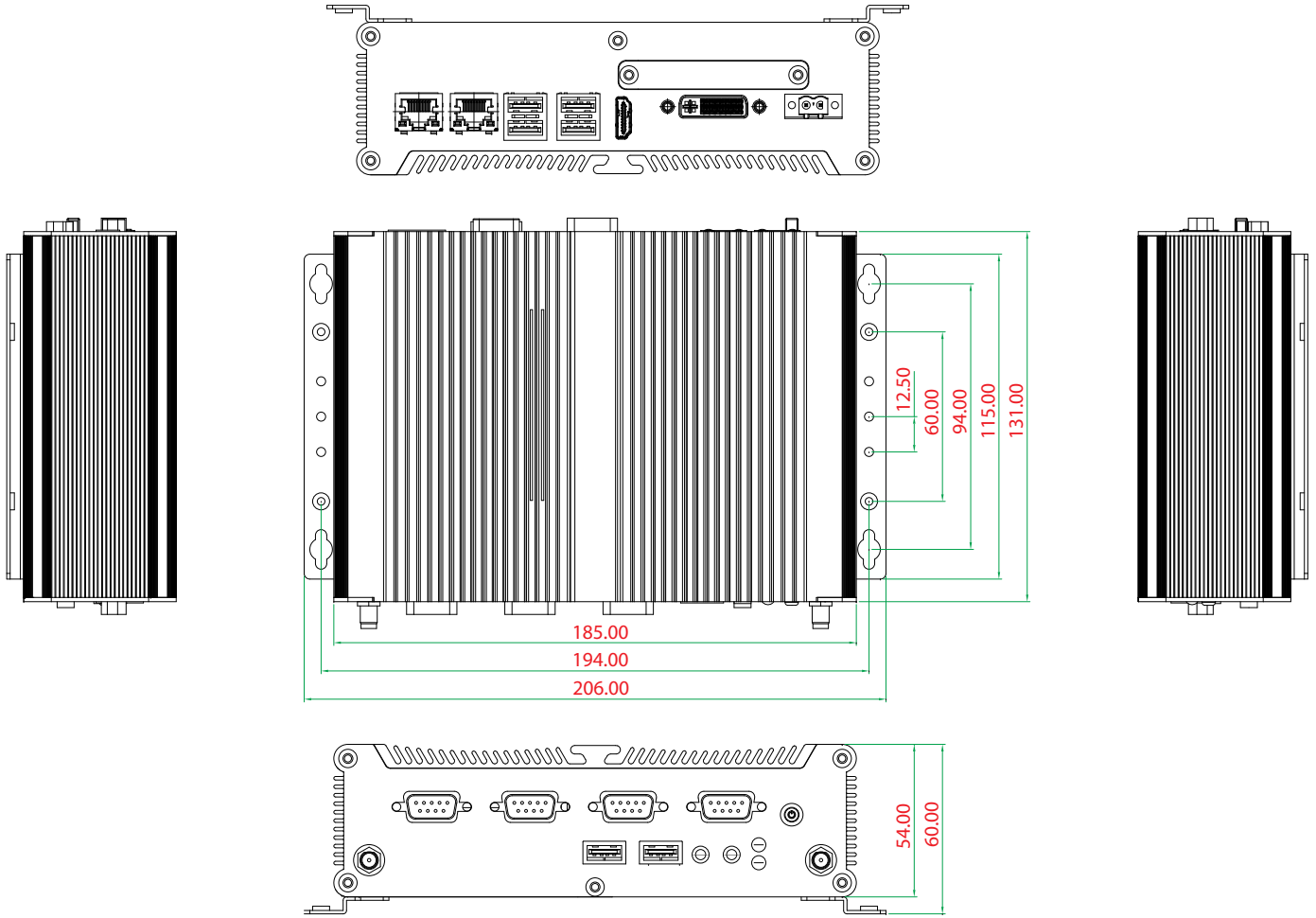
Gigabit LAN Ports

Dual Gigabit LAN ports to connect the system to a local area network.

CompactFlash

Used to insert a CompactFlash card.

Mechanical Dimensions



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the eCC104 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:

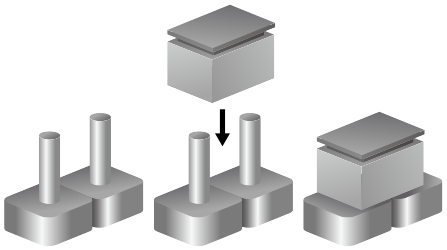
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

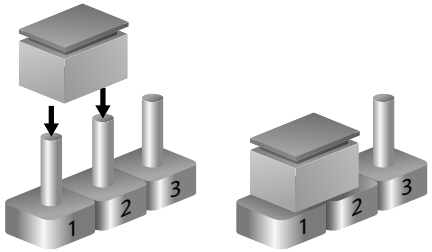
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



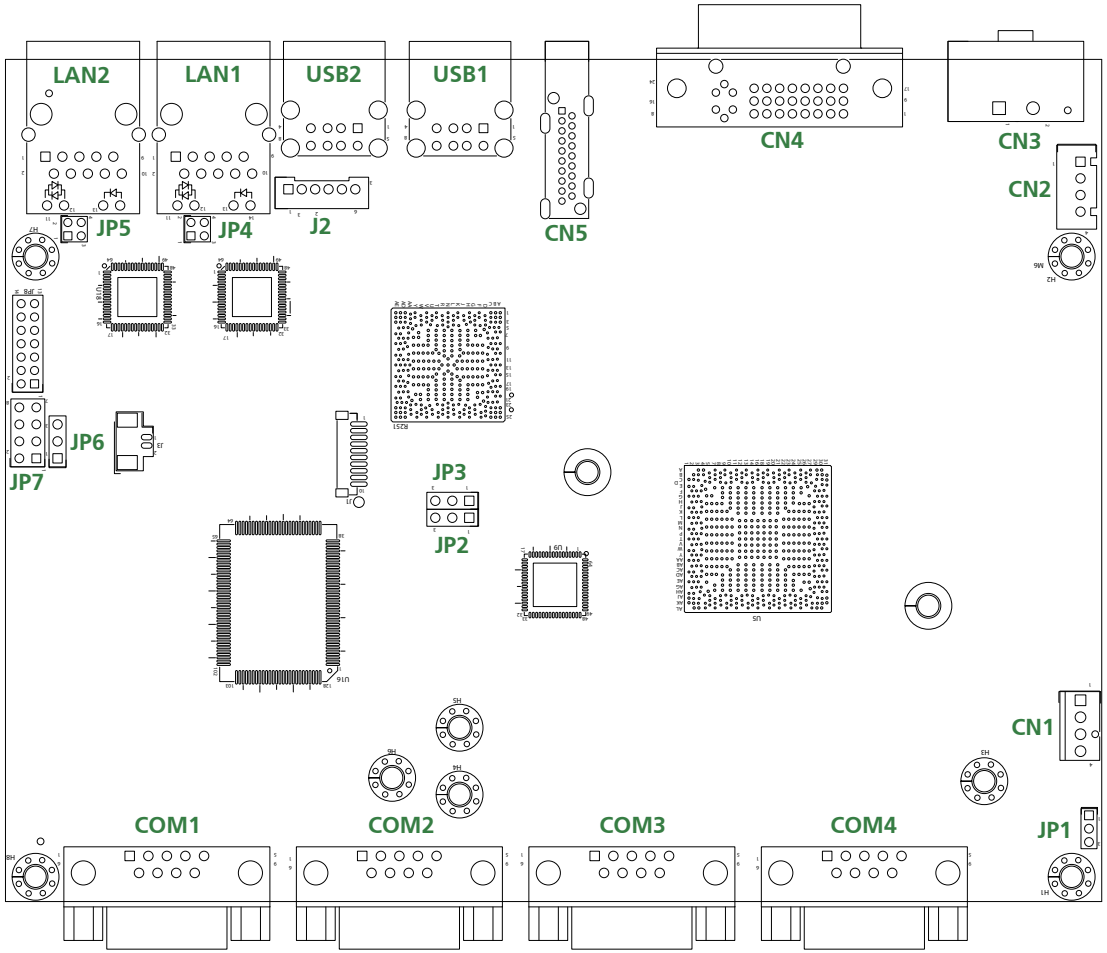
Three-Pin Jumpers: Pins 1 and 2 are Short



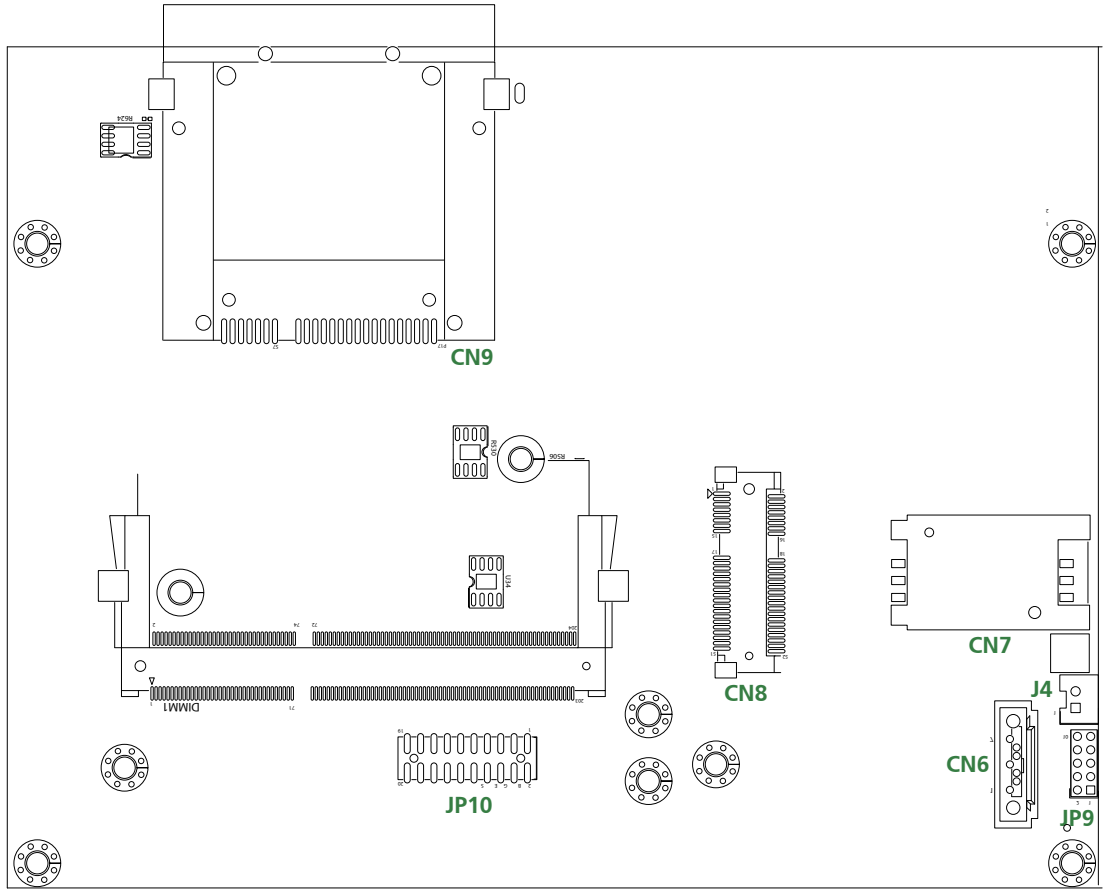
Locations of the Jumpers and Connectors for NISB104

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

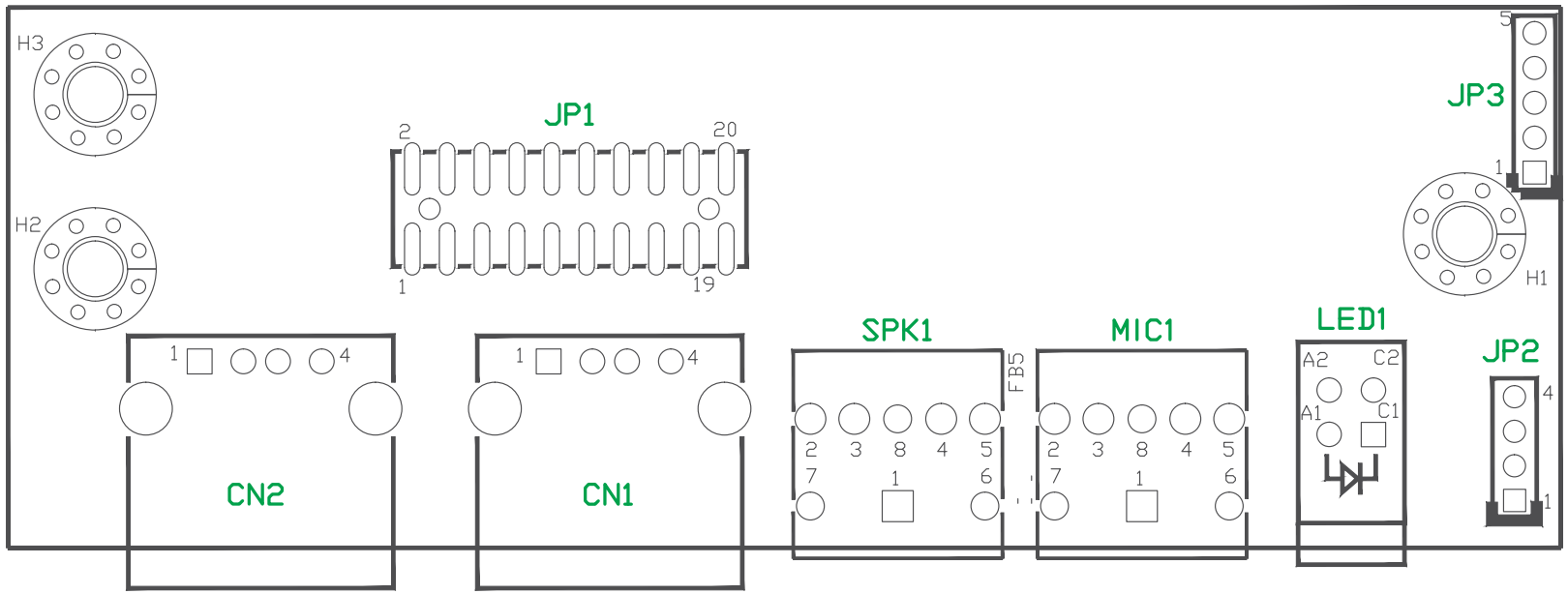
Top View



Bottom View



Locations of the Jumpers and Connectors for NISKIO2



NISB104

Jumpers

RTC Clear
Connector type: 1x3 3-pin header
Connector location: JP6

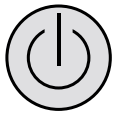
Normal (default) | clear CMOS

Pin	Settings
1-2 On	Normal
2-3 On	Clear BIOS

NOTE: 1-2 On: default

Connector Pin Definitions

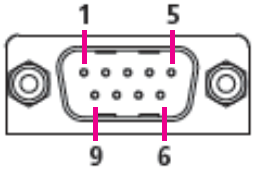
External I/O Interfaces – Front Panel
Power On/Off Switch
Connector location: SW1



