



NEXCOM International Co., Ltd.

IoT Automation Solutions

Fan-less Computer

NISE 301

User Manual

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PREFACE

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Disclaimer

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Acknowledgements

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Regulatory Compliance Statements

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

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

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

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

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

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

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force 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.
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.

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Package Contents

Before continuing, verify that the NISE 301 package that you received is complete. Your package should have all the items listed in the following table.

Item	Name	Description	Qty
1	NISE 301 ASSY		1
2	Terminal Blocks 2P Phoenix Contact:1803578	3.81mm Male DIP Green	1
3	(T)Terminal Blocks 3P Phoenix Contact:1777992	5.08mm Male DIP Green	1
4	Round Head Screw LONG FEI	P4x6mm ISO/SW8x0.8 NIGP	4
5	Flat Head Screw LONG FEI:F3x5 Nylok NI+Heat Treatment	F3x5 Nylok NI+Heat Treatment	4
6	Round Head Screw LONG FEI:P2x3 ISO+Nylon	P2x3 NI Nylok	4
7	Rear Wall Mount Bracket for NISE 301 VER:A CHYUAN-JYH	75.5x32.2x6mm SPCC t=1.2mm NI	2
8	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
9	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
10	(N)NISE 301 Quick Reference Guide VER:A SIZE:A4	KRAMER	1
11	(N)NISE 301 DVD Driver VER:1.0	JCL	1

Ordering Information

The following information below provides ordering information for NISE 301.

- **Barebone**

NISE 301 System (P/N: 10J00030100X0)

- **24V, 60W AC to DC power adapter w/o power core (P/N: TBD)**

Optional Fieldbus Kit

88J50090E05X0	FBI 90E-DNM KIT (w/15cm Cable)	DeviceNet Master Module Kit
88J50090E06X0	FBI 90E-ECM KIT (w/15cm Cable)	EtherCAT Master Module Kit
88J50090E07X0	FBI 90E-EP KIT (w/15cm Cable)	EtherNet/IP Master Module Kit
88J50090E08X0	FBI 90E-PBM KIT (w/15cm Cable)	PROFIBUS Master Module Kit
88J50090E09X0	FBI 90E-PNM KIT (w/15cm Cable)	PROFINET Master Module Kit
88J50090E14X0	FBI 90E-S3M KIT (w/15cm Cable)	SERCOSIII Master Module Kit
88J50090E16X0	FBI 90E-COM KIT (w/15cm Cable)	CANopen Master Module Kit

Optional Module Kit

88J00030110X0	NISE 301 3.5G Module Kit TELIT: HE910-G	5 Bands UMTS / HSPA w/ GPS and voice data
88J00030100X0	NISE 301 Wi-Fi Module Kit Intel: 7260.HMWWB.R	Dual Band Wireless-AC 7260, 2x2 AC+BT,HMC
88J00030101X0	NISE 301 Wi-Fi Module Kit Intel: 7260.HMWBWNB.R	WLAN+Bluetooth Combo Module
88JK0ECOM02X0	NISKECOM3 Universal Kit (w/15cm DB26 cable)	Mini-PCIe to 4xCOM Module w/Isolation RS232/422/485 Auto Flow Control w/Universal Bracket
88JK0ECOM03X0	NISKECOM3 Universal Kit (w/25cm DB26 cable)	Mini-PCIe to 4xCOM Module w/Isolation RS232/422/485 Auto Flow Control w/Universal Bracket
88JK0ECOM06X0	NISKECOM4 Universal Kit (w/15cm DB26 cable)	Mini-PCIe to 4 PORT RS232 Module w/Universal Bracket

CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- Onboard Intel® Atom™ processor E3845 quad core, 1.91GHz
- 2x Mini-PCIe sockets, 2x COM port expansions
- 3x USB 2.0, 1x CFast (SATA 2.0), 1x 2.5" HDD (SATA 2.0)
- Wi-Fi/GSM
- VGA/DVI-D
- External RTC Battery Holder
- DC Input 24V +/- 20%

Hardware Specifications

CPU Support

- Onboard Intel® Atom™ processor E3845 quad core, 1.91GHz

Main Memory

- 1x DDR3L SO-DIMM socket, support up to 4GB with un-buffered and non-ECC

Display Option

- Dual independent display
 - DVI-D + VGA

Front I/O Status LEDs

- 1x Power Status/1x HDD Access LEDs
- 2x LAN Status/1x CFast LEDs
- 4x GPO Status/1x Battery Low LEDs

Front I/O Interface

- 1x ATX power on/off switch
- 1x VGA, 1x DVI-D
- 3x USB 2.0 ports (500mA per each)
- 2x Intel® GbE LAN ports (I210AT); support WoL, Teaming and PXE
- 2x Serial ports (2x RS232/422/485 with auto flow control)
- 2x Antenna holes for Wi-Fi/GSM
- 1x External CFast socket
- 1x SIM card holder
- 1x External RTC Li-ion battery holder

Front Expansion Slot

- 2x Mini-PCIe expansion slots
 - Optional PROFIBUS, PROFINET, DeviceNet, EtherCAT, EtherNet/IP master/slave module
 - Optional GbE LAN, Wi-Fi, 3.5G module
 - Optional RS232/422/485 module

Storage Device

- 1x CFast (SATA 2.0)
- 1x 2.5" HDD (SATA 2.0)

Power Requirement

- AT/ATX power mode (default with ATX power mode)
- Power input: Typical +24Vdc +/-20%
- Power adapter: Optional AC to DC power adapter (+24Vdc, 60W)

Dimensions

- 205mm (W) x 160mm (D) x 80mm (H) without wall-mount bracket

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: -20°C to 85°C
- Relative Humidity: 10% to 93% (non-condensing)
- Shock Protection:
 - HDD: 20G, half sine, 11ms, IEC60068-2-27
 - CFast: 50G, half sine, 11ms, IEC60068-2-27
- Vibration Protection w/ HDD Condition:
 - Random: 0.5Grms @ 5 ~ 500Hz, IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5 ~ 500Hz, IEC60068-2-6

Certifications

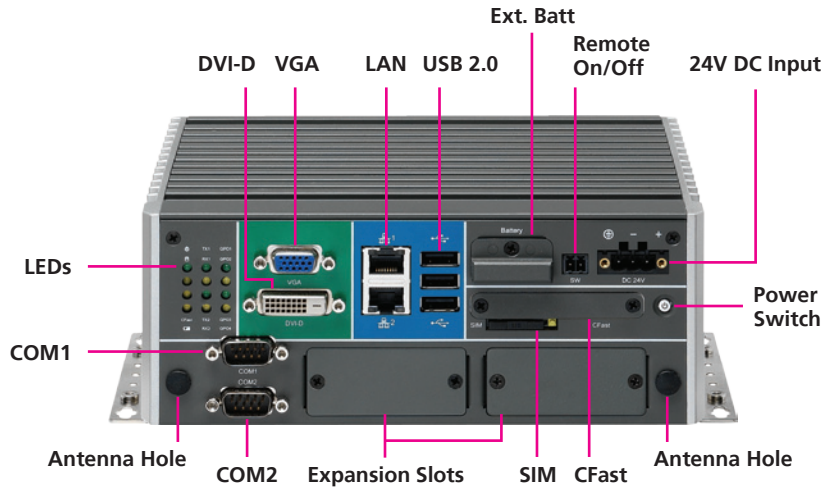
- CE Class A
- FCC Class A
- LVD

OS Support List

- Windows 7 32-bit and 64-bit
- Windows 8.1 32-bit and 64-bit

Knowing Your NISE 301

Front View



Rear View



LEDs

LEDs for the power, hard drive, CFast, battery, COM1/2 and GPO activity.

VGA and DVI-D Ports

Used to connect an analog VGA monitor and digital LCD panel.

LAN

2 Intel GbE LAN ports to connect the system to a local area network

USB 2.0

Three USB 2.0 ports to connect the system with USB 2.0 devices.

