



NEXCOM International Co., Ltd.

IoT Automation Solutions Business Group

Fan-less Computer

NISE 50C and NISE 50C-H

User Manual

CONTENTS

Preface

Copyright	iv
Disclaimer	iv
Acknowledgements	iv
Regulatory Compliance Statements	iv
Declaration of Conformity	iv
RoHS Compliance	v
Warranty and RMA	vi
Safety Information	viii
Installation Recommendations	viii
Safety Precautions	ix
Technical Support and Assistance	x
Conventions Used in this Manual	x
Global Service Contact Information	xi
Package Contents	xiii
Ordering Information	xiv

Chapter 1: Product Introduction

Overview	1
Hardware Specifications	2
Knowing Your NISE 50C and NISE 50C-H	4
NISE 50C Front Panel	4
NISE 50C-H Front Panel	4
NISE 50C Rear Panel	5
NISE 50C-H Rear Panel	5
Mechanical Dimensions	6

Chapter 2: Jumpers and Connectors

Before You Begin	8
Precautions	8
Jumper Settings	9
Locations of the Jumpers and Connectors for NISB 50C	10
NISB 50C	10
Jumpers	12
AT/ATX Power Select	12
CMOS Clear Select	12
ME Clear Select	13
Connector Pin Definitions	14
External I/O Interfaces - Front Panel	14
SIM Card Slot	14
HDMI	14
USB 3.0 Ports	15
RJ45 LAN Port	16
External I/O Interfaces - Rear Panel	17
12V DC Power Input	17
COM 1 Port (RS232)	17
COM 2 Port (RS232)	18
COM 3 Port (RS232)	18
Line-out Connector	19
Internal Connectors	20
BIOS Pin Header	20
SATA Connector	20
SATA Power Connector	21



- GPIO Pin Header 21
- Mic-in Pin Header..... 22
- Port 80 Connector 22
- COM 4 Pin Header (RS232) 23
- PWR_LED/HDD_LED/SMB_BUS/S3/SW_ON/RESET 23
- RTC Connector 24
- EC Programmable Connector..... 24
- Mini-PCIe Connector (3G/SIM) 25
- Mini-PCIe Connector (3G) 26
- Mini-PCIe Connector (Wi-Fi)..... 27

Chapter 3: System Setup

- Removing the Bottom Cover 28
- Removing the Top Cover 29
- Installing a Mini-PCIe Module (Half-size)..... 30
- Installing a Mini-PCIe Module (Full-size)..... 31
- Installing a SIM Card 32
- Installing an Antenna 33
- Installing a SATA Hard Drive for NISE 50C-H 35

Chapter 4: BIOS Setup

- About BIOS Setup 36
- When to Configure the BIOS..... 36
- Default Configuration 37
- Entering Setup 37
- Legends 37
- BIOS Setup Utility..... 39
 - Main 39
 - Advanced 40
 - Chipset..... 51
 - Security 53

- Boot..... 54
- Save & Exit 55

Appendix A: Power Consumption..... 56

Appendix B: Watchdog..... 57

Appendix C: GPI/O Control..... 59

Appendix D: Wi-Fi & 3G LED..... 61

PREFACE

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Acknowledgements

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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



NEXCOM RoHS Environmental Policy and Status Update

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

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

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

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

How to recognize NEXCOM RoHS Products?

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

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

Warranty and RMA

NEXCOM Warranty Period

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

NEXCOM Return Merchandise Authorization (RMA)

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

Repair Service Charges for Out-of-Warranty Products

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

Repair Service Charges for Out-of-Warranty Products

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

System Level

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

Board Level

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

Warnings

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

Cautions

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

Safety Information

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

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



Danger of explosion if battery is incorrectly replaced. Replace with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

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

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

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

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

Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. **CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**

Technical Support and Assistance

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

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual



Warning:

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



Caution:

Information to avoid damaging components or losing data.



Note:

Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the NISE 50C/50C-H package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Description	Qty
1	6012200052X00	PE Zipper Bag #8	1
2	6012200053X00	PE Zipper Bag #3	1
3	50311F0330X00	Round Head Screw Long Fei:P2x3 ISO+Nylon	6
4	60233POW33X00	DC Cord EDI:281040051051-RS	1
5	602DCD1053X00	(E)NISE 50C DVD Driver VER:1.0	1
6	60177A0467X00	(E)NISE 50C Quick Reference Guide VER:A SIZE:A4	1
7	5060900226X00	Mini PCIe Bracket CHYUAN-JYH	1
8	50311F0295X00	Flat Head Screw Long Fei:F2x4 NYLOK NIGP	2

Ordering Information

The following information below provides ordering information for NISE 50C and NISE 50C-H.

- **Barebone**

- **NISE 50C (P/N: 10J00005001X0)**

- Intel® Atom™ Processor E3826 Dual Core Fanless System

- **NISE 50C-H (P/N: 10J00005003X0)**

- Intel® Atom™ Processor E3826 Dual Core Fanless System

- **12V, 60W AC/DC power adapter w/o power cord (P/N: 7400060017X00)**

CHAPTER 1: PRODUCT INTRODUCTION

Overview



NISE 50C Front View



NISE 50C Rear View



NISE 50C-H Front View



NISE 50C-H Rear View

Key Features

- Onboard Intel® Atom™ processor E3826 dual core, 1.46GHz
- 1x HDMI Display
- 1x Intel I120AT LAN port supports WoL, Teaming and PXE
- 4x USB 2.0
- 3x COM ports with RS232, each port only have Tx/Rx/GND
- 3x Optional Interface for optional Wi-Fi/3.5G/LTE modules
- Support -5 ~ 55 degrees C extended operating temperature
- Support 12V DC input

Hardware Specifications

CPU Support

- Onboard Intel® Atom™ processor E3826 Dual Core, 1.46GHz
- Support Intel® Atom™ E3800 processor family from Single Core E3815, Dual Core E3825/E3826/E3827 and Quad Core E3845 with different SKUs.

Main Memory

- Onboard DDR3L 1066/1333 2GB RAM, un-buffered and non-ECC, max up to 2GB

Display Option

- 1x HDMI display

Front I/O Interface

- ATX power on/off switch
- 1x Wi-Fi/1x GSM LEDs (NISE 50C)
- 1x Storage Access/1x Wi-Fi/1x GSM LEDs (NISE 50C-H)
- 1x SIM Card holder
- 1x Intel I210AT GbE LAN port, supports Wake on LAN, Teaming and PXE
- 1x HDMI Display Output
- 4x USB 2.0 (500mA per each)
- 2x Antenna Holes for optional Wi-Fi/3.5G antenna

Rear I/O Interface

- 3x DB9, only support RS232 Tx/Rx/GND signal
- 1x Line-out
- Support 12V DC input

I/O Interface - Internal

- 4x GPI and 4x GPO (5V, TTL Type)
- 1x DB9, only supports RS232, Tx/Rx/GND signal

Storage Device

- Onboard 16GB EMMC
- 1x 2.5" HDD (SATA 2.0) only for NISE 50C-H

Expansion Slot

- 3x Mini PCIe sockets for optional Wi-Fi/3.5G modules

Power Requirements

- Power input: 12Vdc
- 1x optional 12V, 60W power adapter

Support OS

- Windows 7 (NISE 50C-H)
- Windows Embedded Standard 7 (NISE 50C-H)
- Windows 8.1
- Windows Embedded Standard 8
- Android 4.4

Dimensions

- 146mm(W) x 26mm(H) x 150mm(D) (NISE 50C)
- 146mm(W) x 42mm(H) x 150mm(D) (NISE 50C-H)

Construction

- Aluminum and metal chassis with fanless design

Environment

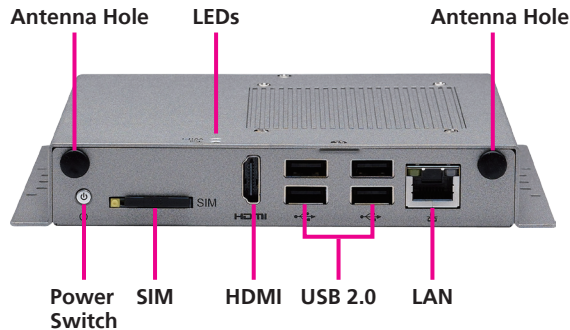
- Operating Temperature:
Ambient with air flow: -5°C to 55°C
(According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -30°C to 85°C
- Relative humidity: 10% to 95% (non-condensing)
- NISE 50C:
 - Shock Protection:
 - EMMC: 50G, half sine, 11ms, IEC60068-27
- NISE 50C:
 - Vibration Protection w/ EMMC Condition:
 - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
 - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6
- NISE 50C-H:
 - Shock Protection:
 - HDD: 20G, half sine, 11ms, IEC60068-27
 - SSD: 50G, half sine, 11ms, IEC60068-27
- NISE 50C-H:
 - Vibration Protection w/HDD Condition:
 - Random: 0.5Grms @ 5~500 Hz, IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5~500 Hz, IEC60068-2-6
- NISE 50C-H:
 - Vibration Protection SSD Condition:
 - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
 - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6

Certifications

- CE
- FCC Class A

Knowing Your NISE 50C and NISE 50C-H

NISE 50C Front Panel



Antenna Hole

Used to install external antennas.

Power Switch

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

SIM

Used to insert a SIM card.

HDMI

Used to connect a high-definition display.

USB 2.0

USB 2.0 ports to connect the system with USB 2.0/1.1 devices.

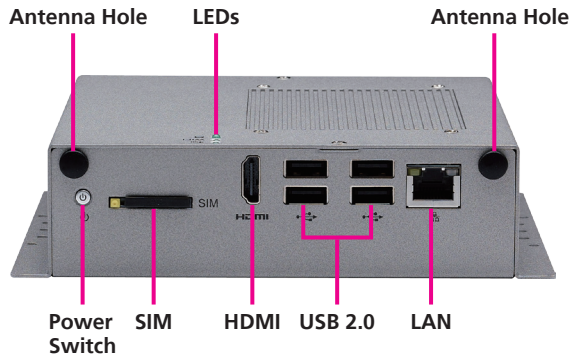
LAN

Used to connect the system to a local area network.

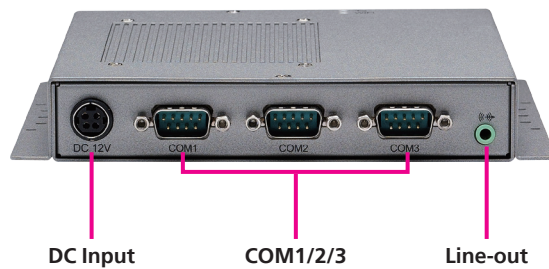
LED Indicators

Indicates the hard drive (NISE 50C-H only), Wi-Fi and GSM activity of the system.

