



NEXCOM International Co., Ltd.

IoT Automation Solutions Business Group

Fan-less Computer

NISE 50 and NISE 50W

User Manual

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PREFACE

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Acknowledgements

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Regulatory Compliance Statements

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

Declaration of Conformity

FCC

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

CE

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

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

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

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

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

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

How to recognize NEXCOM RoHS Products?

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

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

Warranty and RMA

NEXCOM Warranty Period

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

NEXCOM Return Merchandise Authorization (RMA)

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

Repair Service Charges for Out-of-Warranty Products

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

System Level

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

Board Level

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

Warnings

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

Cautions

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

Installation Recommendations

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

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

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

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

Safety Information

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

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



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.



This product is intended to be supplied by a Listed Power Adapter, rated 24Vdc, 2.5A minimum, T_{ma} = 55 degrees C, and the altitude of operation = 2000m. (2000m for general requirement, 5000m for collocation with Adapter: FSP Group Inc. / FSP060-DAAN3.)
If need further assistance with purchasing the power source, please contact to NEXCOM (mfr.) for further information.

Safety Precautions

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

Technical Support and Assistance

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

Warning!

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

Conventions Used in this Manual



Warning:

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



Caution:

Information to avoid damaging components or losing data.



Note:

Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the package that you received is complete. Your NISE 50/NISE 50W package should have all the items listed in the following tables.

NISE 50

| Item | Part Number | Description | Qty |
|------|---------------|--|-----|
| 1 | 6012200052X00 | PE Zipper Bag #8 170x240mm | 1 |
| 2 | 60177A0433X00 | NISE 50 Quick Reference Guide VER: A Size: A4 | 1 |
| 3 | 6012200053X00 | PE Zipper Bag #3 100x70mm | 2 |
| 4 | 50311F0330X00 | Round Head Screw P2x3 NI Nylok | 6 |
| 5 | 4NCPM00302X00 | Terminal Blocks 3P Male DIP Green | 1 |
| 6 | 5060900226X00 | Mini PCIe Bracket 29x30x2.1mm SPCC t= 1.0mm NI | 1 |
| 7 | 50311F0295X00 | Flat Head Screw F2x4 NIGP Nylok | 2 |
| 8 | 602DCD1143X00 | NISE 50 DVD Driver VER: 1.0 | 1 |

NISE 50W

| Item | Part Number | Description | Qty |
|------|---------------|---|-----|
| 1 | 6012200052X00 | PE Zipper Bag #8 170x240mm | 1 |
| 2 | 60177A0433X00 | Quick Reference Guide VER:A SIZE:A4 | 1 |
| 3 | 6012200053X00 | PE Zipper Bag #3 100x70mm | 2 |
| 4 | 50311F0330X00 | Round Head Screw P2x3 NI NYLOK | 6 |
| 5 | 4NCPM00302X00 | Terminal Blocks 3P Male DIP Green | 1 |
| 6 | 5060900226X00 | Mini PCIe Bracket 29x30x2.1mm SPCC t=1.0mm NI | 1 |
| 7 | 50311F0295X00 | Flat Head Screw F2x4 NIGP Nylok | 2 |
| 8 | 602DCD1143X00 | DVD Driver VER: 1.0 | 1 |
| 9 | 6012200126X00 | Chain Bag #6 170x120mm | 1 |
| 10 | 4BJK0100A1X10 | PCB For HDD Tray 100x94mm Thickness:1.6mm | 1 |
| 11 | 50311F0144X00 | I Head Screw: M3x4mm | 8 |

Ordering Information

The following information below provides ordering information for NISE 50 and NISE 50W.

- **Barebone**

- **NISE 50 (P/N: 10J00005000X0)**

- Intel® Atom™ processor E3826 dual core fanless system, with onboard 16GB EMMC and 2GB DDR3L RAM

- **NISE 50W (P/N:10J00005011X0)**

- Intel® Atom™ processor E3826 dual core fanless system, with onboard 16GB EMMC and 2G DDR3L RAM

- **24V, 60W AC/DC power adapter w/o power cord (P/N: 740060054X00)**

CHAPTER 1: PRODUCT INTRODUCTION

Overview



NISE 50



NISE 50W

Key Features

- Onboard Intel® Atom™ processor E3826 dual core, 1.46GHz
- 1 x HDMI display
- 2 x Intel® I120AT GbE LAN ports; support WoL, Teaming and PXE
- 4 x USB 2.0
- 3 x mini-PCIe sockets for optional Wi-Fi/3.5G/LTE modules
- 1 x RS232, 1 x RS232 (only Tx/Rx/GND), 1 x RS422/485 with auto flow control
- Support -5 ~ 55 degree C operating temperature
- Support 24V DC input
- 1 x 2.5" Front Accessible HDD Tray (NISE 50W only)

Hardware Specifications

CPU Support

- Default: Onboard Intel® Atom™ processor E3826 Dual Core, 1.46GHz
- Optional: Support Intel® Atom™ processor E3845 Quad Core, 1.91GHz (by request)

Main Memory

- On-board DDR3L 2GB

Display Option

- 1 x HDMI display

I/O Interface - Front

- ATX power on/off switch
- 1 x Storage/2 x GPO programmable LED
- 1 x SIM card holder
- 2 x Intel® I210AT GbE LAN ports; support WoL, Teaming and PXE
- 1 x HDMI Display Output
- 4 x USB 2.0 (500mA per each)
- 2 x Antenna holes for optional Wi-Fi/3.5G antenna

I/O Interface - Rear

- 3 x DB9 for COM1 & COM2 & COM3
 - COM1: Full RS232 signal
 - COM2: RS232, only supports Tx/Rx/GND
 - COM3: RS422/485 auto flow control
- 1 x Line-out
- Support 24V DC INPUT

I/O Interface - Internal

- 4 x GPI and 4 x GPO (Programmable to GPI or GPO)
- 1 x DB9, only supports RS232, Tx/Rx/GND single

Storage Device

- On-board 16GB EMMC
- Optional mSATA module
- Optional 2.5" HDD/SSD in 7mm thickness (NISE 50W only)

Expansion Slot

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

| Mini-PCIe | Size | USB | PCIe | mSATA | 3.5G/4G |
|-----------|------|-----|------|---------|---------|
| CN5 | Full | ✓ | N/A | Support | Support |
| CN6 | Full | ✓ | ✓ | N/A | Support |
| CN7 | Half | ✓ | ✓ | N/A | N/A |

Power Requirements

- Power input: 24V DC +/-20%
- 1 x optional 24V, 60W power adapter

Support OS

| Model Name | NISE 50 | | NISE 50-4G-32G | | NISE 50W | |
|----------------|----------------------------------|--------|----------------|--------|----------|--------|
| Storage | eMMC 16GB | mSATA | eMMC 32GB | mSATA | SSD | |
| Memory | 2GB | | 4GB | | 2GB | |
| OS | Android 4.4 | 64-bit | | 64-bit | | |
| | Windows 10 IoT Enterprise | | | 64-bit | 64-bit | |
| | WES8 | 32-bit | 32-bit | 64-bit | 64-bit | 32-bit |
| | Windows 7 Professional | | 32-bit | | 64-bit | 32-bit |
| | WES7E | | 32-bit | | 64-bit | 32-bit |
| | WEC7 | | 32-bit | | 32-bit | 32-bit |

* Note: Only one LAN can be active under Android 4.4.

Dimensions

- NISE 50: 162mm(W) x 26mm(H) x 150mm(D) without wall-mount bracket
- NISE 50W: 261mm(W) x 26mm(H) x 150mm(D) without wall-mount bracket

Construction

- Metal chassis with fanless design

Environment

- Operating Temperature:
Ambient with air flow: -5°C to 55°C
(According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage Temperature: -20°C to 75°C
- Relative Humidity: 10% to 95% (non-condensing)

NISE 50:

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

NISE 50W:

- Shock Protection:
 - HDD: 20G, half sine, 11ms, IEC60068-27
 - SSD / mSATA: 50G, half sine, 11ms, IEC60068-27
- Vibration protection w/HDD condition:
 - Random: 0.5Grms @ 5~500 Hz, IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5~500 Hz, IEC60068-2-6
- Vibration protection w/SSD or mSATA condition:
 - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
 - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6

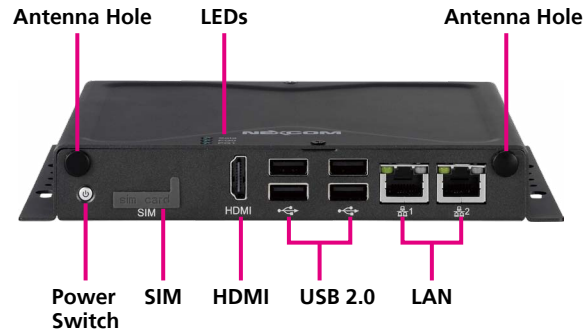
Certifications

- CE
- FCC Class A
- UL/CUL

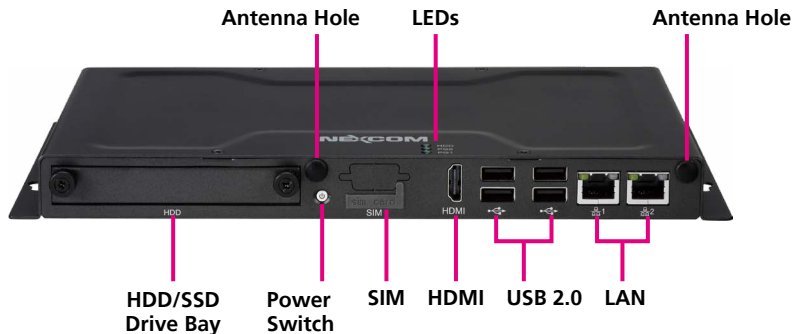
Knowing Your NISE 50 and NISE 50W

Front Panel

NISE 50



NISE 50W



HDD/SSD Drive Bay

Used to install a 2.5" HDD/SSD.