External Battery Holder

Used to hold an external battery.

Remote On/Off Switch

Used to connect a remote to power on/off the system.

24V DC Input

Used to plug a DC power cord.

Power Switch

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

COM1 and COM2

Two RS232/422/485 DB9 serial ports with auto flow control.

SIM and CFast Slots

Used to install a SIM card and CFast card.

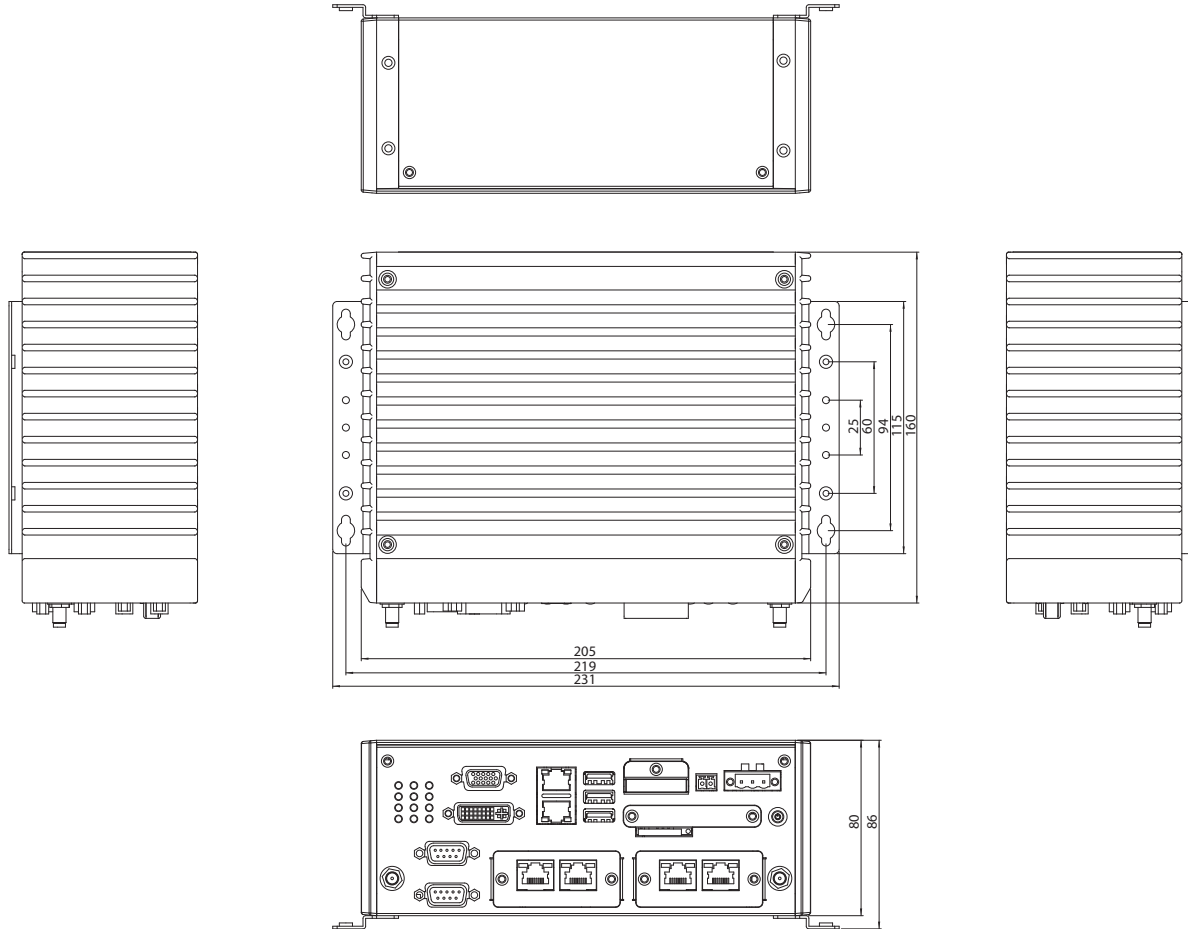
Expansion Slots

Expansions for optional add-on fieldbus, GbE LAN, COM and Wi-Fi/3G modules.

Antenna Hole

Used to connect an external antenna for Wi-Fi module.

Mechanical Dimensions



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 301 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:

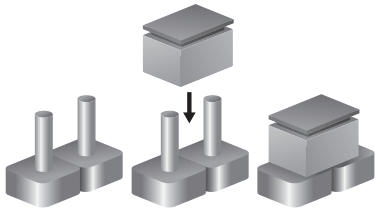
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

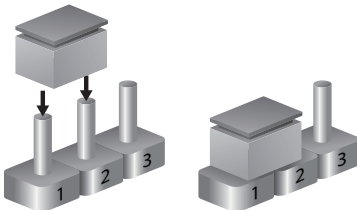
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



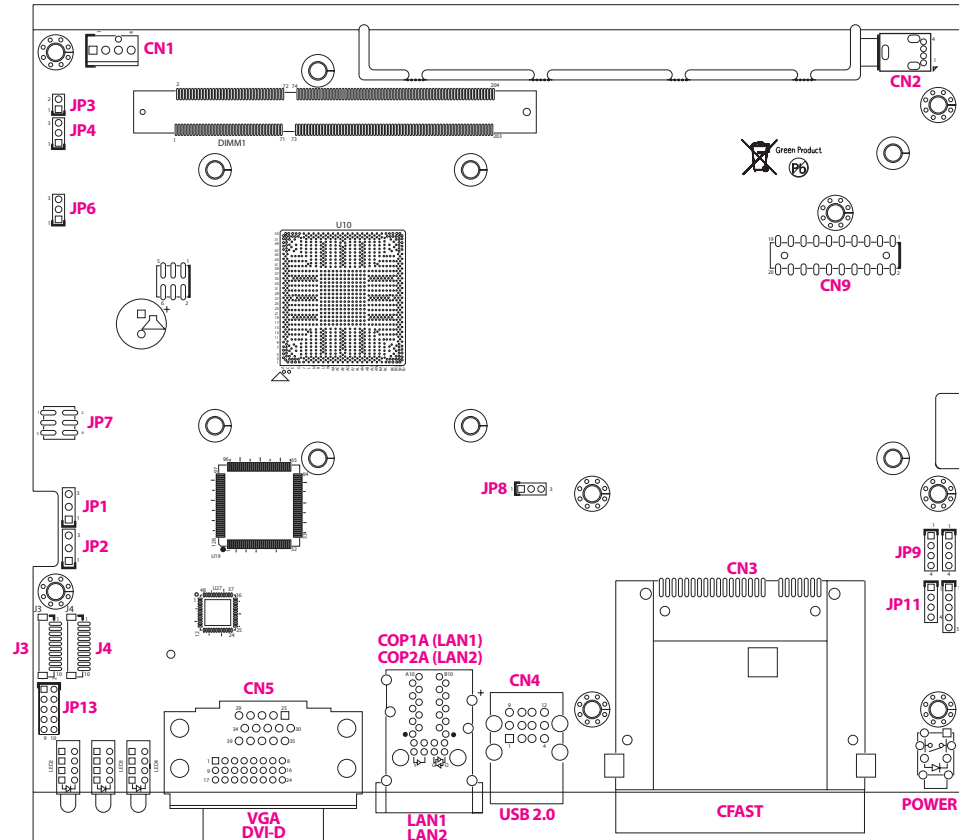
Three-Pin Jumpers: Pins 1 and 2 are Short



