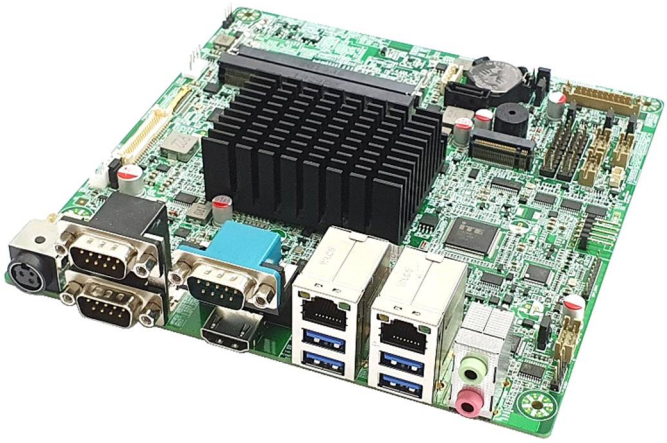
# Hanasis Mother Board (ITX-N5105)

# User Manual



Version 1.0

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# Contents

# Chapter1. Introduction

Thank you for purchasing ITX-N5105 motherboard, a reliable motherboard produced under Hanasis's consistently stringent quality control. It delivers excellent performance with robust design conforming to Hanasis's commitment to quality and endurance. In this manual, chapter 1 and 2 contain introduction of the motherboard and step- by-step guide to the hardware installation. Chapter 3 contains the configuration guide to BIOS setup.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on Hanasis&Ruide website without further notice.

If you require technical support related to this motherboard, please contact a Hanasis R&D.

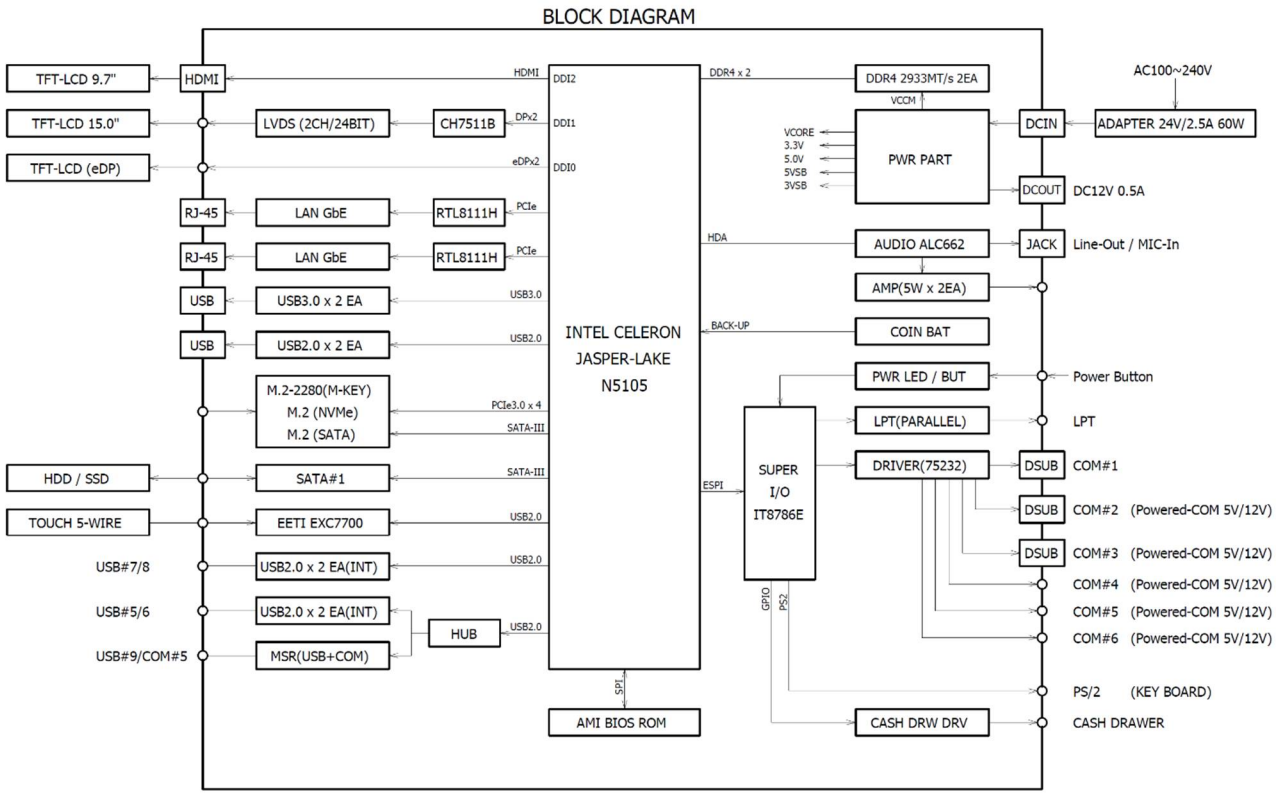
Safety rules

1. Please read this manual before use the motherboard to avoid damage caused by illegal operation.
2. Do not use this product in humid environment or with strong mechanical movement.
3. Build good ESD protection before operate it.
4. You must remove power supply before install any external module.
5. Please make sure that the Power supply is 24V DC.
6. Prohibit unauthorized reworks, and we will not take any responsibility for any damage caused by unauthorized rework.