Pin	Settings
1	GND
2	I_PWRBT#
3	I_PWRBT#
4	GND
A1	PWRLED_N
C1	PWRLED_P

COM1 Serial Port

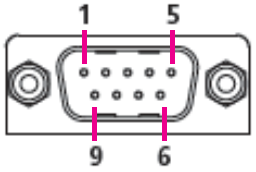
Connector type: DB-9 port
Connector location: COM1



Pin	Definition	Pin	Definition
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1		

COM2 Serial Port

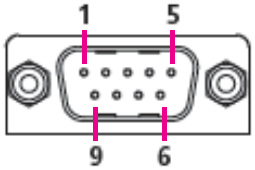
Connector type: DB-9 port
Connector location: COM2



RS232		RS485		RS422	
Pin	**Definition**	**Pin**	**Definition**	**Pin**	**Definition**
1	SP2_DCD	1	SP2_DATA-	1	SP2_TX-
2	SP2_RXD	2	SP2_DATA+	2	SP2_TX+
3	SP2_TXD	3	NC	3	SP2_RX+
4	SP2_DTR	4	NC	4	SP2_RX-
5	GND	5	GND	5	GND
6	SP2_DSR	6	NC	6	SP2_RTS-
7	SP2_RTS	7	NC	7	SP2_RTS+
8	SP2_CTS	8	NC	8	SP2_CTS+
9	SP2_RI	9	NC	9	SP2_CTS-

COM3 Serial Port

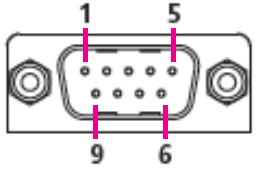
Connector type: DB-9 port
Connector location: COM3



RS232		RS485		RS422	
Pin	**Definition**	**Pin**	**Definition**	**Pin**	**Definition**
1	SP3_DCD	1	SP3_DATA-	1	SP3_TX-
2	SP3_RXD	2	SP3_DATA+	2	SP3_TX+
3	SP3_TXD	3	NC	3	SP3_RX+
4	SP3_DTR	4	NC	4	SP3_RX-
5	GND	5	GND	5	GND
6	SP3_DSR	6	NC	6	SP3_RTS-
7	SP3_RTS	7	NC	7	SP3_RTS+
8	SP3_CTS	8	NC	8	SP3_CTS+
9	SP3_RI	9	NC	9	SP3_CTS-

COM4 Serial Port

Connector type: DB-9 port
Connector location: COM4

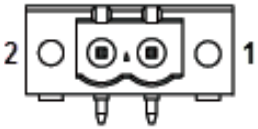


Pin	Definition	Pin	Definition
1	DCD4	2	RXD4
3	TXD4	4	DTR4
5	GND	6	DSR4
7	RTS4	8	CTS4
9	RI4		

External I/O Interfaces – Rear Panel

9~36V DC Power Input

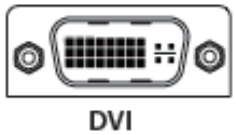
Connector type: Phoenix 1x2 2-pin
Connector location: CN3



Pin	Definition
1	GND
2	VIN+

DVI-I/VGA Connector

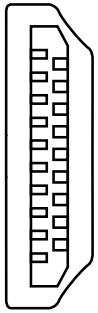
Connector type: 24-pin D-Sub, 2.0mm-M-180 (DVI)
Connector location: CN4A (DVI) and CN4B (VGA)



Pin	Definition	Pin	Definition
1	TX2	2	TX2+
3	GND	4	NC
5	NC	6	DDC_CLK
7	DDC_DATA	8	VSYNC_VGA
9	TX1-	10	TX1+
11	GND	12	NC
13	NC	14	DVI_VCC(+5V)
15	GND	16	HotPlugDet
17	TX0-	18	TX0+
19	GND	20	DDCCLK_VGA
21	DDCDATA_VGA	22	GND
23	TXCLK+	24	TXCLK-
C1	RED	C2	GREEN
C3	BLUE	C4	HSYNC_VGA
C5A	VGADET	C5B	GND
MH1	CHASSIS_GND	MH2	CHASSIS_GND

HDMI

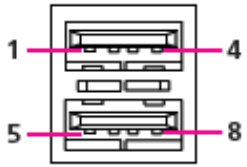
Connector type: HDMI port
Connector location: CN5



Pin	Definition	Pin	Definition
1	HDMI_DATA2_P	2	GND
3	HDMI_DATA2_N	4	HDMI_DATA1_P
5	GND	6	HDMI_DATA1_N
7	HDMI_DATA0_P	8	GND
9	HDMI_DATA0_N	10	HDMI_CLK_P
11	GND	12	HDMI_CLK_N
13	NC	14	NC
15	HDMI_CTRL_CLK	16	HDMI_CTRL_DATA
17	GND	18	HDMI_VCC5
19	HDMI_HPD_R	20	

USB0/1 Ports

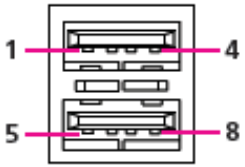
Connector type: Dual USB port, Type A
Connector location: USB1



Pin	Definition	Pin	Definition
1	+5V	2	Data 0-
3	Data 0+	4	GND
5	+5V	6	Data 1-
7	Data 1+	8	GND

USB2/3 Ports

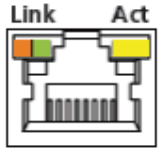
Connector type: Dual USB port, Type A
Connector location: USB2



Pin	Definition	Pin	Definition
1	+5V	2	Data 2-
3	Data 2+	4	GND
5	+5V	6	Data 3-
7	Data 3+	8	GND

LAN1 Port

Connector type: RJ45 port with LEDs
Connector location: LAN1



Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	No link

Act	Status
Flashing Yellow	Data activity
Off	No activity

Pin	Definition	Pin	Definition
1	LAN1_MDI0P	2	LAN1_MDI0N
3	LAN1_MDI1P	4	LAN1_MDI1N
5	LAN1TCT	6	LAN1TCTG
7	LAN1_MDI2P	8	LAN1_MDI2N
9	LAN1_MDI3P	10	LAN1_MDI3N
11	LAN1_LEDACT#	12	LAN1_ACTPW
13	LAN1_LINK	14	LAN1_LINK1G#
MH1	GND	MH2	GND

LAN2 Port

Connector type: RJ45 port with LEDs
Connector location: LAN2

Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	No link

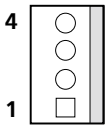
Act	Status
Flashing Yellow	Data activity
Off	No activity

Pin	Definition	Pin	Definition
1	LAN2_MDI0P	2	LAN2_MDI0N
3	LAN2_MDI1P	4	LAN2_MDI1N
5	LAN2TCT	6	LAN2TCTG
7	LAN2_MDI2P	8	LAN2_MDI2N
9	LAN2_MDI3P	10	LAN2_MDI3N
11	LAN2_LEDACT#	12	LAN2_ACTPW
13	LAN2_LINK	14	LAN2_LINK1G#
MH1	GND	MH2	GND

Internal Connectors
NISB 104

CPU Fan Connector

Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CN1



Pin	Definition
1	GND
2	+12V
3	CPUFANIN(CPU_FAN_SPEED)
4	CPUFANOUT(CPU_FAN_PWM)

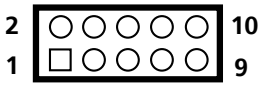
DC Input/Output Connector

Connector type: 1x4 JST, 4-pin, 2.5mm pitch
Connector location: CN2

Pin	Definition	Pin	Definition
1	VIN	2	VIN
3	GND	4	GND

GPIO Connector

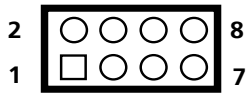
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JP9



Pin	Definition	Pin	Definition
1	+5V	2	GND
3	SIO_GPO24(Pin58)	4	SIO_GPI20(Pin52)
5	SIO_GPO25(Pin59)	6	SIO_GPI21(Pin54)
7	SIO_GPO26(Pin60)	8	SIO_GPI22(Pin56)
9	SIO_GPO27(Pin61)	10	SIO_GPI23(Pin57)

Keyboard/Mouse Connector

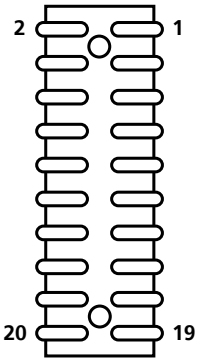
Connector type: 2x4 8-pin header, 2.54mm pitch
Connector location: JP7



Pin	Definition	Pin	Definition
1	KBMSVCC	2	KBMSVCC
3	LKBDAT	4	LMDAT
5	LKBCLK	6	LMCLK
7	GND	8	GND

B to B Connector

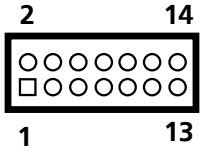
Connector type: 2x10 20-pin header
Connector location: JP10



Pin	Definition	Pin	Definition
1	VCC5	2	VCC5
3	I_USBN5	4	I_USBN4
5	I_USBP5	6	I_USBP4
7	GND	8	GND
9	I_USBOC#45	10	VCC3
11	HDD_LED_PWR	12	POWER_LED_PWR
13	HDD_LED_N	14	PWR_LED_N
15	CODEC_HDASYNC	16	CODEC_HDASDO
17	CODEC_HDARST#	18	CODEC_HDABCLK
19	I_SPKR	20	I_HDASDI0

PWR_BT/RET_BT/LED/SM BUS Pin Header

Connector type: 2x7 14-pin header, 2.0mm pitch
Connector location: JP8



Pin	Definition	Pin	Definition
1	PWR_LED_N	2	PWR_LED_P
3	SATA_LED#	4	SATA_LED_P
5	SMB_C	6	SMB_D
7	3VSB	8	GND
9	PM_SLP_S3	10	PSON
11	POWER BOTTOM	12	GND
13	RESET BOTTOM	14	GND

LAN1 LED

Connector type: 2x2 4-pin header, 2.0mm pitch
Connector location: JP4

Pin	Definition
1	LAN1_ACTPW
2	LAN1_LEDACT#
3	LAN1_LINK1G#
4	LAN1_LINK

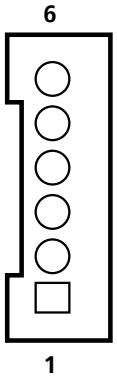
LAN2 LED

Connector type: 2x2 4-pin header, 2.0mm pitch
Connector location: JP5

Pin	Definition
1	LAN2_ACTPW
2	LAN2_LEDACT#
3	LAN2_LINK1G#
4	LAN2_LINK

USB 6 Connector

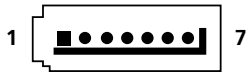
Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J2



Pin	Definition	Pin	Definition
1	+5V	2	Data 6-
3	Data 6+	4	NC
5	NC	6	GND

SATA Connector

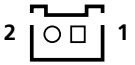
Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN6



Pin	Definition
1	GND
2	SATA_TXP0_C
3	SATA_TXN0_C
4	GND
5	SATA_RXN0_C
6	SATA_RXP0_C
7	GND

SATA Power Connector

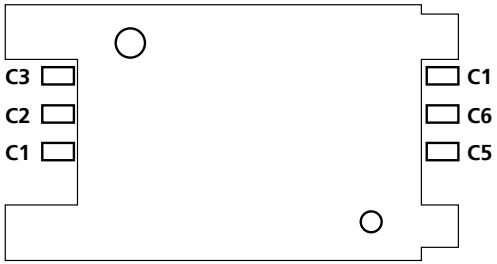
Connector type: 1x2 JST, 2-pin header, 2.5mm pitch
Connector location: J4



Pin	Definition
1	GND
2	+5V

SIM Card Connector

Connector location: CN7

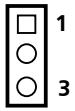


Pin	Definition	Pin	Definition
C1	UIM_PWR	C2	UIM_RESET
C3	UIM_CLK	C4	GND
C5	UIM_VPP	C6	UIM_DATA

3.5G Line-out Pin Header

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

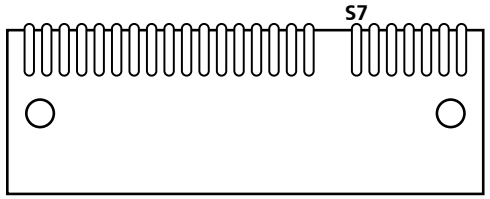
Connector location: JP2



Pin	Definition
1	LOUT_RL
2	LOUT_RR
3	ANGND

CFast CON

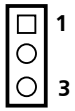
Connector type: CFast socket
Connector location: CN9



Pin	Definition	Pin	Definition
S1	GND	PC1	CDI
S2	SATA_TXP1	PC2	GND
S3	SATA_TXN1	PC3	NC
S4	GND	PC4	NC
S5	SATA_RXN1	PC5	NC
S6	SATA_RXP1	PC6	NC
S7	GND	PC7	GND
		PC8	NC
		PC9	CFAST_ACCESS
		PC10	NC
		PC11	NC
		PC12	NC
		PC13	+3.3V
		PC14	+3.3V
		PC15	GND
		PC16	GND
		PC17	NC

3.5G Mic-in Pin Header

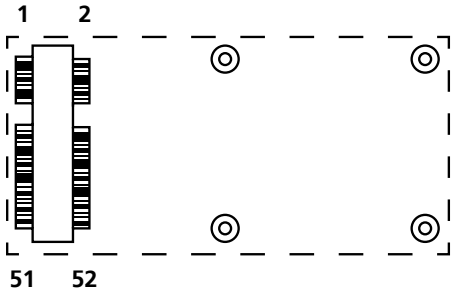
Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP3