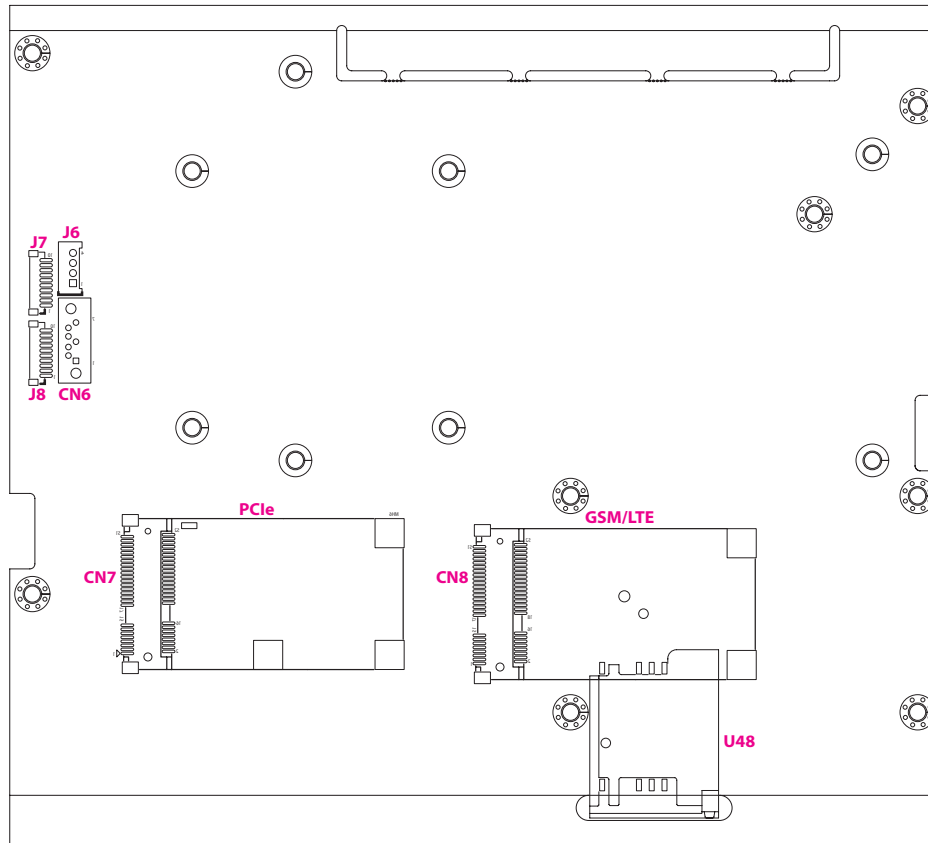
Locations of the Jumpers and Connectors for NISB 301

The figures below are the top and bottom views of the NISB 301 main board used in NISE 301. It shows the locations of the jumpers and connectors.

Top View



Bottom View



Jumpers

AT/ATX Power Type Select

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP4



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

RTC Clear Select

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP1



Pin	Function
1-2	Normal
2-3	RTC Clear

RTC Clear Select

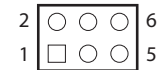
Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP2



Pin	Function
1-2	Normal
2-3	RTC Clear

COM1 RI# Pin Power Select

Connector type: 2x3 6-pin header, 2.0mm pitch
Connector location: JP7



Pin	Definition
1-2	RI
3-4	5V
5-6	12V

GSM/Dongle Switch Select

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP8



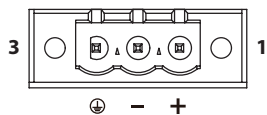
Pin	Function
1	3VSB_MINI2
2	USB_SEL
3	GND

Connector Pin Definitions

External I/O Interfaces - Front Panel

24V DC Power Input

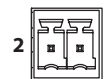
Connector type: Phoenix Contact 1x3 3-pin terminal block



Pin	Definition
1	VIN_VCC
2	VIN_VSS
3	Chassis_GND

Remote Power On/Off Switch

Connector type: 1x2 2-pin terminal block

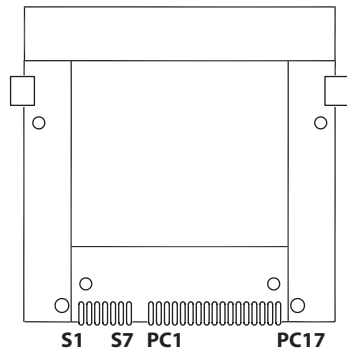


Pin	Definition
1	PBT_PU
2	GND

CFast

Connector type: CFast Socket

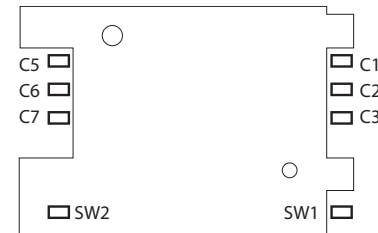
Connector location: CN3



Pin	Definition	Pin	Definition
S1	GND	PC6	NC
S2	SATA_TXP2	PC7	GND
S3	SATA_TXN2	PC8	TEST POINT
S4	GND	PC9	NC
S5	SATA_RXN2	PC10	NC
S6	SATA_RXP2	PC11	NC
S7	GND	PC12	NC
PC1	GND	PC13	+3.3V
PC2	GND	PC14	+3.3V
PC3	NC	PC15	GND
PC4	NC	PC16	GND
PC5	NC	PC17	NC

SIM Card Socket

Connector location: U48

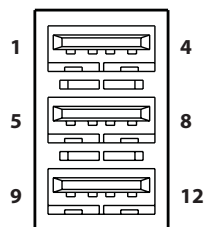


Pin	Definition	Pin	Definition
C1	UIM_PWR	C2	UIM_RESET
C3	UIM_CLK	C5	GND
C6	UIM_VPP	C7	UIM_DATA

USB 2.0 Ports

Connector type: Triple USB 2.0 ports, Type A

Connector location: CN4

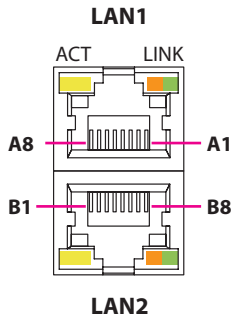


Pin	Definition	Pin	Definition
1	+5V	2	Data 0-
3	Data 0+	4	GND
5	+5V	6	Data 1-
7	Data 1+	8	GND
9	+5V	10	Data 2-
11	Data 2+	12	GND

LAN1 and LAN2 Ports

Connector type: RJ45 port with LEDs

Connector location: COP1A (LAN1) and COP1B (LAN2)



Act	Status
Flashing Yellow	Data activity
Off	No activity

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

LAN1

Pin	Definition	Pin	Definition
A1	LAN1_MDI0P	A2	LAN1_MDI0N
A3	LAN1_MDI1P	A4	LAN1_MDI1N
A5	LAN1_MDI2P	A6	LAN1_MDI2N
A7	LAN1_MDI3P	A8	LAN1_MDI3N
A9	V1P5_LAN	A10	GND
A11	V3P3_LAN	A12	LAN_LED_ACT#
A13	LAN_LED_LINK#	A14	LAN_LED_LINK1G#

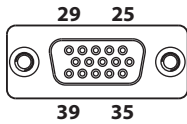
LAN2

Pin	Definition	Pin	Definition
B1	LAN2_MDI0P	B2	LAN2_MDI0N
B3	LAN2_MDI1P	B4	LAN2_MDI1N
B5	LAN2_MDI2P	B6	LAN2_MDI2N
B7	LAN2_MDI3P	B8	LAN2_MDI3N
B9	V1P5_LAN2	B10	GND
B11	V3P3_LAN2	B12	LAN2_LED_ACT#
B13	LAN2_LED_LINK#	B14	LAN2_LED_LINK1G#

VGA

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

Connector location: CN5B

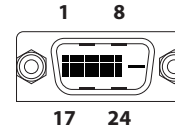


Pin	Definition	Pin	Definition
25	RED	26	GREEN
27	BLUE	28	NC
29	GND	30	VGADET
31	GND	32	GND
33	+5V	34	GND
35	NC	36	DDCDATA_VGA
37	HSYNC_VGA	38	VSYNC_VGA
39	DDCCLK_VGA		

DVI-D Connector

Connector type: 24-pin D-Sub, 2.0mm-M-180 (DVI)

Connector location: CN5A



Pin	Definition	Pin	Definition
1	TX2-	2	TX2+
3	GND	4	NC
5	NC	6	DDC_CLK
7	DDC_DATA	8	NC
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	NC
21	NC	22	NC
23	TXCLK+	24	TXCLK-