Antenna Hole

Used to install external antennas.

Power Switch

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

SIM

Used to insert a SIM card.

LED Indicators

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

HDMI

Used to connect a high-definition display.

USB 2.0

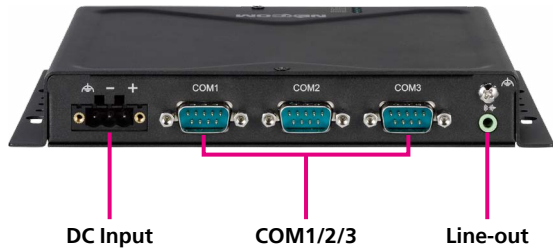
USB 2.0 ports to connect the system with USB 2.0/1.1 devices.

LAN

Used to connect the system to a local area network.

Rear Panel

NISE 50



DC Input

Used to plug a DC power cord.

COM1 to COM3

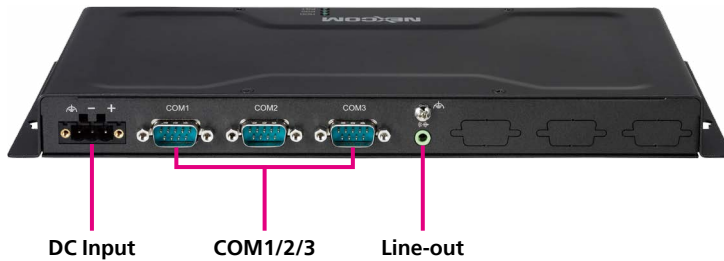
Three DB9 ports used to connect serial devices.

- COM1: Full RS232 signal
- COM2: RS232, only supports Tx/Rx/GND
- COM3: RS422/485 auto flow control

Line-out

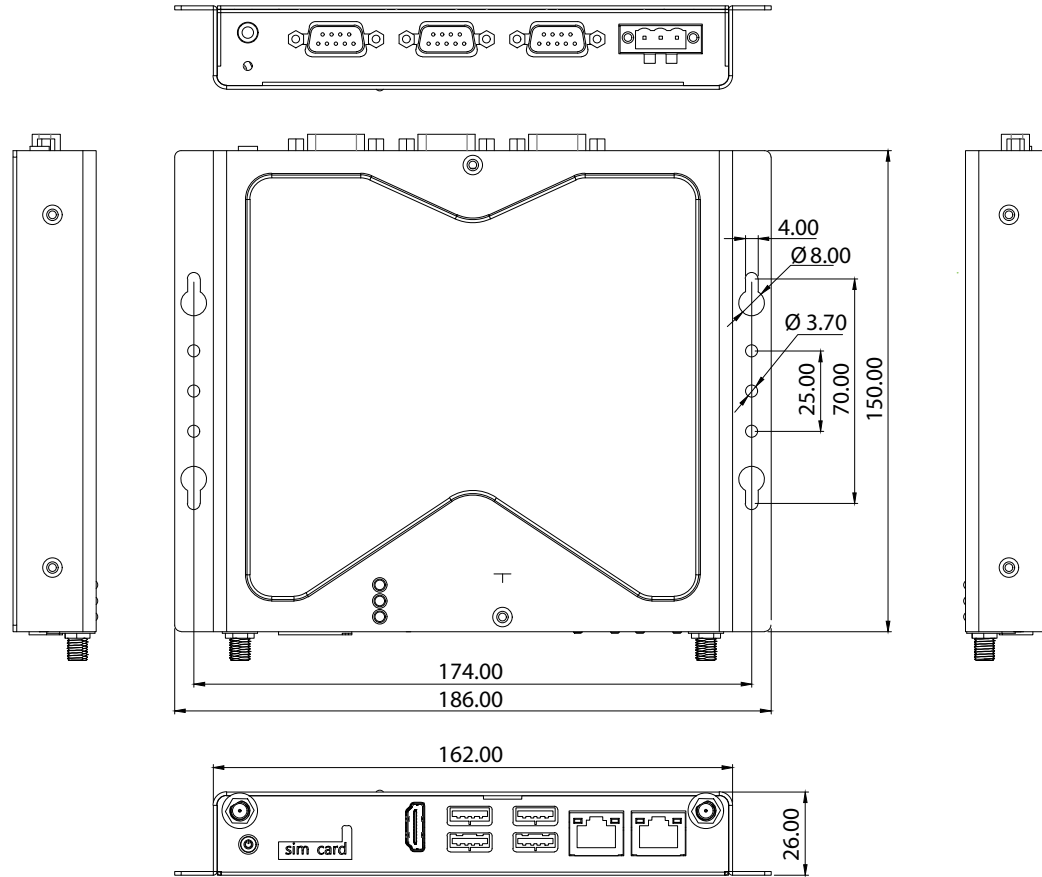
Used to connect a headphone or a speaker.

NISE 50W

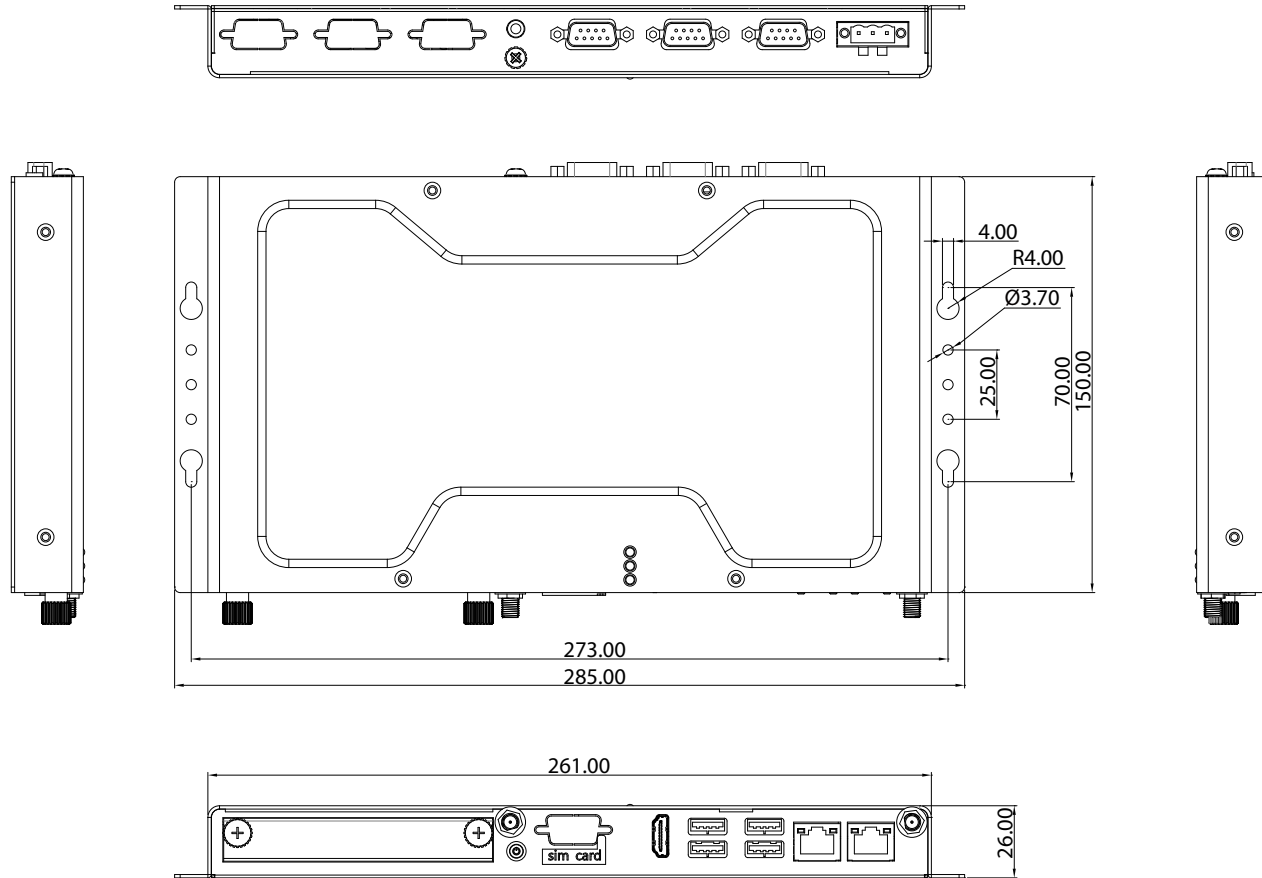


Mechanical Dimensions

NISE 50



NISE 50W



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NISE 50 and NISE 50W 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:

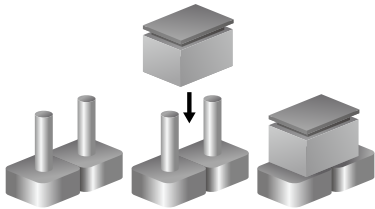
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

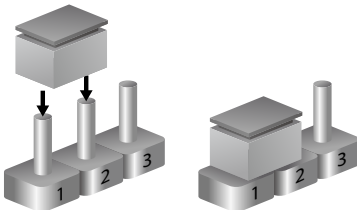
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



