



NEXCOM International Co., Ltd.

**Intelligent Platform & Services Business Unit**  
**Embedded Computing (Mini-ITX Motherboard)**

**NEX 621A**

User Manual

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# PREFACE

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## Acknowledgements

NEX 621A is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

## Regulatory Compliance Statements

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

## Declaration of Conformity

### FCC

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

### CE

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

## RoHS Compliance



### **NEXCOM RoHS Environmental Policy and Status Update**

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

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

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

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

### **How to recognize NEXCOM RoHS Products?**

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

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

## Warranty and RMA

### NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

### NEXCOM Return Merchandise Authorization (RMA)

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

### Repair Service Charges for Out-of-Warranty Products

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

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

### System Level

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

### Board Level

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

## Warnings

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

## Cautions

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

## Safety Information

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

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

## Installation Recommendations

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

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

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

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



## Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect the equipment from any AC outlet before cleaning or installing a component inside the chassis. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. To prevent electrostatic build-up, leave the board in its anti-static bag until you are ready to install it.
5. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
6. Keep the board away from humidity.
7. Put the board on a stable surface. Dropping it or letting it fall may cause damage.
8. Wear anti-static wrist strap.
9. Do all preparation work on a static-free surface.
10. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
11. Hold the board only by its edges. Be careful not to touch any of the components, contacts or connections.
12. All cautions and warnings on the board should be noted.
13. Use the correct mounting screws and do not over tighten the screws.
14. Keep the original packaging and the anti-static bag; in case the board has to be returned for repair or replacement.

## Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at [www.nexcom.com](http://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 NEX 621A package that you received is complete. Your package should have all the items listed in the following table.

| Item | Name                | Qty |
|------|---------------------|-----|
| 1    | NEX 621 motherboard | 1   |
| 2    | CPU sink            | 1   |
| 3    | I/O panel shield    | 1   |

### Optional Accessories

| Item | Part Number   | Name  | Description   |
|------|---------------|---|---|
| 1    | 7400060025X00 | Power Adapter FSP:FSP060 DBAE1 (9NA06031AJ)       | 60W 12V/5A w/Molding Type for ESI355-TN                           |
| 2    | 603COM0093X00 | COM Port Cable (N)COM Port Cable CP:NEX-171109-02 | COM Port Cable CP:NEX-171109-02 DB9(M) to IDC 10P PIT:2mm L=250mm |
| 3    | 603USB0085X00 | USB Cable for NEX 621A ST:MD5606152               | USB CONx2 + Bracket to Dupont 10P PIT:2.0mm 200mm                 |
| 4    | 603PS20006X00 | PS2 KB/MS Cable for NEX 621A                      | PS2 KB/MS Cable to Housing 2x3P PIT:2.0mm L:150mm                 |

## Ordering Information

The following below provides ordering information for NEX 621A.

### **NEX 621A-N3060 (P/N: 10G00062100X0)**

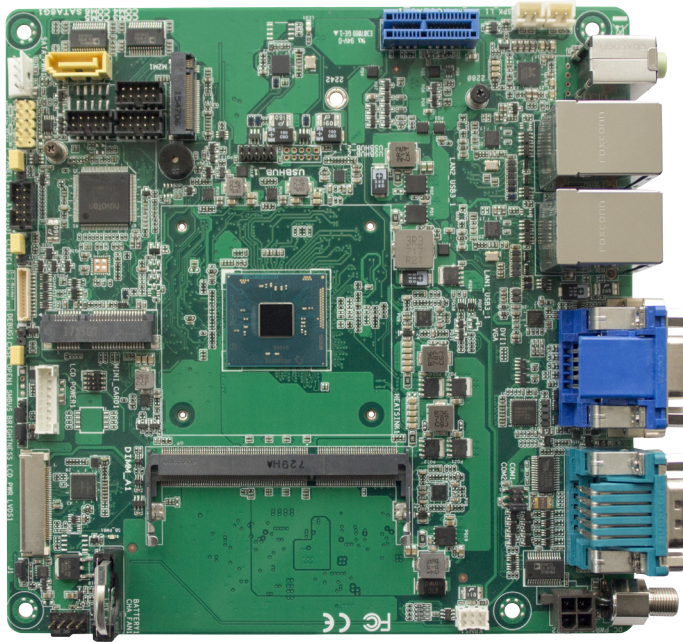
Onboard Intel® Celeron® Processor N3060, w/DDR3L SO-DIMM, support multiple displays from VGA, DVI-D, LVDS, 1 x SATAIII 6.0Gb/s, 1 x M.2 M-key, 1 x Mini PCIe, LAN x 2, USB 3.0 x 4, USB 2.0 x 3, COM x 5, HD Audio, DC Input +12V

### **Optional Accessories**

- 12V, 60W power adapter w/o power cord (P/N: 7400060025X00)
- COM port cable (P/N: 603COM0093X00)
- USB cable (P/N: 603USB0085X00)
- PS/2 cable (P/N: 603PS20006X00)

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



## Key Features

- Onboard Intel® Celeron® Processor N3060, w/DDR3L SO-DIMM
- Support multiple displays from VGA, DVI-D and LVDS
- Support 1 x SATAIII 6.0Gb/s, 1 x M.2 M-key ,1 x Mini PCIe, 4 x USB 3.0 and 3 x USB 2.0 ports
- Support 2 x RTL GbE LAN, 5 x serial ports, 1 x PCIe x1, 1 x PS/2 header, 1 x 8-bit DIO, HD Audio and 1 x Speaker out
- DC Input +12V
- Fanless
- Optional: Wi-Fi module/M.2 storage/TPM module

## Hardware Specifications

### CPU Support

- Intel® Celeron® Processor N3060, [2C @ 2.48GHz CPU (Burst Mode), 320/600MHz GFX (Turbo), ~6W TDP]

### Display

- 1 x DVI-D connector (resolution up to 1920x1200 @ 60Hz)
- 1 x VGA connector (resolution up to 1920x1200 @ 60Hz)
- 1 x LVDS connector (resolution up to 1920x1080 @ 60Hz)

