NEXCOM International Co., Ltd.

IoT Automation Solutions Business Group
Fan-less Computer
NISE 51/NISE 51-J3455/NISE 51-E3930
User Manual

www.nexcom.com

CONTENTS

Preface

Chapter 1: Product Introduction

Chapter 2: Jumpers and Connectors

Chapter 3: System Setup

Chapter 4: BIOS Setup

Appendix A: GPI/O Programming Guide.............68

Appendix B: Watchdog Timer Setting..................69

Appendix C: Power Consumption........................70

PREFACE

Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written consent from NEXCOM International Co., Ltd.

Disclaimer

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

Acknowledgements

NISE 51, NISE 51-J3455 and NISE 51-E3930 are trademarks of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class 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.

v NISE 51/NISE 51-J3455/NISE 51-E3930 User Manual

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.

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.

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.

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 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.

▪ This product is intended to be supplied by an approved power adapter, rated 12Vdc, 5A or 24Vdc, 2.5A minimum and Tma 55 degree Celsius. If further assistance is needed, please contact NEXCOM for further information.

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.

ATTENTION
IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

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. This equipment is not suitable for use in locations where children are likely to be present.

14. Ensure to connect the power cord to a socket-outlet with earthing connection.

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

16. 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.

17. Do not place heavy objects on the equipment.

18. 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.

19. 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.

Global Service Contact Information

Headquarters
NEXCOM International Co., Ltd.

9F, No. 920, Chung-Cheng Rd.,
Zhonghe District, New Taipei City, 23586,
Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
www.nexcom.com

Asia
Taiwan
NexAIoT Headquarters
Industry 4.0 and Cloud Services

13F, No.916, Zhongzheng Rd.,
Zhonghe District, New Taipei City,
23586, Taiwan, R.O.C.
Tel: +886-2-8226-7796
Fax: +886-2-8226-7926
Email: sales@nexaiot.com
www.nexaiot.com

NexAIoT Co., Ltd.
Taichung Office

16F, No.250, Sec. 2, Chongde Rd.,
Beitun District,
Taichung City, 406, Taiwan, R.O.C.
Tel: +886-4-2249-1179
Fax: +886-4-2249-1172
Email: sales@nexaiot.com
www.nexaiot.com

NexCOBOT Taiwan Co., Ltd.

13F, No.916, Chung-Cheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7926
Email: sales@nexcobot.com
www.nexcobot.com

GreenBase Technology Corp.

13F, No.922, Chung-Cheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7900
Email: sales@nexcom.com.tw
www.nexcom.com.tw

EMBUX Technology Co., Ltd.

13F, No.916, Chung-Cheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: sales@nexcom.com.tw
www.nexcom.com.tw

TMR Technology Corp.

13F, No.916, Chung-Cheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: sales@nexcom.com.tw
www.nexcom.com.tw

China
NEXSEC Incorporated

5F, No.4, No.7 Fengxian Middle Rd.,
(Beike Industrial Park), Haidian District,
Beijing, 100094, China
Tel: +86-10-5704-2680
Fax: +86-10-5704-2681
Email: marketing@nexsec.cn
www.nexsec.cn

NEXCOM Shanghai

No.4, 16 Building,
Shanghai OMNI Tech & Science Park
No. 1699, Douhui Rd.,
Shanghai, 201108, China
Tel: +86-21-5278-5868
Fax: +86-21-3251-6358
Email: sales@nexcom.cn
www.nexcom.cn

NEXCOM Surveillance Technology Corp.

5F, Building C, ZhenHan Industrial Zone,
GanKeng Community, Buji Street,
LongGang District,
ShenZhen, 518112, China
Tel: +86-755-8364-7768
Fax: +86-755-8364-7738
Email: steveyang@nexcom.com.tw
www.nexcom.cn

NEXCOM United System Service

Room 603/604, Huiyinmingzun Plaza Bldg. 1,
No. 609, Yunlin East Rd.,
Shanghai, 200062, China
Tel: +86-21-5278-5868
Fax: +86-21-3251-6358
Email: renwang@nexcom.com.tw
www.nexcom.cn

NEXGOL Chongqing

1F, Building B4, Electronic 2nd Area,
(Phoenix Lake Industrial Park), Yongchuan Dist.,
Chongqing City, 402160, China
Tel: +86-23-4960-9080
Fax: +86-23-4966-5855
Email: sales@nexgol.com.cn
www.nexcobot.com/NexGOL

NexCOBOT China

Room 501, Building 1, Haichuang Building,
No.7 Qingyi Road, Guicheng Street,
Nanhai District, Foshan City,
Guangdong Province, 528314, China
Tel: +86-757-8625-7118
Email: sales@nexcobot.com
www.nexcobot.com.cn

Beijing NexGemo Technology Co.,Ltd.

5F, Gemotech Building, No.1, Development Rd.,
Changping International Information Industry Base,
Changping District,
Beijing, 102206, China
Tel: +86-10-8190-9328
Fax: +86-10-8190-9456
Email: sales@gemotech.cn
www.nexgemo.cn

Japan
NEXCOM Japan

9F, Tamachi Hara Bldg.,
4-11-5, Shiba Minato-ku,
Tokyo, 108-0014, Japan
Tel: +81-3-5419-7830
Fax: +81-3-5419-7832
Email: sales@nexcom-jp.com
www.nexcom-jp.com

America
USA
NEXCOM USA

46665 Fremont Blvd.,
Fremont CA 94538, USA
Tel: +1-510-656-2248
Fax: +1-510-656-2158
Email: sales@nexcom.com
www.nexcomusa.com

Europe
United Kingdom
NEXCOM EUROPE

10 Vincent Avenue,
Crownhill Business Centre,
Milton Keynes, Buckinghamshire
MK8 0AB, United Kingdom
Tel: +44-1908-267121
Fax: +44-1908-262042
Email: sales.uk@nexcom.eu
www.nexcom.co.uk

Package Contents

Before continuing, verify that the package that you received is complete. Your NISE 51 package should have all the items listed in the following table.

Item	Part Number	Description	Qty
1	19J00005100X0	NISE 51 ASSY	1
2	4NCPM00302X00	Terminal Blocks 3P Phoenix Contact:1777992	1
3	50311F0215X00	I Head Screw Long Fei:I3x5ISO+NYLOK NIGP	2
4	50311F0295X00	Flat Head Screw Long Fei:F2x4 NYLOK NIGP	2
5	50311F0330X00	Round Head Screw Long Fei:P2x3 ISO+NYLON	2
6	5060900226X00	Mini PCIe Bracket CHYUAN-JYH	1
7	6012200052X00	PE Zipper Bag #8	1
8	6012200053X00	PE Zipper Bag #3	1
9	60177A0695X00	NISE 51 Quick Reference Guide VER:A SIZE:A4	1
10	602DCD1601X00	NISE 51 DVD Driver VER:1.0	1

Ordering Information

The following information below provides ordering information for NISE 51.

NISE 51 (P/N: 10J00005100X0)
- Intel® Celeron® processor N3350 Dual Core fanless system, with onboard 16GB eMMC

NISE 51-J3455 (P/N: 10J00005106X0)
- Intel® Celeron® processor J3455 Quad Core fanless system, with onboard 16GB eMMC

NISE 51-E3950 (P/N: 10J00005101X0, by request)
- Intel Atom® processor E3950 Quad Core fanless system, with onboard 16GB eMMC

- **24V, 60W AC/DC power adapter w/o power cord (P/N: 7400060054X00)**

CHAPTER 1: PRODUCT INTRODUCTION

Overview

Key Features

- Onboard Intel® Celeron® processor N3350 Dual Core, 2.4GHz

- 1 x DP display

- 2 x Intel® I211AT GbE LAN ports; support WoL, teaming and PXE

- 2 x USB 2.0

- 2 x USB 3.0

- 1 x mini-PCIe socket for optional Wi-Fi/3.5G/LTE module

- 2 x M.2 slots for Wi-Fi/Bluetooth and storage/LTE modules

- 2 x RS232, 1 x RS422/485 with auto flow control

- Support -5~55 degree C operating temperature

- Support 12V and 24V DC input

Hardware Specifications

CPU Support

- Onboard Intel® Celeron® processor N3350 Dual Core, 2.4GHz
- Onboard Intel® Celeron® processor J3455 Quad Core, 1.50GHz
- Onboard Intel Atom® processor E3950 Quad Core, 2.0GHz (by request)

Main Memory

- 1 x DDR3L 1866 SO-DIMM socket, support up to 8GB

Display Option

- 1 x DP display

I/O Interface - Front

- ATX power on/off switch
- 1 x Storage/2 x GPO programmable LEDs
- 1 x SIM card holder
- 2 x Intel® I211-AT GbE LAN ports; support WoL, teaming and PXE
- 1 x DP display output
- 2 x USB 2.0
- 2 x USB 3.0
- 3 x Antenna holes for optional Wi-Fi/3.5G antenna

I/O Interface - Rear

- 3 x DB9 for COM1 & COM2 & COM3
  - COM1/COM2: Full RS232 signal
  - COM3: RS422/485 auto flow control
- 1 x Line-out
- Support 12V/24V DC input

I/O Interface - Internal

- 4 x GPI and 4 x GPO (programmable to GPI or GPO)
- 1 x RS232, pin header, supports RS232 TX/RX/GND signal only

Storage Device

- Onboard 16GB EMMC, max up to 32G by request
- Optional M.2 B, BM key 2242 module

Power Requirements

- Power input: 12V/24V DC +/-10%
- 1 x Optional 24V, 60W power adapter

Support OS

- Linux Kernel version 4.1 (storage: 16GB eMMC)
- Windows 10 IoT Enterprise (storage: M.2 is recommended)

Dimensions

- 162mm (W) x 26mm (H) x 150mm (D) without wall-mount bracket

Construction

- 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 75°C
- Relative humidity: 10% to 95% (non-condensing)