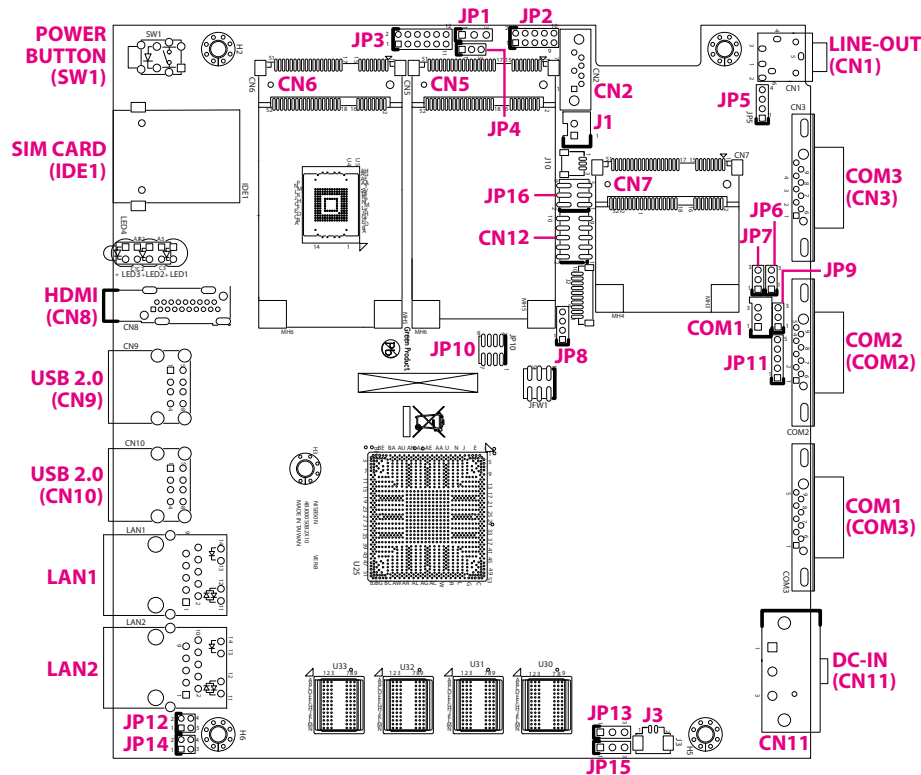
Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors for NISB 50

NISB 50

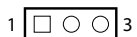
The figure below is the top view of the NISB 50 main board which is the main board used in NISE 50 and NISE 50W. It shows the locations of the jumpers and connectors.



Jumpers

AT/ATX Power Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP1



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

1-2 On: default

| Pin | Definition |
|-----|---------------|
| 1 | 3VSB |
| 2 | AT_ATX_SELECT |
| 3 | GND |

CMOS Clear Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP13



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

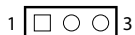
1-2 On: default

| Pin | Definition |
|-----|------------|
| 1 | NC |
| 2 | RTC_TEST# |
| 3 | GND |

ME Clear Select

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

Connector location: JP15



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

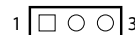
1-2 On: default

| Pin | Definition |
|-----|------------|
| 1 | NC |
| 2 | SRTC_TEST# |
| 3 | GND |

COM3 RS422/485 Select

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

Connector location: JP9



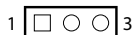
| Pin | Settings |
|--------|----------|
| 1-2 On | RS422 |
| 2-3 On | RS485 |

2-3 On: default

| Pin | Definition |
|-----|--------------|
| 1 | VCC5 |
| 2 | RS485_OE |
| 3 | RS485_OE_RTS |

SIM Card Power Select

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



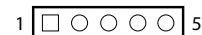
| Pin | Settings |
|--------|----------------|
| 1-2 On | 3G/mSATA (CN5) |
| 2-3 On | 3G/Wi-Fi (CN6) |

1-2 On: default

| Pin | Definition |
|-----|------------|
| 1 | UIM_PWR1 |
| 2 | UIM_PWR |
| 3 | UIM_PWR2 |

COM1 5V/12V/RI Select

Connector type: 1x5 5-pin header, 2.0mm pitch
Connector location: JP11



| Pin | Settings |
|--------|----------|
| 1-2 On | +5V |
| 2-3 On | +12V |
| 4-5 On | Ring |

4-5 On: default

| Pin | Definition |
|-----|------------|
| 1 | VCC5 |
| 2 | COM1_RI#_T |
| 3 | VCC12 |
| 4 | COM1_RI#_T |
| 5 | COM1_RI# |

COM3 TX Terminal Pin header

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



| Pin | Definition |
|-----|------------|
| 1 | TX+ |
| 2 | TX- |
| 3 | GND |



Note:
No need to have jumper on if it is 1.2M with CAT.6 cable based on NEXCOM's testing. If have signal concern for long distance, please change the jumper on pin 1-2.

COM3 RX Terminal Pin header

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP7



| Pin | Definition |
|-----|------------|
| 1 | RX+_DATA+ |
| 2 | RX-_DATA- |
| 3 | GND |



Note:
No need to have jumper on if it is 1.2M with CAT.6 cable based on NEXCOM's testing. If have signal concern for long distance, please change the jumper on pin 1-2.

Connector Pin Definitions

External I/O Interfaces - Front Panel

Power Button

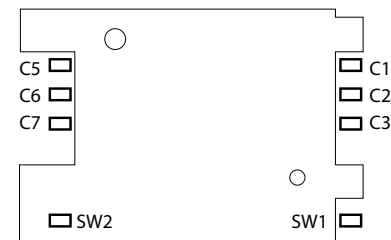
Connector location: SW1



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | GND | 2 | EC_PWRBT# |
| 3 | EC_PWRBT# | 4 | GND |
| A1 | PWR_SW_P | C1 | PWR_SW_N |
| MH1 | GND | MH2 | GND |

SIM Card Slot

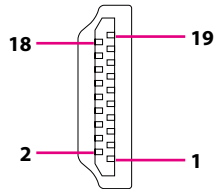
Connector location: IDE1



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

HDMI

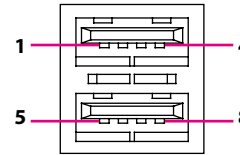
Connector type: HDMI port
 Connector location: CN8



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

USB1/2 Ports (USB 2.0)

Connector type: USB 3.0 port
 Connector location: CN10

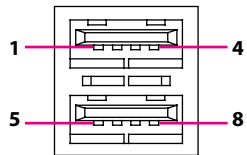


| Pin | Definition | Pin | Definition |
|-----|-------------|-----|-------------|
| 1 | 4USBV1 | 2 | DN1_C |
| 3 | DP1_C | 4 | GND |
| 5 | 4USBV1 | 6 | DN2_C |
| 7 | DP2_C | 8 | GND |
| MH1 | CHASSIS_GND | MH2 | CHASSIS_GND |
| MH3 | CHASSIS_GND | MH4 | CHASSIS_GND |

USB3/4 Ports (USB 2.0)

Connector type: USB 3.0 port

Connector location: CN9

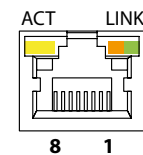


| Pin | Definition | Pin | Definition |
|-----|-------------|-----|-------------|
| 1 | 4USBV2 | 2 | DN3_C |
| 3 | DP3_C | 4 | GND |
| 5 | 4USBV2 | 6 | DN4_C |
| 7 | DP4_C | 8 | GND |
| MH1 | CHASSIS_GND | MH2 | CHASSIS_GND |
| MH3 | CHASSIS_GND | MH4 | CHASSIS_GND |

LAN 1 Port

Connector type: RJ45 with LEDs

Connector location: LAN1

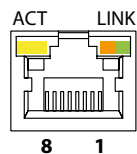


| Pin | Definition | Pin | Definition |
|-----|-----------------|-----|-------------|
| 1 | LAN_MDI0P_1 | 2 | LAN_MDI0N_1 |
| 3 | LAN_MDI1P_1 | 4 | LAN_MDI1N_1 |
| 5 | LAN1TCT | 6 | GND |
| 7 | LAN_MDI2P_1 | 8 | LAN_MDI2N_1 |
| 9 | LAN_MDI3P_1 | 10 | LAN_MDI3N_1 |
| 11 | LAN_LED_LINK1G# | 12 | LAN_LINK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

LAN 2 Port

Connector type: RJ45 with LEDs

Connector location: LAN2

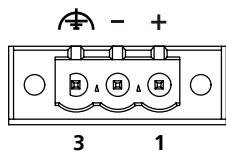


| Pin | Definition | Pin | Definition |
|-----|------------------|-----|-------------|
| 1 | LAN2_MDI0P | 2 | LAN2_MDI0N |
| 3 | LAN2_MDI1P | 4 | LAN2_MDI1N |
| 5 | LAN2_TCT | 6 | GND |
| 7 | LAN2_MDI2P | 8 | LAN2_MDI2N |
| 9 | LAN2_MDI3P | 10 | LAN2_MDI3N |
| 11 | LAN2_LED_LINK1G# | 12 | LAN2_LINK |
| 13 | LAN2_LED_ACT# | 14 | LAN2_ACTPW |
| MH1 | CHASSIS_GND | MH2 | CHASSIS_GND |

External I/O Interfaces - Rear Panel

24V DC Power Input

Connector location: CN11

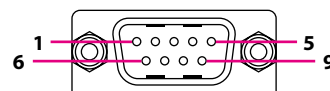


| Pin | Definition |
|-----|------------|
| 1 | VIN_1 |
| 2 | VIN_VSS |
| 3 | R_GND |

COM 1 Port (RS232)

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

Connector location: COM3

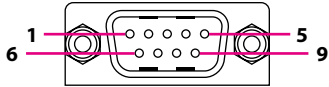


| Pin | Definition | Pin | Definition |
|-----|--------------|-----|--------------|
| 1 | COM1_DCD#_R | 2 | COM1_RXD_R |
| 3 | COM1_TXD_R | 4 | COM1_DTR#_R |
| 5 | GND | 6 | COM1_DSR#_R |
| 7 | COM1_RTS#_R | 8 | COM1_CTS#_R |
| 9 | COM1_RI#_T | | |
| MH1 | CHASIS_GNDR2 | MH2 | CHASIS_GNDR1 |

COM 2 Port (RS232)

