



NexAIoT Co., Ltd.

IoT Automation Solutions Business Group

Fan-less Computer

NISE 110 Series

User Manual

CONTENTS

Preface

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

Chapter 1: Product Introduction

Overview	1
Hardware Specifications.....	2
Knowing Your NISE 110.....	4
Front Panel.....	4
Rear Panel.....	5
Mechanical Dimensions.....	6

Chapter 2: Jumpers and Connectors

Before You Begin	7
Precautions	7
Jumper Settings.....	8
Locations of the Jumpers and Connectors for NISE 110.....	9
Top View.....	9
Bottom View.....	10
Jumper and DIP Switch Settings.....	11
AT/ATX Selection.....	11
Clear CMOS.....	11
Connector Pin Definitions	12
External I/O Interfaces	12
COM1 Connector	12
COM2 Connector	12
COM3 Connector	13
COM4 Connector	13
DisplayPort Connector.....	14
HDMI Connector.....	14
Power Input	15
Remote Power On/Off.....	15
LAN Port 1 and 2	16
LAN Port 3	17
LED Indicators	18
Power Button.....	18
USB3.0 Ports	19



- USB2.0 Ports 19
- Internal Connectors 20
 - RTC Battery..... 20
 - CPU Heater (Optional)..... 20
 - M.2 Key B Connector..... 21
 - Mini-PCIe Socket..... 23
 - UART Connector 25
 - DE1 Connector 26
 - DDR5 SO-DIMM..... 27
 - GPIO Connector..... 30
 - Flash BIOS Pin Connector 30
 - MCU Programming 31
 - Reset Pin Header 31
 - USB 2.0 Port Connector 32
 - Audio Mic In Connector 32
 - Audio Line Out Connector 33
 - Audio Speaker Connector 33
 - Nano SIM Connector..... 34
 - AT/ATX Selection (Optional)..... 34

Chapter 3: System Setup

- Removing the Chassis Bottom Cover 35
- Installing a SO-DIMM Memory Module 36
- Installing a SIM Card 38
- Installing the antenna cable 40
- Installing a Mini-PCIe Module..... 42
- Installing an M.2 Module (internal)..... 45
- Wall Mounting Instructions 49

Chapter 4: BIOS Setup

- About BIOS Setup 50
- When to Configure the BIOS..... 50
- Default Configuration 51
- Entering Setup 51
- Legends 51
- BIOS Setup Utility 53
 - Main 53
 - Advanced 54
 - Chipset..... 63
 - Security 65
 - Boot..... 66
 - Save & Exit 67

Appendix A: Watchdog Timer Setting

Appendix B: GPI/O Programming Guide

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 NexAloT Co., Ltd.

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NexAloT 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>. NexAloT 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 110 series products are the trademark of NexAloT 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



NexAloT RoHS Environmental Policy and Status Update

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

Warranty and RMA

NexAloT Warranty Period

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

NexAloT Return Merchandise Authorization (RMA)

- Customers shall enclose the “NexAloT 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 “NexAloT 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, NexAloT 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 NexAloT 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

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

Board Level

- Component fee: NexAloT 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, NexAloT 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.
- CAUTION, Risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- Never open the equipment. For safety reasons, the equipment should be opened only by qualified skilled person.
- Caution: Before equipment installation begins, ensure that a skilled personnel has attached an appropriate power cable supplied.

- Field wiring shall be conducted by skilled persons.
 - Insert the positive and negative wires into the V+ and V- contacts on the terminal block connector.
 - Tighten the wire-clamps screws to prevent the DC wires coming loose.
- Take into consideration the following guidelines before wiring the device.
 - The Input connector is suitable for 30-12 AWG (min.6.6A). Torque value 5 lb-in.
 - Please choose Copper wire.



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 NexAloT products, visit NexAloT'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

12F, 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: 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: 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.,
Sanhong 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.nexcom.cn

Beijing NexGemo Technology Co.,Ltd.

Room 205, No.1, Fazhan Rd.,
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

Package Contents

Before continuing, verify that the package that you received is complete. Your NISE 110 series package should have all the items listed in the following table.

Item	Part Number	Description	Qty
1	4NCPM00302X00	TERMINAL BLOCKS 3PIN 5.08mm MALE DIP GREEN	1
2	4NCPM00203X00	TERMINAL BLOCKS 2PIN 3.81mm MALE 90D GREEN	1
3	5061711760X00	MINI PCI-E BRACKET 30x29x2.1mm SPCC T=1.0mm	1
4	5061600245X00	WASHER 10.4x6.4mm T=1mm NYLON BLACK	8
5	50311F0295X00	FLAT HEAD SCREW F2x4 NIGP NYLOK	1
6	50311F0330X00	ROUND HEAD SCREW P2x3 NI NYLOK	2
7	5050300264X00	HEAT SINK 20x20x6mm BLACK	4

Ordering Information

The following information below provides ordering information for NISE 110 series products.

NISE110-A01 system (P/N: 10J00011002X0)

- Intel Celeron® Processor N97 2.0GHz

NISE110-A02 system (P/N: 10J00011003X0)

- Intel Atom® Processor x7211E 1.0GHz

CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- Onboard Intel® Celeron® Processor N97 quad core 2.0GHz or Atom® Processor x7211E dual core 1.0GHz
- 2 x Display output, 1 x HDMI, and 1 x DP port
- 3 x Intel® I226 IT 2.5 GbE TSN LAN ports; supports WoL, teaming and PXE
- Storage support mSATA and M.2 SATA PCIe x2 module
- 1 x Mini PCIe Wi-Fi/LTE wireless module
- 2 x USB 3.2, 2 x USB 2.0
- 2 x DB9 for RS-232/422/485, 2 x DB9 for RS232
- Support -40°C~70°C extended operating temperature
- Support 9~30V DC input; supports AT/ATX power mode

Hardware Specifications

CPU Support

- A01: Onboard Intel Celeron® Processor N97 quad core 2.0GHz
- A02: Onboard Intel Atom® x7211E dual core 1.0GHz

Main Memory

- 1 x DDR5 4800 SO-DIMM, supports up to 16GB

Display Option

- Dual independent display: HDMI + DP

I/O Interface - Front

- ATX power on/off switch
- LED indicator: power status, RTC battery low, programmable
- 3 x 2.5GbE Intel® I226 IT LAN port; supports WoL teaming and PXE
- 2 x USB 3.2 port
- 1 x HDMI port
- 1 x DB9 for COM1, supports RS-232 only
- 1 x Optional I/F opening for optional function output or module interface use
- 1 x 3-pin DC input, supports +9 to 30V DC input

I/O Interface - Rear

- 2 x USB 2.0 port
- 1 x 2-pin remote power on/off switch
- 1 x DisplayPort
- 1 x COM2 (DB9), supports RS-232 only
- 2 x COM3 & COM4 (DB9), supports RS-232/422/485 with auto flow control, BIOS setting

I/O Interface - Internal

- 4 x GPI and 4 x GPO (5V, TTL type)
- 1 x nano-SIM holder
- TPM 2.0
- Mic in / Line out (optional)

Storage Device

- 1 x Mini PCIe for mSATA
- 1 x M.2 Key B 2242/2280 for SATA/PCIe x2 SSD

Expansion Slot

- 1 x Mini PCIe socket, supports optional Wi-Fi/4G LTE modules
- 1 x M.2 Key B socket, supports optional 5G/4G LTE/Storage modules

Power Requirements

- Power input: +9 to 30V DC
- 1x Optional 24V, 60W power adapter

Supported OS

- Windows 10 IoT Enterprise, 64-bit
- Windows 11
- Linux Kernel version 4.1

Dimensions

- 185mm (W) x 131mm (D) x 56mm (H) without wall-mount bracket

Construction

- Aluminum chassis with fanless design

Environment

- Operating temperature: Ambient with air flow
(according to IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14):
 - A01: -40~60°C
 - A02: -20~60°C (UL approved), to 70°C (system limitation)
- Storage temperature: -40°C~80°C
- Relative humidity: 95% at 40°C
- Shock protection:
 - M.2/mSATA: 50G@wall mount, half sine, 11ms(operation) , IEC60068 2-27
- Vibration protection with M.2 & mSATA condition:
 - Random: 2Grms@5~500 Hz, IEC 60068-2-64
 - Sinusoidal: 2Grms@5~500 Hz, IEC 60068-2-6

Certifications

- CE approval
 - EN 61000-6-2
 - EN 61000-6-4
- FCC Class A
- UL

OS Support

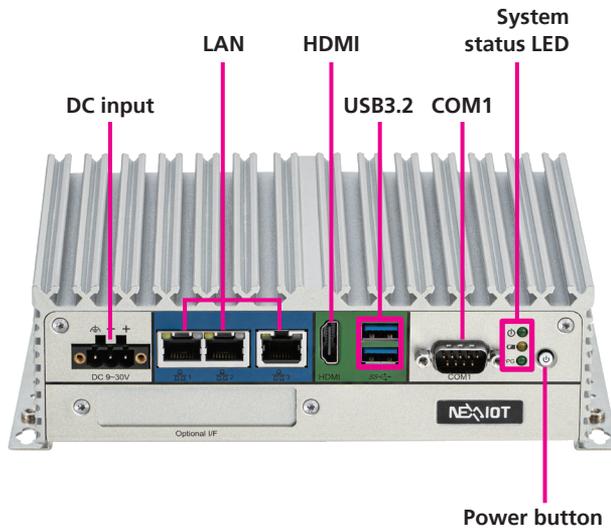
- Windows 10 IoT Enterprise, 64-bit
- Windows 11
- Linux Kernel version 4.1

Weight Information

- 3.1kg

Knowing Your NISE 110

Front Panel



DC Input

Used to plug a DC power cord (3-pin, 9~30V).