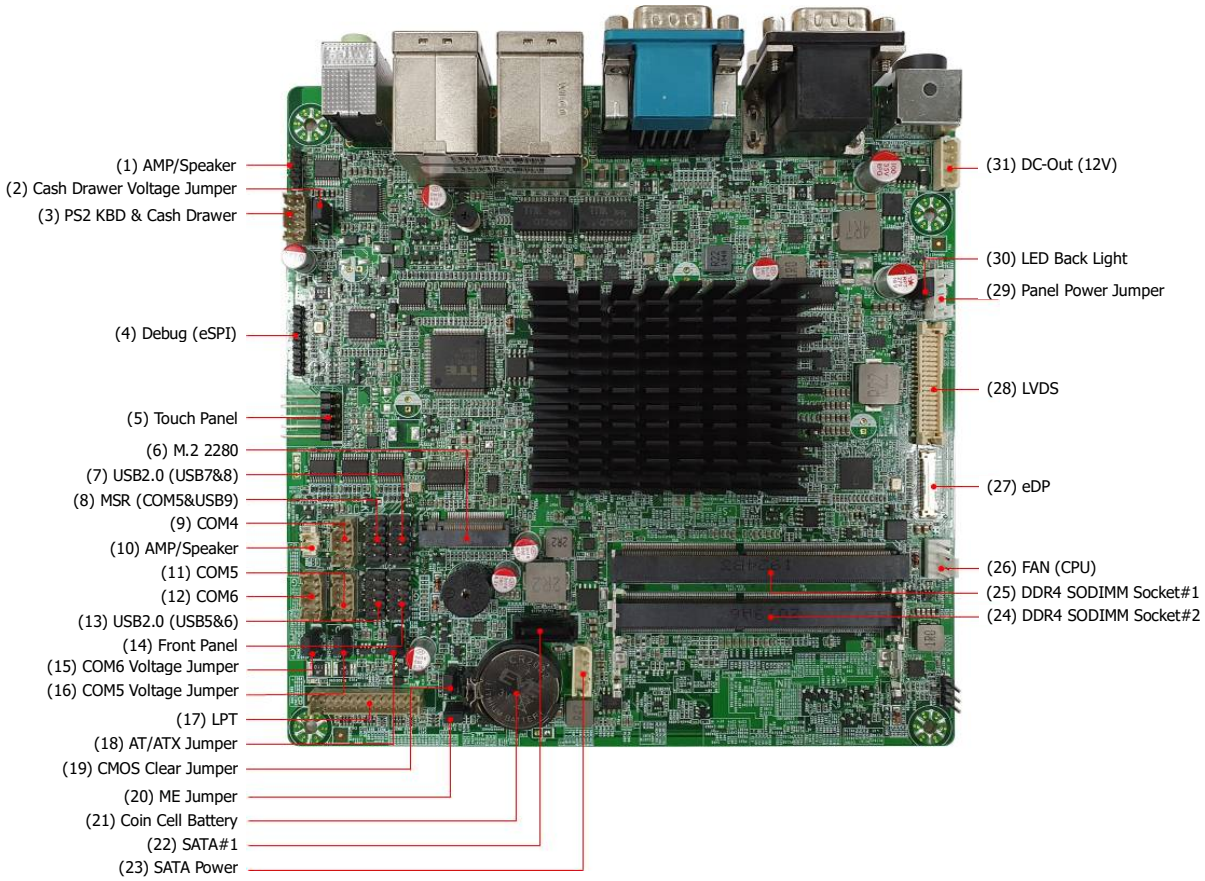
## 1.1 Specification

| Item | | Specification |
|---|---|---|
| Form Factor | Dimension | Mini-ITX Form Factor 6-Layer |
| Processor System | CPU | Intel® Celeron Quad-Core Processor N5095 (4M Cache Upto 2.90 GHz)<br>Intel® Celeron Quad-Core Processor N5105 (4M Cache Upto 2.90 GHz) |
| | Socket | FCBGA1338 |
| | TDP | N5095 (15 W) / N5105 (10 W) |
| | BIOS | AMI UEFI BIOS |
| Memory | Speed & Type | DDR4 3200 MT/s |
| | Memory Type | DDR4 SODIMM(260 Pin) x 2 Slot |
| | Memory Capacity | Support up to 32 GB |
| Graphics | Controller | Intel® UHD Graphics |
| | VRAM | Shared Memory |
| | HDMI | Support Max Resolution 4096 x 2160 @60Hz |
| | LVDS | Dual Channel 18/24bits, Max Resolution 1920x1200 |
| | Multi Display | Three Display, LVDS + eDP + HDMI |
| Ethernet | Speed | 10/100/1000 Mbps |
| | Controller | Realtek RTL8111H PCIe GbE Controller |
| | Connector | RJ-45 x 2 |
| SATA | Data Trans. Rate | 1 x SATA-III 6.0Gb/S |
| Audio | Controller | Realtek ALC662 / Everlast ES8336 HD Codec, Amplifier 5W |
| Rear I/O | HDMI | 1 x Type-A |
| | Ethernet | 2 x RJ45 |
| | USB | 2 x USB 3.0, 2 x USB 2.0 |
| | Audio | 2 x Jack (Line-Out / Mic-In) |
| | Serial(COM) | 3 x DSUB9 (COM#1/2/3) |
| | DC-Jack (24V) | 1 x DIN 3Pin |
| On-Board Connector | Memory Socket | 2 x Slot (Horizontal) |
| | LVDS/ LED BL | 1 x LVDS(40 Pin Box) / 1 x LEDBL(5 Pin Box) |
| | eDP | 1 x 30 Pin Header |
| | USB | 2 x 9 Pin Header (4 x USB 2.0) |
| | MSR | 1 x 9 Pin Header (COM#5 + USB 2.0) |
| | Serial (COM) | 3 X 10 Pin Box Header (COM4~6) |
| | Parallel (LPT) | 1 x 26 Box Header |
| | Front Panel | 1 x 9 Pin Header (Power LED / HDD LED / LAN LED / Power Button) |
| | SATA | 1 x SATA-III / 1 x 4 Pin Box Header (SATA Power) |
| | M.2 2280 | M KEY NVMe PCIeX4 & SATA 3 B&M KEY |
| | PS2 & Cash Drawer | 1 x 10 Pin Box Header |
| | Battery | 1 x Coin Cell (CR2032) / CMOS Jumper |
| | Audio AMP | 1 x 2 Pin Box Header / 1 x 4 Pin Header |
| | Touch Panel | 1 x 5 Pin Header (Resistive) |
| | DC-Out Power | 1 x 4 Pin Box Header |
| | AT / ATX Jumper | AT : Directly PWR on / ATX : Press Button to PWR on |
| Power Requirements | Input Power | DC 24V / 2.5A |
| | DC-Out | DC 12V / 500mA |
| Environment | Storage Temp. | -20~80 ℃ |
| | Operating Temp. | 0~60 ℃ |

## 1.2 System Block Diagram

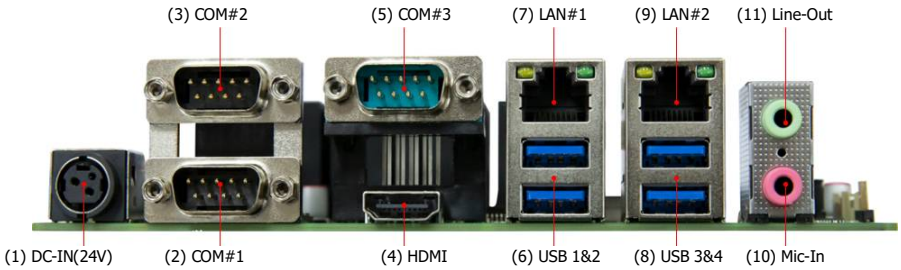


## 1.3 Mother Board Layout




| No | Connector Name | No | Connector Name |
|---|---|---|---|
| 1 | Amplifier(Speaker) Pin Header | 17 | LPT(Parallel) Connector |
| 2 | Cash Drawer Voltage Jumper | 18 | AT/ATX Mode Jumper |
| 3 | PS/2 Key Board & Cash Drawer Connector | 19 | CMOS Clear Jumper |
| 4 | DEBUG Pin Header (eSPI) | 20 | ME Jumper |
| 5 | Touch Panel (5-Wire) | 21 | Coin Cell Battery |
| 6 | M.2 2280 (NVMe & SATA) | 22 | SATA#1 |
| 7 | USB2.0 Pin Header (USB7&8) | 23 | SATA Power Connector |
| 8 | MSR Pin Header (COM5&USB9) | 24 | DDR4 SODIMM Socket#2 |
| 9 | COM4 Connector | 25 | DDR4 SODIMM Socket#1 |
| 10 | Amplifier(Speaker) Pin Header | 26 | FAN System (CPU) |
| 11 | COM5 Connector | 27 | eDP Signal & Power Connector |
| 12 | COM6 Connector | 28 | LVDS Signal Connector |
| 13 | USB2.0 Pin Header (USB5&6) | 29 | LVDS Panel Power Jumper |
| 14 | Front Panel Pin Header (LED & Button) | 30 | LVDS Backlight Connector |
| 15 | COM6 Voltage Jumper | 31 | DC-Out Connector |
| 16 | COM5 Voltage Jumper | | |

## 1.4 I/O Panel Connector




| No | Connector Name | No | Connector Name |
|---|---|---|---|
| 1 | DC-IN (24V) | 7 | LAN#1 (RJ-45) |
| 2 | COM#1 (DSUB9P) | 8 | USB 3&4 (USB2.0) |
| 3 | COM#2 (DSUB9P) | 9 | LAN#2 (RJ-45) |
| 4 | HDMI | 10 | Audio Jack (Mic-In) |
| 5 | COM#3 (DSUB9P) | 11 | Audio Jack (Line-Out) |
| 6 | USB 1&2 (USB3.0) | | |

### 1.4.1 LAN Port LED Indications

There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

| Link LED | | Activity LED | | LAN JACK |
|---|---|---|---|---|
| Status | Description | Status | Description | |
| Off | No Link | Off | No Activity |  |
| Orange | 100Mbps Connection | Green | Blank (100M / 1G) | |
| | 1Gbps Connection | | | |

# Chapter2. Installation

This is a standard mini-itx form factor motherboard for POS or Industrial system. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

> Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

## 2.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis.

> Do not over-tighten the screws! Doing so may damage the motherboard.

## 2.2 Pre-Installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.

> Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply.
> Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

## 2.3 Installation of Memory Modules (SO-DIMM)

ITX-N5105 motherboard provides two 260-pin DDR4 (Double Data Rate 3) SO-DIMM slot.