### System

- 1 x DDR3L 1600 MHz SO-DIMM, max. 8GB, non-ECC
- 1 x SATAIII 6Gb/s connector
- 1 x SATA power connector
- 2 x USB 3.0 + LAN (RJ45) connector
- 2 x USB 2.0 header:  
Support additional 3 USB ports (2 x 2\*5-PIN, p=2.00mm)
- 1 x PS/2 header
- 5 x Serial ports:  
3 x RS232 [COM1 (DB9), COM3~5 box header]  
1 x RS232/485/422 & +5V/RI/+12V Select by COM2 (DB9)
- 1 x 8-bit DIO header (4-in/4-out)
- Watchdog Timer (1~255 step by software program)
- 1 x TPM connector
- Support Realtek HD AUDIO:  
1 x dual deck jack (Line-out, Mic-in)  
1 x Speaker out header (4Ω/2W)
- 1 x lockable DC jack, 1 x ATX 4-pin power connector

### BIOS

- 64Mbit Flash ROM x 1, AMI BIOS

### Storage Device

- 1 x SATAIII 6.0Gb/s
- 1 x M.2 M-key (2242/2280, default: 2280)

### Expansion

- 1 x PCIe 2.0 [x1] slot
- 1 x Mini PCI Express slot:  
(Full-size, supports PCIe/USB interface)

### Power Requirements

- 12V DC input:  
DC lockable jack or ATX 4-pin power connector
- Power Mode AT / ATX (jumper selection)

### Rear I/O

- 1 x Lockable DC power jack
- 2 x Serial (DB9) ports
- 1 x DVI-D connector
- 1 x VGA connector
- 2 x USB 3.0 + LAN (RJ45) connector
- 1 x dual deck jack

### Mechanical & Environment

- Operating Temperature: 0°C ~ 60°C
- Storage Temperature: -20°C ~ 80°C
- Relative humidity: Operating 10%~90%, non-condensing

### Dimension

- Mini-ITX 6.7" x 6.7" (170mm x 170mm)



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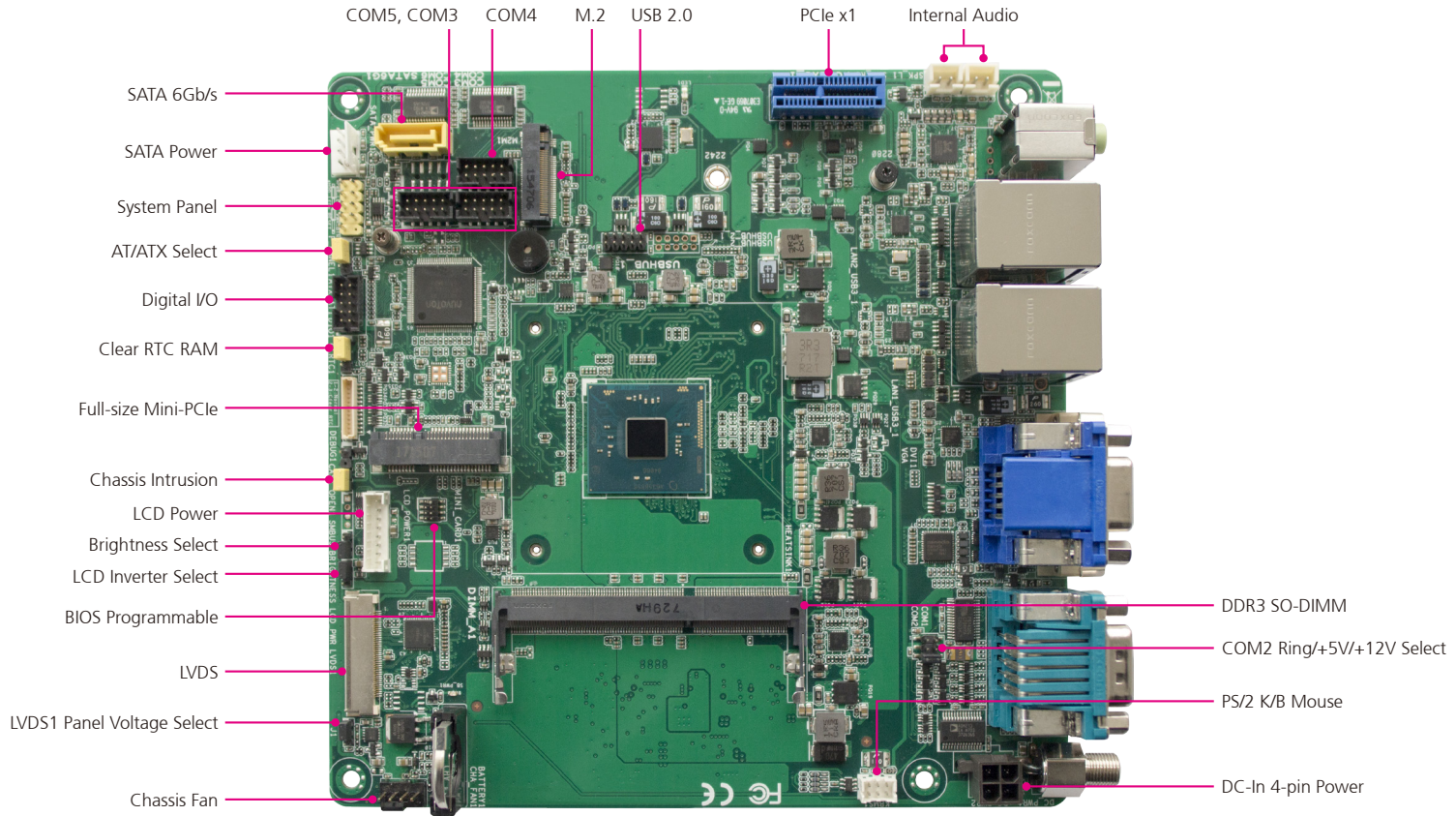
## Operating System