NISE 50C-H Front Panel



NISE 50C Rear Panel



DC Input

Used to plug a DC power cord.

COM1 to COM3

Three DB9 ports used to connect RS232 Tx/Rx/GND signals.

Line-out

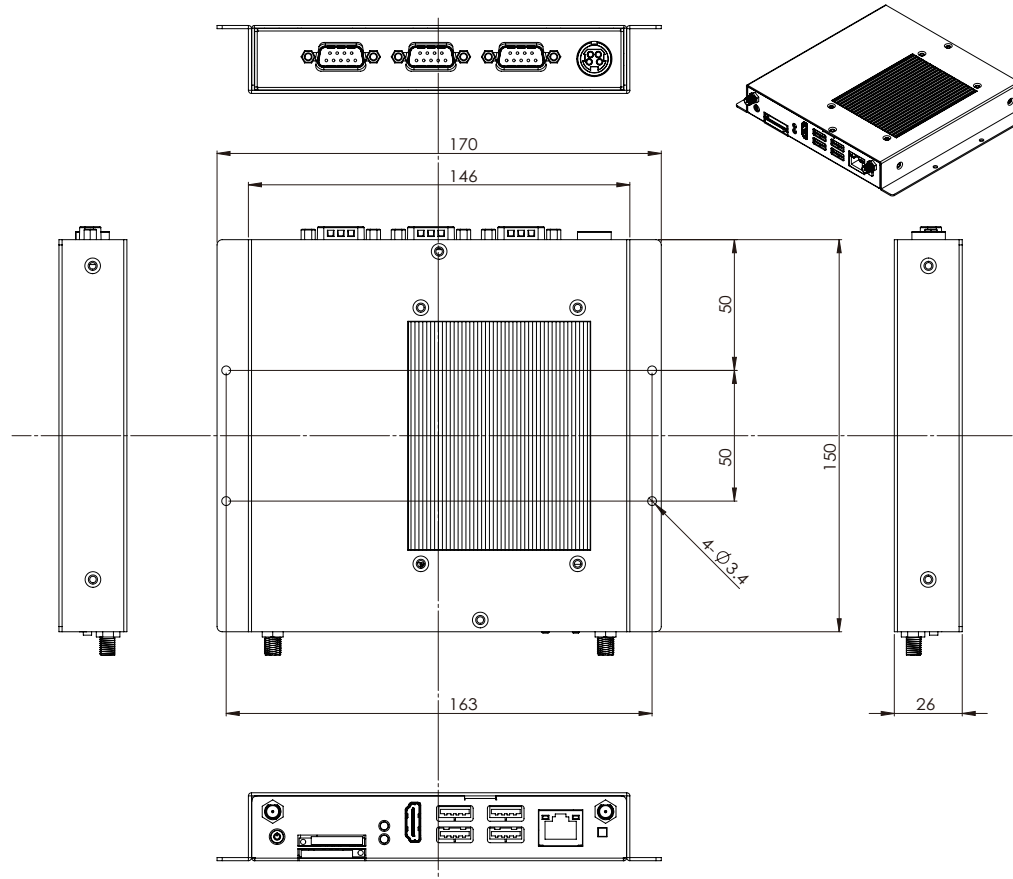
Used to connect a headphone or a speaker.

NISE 50C-H Rear Panel

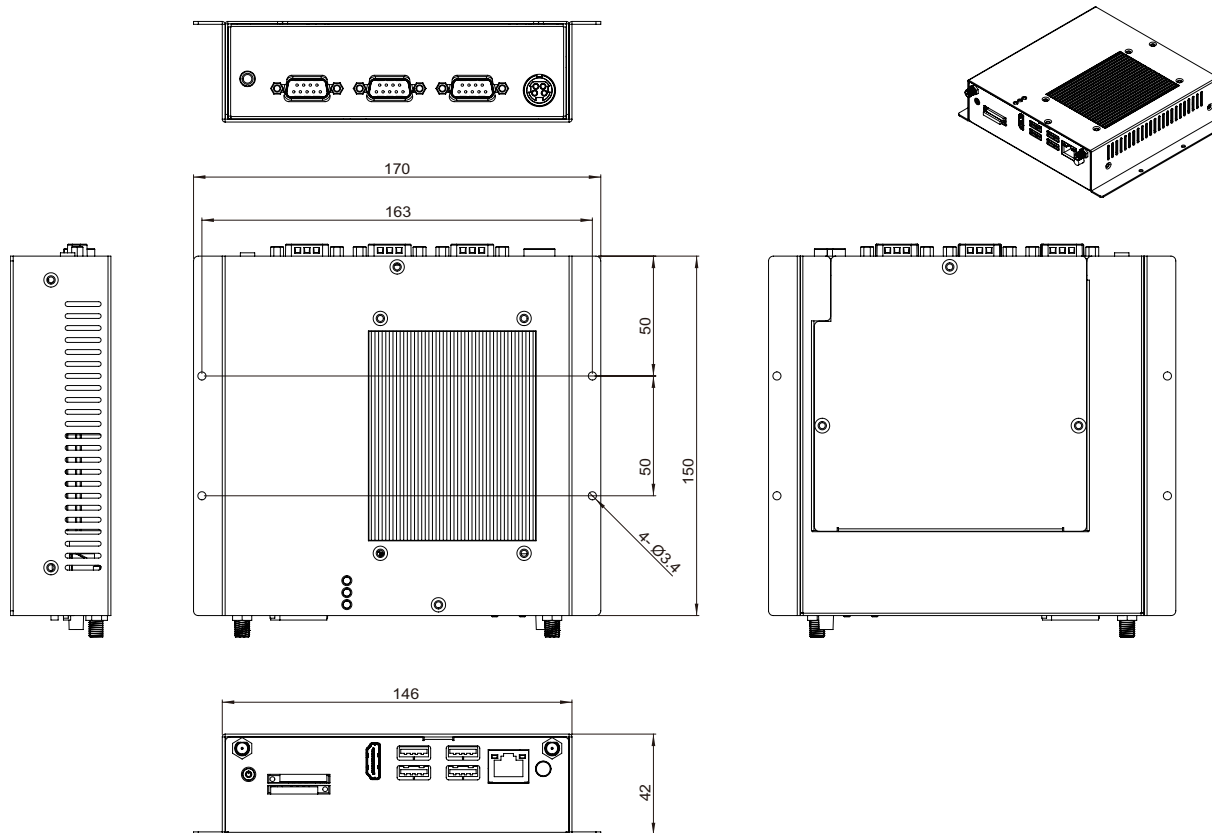


Mechanical Dimensions

NISE 50C



NISE 50C-H



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 50C and NISE 50C-H 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:

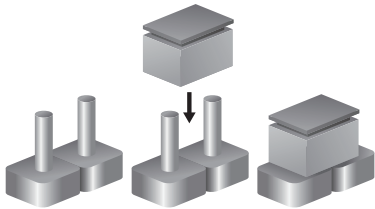
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

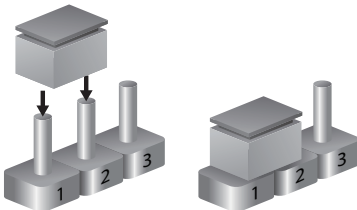
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



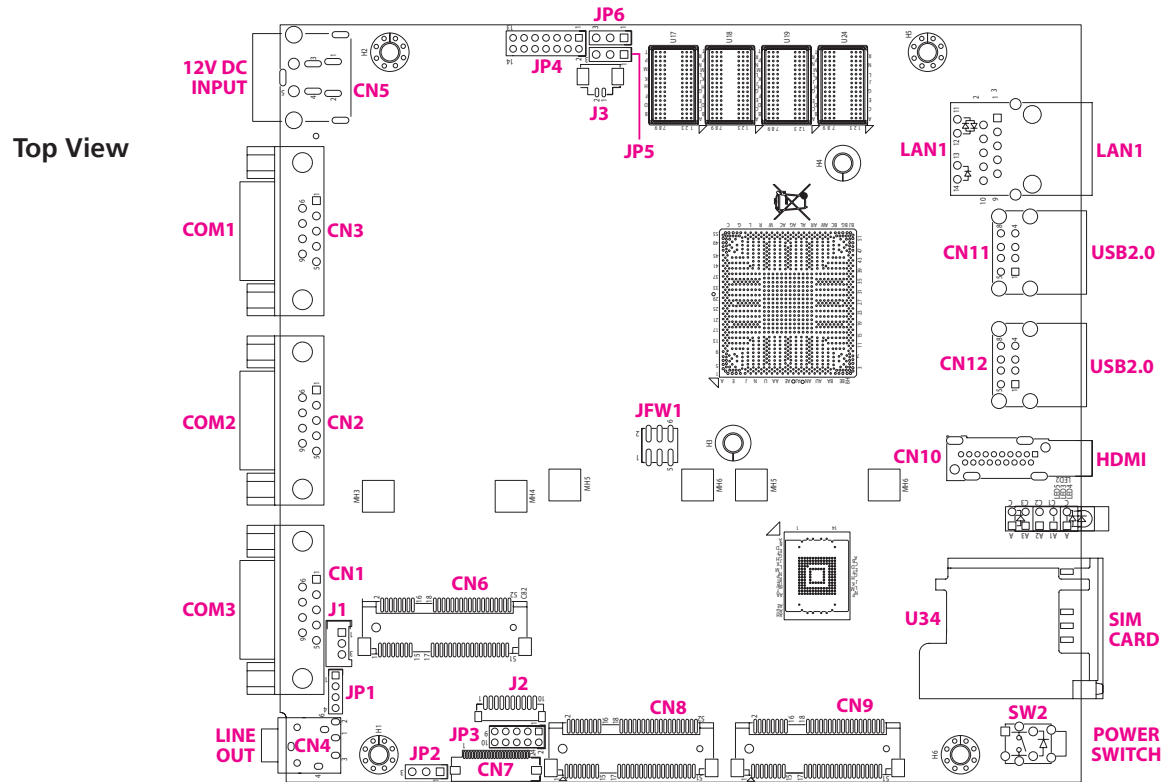
Three-Pin Jumpers: Pins 1 and 2 are Short