> 1. It is not allowed to install a DDR/DDR2/DDR3 memory module into a DDR4 slot; otherwise, this motherboard and SO-DIMM may be damaged.

### 2.3.1 Installation a SO-DIMM

> Please make sure to disconnect the power supply before adding or removing SO-DIMM or the system components.

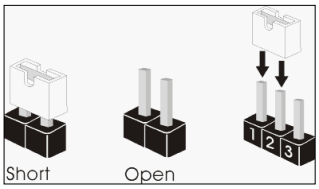
Step#1] Align a SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.

> The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot in the incorrect orientation.

Step#2] Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

## 2.4 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open".
The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.




### 2.4.1 Clear CMOS Jumper (JCMOS)

| Connector SPEC | Shape | Jumper Description | Remark |
|---|---|---|---|
| 3-Pin 2.54 Pitch |  | 1 - 2 : Normal<br>2 - 3 : Clear CMOS | Default is Normal |

NOTE] JCMOS allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLR_CMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time and user default profile will be cleared only if the CMOS battery is removed.

### 2.4.2 Panel Power Jumper (JLV)

| Connector SPEC | Shape | Jumper Description | Remark |
|---|---|---|---|
| 3-Pin 2.54 Pitch |  | 1 - 2 : +3.3V (LCD 15")<br>2 - 3 : +5.0V (LCD 17"/19") | Default is +3.3V |

### 2.4.3 AT/ATX Mode Jumper (J_AT)

| Connector SPEC | Shape | Jumper Description | Remark |
|---|---|---|---|
| 3-Pin 2.54 Pitch |  | 1 - 2 : ATX Mode (Button On)<br>2 - 3 : AT Mode | Default is ATX Mode |

### 2.4.4 COM(5/6) Port Power Setting Jumper (JCOM5/JCOM6_PWR)

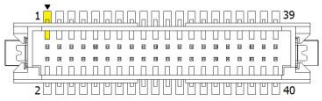
| Connector SPEC | Shape | Jumper Description | Remark |
|---|---|---|---|
| 3-Pin 2.54 Pitch |  | 1 - 2 : +5 V<br>2 - 3 : +12V | Default is +5V |

### 2.4.5 Cash Drawer Voltage Select Jumper (JDRA_PWR)

| Connector SPEC | Shape | Jumper Description | Remark |
|---|---|---|---|
| 3-Pin 2.54 Pitch |  | 1 - 2 : +24V<br>2 - 3 : +12V | Default is +24V |

## 2.5 Onboard Header and Connectors

### 2.5.1 LVDS Connector (LVDS)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 40-Pin 1.25 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | +12V | 2 | +12V |
| 3 | +12V | 4 | +12V |
| 5 | +12V | 6 | GND |
| 7 | VCC 3.3V | 8 | GND |
| 9 | LVDS Panel PWR | 10 | LVDS Panel PWR |
| 11 | DDC CLK | 12 | DDC DAT |
| 13 | Back Light Adjust | 14 | LVDS Power Enable |
| 15 | Back Light Enable | 16 | GND |
| 17 | LVDS#1 D0 (-) | 18 | LVDS#1 D0 (+) |
| 19 | LVDS#1 D1 (-) | 20 | LVDS#1 D1 (+) |
| 21 | LVDS#1 D2 (-) | 22 | LVDS#1 D2 (+) |
| 23 | LVDS#1 CLK (-) | 24 | LVDS#1 CLK (+) |
| 25 | LVDS#1 D3 (-) | 26 | LVDS#1 D3 (+) |
| 27 | GND | 28 | GND |
| 29 | LVDS#2 D0 (-) | 30 | LVDS#2 D0 (+) |
| 31 | LVDS#2 D1 (-) | 32 | LVDS#2 D1 (+) |
| 33 | LVDS#2 D2 (-) | 34 | LVDS#2 D2 (+) |
| 35 | LVDS#2 CLK (-) | 36 | LVDS#2 CLK (+) |
| 37 | LVDS#2 D3 (-) | 38 | LVDS#2 D3 (+) |
| 39 | GND (LVDS Detection) | 40 | GND |

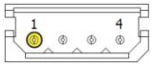
NOTE] Grounding of Pin#39 is required to ensure normal LVDS output.

### 2.5.2 Inverter / Back Light Connector (IVCN)

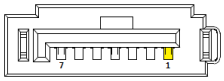
| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 5-Pin 2.0 Pitch |  | 1 : +12V<br>2 : GND<br>3 : Back Light Enable<br>4 : Back Light Adjust<br>5 : +5V | |

NOTE] The LVDS backlight is controlled by PWM method.

### 2.5.3 SATA Power Connector (SATAPWR)

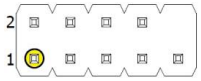
| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 4-Pin 2.5 Pitch |  | 1 : +12V<br>2 : GND<br>3 : GND<br>4 : +5V | |

### 2.5.4 SATA-III Connector (SATA)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 7-Pin SATA |  | 1 : GND<br>2 : A(+)<br>3 : A(-)<br>4 : GND<br>5 : B(-)<br>6 : B(+)<br>7 : GND | |

NOTE] These are two Serial ATA connectors to support SATA data cables for internal storage devices. Both are SATA-III(6.0 Gb/s).

### 2.5.5 System Front Panel Connector (F_PANEL)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 9-Pin 2.54 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | HDD LED (+) | 2 | PWRLED (+) |
| 3 | HDD LED (-) | 4 | PWRLED (-) |
| 5 | LAN ACT LED (+) | 6 | PWRBTN (+) |
| 7 | LAN ACT LED (-) | 8 | PWRBTN (-) |
| 9 | DUMMY | 10 | - |

Connect the power switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Button Switch) :

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

PWRLED (System Power LED) :

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating.

HDDLED (Hard Drive Activity LED) :

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

LANLED (Network Activity LED) :

Connect to the network activity LED on the chassis front panel. The LED is on when the LAN is transmitting data.

NOTE] The front panel design may differ by chassis. A front panel module mainly consists of power switch, network LED, power LED, hard drive activity LED. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

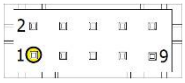
### 2.5.6 Parallel Port Connector (JLPT)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 26-Pin 2.0 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | STB# | 14 | AFD# |
| 2 | SPD0 | 15 | ERROR# |
| 3 | SPD1 | 16 | PINIT# |
| 4 | SPD2 | 17 | SLIN# |
| 5 | SPD3 | 18 | GND |
| 6 | SPD4 | 19 | GND |
| 7 | SPD5 | 20 | GND |
| 8 | SPD6 | 21 | GND |
| 9 | SPD7 | 22 | GND |
| 10 | ACK# | 23 | GND |
| 11 | BUSY | 24 | GND |
| 12 | PE | 25 | GND |
| 13 | SLCT | | |

NOTE] This is an interface for print port cable that allows convenient connection of printer devices.