- Windows 7 (32/64-bit)
- Windows 8.1 and Windows 10 (64-bit)
- Linux Fedora

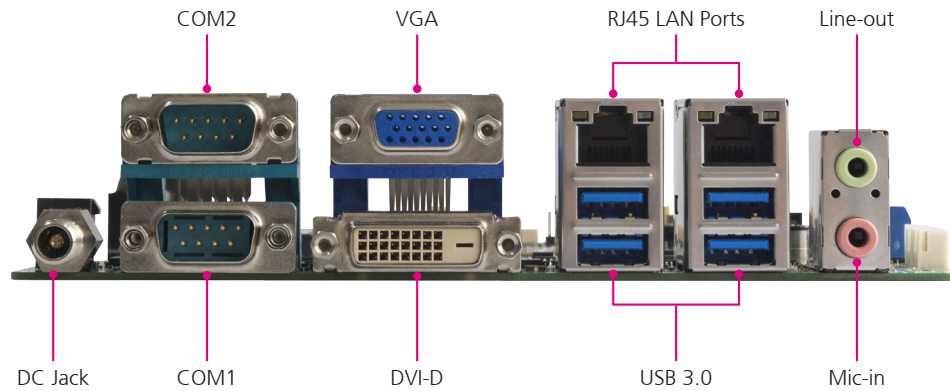
## Certifications

- EMC & Safety
- CE/FCC Class A

# Knowing Your NEX 621A



## Edge I/O View



## CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NEX 621A 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:

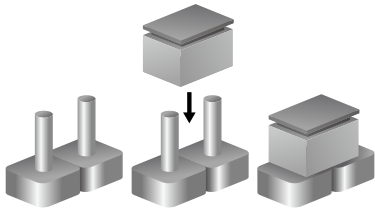
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

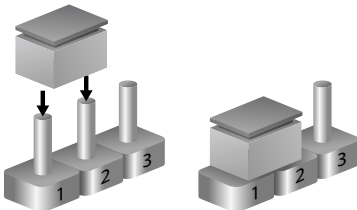
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

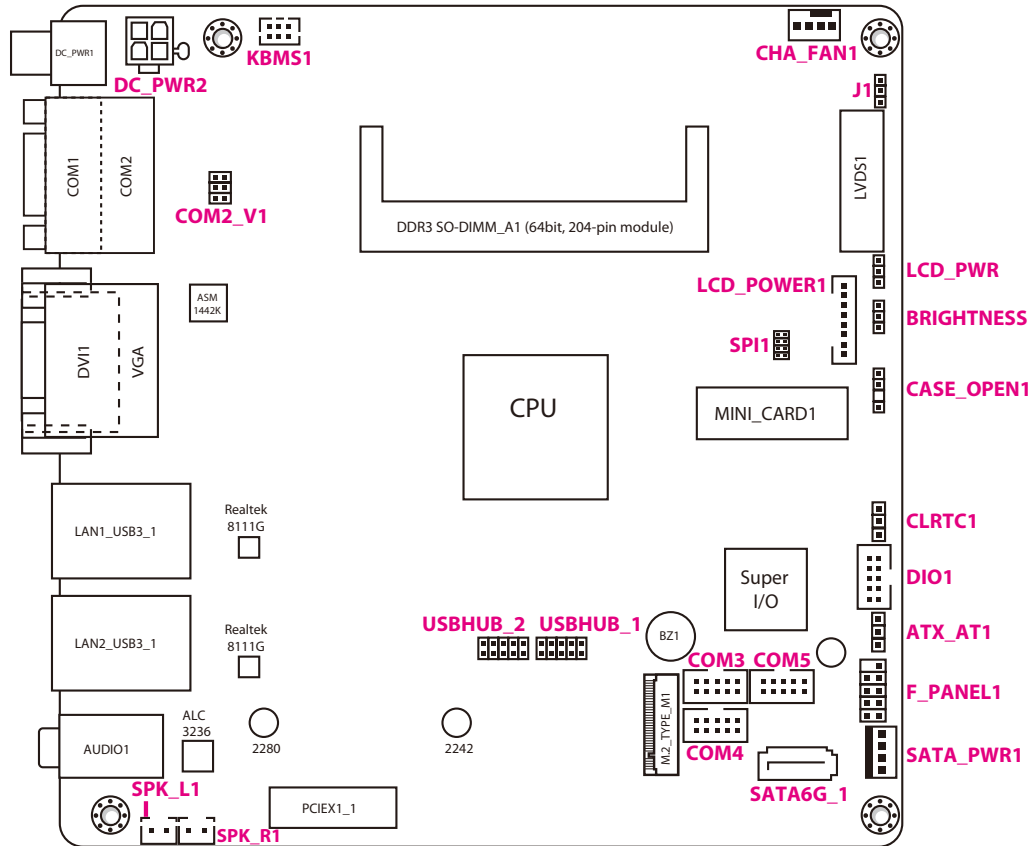


Three-Pin Jumpers: Pins 1 and 2 are Short

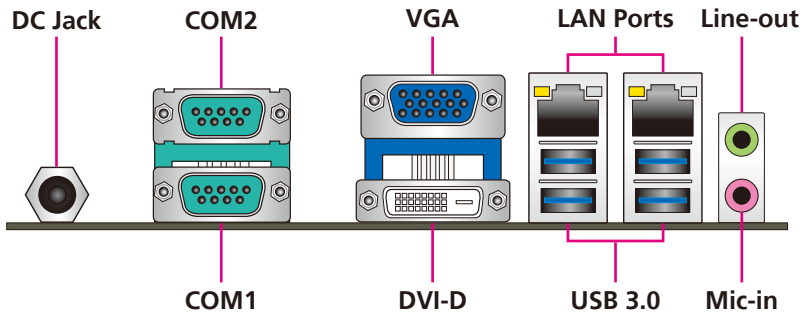


# Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.



## Rear Panel Connectors



### DC Jack

Used to plug a DC power cord and adapter.

### COM1 and COM2

Two DB9 ports used to connect RS232/422/485 (COM2) and RS232 (COM1) compatible devices.

### VGA

Used to connect an analog VGA monitor.

### DVI-D

Used to connect a DVI-D interface monitor.

### LAN Ports

Used to connect the system to a local area network.

### USB 3.0

Used to connect USB 3.0/2.0 devices.

### Line-out

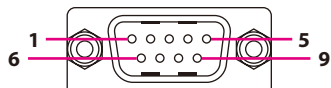
Used to connect a headphone or a speaker.

### Mic-in

Used to connect an external microphone.