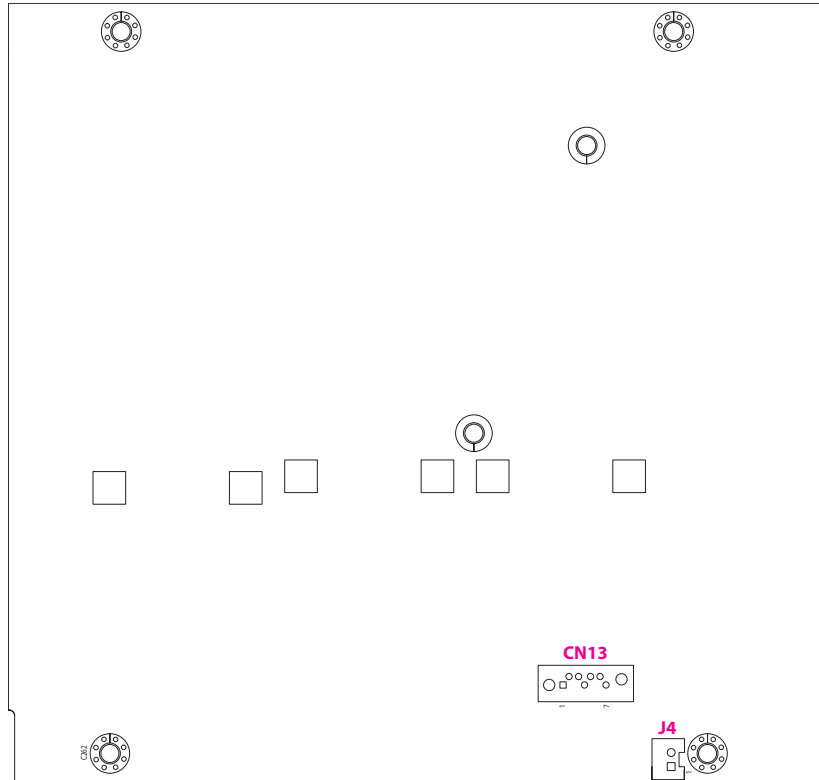
Locations of the Jumpers and Connectors for NISB 50C

NISB 50C

The figure below is the top view of the NISB 50C main board which is the main board used in NISE 50C and NISE 50C-H. It shows the locations of the jumpers and connectors.



Bottom View



Jumpers

AT/ATX Power Select

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



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

Pin	Definition
1	3VSB
2	AT_ATX_SELECT
3	GND

CMOS Clear Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP6



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

1-2 On: default

Pin	Definition
1	NC
2	RTC_TEST#
3	GND

ME Clear Select

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

Connector location: JP5



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

1-2 On: default

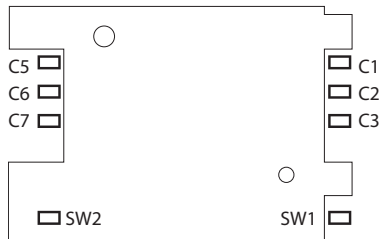
Pin	Definition
1	NC
2	SRTC_TEST#
3	GND

Connector Pin Definitions

External I/O Interfaces - Front Panel

SIM Card Slot

Connector location: U34

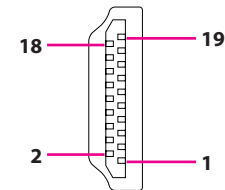


Pin	Definition	Pin	Definition
C1	UIM_PWR	C2	UIM_RESET
C3	UIM_CLK	C5	GND
C6	UIM_VPP	C7	UIM_DATA
SW1	GND	SW2	GND

HDMI

Connector type: HDMI port

Connector location: CN10

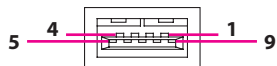


Pin	Definition	Pin	Definition
1	HDMI_DATA2_P_C	2	GND
3	HDMI_DATA2_N_C	4	HDMI_DATA1_P_C
5	GND	6	HDMI_DATA1_N_C
7	HDMI_DATA0_P_C	8	GND
9	HDMI_DATA0_N_C	10	HDMI_CLK_P_C
11	GND	12	HDMI_CLK_N_C
13	NC	14	NC
15	HDMI_CTRL_CLK_C	16	HDMI_CTRL_DAT_C
17	GND	18	HDMI_PWR
19	HDMI_HPD_R		
MH1	CHASSIS_GND	MH2	CHASSIS_GND
MH3	CHASSIS_GND	MH4	CHASSIS_GND

USB 3.0 Ports

Connector type: USB 3.0 port

Connector location: CN11 and CN12



CN11

Pin	Definition	Pin	Definition
1	4USBV1	2	DN1_C
3	DP1_C	4	GND
5	4USBV1	6	DN2_C
7	DP2_C	8	GND
MH1	CHASSIS_GND	MH2	CHASSIS_GND
MH3	CHASSIS_GND	MH4	CHASSIS_GND

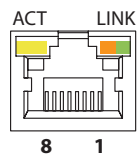
CN12

Pin	Definition	Pin	Definition
1	4USBV2	2	DN3_C
3	DP3_C	4	GND
5	4USBV2	6	DN4_C
7	DP4_C	8	GND
MH1	CHASSIS_GND	MH2	CHASSIS_GND
MH3	CHASSIS_GND	MH4	CHASSIS_GND

RJ45 LAN Port

Connector type: RJ45 with LEDs

Connector location: LAN1

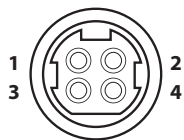


Pin	Definition	Pin	Definition
1	LAN_MDI0P_1	2	LAN_MDI0N_1
3	LAN_MDI1P_1	4	LAN_MDI1N_1
5	LAN1TCT	6	GND
7	LAN_MDI2P_1	8	LAN_MDI2N_1
9	LAN_MDI3P_1	10	LAN_MDI3N_1
11	LAN_LED_ACT#	12	LAN1_ACTPW
13	LAN_LED_LINK1G#	14	LAN1_LINK
MH1	CHASSIS_GND	MH2	CHASSIS_GND

External I/O Interfaces - Rear Panel

12V DC Power Input

Connector location: CN5

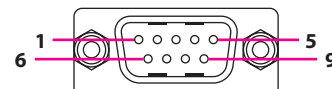


Pin	Definition	Pin	Definition
1	VIN_1	2	VIN_1
3	VIN_VSS	4	VIN_VSS
5	R_GND		
MH1	N/A	MH2	N/A
MH3	N/A	MH4	N/A

COM 1 Port (RS232)

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

Connector location: CN3

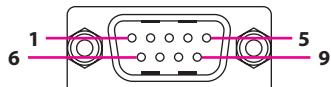


Pin	Definition	Pin	Definition
1	N/A	2	SP1_RXD_R
3	SP1_TXD_R	4	N/A
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A		
MH1	CHASIS_GNDR	MH2	CHASIS_GNDR

COM 2 Port (RS232)

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

Connector location: CN2

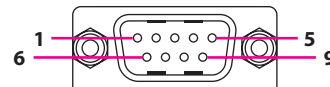


Pin	Definition	Pin	Definition
1	N/A	2	SP2_RXD_R
3	SP2_TXD_R	4	N/A
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A		
MH1	CHASIS_GNDR	MH2	CHASIS_GNDR

COM 3 Port (RS232)

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

Connector location: CN1



Pin	Definition	Pin	Definition
1	N/A	2	SP3_RXD_R
3	SP3_TXD_R	4	N/A
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A		
MH1	CHASIS_GNDR	MH2	CHASIS_GNDR

Line-out Connector

Connector type: 1x 3.5mm TRS

Connector location: CN4



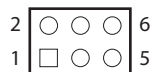
Pin	Definition	Pin	Definition
1	LOUT_L3	2	LINE_OUT_JD
3	AGND	4	LOUT_R3

Internal Connectors

BIOS Pin Header

Connector type: 2x3 6-pin Wafer, 2.0mm pitch

Connector location: JFW1

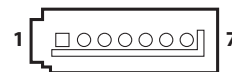


Pin	Definition	Pin	Definition
1	VCC	2	GND
3	CS#0	4	CLK
5	SO	6	SI

SATA Connector

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

Connector location: CN13



Pin	Definition	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 2-pin header, 2.0mm pitch

Connector location: J4

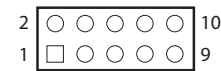


Pin	Definition
1	VCC5
2	GND

GPIO Pin Header

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

Connector location: JP3

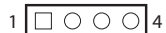


Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	ICH_GPO0_OUT	4	ICH_GPIO_IN
5	ICH_GPO1_OUT	6	ICH_GPI1_IN
7	ICH_GPO2_OUT	8	ICH_GPI2_IN
9	ICH_GPO3_OUT	10	ICH_GPI3_IN

Mic-in Pin Header

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

Connector location: JP1



Pin	Definition
1	MIC1_L3
2	MIC_JD
3	MIC_JD
4	MIC1_R3

Port 80 Connector

Connector type: 1x10 10-pin header, 1.0mm pitch

Connector location: J2

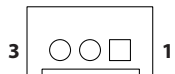


Pin	Definition	Pin	Definition
1	GND	2	EC_PLTRST#
3	DEBUG_LPC33MHZ	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_AD0
9	VCC3/LPC_SERIRQ	10	VCC3
MH1	GND	MH2	GND

COM 4 Pin Header (RS232)

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

Connector location: J1

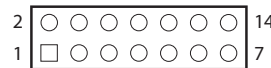


Pin	Definition
1	GND
2	SP4_RXD_R
3	SP4_TXD_R

PWR_LED/HDD_LED/SMB_BUS/S3/SW_ON/RESET

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

Connector location: JP4



Pin	Definition	Pin	Definition
1	GND	2	VCC3
3	SATA_LED#	4	VCC3
5	I2C_C	6	I2C_D
7	3VSB	8	GND
9	SLP_S3#	10	PS_ON#
11	EC_PWRBT#	12	GND
13	PM_RESET#_J	14	GND

RTC Connector

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

Connector location: J3

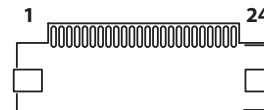


Pin	Definition
1	GND
2	VBAT_L

EC Programmable Connector

Connector type: 1x24 24-pin header, 0.5mm pitch

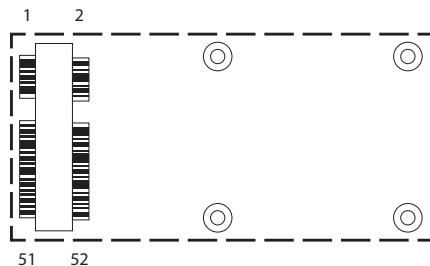
Connector location: CN7



Pin	Definition	Pin	Definition
1	EC_KSO0	2	EC_KSO1
3	EC_KSO2	4	EC_KSO3
5	EC_KSO4	6	EC_KSO5
7	EC_KSO6	8	EC_KSO7
9	EC_KSO8	10	EC_KSO9
11	EC_KSO10	12	GND
13	GND	14	GND
15	GND	16	GND
17	EC_KSI0	18	EC_KSI1
19	EC_KSI2	20	EC_KSI3
21	EC_KSI4	22	EC_KSI5
23	GND	24	GND