COM 1

Connector type: DB-9 port, 9-pin D-Sub
 1x10 20-pin header, 1.0mm pitch
 Connector location: J7



Pin	Definition	Pin	Definition
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	GND

COM 2

Connector type: DB-9 port, 9-pin D-Sub
 1x10 20-pin header, 1.0mm pitch
 Connector location: J8



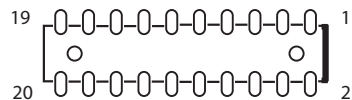
Pin	Definition	Pin	Definition
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RI2	10	GND

Internal Connectors

ATX Power Connector

Connector type: 2x10 20-pin header, 2.54mm pitch

Connector location: CN9



Pin	Definition	Pin	Definition
1	12VSB	2	12VSB
3	12VSB	4	12VSB
5	12VSB	6	12VSB
7	12VSB	8	12VSB
9	GND	10	GND
11	GND	12	GND
13	GND	14	GND
15	GND	16	GND
17	GND	18	5VSB
19	VBAT	20	PBT_PU_I

System Reset

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

Connector location: JP3



Pin	Definition
1	Reset
2	GND

SMBus

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

Connector location: JP6

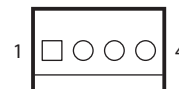


Pin	Definition
1	SMB_CLK
2	SMB_DATA
3	GND

System Fan Connector

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

Connector location: CN1

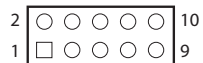


Pin	Definition
1	GND
2	12V
3	FANIN
4	FANOUT

GPIO

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

Connector location: JP13



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

COM Port 3 (RS232)

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

Connector location: J3



Pin	Definition	Pin	Definition
1	DCD3	2	RXD3
3	TXD3	4	DTR3
5	GND	6	DSR3
7	RTS3	8	CTS3
9	RI3	10	GND

COM Port 4 (RS232)

Connector type: 1x10 10-pin header, 1.0mm pitch
 Connector location: J4



Pin	Definition	Pin	Definition
1	DCD4	2	RXD4
3	TXD4	4	DTR4
5	GND	6	DSR4
7	RTS4	8	CTS4
9	RI4	10	GND

Mic-in

Connector type: 1x4 4-pin header, 2.0mm pitch
 Connector location: JP10



Pin	Definition
1	MIC1_L
2	GND
3	MIC_JD
4	MIC1_R

Line-out

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

Connector location: JP11



Pin	Definition
1	LOUT_L
2	GND
3	LOUT_JD
4	LOUT_R

Line-in

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

Connector location: JP9



Pin	Definition
1	LIN_L3
2	GND
3	LIN_JD
4	LIN_R3

Speaker-out

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

Connector location: JP12

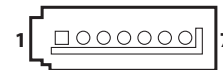


Pin	Definition	Pin	Definition
1	FRONT_L+	2	FRONT_L-
3	GND	4	FRONT_R+
5	FRONT_R-		

SATA Connector

Connector type: 1x7 7-pin header, 1.27mm pitch

Connector location: CN6

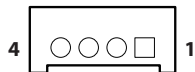


Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP1
3	SATA_TXN1	4	GND
5	SATA_RXN1	6	SATA_RXP1
7	GND		

SATA Power Connector

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

Connector location: J6

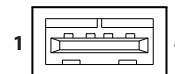


Pin	Definition
1	12V
2	GND
3	GND
4	VCC5

USB Connector (Dongle)

Connector type: USB port

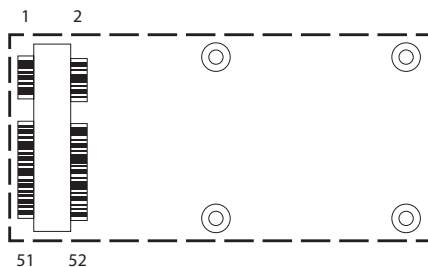
Connector location: CN2



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

Mini-PCIe Connector (Wi-Fi)

Connector location: CN7

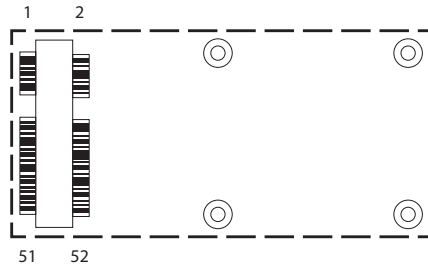


Pin	Definition	Pin	Definition
1	WAKE#	2	+3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	NC
9	GND	10	NC
11	REF CLK-	12	NC
13	REF CLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	Disable#
21	GND	22	PERST#
23	PCIERX1N	24	+3VSB
25	PCIERX1P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	+1.5V
29	GND	30	SMBCLK
31	PCIETX-	32	SMBDATA
33	PCIETX+	34	GND
35	GND	36	USB_ON
37	GND	38	USB_OP
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

Mini-PCIe Connector (3.5G/LTE)

Connector location: CN8



Pin	Definition	Pin	Definition
1	WAKE#	2	+3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REF CLK-	12	UIM_CLK
13	REF CLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	Disable#
21	GND	22	PERST#
23	PCIERX1N	24	+3VSB
25	PCIERX1P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	+1.5V
29	GND	30	SMBCLK
31	PCIETX-	32	SMBDATA
33	PCIETX+	34	GND
35	GND	36	USB_1N
37	GND	38	USB_1P
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

CHAPTER 3: SYSTEM SETUP

Removing the Top 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. Locate the 4 screws on the top cover.



2. Remove the screws then lift up the cover and remove it from the chassis.

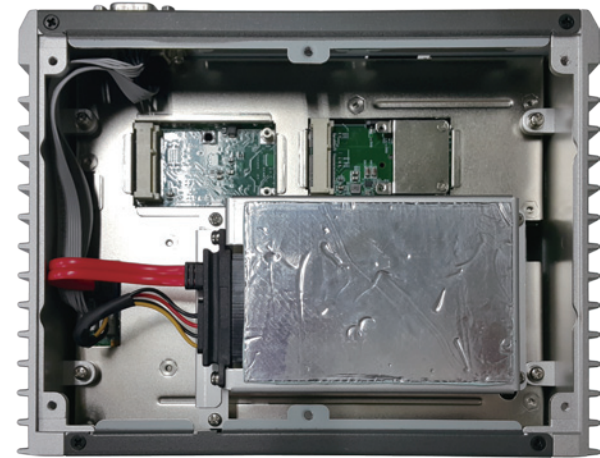


Removing the Bottom Cover

1. Remove the 6 screws on the bottom cover.



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



Installing a SO-DIMM Memory Module



Remove the top cover before installing a SO-DIMM module.

1. Locate the SO-DIMM socket and release the locks.



SO-DIMM
socket

2. Insert the SO-DIMM module into the socket and apply even pressure to both ends of the module until it is locked.



Installing a 3G/GSM Module

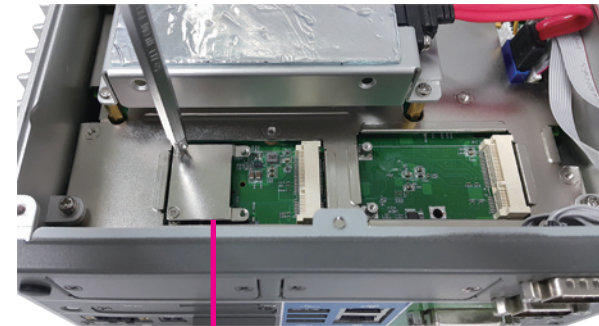
1. Locate the antenna hole cover on the front panel and remove it.