## COM 2 Port (RS232/422/485)

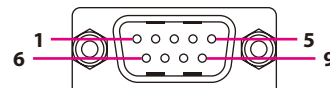
Connector type: DB-9 port, 9-pin D-Sub



| RS232 |             | RS485 |              | RS422 |               |
|-------|-------------|-------|--------------|-------|---------------|
| Pin   | Definition  | Pin   | Definition   | Pin   | Definition    |
| 1     | DCD         | 1     | RS485 D- (B) | 1     | RS422_TX- (B) |
| 2     | RXD         | 2     | RS485 D+ (A) | 2     | RS422_TX+ (A) |
| 3     | TXD         | 3     | NC           | 3     | RS422_RX+ (A) |
| 4     | DTR         | 4     | NC           | 4     | RS422_RX- (B) |
| 5     | GND         | 5     | NC           | 5     | NC            |
| 6     | DSR         | 6     | NC           | 6     | NC            |
| 7     | DTS         | 7     | NC           | 7     | NC            |
| 8     | CTS         | 8     | NC           | 8     | NC            |
| 9     | RI/+12V/+5V | 9     | NC           | 9     | NC            |

## COM 1 Port (RS232)

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

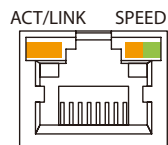


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | DCD        | 2   | TXD        |
| 3   | GND        | 4   | RTS        |
| 5   | RI         | 6   | RXD        |
| 7   | DTR        | 8   | DSR        |
| 9   | CTS        |     |            |



## LAN Ports LED Description

Connector type: RJ45 port with LEDs



| ACT/LINK LED |               | SPEED LED |                       |
|--------------|---------------|-----------|-----------------------|
| Status       | Description   | Status    | Description           |
| Off          | No link       | Off       | 10 Mbps network link  |
| Orange       | Linked        | Orange    | 100 Mbps network link |
| Flashing     | Data activity | Green     | 1 Gbps network link   |

## Jumpers

### Clear RTC RAM

Connector type: 1x3 3-pin header

Connector location: CLRTC1



**1-2 Short  
(Default)**



**2-3 Short**

| Pin | Status | Definition |
|-----|--------|------------|
| 1-2 | Short  | Normal     |
| 2-3 | Short  | Clear CMOS |

### LVDS1 Panel Voltage Selection Jumper

Connector type: 1x3 3-pin header

Connector location: J1



**1-2 Short**



**2-3 Short  
(Default)**

| Pin | Status | Definition |
|-----|--------|------------|
| 1-2 | Short  | +5V        |
| 2-3 | Short  | +3V        |

## AT/ATX Mode Select

Connector type: 1x3 3-pin header  
Connector location: ATX\_AT1



1-2 Short

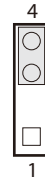


2-3 Short  
(Default)

| Pin | Status | Settings |
|-----|--------|----------|
| 1-2 | Short  | AT Mode  |
| 2-3 | Short  | ATX Mode |

## Chassis Intrusion Jumper

Connector type: 1x4 4-pin header  
Connector location: CASE\_OPEN1

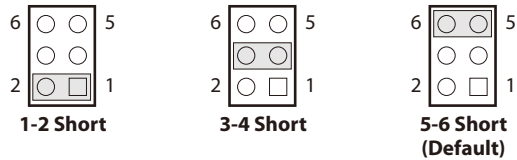


3-4 Short  
(Default)

| Pin | Status | Settings   |
|-----|--------|--|
| 1-2 | Open   | Enables the chassis intrusion detection feature  |
| 3-4 | Short  | Disables the chassis intrusion detection feature |

## COM2 Ring/+5V/+12V Select

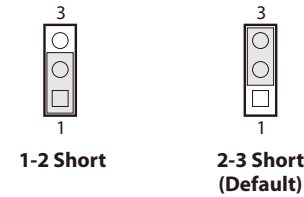
Connector type: 2x3 6-pin header  
 Connector location: COM2\_V1



| Pin | Status | Definition |
|-----|--------|------------|
| 1-2 | Short  | +12V       |
| 3-4 | Short  | +5V        |
| 5-6 | Short  | Ring       |

## Inverter1 Voltage Select

Connector type: 1x3 3-pin header  
 Connector location: LCD\_PWR



| Pin | Status | Settings      |
|-----|--------|---------------|
| 1-2 | Short  | +12V          |
| 2-3 | Short  | +5V (Default) |

## Brightness Select

Connector type: 1x3 3-pin header  
Connector location: BRIGHTNESS



**1-2 Short**



**2-3 Short**

| Pin | Status | Settings |
|-----|--------|----------|
| 1-2 | Short  | DC mode  |
| 2-3 | Short  | PWN mode |

## Connector Pin Definitions

### Internal Connectors

#### Chassis Fan Connector

Connector type: 1x4 4-pin header

Connector location: CHA\_FAN1

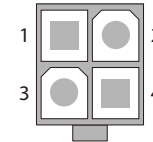


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | VCC        |
| 3   | SENSE      | 4   | PWM        |

#### 4-pin DC-In Power Connector

Connector type: 2x2 4-pin header

Connector location: DC\_PWR2

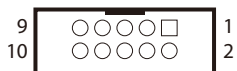


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | GND        |
| 3   | +12V       | 4   | +12V       |

## Serial Port Connectors

Connector type: 2x5 10-pin header

Connector location: COM3, COM4 and COM5



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | DCD        | 2   | RXD        |
| 3   | TXD        | 4   | DTR        |
| 5   | GND        | 6   | DSR        |
| 7   | RTS        | 8   | CTS        |
| 9   | RI         | 10  | NA         |

## LVDS Connector

Connector type: 1x40 40-pin header

Connector location: LVDS1



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | LVDS0_D3+  | 2   | LVDS0_D3-  |
| 3   | LVDS0_D2+  | 4   | LVDS0_D2-  |
| 5   | LVDS0_D1+  | 6   | LVDS0_D1-  |
| 7   | LVDS0_D0+  | 8   | LVDS0_D0-  |
| 9   | LVDS1_D3+  | 10  | LVDS1_D3-  |
| 11  | LVDS1_D2+  | 12  | LVDS1_D2-  |
| 13  | LVDS1_D1+  | 14  | LVDS1_D1-  |
| 15  | LVDS1_D0+  | 16  | LVDS1_D0-  |
| 17  | GND        | 18  | +V_PANEL   |
| 19  | +V_PANEL   | 20  | +V_PANEL   |
| 21  | NC         | 22  | +3V        |
| 23  | GND        | 24  | GND        |
| 25  | GND        | 26  | LVDS0_CLK+ |
| 27  | LVDS0_CLK- | 28  | GND        |
| 29  | GND        | 30  | GND        |
| 31  | SPC1       | 32  | INV_ENABKL |
| 33  | VCON       | 34  | LVDS1_CLK+ |
| 35  | LVDS1_CLK- | 36  | +BLVCC     |
| 37  | +BLVCC     | 38  | +BLVCC     |
| 39  | NC         | 40  | SPD1       |