Mini-PCle Connector (3G/SIM)

Connector location: CN8

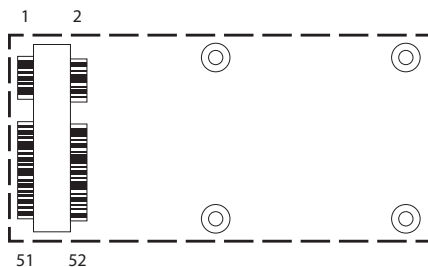


Pin	Definition	Pin	Definition
1	PCIEWAKE#	2	3VSB_MINI1
3	N/A	4	GND
5	N/A	6	N/A
7	N/A	8	UIM_PWR
9	GND	10	UIM_DATA
11	MC9090_1V8_OUT	12	UIM_CLK
13	N/A	14	UIM_RESET
15	GND	16	UIM_VPP
17	N/A	18	GND
19	N/A	20	EC_MC609_DISABLE
21	GND	22	EC_MC609_RESET
23	N/A	24	3VSB_MINI1
25	N/A	26	GND

Pin	Definition	Pin	Definition
27	GND	28	N/A
29	GND	30	EC_I2CCLK
31	GND	32	EC_I2CDATA
33	EC_MC9090_RESET	34	GND
35	GND	36	MINI1USBN
37	GND	38	MINI1USBP
39	3VSB_MINI1	40	GND
41	3VSB_MINI1	42	N/A
43	GND	44	N/A
45	N/A	46	N/A
47	N/A	48	N/A
49	N/A	50	GND
51	N/A	52	3VSB_MINI1

Mini-PCIe Connector (3G)

Connector location: CN9

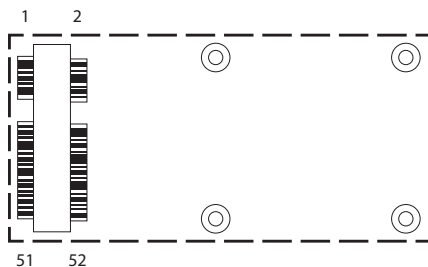


Pin	Definition	Pin	Definition
1	PCIEWAKE#	2	3VSB_MINI2
3	N/A	4	GND
5	N/A	6	V1P5S_2
7	MINICARD2CLKREQ#	8	UIM2_PWR
9	GND	10	UIM2_DATA
11	PCIE_CLKN0	12	UIM2_CLK
13	PCIE_CLKP0	14	UIM2_RESET
15	GND	16	UIM2_VPP
17	N/A	18	GND
19	N/A	20	EC_MC509_DISABLE
21	GND	22	EC_MC509_RESET
23	I_PERXN0_C	24	3VSB_MINI2
25	I_PERXP0_C	26	GND

Pin	Definition	Pin	Definition
27	GND	28	V1P5S_2
29	GND	30	EC_SMBCLK
31	PCIE_TXN0	32	EC_SMBDATA
33	PCIE_TXP0	34	GND
35	GND	36	MINI2USBN
37	GND	38	MINI2USBP
39	3VSB_MINI2	40	N/A
41	3VSB_MINI2	42	N/A
43	N/A	44	N/A
45	N/A	46	N/A
47	N/A	48	V1P5S_2
49	N/A	50	GND
51	N/A	52	3VSB_MINI2

Mini-PCIe Connector (Wi-Fi)

Connector location: CN6



Pin	Definition	Pin	Definition
1	PCIE_WAKE#	2	3VSB_MINI3
3	N/A	4	GND
5	N/A	6	V1P5S_3
7	MINICARD1CLKREQ#	8	N/A
9	GND	10	N/A
11	PCIE_CLKN2	12	N/A
13	PCIE_CLKP2	14	N/A
15	GND	16	N/A
17	N/A	18	GND
19	N/A	20	EC_WIFI_DISABLE
21	GND	22	EC_PLTRST#
23	I_PERXN2_C	24	3VSB_MINI3
25	I_PERXP2_C	26	GND

Pin	Definition	Pin	Definition
27	GND	28	V1P5S_3
29	GND	30	EC_SMBCLK
31	PCIE_TXN2	32	EC_SMBDATA
33	PCIE_TXP2	34	GND
35	GND	36	MINI3USBN
37	GND	38	MINI3USBP
39	3VSB_MINI3	40	GND
41	3VSB_MINI3	42	N/A
43	GND	44	N/A
45	N/A	46	N/A
47	N/A	48	V1P5S_3
49	N/A	50	GND
51	N/A	52	3VSB_MINI3

CHAPTER 3: SYSTEM SETUP

Removing the Bottom Cover

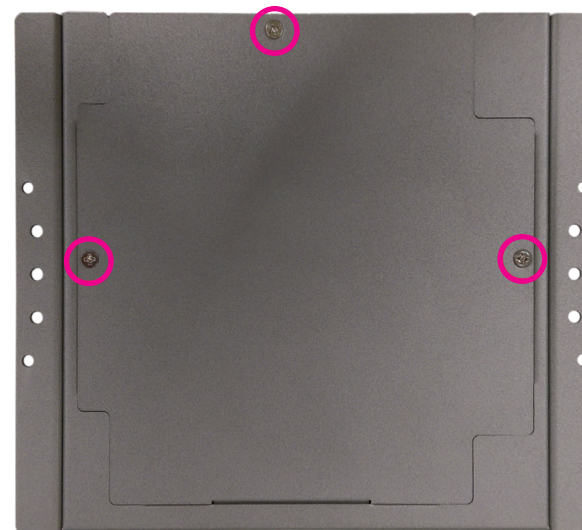


Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.



Note:
Installation for SATA Hard Drive

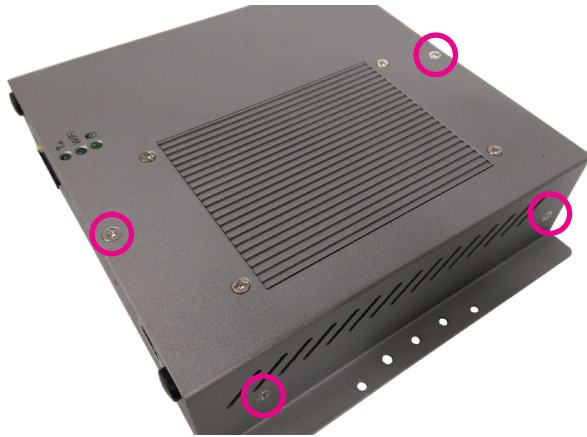
1. With the bottom side of the chassis facing up, remove the mounting screws on the bottom cover and then put them in a safe place for later use.



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

Removing the Top Cover

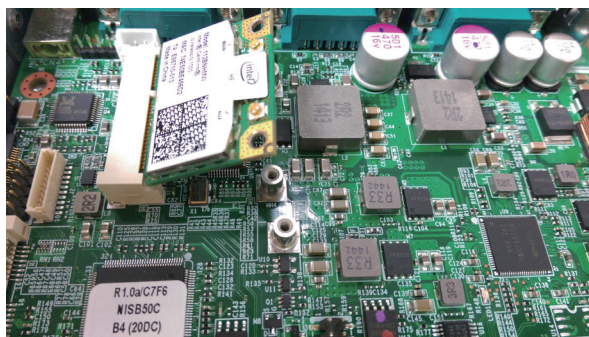
1. Remove the mounting screws on the top cover and then put them in a safe place for later use.



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

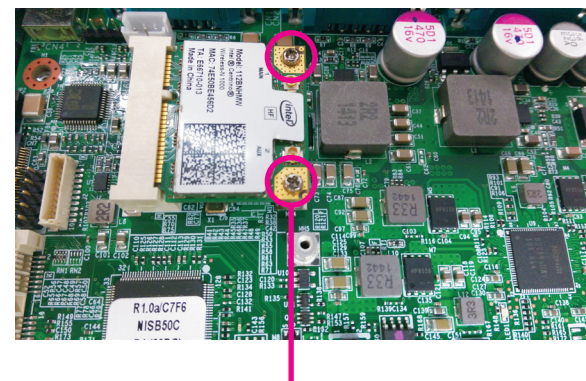
Installing a Mini-PCle Module (Half-size)

1. Locate the mini-PCI Express slot on the board.



2. Insert the Wi-Fi module into the mini-PCI Express slot at a 45 degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

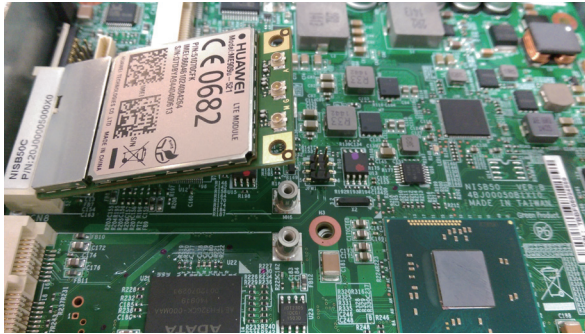
3. Push the module down and then secure it with mounting screws.



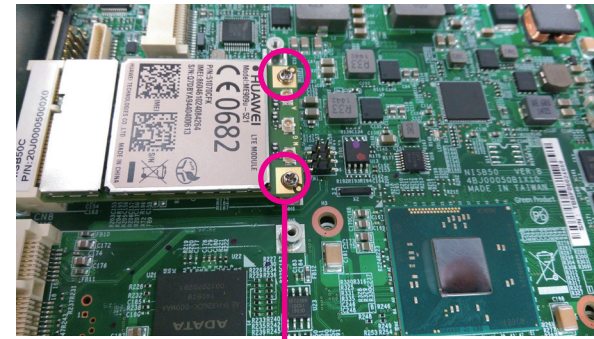
Mounting
screw

Installing a Mini-PCle Module (Full-size)

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



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



Mounting
screw

Installing a SIM Card

1. Locate the SIM card holder on the front panel and release it by pushing the yellow button.



2. Place the SIM card into the holder.



3. Insert the SIM card holder back to its original position.



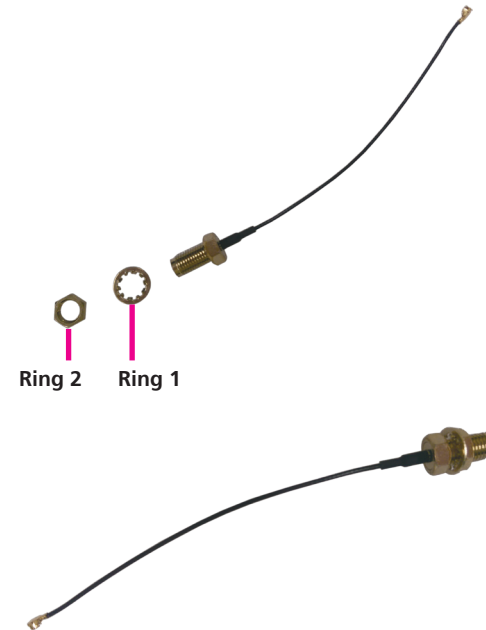
Installing an Antenna

1. Remove the antenna hole covers located on the front panel.



2. Insert the antenna jack end of the cable through the antenna hole.

3. Insert the 2 rings (ring 1 and ring 2) onto the antenna jack end of the cable.



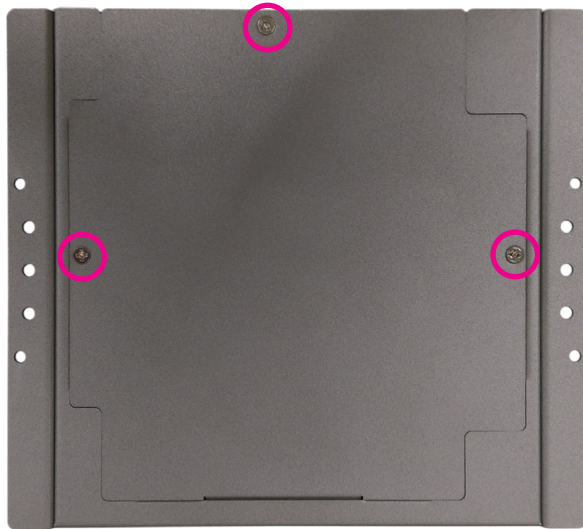
4. Attach the other end of the antenna cable onto the module.