2. Install the antenna jack through the hole, and fix the cable with rings.



3. Locate the Wi-Fi/3G slot and remove the half-size mini-PCIe bracket.



Half-size
Mini-PCIe bracket

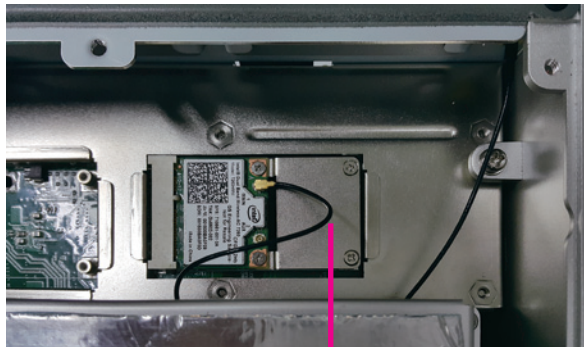
4. Secure the mini-PCIe bracket to the 3G/Wi-Fi module with screws.



6. Install the antenna. (3G/GSM antenna is shown as example below).



5. Insert the 3G/Wi-Fi module into the slot and secure it with screws, then attach the RF antenna cable onto the module.



RF antenna cable

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.

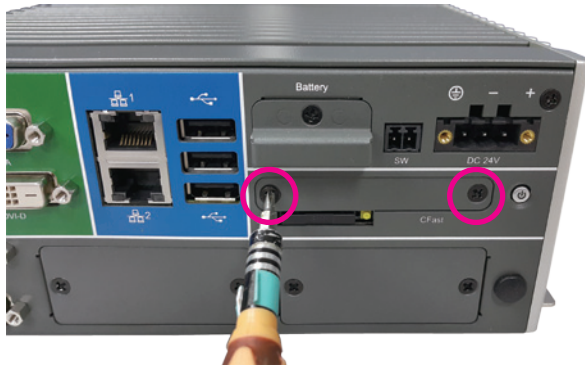


3. Insert the SIM card holder back to its original position.



Installing a CFast Card

1. Locate the CFast socket at the front and remove its cover.

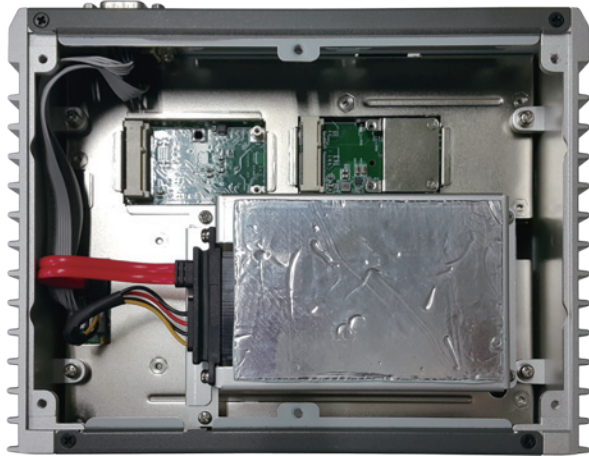


2. Insert the CFast card into the slot, then secure the cover back to its original location.

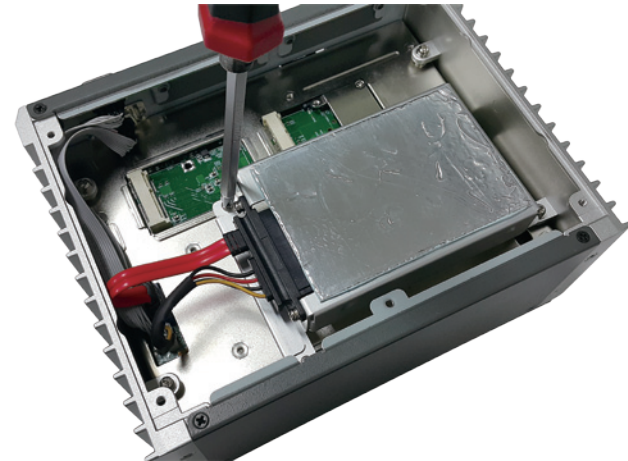


Installing a SATA Hard Drive

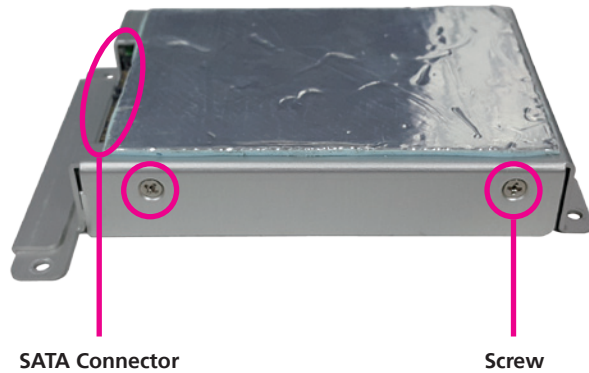
1. Remove the bottom cover of the chassis.



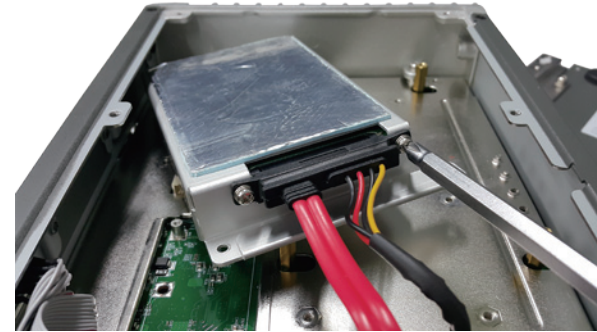
2. Unscrew the HDD bracket and lift it up.



3. Unscrew the SATA connector and place the HDD into the bracket with the connector side facing towards the opening. Once in place, secure the HDD to the bracket with screws.



4. Fix the SATA connector to the HDD and secure the HDD bracket back to its original location.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 301. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

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

About BIOS Setup

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

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

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

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

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

When to Configure the BIOS

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

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

Default Configuration


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

Entering Setup












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

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

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

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.

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.

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	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				
Compliance	N301-005 x64				
Project Version	07/07/2014 18:10:15				
Build Date and Time					
CPU Configuration		901		←→: Select Screen	
Microcode Patch			↑↓: Select Item		
Memory Information		8192 MB		Enter: Select	
Total Memory			+/-: Change Opt.		
GOP Information		[N/A]		F1: General Help	
Intel(R) GOP Driver			F2: Previous Values		
System Date	[Sat 03/28/2015]		F3: Optimized Defaults		
System Time	[16:37:59]		F4: Save & Exit		
				ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.					

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.

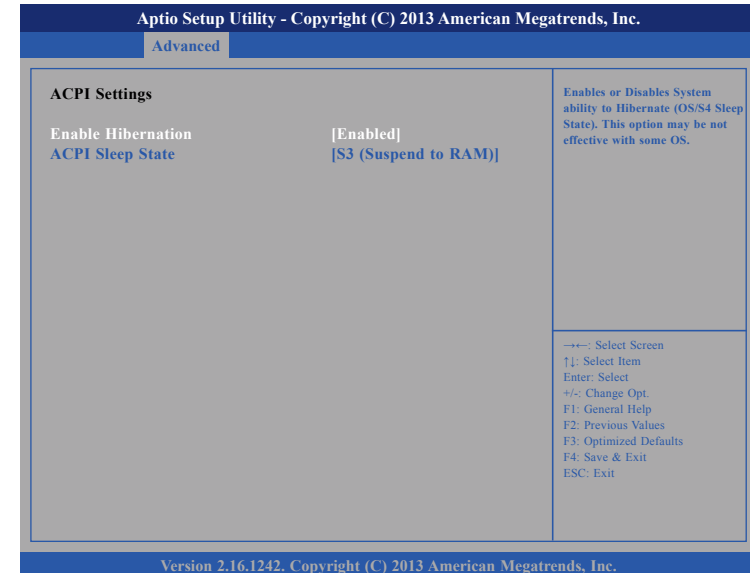


Setting incorrect field values may cause the system to malfunction.



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).

IT8786E Super IO Configuration

This section is used to configure the serial ports.