### 2.5.7 COM Port Connector (COM4/5/6)

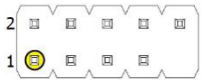
| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 10-Pin 2.0 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | DCD | 2 | RXD |
| 3 | TXD | 4 | DTR |
| 5 | GND | 6 | DSR |
| 7 | RTS | 8 | CTS |
| 9 | COM Port Power (5V or 12V) | 10 | N.C |

Note] The Power Voltage (Pin9) of COM#4 is selected by BIOS. Default value is 0V. (Support 0V/5V)

Note] The Power Voltage (Pin9) of COM#5/COM#6 is selected by Jumper on Board. Default value is 5V. (Support 0V/5V/12V)

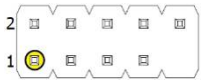
### 2.5.8 USB2.0 Connector (USB5&6, USB7&8)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 9-Pin 2.54 Pitch |  | Refer to below | |



| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | VUSB 5.0V | 2 | VUSB 5.0V |
| 3 | USB DM | 4 | USB DM |
| 5 | USB DP | 6 | USB DP |
| 7 | GND | 8 | GND |
| 9 | N.C | 10 | - |

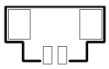
### 2.5.9 MSR Connector (COM#5, USB#9)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 9-Pin 2.54 Pitch |  | Refer to below | |

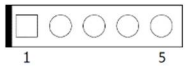


| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | VUSB 5.0V | 2 | VUSB 5.0V |
| 3 | COM#5 TXD | 4 | USB#9 DM |
| 5 | COM#5 RXD | 6 | USB#9 DP |
| 7 | GND | 8 | GND |
| 9 | - | 10 | N.C |

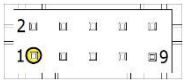
### 2.5.10 Internal AMP Speaker Connector(AMP_SPK)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 2-Pin 1.25 Pitch |  | 1 : AMP L (+)<br>2 : AMP L (-) | |

### 2.5.11 Touch Panel Connector

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 5-Pin 2.54 Pitch |  | 1 : LL / Y(-)<br>2 : LR / X(-)<br>3 : COM / SENSE<br>4 : UL / X(+)<br>5 : UR / Y(+) | |

### 2.5.12 PS2 Key Board & Cash Drawer Connector (KBD&DRAWER)

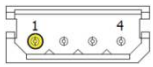
| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 10-Pin 2.0 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | KBD PWR(+5V) | 2 | Cash Drawer Power (24V or 12V) |
| 3 | KBD PS2 DATA | 4 | Cash Drawer#1 |
| 5 | KBD PS2 CLK | 6 | Cash Drawer#2 |
| 7 | GND | 8 | Cash Drawer Switch |
| 9 | GND | 10 | GND |

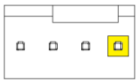
### 2.5.13 Internal AMP Speaker Connector (SPKER)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 4-Pin 2.5 Pitch |  | 1 : AMP L (+)<br>2 : AMP L (-)<br>3 : AMP R (+)<br>4 : AMP R (-) | |

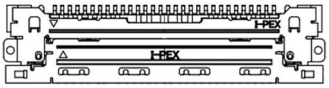
### 2.5.14 DC-OUT Power Connector (DC_OUT1)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 4-Pin 2.5 Pitch |  | 1 : +12V<br>2 : +12V<br>3 : GND<br>4 : GND | |

### 2.5.15 CPU FAN Connector (CPU_FAN)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 4-Pin 2.5 Pitch |  | 1 : GND<br>2 : +12V<br>3 : FAN Speed (Sense)<br>4 : FAN Speed Control | |

### 2.5.16 eDP Connector (EDP)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| 30-Pin 0.5 Pitch |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | NC | 2 | GND (High Speed) |
| 3 | LANE 1 (-) | 4 | LANE 1 (+) |
| 5 | GND (High Speed) | 6 | LANE 0 (-) |
| 7 | LANE 0 (+) | 8 | GND (High Speed) |
| 9 | AUX CH (+) | 10 | AUC CH (-) |
| 11 | GND (High Speed) | 12 | LCD PWER (+3.3V) |
| 13 | LCD PWER (+3.3V) | 14 | NC |
| 15 | GND (LCD) | 16 | GND (LCD) |
| 17 | HPD (Hot Plug Detect) | 18 | GND (BL) |
| 19 | GND (BL) | 20 | GND (BL) |
| 21 | GND (BL) | 22 | BL ENABLE |
| 23 | BL PWM | 24 | NC |
| 25 | NC | 26 | BL POWER (+12V) |
| 27 | BL POWER (+12V) | 28 | BL POWER (+12V) |
| 29 | BL POWER (+12V) | 30 | NC |

NOTE] The eDP (Embedded DisplayPort) flat panel display interface supports up to 1920 x 1200@60Hz resolution.

## 2.6 I/O Connectors

### 2.6.1 COM#1 / COM#2 / COM#3

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| DSUB 9Pin |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | COM Power 0V / 5V / 12V (Select by BIOS) |
| 5 | GND | 10 | - |

NOTE] Pin9 of COM2/3 (DB9 on Rear IO) is 0V by default, +5V or +12V is selectable by setting BIOS.

### 2.6.2 LAN

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| RJ-45 with LED |  | Refer to below | |

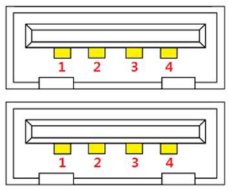
| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | MD0 (+) | 5 | MD2 (+) |
| 2 | MD0 (-) | 6 | MD2 (-) |
| 3 | MD1 (+) | 7 | MD3 (+) |
| 4 | MD1 (-) | 8 | MD3 (-) |

### 2.6.3 HDMI

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| HDMI 19 Pin |  | Refer to below | |

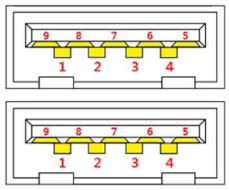
| No | Signal Description | No | Signal Description | No | Signal Description |
|---|---|---|---|---|---|
| 1 | TMDS CH2(+) | 8 | GND | 15 | DDC CLK |
| 2 | GND | 9 | TMDS CH0(-) | 16 | DDC DAT |
| 3 | TMDS CH2(-) | 10 | TMDS CLK(+) | 17 | GND |
| 4 | TMDS CH1(+) | 11 | GND | 18 | +5V |
| 5 | GND | 12 | TMDS CLK(-) | 19 | HPD(Hot Plug Detect) |
| 6 | TMDS CH1(-) | 13 | CEC | - | |
| 7 | TMDS CH0(+) | 14 | - | - | |

### 2.6.4 USB2.0 (USB 3&4)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| RJ-45 with LED |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | VUSB (+5V) | 1 | VUSB (+5V) |
| 2 | USB DM | 2 | USB DM |
| 3 | USB DP | 3 | USB DP |
| 4 | GND | 4 | GND |

### 2.6.4 USB3.0 (USB 1&2)

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| RJ-45 with LED |  | Refer to below | |

| No | Signal Description | No | Signal Description |
|---|---|---|---|
| 1 | VUSB (+5V) | 5 | SSRX(-) |
| 2 | USB DM | 6 | SSRX(+) |
| 3 | USB DP | 7 | GND |
| 4 | GND | 8 | SSTX(-) |
| | | 9 | SSTX(+) |

### 2.6.5 DC-IN JACK

| Connector SPEC | Shape | Signal Description | Remark |
|---|---|---|---|
| Power Din 3 Pin |  | 1 : +24V<br>2 : GND<br>3 : N.C | |

# Chapter3. BIOS SETUP

## 3.1 Access the BIOS Setup

After power on, press the <Delete> Button during the P.O.S.T.(Power-on Self-Test) process.

Once you enter the BIOS Setup, the Main Menu will show up on the screen, in which you can use the arrow keys to move or select the items, and press <Enter> to accept or enter the sub-menu.

NOTE] Press <Delete> to enter BIOS Setup program, <F11> to show BBS.

### 3.1.1 Menu Bar

The top of the screen has a menu bar with the following selections :

| Menu | Description |
|---|---|
| Main | To set up the system time/date information |
| Advanced | To set up the advanced UEFI features |
| Chipset | To display Memory & Graphics features |
| Security | To set up the security features |
| Boot | To set up the default system device to locate and load the Operating System |
| Save & Exit | To exit the current screen or the UEFI SETUP UTILITY |

Use <←> key or <→> key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

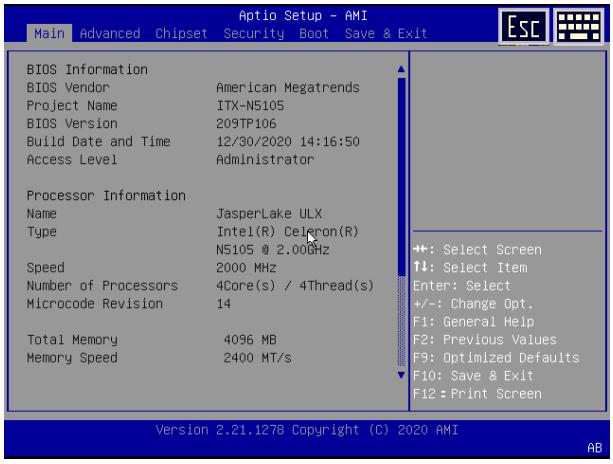
### 3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

| Navigation Key(s) | Function Description |
|---|---|
| ← / → | Moves cursor left or right to select Screens |
| ↑ / ↓ | Moves cursor up or down to select items |
| + / - | To change option for the selected items |
| <Enter> | To bring up the selected screen |
| <F1> | To display the General Help Screen |
| <F2> | To load previous values for all the settings |
| <F9> | To load optimal default values for all the settings |
| <F10> | To save changes and exit the UEFI SETUP UTILITY |
| <F12> | To print screen and save it to USB memory. |
| <ESC> | To jump to the Exit Screen or exit the current screen |

## 3.2 Main Screen

This page contains the basic information about the BIOS version, and you can set the system date and time manually.