## LCD Panel Power Connector

Connector type: 1x8 8-pin header

Connector location: LCD\_POWER1

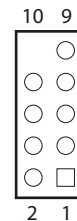


| Pin | Definition | Pin | Definition       |
|-----|------------|-----|------------------|
| 1   | INV_ENABKL | 2   | LVDS_BKL_CONTROL |
| 3   | +BLVCC     | 4   | +BLVCC           |
| 5   | GND        | 6   | GND              |
| 7   | NC         | 8   | NC               |

## System Panel Connector

Connector type: 2x5 10-pin header

Connector location: F\_PANEL



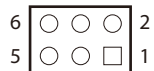
| Pin | Definition    | Pin | Definition |
|-----|---------------|-----|------------|
| 1   | HDD_LED+      | 2   | PWR_LED+   |
| 3   | HDD_LED-      | 4   | PWR_LED-   |
| 5   | GND           | 6   | PWRBTN#    |
| 7   | RSTCON#_PANEL | 8   | GND        |
| 9   | NC            | 10  | NA         |



## PS/2 Keyboard/Mouse Connector

Connector type: 2x3 6-pin header

Connector location: KBMS1

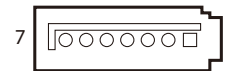


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | MS_DATA    | 2   | MS_CLK     |
| 3   | GND        | 4   | +5V_USB    |
| 5   | KB_DATA    | 6   | KB_CLK     |

## Serial ATA 6.0Gb/s Connectors

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

Connector location: SATA6G\_1

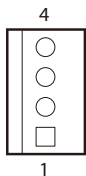


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | RSATA_TXP1 |
| 3   | RSATA_TXN1 | 4   | GND        |
| 5   | RSATA_RXN1 | 6   | RSATA_RXP1 |
| 7   | GND        |     |            |

## SATA Power Connector

Connector type: 1x4 4-pin header

Connector location: SATA\_PWR1

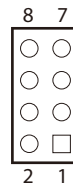


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | GND        |
| 3   | GND        | 4   | +12V       |

## BIOS Programmable Connector

Connector type: 2x4 8-pin header

Connector location: SPI1

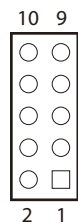


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +1.8V_SPI  | 2   | GND        |
| 3   | SPI_CS0#_F | 4   | SPI_CLK_F  |
| 5   | SPI_SO_F   | 6   | SPI_SI_F   |
| 7   | NC         | 8   | NC         |

## Digital I/O Connector

Connector type: 2x5 10-pin header

Connector location: DIO1



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | DIO_I#1    | 2   | DIO_I#2    |
| 3   | DIO_I#3    | 4   | DIO_I#4    |
| 5   | DIO_O#1    | 6   | DIO_O#2    |
| 7   | DIO_O#3    | 8   | DIO_O#4    |
| 9   | +5V        | 10  | GND        |

## Internal Audio Connectors

Connector type: 1x2 2-pin header

Connector location: SPKR\_R1 and SPKR\_L1



### SPKR\_R1

| Pin | Definition |
|-----|------------|
| 1   | R_OUT-     |
| 2   | R_OUT+     |

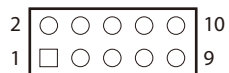
### SPKR\_L1

| Pin | Definition |
|-----|------------|
| 1   | L_OUT-     |
| 2   | L_OUT+     |

