NexAIoT Co., Ltd.

IoT Automation Solutions Business Group
Fan-less Computer
NISE 70-T01/T02/T03
User Manual

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.............46

Appendix B: Watchdog Timer Setting.................47

Appendix C: Power Consumption.........................48

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 NexAIoT Co., Ltd.

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NexAIoT Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: http://www.nexaiot.com. NexAIoT 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 70 series is a trademark of NexAIoT 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

NexAIoT RoHS Environmental Policy and Status Update

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

Warranty and RMA

NexAIoT Warranty Period

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

NexAIoT Return Merchandise Authorization (RMA)

- Customers shall enclose the "NexAIoT 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 "NexAIoT 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, NexAIoT 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 NexAIoT 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

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

Board Level

- Component fee: NexAIoT 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, NexAIoT 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 NexAIoT for further information.

CAUTION! 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.

CAUTION! 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 NexAIoT products, visit NexAIoT's website at www.nexaiot.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, Zhongzheng 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.922, Zhongzheng Rd.,
Zhonghe District, New Taipei City,
23586, Taiwan, R.O.C.
Tel: +886-2-8226-7796
Fax: +886-2-8226-7926
Email: jacobhuang@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: jacobhuang@nexaiot.com
www.nexaiot.com

NexCOBOT Taiwan Co., Ltd.

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

GreenBase Technology Corp.

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

DivioTec Inc.

19F-1A, No.97, Sec.4, ChongXin Rd.,
Sanchong District,
New Taipei City, 24161, Taiwan, R.O.C.
Tel: +886-2-8976-3077
Email: sales@diviotec.com
www.diviotec.com

AIoT Cloud Corp.

13F, No.922, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: alantsai@aiotcloud.net
www.aiotcloud.dev

EMBUX TECHNOLOGY CO., LTD.

13F, No.916, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: info@embux.com
www.embux.com

TMR TECHNOLOGIES CO., LTD.

13F, No.916, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: services@tmrtek.com
www.tmrtek.com

China
NEXSEC Incorporated

201, Floor 2, Unit 2, Building 15, Yard 3,
Gaolizhang Road, Haidian District,
Beijing, 100094, China
Tel: +86-10-5704-2680
Fax: +86-10-5704-2681
Email: marketing@nexsec.cn
www.nexsec.cn

NEXCOM Shanghai

Room 406-407, Building C, No 154, Lane 953,
Jianchuan Road, Minhang District,
Shanghai, 201108, China
Tel: +86-21-5278-5868
Fax: +86-21-3251-6358
Email: sales@nexcom.cn
www.nexcom.cn

NEXCOM Surveillance Technology Corp.

Floor 8, Building B3, Xiufeng 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

NEXGOL Chongqing

1st Building No.999,
Star Boulevard, Yongchuan Dist,
Chongqing City, 402160, China
Tel: +86-23-4960-9080
Fax: +86-23-4966-5855
Email: sales@nexgol.com.cn
www.nexcobot.cn

Beijing NexGemo Technology Co.,Ltd.

Room 205, No.1, Fazhan Road.,
Beijing International Information Industry Base,
Changping District,
Beijing, 102206, China
Tel: +86-10-8072-2025
Fax: +86-10-8072-2022
Email: sales@nexgemo.cn
www.nexgemo.com

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.com

Package Contents

Before continuing, verify that the package that you received is complete. Your NISE 70-T01/T02/T03 package should have all the items listed in the following table.

Item	Part Number	Description	Qty
1	4NCPM00302X00	(T)Terminal Blocks 3P Phoenix Contact:1777992 5.08mm MALE DIP GREEN	1
2	4NCPM00203X00	Terminal Blocks 2P Phoenix Contact:1803578 3.81mm MALE ASSY GREEN	1
3	5061600245X00	Washer Kangyang:TW-320-01 10.4x6.4mm T=1mm NYLON BLACK	6
4	5050900008X00	Mini PCI-e Bracket Ver:A MP 30x29x2.1mm SPCC T=1.0mm	1
5	5060900226X00	Mini PCIe Bracket CHYUAN-JYH 29x30x2.1mm SPCC t=1.0mm NI	1
6	50311F0295X00	Flat Head Screw Long Fei:F2x4 NYLOK NIGP F2x4 NIGP NYLOK	1
7	50311F0330X00	Round Head Screw Long Fei:P2x3 ISO+NYLON P2x3 NI NYLOK	2
8	50311F0215X00	(H)I Head Screw Long Fei:I3x5ISO+NYLOK NIGP I3x5 NI NYLOK	1
9	5060200549X00	Thermal Pad For VTC6220-BK VPU-02 Card Heatsink E-LIN 40x30x5mm K=2.5 W/mk PK404HC	2

xiii NISE 70-T01/T02/T03 User Manual

Ordering Information

The following information below provides ordering information for NISE 70.

NISE 70-T01 (P/N: 10J00007000X0)
- Intel® Celeron® 6305E Tiger Lake-UP3 processor fanless system

NISE 70-T02 (P/N: 10J00007001X0)
- Intel® Core™ i5-1145G7E Tiger Lake-UP3 processor system with fan (Optional fanless with 15W TDP limit)

NISE 70-T03 (P/N: 10J00007002X0)
- Intel® Core™ i7-1185G7E Tiger Lake-UP3 processor system with fan (Optional fanless with 15W TDP limit)

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

xiv NISE 70-T01/T02/T03 User Manual

CHAPTER 1: PRODUCT INTRODUCTION

Overview

Key Features

- Onboard Intel® Celeron® 630SE Processor

- 4 x HDMI

- 3 x USB 3.0, 1 x USB 2.0

- 1 x RS232/422/485, 1 x RS232

- 3 x GbE LAN ports; support WoL, teaming and PXE

- Onboard TPM2.0 chip

- 1x M.2 socket for storage/4G LTE/5G modules

- 1 x mini-PCIe sockets support optional mSATA/Wi-Fi/BT/4G LTE module

- Support operating temperature from -5 to 55 Celsius degree

- Support +12V to 24VDC input; support ATX power mode

Hardware Specifications

CPU Support

- Onboard Intel® Celeron® processor 630SE
- Support Intel® Core™ i7/i5 Tiger Lake-UP3 processors with different SKUs

Main Memory

- 1 x DDR4 3200 SO-DIMM socket, support up to 32GB

Display Option

- 4 x HDMI ports, support 4K @30Hz

I/O Interface - Front

- ATX power on/off switch
- 4 x HDMI port, support 4K @30Hz
- 2 x Intel® I211 and 1 x Intel® WGI219LM GbE LAN ports; support WoL, teaming and PXE
- 1 x Antenna hole

I/O Interface - Rear

- 3 x USB 3.0 ports (900mA per each)
- 1 x USB 2.0 port (500mA per each)
- 2 x DB9 serial port for COM1 & COM2
  - COM1: RS232/422/485 with auto flow control
  - COM2: full RS232 signal
- 2 x Antenna hole
- 1 x 2-pin remote power on/off switch
- Support +12V to 24V DC input

I/O Interface - Internal

- 4 x GPI and 4 x GPO (programmable to GPI or GPO)

Expansion Slot/Storage

- 1 x mini-PCIe sockets for optional Wi-Fi/BT/4G LTE/mSATA
- 1 x M.2, support B & B+M Key module for optional 4G LTE/5G/SATA storage (SATA/PCIe/USB,2242/3042)

Power Requirements

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

Supported OS

- Windows® 10 Enterprise 64-bit
- Linux Kernel 4.19

Dimensions

- 198.8mm (W) x 150.4mm (D) x 37.7mm (H) with wall mount bracket

Construction

- Aluminum and metal chassis with fanless design

Environment

- Operating temperature:

  Ambient with air flow: -5°C to 55°C (Celeron), 0°C to 50°C (Core i5/i7)
  (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 95% (non-condensing)
- Shock protection:
  - M.2/mSATA: 50G, half sine, 11ms, IEC60068-2-27
- Vibration protection with mSATA & M.2 condition:
  - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
  - 64-Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6

Certifications

- CE
- FCC Class A

Knowing Your NISE 70

Front Panel

Antenna Hole

HDMI   LAN   Power Switch

Rear Panel

Antenna Hole

Remote On/Off

USB 2.0/3.0

COM1   COM2
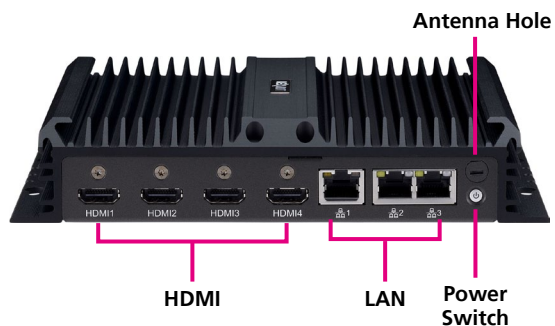
DC Input

Antenna Hole
Used to install external antennas.