LAN

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

HDMI

A HDMI port is used to connect an HDMI interface display.

USB 3.2

USB 3.2 ports to connect the system with USB 3.2/2.0/1.1 devices.

COM1

Used to connect a RS232 device.

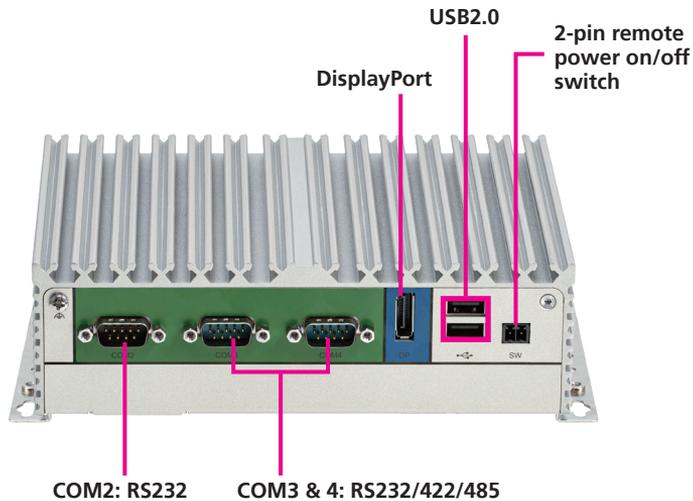
System status LED

Indicate the power status, RTC battery status, and GPO status of the system.

Power button

Power on or off the system.

Rear Panel



DisplayPort

A DisplayPort connector is used to connect a DisplayPort interface display.

USB 2.0

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

2-pin Remote On/Off Switch

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

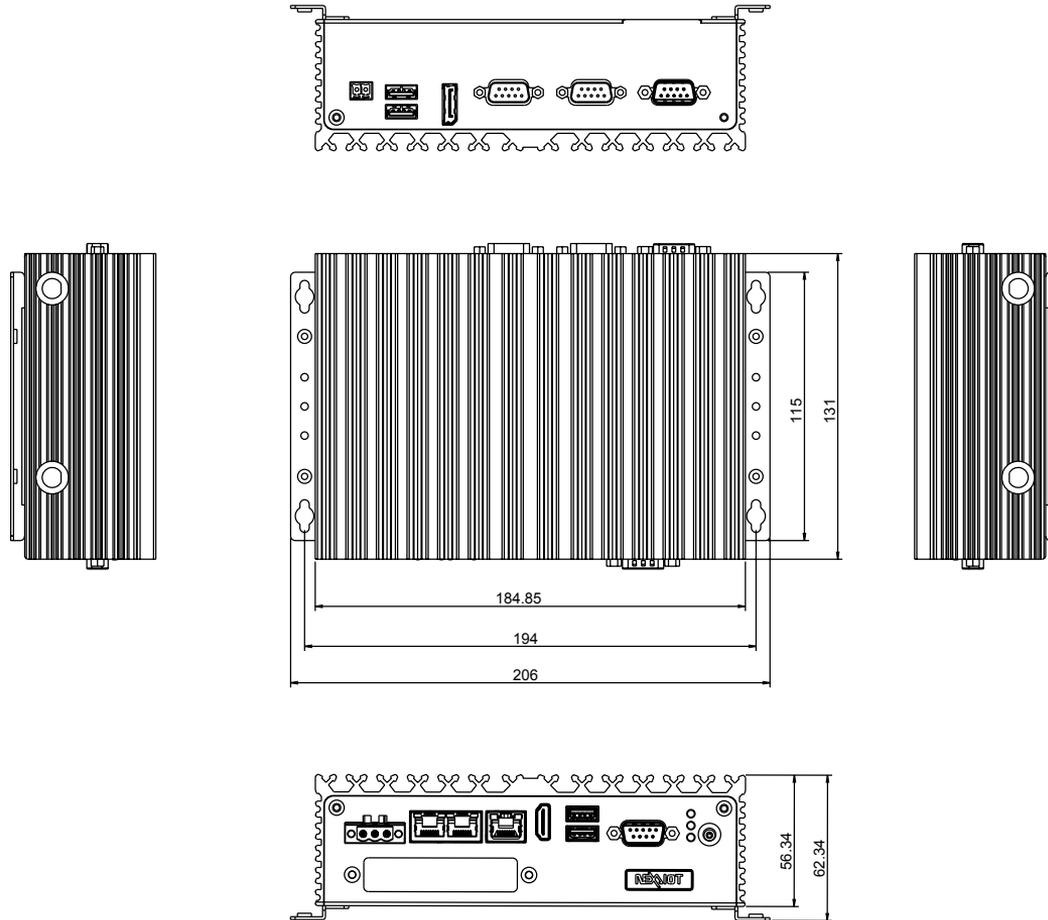
COM2

Used to connect a RS232 device.

COM3 & 4

Used to connect a RS232/RS422/RS485 device.

Mechanical Dimensions



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 110 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:

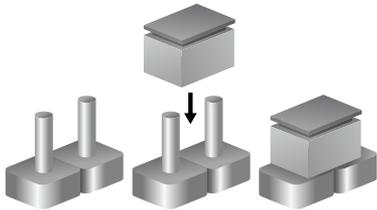
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

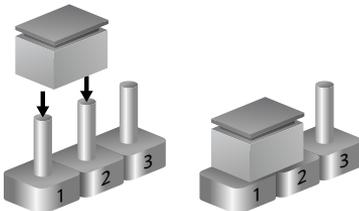
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



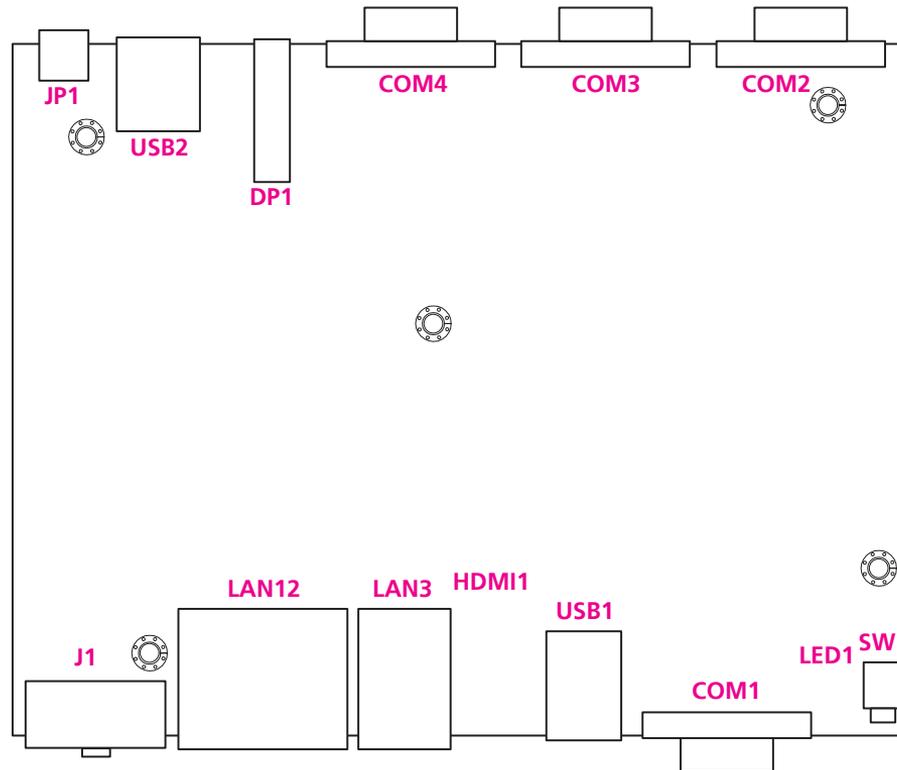
Three-Pin Jumpers: Pins 1 and 2 are Short



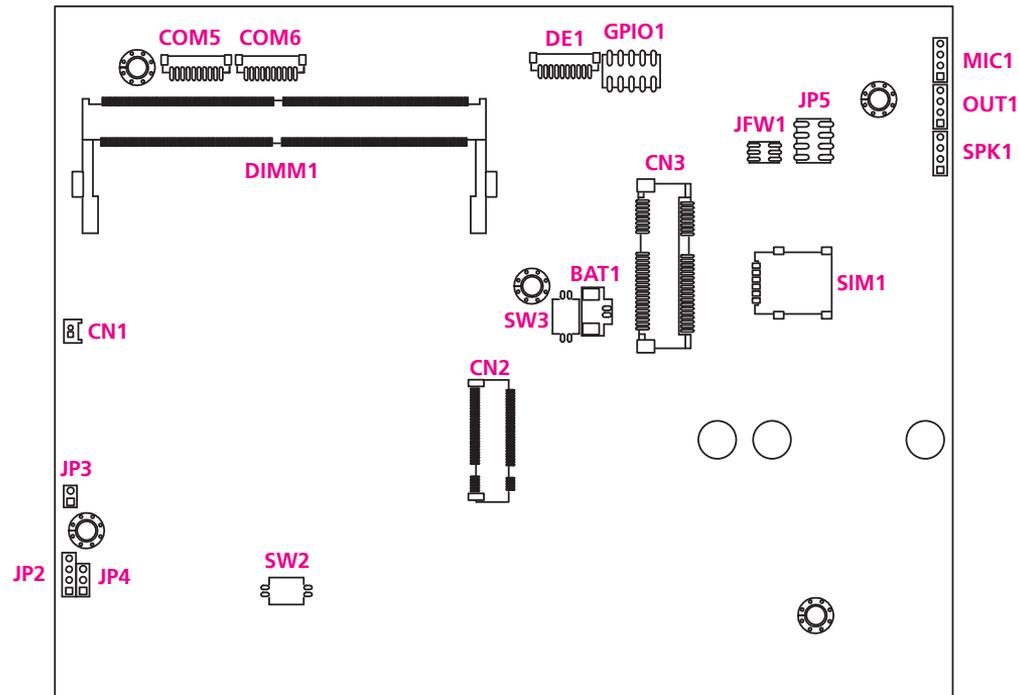
Locations of the Jumpers and Connectors for NISE 110

The figure below shows the locations of the NISE 110 mainboard jumpers and connectors. Refer to the figures below and next page for detailed information on pin settings and definitions marked in pink.