Pin	Definition
1	MIC_RL
2	MIC_RR
3	ANGND

Mini-PCIe Slot

Connector location: CN8



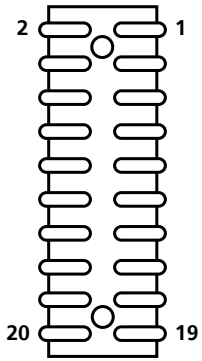
Pin	Definition	Pin	Definition
1	PCIEWAKE#	2	+3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	NC
9	GND	10	NC
11	REF CLK-	12	NC
13	REF CLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	Disable#
21	GND	22	RST#
23	PCIERX0-	24	+3VSB
25	PCIERX0+	26	GND

Pin	Definition	Pin	Definition
27	GND	28	+1.5V
29	GND	30	SMBCLK
31	PCIETX0-	32	SMBDATA
33	PCIETX0+	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3VSB	40	GND
41	+3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3VSB

NISKIO2

B to B Connector

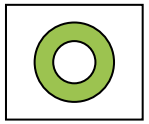
Connector type: 2x10 20-pin header
Connector location: JP1



Pin	Definition	Pin	Definition
1	VCC5	2	VCC5
3	I_USBN4	4	I_USBN5
5	I_USBP4	6	I_USBP5
7	GND	8	GND
9	VCC3	10	I_USBOC#45
11	POWER_LED_PWR	12	HDD_LED_PWR
13	PWR_LED_N	14	HDD_LED_N
15	CODEC_HDASDO	16	CODEC_HDASYNC
17	CODEC_HDABCLK	18	CODEC_HDARST#
19	I_HDASDI0	20	I_SPKR

Line-out Pin Header

Connector type: 3.5mm TRS
Connector location: SPK1



Pin	Definition
1	GND
2	OUT_L
3	EXLINEOUT_JD
4	NC
5	OUT_R

Line-out Internal Speaker

Connector type: 1x5 5-pin header, 2.0mm pitch
Connector location: JP3

Pin	Definition
1	FRONT_L+
2	FRONT_L-
3	FRONT_R+
4	GND
5	FRONT_R-

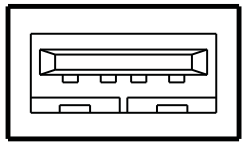
Line-in Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP2

Pin	Definition
1	FLIN_L
2	LIN_JD
3	FLIN_R
4	GND

USB1~ USB2 Connector

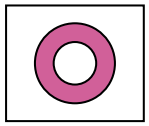
Connector type: USB port, Type A
Connector location: CN1 and CN2



Pin	Definition
1	VCC5
2	DATA_N
3	DATA_P
4	GND

MIC Pin Header

Connector type: 3.5mm TRS
Connector location: MIC1



Pin	Definition
1	AU_GND
2	MIC_OUT-L
3	AU_GN
4	MIC_JD1
5	MIC_OUT-R

Power LED/ HDD LED

HDD Access LED

Power Status LED

Pin	Definition
PWR	Green
HDD	Yellow

Chapter 3: System Setup

Removing the Chassis Cover

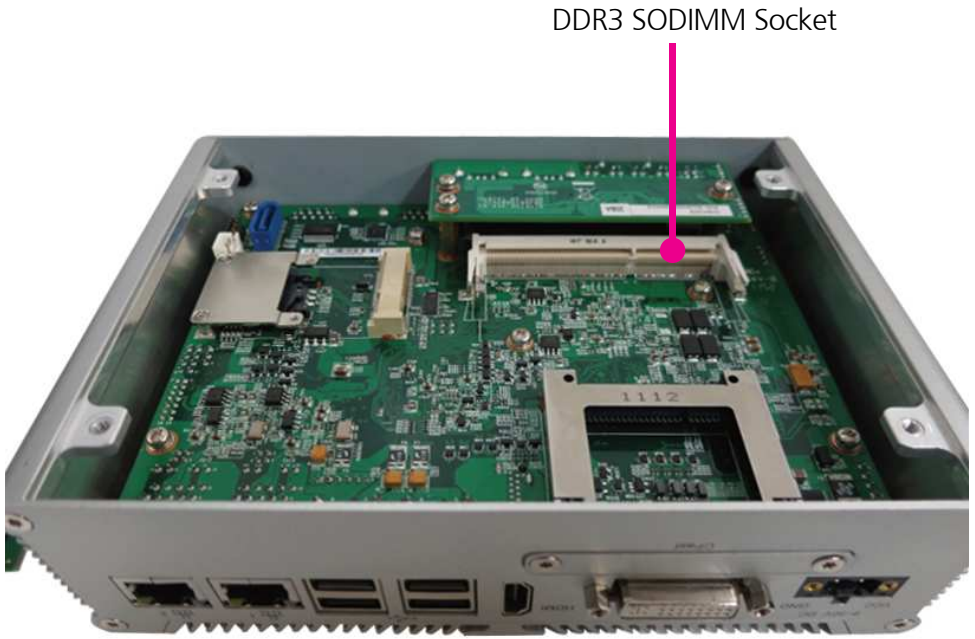
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1.With the bottom side of the chassis facing up, remove the mounting screws of the bottom cover and then put them in a safe place for later use.

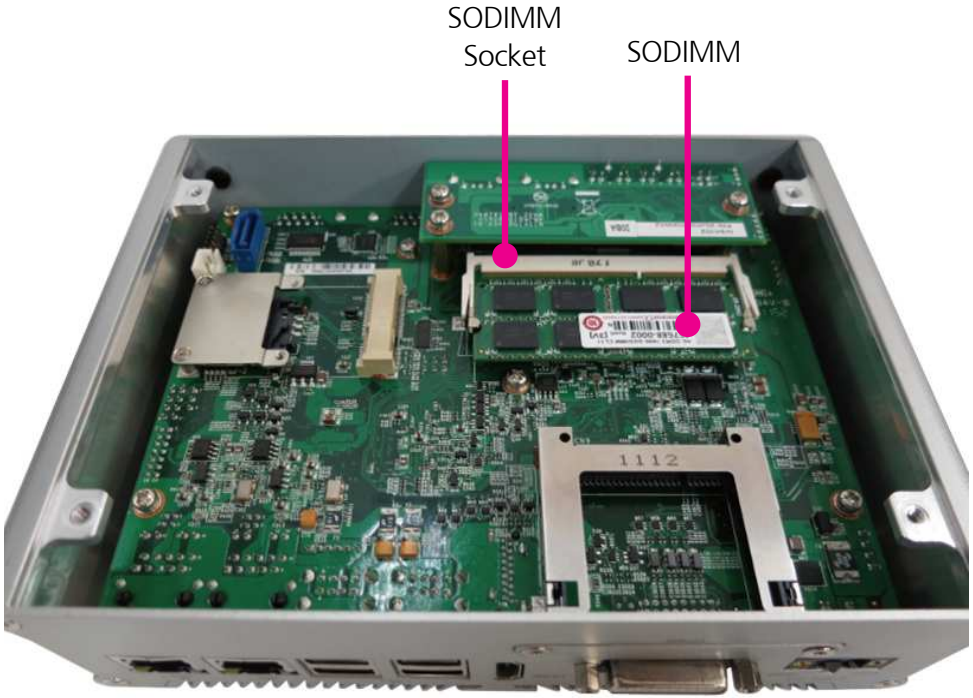
2.Lift up the cover and remove it from the chassis.

Installing the DDR3 SODIMM

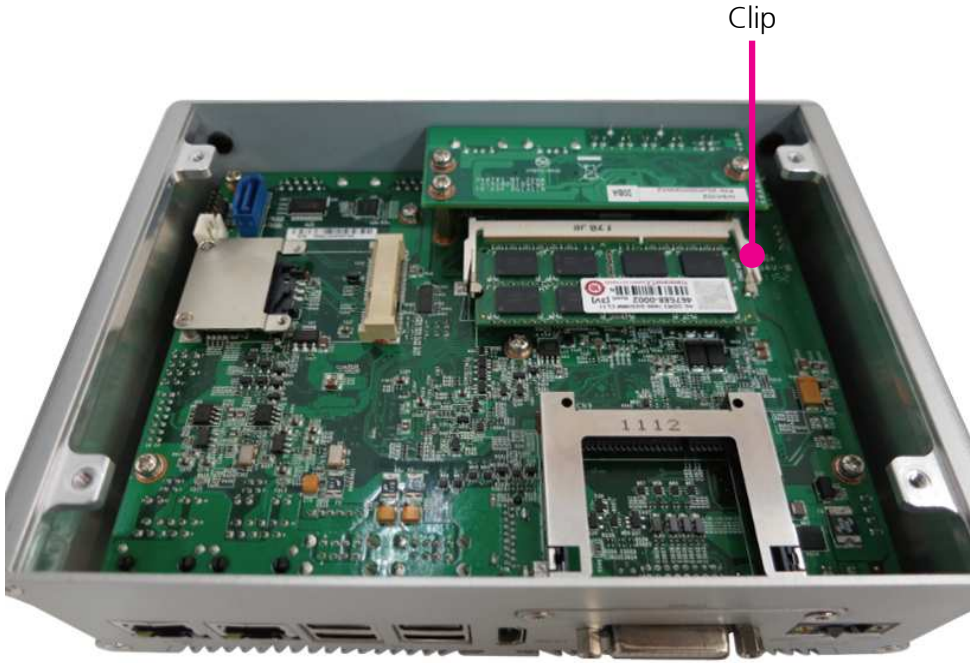
1.Locate the SODIMM socket on the board.



2.Insert the module into the socket at approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips into the socket. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.



3.Push the module down until the clips on both sides of the socket lock into position. You will hear a distinctive "click" sound, indicating the module is correctly locked into position.

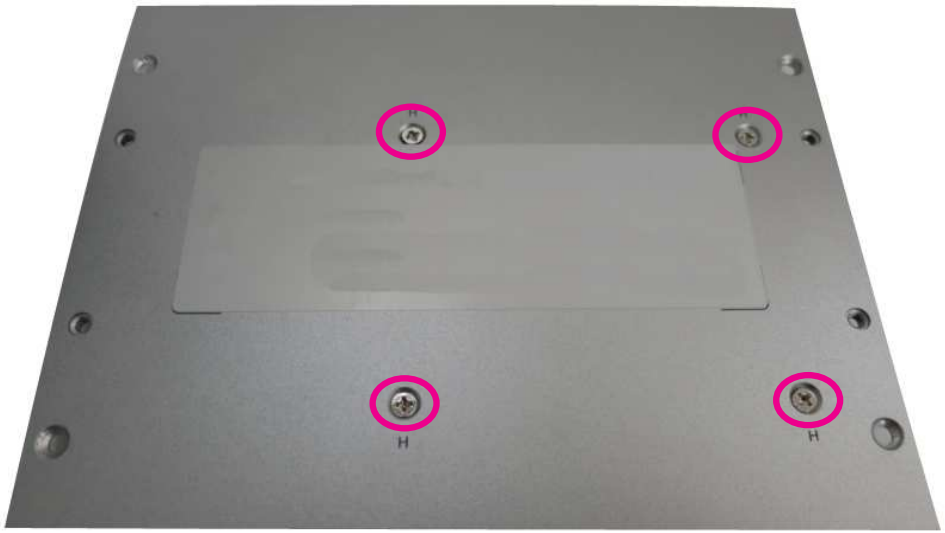


Installing a SATA Hard Drive

1.The inner side of the bottom cover is where you will install the SATA drive. Align the mounting holes of the SATA drive with the mounting holes on the cover.

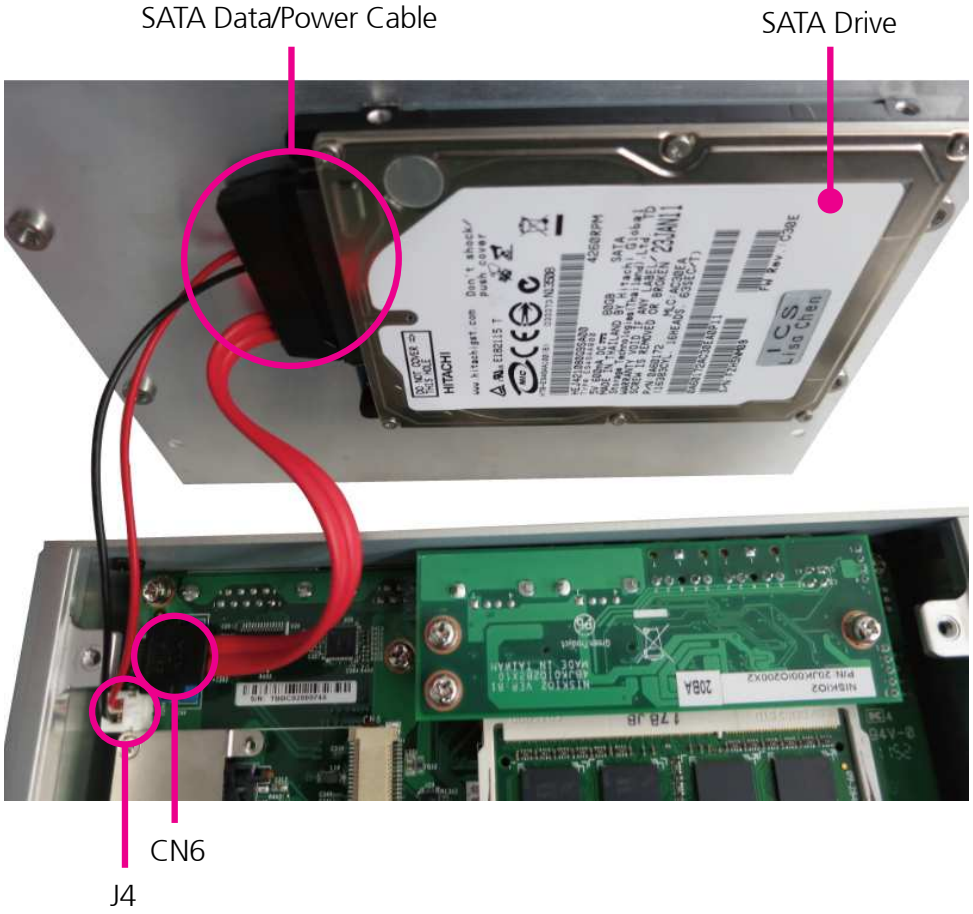
Inner Side of the Cover

2.While supporting the SATA drive, turn the cover to the other side. This will be the outer side of the cover. Use the provided screws to secure the drive in place.