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

LAN
Three RJ45 ports used to connect the system to a local area network.

HDMI
Four HDMI ports used to connect HDMI interface displays.

DC Input
Used to plug a DC power cord.

COM1 to COM2
– COM1: RS232/422/485 with auto flow control
– COM2: full RS232 signal
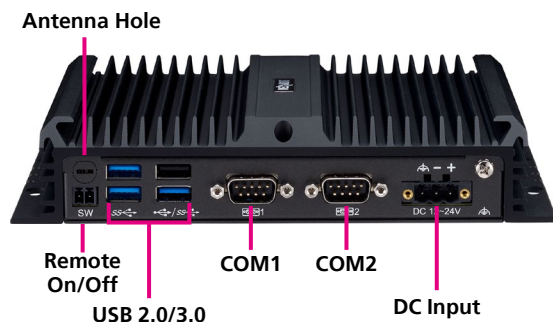
USB 3.0
USB 3.0 ports to connect the system with USB 3.0/2.0 devices.

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

Remote On/Off Switch
Used to connect a remote to power on/off the system.

Mechanical Dimensions
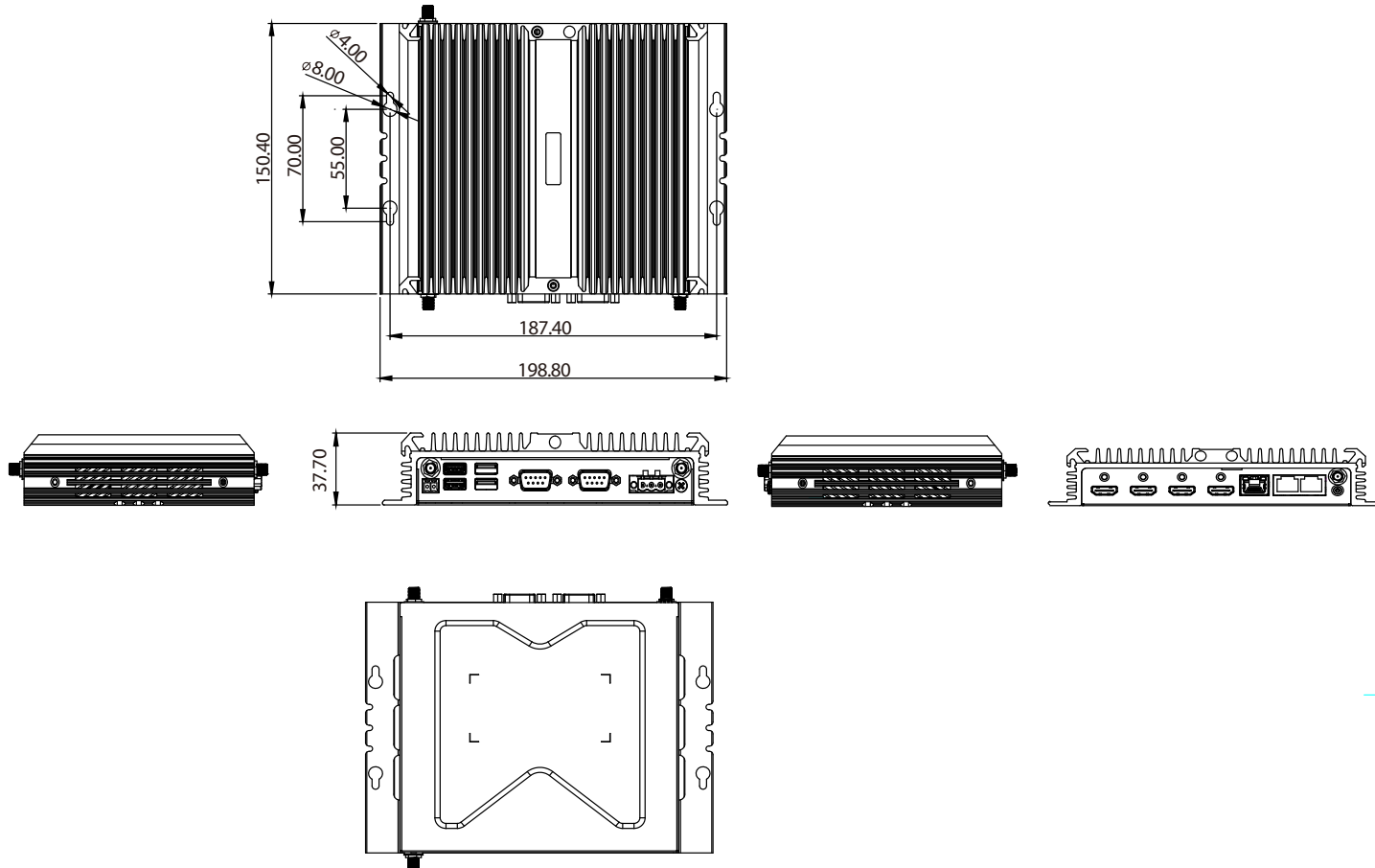
CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 70 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)
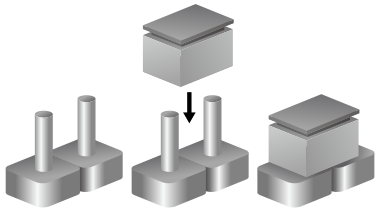
Three-Pin Jumpers: Pins 1 and 2 are Short
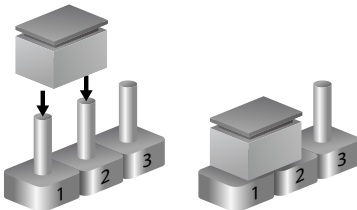
Locations of the Jumpers and Connectors for NISB 70

NISB 70

The figure below is the top view of the NISB 70 main board which is the main board used in NISE 70. It shows the locations of the jumpers and connectors.
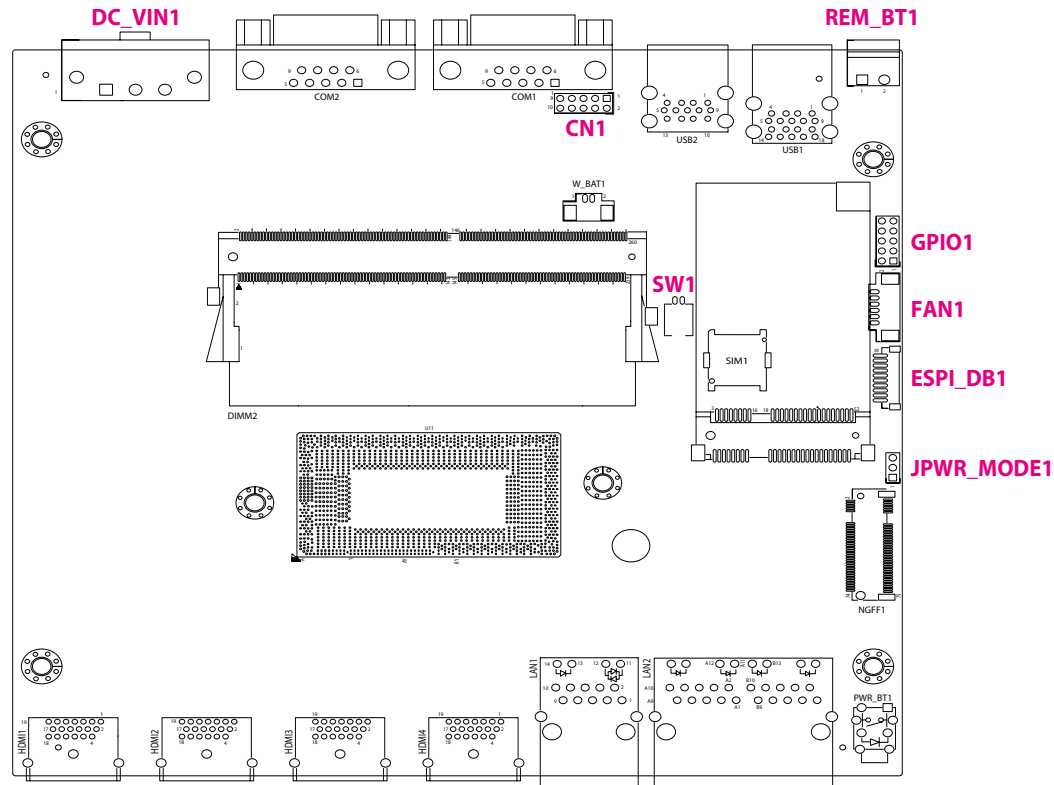
DIP Switches