Top View



Bottom View



Jumper and DIP Switch Settings

AT/ATX Selection

Connector type: 3-pin header

Connector location: JP4



Pin	Settings
1-2	AT mode
2-3	ATX mode (default)

Pin	Definition
1	N17777693
2	ATX_AT#_SEL
3	NC

Clear CMOS

Connector type: DIP Switch

Connector location: SW3



Pin	Definition	Pin	Definition
1	RTC_RST_N	4	GND
2	SRTC_RST_N	3	GND

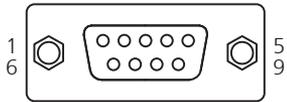
Connector Pin Definitions

External I/O Interfaces

COM1 Connector

Connector type: D-SUB DIP 9-pin Serial Port, RS232

Connector location: COM1

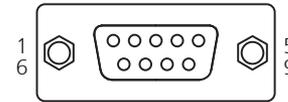


Pin	Definition	Pin	Definition
1	COM1DCDL	MH1	N18628105
2	COM1RXD	MH2	CHASIS_GND
3	COM1TXD	NH1	
4	COM1DTRL	NH2	
5	GND		
6	COM1DSRL		
7	COM1RTSL		
8	COM1CTSL		
9	COM1RIL		

COM2 Connector

Connector type: D-SUB DIP 9-pin Serial Port, RS232

Connector location: COM2

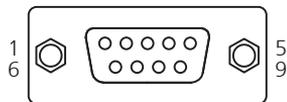


Pin	Definition	Pin	Definition
1	COM2DCDL	MH1	COM3MH2_GND
2	COM2RXD	MH2	NC
3	COM2TXD	NH1	
4	COM2DTRL	NH2	
5	GND		
6	COM2DSRL		
7	COM2RTSL		
8	COM2CTSL		
9	COM2RIL		

COM3 Connector

Connector type: D-SUB DIP 9-pin Serial Port, RS232/RS422/RS485

Connector location: COM3

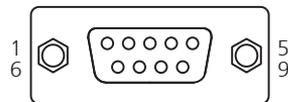


Pin	Definition	Pin	Definition
1	COM3DCDL	MH1	COM4MH2_GND
2	COM3RXD	MH2	COM3MH2_GND
3	COM3TXD	NH1	
4	COM3DTRL	NH2	
5	GND		
6	COM3DSRL		
7	COM3RTSL		
8	COM3CTSL		
9	COM3RIL		

COM4 Connector

Connector type: D-SUB DIP 9-pin Serial Port, RS232/RS422/RS485

Connector location: COM4

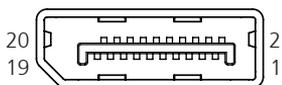


Pin	Definition	Pin	Definition
1	COM4DCDL	MH1	CHASSIS_R_GND
2	COM4RXD	MH2	COM4MH2_GND
3	COM4TXD	NH1	
4	COM4DTRL	NH2	
5	GND		
6	COM4DSRL		
7	COM4RTSL		
8	COM4CTSL		
9	COM4RIL		

DisplayPort Connector

Connector type: DisplayPort

Connector location: DP1

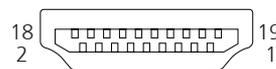


Pin	Definition	Pin	Definition
1	DP_TX0_c_DP	11	GND
2	GND	12	DP_TX3_c_DN
3	DP_TX0_c_DN	13	DP_CONFIG1
4	DP_TX1_c_DP	14	DP_CONFIG2
5	GND	15	DP_AUX_c_DP
6	DP_TX1_c_DN	16	GND
7	DP_TX2_c_DP	17	DP_AUX_c_DN
8	GND	18	DP_HPD
9	DP_TX2_c_DN	19	DP_RETURN
10	DP_TX3_c_DP	20	VCC3_DP1
MH1	CHASIS_GND	MH2	NC
MH3	CHASIS_GND	MH4	NC
NH1		NH2	

HDMI Connector

Connector type: HDMI port

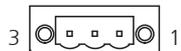
Connector location: HDMI1



Pin	Definition	Pin	Definition
1	HDMITX2P1	11	GND
2	GND	12	HDMICLN1
3	HDMITX2N1	13	NC
4	HDMITX1P1	14	NC
5	GND	15	HDMIDDCSCL
6	HDMITX1N1	16	HDMIDDCSDA
7	HDMITX0P1	17	GND
8	GND	18	VCC5HDMI
9	HDMITX0N1	19	HDMIHPD
10	HDMICLKP1		
MH1	CHASIS_GND	MH2	NC
MH3	CHASIS_GND	MH4	NC
NH1		NH2	

Power Input

Connector location: J1

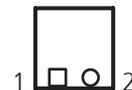


Pin	Definition
A1	VIN_1
A2	VIN_VSS
A3	VINPIN3

Remote Power On/Off

Connector type: 2-pin header

Connector location: JP1

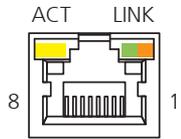


Pin	Definition
1	GND
2	PWRBTN#_J

LAN Port 1 and 2

Connector type: RJ45

Connector location: LAN12



LED indicators

LAN Speed	Act. LED	Link LED
2.5Gbps	Blinking yellow	Steady green
1Gbps	Blinking yellow	Steady green
100Mbps	Blinking yellow	Steady orange
10Mbps	Blinking yellow	Off

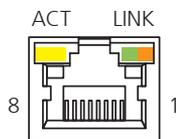
Pin	Definition	Pin	Definition
A1	LAN1_MDIAP	A9	LAN1_MDIDP
A2	LAN1_MDIAN	A10	LAN1_MDIDN
A3	LAN1_MDIBP	A11	LAN1_LED2500L_R
A4	LAN1_MDIBN	A12	LAN1_LED1GL_R
A5	LAN1TCT	A13	LAN1_LEDACTL_R
A6	GND	A14	LAN1_ACT_CON
A7	LAN1_MDICP	NH1	NC
A8	LAN1_MDICN	MH1	CHASIS_GND

Pin	Definition	Pin	Definition
B1	LAN2_MDIAP	B9	LAN2_MDIDP
B2	LAN2_MDIAN	B10	LAN2_MDIDN
B3	LAN2_MDIBP	B11	LAN2_LED2500L_R
B4	LAN2_MDIBN	B12	LAN2_LED1GL_R
B5	LAN2TCT	B13	LAN2_LEDACTL_R
B6	GND	B14	LAN2_ACT_CON
B7	LAN2_MDICP	NH2	NC
B8	LAN2_MDICN	MH2	CHASIS_GND

LAN Port 3

Connector type: RJ45

Connector location: LAN3



Pin	Definition	Pin	Definition
1	LAN3_MDIAP	8	LAN3_MDICN
2	LAN3_MDIAN	9	LAN3_MDIDP
3	LAN3_MDIBP	10	LAN3_MDIDN
4	LAN3_MDIBN	11	LAN3_LED2500L_R
5	LAN3_TVCC	12	LAN3_LED1GL_R
6	N168081	13	LAN3_LEDACTL_R
7	LAN3_MDICP	14	LAN3_ACT_CON
NH1	NC	NH2	NC
MH1	CHASIS_GND	MH2	CHASIS_GND

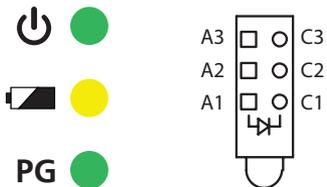
LED indicators

LAN Speed	Act. LED	Link LED
2.5Gbps	Blinking yellow	Steady green
1Gbps	Blinking yellow	Steady green
100Mbps	Blinking yellow	Steady orange
10Mbps	Blinking yellow	Off

LED Indicators

Connector type: LED housing, tri-level

Connector location: LED1



Pin	Definition	Pin	Definition
A1	BAT_LED_N	C1	GND
A2	VCC3	C2	GPIO_LED1L
A3	VCC3	C3	MCU_PLED

Power Button

Connector type: DC12V, 8-pin header, with blue/red LED indicators

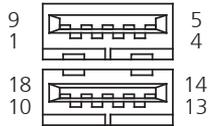
Connector location: SW1



Pin	Definition	Pin	Definition
1	GND	2	ATX_PBT
4	GND	3	ATX_PBT
A1	PWRLED_N	C1	N153755
MH1	NC	MH2	NC

USB 3.2 Ports

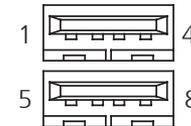
Connector type: Dual USB 3.2 Ports
 Connector location: USB1