5. Connect the external antenna to the antenna jack.



Installing a SATA Hard Drive for NISE 50C-H

1. Remove the bottom cover before installing a SATA HDD.



2. Use the screws to secure the 2.5" HDD drive in place.



3. Secure the HDD bracket to its original place.

CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 50C and NISE 50C-H. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

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

About BIOS Setup

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

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

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

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

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

When to Configure the BIOS

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

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

Default Configuration


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

Entering Setup












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

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

Powering on the computer and immediately pressing allows you to enter Setup.

Press the  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.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu


Scroll Bar

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

Submenu


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

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  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) 2013 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
BIOS Information		American Megatrends		Set the Date. Use Tab to switch between Date elements.	
BIOS Vendor	5.009				
Core Version	UEFI 2.3; PI 1.2				
Compliancy	N050-006 x64				
Project Version	07/08/2015 10:01:28				
Build Date and Time	B 00 17				
EC Version					
CPU Configuration		901			
Microcode Patch					
Memory Information		2048 MB			
Total Memory					
GDP Information		[N/A]			
Intel(R) GOP Driver					
System Date	[Fri 10/23/2015]				
System Time	[17:50:09]				

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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

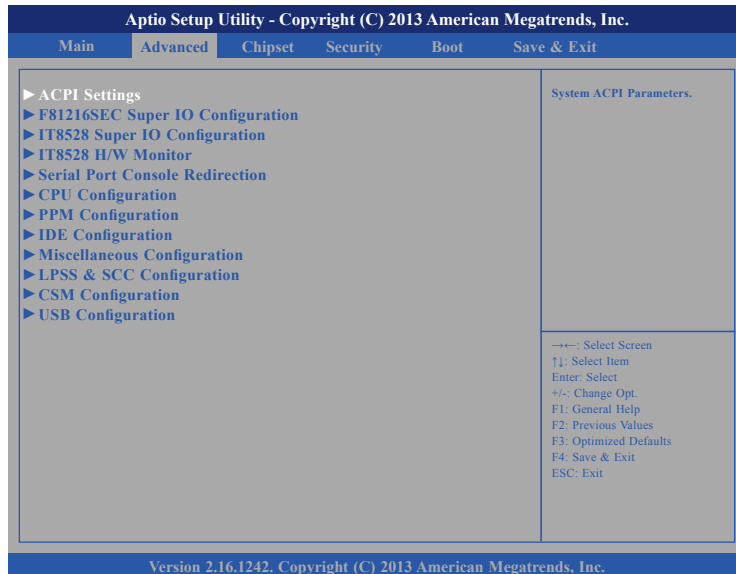
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

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.

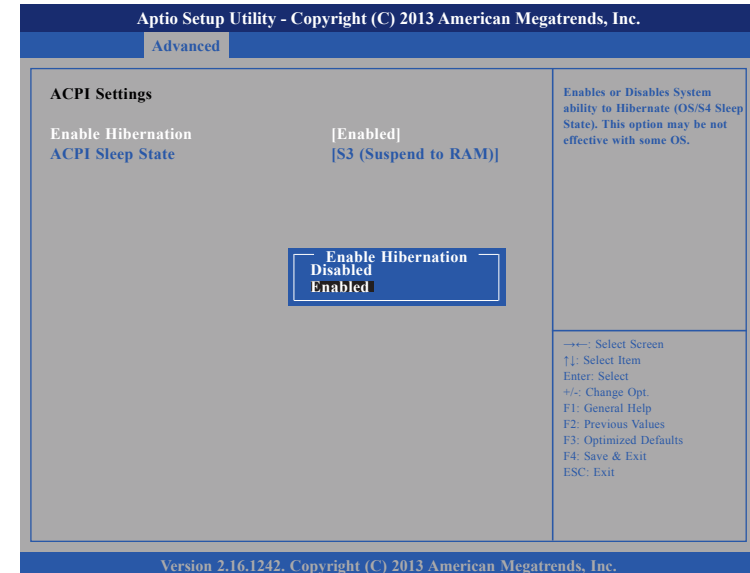


Setting incorrect field values may cause the system to malfunction.



ACPI Settings

This section is used to configure ACPI Settings.



Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

ACPI Sleep State



Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

F81216SEC Super IO Configuration

This section is used to configure the serial ports of the F81216SEC Super IO.

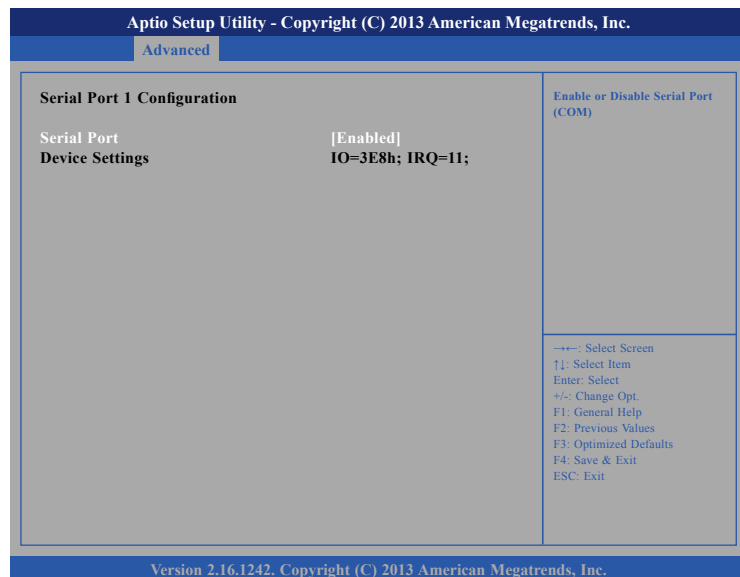


Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.

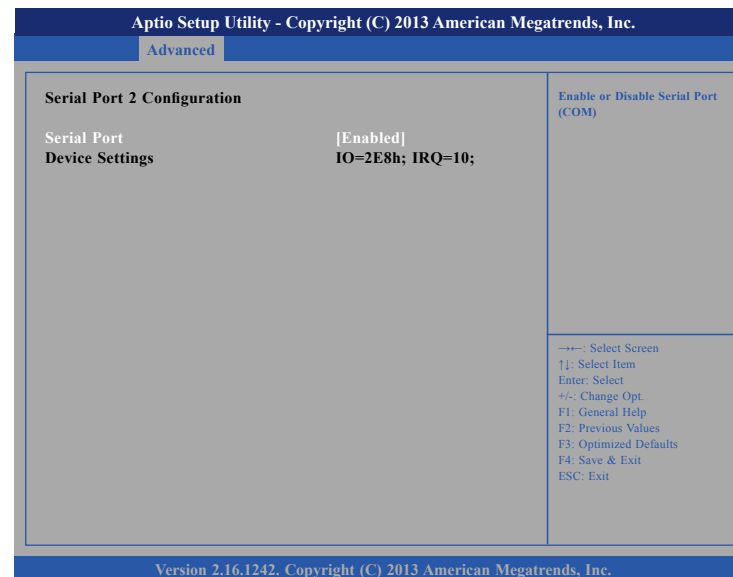


Serial Port

Enables or disables the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

Enables or disables the serial port.

IT8528 Super IO Configuration

This section is used to configure the serial ports of the IT8528 Super IO.



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.

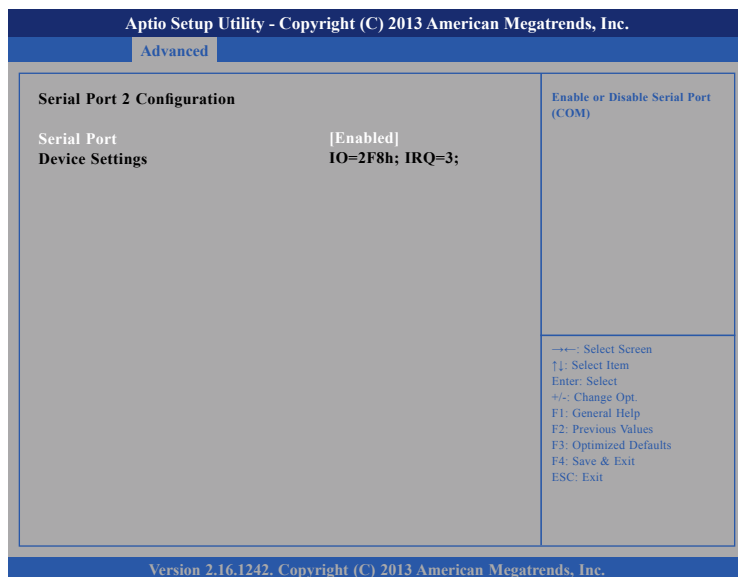


Serial Port

Enables or disables the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

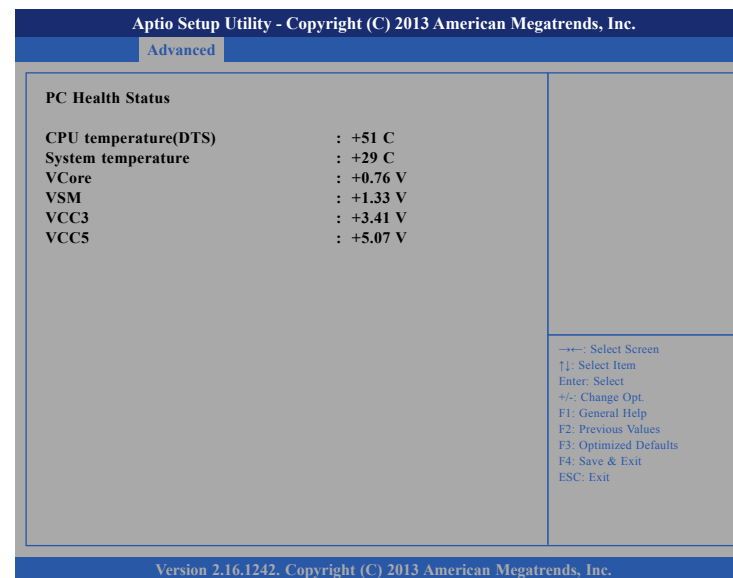


Serial Port

Enables or disables the serial port.