### 3.2.1 System Date

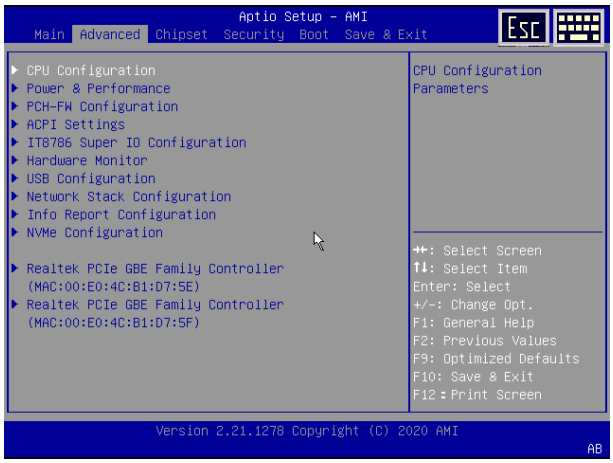
Set the system date. The date format is [Week, Month/Day/Year]. Use <Tab> to switch the item between month, day and year. Ether you can use the <+>/<-> key to change the value, or use the number keys to enter a new value for the date setting.

### 3.2.2 System Time

Set the system time. The time format is [Hour/Minute/Second]. Use <Tab> to switch the item between hour, minute, second. Ether you can use the <+>/<-> key to change the value, or use the number keys to enter a new value for the time setting.

## 3.3 Advanced Screen

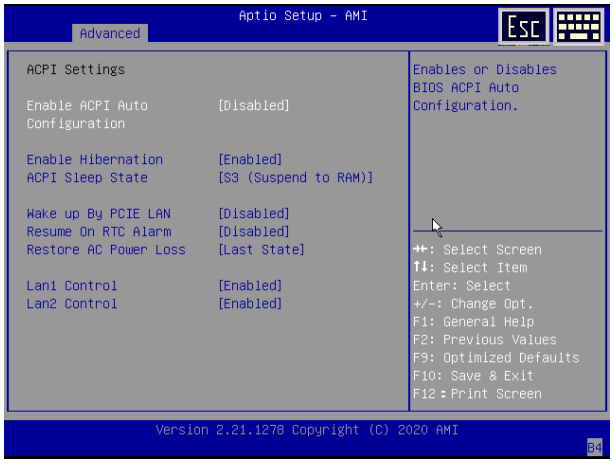
In this section, you may set the configurations for the following items : ACPI Settings, Super IO Configuration, HW Monitor, CPU Configuration, PPM, IDE, CSM, Info Report, USB Configuration.




Setting wrong values in this section may cause the system to malfunction.

### 3.3.1 ACPI Settings

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.



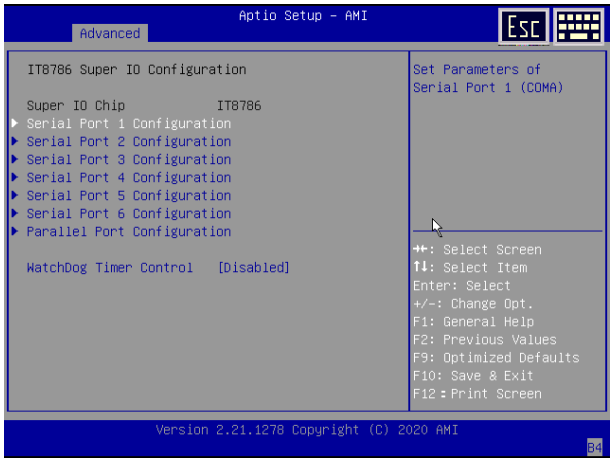

#### 3.3.1.1 Enable Hibernation

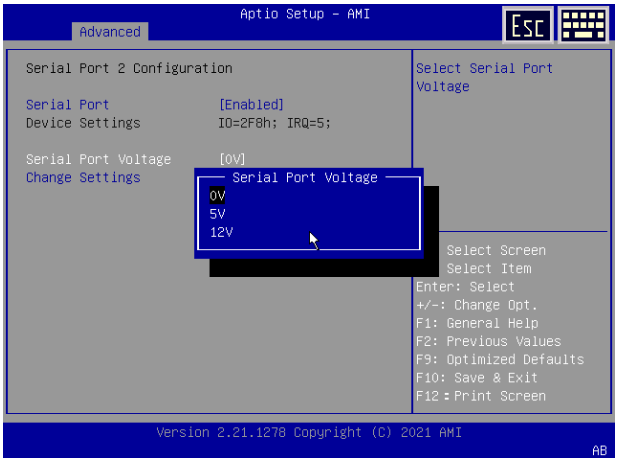
This item is used to enable or disable system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

#### 3.3.1.2 ACPI Sleep State

This item is used to select the highest ACPI sleep state. The system will enter when the SUSPEND button is pressed.

### 3.3.2 Super IO Configuration




#### 3.3.2.1 Serial Port1/2/3/4/5/6 Configuration

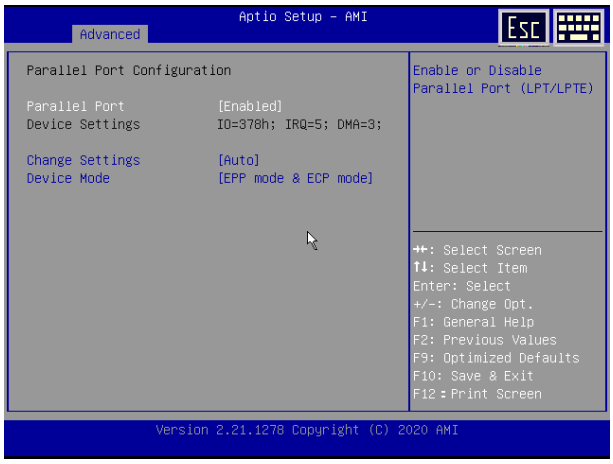
This item is used to set parameters of COM1/2/3/4/5/6.

COM2/3 support the serial port voltage to 5V or 12V by BIOS. COM4 support the serial port voltage to 5V by BIOS.

COM5/6 support the serial port voltage to 5V or 12V by jumper

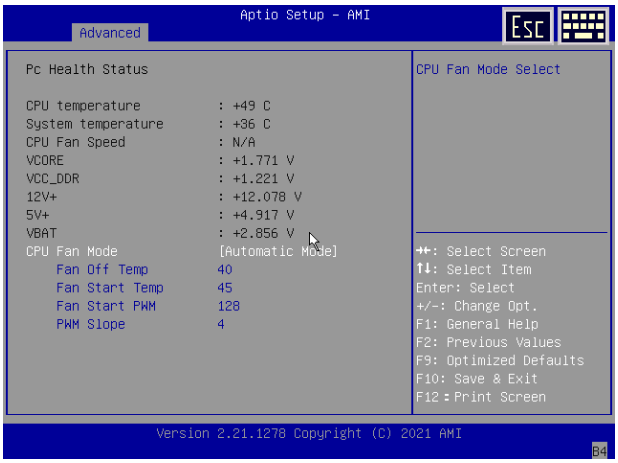
#### 3.3.2.2 Parallel Port Configuration

This item is used to set parameters of the parallel port.