- Shock protection:
  - M.2/EMMC: 50G, half sine, 11ms, IEC60068-27
- Vibration protection w/M.2 or EMMC condition:
  - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
  - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6

Certifications

- CE
- FCC Class A

Expansion Slot

- 1 x mini-PCIe socket for optional Wi-Fi/3.5G module and 2 x M.2 slots for optional WiFi/Bluetooth and LTE modules

Mini-PCIe Slot	Configuration	USB	PCIe	SATA	3.5G/4G	Wi-Fi/Bluetooth	Storage
Mini_card1	Full size	✓	✓	N/A	Support	Support	N/A

M.2 Slot	Configuration	USB	PCIe	SATA	3.5G/4G	Wi-Fi/Bluetooth	Storage
M.2_Key_A1	A Key 2230	✓	✓	N/A	N/A	Support	N/A
M.2_Key_B1	B Key 2242/3042	✓ (3042)	N/A	✓ (2242)	Support (3042)	N/A	Support (2242)

Knowing Your NISE 51

Front Panel

Antenna Hole   LEDs   USB 3.0   Antenna Hole

Power Switch   SIM   DP   USB 2.0   LAN

Rear Panel

DC Input   COM1/2/3   Line-out
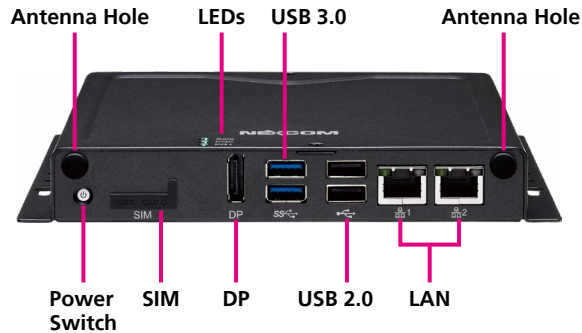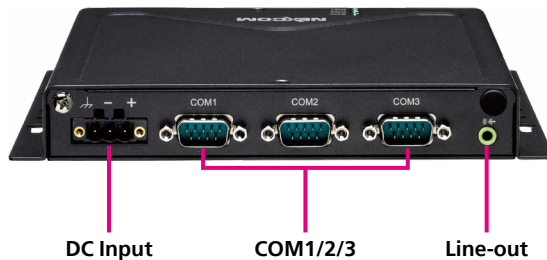
Antenna Hole
Used to install external antennas.

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

SIM
Used to insert a SIM card.

LED Indicators
Indicates the hard drive and GPIO (programmable) activity of the system.

DisplayPort (DP)
Used to connect a DisplayPort interface display.

USB 3.0
USB 3.0 ports to connect the system with USB 3.0/2.0 devices.

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.

DC Input
Used to plug a DC power cord.

COM1 to COM3
Three DB9 ports used to connect serial devices.
– COM1 & COM2: Full RS232 signal
– COM3: RS422/485 auto flow control

Line-out
Used to connect a headphone or a speaker.

   4   NISE 51/NISE 51-J3455/NISE 51-E3930 User Manual

Mechanical Dimensions
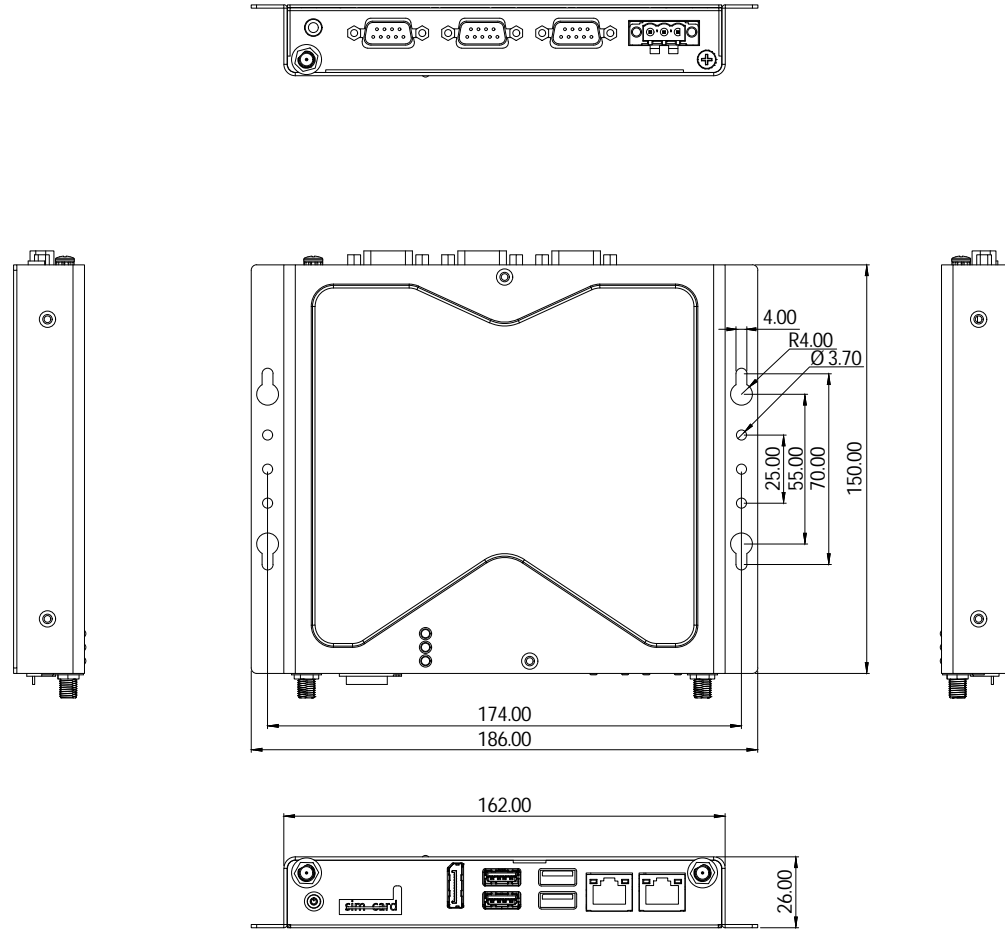
CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 51 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)
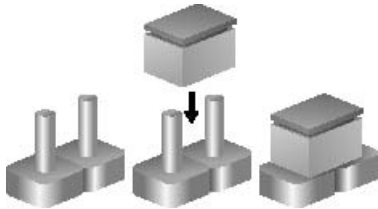
Three-Pin Jumpers: Pins 1 and 2 are Short
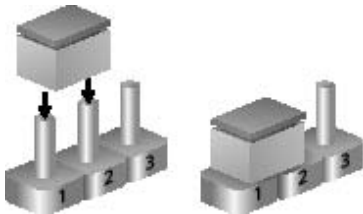
Locations of the Jumpers and Connectors for NISB 51

NISB 51

The figure below is the top view of the NISB 51 main board which is the main board used in NISE 51. It shows the locations of the jumpers and connectors.
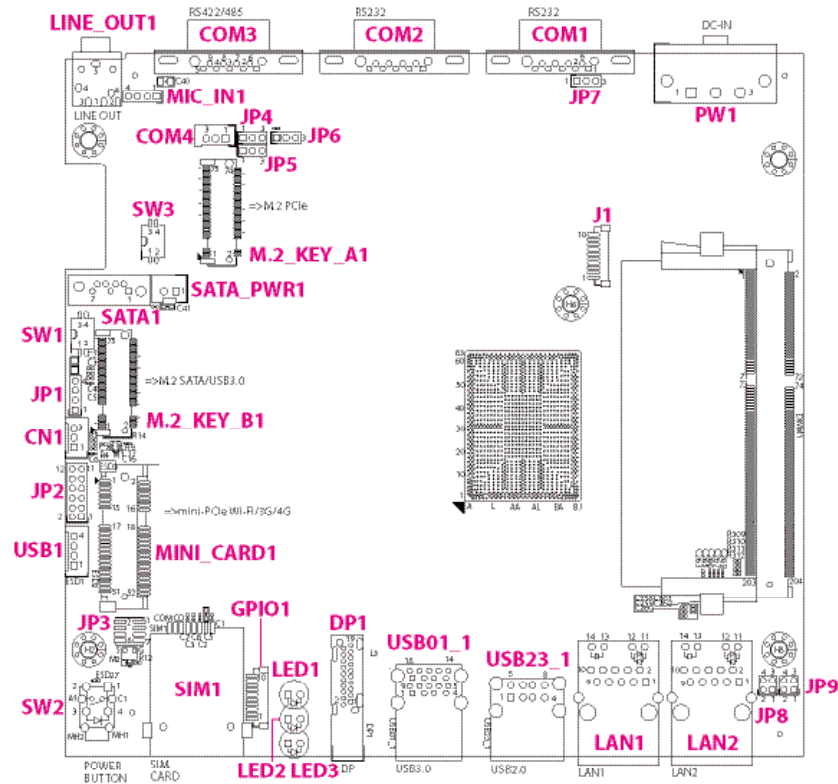
Jumpers and Switches

COM1 5V/RI Select

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP7
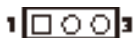
Pin	Settings
1-2 On	5V
2-3 On	RI

2-3 On: default

Pin	Definition
1	VCC5
2	SP1_RI#_R
3	SP1_RI#

COM3 RS422/485 Select (Default RS485)

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP6

Pin	Definition
1	RX+
2	RX-
3	NC

COM3 TX Terminal Pin Header

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP5
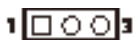
Pin	Definition
1	TX+_DATA+
2	TX-_DATA-
3	NC

COM3 RX Terminal Pin Header

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

Pin	Definition
1	RX+
2	RX-
3	NC

AT/ATX Type Select

Connector type: 2-pin DIP switch
Connector location: SW1
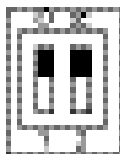
Pin	Settings
1 On, 2 Off	AT
1 Off, 2 On	ATX