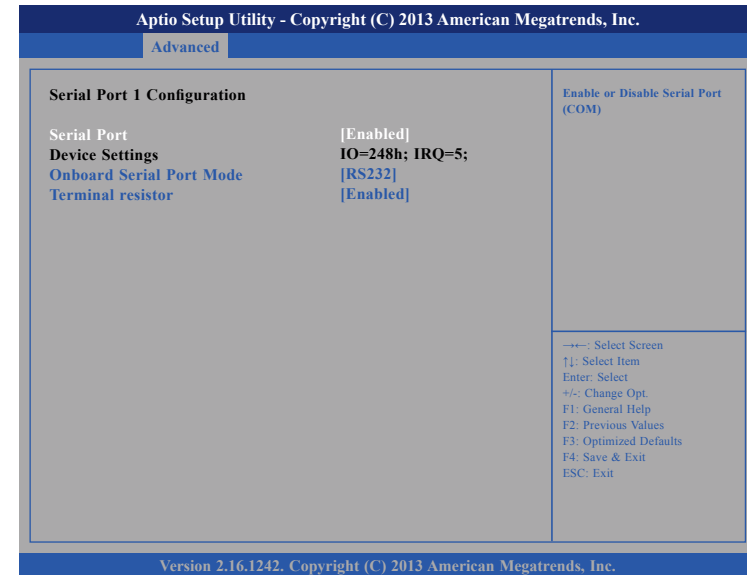


Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

Enables or disables the serial port.

Onboard Serial Port Mode

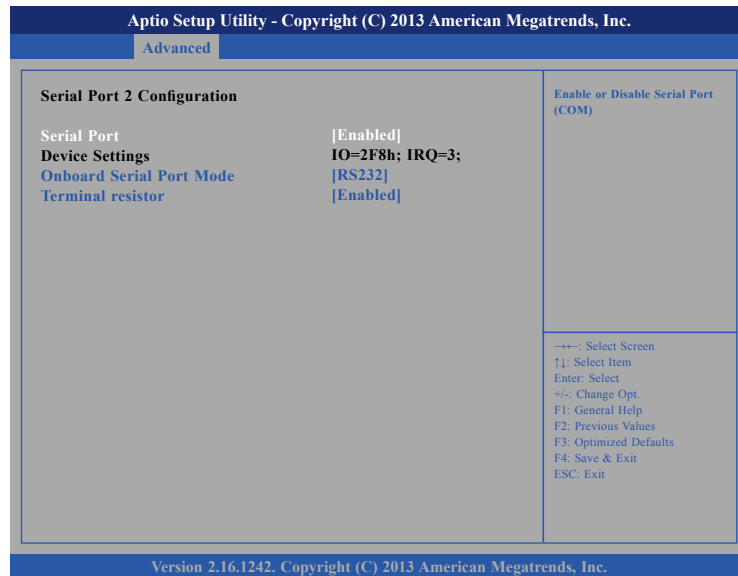
Select this to change the serial port mode to RS232, RS422 or RS485.

Terminal Resistor

Enables or disables the terminal resistor.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

Enables or disables the serial port.

Onboard Serial Port Mode

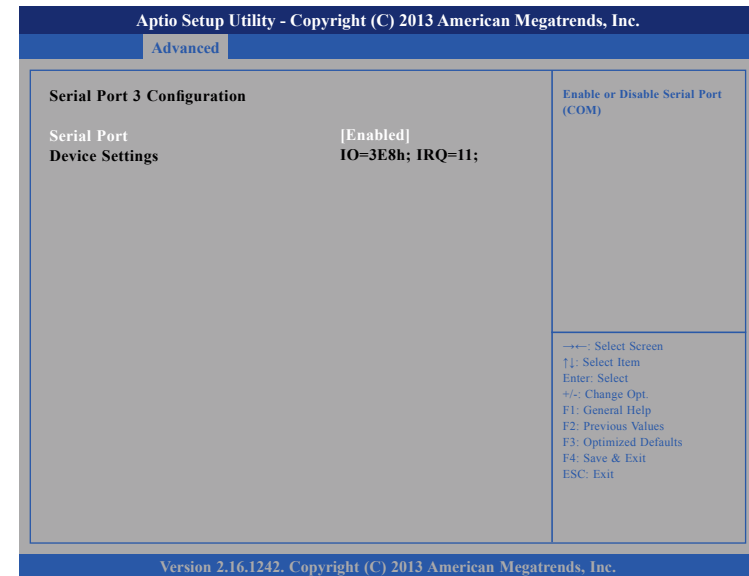
Select this to change the serial port mode to RS232, RS422 or RS485.

Terminal Resistor

Enables or disables the terminal resistor.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

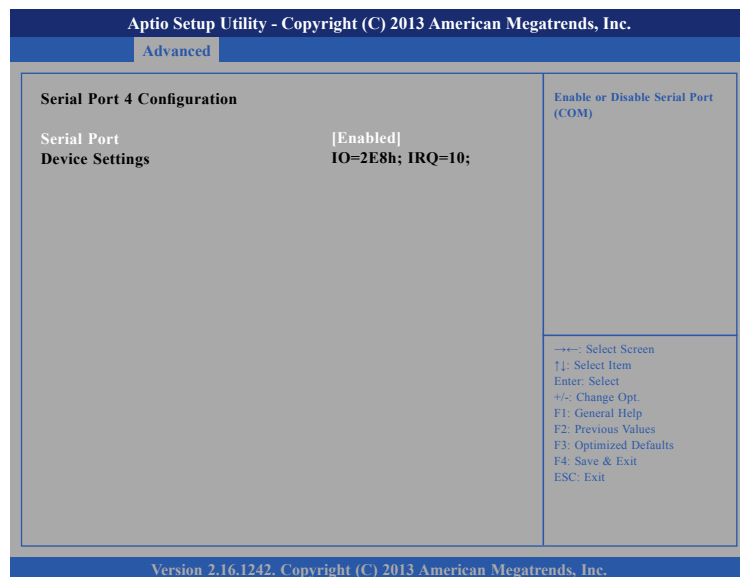
Enables or disables the serial port.

Terminal Resistor

Enables or disables the terminal resistor.

Serial Port 4 Configuration

This section is used to configure serial port 4.



Serial Port

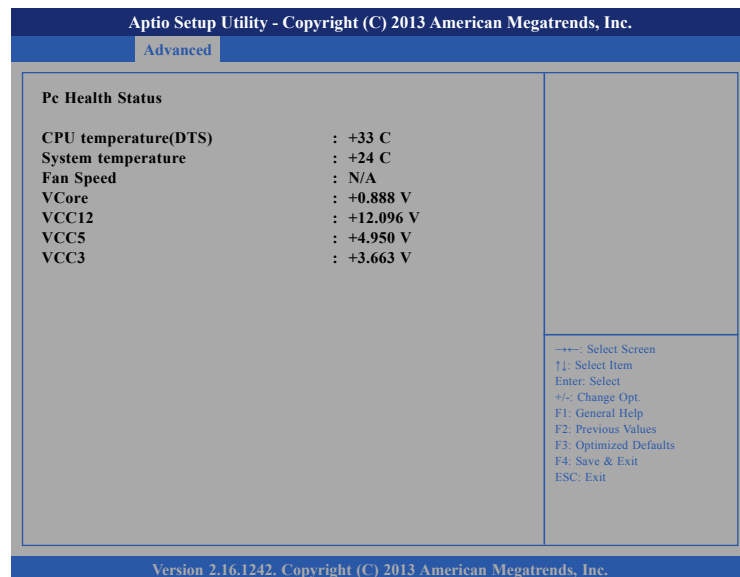
Enables or disables the serial port.

Terminal Resistor

Enables or disables the terminal resistor.

H/W Monitor

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



VCore

Detects and displays the Vcore CPU voltage.

VCC12

Detects and displays 12V voltage.

VCC5

Detects and displays 5V voltage.

VCC3

Detects and displays 3.3V voltage.

CPU Temperature

Detects and displays the current CPU temperature.

System Temperature

Detects and displays the current system temperature.

Fan Speed

Detects and displays the fan speed.