Pin	Definition	Pin	Definition
1	5VSB_USB1	10	5VSB_USB1
2	IUSB2N1	11	IUSB2N2
3	IUSB2P1	12	IUSB2P2
4	GND	13	GND
5	IUSB3CRXN1	14	IUSB3CRXN2
6	IUSB3CRXP1	15	IUSB3CRXP2
7	GND	16	GND
8	IUSB3CTXN1	17	IUSB3CTXN2
9	IUSB3CTXP1	18	IUSB3CTXP2
MH1	CHASIS_GND	MH2	
MH3	CHASIS_GND	MH4	CHASIS_GND

USB 2.0 Ports

Connector type: Dual USB 2.0 Ports
 Connector location: USB2

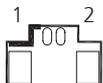


Pin	Definition	Pin	Definition
1	5VSB_USB2	5	5VSB_USB2
2	IUSB2N3	6	IUSB2N4
3	IUSB2P3	7	IUSB2P4
4	GND	8	GND
MH1	CHASSIS_R_GND	MH2	CHASSIS_R_GND
MH3	CHASSIS_R_GND	MH4	CHASSIS_R_GND

Internal Connectors

RTC Battery

Connector location: BAT1



Pin	Definition
1	GND
2	3V_BAT1_R
MH1	GND
MH2	GND

CPU Heater (Optional)

Connector type: 2-pin header

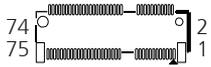
Connector location: CN1



Pin	Definition
1	5VSB_HEATER
2	GND

M.2 Key B Connector

Connector location: CN2



Pin	Definition	Pin	Definition
1	M2BCONFIG3	2	3VSB_M2
3	GND	4	3VSB_M2
5	GND	6	S_M2POFFL
7	USB2_P7_DP	8	S_M2DISL
9	USB2_P7_DN	10	NC
11	M2REFCLK-	12	
13		14	
15		16	
17		18	
19		20	NC

Pin	Definition	Pin	Definition
21	M2BCONFIG0	22	NC
23	LTEPEWAKE2	24	NC
25	NC	26	NC
27	GND	28	NC
29	M2_PCIEUSBRN	30	UIM_RESET
31	M2_PCIEUSBRP	32	UIM_CLK
33	GND	34	UIM_DATA
35	M2_PCIEUSBTN	36	UIM_PWR
37	M2_PCIEUSBTP	38	NC
39	GND	40	NC

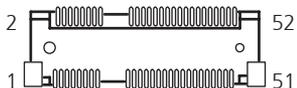
Continued on the next page

Pin	Definition	Pin	Definition
41	M2_PCIESATARP	42	NC
43	M2_PCIESATARN	44	NC
45	GND	46	NC
47	M2_PCIESATATN	48	NC
49	M2_PCIESATATP	50	LTEPERSTL
51	GND	52	M2CLKREQN
53	CLK_PCIE_M2_N0	54	LTEPEWAKE1
55	CLK_PCIE_M2_P0	56	NC
57	GND	58	NC
59	NC	60	NC

Pin	Definition	Pin	Definition
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	M2LTERSTL	68	M2B_SUSCLK
69	M2BCONFIG1	70	3VSB_M2
71	GND	72	3VSB_M2
73	GND	74	3VSB_M2
75	M2BCONFIG2		
MH1	GND	MH2	GND
NH1	NC	NH2	NC

Mini-PCIe Socket

Connector location: CN3



Pin	Definition	Pin	Definition
1	PCIE_WAKE#	2	3VSB_MINILTE
3	NC	4	GND
5	NC	6	1V5_MINI
7	CLKREQ4_MINI_PCIE_N	8	UIM_PWR
9	GND	10	UIM_DATA
11	CLK_MINI_PCIE_N4	12	UIM_CLK
13	CLK_MINI_PCIE_P4	14	UIM_RESET
15	GND	16	UIM_VPP

Pin	Definition	Pin	Definition
17	NC	18	GND
19	NC	20	LTEDISL
21	GND	22	I_PLTRSTN
23	MINI_PCIESATARP	24	3VSB_MINILTE
25	MINI_PCIESATARN	26	GND
27	GND	28	1V5_MINI
29	GND	30	mPCIe_SMB_CLK
31	MINI_PCIESATATN	32	mPCIe_SMB_DATA

Continued on the next page

Pin	Definition	Pin	Definition
33	MINI_PCIESATATP	34	GND
35	GND	36	USB2_P8_DN
37	GND	38	USB2_P8_DP
39	3VSB_MINI	40	GND
41	3VSB_MINI	42	NC
43	GND	44	NC
45	NC	46	NC

Pin	Definition	Pin	Definition
47	NC	48	1V5_MINI
49	NC	50	GND
51	PCIESATASEL	52	3VSB_MINI
MH1	GND	MH2	GND
MH3	NC	MH4	NC
MH5	GND	MH6	NC
NH1	NC	NH2	NC

UART Connector

Connector type: 10-pin header header

Connector location: COM5, COM6



COM5

Pin	Definition	Pin	Definition
1	COM5DCDL	7	COM5RTSL
2	COM5RXD	8	COM5CTSL
3	COM5TXD	9	COM5RIL
4	COM5DTRL	10	GND
5	GND	MH1	GND
6	COM5DSRL	MH2	GND

COM6

Pin	Definition	Pin	Definition
1	COM6DCDL	7	COM6RTSL
2	COM6RXD	8	COM6CTSL
3	COM6TXD	9	COM6RIL
4	COM6DTRL	MH1	GND
5	GND	MH2	GND
6	COM6DSRL	NH1	GND

DE1 Connector

Connector type: 10-pin header

Connector location: DE1

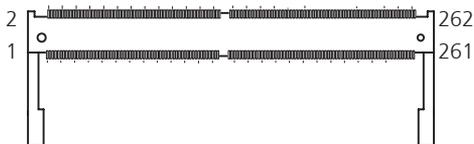


Pin	Definition	Pin	Definition
1	GND	7	ESPI_HDR_IO1
2	I_PLTRSTN_BUFF	8	ESPI_HDR_IO0
3	ESPI_HDR_CLK	9	I_ESPI_RESET_N
4	I_ESPI_CS0_N	10	3VSB
5	ESPI_HDR_IO3	MH1	GND
6	ESPI_HDR_IO2	MH2	GND

DDR5 SO-DIMM

Connector type: SO-DIMM socket

Connector location: DIMM1



Pin	Definition	Pin	Definition
1	5VSB	2	DIMM1_C0_SA0
3	5VSB	4	DRAM_CLK
5	NC	6	DRAM_DATA
7	DDR5_PWR_GOOD	8	DDR5_PWR_EN
9	GND	10	GND
11	M_0_DQ_12	12	M_0_DQ_10
13	GND	14	GND
15	M_0_DQ_13	16	M_0_DQ_11
17	GND	18	GND
19	GND	20	M_0_DQS_1_DN
21	GND	22	M_0_DQS_1_DP
23	M_0_DQ_16	24	GND
25	GND	26	M_0_DQ_15

Pin	Definition	Pin	Definition
27	M_0_DQ_14	28	GND
29	GND	30	M_0_DQ_17
31	M_0_DQ_07	32	GND
33	GND	34	M_0_DQ_00
35	M_0_DQ_05	36	GND
37	GND	38	M_0_DQ_04
39	M_0_DQS_0_DN	40	GND
41	M_0_DQS_0_DP	42	GND
43	GND	44	GND
45	M_0_DQ_03	46	M_0_DQ_01
47	GND	48	GND
49	M_0_DQ_06	50	M_0_DQ_02
51	GND	52	GND

Continued on the next page

Pin	Definition	Pin	Definition
53	M_0_DQ_20	54	M_0_DQ_22
55	GND	56	GND
57	M_0_DQ_23	58	M_0_DQ_21
59	GND	60	GND
61	GND	62	M_0_DQS_2_DN
63	GND	64	M_0_DQS_2_DP
65	M_0_DQ_25	66	GND
67	GND	68	M_0_DQ_26
69	M_0_DQ_24	70	GND
71	GND	72	M_0_DQ_27
73	M_0_DQ_36	74	GND
75	GND	76	M_0_DQ_30
77	M_0_DQ_37	78	GND
79	GND	80	M_0_DQ_35
81	M_0_DQS_3_DN	82	GND
83	M_0_DQS_3_DP	84	GND
85	GND	86	GND
87	M_0_DQ_32	88	M_0_DQ_31
89	GND	90	GND
91	M_0_DQ_33	92	M_0_DQ_34
93	GND	94	GND
95	NC	96	NC
97	GND	98	GND
99	NC	100	NC
101	GND	102	NC
103	NC	104	GND

Pin	Definition	Pin	Definition
105	GND	106	M_0_CS0
107	M_0_CA0	108	NC
109	M_0_CA1	110	M_0_CS1
111	GND	112	GND
113	M_0_CA2	114	M_0_CA3
115	M_0_CA4	116	M_0_CA5
117	GND	118	GND
119	M_0_CA6	120	M_0_CA7
121	M_0_CA8	122	M_0_CA9
123	GND	124	GND
125	M_0_CA10	126	M_0_CA11
127	M_0_CA12	128	NC
129	GND	130	GND
131	M_0_CLK0_DP	132	M_0_CLK1_DP
133	M_0_CLK0_DN	134	M_0_CLK1_DN
135	GND	136	GND
137	M_1_CLK0_DP	138	M_1_CLK1_DP
139	M_1_CLK0_DN	140	M_1_CLK1_DN
141	GND	142	GND
143	NC	144	M_1_CA12
145	M_1_CA11	146	M_1_CA10
147	GND	148	GND
149	M_1_CA9	150	M_1_CA8
151	M_1_CA7	152	M_1_CA6
153	GND	154	GND
155	M_1_CA5	156	M_1_CA4