1 Off, 2 On: default

Pin	Definition
1	AT_PWRBT#
2	PBT_TR
3	PWRBTN#
4	PWRBTN#

RTC Reset Connector

Connector type: 2-pin DIP switch
Connector location: SW3
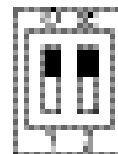
Pin	Settings
1 Off, 2 Off	Off

1 Off, 2 Off: default

Pin	Definition
1	RTEST#
2	SRTCRST#
3	GND
4	GND

Connector Pin Definitions

External I/O Interfaces - Front Panel

Power Button

Connector location: SW2

SIM Card Slot

Connector location: SIM1

Pin	Definition	Pin	Definition
1	GND	2	PBT_TR
3	PBT_TR	4	GND
A1	PWRLED_N	C1	PWRLED_P

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

LED Indicators

Connector location: LED1, LED2 and LED3

LED1 ⬤ Sata

LED2 ⬤ PG0

LED3 ⬤ PG1

	Pin	Definition	Pin	Definition
LED1	A	VCC3	C	SATA_LED_N
LED2	A	3VSB	C	GPO_PR1
LED3	A	3VSB	C	GPO_PR2

DisplayPort

Connector type: DisplayPort
Connector location: DP1

20 ─── 19

2 ─── 1
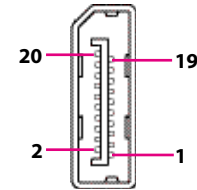
Pin	Definition	Pin	Definition
1	DP_DATA0_P_C	2	GND
3	DP_DATA0_N_C	4	DP_DATA1_P_C
5	GND	6	DP_DATA1_N_C
7	DP_DATA2_P_C	8	GND
9	DP_DATA2_N_C	10	DP_DATA3_P_C
11	GND	12	DP_DATA3_N_C
13	NC	14	NC
15	DPC_AUXP_C	16	GND
17	DPC_AUXN_C	18	DDI0HPD0
19	GND	20	DP_PWR

USB 3.0 Ports

Connector type: Dual USB 3.0 ports
Connector location: USB01_1

USB 2.0 Ports

Connector type: Dual USB 2.0 ports
Connector location: USB23_1
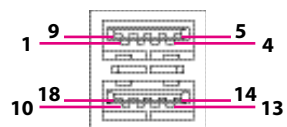
Pin	Definition	Pin	Definition
1	P5V_USB01	2	USB2_N3_C
3	USB2_P3_C	4	GND
5	USB3_RX0N_C	6	USB3_RX0P_C
7	GND	8	USB3_TX0N_C
9	USB3_TX0P_C	10	P5V_USB01
11	USB2_N1_C	12	USB2_P1_C
13	GND	14	USB3_RX1N_C
15	USB3_RX1P_C	16	GND
17	USB3_TX1N_C	18	USB3_TX1P_C

Pin	Definition	Pin	Definition
1	P5V_USB23	2	USB2_N2_C
3	USB2_P2_C	4	GND
5	P5V_USB23	6	USB2_N0_C
7	USB2_P0_C	8	GND

LAN 1 Port

Connector type: RJ45 with LEDs
Connector location: LAN1
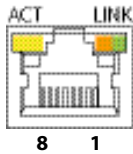
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	LAN1_MDI0P	2	LAN1_MDI0N
3	LAN1_MDI1P	4	LAN1_MDI1N
5	LAN1TCT	6	LAN1TCTG
7	LAN1_MDI2P	8	LAN1_MDI2N
9	LAN1_MDI3P	10	LAN1_MDI3N
11	LAN1_LINK1G#	12	LAN1_LINK100#
13	LAN1_LED_ACT#	14	LAN1_ACT_P

LAN 2 Port

Connector type: RJ45 with LEDs
Connector location: LAN2
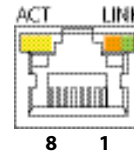
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	LAN2_MDI0P	2	LAN2_MDI0N
3	LAN2_MDI1P	4	LAN2_MDI1N
5	LAN2TCT	6	LAN2TCTG
7	LAN2_MDI2P	8	LAN2_MDI2N
9	LAN2_MDI3P	10	LAN2_MDI3N
11	LAN2_LINK1G#	12	LAN2_LINK100#
13	LAN2_LED_ACT#	14	LAN2_ACT_P

External I/O Interfaces - Rear Panel

DC Power Input

Connector location: PW1
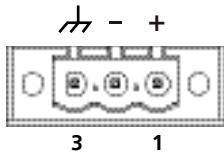
Pin	Definition
1	VIN
2	VSS
3	Earth GND

COM 1 Port (RS232)

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM1
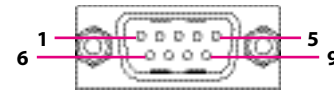
Pin	Definition	Pin	Definition
1	SP1_DCD#	2	SP1_RXD
3	SP1_TXD	4	SP1_DTR#
5	GND	6	SP1_DSR#
7	SP1_RTS#	8	SP1_CTS#
9	SP1_RI#		

COM 2 Port (RS232)

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM2
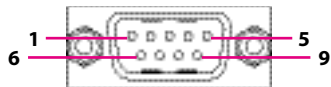
Pin	Definition	Pin	Definition
1	SP2_DCD#	2	SP2_RXD
3	SP2_TXD	4	SP2_DTR#
5	GND	6	SP2_DSR#
7	SP2_RTS#	8	SP2_CTS#
9	SP2_RI#		

COM 3 Port (RS422/485 Only)

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM3
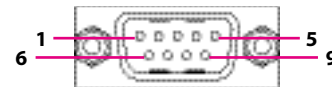
	RS485		RS422	
Pin	Definition	Pin	Definition
1	DATA-_R	1	TX-_R
2	DATA+_R	2	TX+_R
3	NC	3	RX+_R
4	NC	4	RX-_R
5	GND	5	GND
6	NC	6	RTS-_R
7	NC	7	RTS+_R
8	NC	8	CTS+_R
9	NC	9	CTS-_R

Line-out Connector

Connector type: 1x 3.5mm TRS
Connector location: LINE_OUT1

Pin	Definition	Pin	Definition
1	LOUT_R3	2	LINE_OUT_JD
3	GND	4	LOUT_L3
5	GND	6	GND

Internal Connectors

Internal USB 2.0 Connector

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: USB1

80 Port Connector

Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J1

Pin	Definition	Pin	Definition
1	P5V_USB4_P1	2	USB2_N4_C
3	USB2_P4_C	4	GND

Pin	Definition	Pin	Definition
1	GND	2	PLTRST_N
3	LPC_CLKOUT1	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_AD0
9	LPC_SERIRQ	10	VCC3

COM4 Pin Header (TX/RX Only)

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: COM4

Pin	Definition
1	GND
2	SP4_RXD_R
3	SP4_TXD_R

SATA Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA1

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, 2.5mm pitch
Connector location: SATA_PWR1

Pin	Definition
1	GND
2	VCC5

Remote Button/S3 Connector

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: CN1

Pin	Definition
1	REMOTE_S3
2	GND
3	PBT_TR_C

GPIO Connector

Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: GPIO1

Mic-in Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: MIC_IN1

Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	ICH_GPO0_OUT	4	ICH_GPI0_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
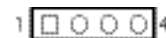
Pin	Definition	Pin	Definition
1	MIC1_L3	2	GND
3	MIC_JD	4	MIC1_R3

LAN1 LED Signal Pin Header

Connector type: 2x2 4-pin header, 2.0mm pitch
Connector location: JP8

Pin	Definition	Pin	Definition
1	LAN1_ACT_P	2	LAN1_LED_ACT#
3	LAN1_LINK1G#	4	LAN1_LINK100#

LAN2 LED Signal Pin Header

Connector type: 2x2 4-pin header, 2.0mm pitch
Connector location: JP9

Pin	Definition	Pin	Definition
1	LAN2_ACT_P	2	LAN2_LED_ACT#
3	LAN2_LINK1G#	4	LAN2_LINK100#

SPI and I2C Pin Header

Connector type: 2x4 8-pin header, 1.27mm pitch
Connector location: JP3

SMBus Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP1
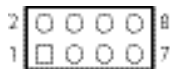
Pin	Definition	Pin	Definition
1	3VSB	2	GND
3	3V3_SPI_CS	4	3V3_SPI_MISO
5	3V3_SPI_MOSI	6	3V3_SPI_CLK
7	3P3_I2C0_CLK	8	3P3_I2C0_DATA
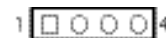
Pin	Definition	Pin	Definition
1	VCC3	2	SMB_CLK_3P3
3	SMB_DATA_3P3	4	GND

PWR_LED/HDD_LED/S3/PS_ON/Reset Header

Connector type: 2x6 12-pin header, 2.0mm pitch
Connector location: JP2
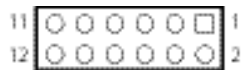
Pin	Definition	Pin	Definition
1	PWR_LED_N	2	VCC5
3	SATA_LED_N	4	VCC5
5	3VSB	6	GND
7	SOC_SLP_S3_N	8	PS_ON#
9	PBT_TR	10	GND
11	PM_RESET#_J	12	GND

Mini-PCIe Connector

Connector location: MINI_CARD1
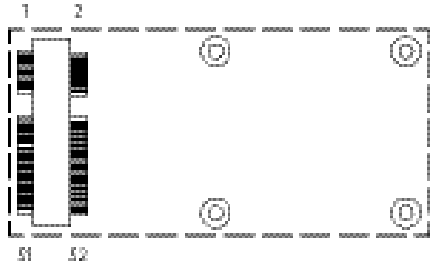
Pin	Definition	Pin	Definition
1	3P3_WAKE0#	2	3VSB_MINI1
3	NC	4	GND
5	NC	6	VCC1_5#1
7	PCIE_CLKREQ1#	8	UIM_PWR
9	GND	10	UIM_DATA
11	PCIE_CLKOUT1N	12	UIM_CLK
13	PCIE_CLKOUT1P	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	MINICARD1DIS#
21	GND	22	PLTRST_N
23	PCIE_RXN1_R	24	3VSB_MINI1
25	PCIE_RXP1_R	26	GND