Outer Side of the Cover

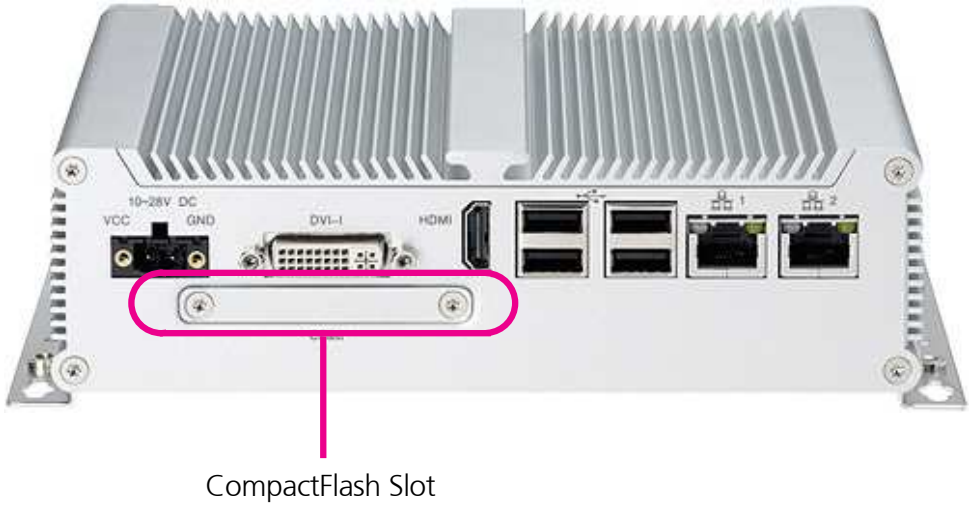
3.Connect the SATA data/power cable to the connector on the SATA drive.



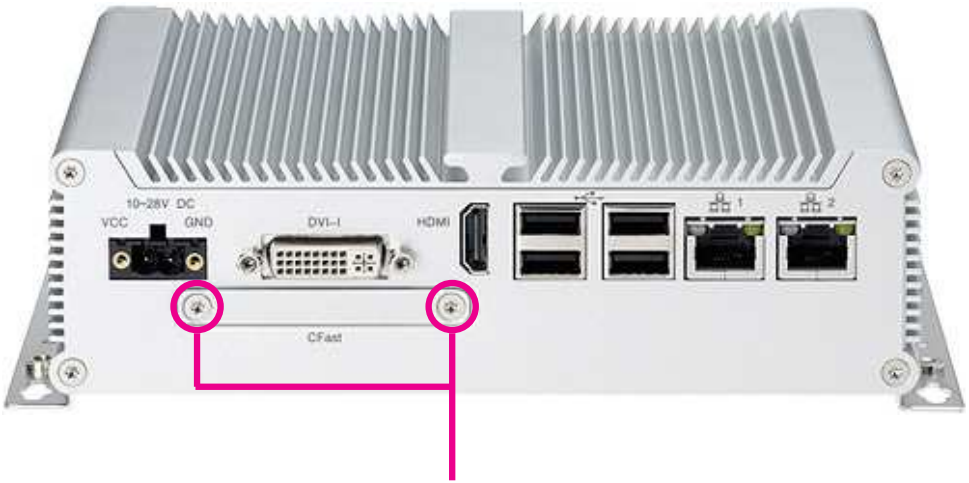
4.Connect the SATA data/power cable to connectors CN6 and J4 on the motherboard respectively.

Installing a CompactFlash Card

1.The CompactFlash slot is located at the rear side of the chassis



2. Remove the mounting screws on the CompactFlash slot's cover.



Mounting Screws

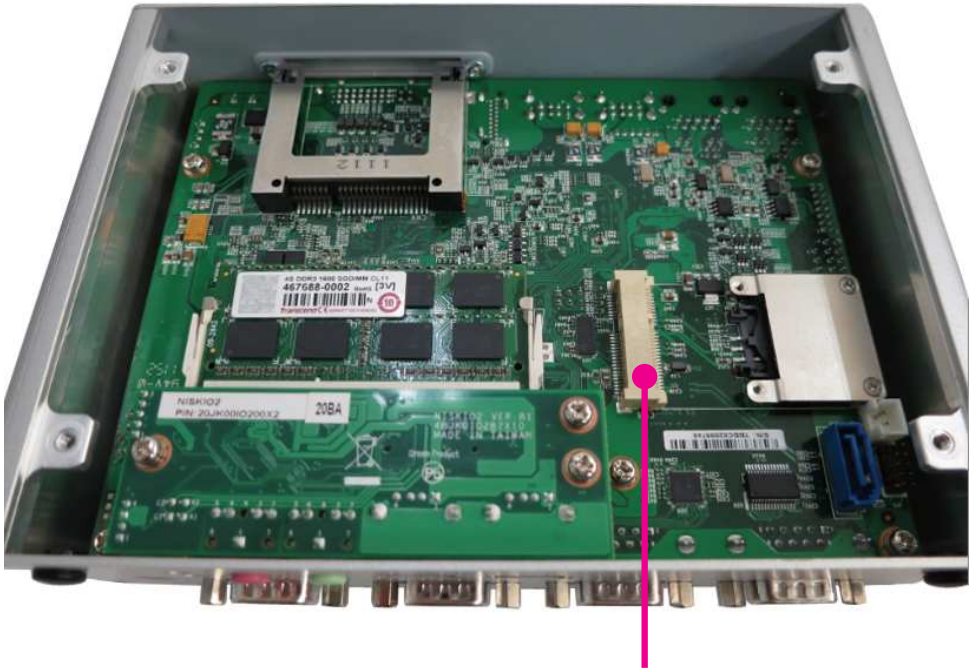
3. Remove the slot's cover to access the CompactFlash slot.

CompactFlash Slot

4. Fasten the CompactFlash cover after installation.

Installing a Wireless LAN Module

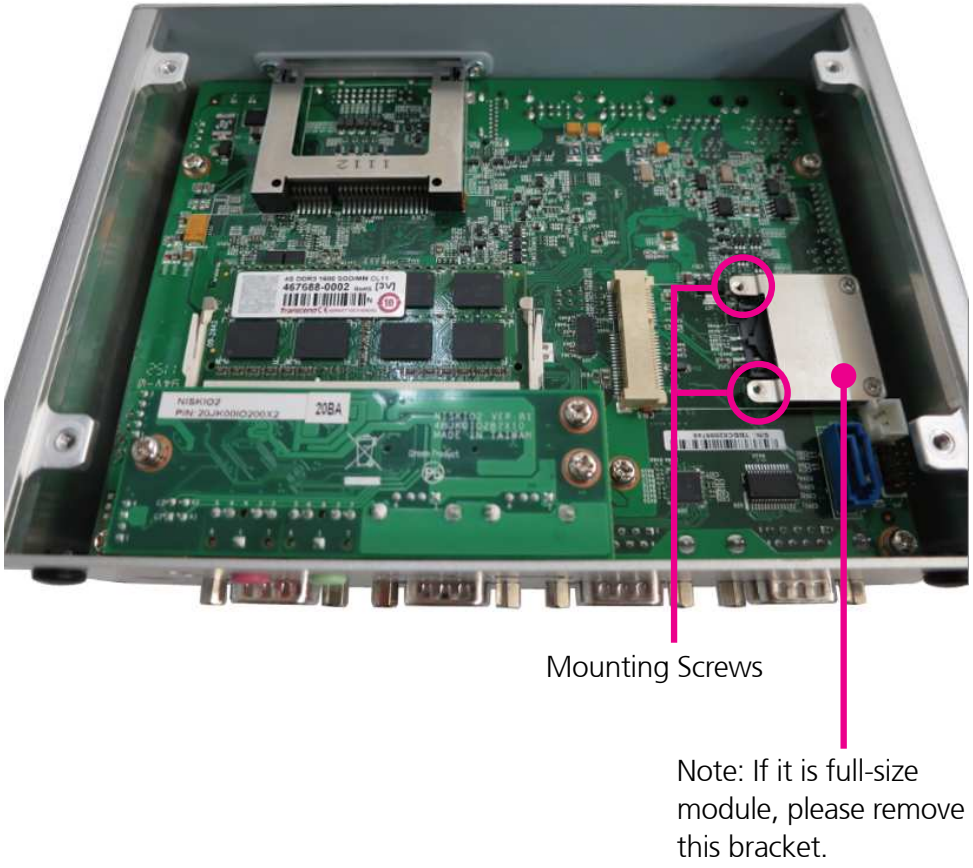
1.Locate the Mini PCI Express slot on the motherboard.



Mini PCI Express Slot

2.Insert the wireless LAN module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

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



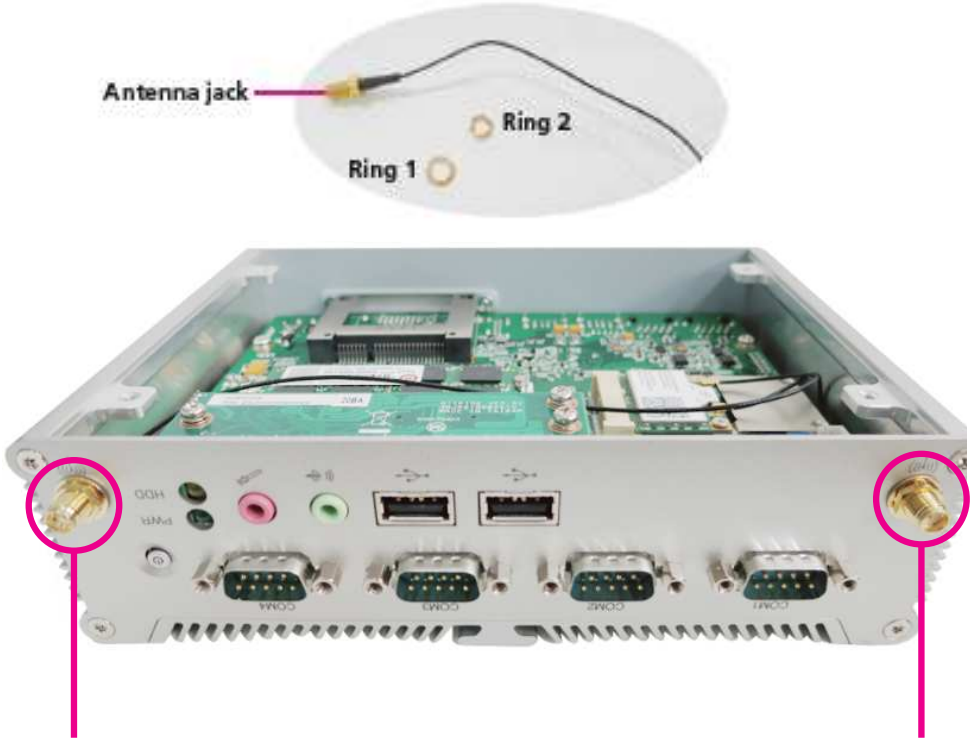
4.Remove the antenna hole covers located at the front panel of the chassis.

5.Insert the antenna jacks into the antenna holes.

Antenna Jack (with long cable)

Antenna Jack (with short cable)

6.Insert the 2 rings (ring 1 and ring2) onto the antenna jacks



Ring 1

Ring 2

7.Attach RF cables of the antenna jacks onto the module.

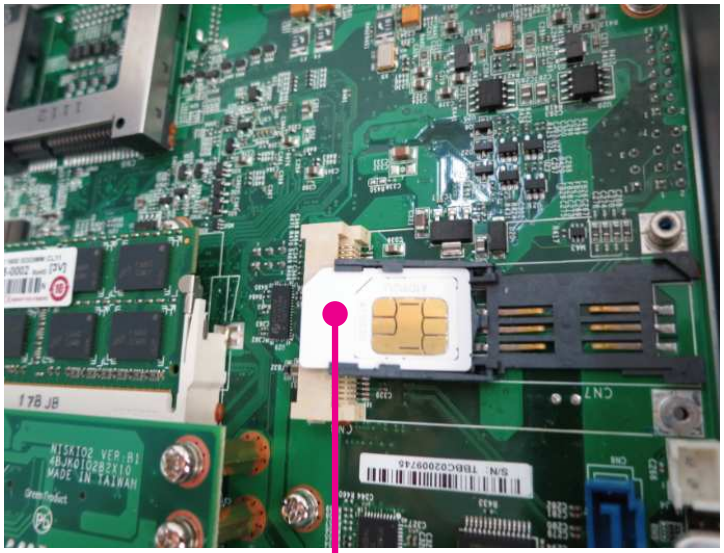
8.Connect an external antenna to the antenna jack.

Installing the SIM Card

1.Slide the SIM card holder to the “OPEN” position.

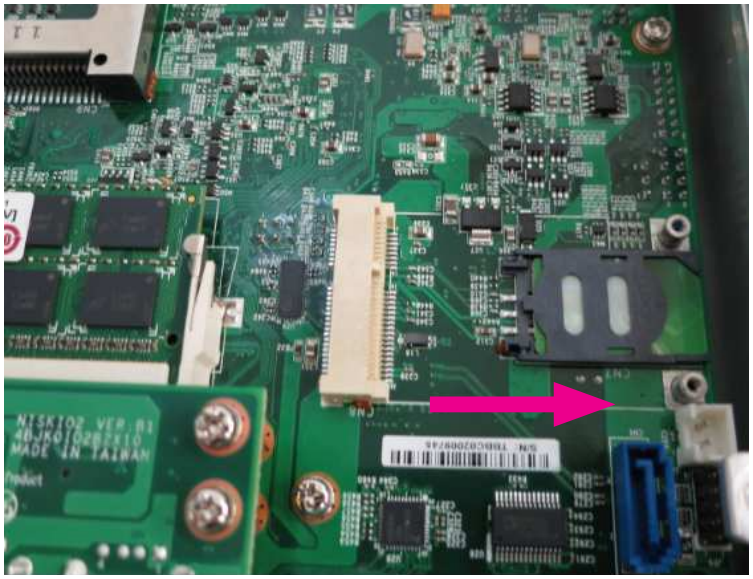
SIM Card Holder

2.Slide the SIM card into the SIM card holder.