Continued on the next page

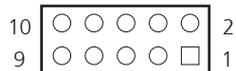
Pin	Definition	Pin	Definition
157	M_1_CA3	158	M_1_CA2
159	GND	160	GND
161	M_1_CS0	162	M_1_CA1
163	DRAM_RST_N_R	164	M_1_CA0
165	M_1_CS1	166	GND
167	GND	168	NC
169	NC	170	GND
171	NC	172	NC
173	GND	174	GND
175	NC	176	NC
177	GND	178	GND
179	M_1_DQ_24	180	M_1_DQ_23
181	GND	182	GND
183	M_1_DQ_26	184	M_1_DQ_22
185	GND	186	GND
187	GND	188	M_1_DQS_2_DN
189	GND	190	M_1_DQS_2_DP
191	M_1_DQ_27	192	GND
193	GND	194	M_1_DQ_20
195	M_1_DQ_25	196	GND
197	GND	198	M_1_DQ_21
199	M_1_DQ_37	200	GND
201	GND	202	M_1_DQ_34
203	M_1_DQ_30	204	GND
205	GND	206	M_1_DQ_35
207	M_1_DQS_3_DN	208	GND
209	M_1_DQS_3_DP	210	GND
211	GND	212	GND

Pin	Definition	Pin	Definition
213	M_1_DQ_31	214	M_1_DQ_33
215	GND	216	GND
217	M_1_DQ_36	218	M_1_DQ_32
219	GND	220	GND
221	M_1_DQ_00	222	M_1_DQ_01
223	GND	224	GND
225	M_1_DQ_02	226	M_1_DQ_03
227	GND	228	GND
229	GND	230	M_1_DQS_0_DN
231	GND	232	M_1_DQS_0_DP
233	M_1_DQ_04	234	GND
235	GND	236	M_1_DQ_07
237	M_1_DQ_06	238	GND
239	GND	240	M_1_DQ_05
241	M_1_DQ_13	242	GND
243	GND	244	M_1_DQ_15
245	M_1_DQ_12	246	GND
247	GND	248	M_1_DQ_16
249	M_1_DQS_1_DN	250	GND
251	M_1_DQS_1_DP	252	GND
253	GND	254	GND
255	M_1_DQ_11	256	M_1_DQ_17
257	GND	258	GND
25.9	M_1_DQ_10	260	M_1_DQ_14
261	GND	262	GND
MH1	GND	MH2	GND
NH1	NC	NH2	NC

GPIO Connector

Connector type: 10-pin header

Connector location: GPIO1



Pin	Definition	Pin	Definition
1	VCC5_GPIO	2	GND
3	SGPO0	4	SGPIO
5	SGPO1	6	SGPI1
7	SGPO2	8	SGPI2
9	SGPO3	10	SGPI3

Flash BIOS Pin Connector

Connector type: 6-pin header

Connector location: JFW1



Pin	Definition
1	VSPI
2	GND
3	CS#_0
4	CLK_0
5	DO_0
6	DI_0

MCU Programming

Connector type: 4-pin header

Connector location: JP2



Pin	Definition
1	3VSB
2	SBW_TCK
3	SBW_TDIO
4	GND

Reset Pin Header

Connector type: 2-pin header

Connector location: JP3



Pin	Definition
1	N17816088
2	GND

USB 2.0 Port Connector

Connector type: 8-pin header
 Connector location: JP5



Pin	Definition	Pin	Definition
1	5VSB_USB3	2	USB2_PH_GND2
3	IUSB2N5	4	IUSB2P6
5	IUSB2P5	6	IUSB2N6
7	USB2_PH_GND1	8	5VSB_USB3

Audio Mic In Connector

Connector type: 4-pin header
 Connector location: MIC1



Pin	Definition
1	MIC_IN-L
2	N17534433
3	MIC_JD
4	MIC_IN-R

Audio Line Out Connector

Connector type: 4-pin header

Connector location: OUT1



Pin	Definition
1	LINE_OUT_LC
2	N17533977
3	LINE2_JD
4	LINE_OUT_RC

Audio Speaker Connector

Connector type: 4-pin header

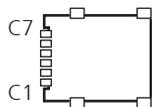
Connector location: SPK1



Pin	Definition
1	ROUTP
2	ROUTN
3	LOUTP
4	LOUTN

Nano SIM Connector

Connector type: SIM card socket
 Connector location: SIM1



Pin	Definition
C1	UIM_PWR
C2	UIM_RESET
C3	UIM_SIM_CLK
C5	GND
C6	UIM_VPP
C7	UIM_DATA
MH1	GND
MH2	GND
MH3	GND
MH4	GND

AT/ATX Selection (Optional)

Connector type: DIP Switch
 Connector location: SW2



SW2 AT/ATX Selection		
Pin 1-4	Pin 2-3	Settings
ON	ON	AT mode (PWR BT available)
ON	OFF	AT mode (PWR BT invalid)
OFF	ON	ATX mode
OFF	OFF	N/A (default)

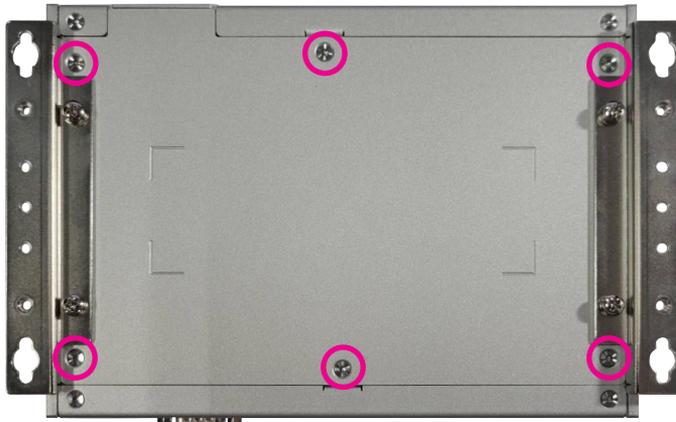
CHAPTER 3: SYSTEM SETUP

Removing the Chassis Bottom Cover



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

1. Locate and remove the six mounting screws from the bottom cover.
2. With the screws removed, lift the cover and remove it from the chassis.



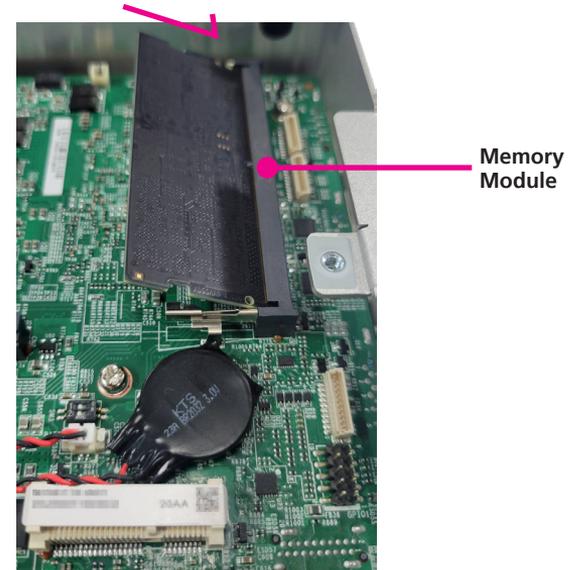
Installing a SO-DIMM Memory Module

1. Locate the SO-DIMM socket.



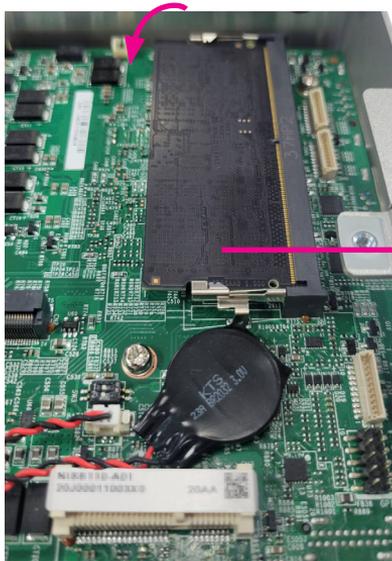
SO-DIMM Socket

2. Insert the module into the socket at an approximately 30-degree angle. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



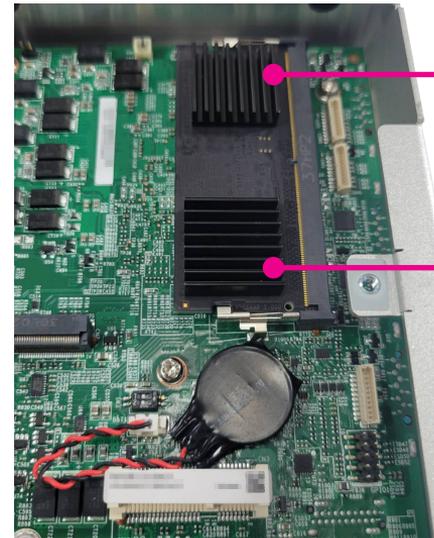
Memory Module

3. Push the module down until the clips on both sides of the socket lock into position.



Memory Module

4. Take heatsinks from the accessory pack and paste them onto the memory modules. (For better cooling, it's strongly recommended to paste the heatsinks onto the chipset dies.)