Pin	Definition	Pin	Definition
27	GND	28	VCC1_5#1
29	GND	30	SMB_CLK_3P3
31	PCIE_TXN1_R	32	SMB_DATA_3P3
33	PCIE_TXP1_R	34	GND
35	GND	36	USB2_N5
37	GND	38	USB2_P5
39	3VSB_MINI1	40	GND
41	3VSB_MINI1	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	VCC1_5#1
49	NC	50	GND
51	NC	52	3VSB_MINI1

M.2 Key A Connector

Connector location: M.2_Key_A1

Pin	Definition	Pin	Definition
1	GND	2	3VSB
3	USB2_P7	4	3VSB
5	USB2_N7	6	NC
7	GND	8	
9		10	
11		12	
13		14	
15		16	NC
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	GND	24	NC
25	NC	26	NC
27	NC	28	NC
29	GND	30	NC
31	NC	32	NC
33	GND	34	NC
35	PCIE_TXP0_S	36	NC
37	PCIE_TXN0_S	38	NC

Pin	Definition	Pin	Definition
39	GND	40	NC
41	PCIE_RXP0_S	42	NC
43	PCIE_RXN0_S	44	NC
45	GND	46	NC
47	PCIE_CLKOUT0P	48	NC
49	PCIE_CLKOUT0N	50	PMU_SUSCLK
51	GND	52	PLTRST_N
53	PCIE_CLKREQ0#	54	W_DISABLE1#
55	3P3_WAKE0#	56	W_DISABLE2#
57	GND	58	I2C7_DATA
59	NC	60	I2C7_CLK
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	3VSB
73	NC	74	3VSB
75	GND		

M.2 Key B Connector

Connector location: M.2_Key_B1
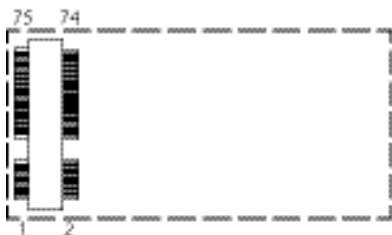
Pin	Definition	Pin	Definition
1	GND	2	3VSB
3	GND	4	3VSB
5	GND	6	NC
7	USB2_P6	8	W_DISABLE1#
9	USB2_N6	10	NC
11	GND	12	
13		14	
15		16	
17		18	
19		20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	UIM_VPP1
29	USB3_RX2N	30	UIM_RESET1
31	USB3_RX2P	32	UIM_CLK1
33	GND	34	UIM_DATA1
35	USB3_TX2N_1	36	UIM_PWR1
37	USB3_TX2P_1	38	NC

Pin	Definition	Pin	Definition
39	GND	40	NC
41	SATA_RXP1_S	42	NC
43	SATA_RXN1_S	44	NC
45	GND	46	NC
47	SATA_TXN1_S	48	NC
49	SATA_TXP1_S	50	PLTRST_N
51	GND	52	PCIE_CLKREQ3#
53	NC	54	3P3_WAKE0#
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	M.2_RESET	68	PMU_SUSCLK
69	CONFIG_1	70	3VSB
71	GND	72	3VSB
73	GND	74	3VSB
75	CONFIG_2		

CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover

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

1. Remove the six mounting screws around the chassis cover. There are two screws each on the top and on the sides.

2. With the screws removed, lift up the cover and remove it from the chassis.

Screws on the sides

Installing a SO-DIMM Memory Module

1. Locate the SO-DIMM socket.

SO-DIMM Socket

2. Insert the module into the socket at an approximately 30 degrees angle. Push the module down until the clips on both sides of the socket lock into position. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

Memory Module
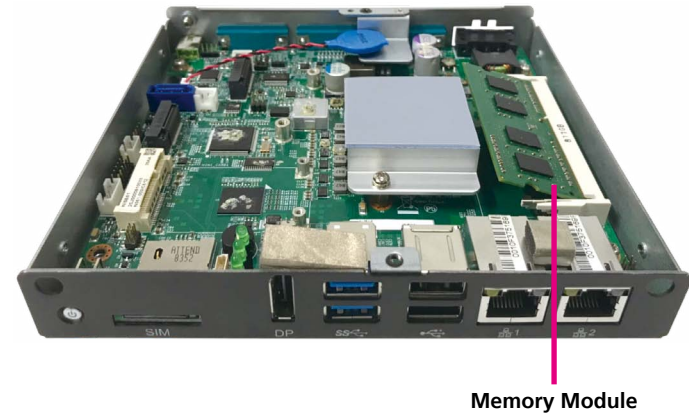
Installing a Wi-Fi/BT M.2 Module (M.2 A Key 2230)

1. Locate the M.2 A key slot on the board.

2. Make sure the gold-plated four-pin connector on the edge of the module is on the left.
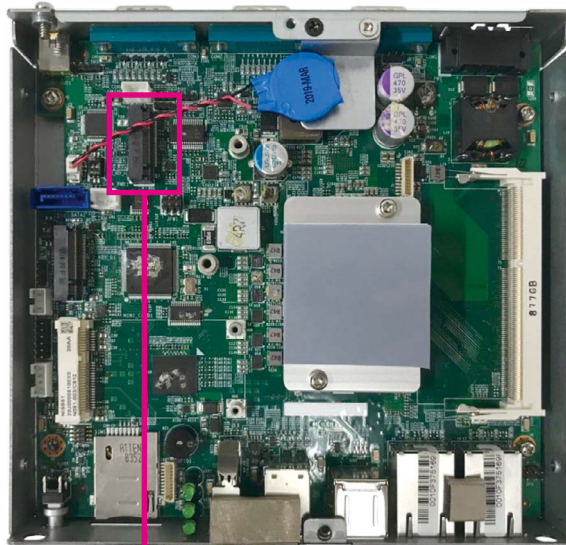
M.2 A Key Slot

Four-Pin

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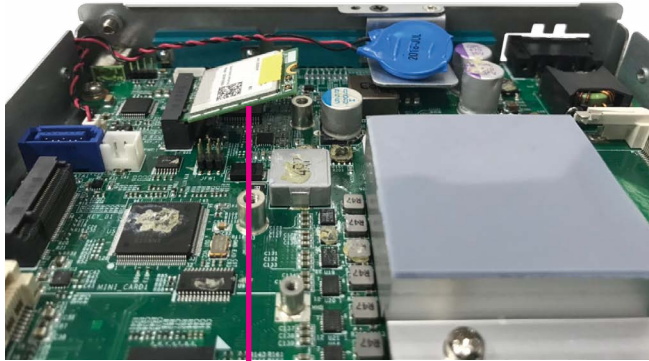
M.2 Module

4. Push the module down and secure it with a screw.

Installing a Storage M.2 Card (B Key 2242)

1. Locate the M.2 B key slot on the board.

2. Make sure the gold-plated six-pin connector on the edge of the module is on the left, while the five-pin connector is on the right.
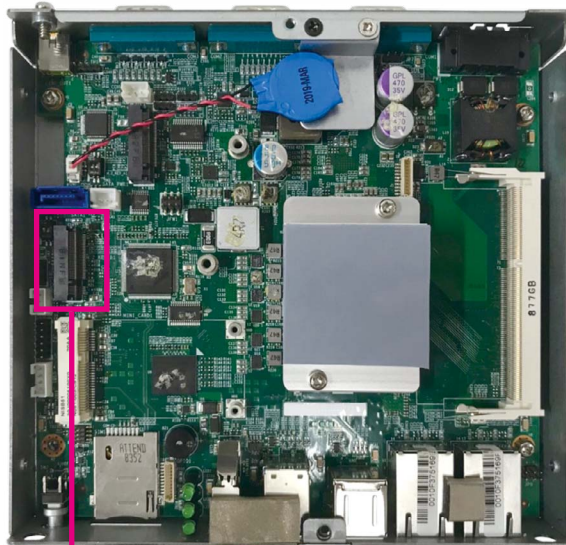
M.2 B Key Slot
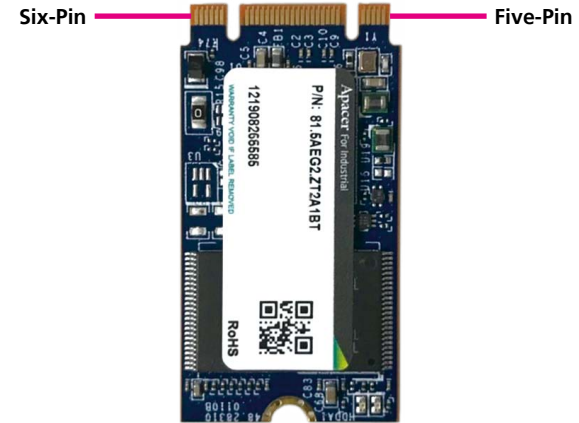
Six-Pin ●━━━━ ━━━━● **Five-Pin**

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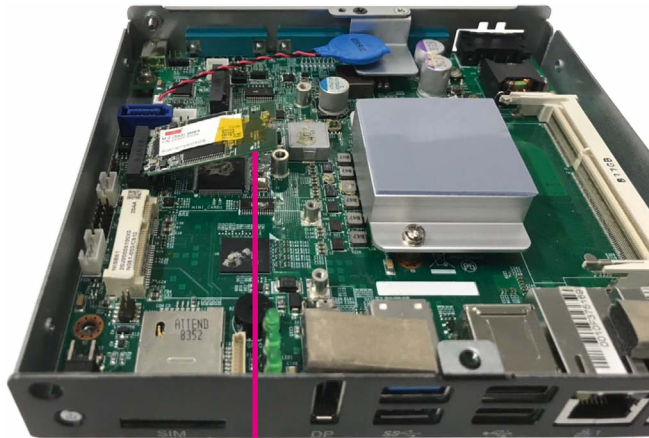
M.2 Module

4. Push the module down and secure it with a screw.

Note:
When installing an M.2 storage, it is recommended that a dedicated thermal pad is placed on top of the chipset of the M.2 module for better heat dissipation.