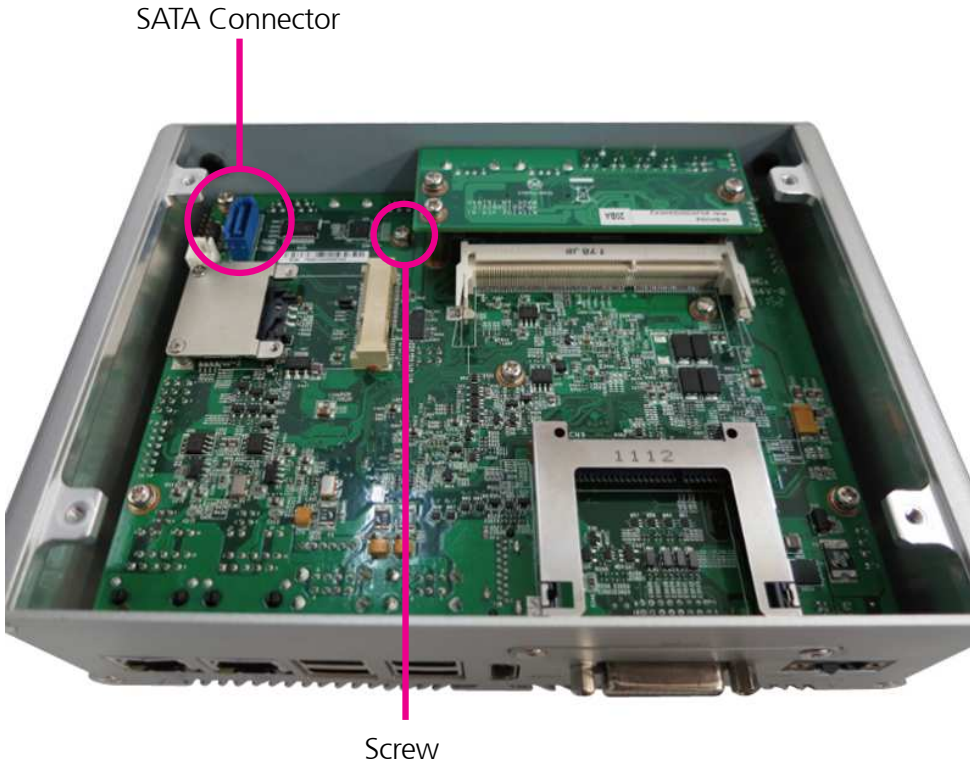
SIM Card

3. Move the holder down and then slide it to the “LOCK” position.

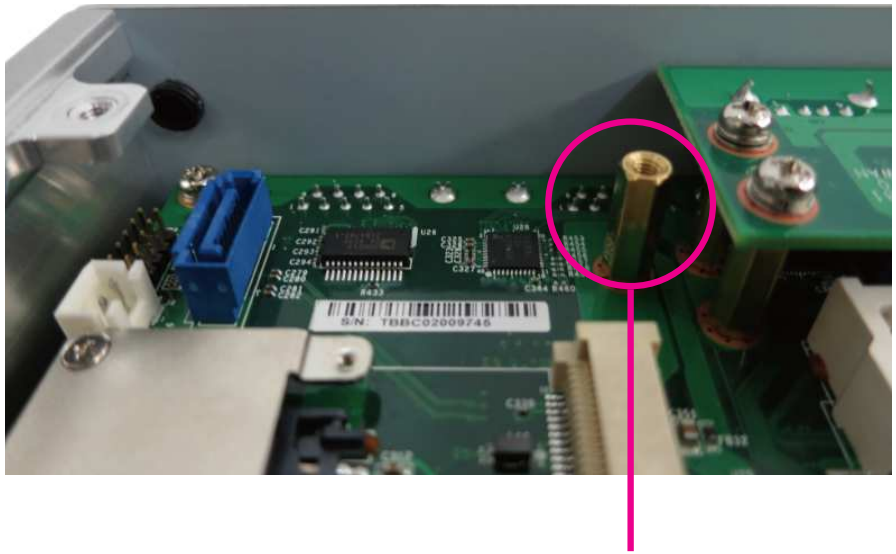


Installing the SATA DOM

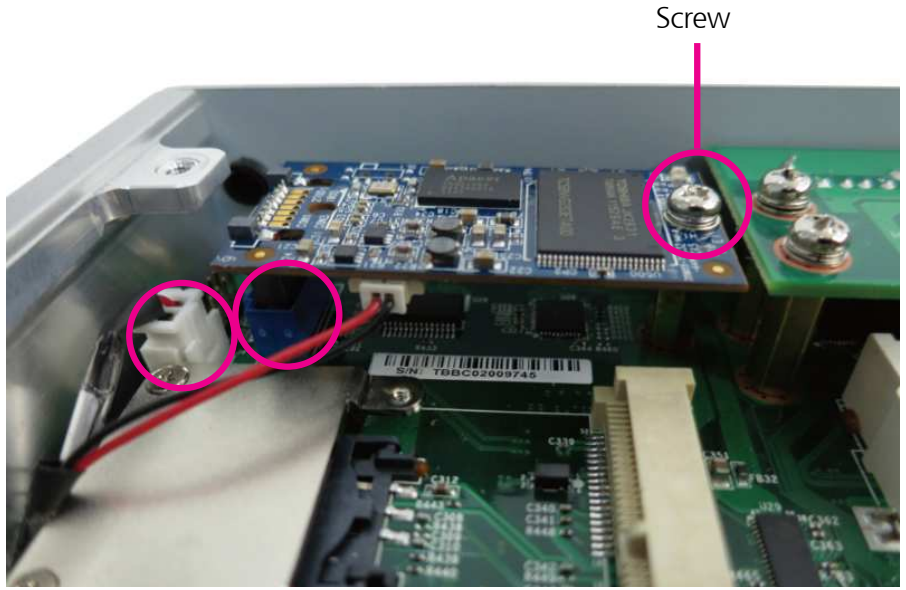
1.Locate the SATA connector on the motherboard and remove the screw as marked.



2.Screw and tighten the copper post (included in the accessory bag) into the screw hole.



3.Install the SATA DOM and connect the SATA power cable to the SATA DOM connector on the motherboard.

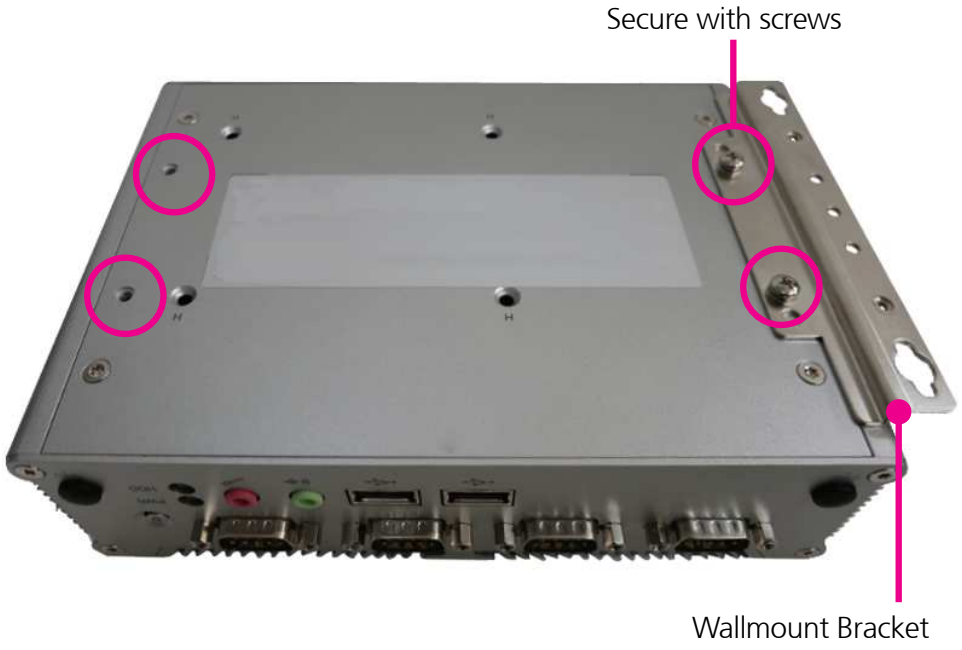


4.Tighten a screw on the top of the copper post.

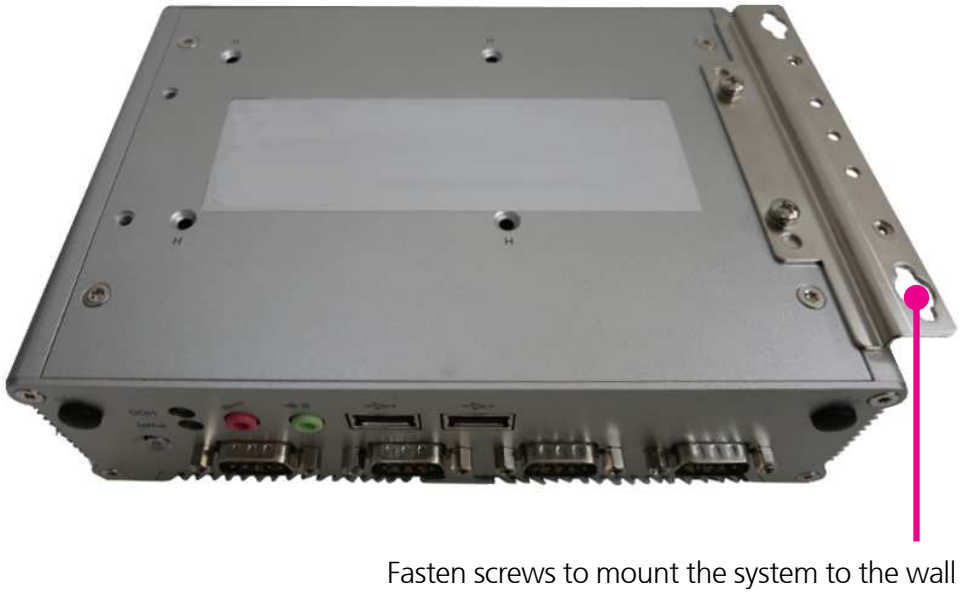
Installing Wallmount Brackets

The wallmount brackets provide a convenient and economical way to mount the system on a wall.

1.The mounting holes are located at the bottom of the system. Secure the brackets on each side of the system using the mounting screws provided.



2.Mount the system on the wall by fastening screws through the bracket's mounting holes.



Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the eCC104. 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 EXOR Web site at www.exorint.it.

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. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC>
Press the <Del> key to enter Setup:

Key	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between sumenus or fields.
<Esc>	Exits the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	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 submenu.

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

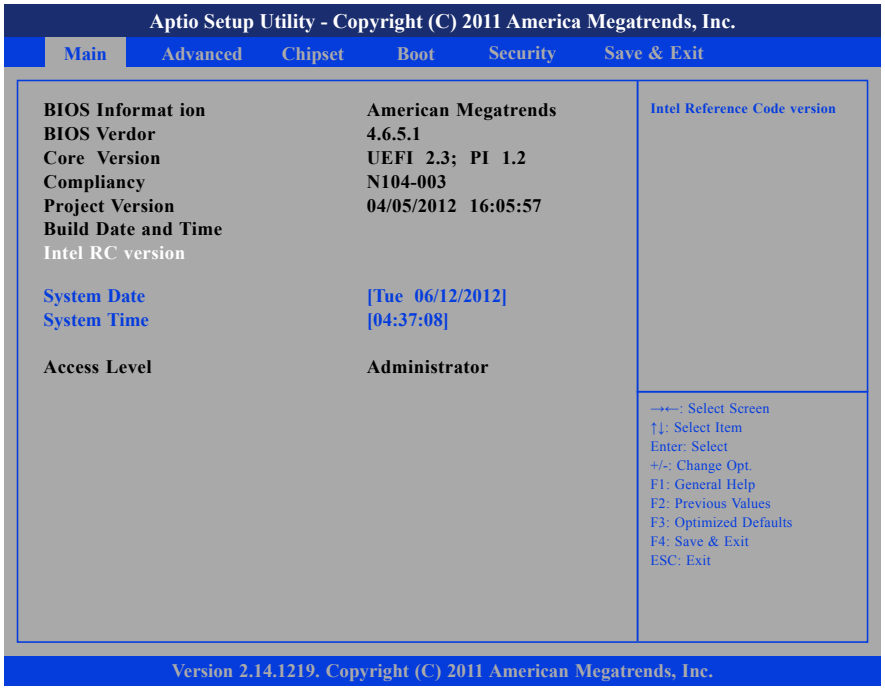
When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

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.



Intel RC Version

Displays the Intel Reference Code version.

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.

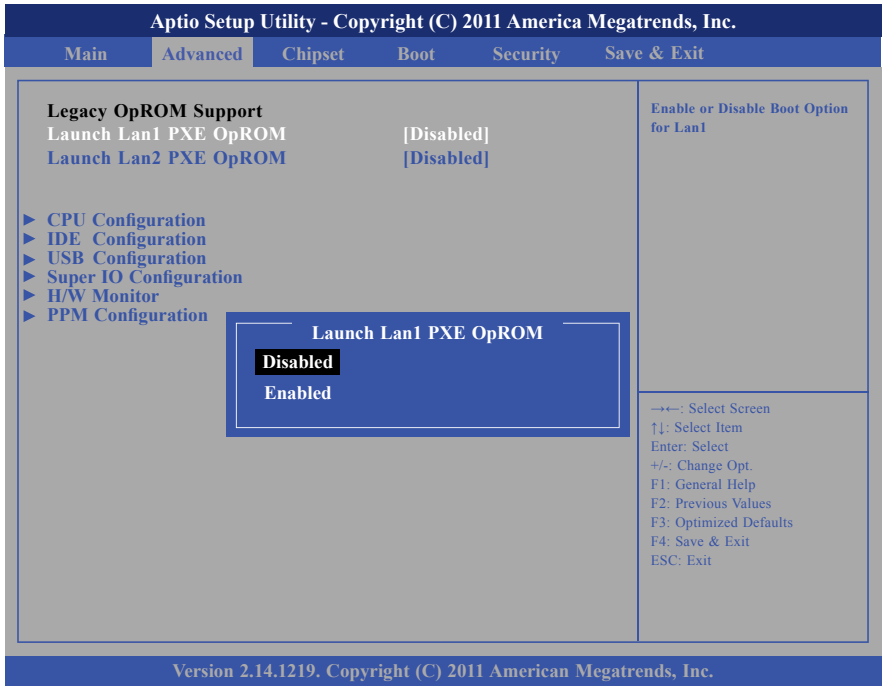
Access Level

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

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.