Heatsinks

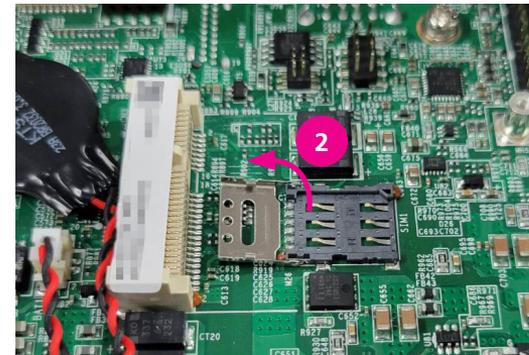
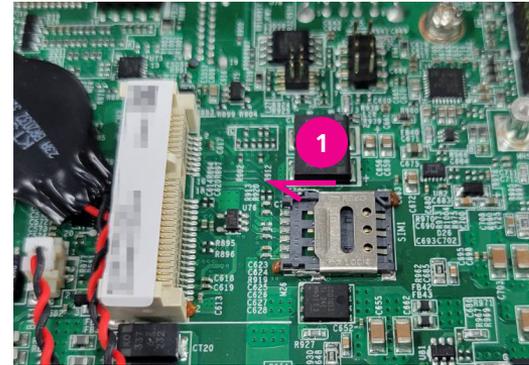
Installing a SIM Card

1. Locate the SIM card holder on the board.

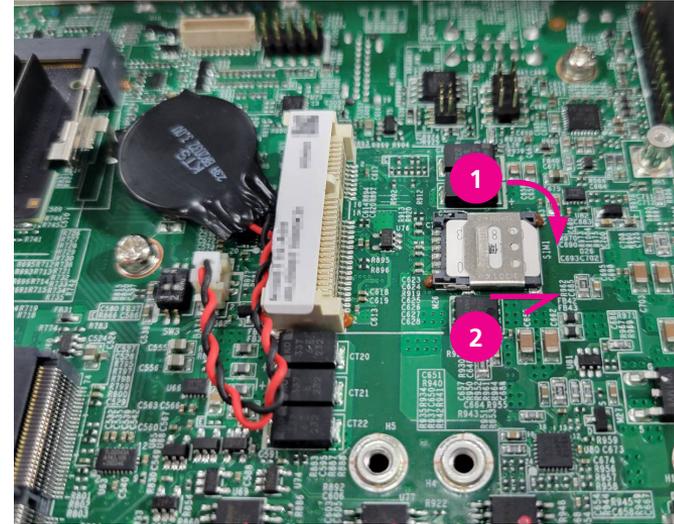


SIM card holder

2. Follow the steps below to release the cover of the SIM holder.



3. Insert your SIM card, and make sure the card with a slant for foolproof fits the SIM card holder well.
4. Follow the steps below to lock the SIM card holder.



Installing the antenna cable

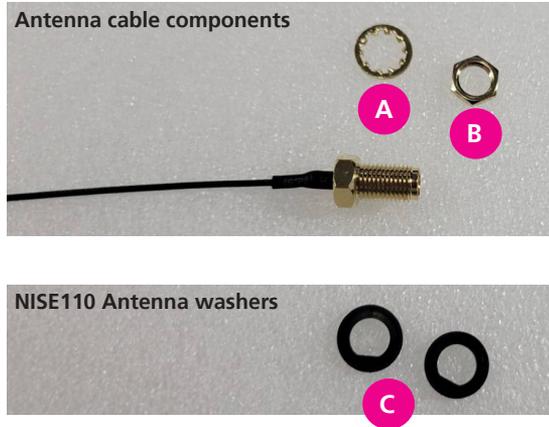
1. Locate the antenna holes marked using a red circle below.



2. Remove the antenna hole plug(s).



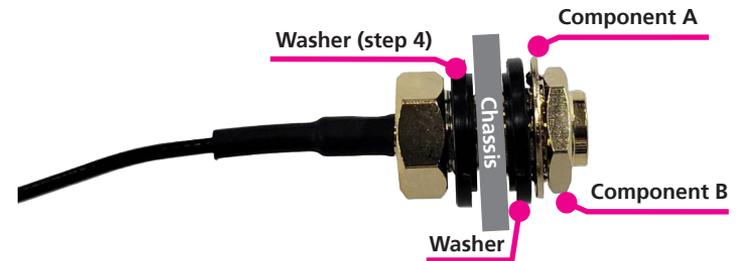
3. Make sure all components are ready.



4. Based on the foolproof design, install the antenna washer into the antenna, and then pass it through the system's antenna hole (which also features a foolproof design).



5. Follow the position shown below to install the other antenna washer and antenna components.

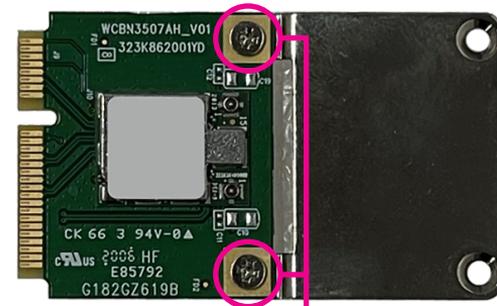


Installing a Mini-PCle Module

1. Locate the mini-PCle socket on the board. Apply the following module sizes and types to NISE110.
 - **Storage:** mSATA, 30 x 26.8 or 30 x 51 mm
 - **Wi-Fi module:** 30 x 26.8 or 30x51 mm
2. Install the mini-PCle bracket to the mini-PCle module if using a half-sized module.



Mini-PCle socket



Screw

3. Insert the WLAN module into the mini-PCIe socket at a 45-degree angle until the gold-plated connectors on the edge of the module insert completely.



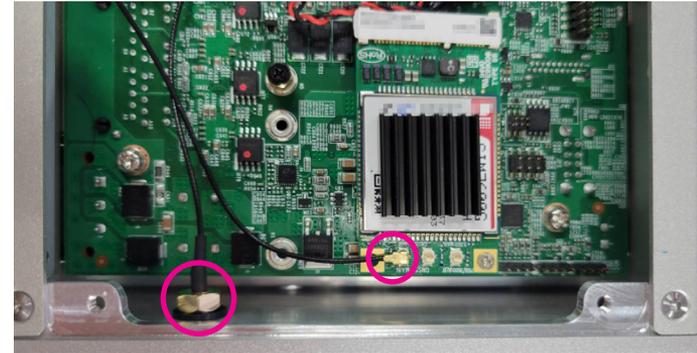
4. Push the module down and secure it with a screw.



5. Paste the heatsink on the module. (For better cooling, it's strongly recommended to paste the heatsinks onto the chipset dies.)
6. Once the module is installed, attach the antenna to the module, then follow the [previous assembly steps](#) for the antenna from the opposite side.



Heatsink



Installing an M.2 Module (internal)

1. Locate the M.2 Key B slot on the board. Apply the following module sizes and types to NISE110.
 - **Storage:** mSATA, 30 x 26.8 or 30 x 51 mm
 - **Wi-Fi module:** 30 x 26.8 or 30x51 mm
2. Make sure the six-pin gold-plated connector on the edge of the module is on the left, while the five-pin connector is on the right.



M.2 Key B slot



Five-pin

Six-pin



The image shown here is an example for the pins reference of the module, rather than the actual orientation mentioned above.

3. NISE110 supports four sizes of M.2 modules. Install the standoff at an appropriate position for the used M.2 module accordingly.



2242/3042
(default)

3052

2280

4. Secure the standoff base per the length of the module.



5. Insert the M.2 module into the M.2 slot at an 45-degree until the gold-plated connectors on the edge of the module insert completely.

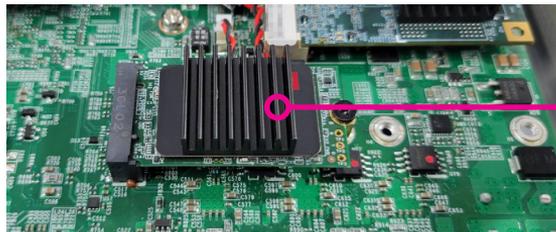
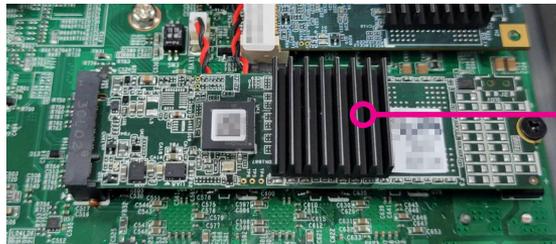
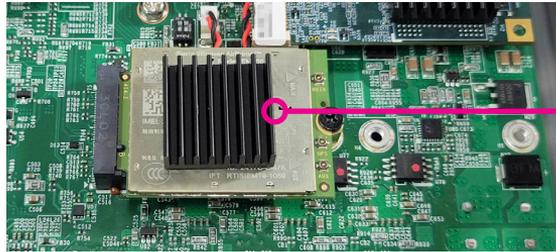


M.2 Key B slot

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



7. Paste the heatsink on the module. (For better cooling, it's strongly recommended to paste the heatsinks onto the chipset dies.)



Heatsink

8. Once the module is installed, attach the antenna to the module, then follow the [previous assembly steps](#) for the antenna from the opposite side.



Wall Mounting Instructions

To mount the system on to a wall or some other surface using the two mounting brackets, please follow the steps below.

1. Turn the system over. Align the two retention screw holes in each bracket with the retention screw holes on the sides of the bottom surface.
2. Secure the brackets to the system by inserting two retention screws into each bracket. The four screws connecting the wall mount bracket to the chassis are 4 x P6#32T screws.
3. Drill holes in the intended installation surface.
4. Align the mounting holes on the sides of the mounting brackets with the predrilled holes on the mounting surface.
5. Insert four retention screws, two in each bracket, to secure the system to the wall.