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

Connector location: COM2

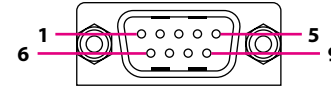


| Pin | Definition | Pin | Definition |
|-----|--------------|-----|--------------|
| 1 | N/A | 2 | SP2_RXD_R |
| 3 | SP2_TXD_R | 4 | N/A |
| 5 | GND | 6 | N/A |
| 7 | SP2_RTS#_R | 8 | SP2_CTS#_R |
| 9 | N/A | | |
| MH1 | CHASIS_GNDR3 | MH2 | CHASIS_GNDR2 |

COM 3 Port (RS422/485 Only)

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

Connector location: CN3



| RS485 | | RS422 | |
|-------|--------------|-------|--------------|
| Pin | Definition | Pin | Definition |
| 1 | DATA- | 1 | TX- |
| 2 | DATA+ | 2 | TX+ |
| 3 | NC | 3 | RX+ |
| 4 | NC | 4 | RX- |
| 5 | GND | 5 | GND |
| 6 | NC | 6 | RTS- |
| 7 | NC | 7 | RTS+ |
| 8 | NC | 8 | CTS+ |
| 9 | NC | 9 | CTS- |
| MH1 | CHASIS_GNDR4 | MH1 | CHASIS_GNDR4 |
| MH2 | CHASIS_GNDR3 | MH2 | CHASIS_GNDR3 |
| NH1 | NA | NH1 | NA |
| NH2 | NA | NH2 | NA |

Line-out Connector

Connector type: 1x 3.5mm TRS

Connector location: CN1



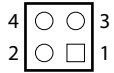
| Pin | Definition | Pin | Definition |
|-----|------------|-----|-------------|
| 1 | LOUT_L3 | 2 | LINE_OUT_JD |
| 3 | AGND | 4 | LOUT_R3 |
| 5 | AGND | 6 | AGND |

Internal Connectors

LAN1 LED Signal Pin Header

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

Connector location: JP12

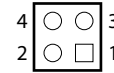


| Pin | Definition | Pin | Definition |
|-----|-----------------|-----|---------------|
| 1 | LAN_ACTPW | 2 | LAN_LED_ACT# |
| 3 | LAN_LED_LINK1G# | 4 | LAN_LED_LINK# |

LAN2 LED Signal Pin Header

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

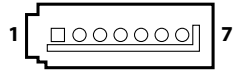
Connector location: JP14



| Pin | Definition | Pin | Definition |
|-----|------------------|-----|----------------|
| 1 | LAN2_ACTPW | 2 | LAN2_LED_ACT# |
| 3 | LAN2_LED_LINK1G# | 4 | LAN2_LED_LINK# |

SATA Connector

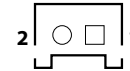
Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: CN2



| Pin | Definition | Pin | Definition |
|-----|-------------|-----|-------------|
| 1 | GND | 2 | SATA_TXP0_C |
| 3 | SATA_TXN0_C | 4 | GND |
| 5 | SATA_RXN0_C | 6 | SATA_RXP0_C |
| 7 | GND | | |

SATA Power Connector

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: J1

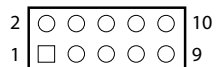


| Pin | Definition |
|-----|------------|
| 1 | GND |
| 2 | VCC5 |

GPIO Pin Header

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

Connector location: JP2

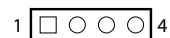


| Pin | Definition | Pin | Definition |
|-----|--------------|-----|-------------|
| 1 | VCC5 | 2 | GND |
| 3 | ICH_GPO0_OUT | 4 | ICH_GPIO_IN |
| 5 | ICH_GPO1_OUT | 6 | ICH_GPI1_IN |
| 7 | ICH_GPO2_OUT | 8 | ICH_GPI2_IN |
| 9 | ICH_GPO3_OUT | 10 | ICH_GPI3_IN |

Mic-in Pin Header

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

Connector location: JP5

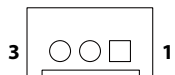


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | MIC1_L3 | 2 | AGND |
| 3 | MIC_JD | 4 | MIC1_R3 |

COM 4 Pin Header (RS232)

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

Connector location: COM1

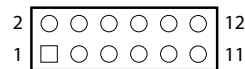


| Pin | Definition |
|-----|------------|
| 1 | GND |
| 2 | SP4_RXD_R |
| 3 | SP4_TXD_R |

Power & HDD LEDs/Power & Reset Switches

Connector type: 2x6 12-pin header, 2.0mm pitch

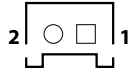
Connector location: JP3



| Pin | Definition | Pin | Definition |
|-----|-------------|-----|------------|
| 1 | PWR_LED_N | 2 | VCC5 |
| 3 | SATA_LED# | 4 | VCC5 |
| 5 | 3VSB | 6 | GND |
| 7 | SLP_S3# | 8 | PS_ON# |
| 9 | EC_PWRBT# | 10 | GND |
| 11 | PM_RESET#_J | 12 | GND |

RTC Connector

Connector type: 1x2 2-pin header, 1.25mm pitch
Connector location: J3



| Pin | Definition |
|-----|------------|
| 1 | GND |
| 2 | VBAT_L |

SMBUS Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP8

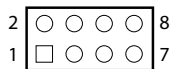


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | VCC3 | 2 | SMB_CLK |
| 3 | SMB_DATA | 4 | GND |

SPI and I2C Pin Header

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

Connector location: JP10

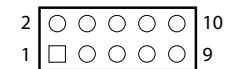


| Pin | Definition | Pin | Definition |
|-----|--------------|-----|--------------|
| 1 | 3VSB | 2 | GND |
| 3 | 3V3_SPI_CS | 4 | 3V3_SPI_MISO |
| 5 | 3V3_SPI_MOSI | 6 | 3V3_SPI_CLK |
| 7 | 3P3_I2C_CLK | 8 | 3P3_I2C_DATA |

GPIO Pin Header

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

Connector location: CN12

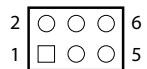


| Pin | Definition | Pin | Definition |
|-----|--------------|-----|---------------|
| 1 | 3VSB | 2 | GND |
| 3 | 3V3_GPIO_IN1 | 4 | 3V3_GPIO_OUT1 |
| 5 | 3V3_GPIO_IN2 | 6 | 3V3_GPIO_OUT2 |
| 7 | 3V3_GPIO_IN3 | 8 | 3V3_GPIO_OUT3 |
| 9 | 3V3_GPIO_IN4 | 10 | 3V3_GPIO_OUT4 |

UART Pin Header (Signal from CPU)

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

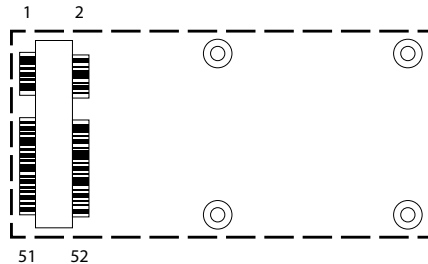
Connector location: JP16



| Pin | Definition | Pin | Definition |
|-----|--------------|-----|--------------|
| 1 | 3VSB | 2 | GND |
| 3 | 3V3_UART_RXD | 4 | 3V3_UART_TXD |
| 5 | 3V3_UART_RTS | 6 | 3V3_UART_CTS |

Mini-PCIe Connector (3G/4G/mSATA)

Connector location: CN5

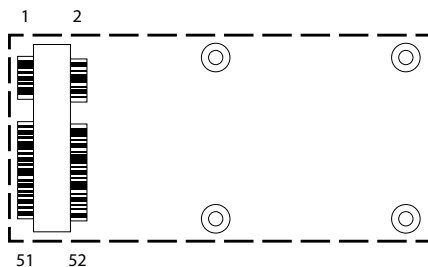


| Pin | Definition | Pin | Definition |
|-----|-------------|-----|---------------|
| 1 | N/A | 2 | 3VSB_MINI1 |
| 3 | N/A | 4 | GND |
| 5 | N/A | 6 | V1P5S_1 |
| 7 | N/A | 8 | UIM_PWR1 |
| 9 | GND | 10 | UIM_DATA |
| 11 | N/A | 12 | UIM_CLK |
| 13 | N/A | 14 | UIM_RESET |
| 15 | GND | 16 | UIM_VPP |
| 17 | N/A | 18 | GND |
| 19 | N/A | 20 | MINICARD2DIS# |
| 21 | GND | 22 | N/A |
| 23 | SATA_RXP1_C | 24 | 3VSB_MINI1 |
| 25 | SATA_RXN1_C | 26 | GND |

| Pin | Definition | Pin | Definition |
|-----|-------------|-----|------------|
| 27 | GND | 28 | V1P5S_1 |
| 29 | GND | 30 | EC_SMBCLK |
| 31 | SATA_TXN1_C | 32 | EC_SMBDATA |
| 33 | SATA_TXP1_C | 34 | GND |
| 35 | GND | 36 | MINI1USBN |
| 37 | GND | 38 | MINI1USBP |
| 39 | 3VSB_MINI1 | 40 | GND |
| 41 | 3VSB_MINI1 | 42 | N/A |
| 43 | GND | 44 | N/A |
| 45 | N/A | 46 | N/A |
| 47 | N/A | 48 | V1P5S_1 |
| 49 | N/A | 50 | GND |
| 51 | 3VSB_MINI1 | 52 | 3VSB_MINI1 |

Mini-PCle Connector (3G/4G/Wi-Fi)