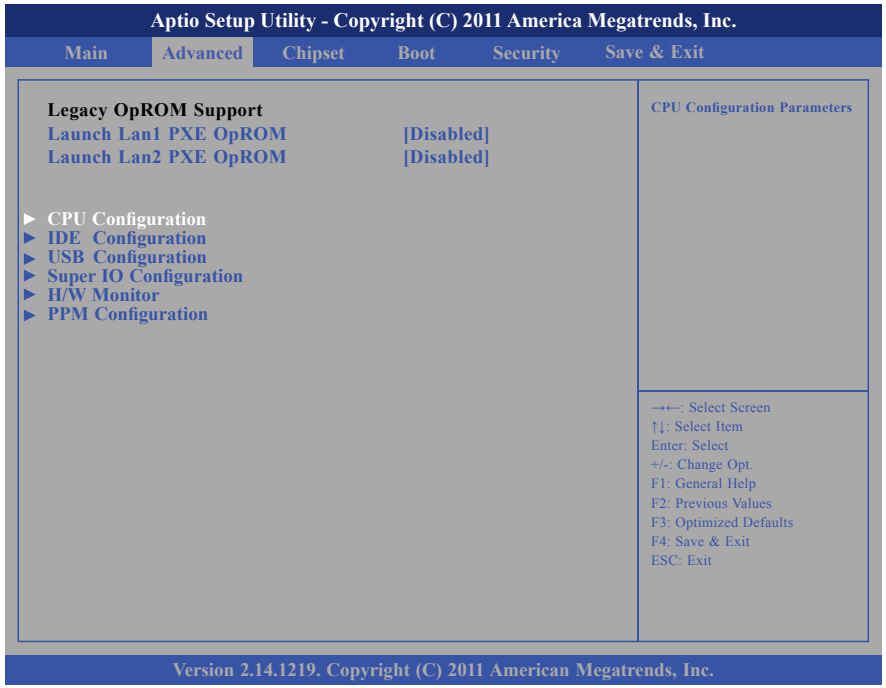


Launch LAN1/2 PXE OpROM

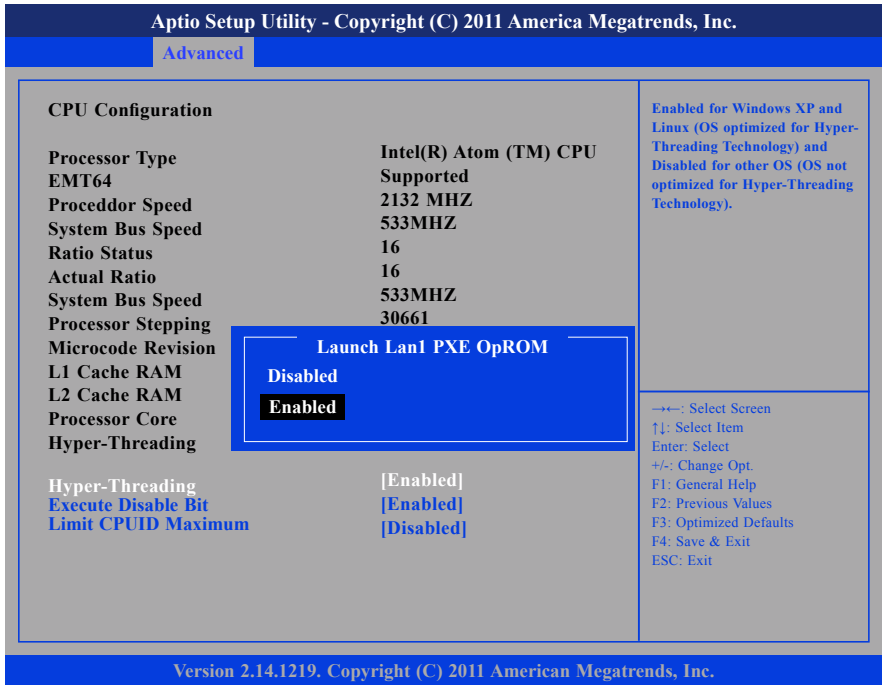
Enables or disables the boot option for legacy network devices connected to LAN1 and LAN2.

CPU Configuration

This section is used to configure the CPU.

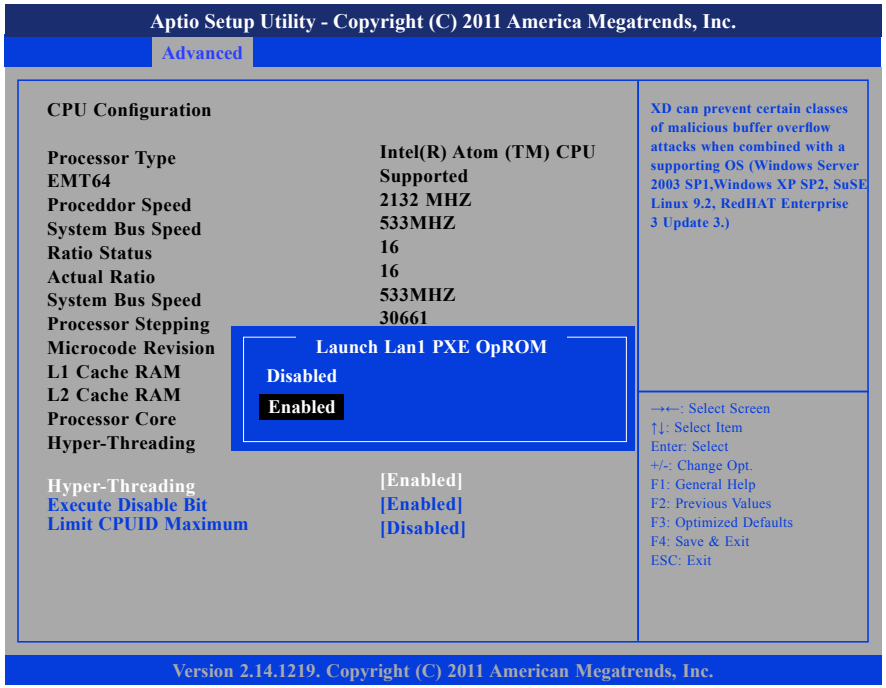


Hyper-Threading



This field is used to enable or disable hyper-threading.

Execute Disable Bit



This field is used to enable or disable execute disable bit. When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

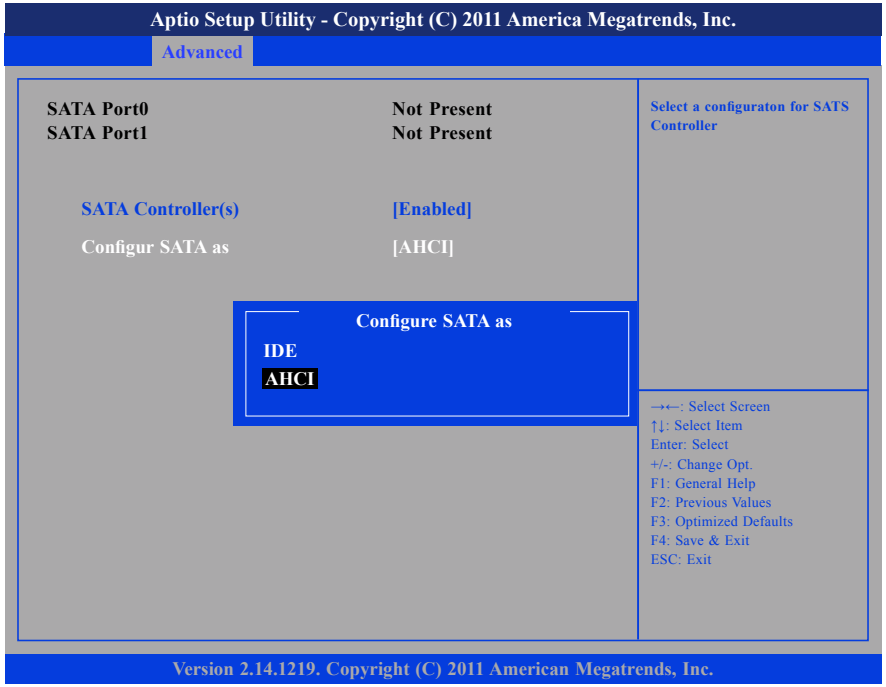
Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

IDE Configuration

This section is used to configure the IDE devices.

Configure SATA as



Configures the SATA as IDE or AHCI mode.

IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.

AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

SATA Controller(s)

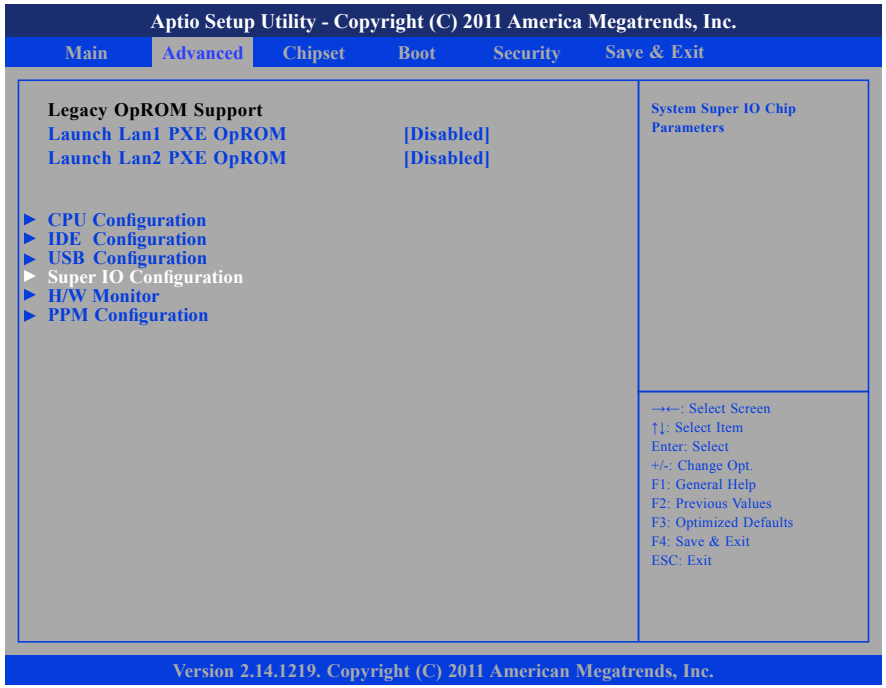
Enables or disables SATA controller.

USB Configuration

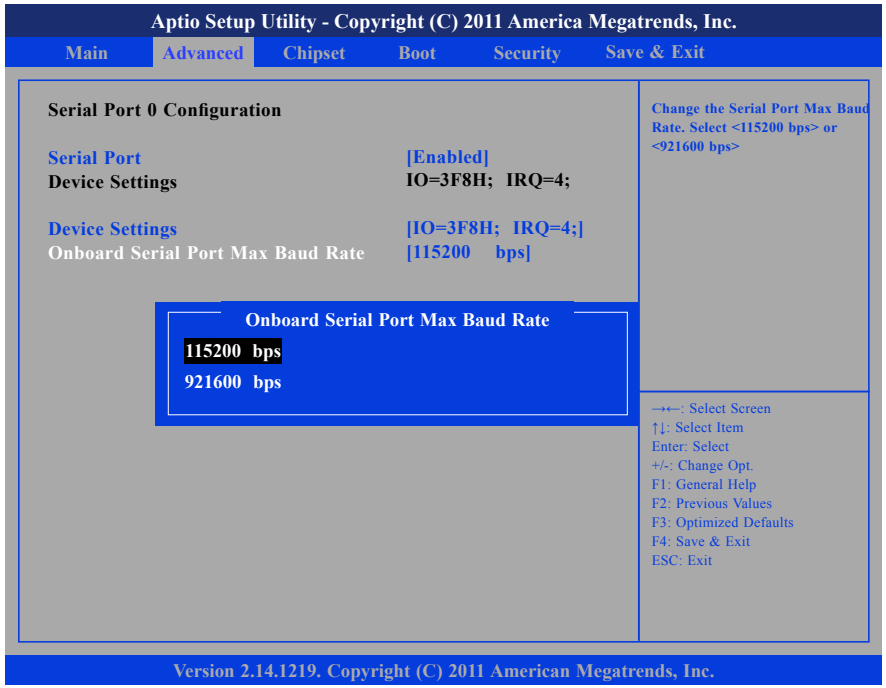
This section is used to configure USB devices.

Super IO Configuration

This section is used to configure the I/O board Super I/O chip.