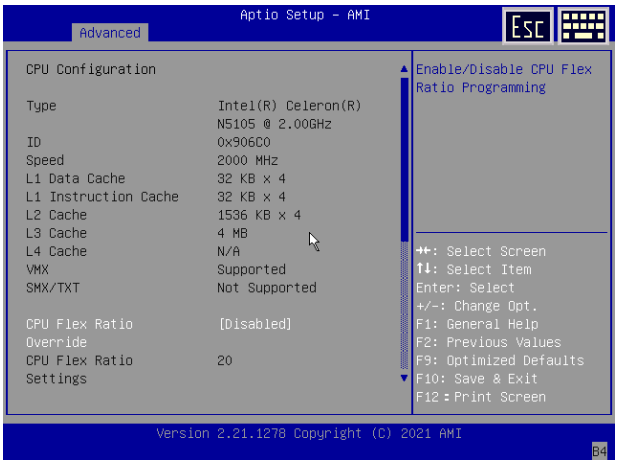


### 3.3.3 H/W Monitor

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed and the critical voltage.




### 3.3.4 CPU Configuration




#### 3.3.4.1 Hyper Threading

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® 10 is required. Set to [Enabled] if using Microsoft® Windows® 10. or Linux kernel version 2.4.18 or higher.

#### 3.3.4.2 Boot Performance Mode

Select the performance state that the BIOS will set before OS handoff.

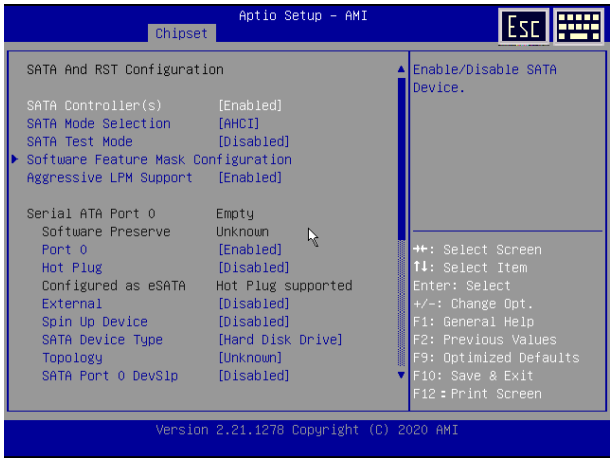
#### 3.3.4.3 Intel SpeedStep™

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. If you install Windows® 7 / 10 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

#### 3.3.4.4 Turbo Mode

Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

### 3.3.5 SATA Configuration




#### 3.3.5.1 SATA Controller(s)

Use this item to enable or disable the SATA Controller feature.

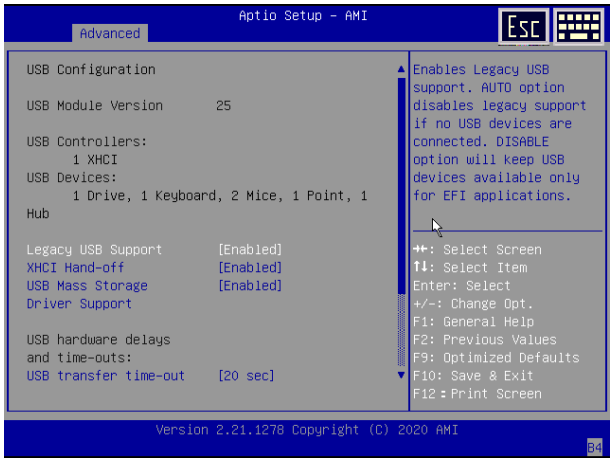
#### 3.3.5.2 SATA Mode Selection

Use this to select SATA mode. The default value is [AHCI Mode].

#### 3.3.5.3 SATA Controller Speed

Use this to set the maximum speed the SATA controller can support. The optional settings are: [Gen1], [Gen2], [Gen3].

### 3.3.6 USB Configuration




#### 3.3.6.1 Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto] and [Disabled].

The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected

If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS.

#### 3.3.6.2 XHCI Hand-Off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

#### 3.3.6.3 USB Mass Storage Driver Support

The optional settings are: [Disabled], [Enabled].

#### 3.3.6.4 USB Transfer Time-out

This is a time-out value for Control, Bulk, and interrupt transfers.

#### 3.3.6.5 Device Reset Time-out

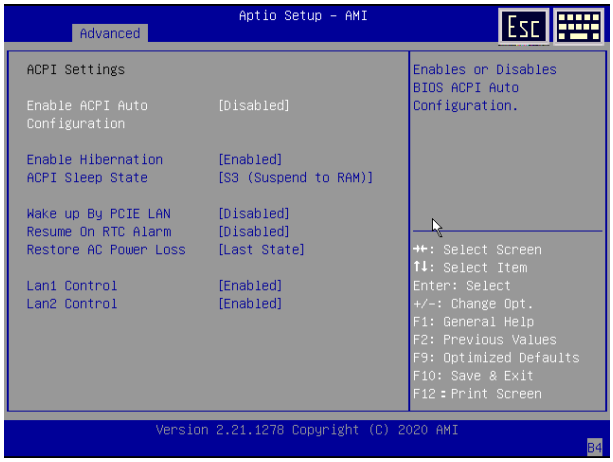
This is a start unit command time-out of USB mass storage.

#### 3.3.6.6 Device Power-Up Delay

Maximum time the device will take before it properly reports itself to the host controller. [Auto] uses default value.

For a root port, it is 100ms. For a hub port, the delay is taken from hub descriptor.

### 3.3.7 Automatic Power On




#### 3.3.7.1 Restore AC Power Loss

This item is used to set the power state after an unexpected AC power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC power resumes and the system starts to boot up when the power recovers.

#### 3.3.7.2 Wake up By PCIE LAN

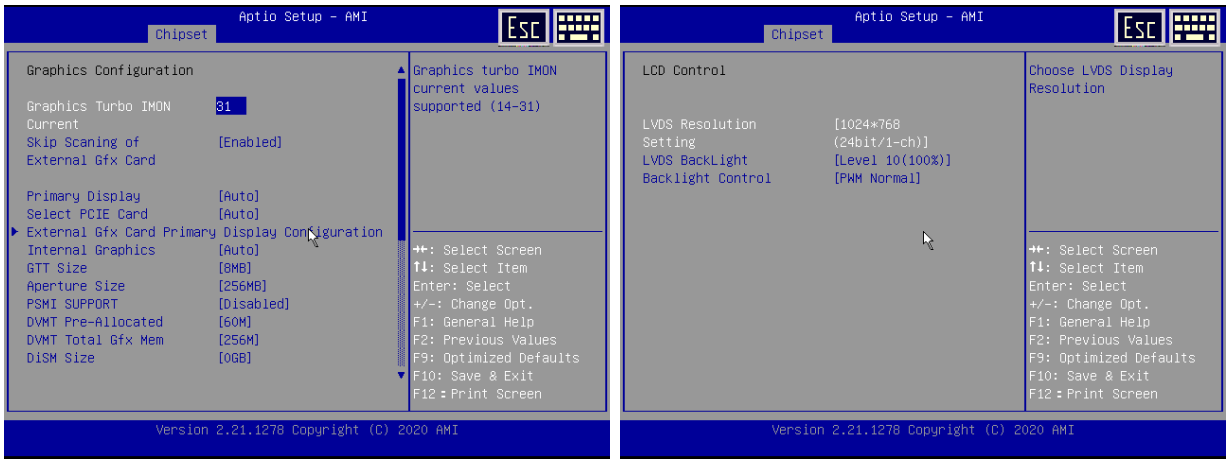
This item decides whether we can wake up the system from S5 by PCIe LAN.

#### 3.3.7.3 Resume On RTC Alarm

This item can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (real time clock). You must use an ATX power supply in order to use this feature.

## 3.4 Chipset Screen

### 3.4.1 System Agent (SA) Configuration (Graphics Configuration)




#### 3.4.1.1 Primary Display

This item is used to select which of IGFX/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.