Clear CMOS Switch

Connector type: 2-pin DIP switch
Connector location: SW1

ATX/AT Mode Selection

Connector location: JPWR_MODE1
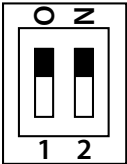
Pin	Definition
1	Clear CMOS
2	Reset CSME

Default: 1-OFF, 2-OFF

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

Default: 1-2

Clear CMOS Switch

Connector location: PWR_BT1

Connector Pin Definitions

External I/O Interfaces - Front Panel

Power Input Connector

Connector location: DC_VIN1

COM Port

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM1, COM2
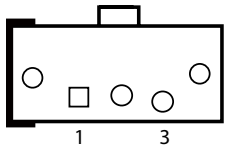
Pin	Definition
1	VIN
2	GND
3	GND_EARTH
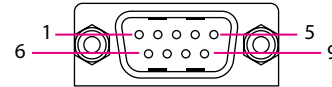
COM1		COM2	
Pin	Definition	Pin	Definition
1	DCD#_COM1	1	DCD#_COM2
2	RXD_COM1	2	RXD_COM2
3	TXD_COM1	3	TXD_COM2
4	DTR#_COM1	4	DTR#_COM2
5	GND	5	GND
6	DSR#_COM1	6	DSR#_COM2
7	RTS#_COM1	7	RTS#_COM2
8	CTS#_COM1	8	CTS#_COM2
9	RI#_COM1	9	RI#_COM2

(COM1:RS-232/422/485, COM2: RS232 only)

USB 3.0 Ports

Connector type: Dual USB 3.0 Type A ports
Connector location: USB1, USB2
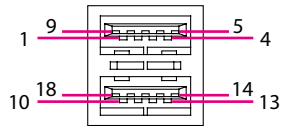
Power Button Connector

Connector type: 1x2 2-pin header
Connector location: REM_BT1
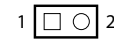
Pin	Definition
1	GND
2	REM_BT#

12

Display Connector

Connector type: HDMI port
Connector location: HDMI1 to HDMI4
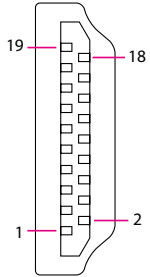
LAN 1 Port

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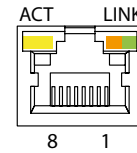
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

LAN 2 Port

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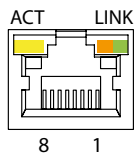
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Internal Connectors

GPIO Connector

Connector type: 2x5 10-pin header
Connector location: GPIO1

Fan Connector

Connector type: 1x6 6-pin header
Connector location: FAN1
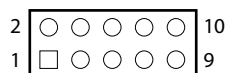
Pin	Definition	Pin	Definition
1	+5V	2	GND
3	GPO_0	4	GPI_0
5	GPO_1	6	GPI_1
7	GPO_2	8	GPI_2
9	GPO_3	10	GPI_3
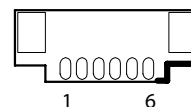
Pin	Definition	Pin	Definition
1	GND	2	+5V
3	TACH_FAN1	4	PWM_FAN1
5	+5VSB	6	GND

Debug Connector

Connector type: 1x10 10-pin header
Connector location: ESPI_DB1
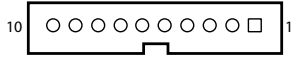
Pin	Definition	Pin	Definition
1	GND	2	PLTRST#
3	eSPI_CLK	4	eSPI_CS#
5	eSPI_IO3	6	eSPI_IO2
7	eSPI_IO1	8	eSPI_IO0
9	eSPI_RESET#	10	+3VSB

Mini-PCIe Connector

Connector location: MPCIE1
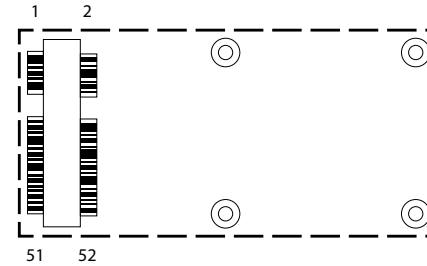
M.2 B Key Slot

Connector location: NGFF1
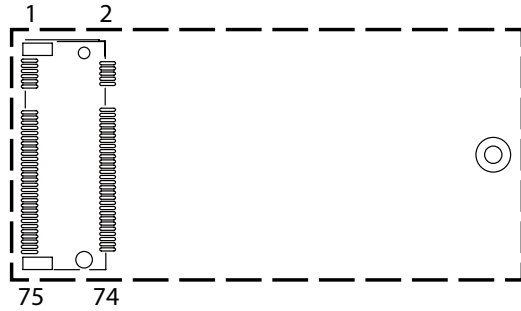
Nano SIM Slot

Connector location: SIM1

17
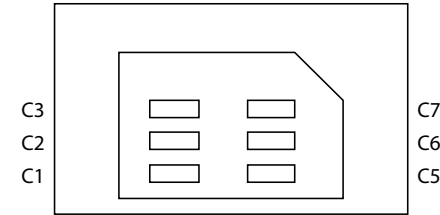
System Internal Function Connector

Connector type: 2x5 10-pin header
Connector location: CN1

```
2 [ O  O  O  O  O ] 10
1 [ □  O  O  O  O ] 9
```
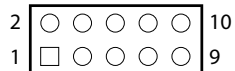
Pin	Definition	Pin	Definition
1	+5VSB	2	GND
3	USB2_N	4	USB2_P
5	UART_RX	6	UART_TX
7	I2C_SCL	8	I2C_SDA
9	GPO_3	10	+5VSB

Block Diagram
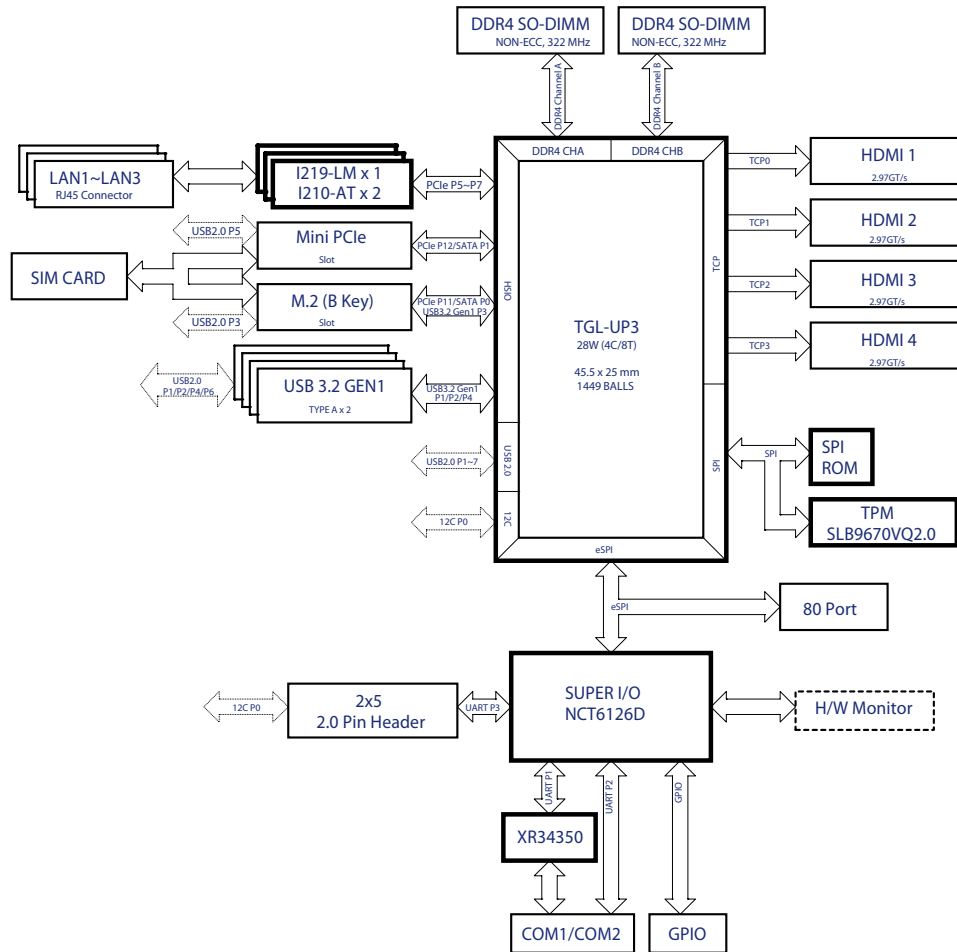
CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover

CAUTION! 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.