## USB 2.0 Connectors

Connector type: 2x5 10-pin header

Connector location: USBHUB\_1 and USBHUB\_2



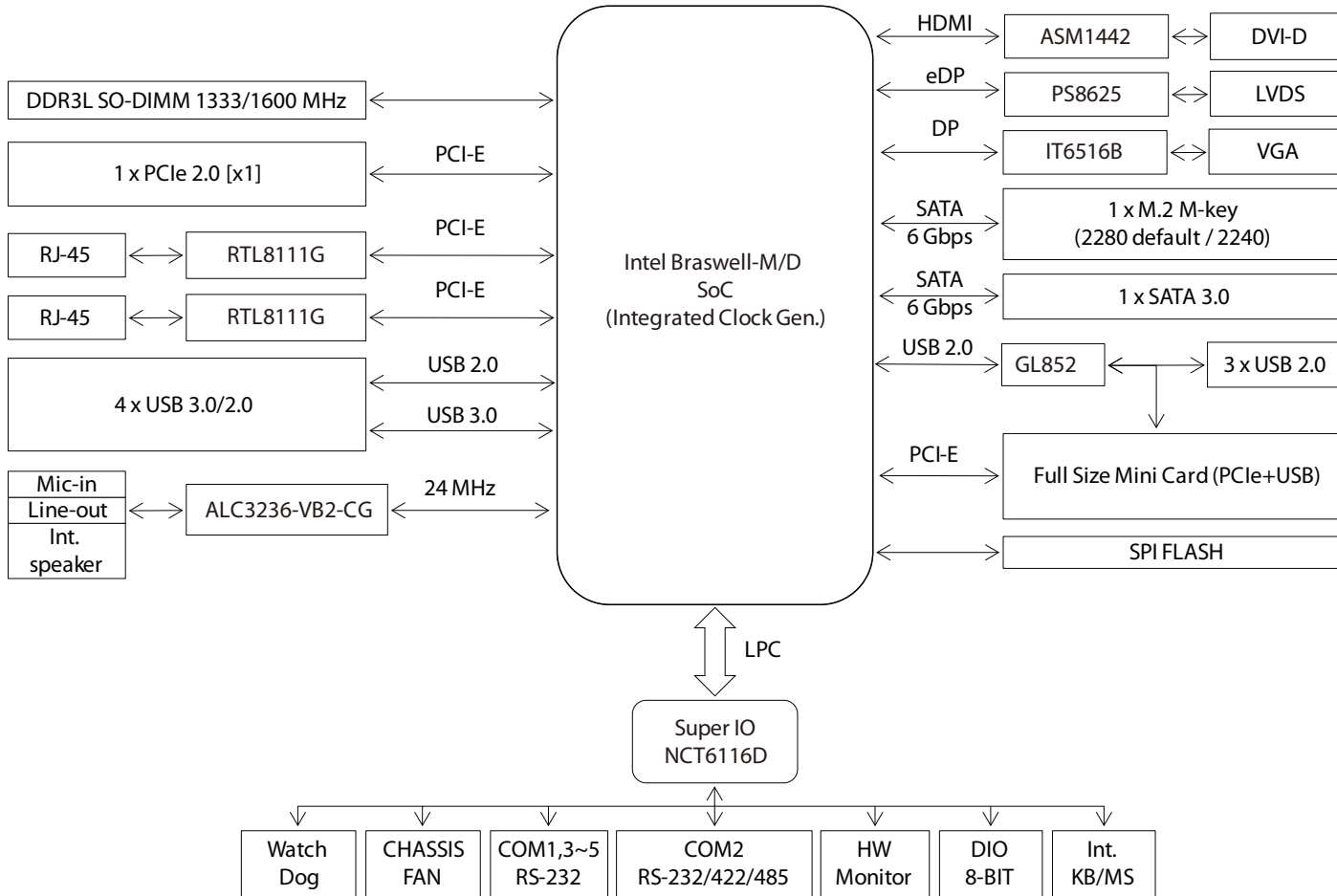
### USBHUB\_1

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | GND        |
| 3   | USBPN0     | 4   | GND        |
| 5   | USBPP0     | 6   | USBPP1     |
| 7   | GND        | 8   | USBPN1     |
| 9   | GND        | 10  | +5V        |

### USBHUB\_2

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | NA         |
| 3   | USBPN1     | 4   | NA         |
| 5   | USBPP1     | 6   | NA         |
| 7   | GND        | 8   | NA         |
| 9   | GND        | 10  | NA         |

# Block Diagram



# CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for NEX 621A. 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](http://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 <Del> 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-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

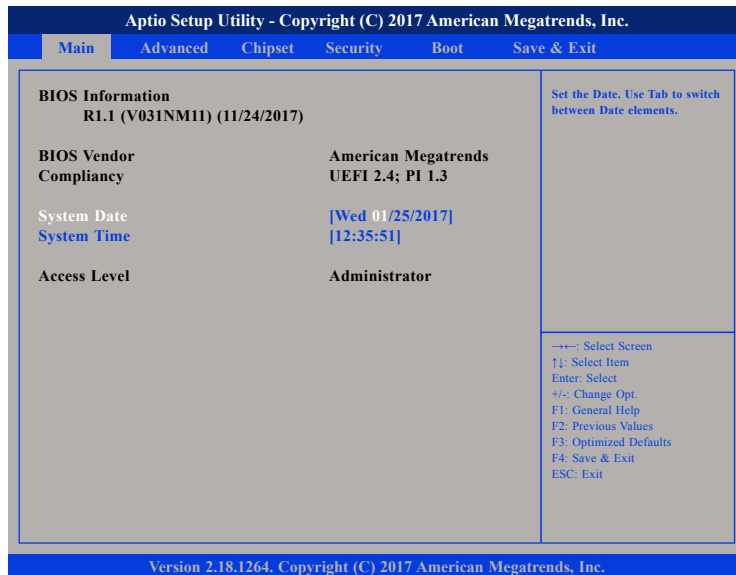
The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

### 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 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.

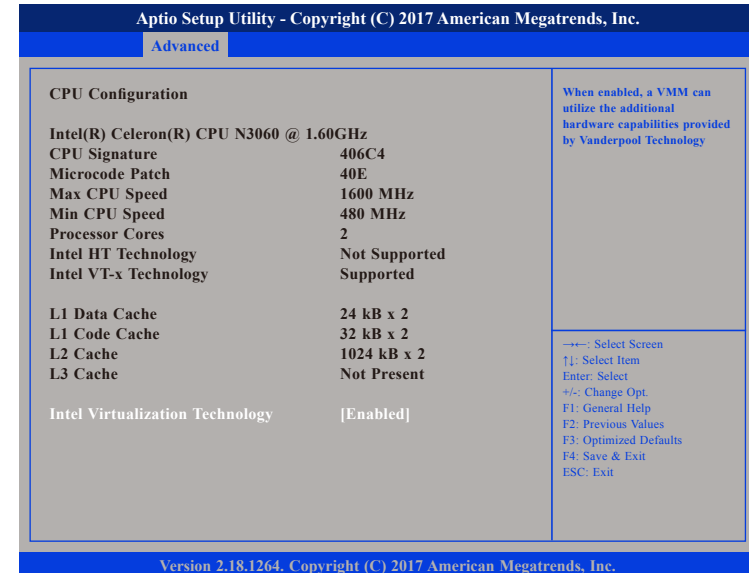


### Case Open Warning

Enables or disables case open warning detection function.

## CPU Configuration

This section is used to configure the CPU settings.

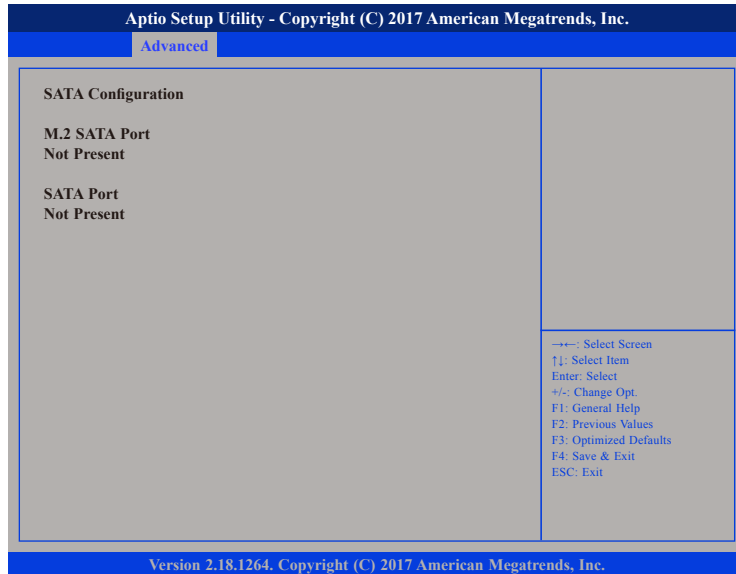


### Intel® Virtualization Technology

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

## SATA Configuration

This section displays information of the SATA drives.