Thermal Pad
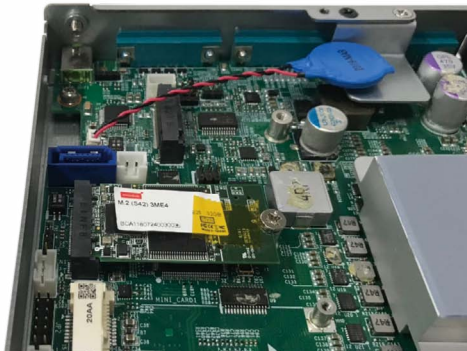
Installing a LTE M.2 Module (B Key 3042)

1. Locate the M.2 B key slot on the board.
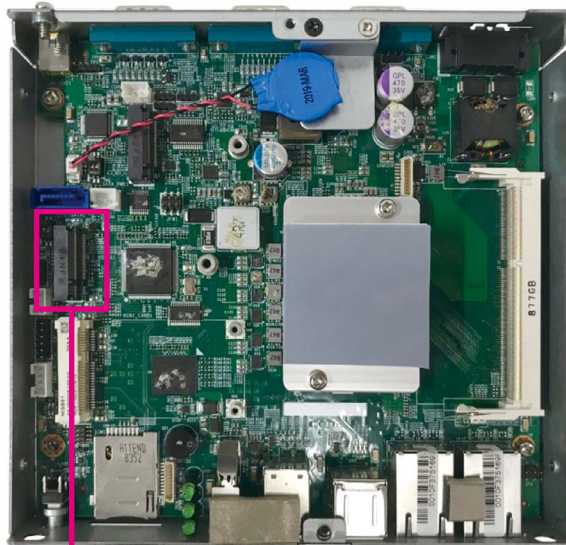
2. Make sure the gold-plated six-pin connector on the edge of the module is on the left.

M.2 B Key Slot

Six-Pin
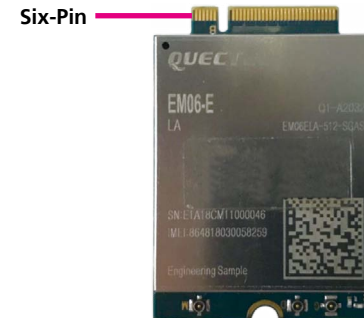
3. Insert the M.2 module into the M.2 slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.

M.2 Module

4. Push the module down and secure it with a screw.

Installing a 3.5G Mini-PCIe Module (Full-size)

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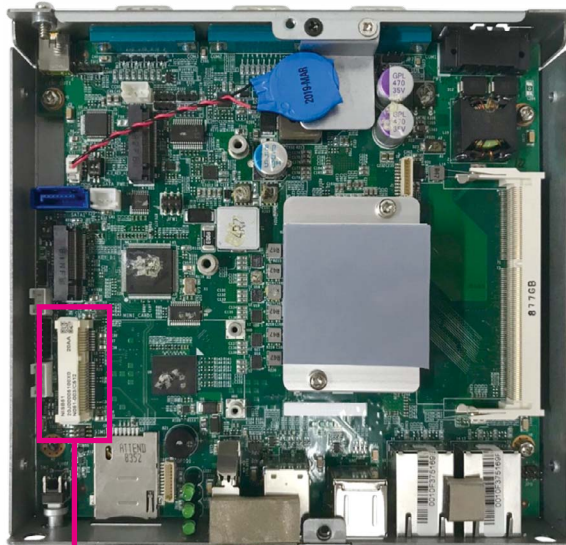
2. Insert the Wi-Fi module into the mini-PCI Express slot at a 45 degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

Mini-PCIe Slot

Wi-Fi Module

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

Mounting Screw
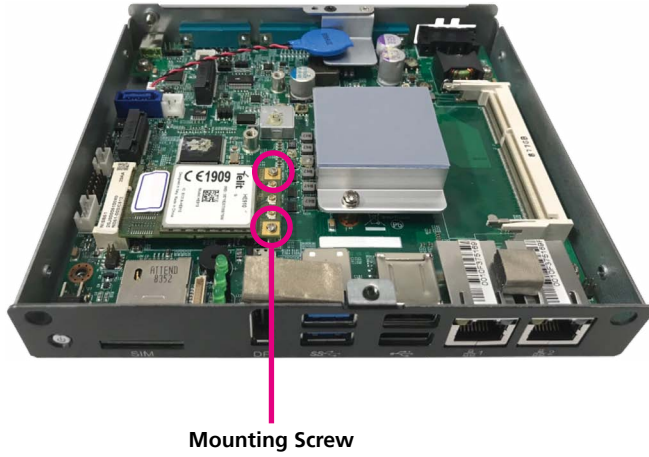
Installing a WLAN/Bluetooth Mini-PCIe Module (Half-size)

1. Align the wireless LAN module to the module bracket and secure both together with screws.

WLAN Module   **Module Bracket**

2. 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.

WLAN Module
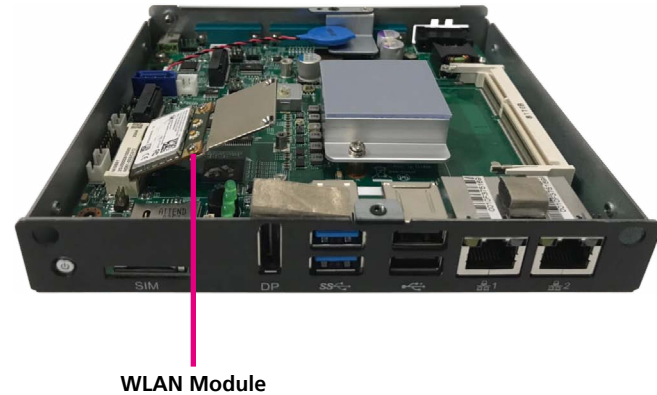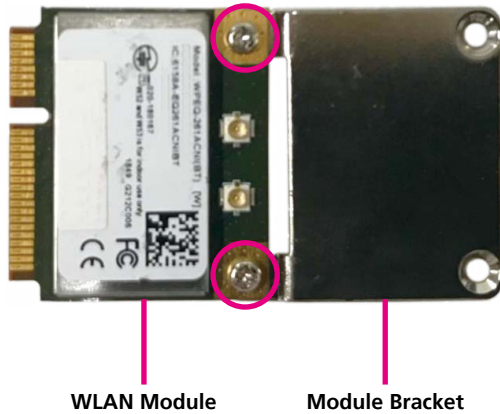
3. Push the module down and then secure it with mounting screws.
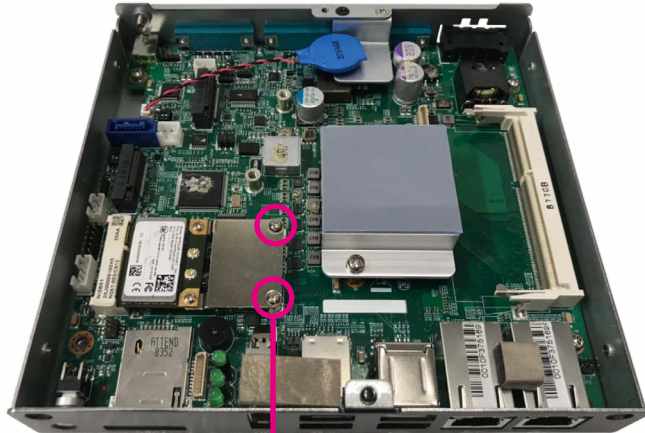
Mounting Screw

Installing a SIM Card

1. Locate the SIM card slot on the front panel and remove the slot cover.

SIM cover

2. Insert the SIM card into the slot.
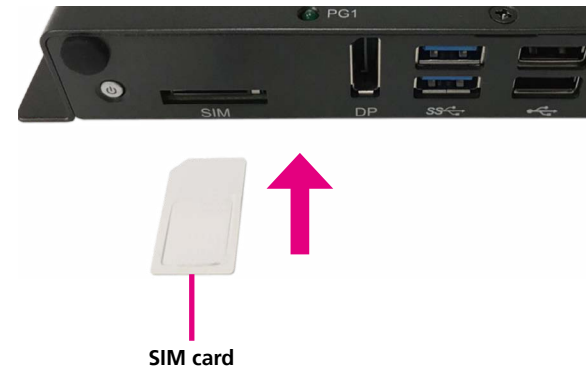
SIM card

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

SIM Cover

Installing an Antenna

Note: Please remove the gaskets (ring 1 and ring 2) on the SMA antenna jack first.

Ring 2
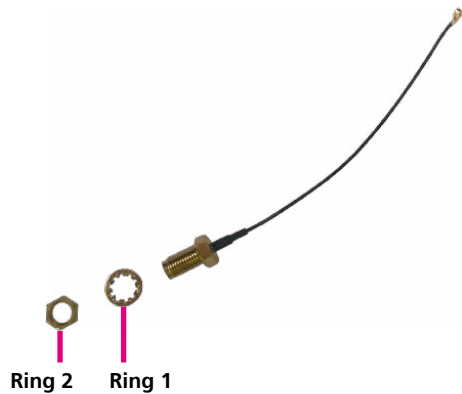
Ring 1

Ring 2   **Ring 1**

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

2. Insert the SMA antenna jack end of the cable through the antenna hole, and insert the 2 rings (ring 1 and ring 2) back to the antenna jack.