Installing a SO-DIMM Memory Module

1. Locate the SO-DIMM socket.
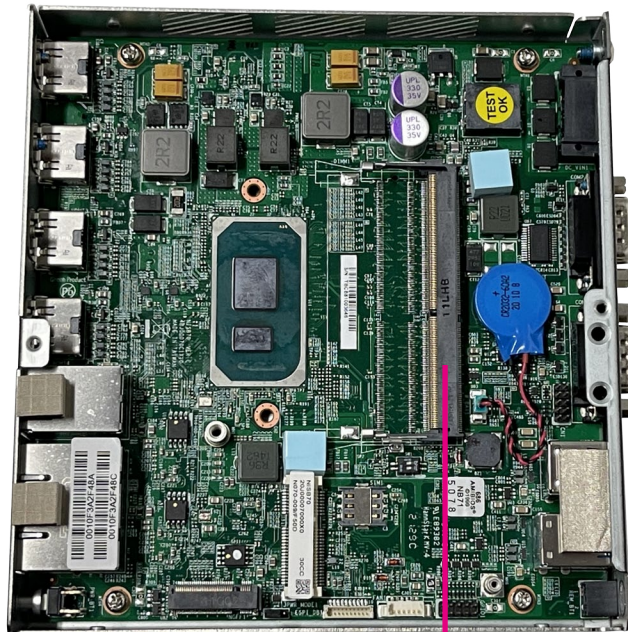
SO-DIMM Socket

2. Insert the module into the socket at an approximately 30-degree 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.
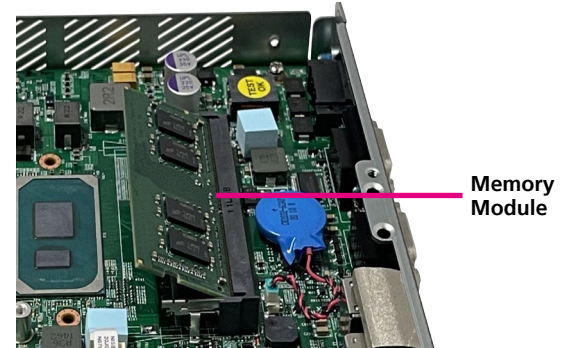
Memory Module
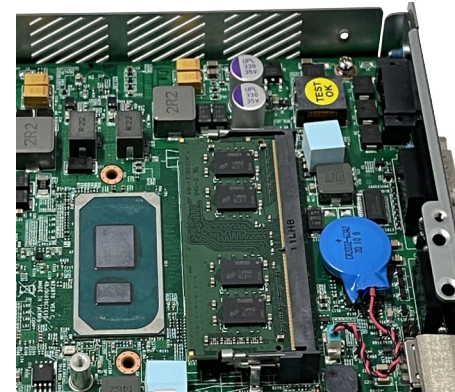
Installing a 5G/4G LTE/mSATA Module (Full-Size)

1. Locate the mini-PCIe slot on the board.

2. Insert the module into the mini-PCIe slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.
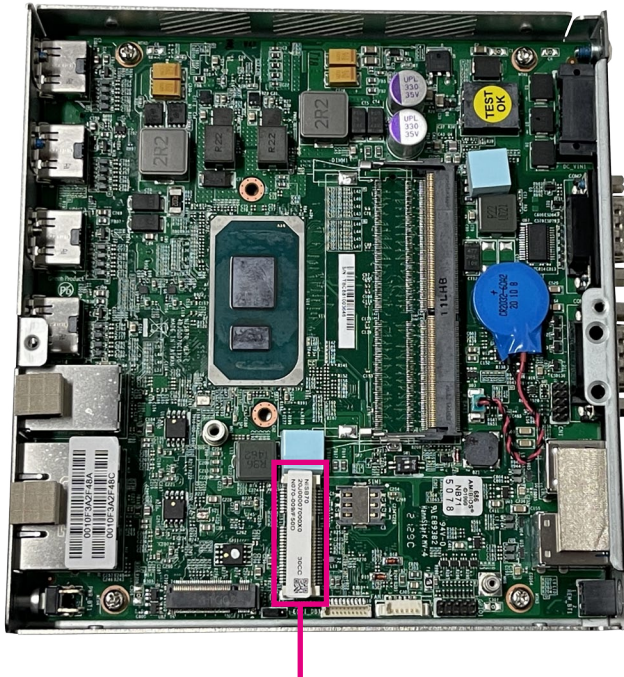
Mini-PCIe Socket
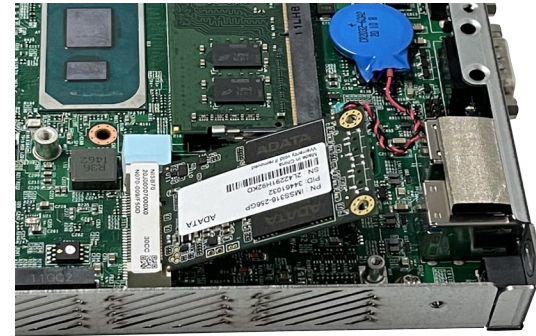
3. Push the module down and secure it with a screw.
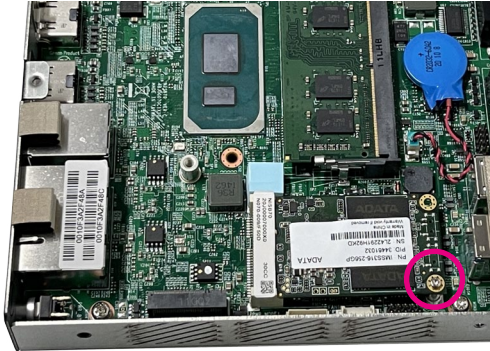
Installing a WLAN/Bluetooth Mini-PCIe Module (Half-size)

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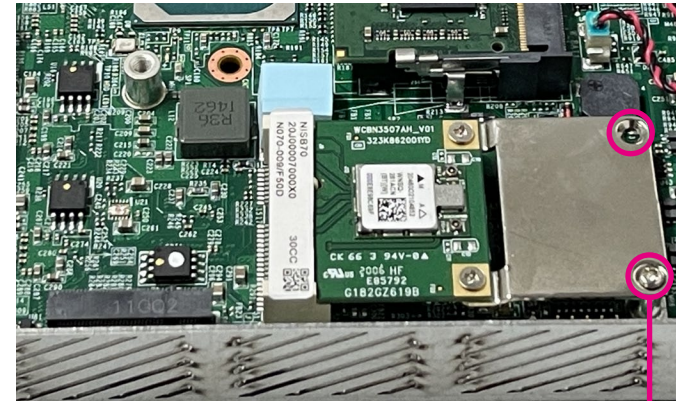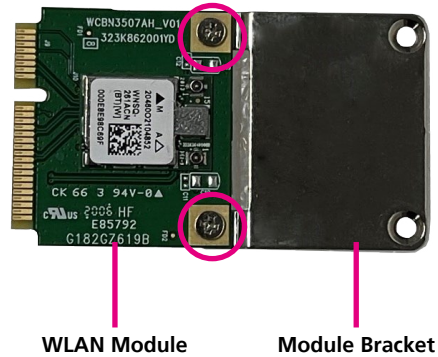
Mounting Screw

Installing a SIM Card

1. Locate the SIM card holder on the motherboard.

2. Release the cover and place the SIM card onto the holder. Push through to insert the SIM card into the SIM card slot.
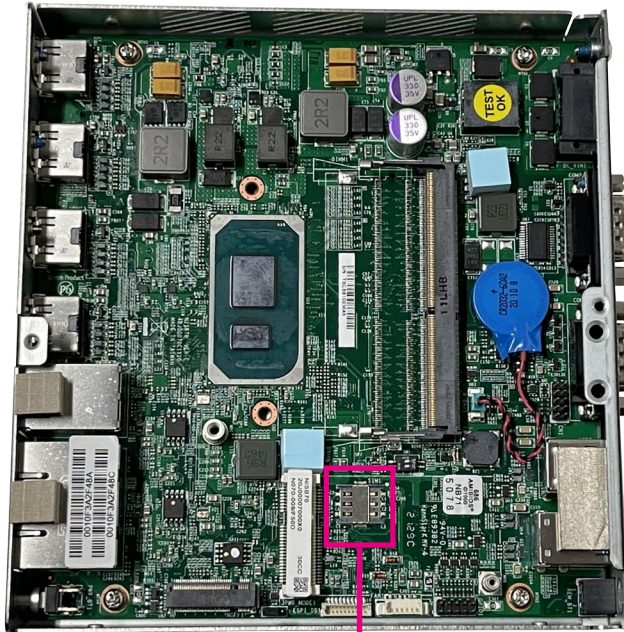
SIM card slot
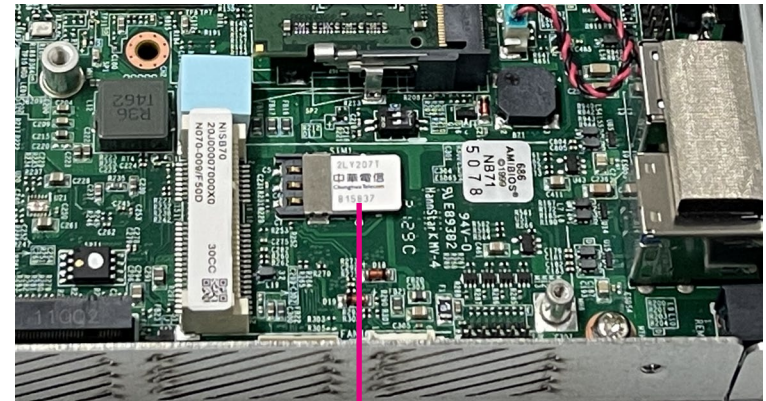
SIM Card

Note:
SIM-card cover is secured to the board.