CPU Configuration

This section is used to configure the CPU.



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.

Active Processor 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.

PPM Configuration

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

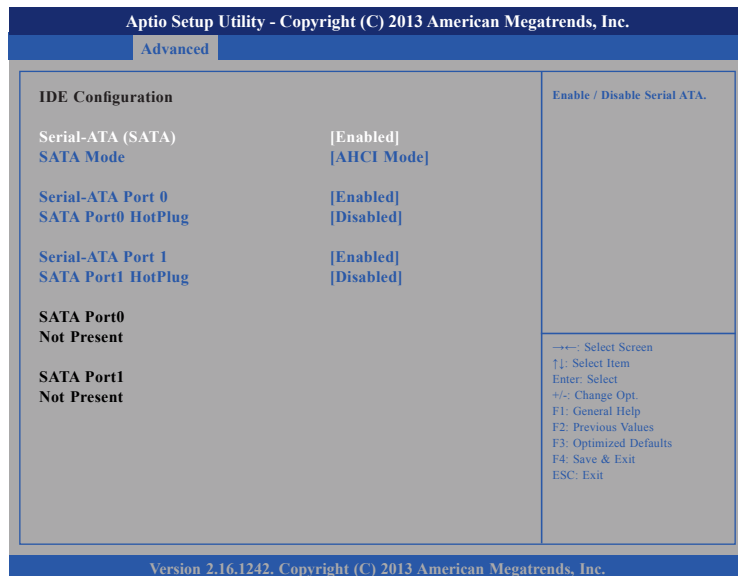


EIST

Enables or disables Intel® SpeedStep.

IDE Configuration

This section is used to configure the SATA drives.



Serial-ATA (SATA)

Enables or disables SATA device.

Serial-ATA Port 0 and Serial-ATA Port 1

Enables or disables SATA port 0 and SATA port 1.

SATA Port1 Hotplug and SATA Port2 Hotplug

Enables or disables hotplug support on SATA port 1 and SATA port 2.

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.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.

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

Disable Keeps USB devices available only for EFI applications.

USB3.0 Support

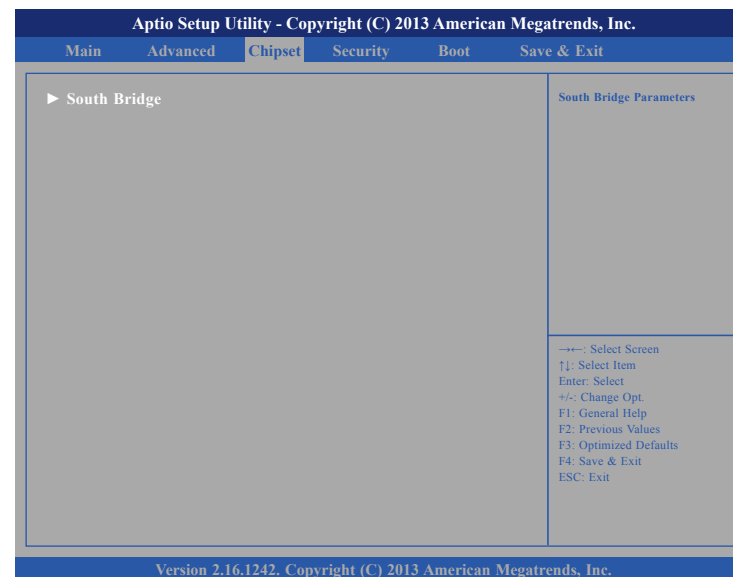
Enables or disables USB 3.0 controller support.

XHCI Hand-off and EHCI Hand-off

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

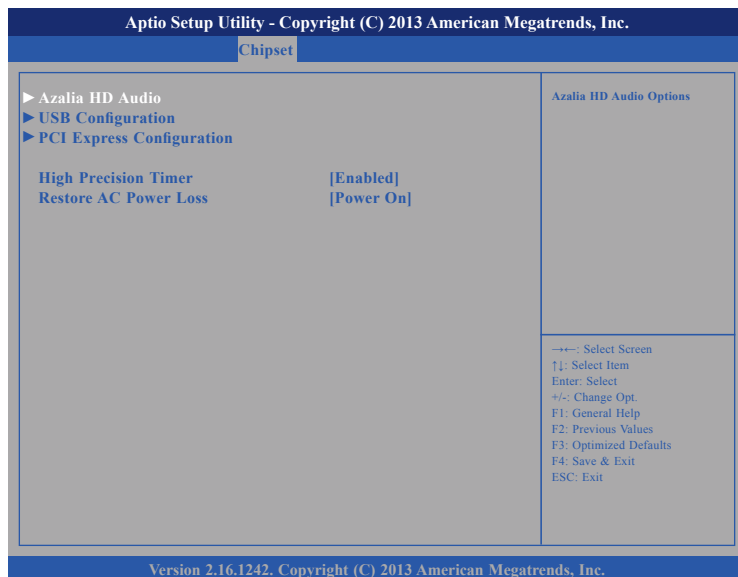
Chipset

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

This section is used to configure the south bridge features.



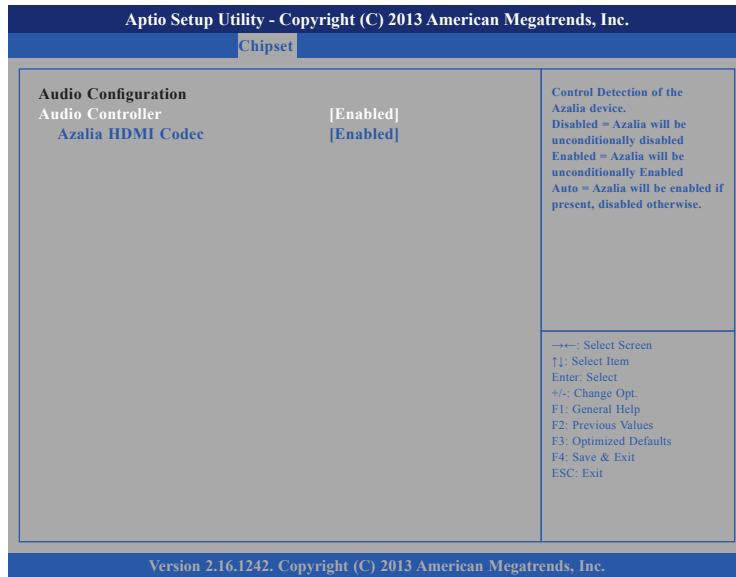
High Precision Timer

Enables or disables the high precision event timer.

Restore AC Power Loss

- | | |
|------------|--|
| Power Off | When power returns after an AC power failure, the system's power is off. You must press the power button to power-on the system. |
| Power On | When power returns after an AC power failure, the system will automatically power-on. |
| Last State | When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns. |

Azalia HD Audio



Azalia

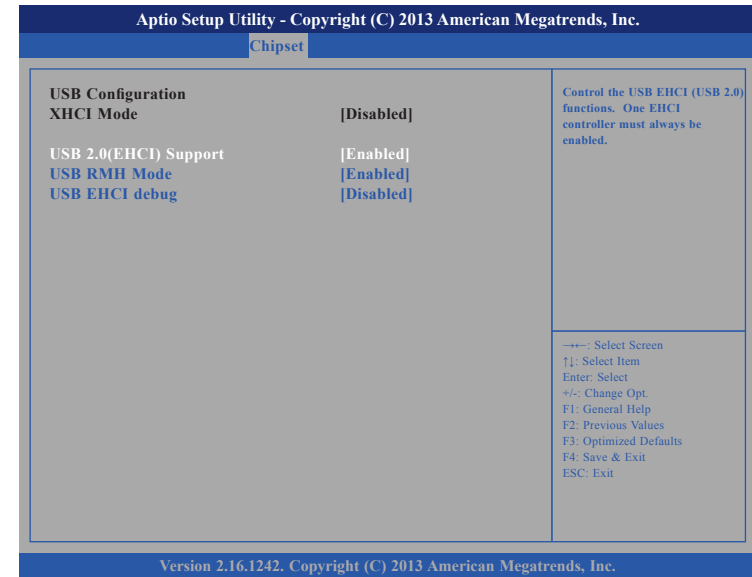
Control detection of the Azalia device.