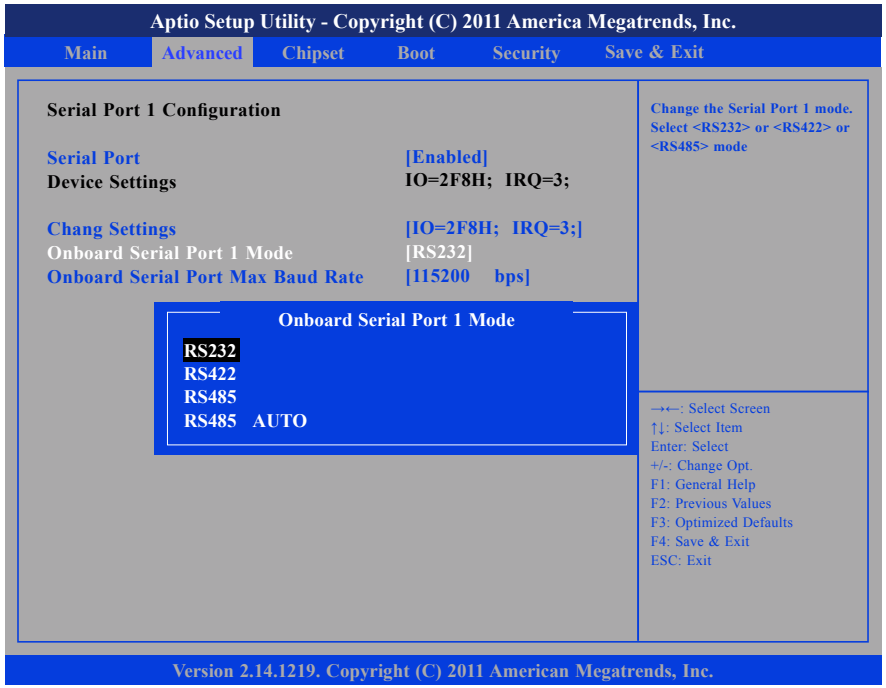


Serial Port 0 Configuration



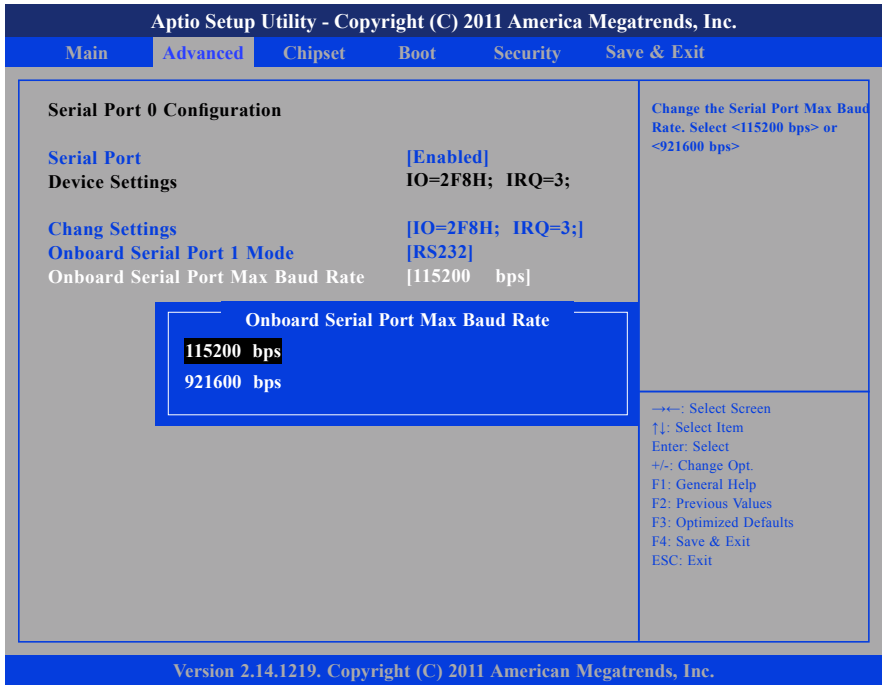
This field configures the maximum baud rate of the serial port 0, the options are 115200 bps and 921600 bps.

Onboard Serial Port Mode



This field is used to configure the mode of serial port 1 as RS232, RS422, RS485 or RS485 AUTO.

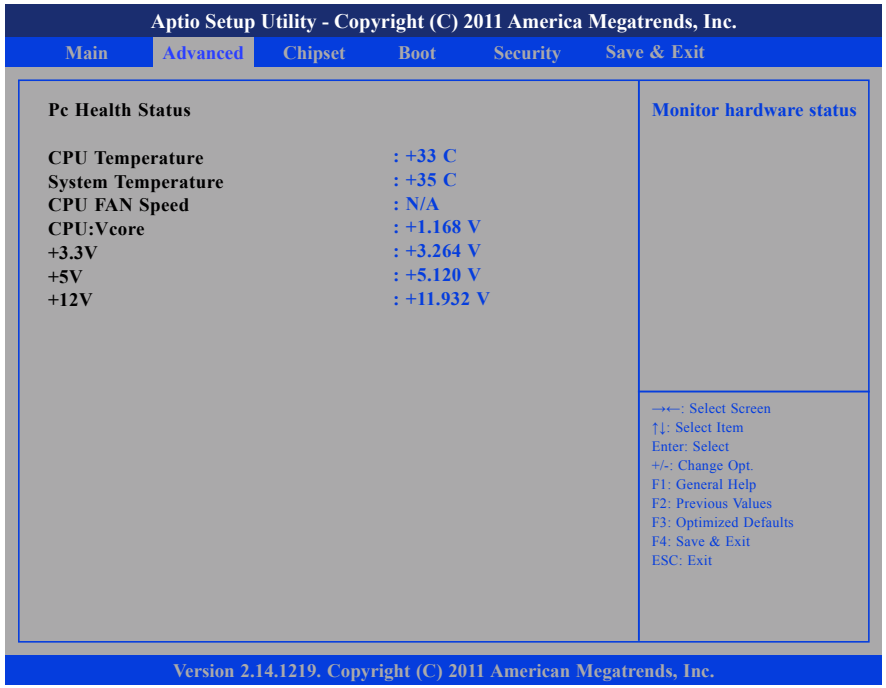
Onboard Serial Port Max Baud Rate



This field configures the maximum baud rate of the serial port 1, the options are 115200 bps and 921600 bps.

H/W Monitor

This section is used to configure the hardware temperature, fan speed and voltages.



PPM Configuration

This section is used to configure Intel SpeedStep.

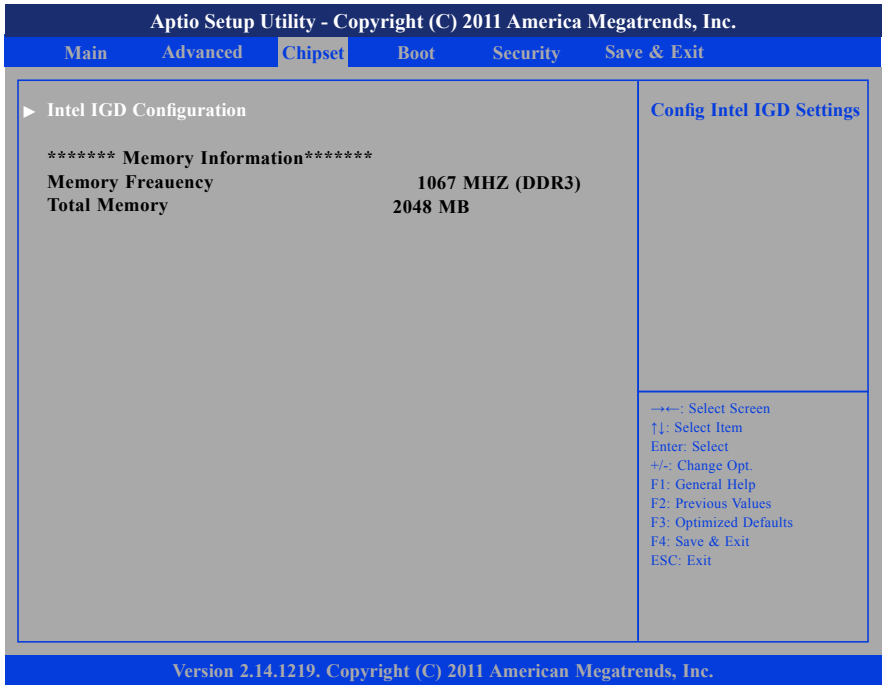
Chipset

This section is used to configure the system based on the specific features of the chipset.

Setting incorrect field values may cause the system to malfunction.

Host Bridge

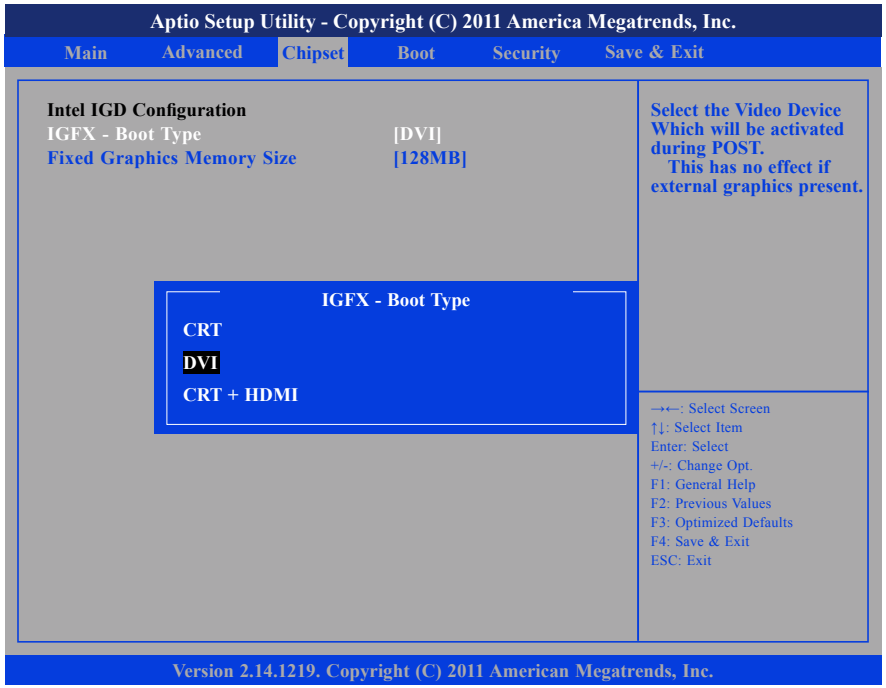
Displays the memory information



Intel® IGD Configuration

Settings for Intel® IGD.

IGFX – Boot Type

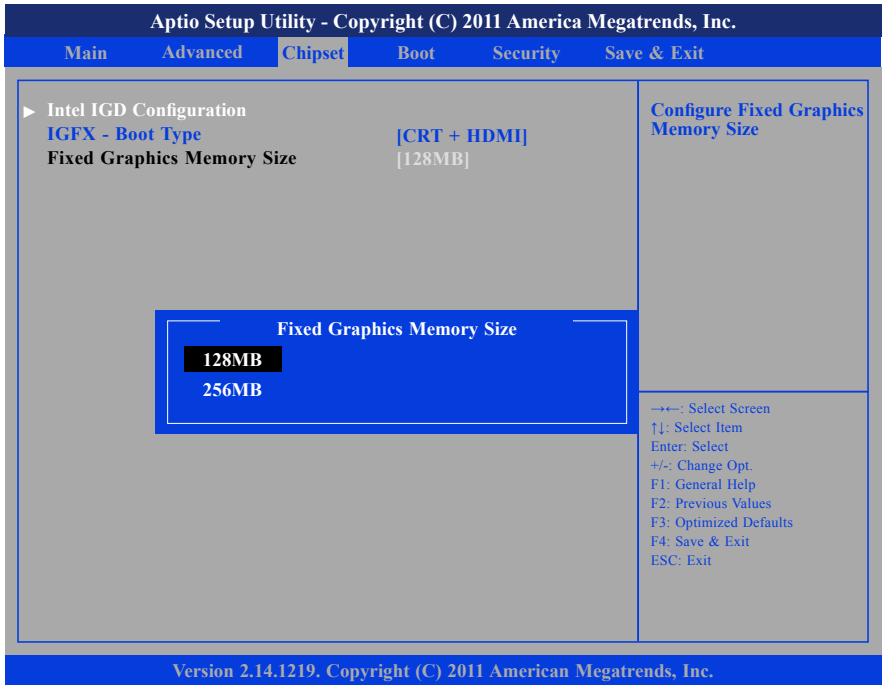


This field is used to configure which video device will be activated during POST. This has no effect if external graphics present. The options are CRT, DVI and CRT + HDMI.

Due to Intel® VBIOS wrong address issue in HDMI mode, there is no "HDMI" display output option in the BIOS menu. Please refer to the following table for the display reference when a HDMI monitor is connected to eCC104.

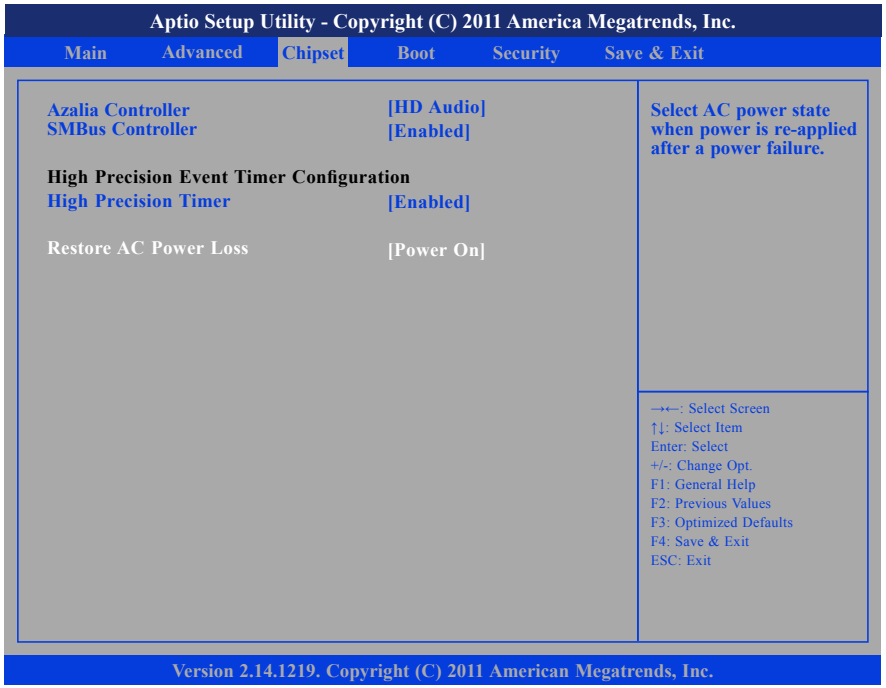
Connected Monitor Type	BIOS setting	Display output at POST mode
HDMI only	DVI	HDMI
HDMI only	CRT + HDMI	HDMI
HDMI+ DVI via Y cable	DVI	DVI
HDMI+ VGA via Y cable	CRT + HDMI	CRT + HDMI
HDMI+ VGA via Y cable	VGA	VGA

Fixed Graphics Memory Size



This field is used to configure the memory size of the fixed graphics, the options are 128MB and 256MB.