IT8528 H/W Monitor

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



CPU Temperature (DTS)

Detects and displays the current CPU temperature.

System Temperature

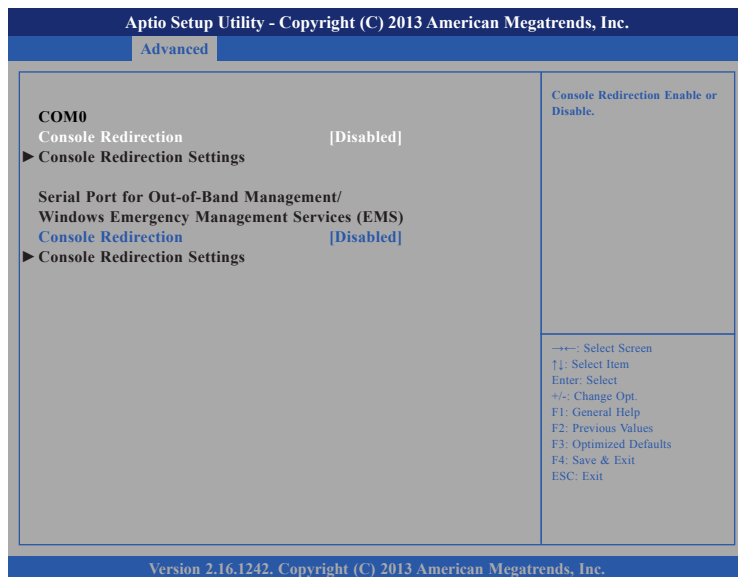
Detects and displays the current system temperature.

VCore to VCC5

Detects and displays the output voltages.

Serial Port Console Redirection

This section is used to configure serial port console redirection settings.



Console Redirection

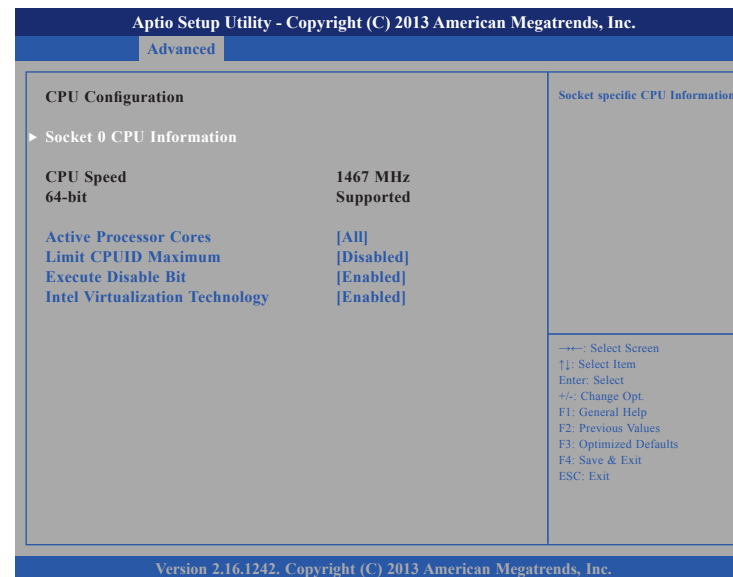
Enables or disables the console redirection. When enabled, Console Redirection Settings will be available.

Console Redirection (Serial Port for Out-of-Band Management)

Enables or disables the console redirection. When enabled, Console Redirection Settings will be available.

CPU Configuration

This section is used to configure the CPU.



Active Processors Cores

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

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.

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).

Intel® Virtualization Technology

Enables or disables Intel Virtualization technology.

Socket 0 CPU Information

Display information on the CPU installed on socket 0.

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Advanced

Socket 0 CPU Information	
Intel(R) Atom(TM) CPU E3826 @ 1.46GHz	
CPU Signature	30679
Microcode Patch	901
Max CPU Speed	1460 MHz
Min CPU Speed	533 MHz
Processor Cores	2
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
L1 Data Cache	24 kB x 2
L1 Code Cache	32 kB x 2
L2 Cache	1024 kB x 1
L3 Cache	Not Present

→←: 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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PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.

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Advanced

PPM Configuration	
EIST	[Disabled]

Enable/Disable Intel SpeedStep

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

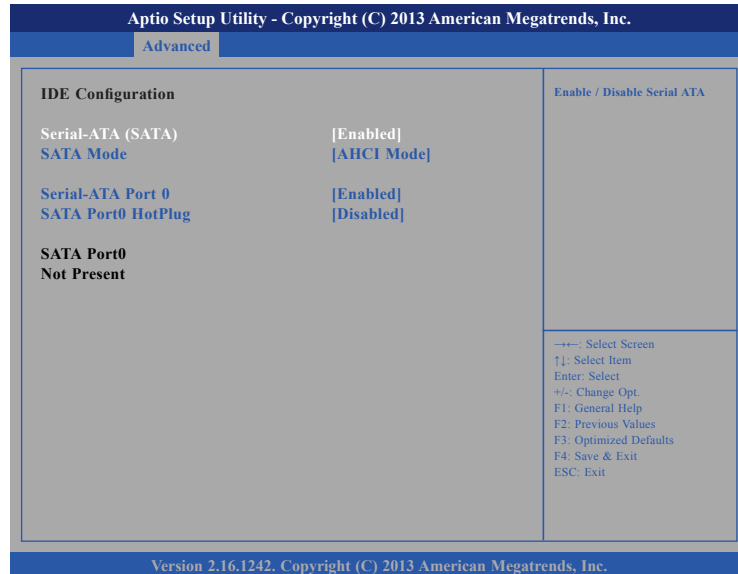
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

EIST

Enables or disables Intel® SpeedStep.

IDE Configuration

This section is used to configure the SATA drives.



Serial-ATA Port 0

Enables or disables SATA port 0.

SATA Port0 HotPlug

Enables or disables hot pluggable support on SATA port 0.

Serial-ATA (SATA)

Enables or disables the SATA controller.

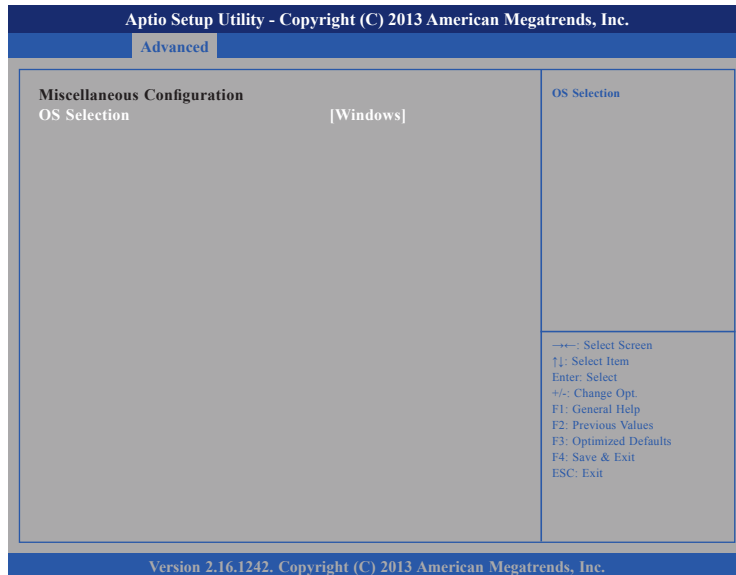
SATA Mode

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.

Miscellaneous Configuration

This section is used to configure other miscellaneous settings.

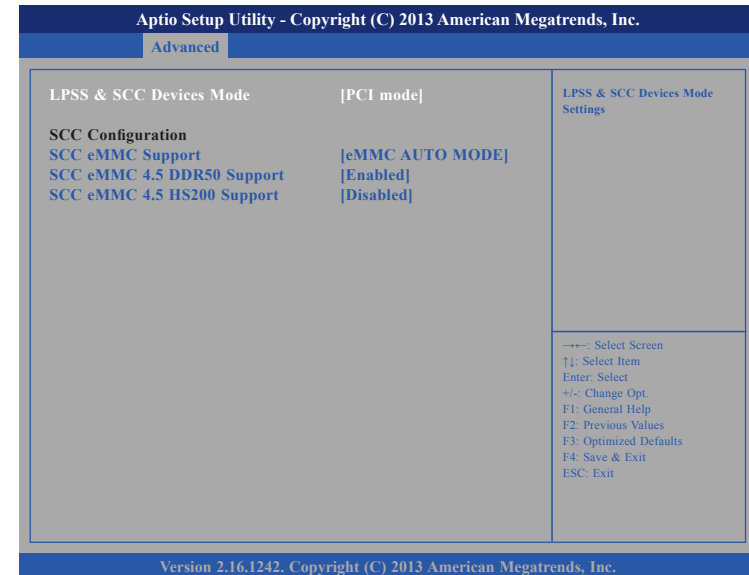


OS Selection

Selects the operating system as Windows or Android.

LPSS & SCC Configuration

This section is used to configure LPSS and SCC settings.



LPSS & SCC Devices Mode

Selects the LPSS and SCC device mode as ACPI mode or PCI mode.

SCC eMMC Support

Enables or disables SCC eMMC support.