Specification of the wall mount screw:
Round Head Screw Long Fei: P6#32Tx 1/ 4/ SW7*0.8 w/
Spring+Flat Washer



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 110 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  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.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu.

Scroll Bar

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

Submenu

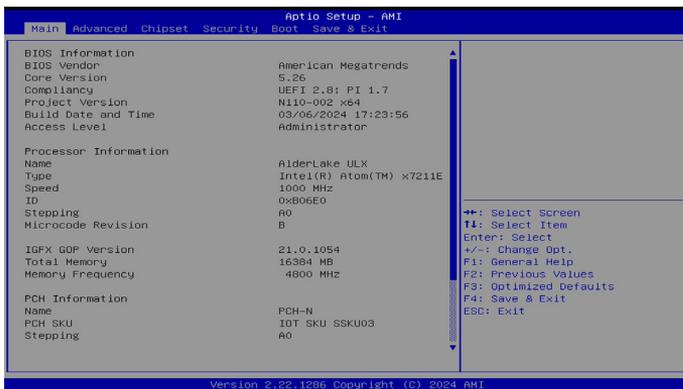
When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

BIOS Setup Utility

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

Main

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



System Date

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

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.



CPU Configuration

This section is used to configure the CPU.



Intel® Virtualization Technology

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

Active Efficient-cores

Number of E-cores (All, 1, or 0) to enable in each processor package.

Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.

Power & Performance

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



CPU - Power Management Control

Enter the CPU Power Management Control the submenu.

CPU - Power Management Control



Intel® SpeedStep™

Allow more than two frequency ranges to be supported.

Turbo Mode

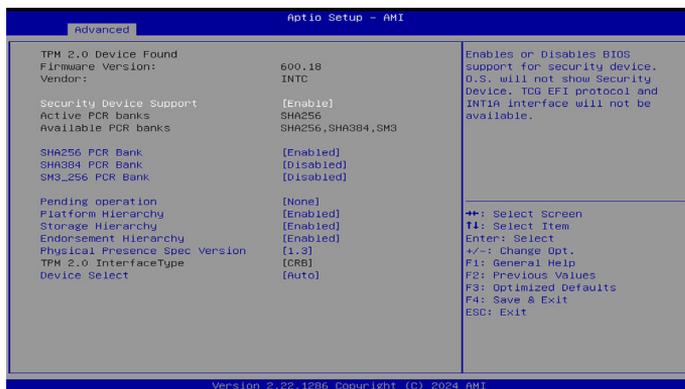
Enable or disable processor Turbo Mode (requires EMTTM enabled too). Auto means enabled.

C states

Enable or disable CPU Power Management. Allow the 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.



Security Device Support

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

SHA256 PCR Bank

Enable or disable SHA256 PCR Bank.

SHA384 PCR Bank

Enable or disable SHA384 PCR Bank.

SM3_256 PCR Bank

Enable or disable SM3-256 PCR Bank.

Pending operation

Schedule an operation (None or TPM Clear) for the security device. Your computer will reboot during restart in order to change state of Security Device.

Platform Hierarchy

Enable or disable the platform hierarchy.

Storage Hierarchy

Enable or disable the storage hierarchy.

Endorsement Hierarchy

Enable or disable the endorsement hierarchy.

Physical Presence Spec Version

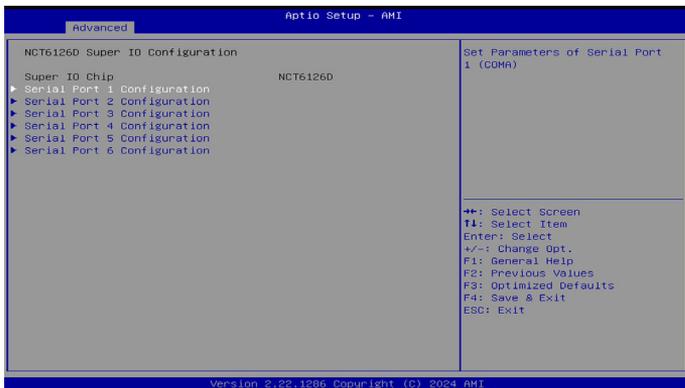
Configure the physical presence spec version. Select to tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

Device Select

Configure 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.



Super IO Chip

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

Serial Port 1 to Serial Port 6 Configuration

Configuration settings for serial port 1 to port 6.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

Enable or disable the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

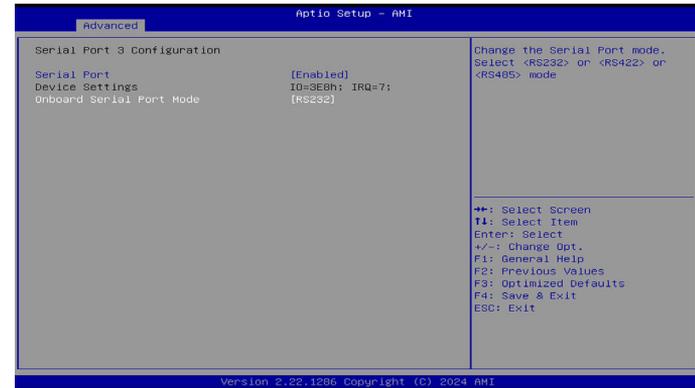


Serial Port

Enable or disable the serial port.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

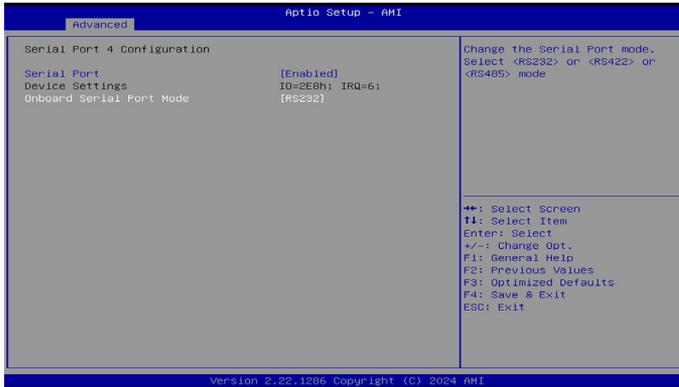
Enable or disable the serial port.

Onboard Serial Port Mode

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

Serial Port 4 Configuration

This section is used to configure serial port 4.



Serial Port

Enable or disable the serial port.

Onboard Serial Port Mode

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

Serial Port 5 Configuration

This section is used to configure serial port 5.



Serial Port

Enable or disable the serial port.

Serial Port 6 Configuration

This section is used to configure serial port 6.

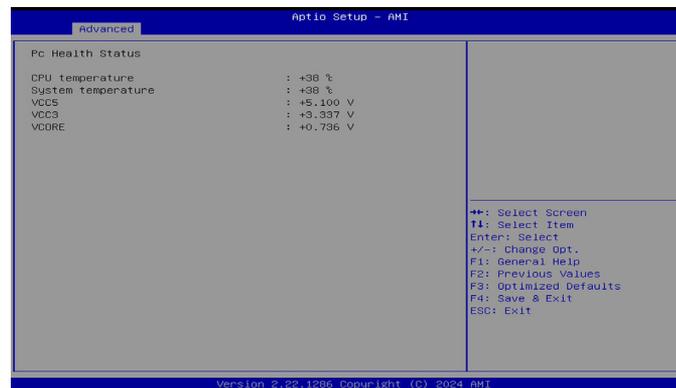


Serial Port

Enable or disable the serial port.

Hardware Monitor

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



CPU temperature

Detect and display the current CPU temperature.

System temperature

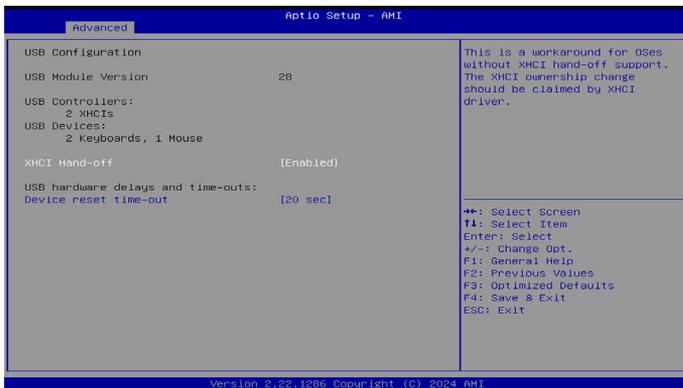
Detect and display the current system temperature.

VCC5 to VCORE

Detect and display the output voltages.

USB Configuration

This section is used to configure the USB.



XHCI Hand-off

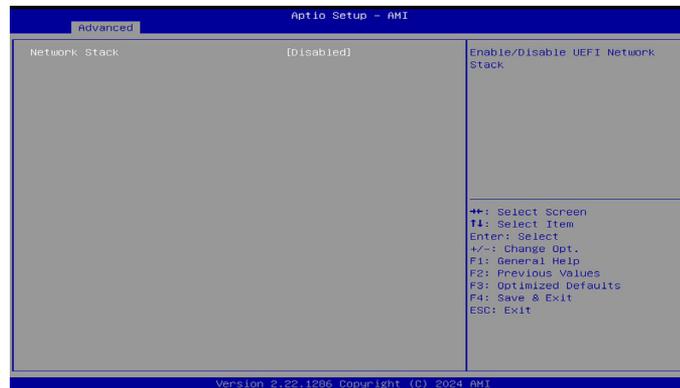
This is a workaround for the OS that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

Device reset time-out

Select the USB mass storage device's start unit command timeout (10 / 20 / 30 / 40 secs).

Network Stack Configuration

This section is used to configure the network stack.