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

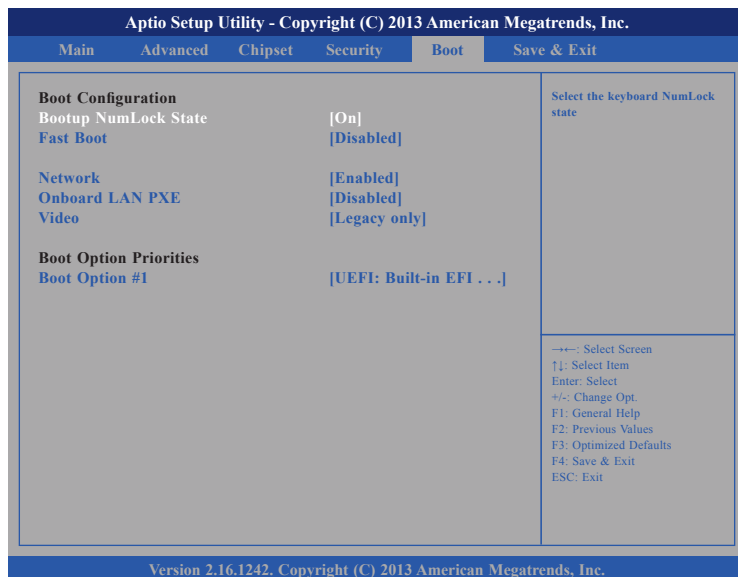
Enables or disables PCH USB rate matching hubs mode.

USB EHCI Debug

Enables or disables PCH EHCI debug capability.

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.

Network

Controls the execution of UEFI and legacy PXE OpROM.

Onboard LAN PXE

Options to disable onboard LAN PXE ROM or enable it for LAN1 or LAN2 .

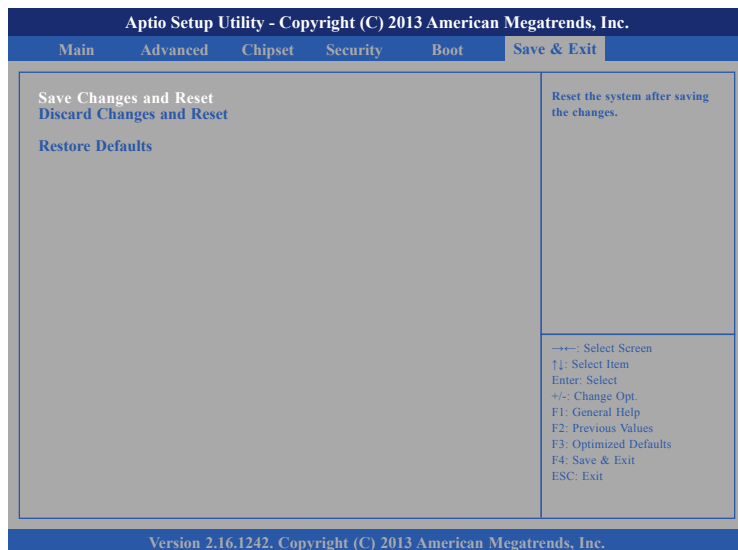
Video

Controls the execution of UEFI and legacy video OpROM.

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.

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

Test Configuration

System Configuration	Sys#1
Chassis	Chassis NISE 301 VER:A
CPU	Intel® Atom™ processor E3845 quad core, 1.91GHz
Memory	Transcend 8G DDR3 SO-DIMM (TS512MSK64W6H)
CPU board	N/A
Mother board	NISB301 REV:B
Power board	NISKIO6 REV:B
HDD	TS64GSSD630I 64GB MLC SSD
FDD	N/A
CD-ROM	N/A
CFast	ADATA CFast 32GB (ISC3E-032GM)
Power Supply	Laboratory DC Power Supply GWINSTEK GPC-60300
Add-on Card	NISK300 LAN Kit
CPU Cooler	NISE 301 CPU Heatsink SHYUNG SHUHN
System FAN	N/A
Keyboard	Microsoft Wired Keyboard 600
Mouse	Microsoft Basic Optical Mouse

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

PROVA CM-07 AC/DC CLAMP METER

Device Under Test

DUT: sys#1/

Test Procedure

1. Power up the DUT, boot into Windows 8 x32 Pro.
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.

Test Data

	Sys #1
	+24V
Full-Loading Mode	1.12A
Total	26.88W
Standby S3 Mode	0.47A
Total	11.28W

APPENDIX B: GPIO PROGRAMMING GUIDE

GPIO (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPIO pins in the NISE 301 series. The pin definition is shown in the following table:

Pin	GPIO Mode	PowerOn Default	Address	Pin	GPIO Mode	PowerOn Default	Address
1	VCC	-	-	2	GND	-	-
3	GPO0	Low	A07h (Bit4)	4	GPIO	High	A07h (Bit0)
5	GPO1	Low	A07h (Bit5)	6	GP11	High	A07h (Bit1)
7	GPO2	Low	A07h (Bit6)	8	GP12	High	A07h (Bit2)
9	GPO3	Low	A07h (Bit7)	10	GP13	High	A07h (Bit3)

Control the GPO 0/1/2/3 level from I/O port A07h bit 4/5/6/7.
The bit is Set/Clear indicated output High/Low.

GPIO programming sample code

```
#define GPO0          (0x01 << 4)
#define GPO1          (0x01 << 5)
#define GPO2          (0x01 << 6)
#define GPO3          (0x01 << 7)

#define GPO0_HI       outportb(0xA07, GPO0)
#define GPO0_LO       outportb(0xA07, 0x00)
#define GPO1_HI       outportb(0xA07, GPO1)
#define GPO1_LO       outportb(0xA07, 0x00)
#define GPO2_HI       outportb(0xA07, GPO2)
#define GPO2_LO       outportb(0xA07, 0x00)
#define GPO3_HI       outportb(0xA07, GPO3)
#define GPO3_LO       outportb(0xA07, 0x00)

void main(void)
{
    GPO0_HI;
    GPO1_LO;
    GPO2_HI;
    GPO3_LO;
}
```


APPENDIX C: WATCHDOG TIMER SETTING

ITE8786 WatchDog Programming Guide

```
#define SUPERIO_PORT 0x2E
#define WDT_SET      0x72
#define WDT_VALUE    0x73

void main(void)
{
    # Enter SuperIO Configuration
    outputb(SUPERIO_PORT, 0x87);
    outputb(SUPERIO_PORT, 0x01);
    outputb(SUPERIO_PORT, 0x55);
    outputb(SUPERIO_PORT, 0x55);

    # Set LDN
    outputb(SUPERIO_PORT, 0x07);
    outputb(SUPERIO_PORT+1, 0x07);

    # Set WDT setting
    outputb(SUPERIO_PORT, WDT_SET);
    outputb(SUPERIO_PORT+1, 0x90);           # Use the second
                                           # Use the minute, change value to 0x10

    # Set WDT sec/min
    outputb(SUPERIO_PORT, WDT_VALUE);
    outputb(SUPERIO_PORT+1, 0x05);         #Set 5 seconds
}
```

APPENDIX D: LED PROGRAMMING GUIDE

LEDs are provided for custom system design. This appendix provides definitions and its default setting for the LEDs in the NISE 301 series. The LED definition is shown in the following table:

Pin	PowerOn Default	Address
LED1	High	A04h (Bit6)
LED2	High	A04h (Bit7)
LED3	High	A05h (Bit0)
LED4	High	A05h (Bit1)

Control the LED (LED1/ LED2/ LED3/ LED4) level from I/O port A04h bit (6/7) and I/O port A05h bit (0/1).
The bit is Set/Clear indicated output High/Low.