Connector location: CN6

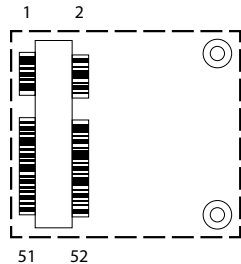


| Pin | Definition | Pin | Definition |
|-----|------------------|-----|---------------|
| 1 | PCIEWAKE# | 2 | 3VSB_MINI2 |
| 3 | N/A | 4 | GND |
| 5 | N/A | 6 | V1P5S_2 |
| 7 | MINICARD2CLKREQ# | 8 | UIM_PWR2 |
| 9 | GND | 10 | UIM_DATA |
| 11 | PCIE_CLKN0 | 12 | UIM_CLK |
| 13 | PCIE_CLKP0 | 14 | UIM_RESET |
| 15 | GND | 16 | UIM_VPP |
| 17 | N/A | 18 | GND |
| 19 | N/A | 20 | MINICARD2DIS# |
| 21 | GND | 22 | EC_PLTRST# |
| 23 | RXNO_R | 24 | 3VSB_MINI2 |
| 25 | RXPO_R | 26 | GND |

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

Half-size Mini-PCle Connector (Wi-Fi)

Connector location: CN7



| Pin | Definition | Pin | Definition |
|-----|------------------|-----|---------------|
| 1 | PCIE_WAKE# | 2 | 3VSB_MINI3 |
| 3 | N/A | 4 | GND |
| 5 | N/A | 6 | V1P5S_3 |
| 7 | MINICARD1CLKREQ# | 8 | N/A |
| 9 | GND | 10 | N/A |
| 11 | PCIE_CLKN3 | 12 | N/A |
| 13 | PCIE_CLKP3 | 14 | N/A |
| 15 | GND | 16 | N/A |
| 17 | N/A | 18 | GND |
| 19 | N/A | 20 | MINICARD3DIS# |
| 21 | GND | 22 | EC_PLTRST# |
| 23 | RXN3_R | 24 | 3VSB_MINI3 |
| 25 | RXP3_R | 26 | GND |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 27 | GND | 28 | V1P5S_3 |
| 29 | GND | 30 | EC_SMBCLK |
| 31 | TXN3_R | 32 | EC_SMBDATA |
| 33 | TXP3_R | 34 | GND |
| 35 | GND | 36 | MINI3USBN |
| 37 | GND | 38 | MINI3USBP |
| 39 | 3VSB_MINI3 | 40 | GND |
| 41 | 3VSB_MINI3 | 42 | N/A |
| 43 | GND | 44 | N/A |
| 45 | N/A | 46 | N/A |
| 47 | N/A | 48 | V1P5S_3 |
| 49 | N/A | 50 | GND |
| 51 | N/A | 52 | 3VSB_MINI3 |

CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover



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

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



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



Screws on the sides

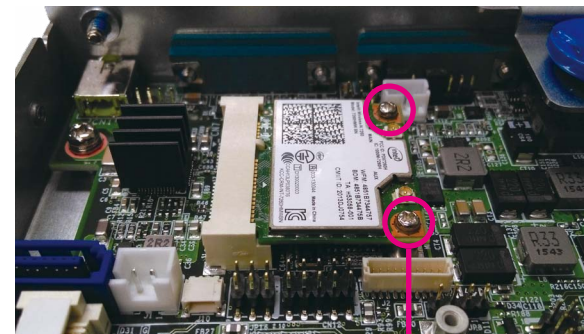
Installing a Wi-Fi/BT Mini-PCle Module (Half-size)

1. Locate the mini-PCI Express slot (CN7) on the board.



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

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



**Mounting
screw**

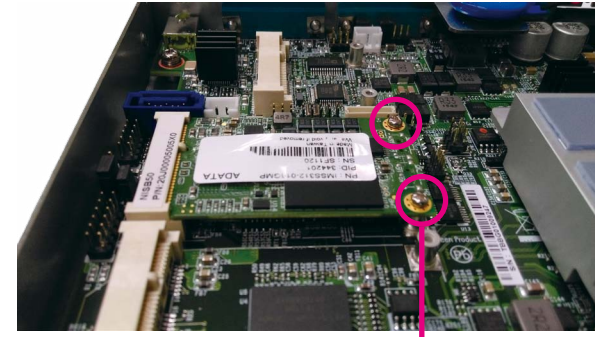
Installing a Mini-PCle Module (Full-size)

1. Locate the mini-PCI Express slot (CN5) on the board.



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

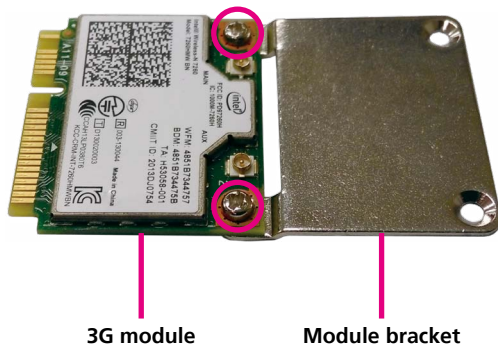
3. Push the module down and then secure it with mounting screws.



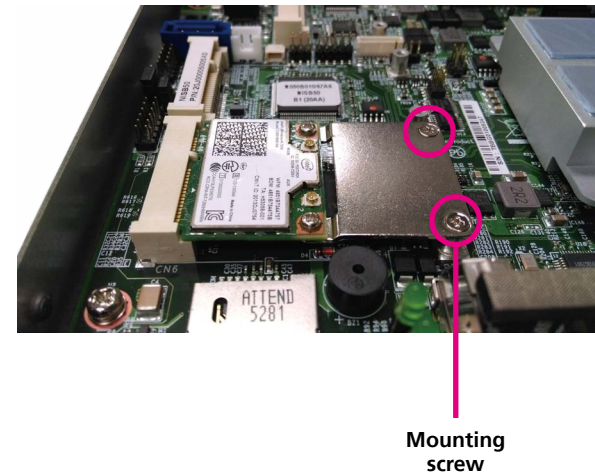
Mounting
screw

Installing a 3G Mini-PCle Module (Half-size)

1. Align the 3G module to the module bracket and secure both together with screws.



2. Insert the wireless LAN module into the mini-PCI Express slot (CN6) 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.

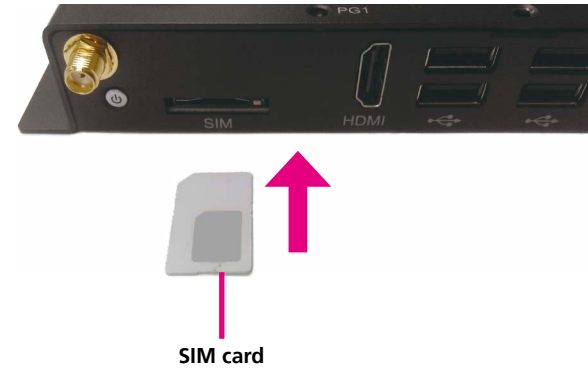


Installing a SIM Card

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



2. Insert the SIM card into the slot.



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

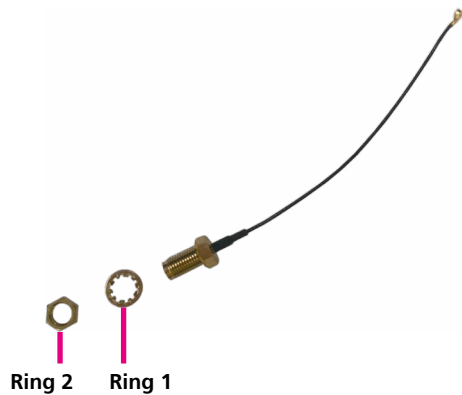


SIM cover

Installing an Antenna



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



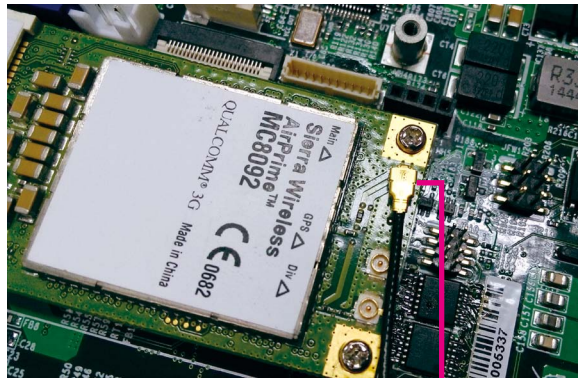
1. Remove the antenna hole cover located on the front panel.



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



3. Attach the RF cable onto the module.



RF cable

4. Connect the external antenna to the antenna jack.

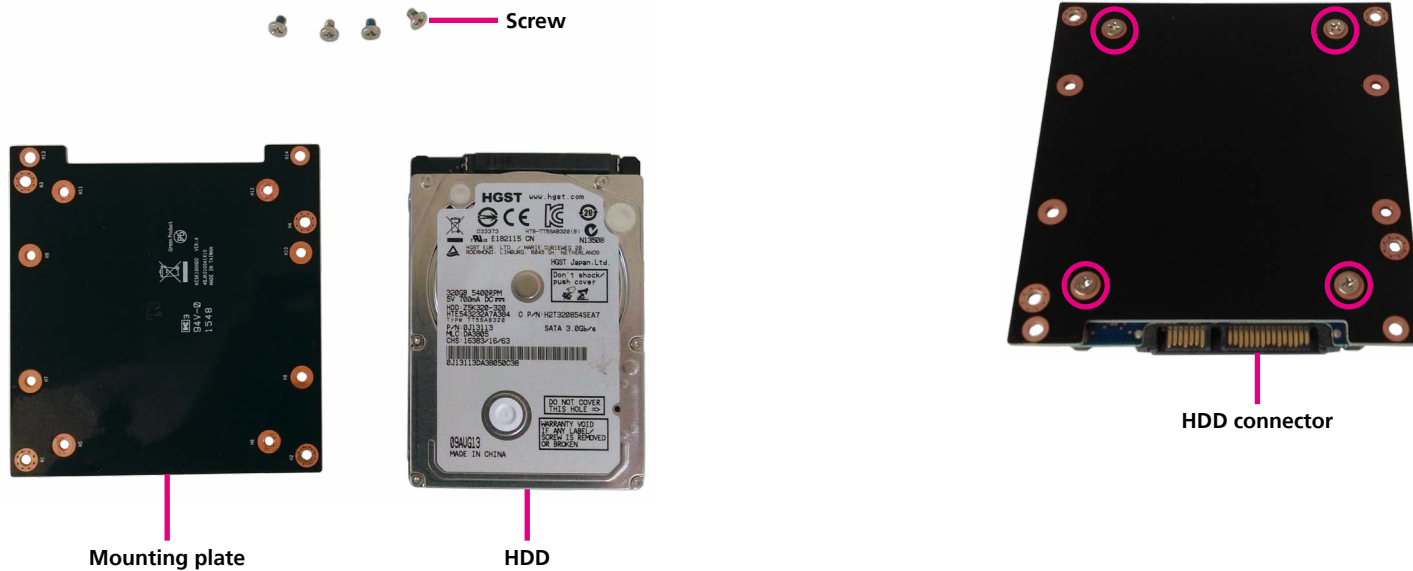
Installing a 2.5" SSD/HDD Storage (For NISE 50W Only)

1. Remove the HDD bracket located at the front panel by loosening the two thumb screws on the bracket cover.
2. Gently pull the HDD bracket out.