South Bridge



Azalia Controller

This section disables Azalia or enables HD Audio.

SMBus Controller

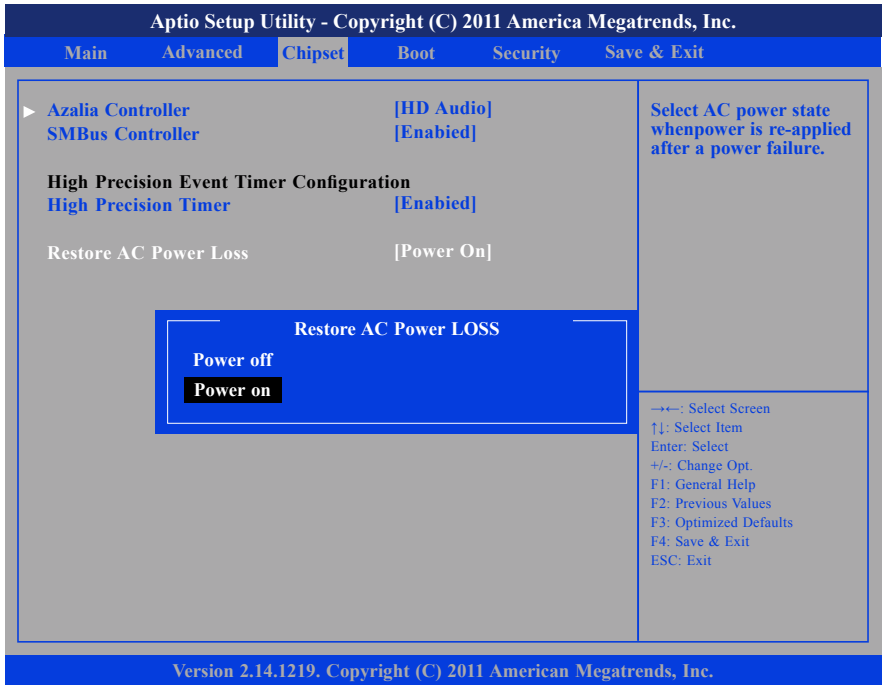
This section is used to configure SMBus.

High Precision Timer

This section is used to configure High Precision Event Timer.

Restore AC Power Loss

This section is used to configure Restore AC Power Loss.



This field is used to configure the AC power state when power is restored after power failure, the options are Power Off and Power On.

Boot

Boot Configuration

This section is used to configure settings during sytem boot.

Setup Prompt Timeout

This section configures the number of seconds to wait for the setup activation key.

Quiet Boot

When Enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

GateA20 Active

Configures the GateA20 function.

Option ROM Messages

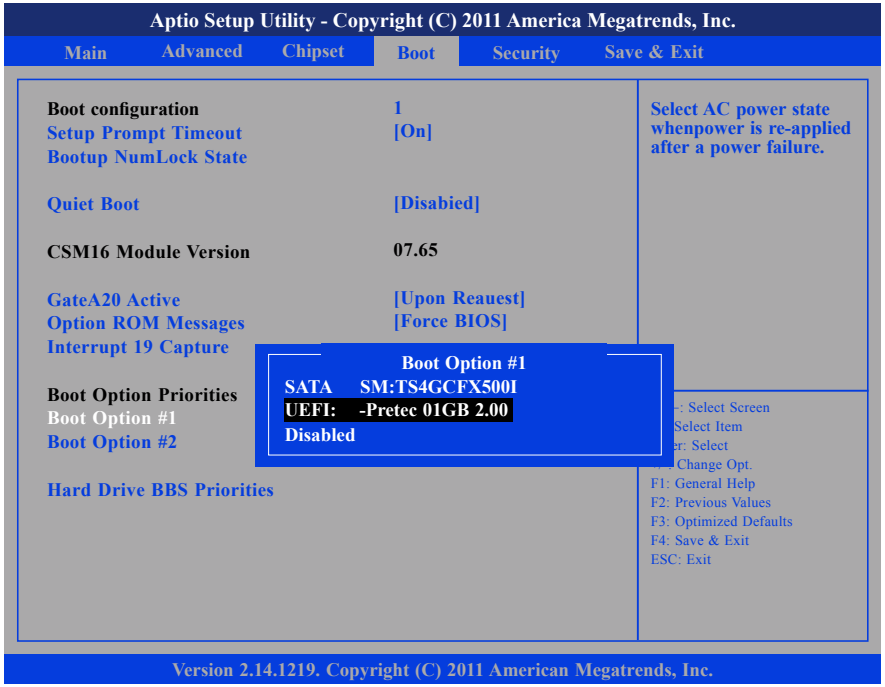
Configures the ROM message.

Interrupt 19 Capture

When enabled, it allows the optional ROM to trap interrupt 19.

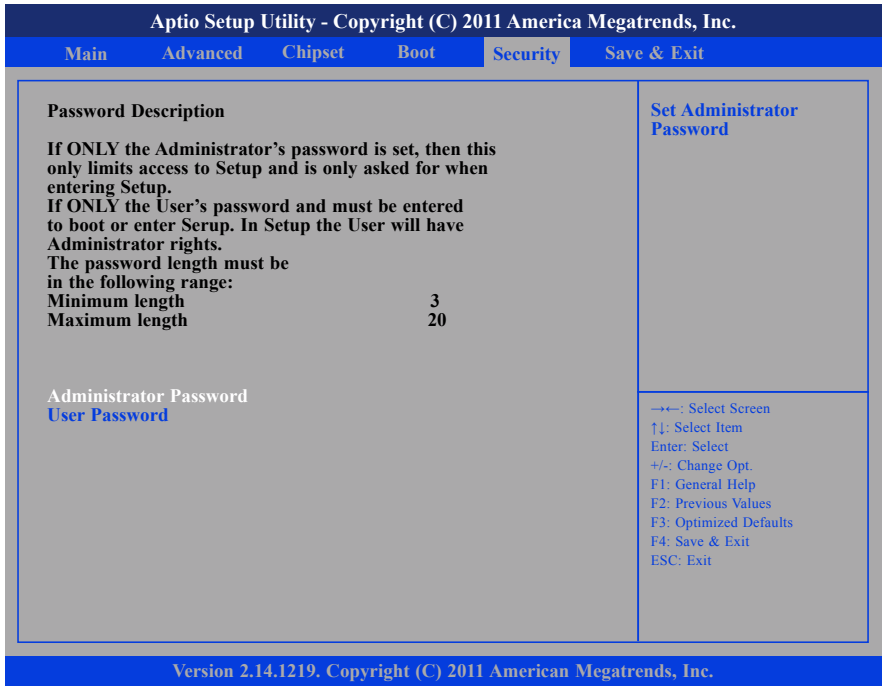
Boot Option Priorities

Boot option #1



This field is used to 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.

Security



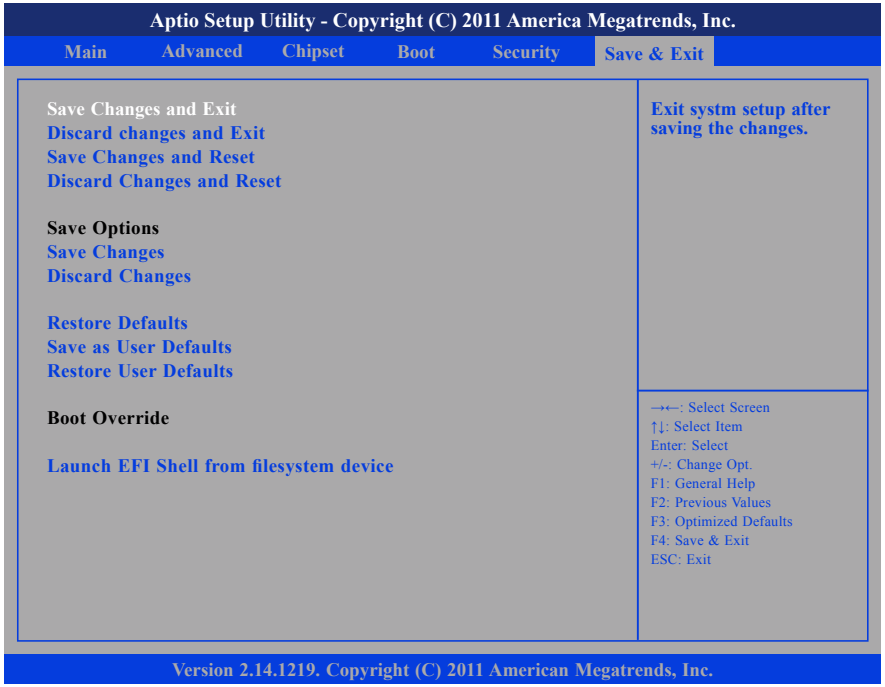
Administrator Password

Sets the administrator's password

User Password

Sets the user's password.

Save & Exit



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 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 selecting Yes.

Boot Override

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

Launch EFI Shell from filesystem device

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

Appendix A: GPI/O Programming Guide

Digital I/O (Digital Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the Digital I/O pins in the eCC104. The pin definition is shown is the following table:

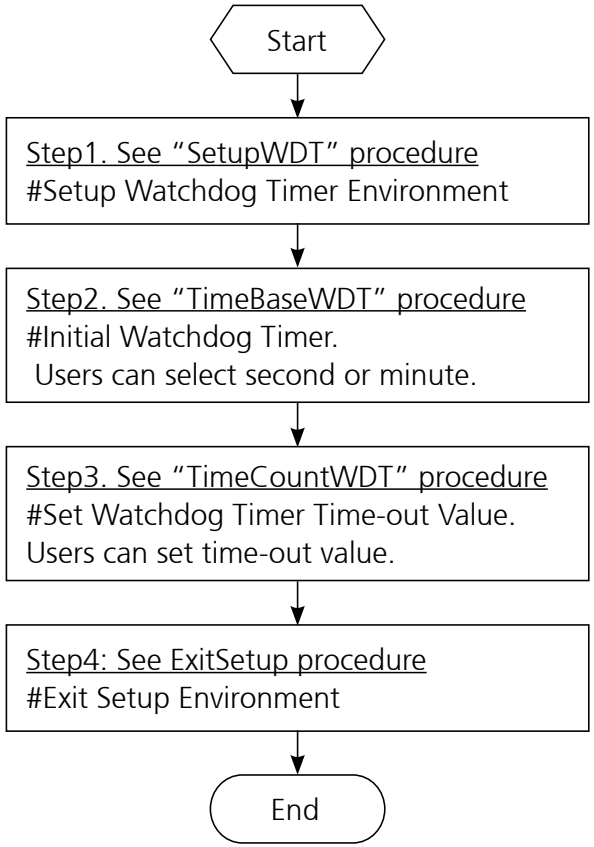
PIN	Description	PIN	Description
1	+5V	2	GND
3	GPO24	4	GPI20
5	GPO25	6	GPI21
7	GPO26	8	GPI22
9	GPO27	10	GPI23

IO base address : A00h
Bit0 : GPI20
Bit1 : GP I21
Bit2 : GP I22
Bit3 : GP I23
Bit4 : GPO24
Bit5 : GPO25
Bit6 : GPO26
Bit7 : GPO27

1. Read/Write GPIO data by I/O port A04h

Appendix B: Watchdog Timer

eCC104 Watch Dog Function Configuration Sequence Description:



ITE8783F WatchDog Programming Guide

```
;----------------------------------------------
SetupWDT        PROC
        mov     dx, 2eh
        mov     al, 087h
        out     dx, al
        nop
        nop
        mov     al, 01h
        out     dx, al
        nop
        nop
        mov     al, 55h
        out     dx, al
        nop
        nop
        out     dx, al          ;Write operations to special address port (2E) for entering MB PnP Mode.

        mov     al, 07h
        out     2eh, al
        mov     al, 07h ;Select logical device for Watch Dog.
        out     2fh, al
        ret
SetupWDT        ENDP

;----------------------------------------------
TimeBaseWDT             PROC
        mov     al, 72h
        out     2eh, al
        mov     al, 10h ;Set WDT reset upon PWROK
        or      al, 80h ;Here!! set 80h for second, set 00h for minute
        out     2fh, al
        ret
TimeBaseWDT     ENDP

;----------------------------------------------
TimeCountWDT    PROC
        mov     al, 73h ;WDT Time-out register.
        out     2eh, al
        mov     al, 03h ;Here!! Set count 3.
        out     2fh, al
        ret
TimeCountWDT    ENDP
;----------------------------------------------
ExitSetup       PROC
        mov     al, 02h
        out     2eh, al
        mov     al, 02h
        out     2fh, al
        ret
ExitSetup       ENDP
;----------------------------------------------
```

Appendix C: Power Consumption

1.Test Configuration

System Configuration	Description
Chassis	CHASSIS eCC104 VER:A
CPU	Intel® Atom™ Processor D2550 (1M Cache, 1.86 GHz)
Memory	Apacer 2GB DDR3 1066MHz SODIMM (78.A2GC9.AF0)
CPU board	N/A
Motherboard	NISB104 REV:B
HDD	SATA2 HDD 2.5 250GB 7200RPM HTE725025A9A364
FDD	N/A
CD-ROM	N/A
CFast	Transcend CFast 4GB (TS4GCFX5001)
Power Supply	POWER ADAPTER FSP060-DBAB1
Add-on Card	N/A
CPU Cooler	eCC104 CPU HEATSINK SHYUNG SHUHN
System FAN	N/A
Keyboard	Microsoft Wired Keyboard 600
Mouse	Microsoft Basic Optical Mouse

2.Power Consumption Measurement

Purpose

The purpose of the power consumption test is to verify the power dissipation of system, and the loading of power supply.

Test Equipment

PROVA CM-07 AC/DC CLAMP METER

Device Under Test

DUT: sys#1/

Test Procedure

1.Power up the DUT, boot into Windows 7 x32 Ultimate.
2.Entering standby mode (HDD power down).
3.Measure the power consumption and record it.
4.Run Burn-in test program to apply 100% full loading.
5.Measure the power consumption and record it.

3.Test Data

	Sys #1	Sys #1
	+12V	+24V
Full-Loading Mode	1.81A	0.96A
Total	21.72W	23.04W
Standby S1Mode	0.84A	0.45A
Total	10.08W	10.8W