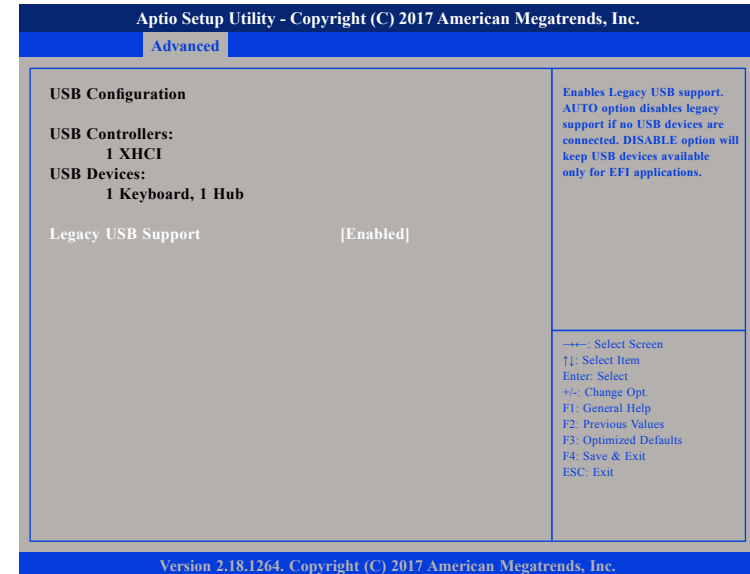


### M.2 SATA Port and SATA Port

Detects and displays information on the devices connected to the M.2 SATA port and SATA port.

## USB Configuration

This section is used to configure the USB.

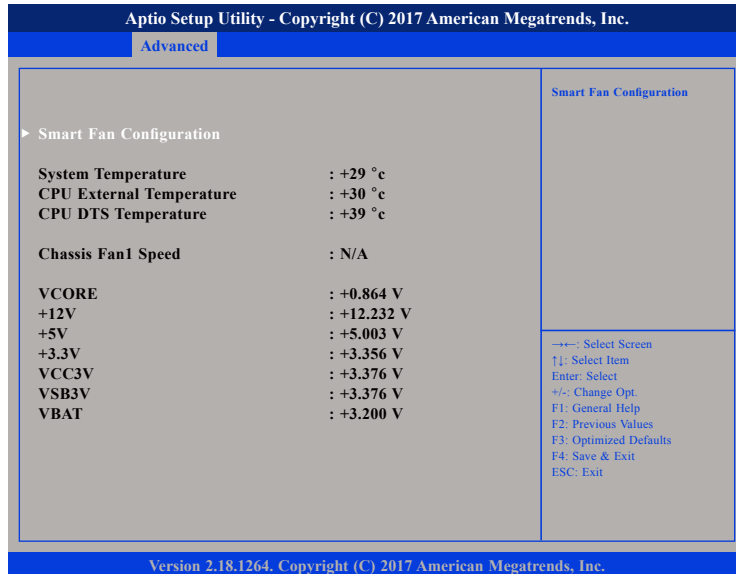


### Legacy USB Support

Enable Enables Legacy USB.  
 Auto Disables support for Legacy when no USB devices are connected.  
 Disable Keeps USB devices available only for EFI applications.

## Hardware Monitor

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



The screenshot shows the 'Advanced' tab of the Aptio Setup Utility. The 'Smart Fan Configuration' section is expanded, displaying the following hardware status:

| Parameter                | Value       |
|--------------------------|-------------|
| System Temperature       | : +29 °c    |
| CPU External Temperature | : +30 °c    |
| CPU DTS Temperature      | : +39 °c    |
| Chassis Fan1 Speed       | : N/A       |
| VCORE                    | : +0.864 V  |
| +12V                     | : +12.232 V |
| +5V                      | : +5.003 V  |
| +3.3V                    | : +3.356 V  |
| VCC3V                    | : +3.376 V  |
| VSB3V                    | : +3.376 V  |
| VBAT                     | : +3.200 V  |

Navigation instructions are listed in the bottom right corner:

- ←→: 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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## Chassis Fan1 Speed

Detects and displays the current chassis fan speed.

## VCORE to VBAT

Detects and displays the output voltages.

## System Temperature

Detects and displays the current system temperature.

## CPU External Temperature

Detects and displays the current CPU external temperature.

## CPU DTS Temperature

Displays the CPU core temperature detected from the DTS (Digital Thermal Sensor).

## Smart Fan Configuration



### CPU Smart Fan Control

Enables or disables CPU smart fan function.

### Fan Control Mode

Configures the fan mode of the CPU fan. The options are Manual Mode, Thermal Cruise Mode (automatic fan mode), Speed Cruise Mode and SMART FAN IV Mode.

### PWM/DC Voltage Output

Configures the PWM/DC voltage output value.

## SIO Configuration

This section is used to configure the serial ports.



### [\*Active\*] Serial Port 1 to [\*Active\*] Serial Port 5

Enters the submenu of [\*Active\*] Serial Port 1 to [\*Active\*] Serial Port 5.

## [\*Active\*] Serial Port 1

| Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.   |                          |
|--|--------------------------|
| Advanced   |                          |
| <b>Serial Port 1 Configuration</b>   |                          |
| <b>Use This Device</b>   | [Enabled]                |
| <b>Logical Device Settings:</b>  |                          |
| <b>Current:</b>  |                          |
| <b>Possible:</b>   | [Use Automatic Settings] |
| <b>WARNING: Disabling SIO Logical Devices</b>  |                          |
| →←: Select Screen<br>↑↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |                          |
| Version 2.18.1264. Copyright (C) 2017 American Megatrends, Inc.  |                          |

### Use This Device

Enables or disables the serial port.

### Possible:

Configures the base address for the serial port.

## [\*Active\*] Serial Port 2

| Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.   |                          |
|--|--------------------------|
| Advanced   |                          |
| <b>Serial Port 2 Configuration</b>   |                          |
| <b>Use This Device</b>   | [Enabled]                |
| <b>Logical Device Settings:</b>  |                          |
| <b>Current:</b>  | IO=2F8h; IRQ=3;          |
| <b>Possible:</b>   | [Use Automatic Settings] |
| <b>Mode :</b>  | [RS232]                  |
| <b>WARNING: Disabling SIO Logical Devices</b>  |                          |
| →←: Select Screen<br>↑↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |                          |
| Version 2.18.1264. Copyright (C) 2017 American Megatrends, Inc.  |                          |

### Use This Device

Enables or disables the serial port.

### Possible:

Configures the base address for the serial port.

### Mode

Configures the serial port mode to RS232, RS422 or RS485.