3. Prepare the mounting plate and its four screws. The mounting plate is used to secure the HDD to the bracket.

4. Secure the HDD onto the mounting plate with the four screws. Make sure the HDD connector is facing towards the cutout on the plate.



5. Place the HDD onto the HDD bracket with the connector facing towards the rear end of the bracket cover.



6. Insert the HDD bracket back into the external slot, then tighten the screws to secure it.



Note:
Please use a 2.5" SSD/HDD with a height no greater than 7mm.

Wallmount Installation



Note 1 (NISE 50): The top cover of the system also serves as the wall mount bracket. Before wall mounting the system, please ensure the top cover is secured with 6 screws. (Screw specifications: F3x5mm)



Note 2 (NISE 50W): The top cover of the system also serves as the wall mount bracket. Before wall mounting the system, please ensure the top cover is secured with 10 screws (4 on top, 2 on bottom, 2 on left and 2 on right. Screw specifications: M3x4mm).



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



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



DIN Rail Clip Installation

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



2. Secure the DIN rail clips with screws.



Screw specifications: P3.5x6mm NI TAP

Aluminum DIN Rail Clip Installation

1. Align the aluminum DIN rail clip to the mounting holes on the chassis cover.
2. Secure the aluminum DIN rail clip with screws.



Screw specifications: P3x5mm Twin Washer 8mm Nylok NI

Packing (NISE 50)

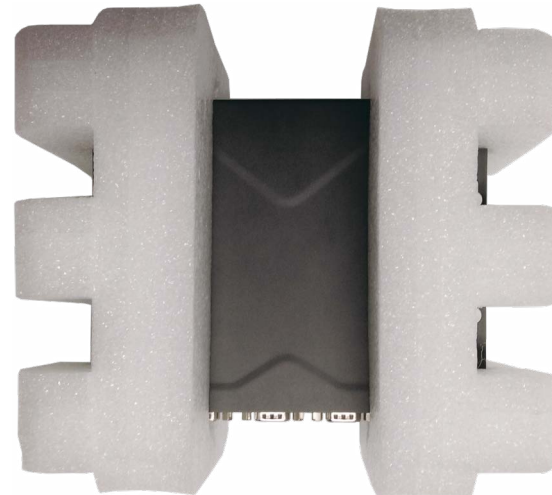


NISE 50 EPE reference.

Top View of Packing



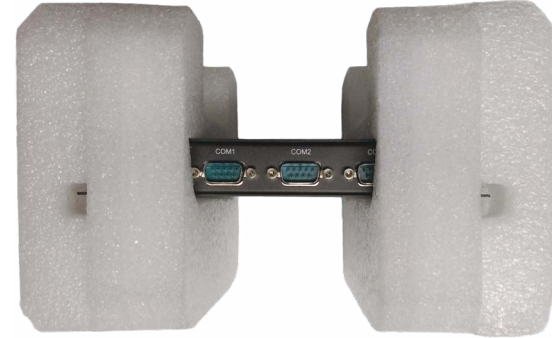
Bottom View of Packing



Front View of Packing



Rear View of Packing

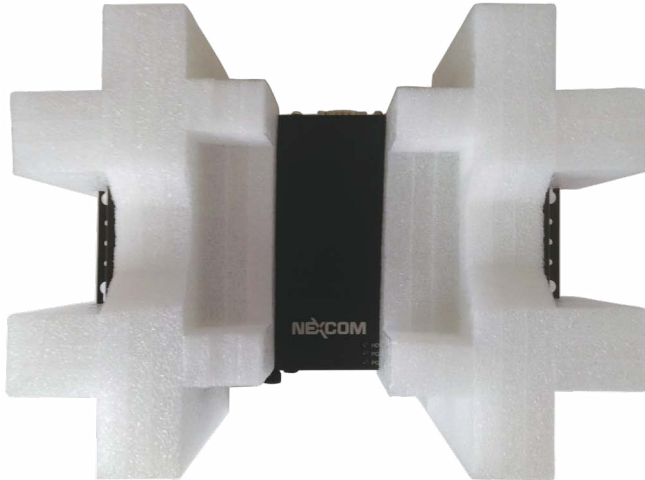


Packing (NISE 50W)

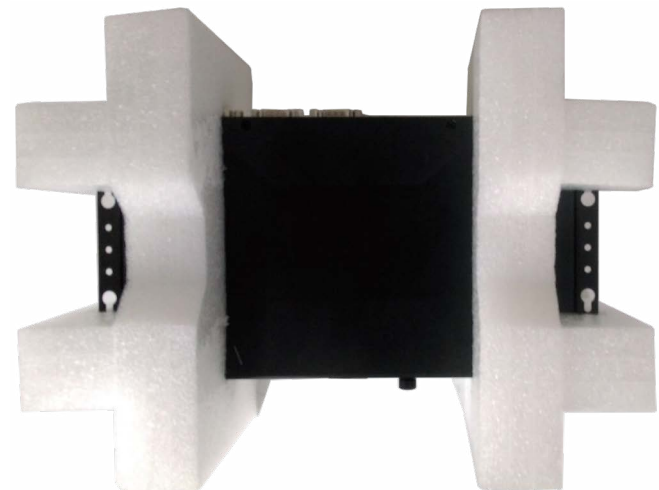


NISE 50W EPE reference.

Top View of Packing



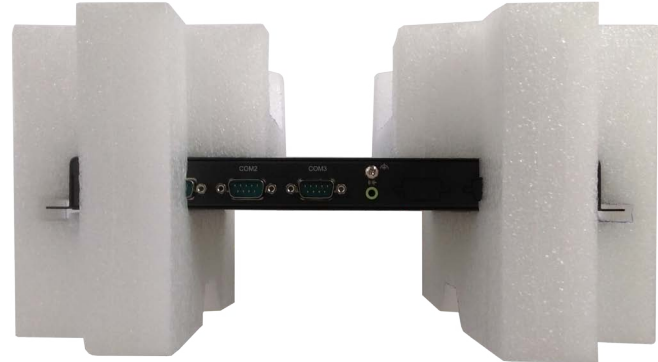
Bottom View of Packing



Front View of Packing



Rear View of Packing



CHAPTER 4: BIOS SETUP

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

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

About BIOS Setup

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

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

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

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

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

When to Configure the BIOS

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

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

Default Configuration


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

Entering Setup












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

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

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

Press the  key to enter Setup:


Legends

| Key | Function |
|---|--|
|  | Moves the highlight left or right to select a menu. |
|  | Moves the highlight up or down between sub-menus or fields. |
|  | Exits the BIOS Setup Utility. |
|  | Scrolls forward through the values or options of the highlighted field. |
|  | Scrolls backward through the values or options of the highlighted field. |
|  | Selects a field. |
|  | Displays General Help. |
|  | Load previous values. |
|  | Load optimized default values. |
|  | Saves and exits the Setup program. |
|  | Press <Enter> to enter the highlighted sub-menu |


Scroll Bar

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

Submenu

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

BIOS Setup Utility

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

Main

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



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

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

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

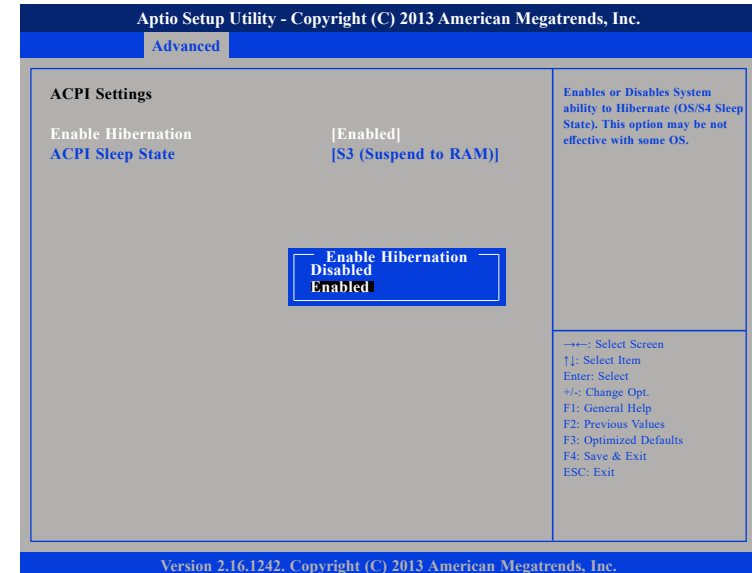


Setting incorrect field values may cause the system to malfunction.



ACPI Settings

This section is used to configure ACPI Settings.