3. Close the cover and secure it to the original position.

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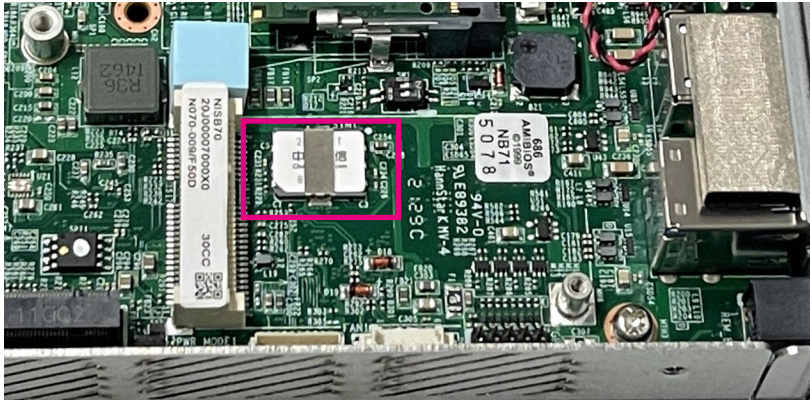
2. Insert the SMA antenna jack end of the cable through the antenna hole, and insert the 2 rings (ring 1 and ring 2) and two washers back to the antenna jack.

Note: Gasket and washer installation sequence.

4   3   2   1 Installation Sequence
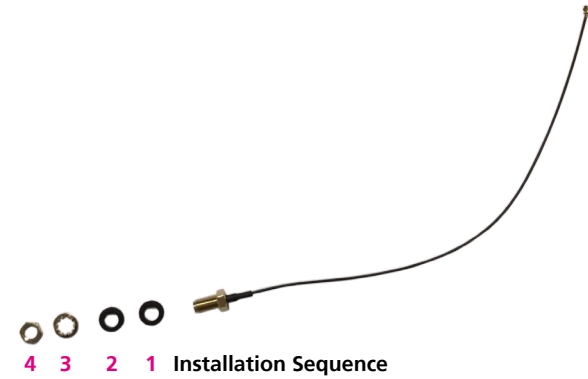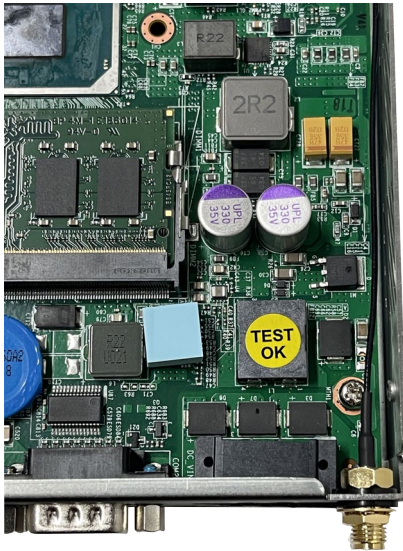
Note:
When installing Wi-Fi or 4G LTE antennas, make sure the washers (P/N:5061600245X00) are fitted onto the antenna connector, one on each side as shown below.
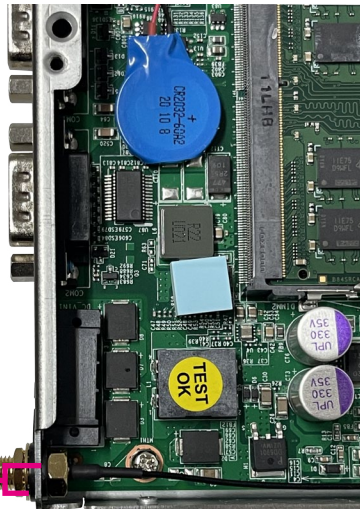
Side A facing inwards and each other

Side A   Side B

3. Attach the RF cable onto the module.
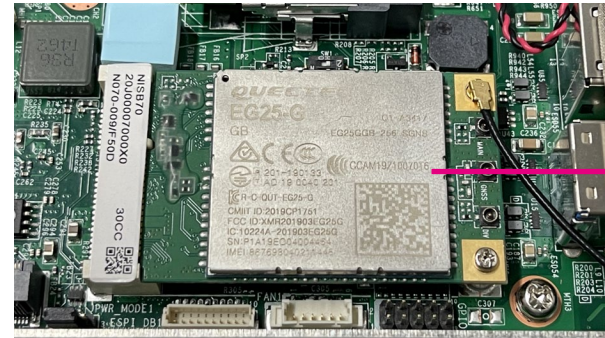
RF Cable
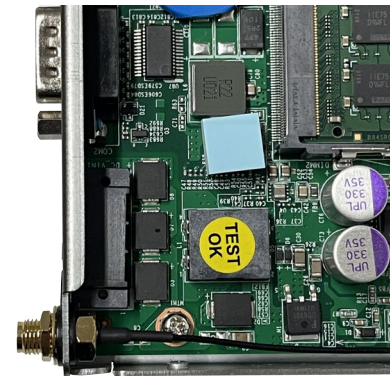
4. Connect the external antenna to the antenna jack.

CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 70 series. 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 NexAIoT website at www.nexaiot.com.

About BIOS Setup

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

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

With easy-to-use pull down menus, you can configure items such as:
- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

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

When to Configure the BIOS

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

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

Default Configuration

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

Entering Setup

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

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

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

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

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 Enter↵ .

BIOS Setup Utility

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

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.
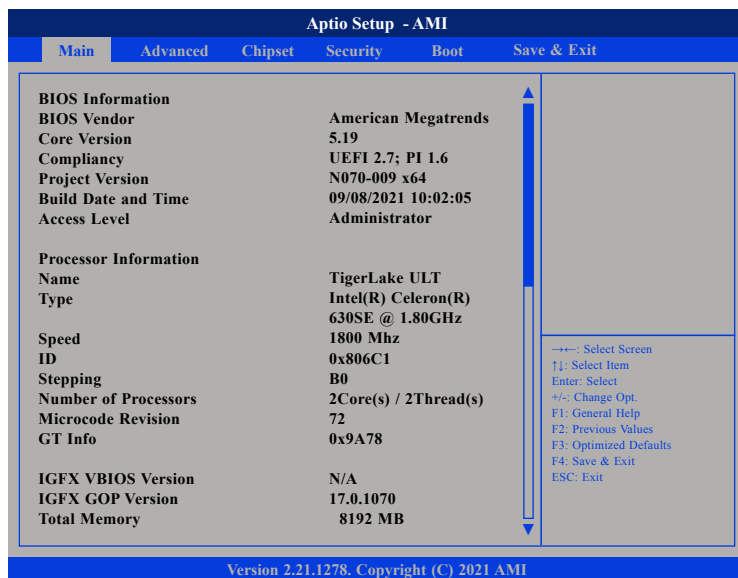
System Date
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

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  - AMI
   Main      Advanced    Chipset    Security     Boot     Save & Exit

  BIOS Information
  BIOS Vendor                 American Megatrends
  Core Version                5.19
  Compliancy                  UEFI 2.7; PI 1.6
  Project Version             N070-009 x64
  Build Date and Time         09/08/2021 10:02:05
  Access Level                Administrator

  Processor Information
  Name                        TigerLake ULT
  Type                        Intel(R) Celeron(R)
                              630SE @ 1.80GHz
  Speed                       1800 Mhz
  ID                          0x806C1                    →←: Select Screen
  Stepping                    B0                         ↑↓: Select Item
  Number of Processors        2Core(s) / 2Thread(s)      Enter: Select
  Microcode Revision          72                         +/-: Change Opt.
  GT Info                     0x9A78                     F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
  IGFX VBIOS Version          N/A                        F4: Save & Exit
  IGFX GOP Version            17.0.1070                  ESC: Exit
  Total Memory                 8192 MB

             Version 2.21.1278. Copyright (C) 2021 AMI
```

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

```
► CPU Configuration                          CPU Configuration Parameters
► Power & Performance
► Trusted Computing
► NCT6126D Super IO Configuration
► Hardware Monitor
► USB Configuration
► Network Stack Configuration
► CSM Configuration
► NVMe Configuration

  Intel(R) Ethernet Connection (13) I219-LM -
  00:10:F3:A2:F4:8A
                                             →←: Select Screen
                                             ↑↓: Select Item
                                             Enter: Select
                                             +/-: Change Opt.
                                             F1: General Help
                                             F2: Previous Values
                                             F3: Optimized Defaults
                                             F4: Save & Exit
                                             ESC: Exit
```

Version 2.21.1278. Copyright (C) 2021 AMI

CPU Configuration

This section is used to configure the CPU.