#### 3.4.1.2 GTT Size

This item is used to select the GTT size.

#### 3.4.1.3 Aperture Size

This item is used to select the Aperture size.

#### 3.4.1.4 DVMT Pre-Allocated

This item is used to select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

#### 3.4.1.5 DVMT Total Gfx Mem

This item shows the information of DVMT 5.0 and Graphic memory size used by the Internal Graphics Device.

#### 3.4.1.6 Primary IGFX Boot Display

This item allows you to select the Primary display device when the mother board start up. The default value is [VBIOS Default].

#### 3.4.1.7 LCD Panel Type

This item allows you to choose the proper resolution for your display device. The default value is [VBIOS Default].

#### 3.4.1.8 Panel Scaling

Set the way of panel scaling.

#### 3.4.1.9 Backlight Control

This item is used to set the way of controlling backlight. The default value is [PWM Normal].

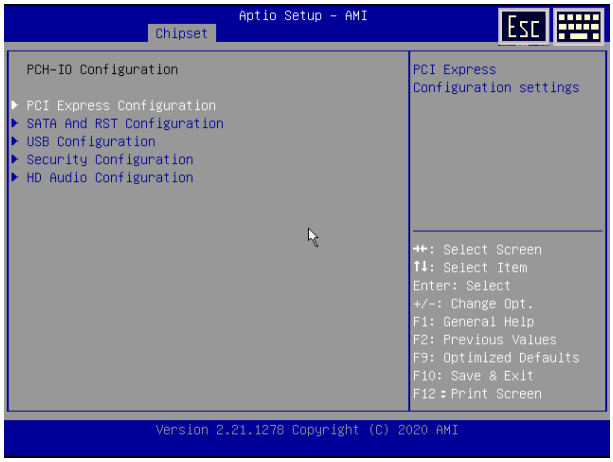
#### 3.4.1.10 LCD Panel Resolution Setting

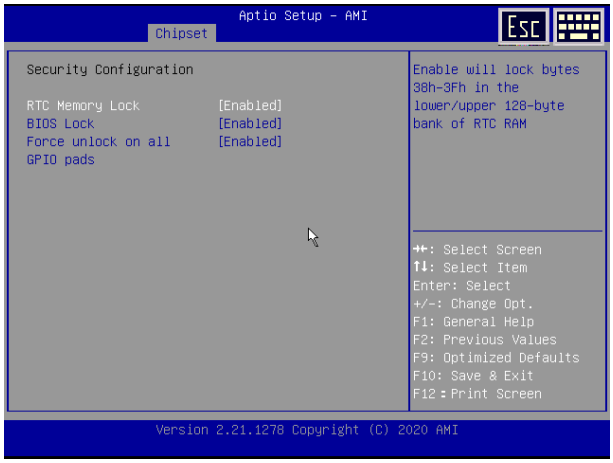
This item allows you to choose the proper resolution for your display device. The default value is [1024x768 (24BIT/1-CH)].

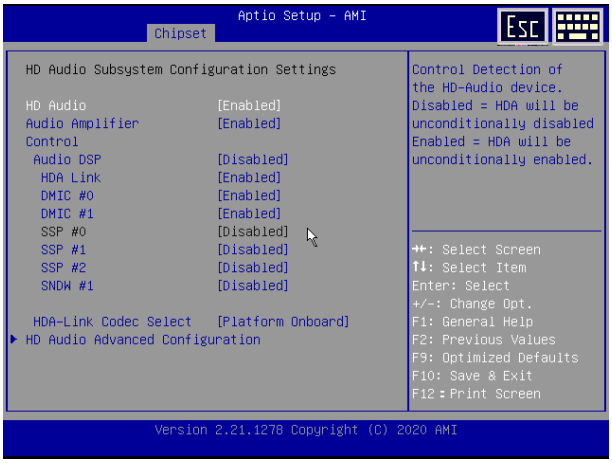
#### 3.4.1.11 LCD Backlight

This item is used to set the panel brightness. The default value is [Level10].

### 3.4.2 PCH-IO Configuration (Audio Configuration / USB Configuration)




#### 3.4.2.1 BIOS Lock

This item is used to enables or disables BIOS SPI region read/write protection. For BIOS upgrade, It has to be disable.

#### 3.4.2.2 HD Audio

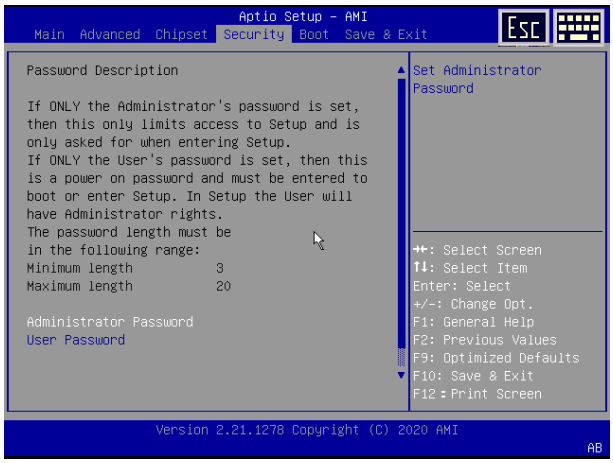
This item is used to enables or disables the audio output.

#### 3.4.2.3 Audio Amplifier Control

This item is used to enable or disable the Amplifier for internal speaker.

## 3.5 Security Screen

In this section, you may set, change or clear the supervisor/user password for the system.




### 3.5.1 Administrator Password

This item allows you to configurate an administrator Password. Press <Enter> to creat a new password, type the password, then press <Enter> again, and then you will be require to type the password again for confirmation. The administrator password allows you to make changes to all BIOS settings.

### 3.5.2 User Password

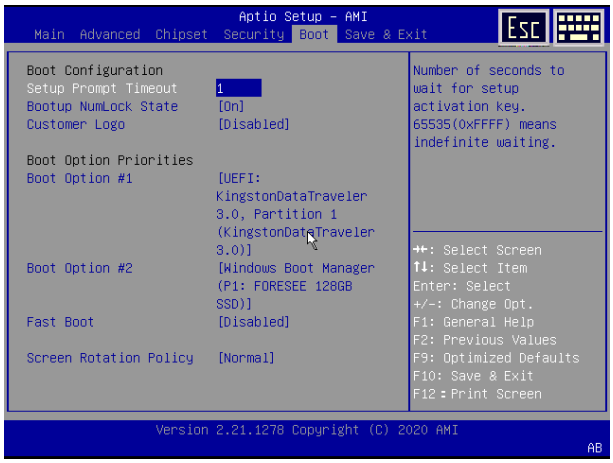
This item allows you to configurate an user Password. Press <Enter> to creat a new password, type the password, then press <Enter> again, and then you will be require to type the password again for confirmation. The user password only allows you to make changes to certain BIOS settings.

NOTE] The length of the password must be between 3-20 characters.

NOTE] To cancel the password, you must press <Enter> on the item(Administrator Password / User Password) and type in the correct password first, then press <Enter> without entering any password, and press <Enter> again as promotion about password clean up conformation.

## 3.6 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.




### 3.6.1 Setup Prompt Timeout

This item is used to set number of seconds to wait for setup activation key.

### 3.6.2 Bootup NumLock State

This item decides the Keyboard NumLock state whether [On] or [Off].

### 3.6.3 Customer LOGO

This item allows you to decide whether to display the Client Logo at system startup. [Disabled] skips the Client Logo when the system startup.

### 3.6.4 Fast Boot

This item is used to enable or disable boot with initialization of a minimal set of devices required to launch active boot option.