3. Attach the RF cable onto the module.

RF cable

4. Connect the external antenna to the antenna jack.

Wall Mount Installation

Note: The top cover of the system also serves as the wall mount bracket. Before wall mounting the system, please ensure the top cover is secured with 6 screws. (Screw specifications: M3x4mm)

1. Align the M4 mounting holes on the chassis cover to the desired installation location.

Mounting holes

2. Mount the system by fastening 4 screws through the mounting holes.

DIN Rail Clip Installation

1. Align the DIN rail clips to the mounting holes on the chassis cover.

2. Secure the DIN rail clips with screws.

Mounting holes

Aluminum DIN Rail Clip Installation

1. Align the aluminum DIN rail clip to the mounting holes on the chassis cover.

2. Secure the aluminum DIN rail clip with screws.

Mounting holes

CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 51. 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.

50 NISE 51/NISE 51-J3455/NISE 51-E3930 User Manual

Default Configuration

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

Entering Setup

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

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

- If the error occurs after the display device is initialized, the screen will display the error message.

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

Legends

Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub-menu or fields.
Esc	Exits the BIOS Setup Utility.
+	Scrolls forward through the values or options of the highlighted field.
−	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	Press <Enter> to enter the highlighted sub-menu.

Scroll Bar

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

Submenu

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

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press [Enter] to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

System Time

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

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
   Main      Advanced    Chipset    Security     Boot    Save & Exit

   BIOS Information                                        Set the Date. Use Tab to
   BIOS Vendor              American Megatrends            switch between Date elements.
   Core Version             5.12                           Default Ranges:
   Compliancy               UEFI 2.5; PI 1.4               Year: 2005-2099
   Project Version          N051-004 x64                   Months: 1-12
   Build Date and Time      01/07/2019 10:46:11            Days: dependent on month
   Access Level             Administrator

   Platform firmware Information
   BXT SOC                  B1
   TXE FW                   3.0.13.1144
   GOP                      10.0.1036

   Memory Information                                      →←: Select Screen
   Total Memory             4096 MB                        ↑↓: Select Item
   Memory Speed             1600 MHz                        Enter: Select
                                                           +/-: Change Opt.
   System Date              [Wed 05/08/2019]               F1: General Help
   System Time              [11:15:12]                     F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

          Version 2.18.1263. Copyright (C) 2019 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.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Main **Advanced** Chipset Security Boot Save & Exit	
▶ ACPI Settings ▶ IT8786E Super IO Configuration ▶ Hardware Monitor ▶ CPU Configuration ▶ Network Stack Configuration ▶ Trusted Computing ▶ USB Configuration	System ACPI Parameters. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.	

ACPI Settings

This section is used to configure ACPI Settings.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Advanced	
ACPI Settings **Enable Hibernation** [Enabled] **ACPI Sleep State** [S3 (Suspend to RAM)]	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.	

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.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

  IT8786E Super IO Configuration                    Set Parameters of Serial Port
                                                    1 (COMA)
  Super IO Chip                    IT8786E
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration
▶ Serial Port 3 Configuration
▶ Serial Port 4 Configuration




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



  Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

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

Serial Port 1 to Serial Port 4 Configuration
Configuration settings for serial port 1 to port 4.

Serial Port 1 Configuration

This section is used to configure serial port 1.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

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




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



  Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
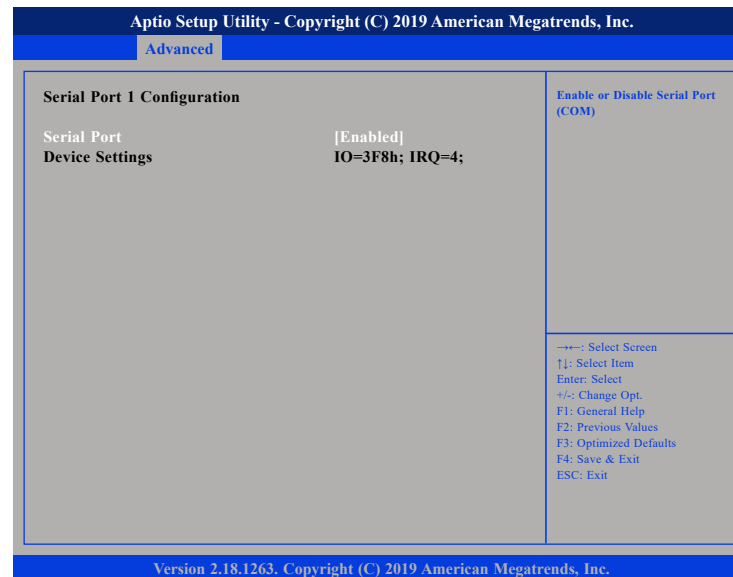
Serial Port
Enables or disables the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced

Serial Port 2 Configuration                                    Enable or Disable Serial Port
                                                               (COM)
Serial Port                        [Enabled]
Device Settings                    IO=2F8h; IRQ=5;




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


Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
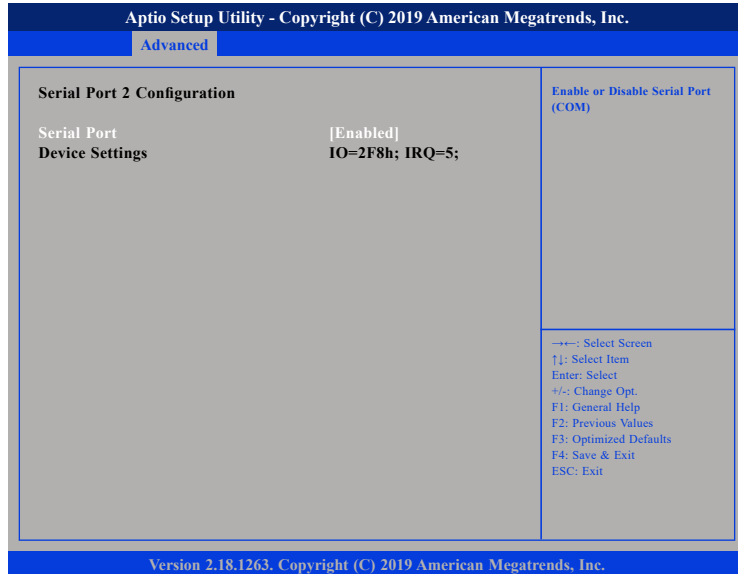
Serial Port
Enables or disables the serial port.

Serial Port 3 Configuration

This section is used to configure serial port 3.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced

Serial Port 3 Configuration                                    Enable or Disable Serial Port
                                                               (COM)
Serial Port                        [Enabled]
Device Settings                    IO=3E8h; IRQ=11;




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


Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

Serial Port
Enables or disables the serial port.

Serial Port 4 Configuration

This section is used to configure serial port 4.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

  Serial Port 4 Configuration                           Enable or Disable Serial Port
                                                         (COM)
  Serial Port                        [Enabled]
  Device Settings                    IO=2E8h; IRQ=10;




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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
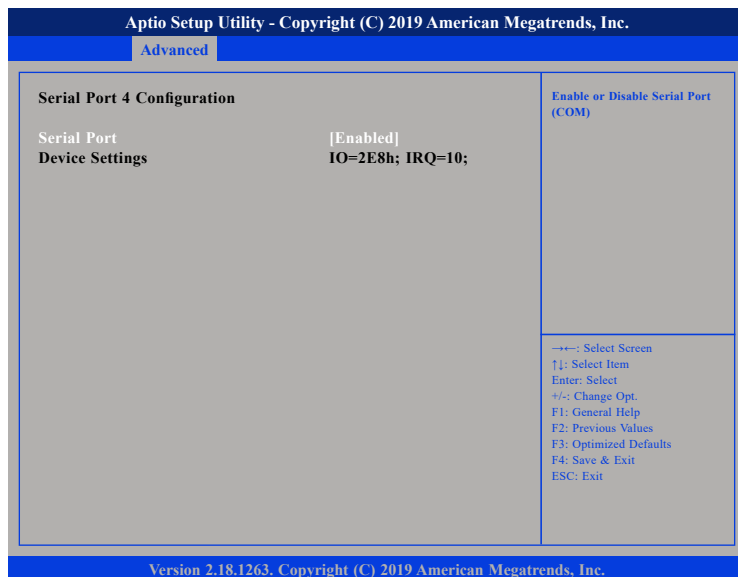
Serial Port
Enables or disables the serial port.

Hardware Monitor

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

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

  Pc Health Status

  CPU temperature(DTS)           : +47 °c
  System temperature             : +32 °c
  VCore                          : +0.744 V
  VDDQ                           : +1.344 V
  VCC5                           : +4.980 V
  VCC3                           : +3.385 V

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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

CPU temperature(DTS)
Detects and displays the current CPU temperature.

System temperature
Detects and displays the current system temperature.

VCore to VCC3
Detects and displays the output voltages.

CPU Configuration

This section is used to configure the CPU.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

  CPU Configuration                                    Socket specific CPU Information

▶ Socket 0 CPU Information

  Speed                        1100 MHz
  64-bit                       Supported

▶ CPU Power Management
  Active Processor Core        [Disabled]
  Intel Virtualization Technology  [Disabled]
  VT-d                         [Disabled]

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

        Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

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

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

VT-d
Enables or disables Intel® VT-d technology.