Enable Hibernation

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

ACPI Sleep State



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

F81216SEC Super IO Configuration

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

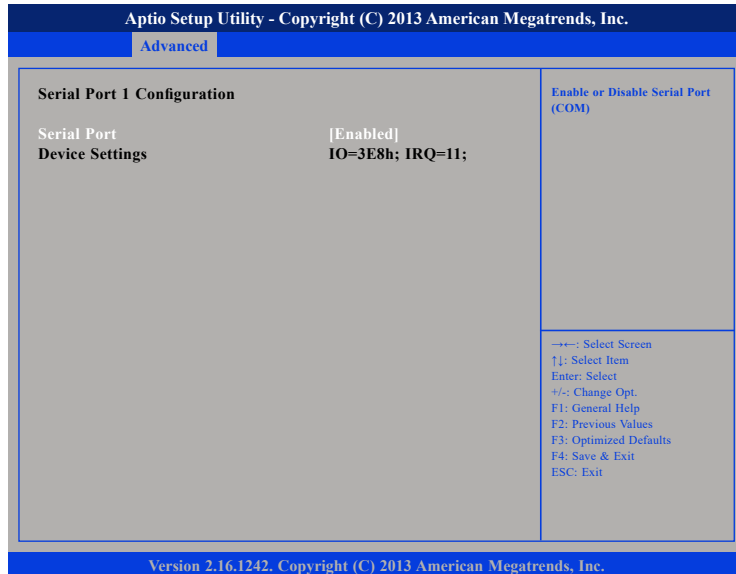


Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.

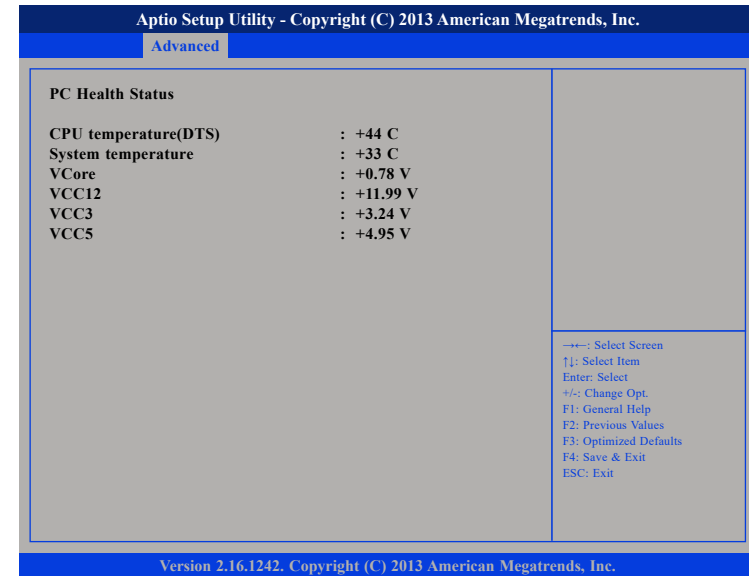


Serial Port

Enables or disables the serial port.

IT8528 H/W Monitor

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



CPU Temperature (DTS)

Detects and displays the current CPU temperature.

System Temperature

Detects and displays the current system temperature.

VCore to VCC5

Detects and displays the output voltages.

Serial Port Console Redirection

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



Console Redirection

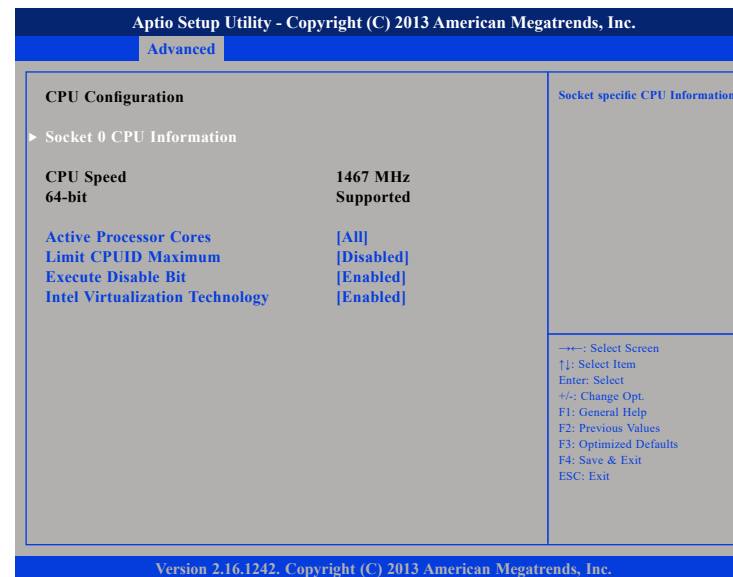
Enables or disables the console redirection. When enabled, Console Redirection Settings will be available.

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

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

CPU Configuration

This section is used to configure the CPU.



Active Processors Cores

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

Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

Intel® Virtualization Technology

Enables or disables Intel Virtualization technology.

Socket 0 CPU Information

Display information on the CPU installed on socket 0.

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Advanced

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

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

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PPM Configuration

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

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Advanced

| PPM Configuration | |
|-------------------|------------|
| EIST | [Disabled] |

Enable/Disable Intel SpeedStep

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

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EIST

Enables or disables Intel® SpeedStep.

IDE Configuration

This section is used to configure the SATA drives.



Serial-ATA Port 0 and Serial-ATA Port 1

Enables or disables SATA port 0 or port 1.

SATA Port0 HotPlug and SATA Port1 HotPlug

Enables or disables hot pluggable support on SATA port 0 or port 1.

Serial-ATA (SATA)

Enables or disables the SATA controller.

SATA Mode

Configures the SATA as IDE or AHCI mode.

- IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.
- AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

Miscellaneous Configuration

This section is used to configure other miscellaneous settings.

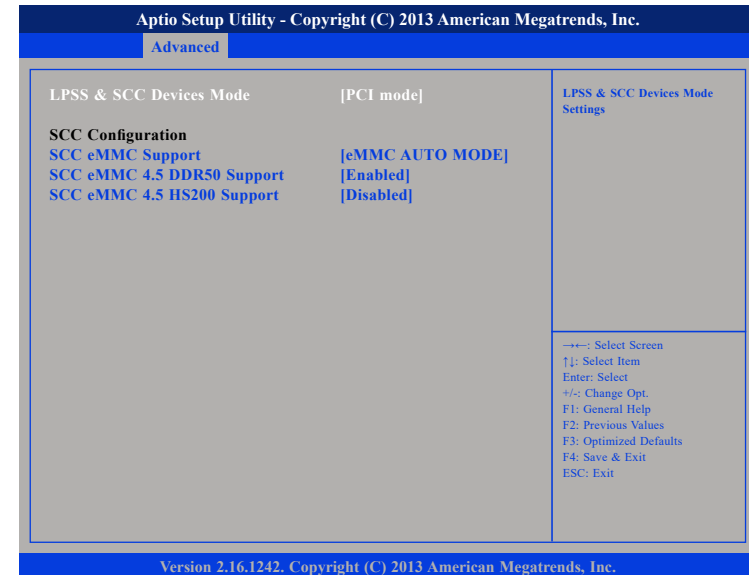


OS Selection

Selects the operating system as Windows or Android.

LPSS & SCC Configuration

This section is used to configure LPSS and SCC settings.



LPSS & SCC Devices Mode

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

SCC eMMC Support

Enables or disables SCC eMMC support.

SCC eMMC 4.5 DDR50 Support

Enables or disables SCC eMMC 4.5 DDR50 support.

SCC eMMC 4.5 HS200 Support

Enables or disables SCC eMMC 4.5 HS200 support.

CSM Configuration

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



CSM Support

Enables or disables CSM support.

Network

Controls the execution of UEFI and legacy PXE OpROM.

Onboard LAN PXE

Enables or disables onboard LAN PXE ROM.

Storage

Controls the execution of UEFI and legacy storage OpROM.

Video

Controls the execution of UEFI and legacy video OpROM.

Other PCI Devices

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

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.

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

Disable Keeps USB devices available only for EFI applications.

XHCI Legacy Support

Enables or disables XHCI controller legacy support.

XHCI Hand-off

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

EHCI Hand-off

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

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

USB Transfer Time-out

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

Device Reset Time-out

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

Device Power-up Delay

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

Trusted Computing

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



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.

Chipset

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



South Bridge

Enters the South Bridge submenu.

South Bridge



High Precision Timer

Enables or disables high precision event timer.

Restore AC Power Loss

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

PCH Azalia Configuration



Azalia

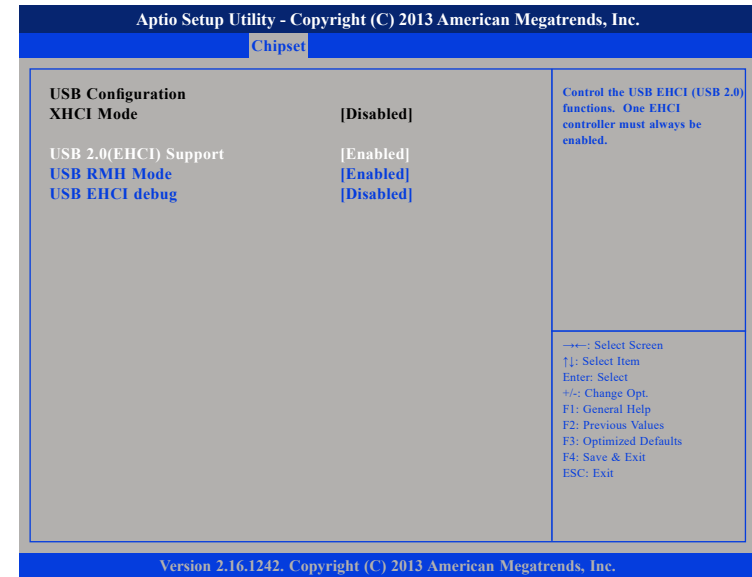
Control detection of the Azalia device.