SCC eMMC 4.5 DDR50 Support

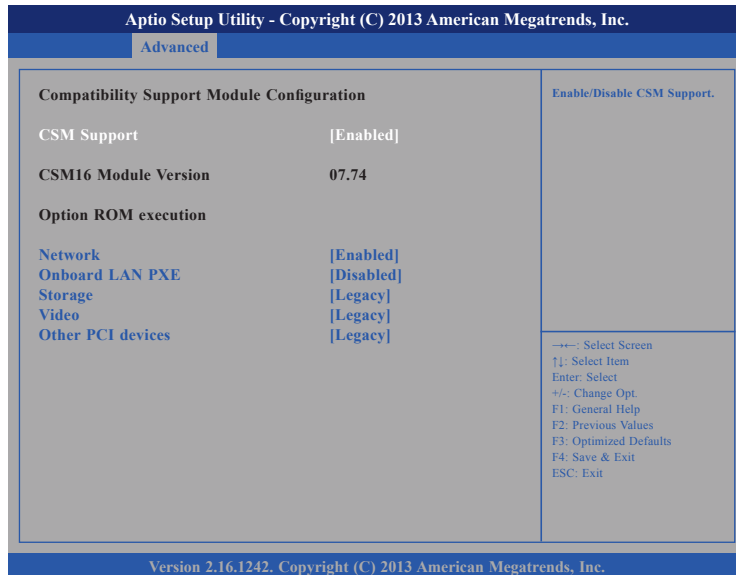
Enables or disables SCC eMMC 4.5 DDR50 support.

SCC eMMC 4.5 HS200 Support

Enables or disables SCC eMMC 4.5 HS200 support.

CSM Configuration

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



CSM Support

Enables or disables CSM support.

Network

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

Determines OpROM execution policy for devices other than network, storage or video.

USB Configuration

This section is used to configure the USB.



The screenshot shows the 'Advanced' tab of the Aptio Setup Utility. The 'USB Configuration' section is expanded, showing the following settings:

- USB Module Version:** 8.11.01
- USB Devices:** 1 Keyboard, 2 Hubs
- Legacy USB Support:** [Enabled]
- XHCI Legacy Support:** [Enabled]
- XHCI Hand-off:** [Enabled]
- EHCI Hand-off:** [Enabled]
- USB Mass Storage Driver Support:** [Enabled]
- USB hardware delays and time-out:**
 - USB transfer time-out:** [20 sec]
 - Device reset time-out:** [20 sec]
 - Device power-up delay:** [Auto]

On the right side of the screen, there is a help text: "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." At the bottom right, there is a list of navigation keys: "→←: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimized Defaults", "F4: Save & Exit", and "ESC: Exit".

Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

XHCI Legacy Support

Enables or disables XHCI controller legacy support.

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.

EHCI Hand-off

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

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

USB Transfer Time-out

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

Device Reset Time-out

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

Device Power-up Delay

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

Chipset

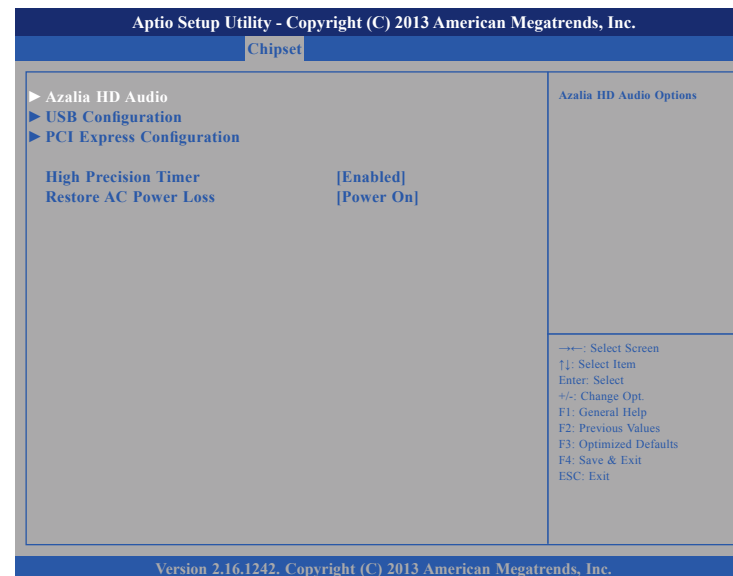
This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



South Bridge

Enters the South Bridge submenu.

South Bridge



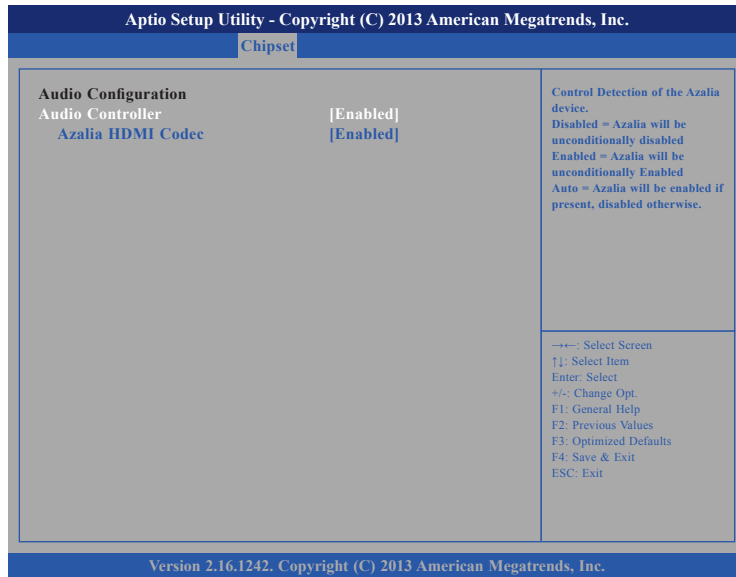
High Precision Timer

Enables or disables high precision event timer.

Restore AC Power Loss

Select the AC power state when power is re-applied after a power failure.

PCH Azalia Configuration



Azalia

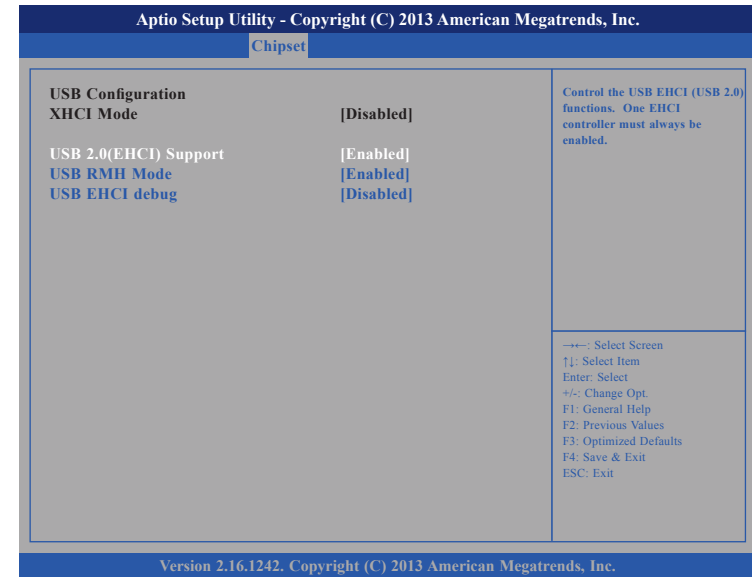
Control detection of the Azalia device.

Disabled Azalia will be unconditionally disabled.
 Enabled Azalia will be unconditionally enabled.

Azalia HDMI Codec

Enables or disables internal HDMI codec for Azalia.

USB Configuration



USB 2.0(EHCI) Support

Enables or disables the Enhanced Host Controller Interface (USB 2.0), one EHCI controller must always be enabled.

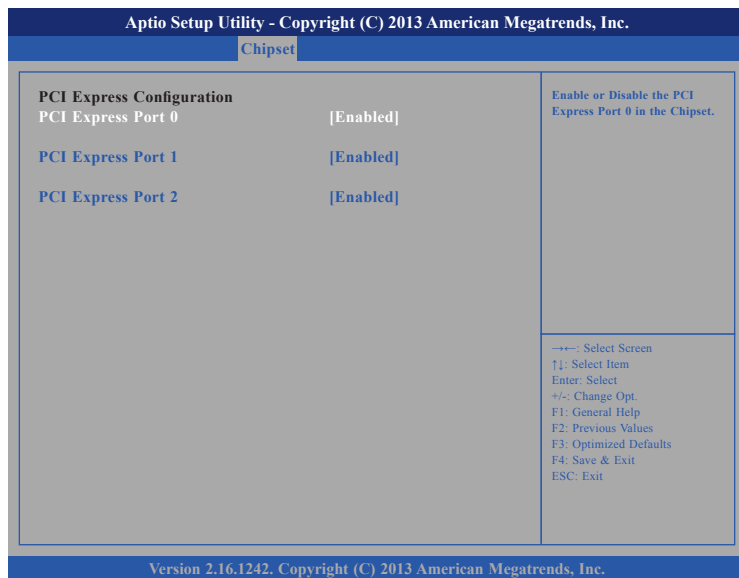
USB RMH Mode

Enables or disables PCH USB rate matching hubs mode.

USB EHCI Debug

Enables or disables PCH EHCI debug capability.

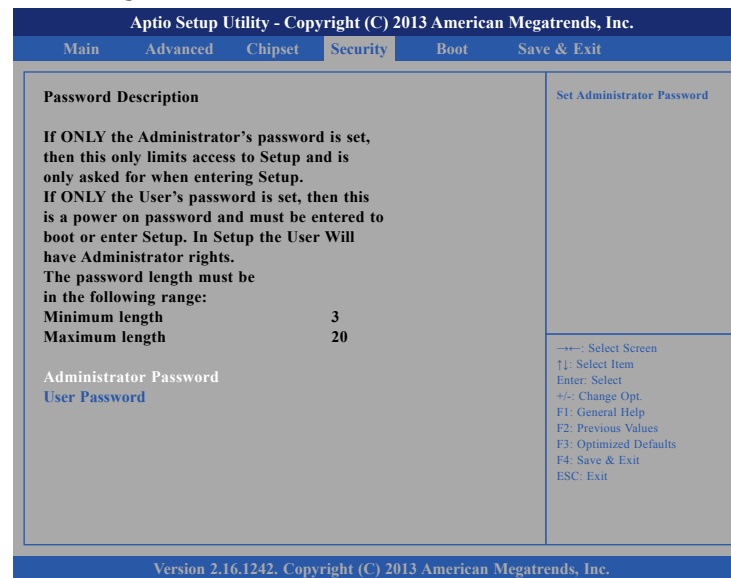
PCI Express Configuration



PCI Express Port 0 to PCI Express Port 2

Enables or disables the PCI Express ports 0 to 2 on the chipset.