### [\*Active\*] Serial Port 3



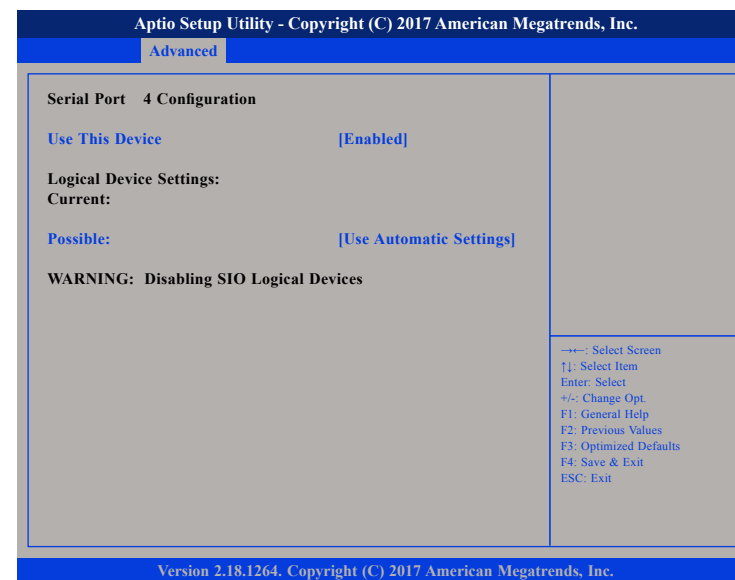
#### Use This Device

Enables or disables the serial port.

#### Possible:

Configures the base address for the serial port.

### [\*Active\*] Serial Port 4



#### Use This Device

Enables or disables the serial port.

#### Possible:

Configures the base address for the serial port.

## [\*Active\*] Serial Port 5



### Use This Device

Enables or disables the serial port.

### Possible:

Configures the base address for the serial port.

## Power Management

This section is used to configure the power management features.



### Restore AC Power Loss

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

### RTC wake system from S5

Enables or disables system wake up from S5.

Fixed Time: System will wake on the hr:min:sec specified.

Dynamic: System will wake on the current time + increase minute(s).

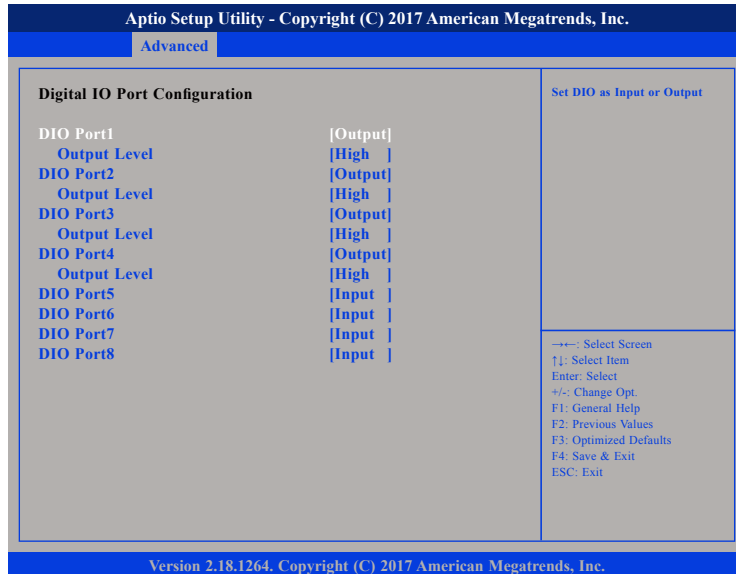


Note: USB does not support S3, S4 and S5 wake.



## Digital IO Port Configuration

This section is used to configure digital I/O port settings.



### DIO Port1 to DIO Port8

Configures DIO port1 to port8 as input or output.

### Output Level

Configures the output level as high or low.

## 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.



### North Bridge

Enters the North Bridge submenu.

### South Bridge

Enters the South Bridge submenu.

## North Bridge



### Max TOLUD

Configures the maximum value of TOLUD.

### Primary Display

Select which of IGD/PCI graphics device should be primary display.

### Primary IGFX Boot Display & Secondary IGFX Boot Display

Select the video device which will be activated during POST. Has no effect if external graphics is present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

### LVDS Panel Support

Enables or disables LVDS panel support.

### LVDS Panel Type

Configures the LVDS panel resolution.

### LVDS Color Depth

Configures the LVDS color depth.

### LVDS Channel Type

Configures the LVDS channel type.

### LVDS Brightness Type

Configures the LVDS brightness type.

### LVDS Brightness Level

Adjusts the LVDS brightness level.

## South Bridge



### Audio Controller

Control detection of the Azalia device.

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

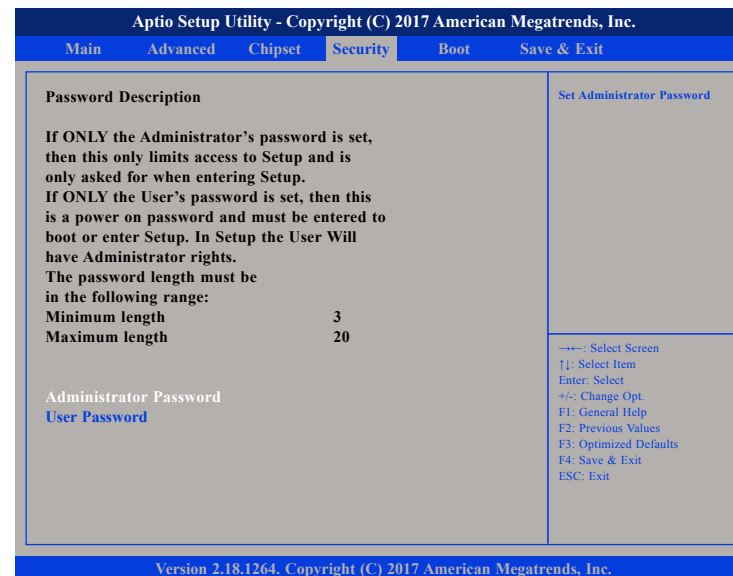
### Mini Card Lane Speed

Configures the lane speed of the mini card.

### PCIe Slot Lane Speed

Configures the lane speed of the PCIe slot.

## Security



### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Boot



### Quiet Boot

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

### Launch PXE ROM

Controls the execution of UEFI and legacy PXE OpROM.

### Network Stack

Enables or disables the network stack.

### Boot Option Priorities

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

## Save & Exit



### Save Changes and Reset

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

### Discard Changes and Exit

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

### Restore Defaults

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