```
Aptio Setup - AMI
  Advanced

CPU Configuration                              When enabled, a VMM
                                               can utilize the additional
Intel (VMX) Virtualization    [Enabled]        hardware capabilities provided
Technology                                     by Vanderpool Technology.
Active Processor Core         [All]

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

Version 2.21.1278. Copyright (C) 2021 AMI

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

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

Power & Performance

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

Aptio Setup - AMI
Advanced

Power & Performance

▶ CPU - Power Management Control

CPU - Power Management Control Options

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

Version 2.21.1278. Copyright (C) 2021 AMI

Aptio Setup - AMI
Advanced

CPU - Power Management Control

Intel(R) SpeedStep(tm)   [Disabled]
C states   [Disabled]

Allows more than two frequency ranges to be supported.

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

Version 2.21.1278. Copyright (C) 2021 AMI

Intel® SpeedStep™
Allows more than two frequency ranges to be supported.

C states
Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

Trusted Computing

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

```
                          Aptio Setup  - AMI
          Advanced

    TPM2.0 Device Found                              Enables or Disables BIOS
    Firmware Version:         7.62                    support for security device.
    Vendor:                   IFX                     O.S. will not show Security
                                                      Device. TCG EFI protocol and
    Security Device Support   [Enable]                INT1A interface will not be
    Active PCR banks          SHA256                  available.
    Available PCR banks       SHA-1,SHA256

    SHA-1 PCR Bank            [Disabled]
    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 2.21.1278. Copyright (C) 2021 AMI
```

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. Select to tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

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.

NCT6126D Super IO Configuration

This section is used to configure the serial ports.

Aptio Setup - AMI	
Advanced	
NCT6126D Super IO Configuration	Set Parameters of Serial Port 1 (COMA)
Super IO Chip NCT6126D	
▶ Serial Port 1 Configuration	
▶ Serial Port 2 Configuration	
	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278. Copyright (C) 2021 AMI	
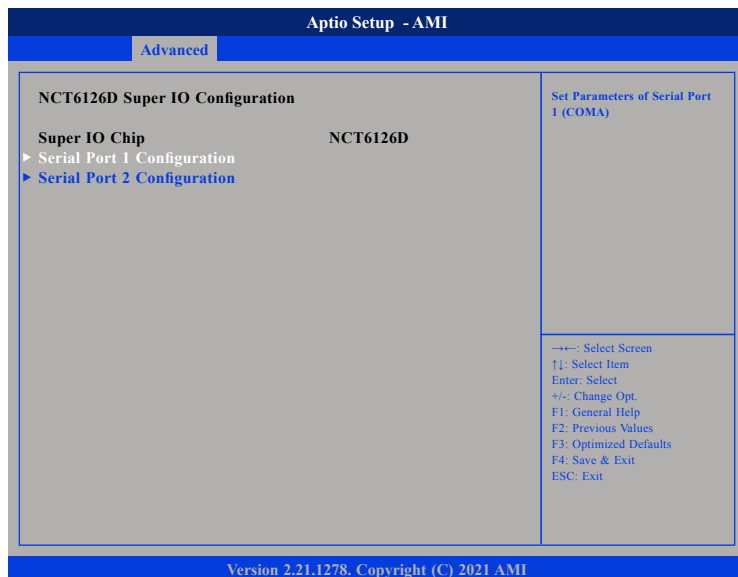
Super IO Chip
Displays the Super I/O chip used on the board.

Serial Port 1 to Serial Port 2 Configuration
Configuration settings for serial port 1 to port 2.

Serial Port 1 Configuration

This section is used to configure serial port 1.

Aptio Setup - AMI	
Advanced	
Serial Port 1 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=3F8h; IRQ=4;	
Onboard Serial Port Mode [RS232]	
Terminal resistor [Enabled]	
	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278. Copyright (C) 2021 AMI	
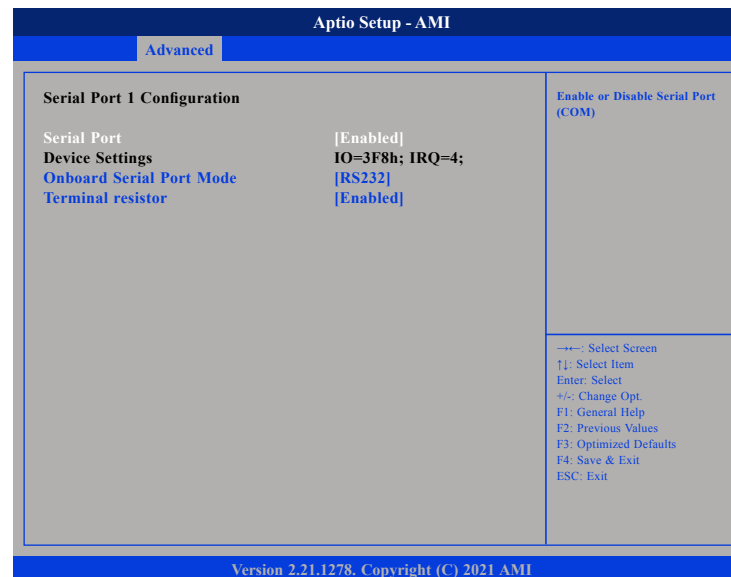
Serial Port
Enables or disables the serial port.

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

Terminal resistor
Enable or disable terminal resistor.

Serial Port 2 Configuration

This section is used to configure serial port 2.

```
                         Aptio Setup - AMI
        Advanced

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




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


           Version 2.21.1278. Copyright (C) 2021 AMI
```
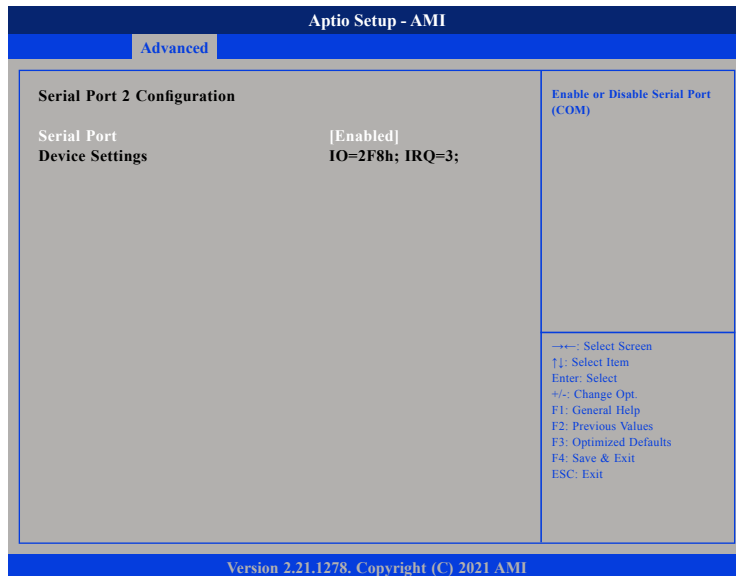
Serial Port
Enables or disables the serial port.

Hardware Monitor

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

```
                         Aptio Setup  - AMI
          Advanced

   Pc Health Status

   System temperature(RT3)          : +35 °c
   System temperature(RT4)          : +38 °c
   CPU temperature                  : +38 °c
   CPU Fan Speed                    : N/A
   +3.3V                            : +3.392 V
   +5V                              : +4.979 V
   VCORE                            : +1.264 V


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


           Version 2.21.1278. Copyright (C) 2021 AMI
```
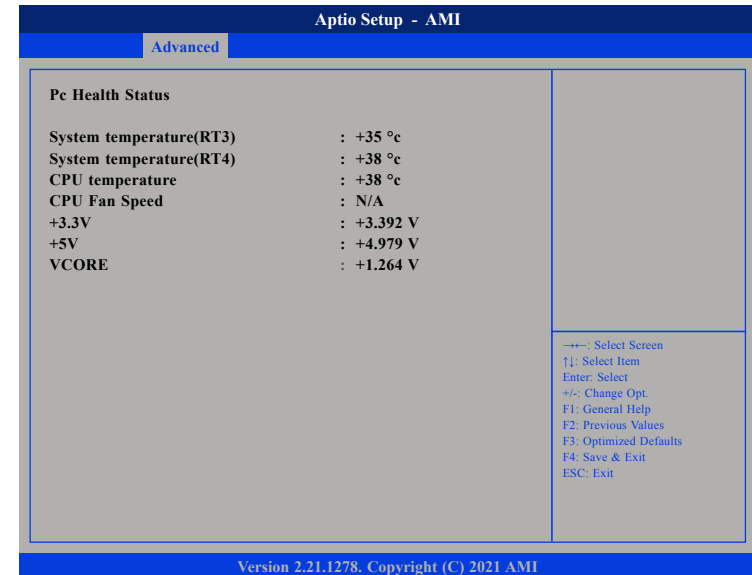
System temperature
Detects and displays the current system temperature.