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

Azalia HDMI Codec

Enables or disables internal HDMI codec for Azalia.

USB Configuration



USB 2.0(EHCI) Support

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

USB RMH Mode

Enables or disables PCH USB rate matching hubs mode.

USB EHCI Debug

Enables or disables PCH EHCI debug capability.

Boot

This section is used to configure the boot features.



Bootup NumLock State

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

Fast Boot

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

Boot Option Priorities

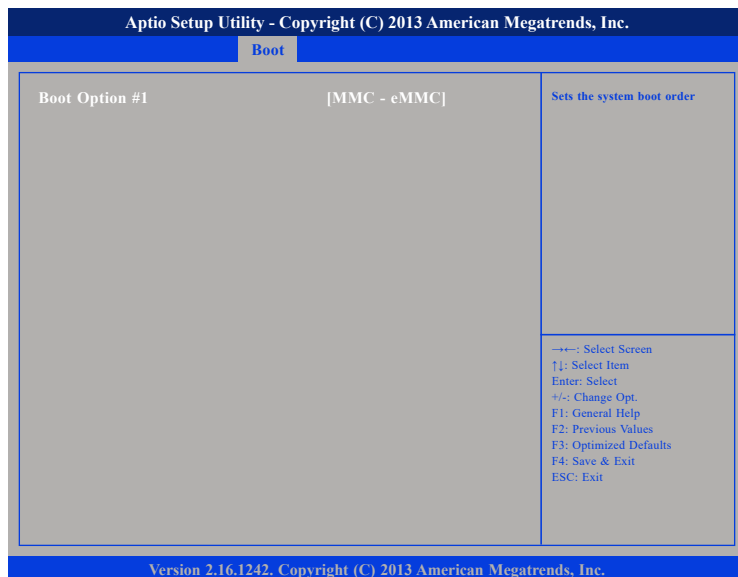
Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

Hard Drive BBS Priorities

Sets the order of the legacy devices in this group.

Hard Drive BBS Priorities

Boot Option #1



Sets the first legacy device to boot from.

Save & Exit



Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

APPENDIX A: POWER CONSUMPTION

Power Consumption Management

Purpose

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

Test Equipment

1. 19" LCD Monitor.
2. DC power supply.
3. Operating System OS: Windows 8.1 (32-bit)
4. Burn In Test Ver7.1
5. Intel® Thermal Analysis Tool software version: 5.0.1019
6. Direct3D Play Test Program
7. Network test program.
8. USB 2.0 (5V, 0.5A (Cement Resistor)) *4.

Device Under Test

DUT: SYS#1

Test Procedure

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

Test Result

| System Mode | | 24Vdc | |
|---|----------------------------|-------------------|-------------------|
| | | I _{max.} | W _{max.} |
| CPU: Intel® Atom™ CPU E3826 @ 1.46 GHz System model: NISE 50 / Revision: B BIOS: American Megatrends Inc. / Revision: N050B013 X64 EC Revision: C 00 2 Operating System OS: Windows 8.1 (32-bit) | Standby mode. (S3) | 0.10A | 2.4W |
| | BIOS mode | 0.36A | 8.64W |
| | 100% Full loading mode. | 0.8A | 19.2W |

APPENDIX B: GPIO CONTROL COMMANDS

This command set is used to control GPIO. The system retrieves a HW pin number from the dynamic control table and sends it to EC. The EC will then use this code to control the real pin. Read/write/set direction/set internal pull up/down GPIO functions are available to the system. Only GPIO-type device id in the dynamic control table can be a controller, the EC does not allow the system to control other pins not defined in the table.

Command List

| Command | Description | | | | | | | | | | | | | | | | | | | | | |
|-------------|--|-------------|------|-------------|------|------|------|------|------------|---|---|---|-------------|--|---|-------------|---|---|---|-------------|--|---|
| 0x10 | Write Pin number into index | | | | | | | | | | | | | | | | | | | | | |
| 0x11 | Accordinging index, get GPIO pin status. 1-active, 0-unactive, 0xFF-fail | | | | | | | | | | | | | | | | | | | | | |
| 0x12 | Accordinging index, change GPIO pin status. 1-active, 0-unactive | | | | | | | | | | | | | | | | | | | | | |
| 0x1D | Accordinging index, get GPIO input/output type. 1-output, 0-input, 0xFF-fail | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Bit7 & Bit6</th> <th>Bit5</th> <th>Bit4</th> <th>Bit3</th> <th>Bit2</th> <th>Bit1</th> <th>Bit0</th> </tr> </thead> <tbody> <tr> <td>0x10 Input</td> <td>x</td> <td>x</td> <td>x</td> <td>0x10Pull-up</td> <td></td> <td>x</td> </tr> <tr> <td>0x01 Output</td> <td>x</td> <td>x</td> <td>x</td> <td>0x01Pull-dn</td> <td></td> <td>x</td> </tr> </tbody> </table> | Bit7 & Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | 0x10 Input | x | x | x | 0x10Pull-up | | x | 0x01 Output | x | x | x | 0x01Pull-dn | | x |
| | Bit7 & Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | | | | | | | | | | | | | | | |
| 0x10 Input | x | x | x | 0x10Pull-up | | x | | | | | | | | | | | | | | | | |
| 0x01 Output | x | x | x | 0x01Pull-dn | | x | | | | | | | | | | | | | | | | |
| 0x1E | Accordinging index, change GPIO input/output type. 1-output, 0-input | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Bit7 & Bit6</th> <th>Bit5</th> <th>Bit4</th> <th>Bit3</th> <th>Bit2</th> <th>Bit1</th> <th>Bit0</th> </tr> </thead> <tbody> <tr> <td>0x10 Input</td> <td>x</td> <td>x</td> <td>x</td> <td>0x10Pull-up</td> <td></td> <td>x</td> </tr> <tr> <td>0x01 Output</td> <td>x</td> <td>x</td> <td>x</td> <td>0x01Pull-dn</td> <td></td> <td>x</td> </tr> </tbody> </table> | Bit7 & Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | 0x10 Input | x | x | x | 0x10Pull-up | | x | 0x01 Output | x | x | x | 0x01Pull-dn | | x |
| | Bit7 & Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | | | | | | | | | | | | | | | |
| 0x10 Input | x | x | x | 0x10Pull-up | | x | | | | | | | | | | | | | | | | |
| 0x01 Output | x | x | x | 0x01Pull-dn | | x | | | | | | | | | | | | | | | | |

GPIO Default Table

There are 8 alternate GPIOs in the COM specification. The system can use commands to control these pins. The system can also setup a default table to configure these GPIO behaviors when power resumes for the first time. This table can be stored into the EEPROM for first time use. The addresses in the ACPI RAM are as follows:

Default Table in ACPI RAM

| | |
|---------------------------|---------------------------|
| GPIO0 start address: 0xD8 | GPIO4 start address: 0xE4 |
| GPIO1 start address: 0xDB | GPIO5 start address: 0xE7 |
| GPIO2 start address: 0xDE | GPIO6 start address: 0xEA |
| GPIO3 start address: 0xE1 | GPIO7 start address: 0xED |

| Offset | Name | Description | | | | | | | | | | | | | | |
|--------|-----------------|--|------|------|------|------|-------|------|------|------|---|---|---|---|---|---|
| 0x00 | Pin | HW pin number. EC will setup this value. | | | | | | | | | | | | | | |
| 0x01 | Type control | Value type is same as command 0x1D. | | | | | | | | | | | | | | |
| 0x02 | Default control | Setup default pin behavior | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Bit7</th> <th>Bit6</th> <th>Bit5</th> <th>Bit4</th> <th>Bit3</th> <th>Bit2</th> <th>Bit1</th> <th>Bit0</th> </tr> </thead> <tbody> <tr> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>HiLow</td> </tr> </tbody> </table> <p>HiLow – If type control is input type, 1-high active and 0-low active.</p> <p>If type control is output type, 1-default output high and 0-default output low.</p> | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | x | x | x | x | x | x |
| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 | | | | | | | | | |
| x | x | x | x | x | x | x | HiLow | | | | | | | | | |

Read GPIO Status Sequence

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

Write GPIO Status Sequence

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

Read GPIO Direction Sequence

| Step | Action | Description |
|------|--------------------------|--|
| 0 | Wait IBF clear | |
| 1 | Write 0x10 to 0x66 | Send GPIO index command |
| 2 | Wait IBF clear | |
| 3 | Write PIN number to 0x62 | Write pin number to index |
| 4 | Wait OBF set | |
| 5 | Read 0x62 port | If index setup successfully, EC will return pin number. If fail, EC will return 0xFF |
| 6 | Wait IBF clear | |
| 7 | Write 0x1D to 0x66 | Send read GPIO direction command |
| 8 | Wait OBF set | |
| 9 | Read 0x62 port | EC will return pin status according pin number which you set in index. 0x80-input, 0x40-output. 0xFF-fail |

Write GPIO Direction Sequence

| Step | Action | Description |
|------|-------------------------------|---|
| 0 | Wait IBF clear | |
| 1 | Write 0x10 to 0x66 | Send GPIO index command |
| 2 | Wait IBF clear | |
| 3 | Write PIN number to 0x62 | Write pin number to index |
| 4 | Wait OBF set | |
| 5 | Read 0x62 port | If index setup successfully, EC will return pin number. If fail, EC will return 0xFF |
| 6 | Wait IBF clear | |
| 7 | Write 0x1E to 0x66 | Send write GPIO direction command |
| 8 | Wait IBF clear | |
| 9 | Write pin status to 0x62 port | Write 0x40, GPIO pin will be set output. Write 0x80, GPIO pin will be set input. |