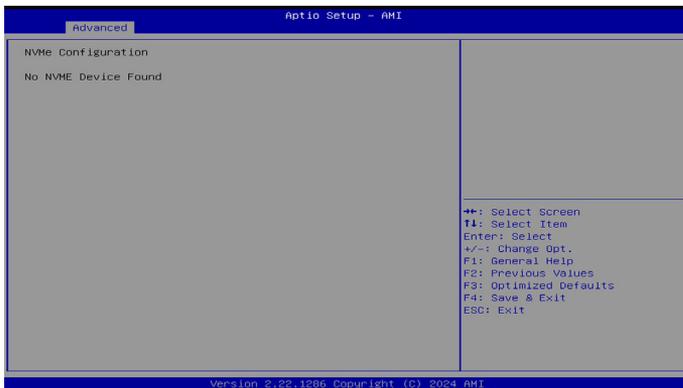


Network Stack

Enables or disables UEFI network stack.

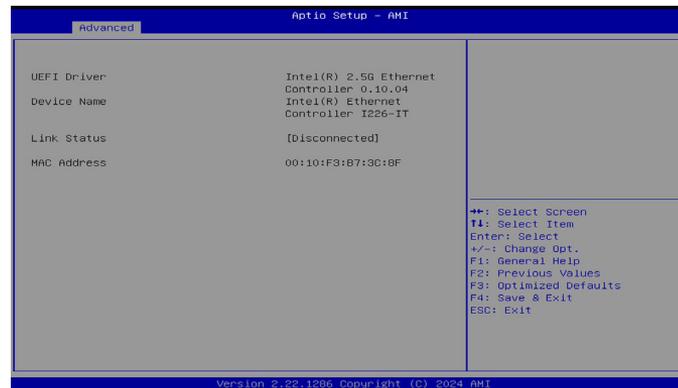
NVMe Configuration

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



Intel(R) Ethernet Controller I226-IT

This section is used to configure Gigabit Ethernet device parameters.



UEFI Driver

Display the UEFI driver version.

Device Name

Display the Ethernet device name.

Link Status

Display the network connection status of the Ethernet device.

MAC Address

Display the MAC address of the Ethernet device.

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.



System Agent (SA) Configuration

Enter the System Agent Configuration submenu.

PCH-IO Configuration

Enter the PCH-IO Configuration submenu.

System Agent (SA) Configuration

This section is used to configure System Agent configuration.



Graphics Configuration

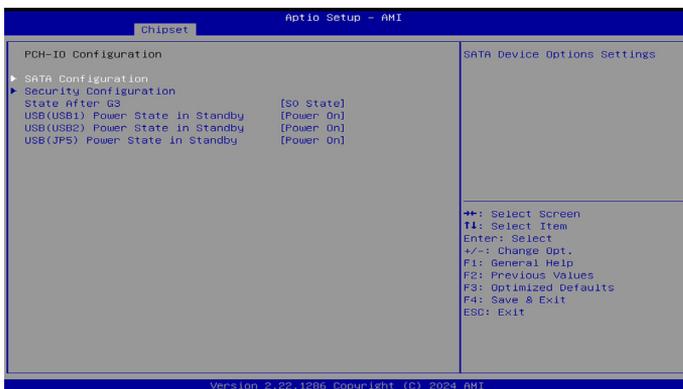
Enter the Graphics Configuration sub-menu.

VT-d

Enable or disable the VT-d capability.

PCH-IO Configuration

This section is used to configure PCH-IO configuration.



SATA Configuration

Enter the SATA Configuration submenu.

Security Configuration

Enter the Security Configuration submenu.

State After G3

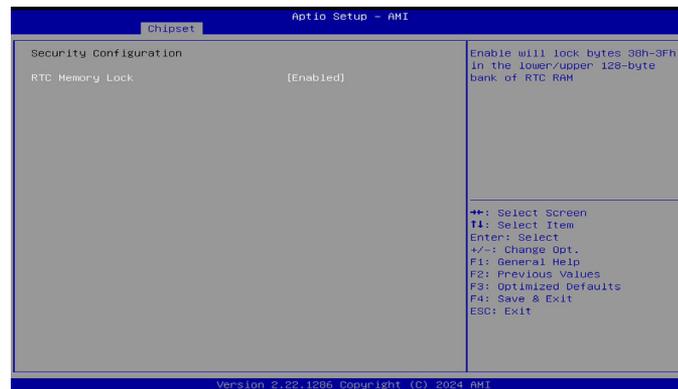
Configure the power state (S0 or S5) when power is re-applied after a power failure (G3 state).

USB Power State in Standby

Configure the USB power state in Standby for USB (USB1, USB2, JP5).

Security Configuration

This section is used to configure PCH-IO configuration.



RTC Memory Lock

Set it to Enabled or Disabled. If it is enabled, it will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.

Security

This section is used to configure the security related options for BIOS protection.



Administrator Password

Select this to reconfigure the administrator's password.

User Password

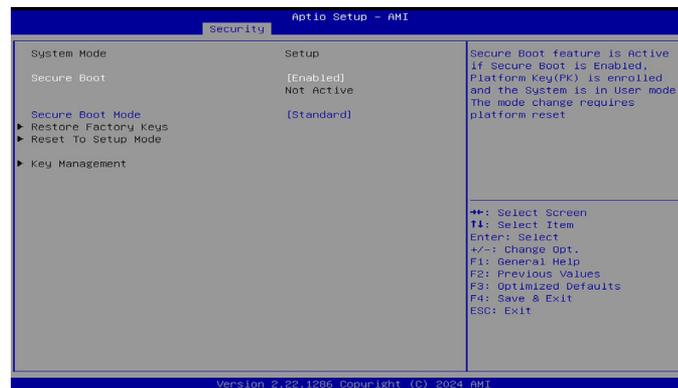
Select this to reconfigure the user's password.

Secure Boot

Enters the Secure Boot submenu.

Secure Boot

This section is used to configure the capability and operation mode of Secure Boot.



Secure Boot

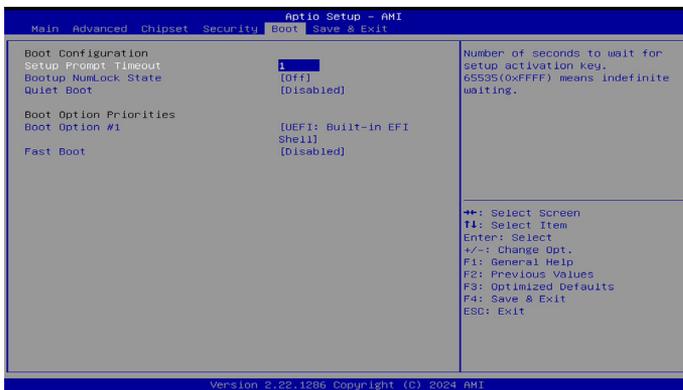
Secure Boot feature is Active when this feature is set to Enabled. Platform Key (PK) is enrolled, and the system is in user mode. To change the mode, resetting the platform is required.

Secure Boot Mode

There are two options available - standard and custom modes. In the custom mode, the secure boot policy variables can be configured by a physically present user without full authentication.

Boot

This section is used to configure the boot features.



Setup Prompt Timeout

Allow you to configure the number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

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: Display OEM logo instead of the POST messages.

Disabled: Display 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

Enable or disable the fast boot feature.

Save & Exit

This section is used to configure options regarding saving the BIOS features that have been set.



Save Changes and Exit

Exit the system setup without saving any changes.

Discard Changes and Exit

Exit the system setup with all the changes that have been done so far discarded.

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 selecting Yes.

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: WATCHDOG TIMER SETTING

NCT6126D WatchDog Programming Guide

```
#define SUPERIO_PORT    0x2E
#define WDT_SET        0xF0
#define WDT_VALUE      0xF1

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

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

    # Set WDT setting
        outputb(SUPERIO_PORT, WDT_SET);
        outputb(SUPERIO_PORT+1, 0x00);           # Use the second
                                                # Use the minute, change value to 0x08

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

APPENDIX B: GPIO PROGRAMMING GUIDE

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

GPIO1 - GPIO Connector

First, set A30h to 0x03.

Pin	GPIO Mode	PowerOn Default	Address	Pin	GPIO Mode	PowerOn Default	Address
1	VCC	-	-	2	GND	-	-
3	GPO0	Low	A32h (Bit4)	4	GPIO	Low	A32h (Bit0)
5	GPO1	Low	A32h (Bit5)	6	GPI1	Low	A32h (Bit1)
7	GPO2	Low	A32h (Bit6)	8	GPI2	Low	A32h (Bit2)
9	GPO3	Low	A32h (Bit7)	10	GPI3	Low	A32h (Bit3)

LED1 - GPO LED

First, set A30h to 0x08.

Pin	GPIO Mode	PowerOn Default	Address
A2	GPIO	High	A32h (Bit6)

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

GPIO programming sample code

```
#define GPO0          (0x01 << 6)
#define GPO1          (0x01 << 5)
#define GPO2          (0x01 << 0)
#define GPO3          (0x01 << 1)

#define GPO0_HI       outputb(0xA03, GPO0)
#define GPO0_LO       outputb(0xA03, 0x00)
#define GPO1_HI       outputb(0xA02, GPO1)
#define GPO1_LO       outputb(0xA02, 0x00)
#define GPO2_HI       outputb(0xA07, GPO2)
#define GPO2_LO       outputb(0xA07, 0x00)
#define GPO3_HI       outputb(0xA07, GPO3)
#define GPO3_LO       outputb(0xA07, 0x00)

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