Security



Administrator Password

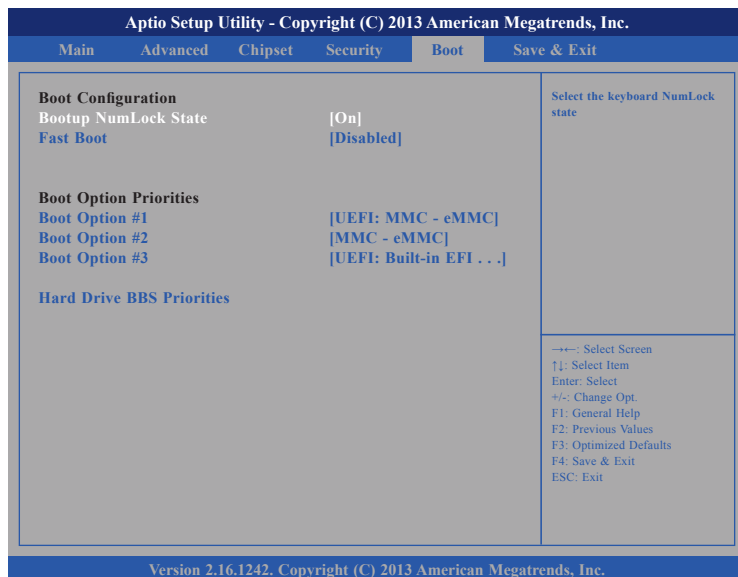
Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.

Boot

This section is used to configure the boot features.



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.

Fast Boot

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

Boot Option Priorities

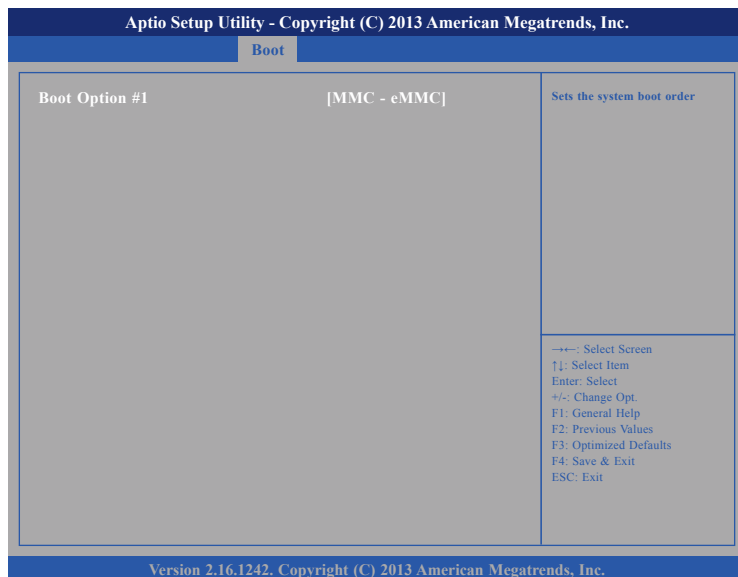
Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

Hard Drive BBS Priorities

Sets the order of the legacy devices in this group.

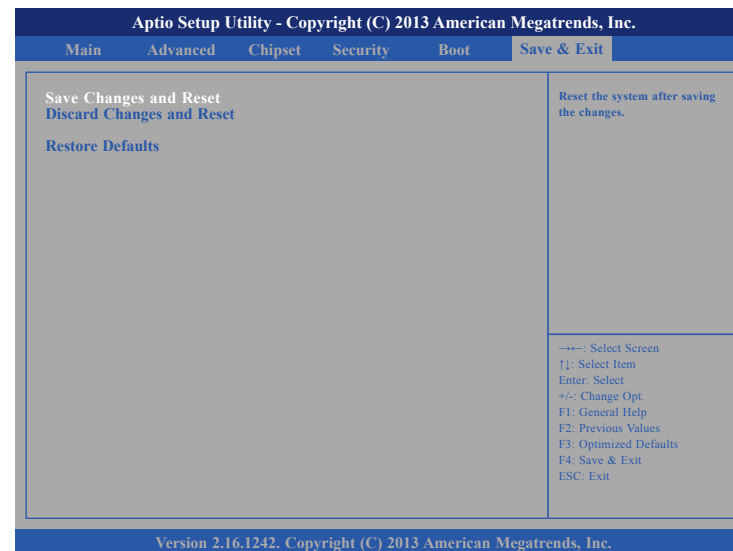
Hard Drive BBS Priorities

Boot Option #1



Sets the first legacy device to boot from.

Save & Exit



Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

APPENDIX A: POWER CONSUMPTION

Power Consumption Management

Purpose

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

Test Equipment

1. 19" LCD Monitor.
2. DC power supply.
3. Operating System OS: Windows 8.1 (64-bit)
4. Burn In Test Ver7.1
5. Kpower Software.
6. Network test program.
7. USB 2.0 (5V, 0.5A (Cement Resistor)) *4.

Device Under Test

DUT: SYS#1

Test Procedure

1. Make sure mechanical structure and electrical functionality are normal before testing.
2. Install all I/O load devices and according as system input voltage specifications to setup DC power supply voltage.
3. Measure system maximum power consumption as below mode:
 - Standby mode.
 - BIOS mode.
 - 100% Full loading mode (include USB load fixture)
4. Measure and record system maximum power consumption value.

Test Result

System Mode		12Vdc	
		I _{max.}	W _{max.}
CPU: Intel® Atom™ CPU E3826 @ 1.46 GHz System model: NISB50C-H / Revision: B BIOS: American Megatrends Inc. / Revision: N050-001 X64 EC Revision: R 00 16 Operating System OS: Windows 8.1 (64-bit)	Standby mode. (S3)	0.09A	1.08W
	BIOS mode	0.61A	7.32W
	100% Full loading mode.	1.52A	18.2W

APPENDIX B: WATCHDOG

Command register and address description:

Command for light sensor:

Command	Description
0x89	Reset watch dog time interval
0x28	Start watchdog
0x29	Stop watchdog
0x2A	Reset watchdog

Address for watchdog:

Watchdog is used to setup time interval and also keep event status. Unit time interval is 1ms. Time setting requires a word (8 bit) long length. You can setup watch dog event time from 0 to 0xFFFFFFFF. Write 0xFFFFFFFF to time interval setting means disable watchdog event. So the interval time range is from 0ms to 497 day (0~0xFFFFFFFF)

Address	Description
0x50-0x53	0~0xFFFFFFFF,

Setup Watchdog time interval description:

Sequence to read light sensor::

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x89 to 0x66	Send read command	>o 0x66 0x89
2	Wait IBF clear		x
3	Write RAM address to 0x62 port	Send Watchdog address 0x50~0x53.	>o 0x62 0x50
4	Wait OBF set		x
5	Write watchdog time interval value to 0x62	Values from 0~0xFFFFFFFF, but two bit in each address, please refer to sample code explanation	>o 0x62 0x90

Sample explanation:

To set up watchdog time interval to 4 sec, here is the vale should fill in in each address.

4sec = 400 ms (decimal) = 190 (hexadecimal)

Address	0x50	0x51	0x52	0x53
Data	0x00	0x00	0x01	0x90

Complete command set sequence:

Further description	Command	Address	Data
Set watch dog interval, write to address 0x50~0x53 and Data"00000190"	①>o 0x66 0x89	②>o 0x62 0x50	③>o 0x00
	④>o 0x66 0x89	⑤>o 0x62 0x51	⑥>o 0x00
	⑦>o 0x66 0x89	⑧>o 0x62 0x52	⑨>o 0x01
	⑩>o 0x66 0x89	⑪>o 0x62 0x53	⑫>o 0x90

Reset Watchdog time interval description:

This command is used to reset watchdog time.

Sequence to read light sensor:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x2A to 0x66	Send reset watchdog command	>o 0x66 0x2A
2	Wait OBF set		x
3	Read 0x62 port	If setup successfully, EC will return 0x03.	x (check 0x03 output on display)

Start Watchdog description:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x28 to 0x66	Send start watchdog command	>o 0x66 0x28
2	Wait IBF clear		x
3	Write 0x01 to 0x62		>o 0x62 0x01 (check 0x03 output on display)
4	Wait OBF set		x
5	Read 0x62 port	If setup successfully, EC will return 0x01.	x (check 0x01 output on display)

Stop Watchdog description:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x29 to 0x66	Send stop watchdog command	>o 0x66 0x29
2	Wait OBF set		x
3	Read 0x62 port	If setup successfully, EC will return 0x02.	x (check 0x02 output on display)

APPENDIX C: GPIO CONTROL

Command register and address description:

EC controls DIO status by following command:

Command	Description
0x10	Write Pin number into index
0x11	According index, get GPIO pin status. 1-active, 0-unactive, 0xFF-fail
0x12	According index, change GPIO pin status. 1-active, 0-unactive

Status Address of DIO:

Command	Description
0x00	DI
0x04	DO

Read DIO command description:

Sequence to Read DIO:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x10 to 0x66	Send GPIO index command	>o 0x66 0x10
2	Wait IBF clear		x
3	Write PIN number to 0x62	Write pin number to index	>o 0x62 0x00
4	Wait OBF set		x
5	Read 0x62 port	If index setup successfully, EC will return pin number. If fail, EC will return 0xFF	x
6	Wait IBF clear		x
7	Write 0x11 to 0x66	Send read GPIO status command	>o 0x66 0x11
8	Wait OBF set		x
9	Read 0x62 port	EC will return pin status according pin number which you set in index. 1-GPIO is high. 0-GPIO is low. 0xFF-fail.	>i 0x62

Write DIO command description:

Sequence to Write DIO:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x10 to 0x66	Send GPIO index command	>o 0x66 0x10
2	Wait IBF clear		x
3	Write PIN number to 0x62	Write pin number to index	>o 0x62 0x04
4	Wait OBF set		x
5	Read 0x62 port	If index setup successfully, EC will return pin number. If fail, EC will return 0xFF	x
6	Wait IBF clear		x
7	Write 0x12 to 0x66	Send write GPIO status command	>o 0x66 0x12
8	Wait IBF clear		x
9	Write pin status to 0x62 port	Write 0x01, GPIO pin will be set high. Write 0x00, GPIO pin will be set low.	>o 0x62 0x01 (set to high)

APPENDIX D: WI-FI & 3G LED

Command register and address description:

Command for light sensor:

Command	Description
0xF0	Write
0xF1	Read

Data for Wi-Fi & 3G LED:

Command	Description
Bit0	Wi-Fi LED Enable or disable; 0x01 to Enable, 0x00 to Disable
Bit1	3G LED Enable or disable; 0x01 to Enable, 0x00 to Disable

Read description:

Sequence to read light sensor:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x80 to 0x66	Send read command	>o 0x66 0xF1
2	Wait OBF set		x
3	Read 0x62 port	data	>i 0x62

Write description:

Step	Action	Description	RW sample code command
0	Wait IBF clear		x
1	Write 0x81 to 0x66	Send write command	>o 0x66 0xF0
2	Wait IBF clear		x
3	Write ram address to 0x62 port	Send control Data 0x01 to Enable LED	>o 0x62 0x01