CPU temperature
Detects and displays the current CPU temperature.

+3.3V to VCORE
Detects and displays the output voltages.

USB Configuration

This section is used to configure the USB.

Aptio Setup - AMI		
Advanced		

```
USB Configuration                                       Enables Legacy USB support.
                                                        AUTO option disables legacy
USB Module Version              26                      support if no USB devices are
                                                        connected. DISABLE option will
USB Controllers:                                        keep USB devices available
   2 XHCIs                                              only for EFI applications.
USB Devices:
   1 Keyboard

Legacy USB Support              [Enabled]
XHCI Hand-off                   [Enabled]

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



            Version 2.18.1278. Copyright (C) 2021 AMI
```

Legacy USB Support

Enabled: Enables legacy USB support.

Auto: Auto option disables legacy support if no USB devices are connected.

Disabled: Disable option will keep USB devices available only for EFI applications.

XHCI Hand-off

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

Device reset time-out

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

Network Stack Configuration

This section is used to configure the network stack.

Aptio Setup - AMI		
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 2.21.1278. Copyright (C) 2021 AMI		
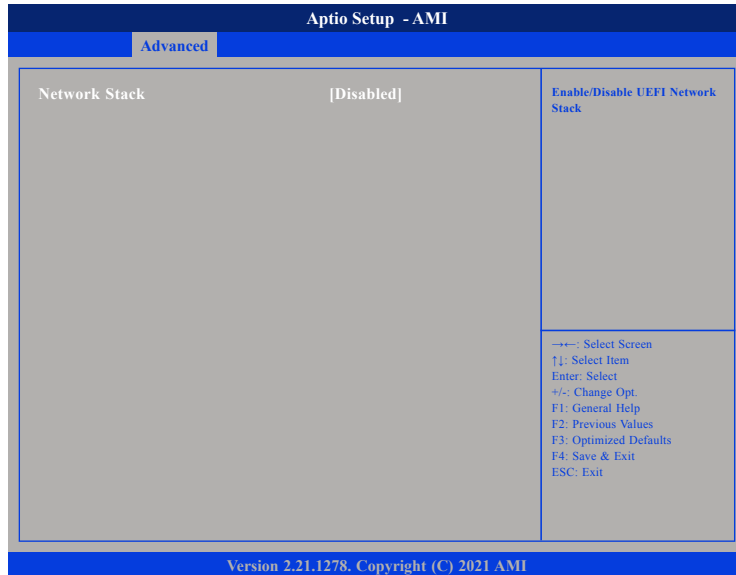
Network Stack

Enables or disables UEFI network stack.

CSM Configuration

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

Aptio Setup - AMI		
Advanced		
Compatibility Support Module Configuration		Enable/Disable CSM Support.
CSM Support [Disabled]		
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278. Copyright (C) 2021 AMI		
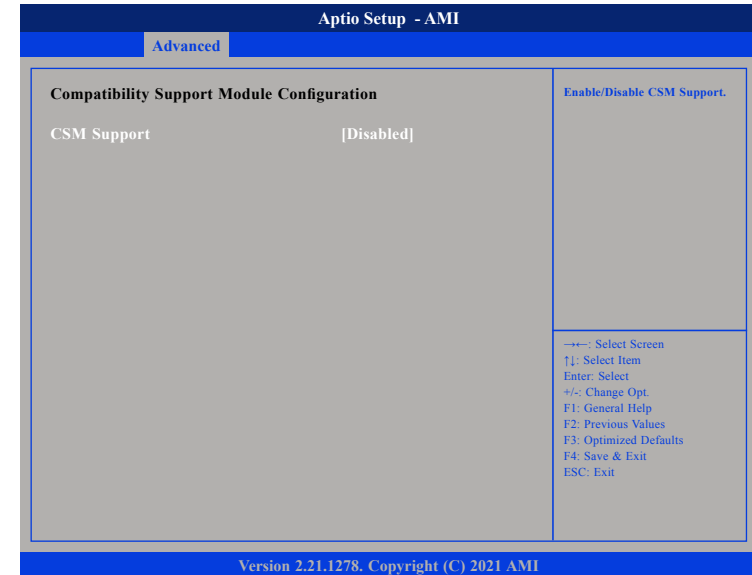
CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

NVMe Configuration

This section is used to display information on the NVMe devices installed.

```
                        Aptio Setup  - AMI
        Advanced

    NVMe Configuration

    No NVME Device Found


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


          Version 2.21.1278. Copyright (C) 2021 AMI
```
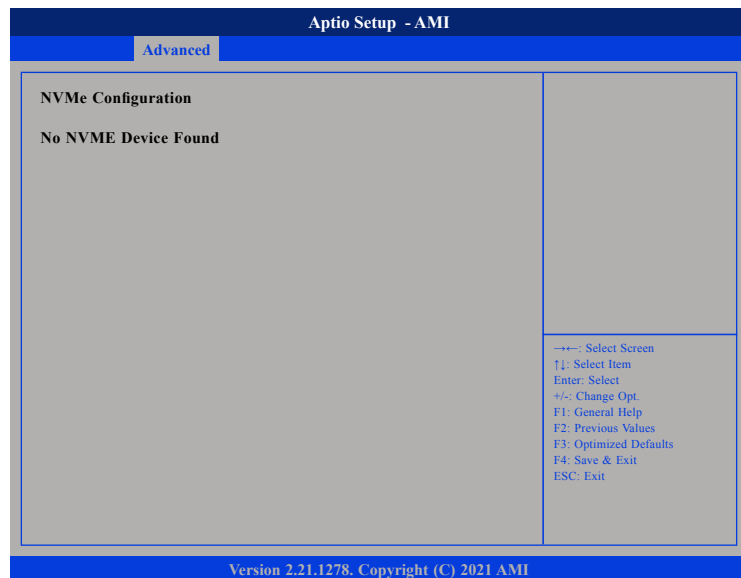
Intel® Ethernet Connection (13) I2190LM - 00:10:F3:A2:F4:8A

```
                        Aptio Setup  - AMI
        Advanced


    PORT CONFIGURATION INFORMATION
    UEFI Driver:            Intel(R) Gigabit 0.0.29
    Adapter PBA:            FFFFFF-OFF
    PCI Device ID           15FB
    PCI Address             00:1F:06
    MAC Address             00:10:F3:A2:F4:8A



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


          Version 2.21.1278. Copyright (C) 2021 AMI
```
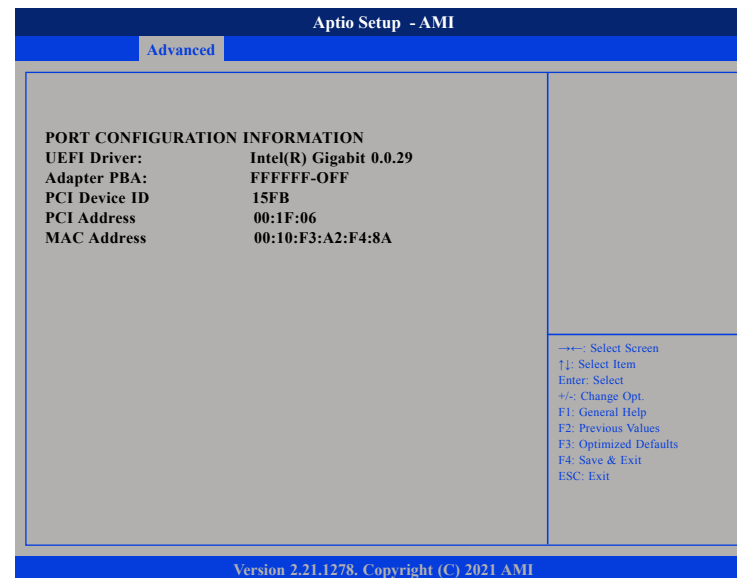
Chipset

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  - AMI
   Main      Advanced   Chipset    Security     Boot     Save & Exit

 ►System Agent (SA) Configuration              South Agent (SA) Parameters
 ►PCH-IO Configuration