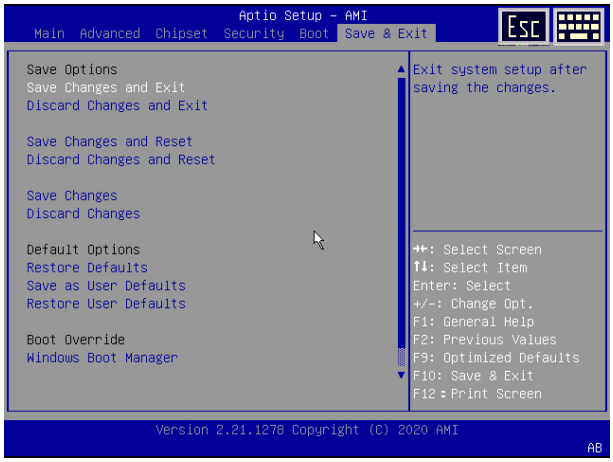
### 3.6.5 Boot Option Priorities

This item allows you to specify the overall boot order from the available devices. The list only display the device with the hightest priority for a specific type. For example, only hard drive defined as the first priority on the [Hard Drive BBS Priorities] will be presented here.

### 3.6.6 Screen Rotation Policy

This item allows you to control the screen direction at POST and BIOS.

## 3.7 Exit Screen




### 3.7.1 Save Changes

Only save changes to CMOS.

### 3.7.2 Discard Changes

Only discard changes just made.

### 3.7.3 Restore Defaults

Load the default settings of the BIOS. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

### 3.7.4 Save as User Defaults

This item enables you to save the changes that you have made as user defaults.

### 3.7.5 Restore User Defaults

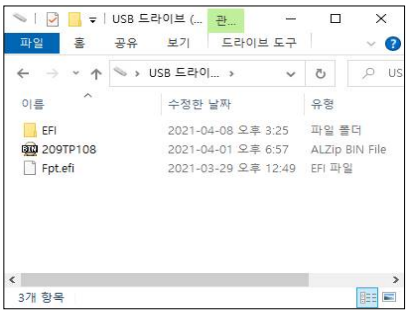
This item enables you to restore the user defaults.

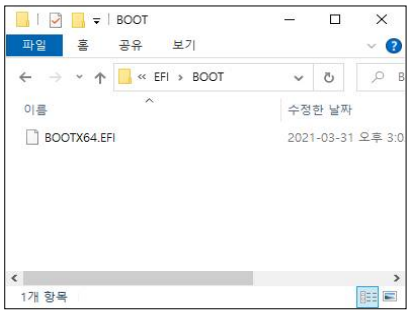
### 3.7.6 Boot Override

Use this item to select the boot device.

# Chapter4. BIOS Upgrade & Download

## 4.1 Prepare BIOS File and Utility

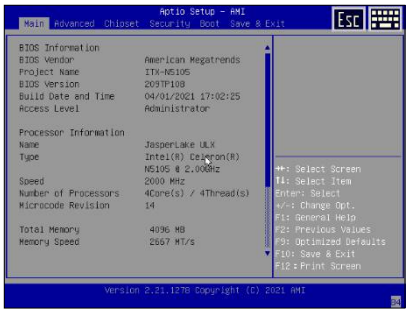



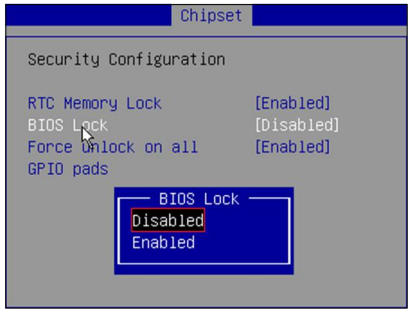

1) Prepare the USB memory. Store the BIOS and utility file((FPT.EFI) in USB memory.

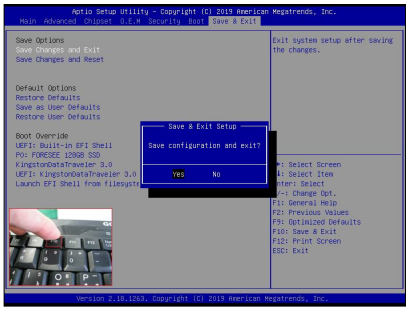
2) Make the specific boot folder and store the file. (D:₩EFI₩BOOT₩BOOTX64.EFI)

3) Turn off the POS and Insert the USB memory to POS system.

## 4.2 Changing BIOS Value and Reboot

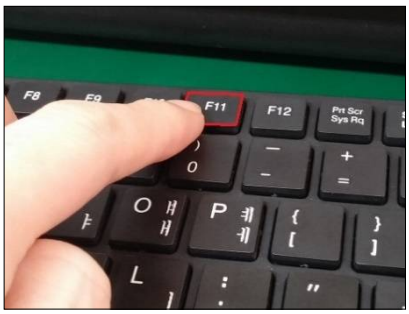




1) Turn on the POS and Press "DEL" key for entering BIOS.

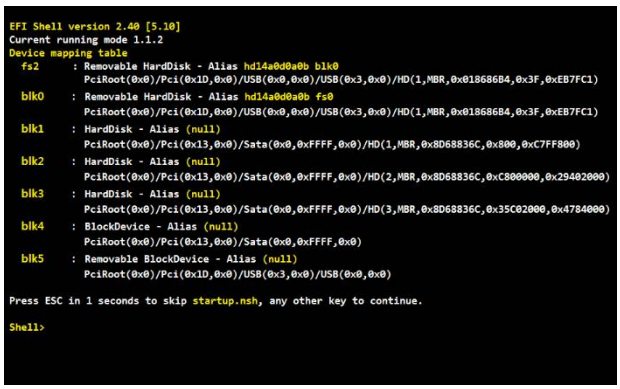
2) Change the "BIOS Lock" to "Disable". (Chipset → PCH-IO Configuration → Security Configuration → BIOS Lock)

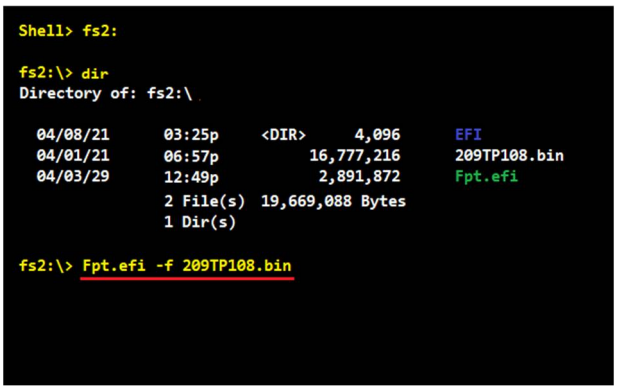
3) Press "F10" key for save and exit.

## 4.3 BIOS Flash

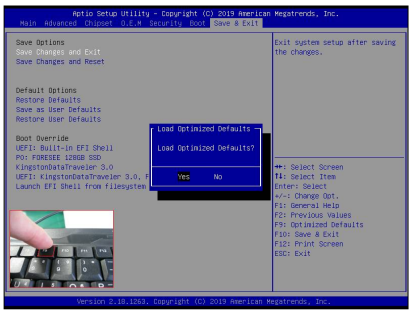


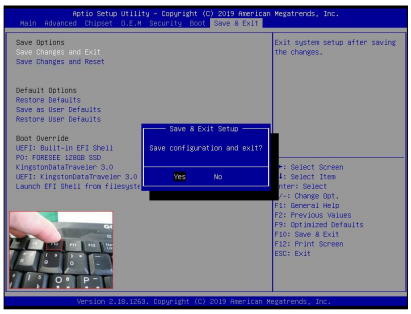



1) Turn on the POS and Press "F11" key for entering UEFI Shell.
2) Change the value to "UEFI:USB MEMORY" and Press "Enter" key.
3) After rebooting via UEFI, It shows like above display.
4) Type "fs2:" and press "Enter" key.
5) Type "ls" or "dir". Then BIOS and utility files are shown.
6) Type "fpt.efi -f XXXXX.bin" to download.
7) It will take 2~3 minute.
8) If download is finished, turn off the POS using Power Button.

## 4.4 BIOS Default and Save




1) Turn on the POS and Press "DEL" key for entering BIOS.
2) Press "F9" for BIOS default.
3) Press "F10" for Save and exit.