Socket 0 CPU Information

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

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
  Advanced

  Socket 0 CPU Information

  Intel(R) Celeron(R) CPU N3350 @ 1.10GHz
  CPU Signature               506C9
  Microcode Patch             32
  Max CPU Speed               1100 MHz
  Min CPU Speed               800 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          →←: Select Screen
  L2 Cache                    1024 kB x 2        ↑↓: Select Item
  L3 Cache                    Not Present        Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

        Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

CPU Power Management

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

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
           Advanced

  CPU Power Management Configuration                    Enable/Disable Intel SpeedStep
  EIST                            [Disabled]




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

          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

EIST
Enables or disables Intel® SpeedStep.

Network Stack Configuration

This section is used to configure the network stack.

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
           Advanced

  Network Stack                   [Disabled]            Enable/Disable UEFI Network
                                                        Stack




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

          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
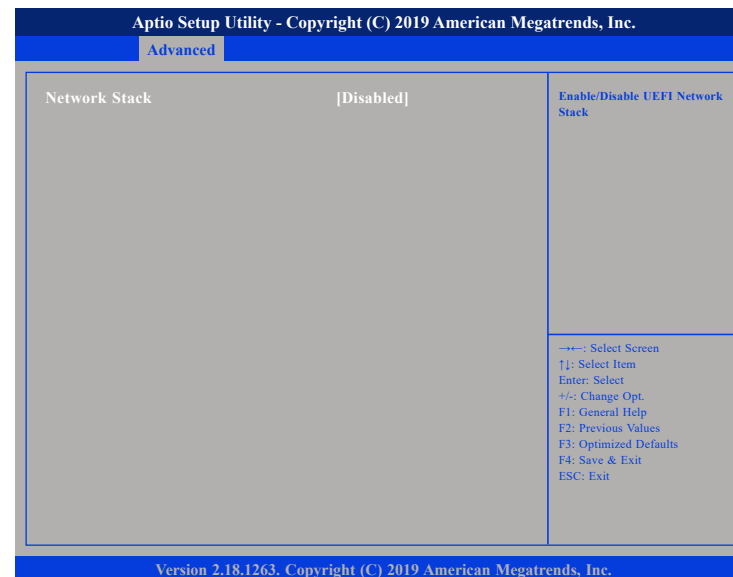
Network Stack
Enables or disables UEFI network stack.

Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.

```
           Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
      Advanced

    TPM20 Device Found                              Enables or Disables BIOS
    Vendor: IFX                                     support for security device. O.S.
    Firmware Version: 5.62                          will not show Security Device.
                                                    TCG EFI protocol and INT1A
                                                    interface will not be available.
    Security Device Support        [Enable]
    Active PCR banks               SHA-1,SHA256
    Available PCR banks            SHA-1,SHA256

    SHA-1 PCR Bank                 [Enabled]
    SHA256 PCR Bank                [Enabled]

    Pending operation              [None]
    Platform Hierarchy             [Enabled]        →←: Select Screen
    Storage Hierarchy              [Enabled]        ↑↓: Select Item
    Endorsement Hierarchy          [Enabled]        Enter: Select
    TPM2.0 UEFI Spec Version       [TCG_2]          +/-: Change Opt.
    Physical Presence Spec Version [1.3]            F1: General Help
    TPM 20 InterfaceType           [TIS]            F2: Previous Values
    Device Select                  [Auto]           F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

           Version 2.19.1266. Copyright (C) 2019 American Megatrends, Inc.
```

Security Device Support
Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

SHA-1 PCR Bank
Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank
Enables or disables SHA256 PCR Bank.

Pending operation
Schedules an operation for the security device.

Platform Hierarchy
Enables or disables platform hierarchy.

Storage Hierarchy
Enables or disables storage hierarchy.

Endorsement Hierarchy
Enables or disables endorsement hierarchy.

TPM2.0 UEFI Spec Version
Configures the TPM 2.0 UEFI spec version.

Physical Presence Spec Version
Configures the physical presence spec version.

Device Select
Configures the TPM version. TPM 1.2 will restrict support to TPM 1.2 devices and TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0 devices with the default set to TPM 2.0 devices if not found, and TPM 1.2 devices will be enumerated.

USB Configuration

This section is used to configure the USB.

```
            Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
          Advanced

    USB Configuration                                  This is a workaround for OSes
                                                       without XHCI hand-off support.
    USB Module Version              17                 The XHCI ownership change
                                                       should be claimed by XHCI
    USB Controllers:                                   driver.
        1 XHCI
    USB Devices:
        1 Keyboard

    XHCI Hand-off                   [Enabled]
    USB Mass Storage Driver Support [Enabled]

    USB hardware delays and time-outs:
    USB transfer time-out           [20 sec]           →←: Select Screen
    Device reset time-out           [20 sec]           ↑↓: Select Item
    Device power-up delay           [Auto]             Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

            Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

XHCI Hand-off

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

USB Mass Storage Driver 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 itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Chipset

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

```
            Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
    Main      Advanced    Chipset    Security    Boot    Save & Exit

 ▶ South Bridge                             South Bridge Parameters
 ▶ South Cluster Configuration




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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

South Bridge
Enters the South Bridge submenu.

South Cluster Configuration
Enters the South Cluster Configuration submenu.

South Bridge

```
            Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset

                                              Enable/Disable SMBus Support
 SMBus Support                    [Enabled]



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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

SMBus Support
Enables or disables SMBus support.

South Cluster Configuration

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset

 ► HD-Audio Configuration                    HD-Audio Configuration Settings
 ► SATA Drives
 ► SCC Configuration
 ► USB Configuration
 ► Miscellaneous Configuration



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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

HD-Audio Configuration
Enters the HD-Audio Configuration submenu.

SATA Drives
Enters the SATA Drives submenu.

SCC Configuration
Enters the SCC Configuration submenu.

USB Configuration
Enters the USB Configuration submenu.

Miscellaneous Configuration
Enters the Miscellaneous Configuration submenu.

HD-Audio Configuration

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset

   HD-Audio Configuration                    Enable/Disable HD-Audio Support
   HD-Audio Support              [Enable]



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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
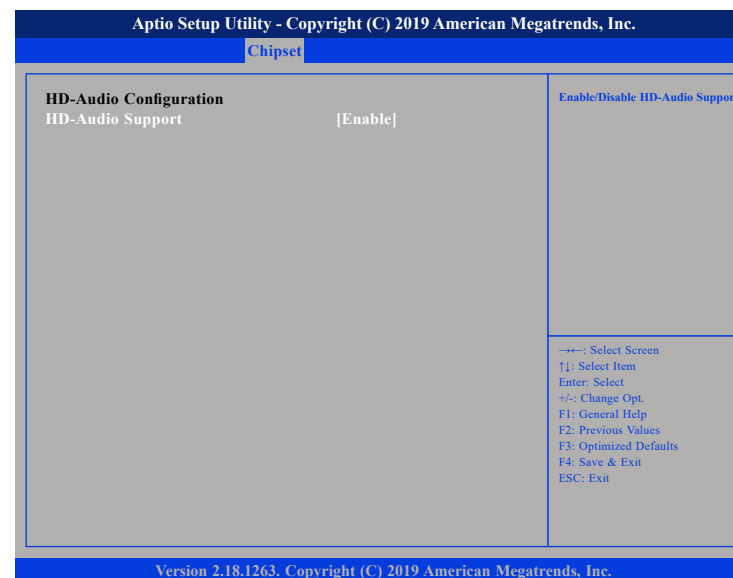
HD-Audio Support
Enables or disables HD-Audio support.

SATA Drives

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Chipset	

SATA Drives		Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).
Chipset-SATA Controller Configuration		
Chipset SATA	[Enable]	
SATA Port 0	[Not Installed]	
Port 0	[Enabled]	
SATA Port 1	M.2 (S42) 3ME4 (32.0GB)	
Port 1	[Enabled]	
		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.

Chipset SATA
Enables or disables the chipset SATA controller.

Port 0 and Port 1
Enables or disables SATA port 0 and SATA port 1.

SCC Configuration

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Chipset	

SCC eMMC Support (D28:F0)	[Enable]	Enable/Disable SCC eMMC Support
		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
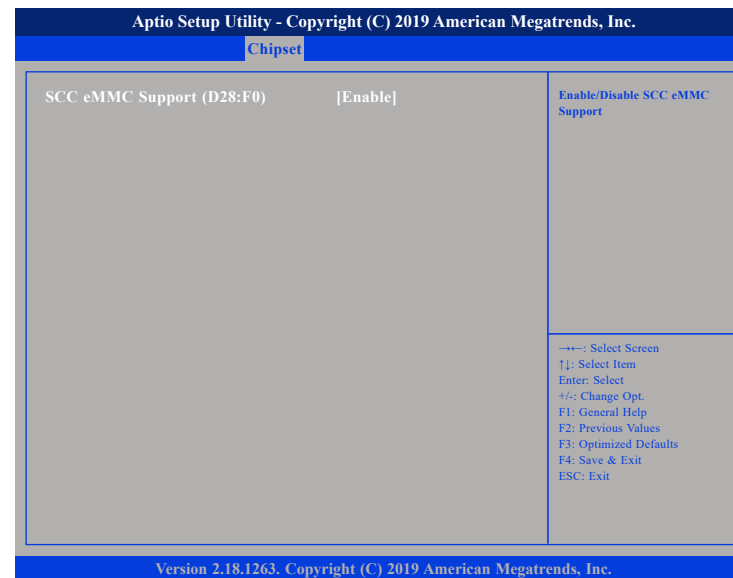
SCC eMMC Support (D28:F0)
Enables or disables SCC eMMC support.

USB Configuration

Chipset

xHCI Mode   [Enable]

Once enabled, XHCI controller
would be function disabled,
none of the USB devices are
detectable and usable during
boot and in OS. Do not disable
it unless for debug purpose.

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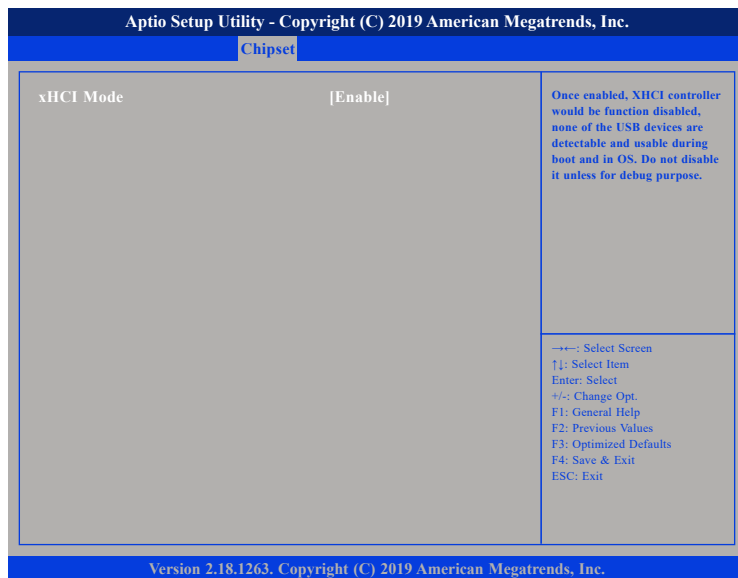
xHCI Mode

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

Miscellaneous Configuration

Chipset

Miscellaneous Configuration
High Precision Timer   [Enable]
State After G3   [S0 State]
USB01 Power State in S5   [ON]
USB23 Power State in S5   [ON]

Enable or Disable the High
Precision Event Timer

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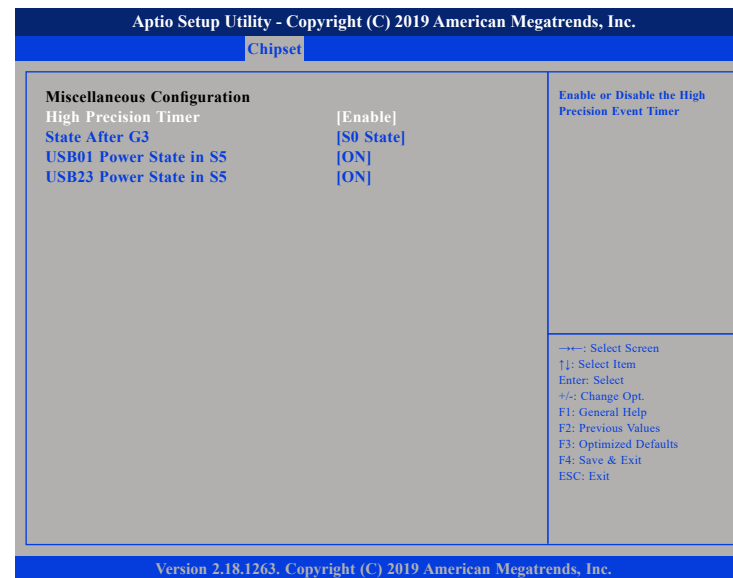
High Precision Timer

Enables or disables high precision event timer.

State After G3

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

S0 State   System will boot directly as soon as power is applied.

S5 State   System stays in power-off state until power button is pressed.

USB01 and USB23 Power State in S5

Configures USB01 and USB23 power state in S5.

Security

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