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


          Version 2.21.1278. Copyright (C) 2021 AMI
```
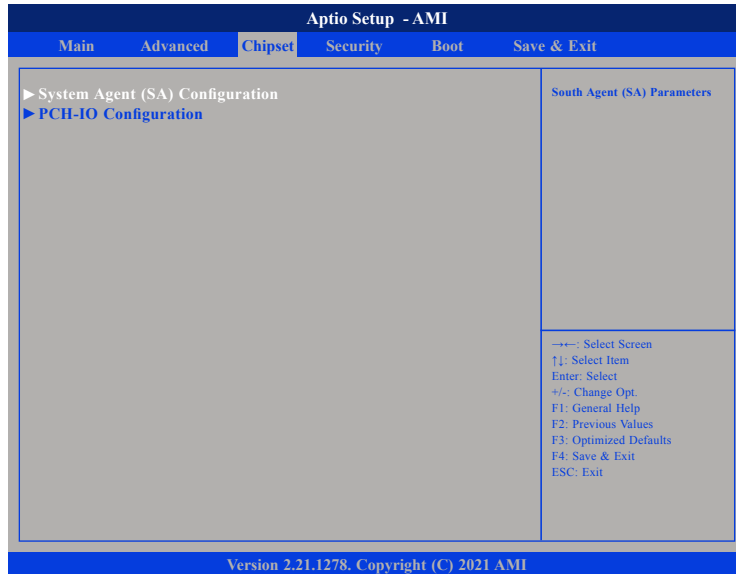
System Agent Configuration

Enters the System Agent submenu.

PCH-IO Configuration

Enters the PCH-IO Configuration submenu.

System Agent (SA) Configuration

```
                         Aptio Setup - AMI
                        Chipset

 System Agent (SA) Configuration              Graphics Configuration

 VT-d                          Supported

 Graphics Configuration

 VT-d                          [Enabled]



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

          Version 2.21.1278. Copyright (C) 2021 AMI
```
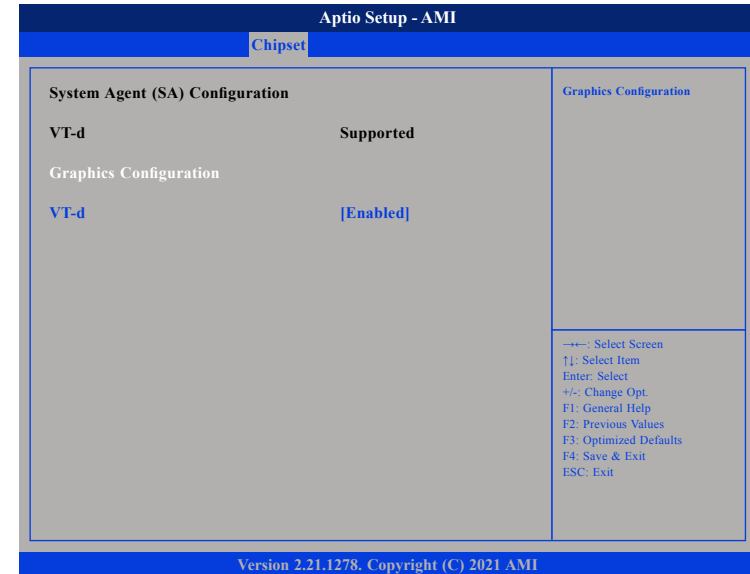
Graphics Configuration

Configures the graphics chip settings.

VT-d

Enables or disables VT-d function on MCH.

Graphics Configuration

Aptio Setup - AMI	
Chipset	

Graphics Configuration

DVMT Pre-Allocated   [60M]
DVMT Total Gfx Mem   **[256M]**

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

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

Version 2.21.1278. Copyright (C) 2021 AMI

DVMT Pre-Allocated
Select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem
Select DVMT5.0 total graphic memory size used by the internal graphics device.

Security

Aptio Setup Utility - AMI					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

Password Description

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

Administrator Password
User Password

Set Administrator Password

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

Version 2.21.1278. Copyright (C) 2021 AMI

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

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

Boot

image of BIOS screen

Aptio Setup - AMI					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

Boot Configuration
Setup Prompt Timeout   1
Bootup NumLock State   [Off]
Quiet Boot   [Disabled]

Boot Option Priorities
Boot Option #1   [UEFI: Built-in EFI Shell]

Number of seconds to wait for setup activation key.
65535 (0xFFFF) means indefinite waiting.

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

Version 2.12.1278 Copyright (C) 2021 AMI

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.
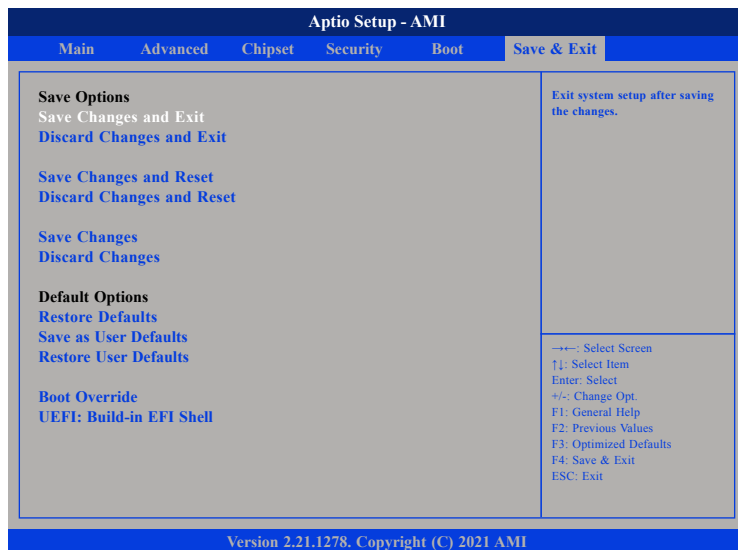
Save & Exit

```
                               Aptio Setup - AMI
    Main      Advanced     Chipset     Security      Boot    Save & Exit

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

  Save Changes and Reset
  Discard Changes and Reset

  Save Changes
  Discard Changes

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

                  Version 2.21.1278. Copyright (C) 2021 AMI
```

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

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

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.

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

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

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

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

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

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

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 70 series. The pin definition is shown in the following table:

Pin	GPIO Mode	PowerOn Default	Address	Pin	GPIO Mode	Address
1	VCC			2	GND	
3	GPO0	Low	A02h (Bit0)	4	GPI0	A02h (Bit4)
5	GPO1	Low	A02h (Bit1)	6	GPI1	A02h (Bit5)
7	GPO2	Low	A02h (Bit2)	8	GPI2	A02h (Bit6)
9	GPO3	Low	A02h (Bit3)	10	GPI3	A02h (Bit7)

The bit is Set/Clear indicated output High/Low.

Appendix B: Watchdog Timer Setting

ITE8786 Watchdog Programming Guide

```
#define SUPERIO_PORT      0x4E
#define WDT_SET           0xF0
#define WDT_VALUE         0xF1

void main(void)
{
   #Enter SuperIO Configuration
        outportb(SUPERIO_PORT, 0x87);
        outportb(SUPERIO_PORT, 0x87);

   # Set LDN
        outportb(SUPERIO_PORT, 0x07);
        outportb(SUPERIO_PORT+1 ,0x08);

   # Set WDT setting
        outportb(SUPERIO_PORT, WDT_SET);
        outportb(SUPERIO_PORT+1, 0x00);          # Use the second
                                                 # Use the minute, change value to 0x08
   # Set WDT sec/min
        outportb(SUPERIO_PORT, WDT_VALUE);
        outportb(SUPERIO_PORT+1, 0x05);          #Set 5 seconds
}
```

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 Software
4. Intel® Thermal Analysis Tool software version
5. Network test program
6. Function port fixture:

Functional Port	Front / Rear Panel
USB 2.0	5V, 0.5A (Cement Resistor) for full load
USB 3.0*3	5V, 1.0A (Cement Resistor) for full load
COM (All ports)	RS232 Loopback (115200 baud rate)
Display Interface	HDMI Interface LCD Monitor
USB	Keyboard & Mouse

Test Procedure

1. Make sure mechanical structure and electrical functionality are normal before testing.
2. Install all I/O load devices and set up DC power supply voltage according to system input voltage specifications.
3. Measure system maximum power consumption as below mode:
   – BIOS mode.
   – ACPI Sleep State Mode (S0).
   – 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	1.029 A	12.35 W
24 V	0.585 A	14.04 W
ACPI Sleep (S0) Mode Power Consumption		
12 V	0.183 A (without USB loader)	2.2 W
24 V	0.162 A (without USB loader)	3.89 W
100% Full Loading Mode Power Consumption		
12 V	3.42 A	41.04 W
24 V	1.72 A	41.28 W

Note:
CPU power limit value is 15W by default (by BIOS setting).