```
Password Description                                      Set Setup Administrator
                                                          Password
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length              3
Maximum length              20

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

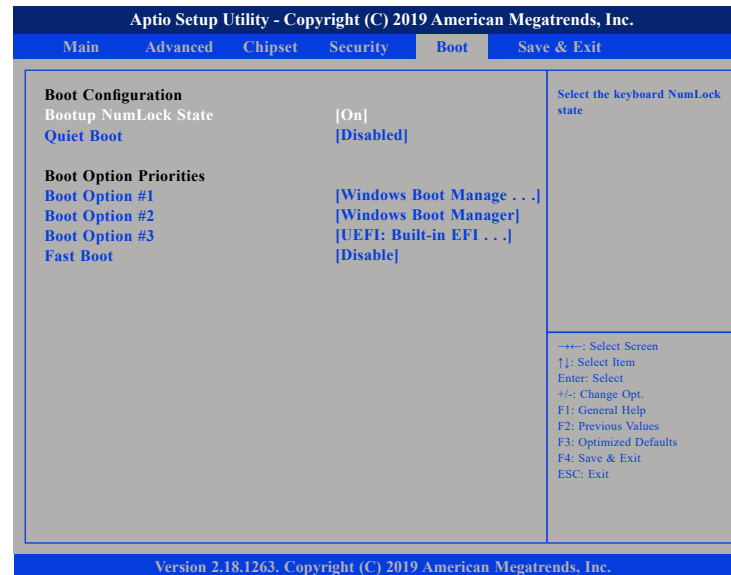**Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.**

Setup Administrator Password
Select this to reconfigure the administrator's password.

User Password
Select this to reconfigure the user's password.

Boot

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

```
Boot Configuration                                        Select the keyboard NumLock
Bootup NumLock State          [On]                        state
Quiet Boot                    [Disabled]

Boot Option Priorities
Boot Option #1                [Windows Boot Manage . . .]
Boot Option #2                [Windows Boot Manager]
Boot Option #3                [UEFI: Built-in EFI . . .]
Fast Boot                     [Disable]

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

Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.

Bootup NumLock State
This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot
Enabled   Displays OEM logo instead of the POST messages.
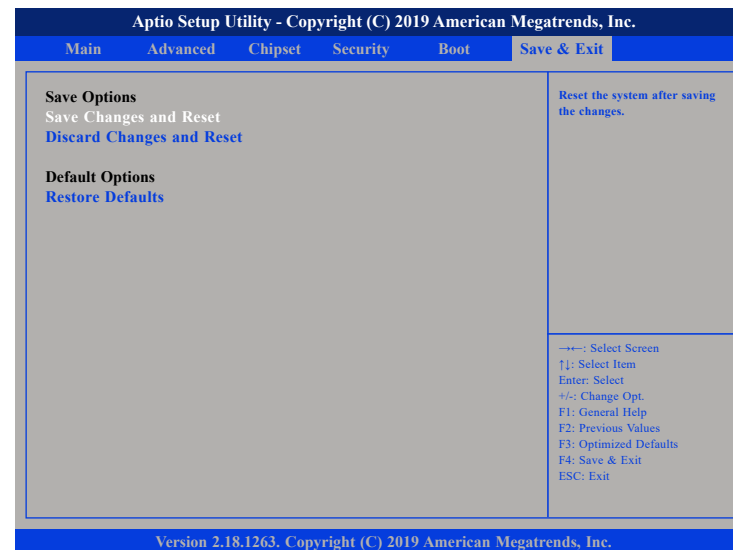Disabled   Displays normal POST messages.

Boot Option Priorities

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

Fast Boot

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

Save & Exit

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
    Main      Advanced    Chipset    Security    Boot    Save & Exit

  Save Options                                      Reset the system after saving
  Save Changes and Reset                            the changes.
  Discard Changes and Reset

  Default Options
  Restore Defaults




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


          Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```

Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Reset

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

Restore Defaults

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

APPENDIX A: GPI/O PROGRAMMING GUIDE

GPI/O (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPI/O pins in the NISE 51 series. The pin definition is shown in the following table:

IO Space
A06h

Pin	Mode	Default	Address	Pin	Mode	Default	Address
1	VCC			2	GND		
3	GPO0	Low	Bit3	4	GPI0	High	Bit7
5	GPO1	Low	Bit2	6	GPI1	High	Bit6
7	GPO2	Low	Bit1	8	GPI2	High	Bit5
9	GPO3	Low	Bit0	10	GPI3	High	Bit4

1=> Hi, 0=> Low

APPENDIX B: 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
        outportb(SUPERIO_PORT, 0x87);
        outportb(SUPERIO_PORT, 0x01);
        outportb(SUPERIO_PORT, 0x55);
        outportb(SUPERIO_PORT, 0x55);

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

  # Set WDT setting
        outportb(SUPERIO_PORT, WDT_SET);
        outportb(SUPERIO_PORT+1, 0x90);         # Use the second
                                                # Use the minute, change value to 0x10
  # Set WDT sec/min
        outportb(SUPERIO_PORT, WDT_VALUE);
        outportb(SUPERIO_PORT+1, 0x05);         # Set 5 seconds
}
```

69 NISE 51/NISE 51-J3455/NISE 51-E3930 User Manual

APPENDIX C: 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 / Software

1. DC power supply
2. Operating System OS: Windows 10 Pro 64-bit
3. Burn-In Test Ver: 8.1 Pro (1025)
4. Intel® Thermal Analysis Tool software version: 6.0.1013
5. Network test program
6. Function port fixture:

Functional Port	Front / Rear Panel
USB 2.0 x2	5V, 0.5A (Cement Resistor)
USB 3.0 x2	5V, 1.0A (Cement Resistor)
COM 1, COM 2	RS232 Loopback (115200 baud rate)
Display Interface	Display Interface LCD Monitor + 5M Display Port Cable

Device Under Test

DUT: NISE 51/ Revision: B
CPU: Intel® Celeron® CPU N3350 @ 1.10 GHz
BIOS: American Megatrends / N051-003 X64

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 set up DC Power supply voltage.
3. Measure system maximum power consumption as below mode:
   - BIOS mode.
   - ACPI Sleep State Mode (S3).
   - 100% Full loading mode (Include USB load fixture)
4. Measure and record system maximum power consumption value.

Test Data

BIOS Mode Power Consumption		
Voltage & Current Measurement		**Total (W)**
Voltage (V)	**Current (A)**	
12 V	0.47 A	6 W
24 V	0.29 A	7 W
ACPI Sleep (S3) Mode Power Consumption		
12 V	0.33 A	4 W
24 V	0.22 A	5 W
100% Full Loading Mode Power Consumption		
12 V	2.2 A	28 W
24 V	1.16 A	28 W