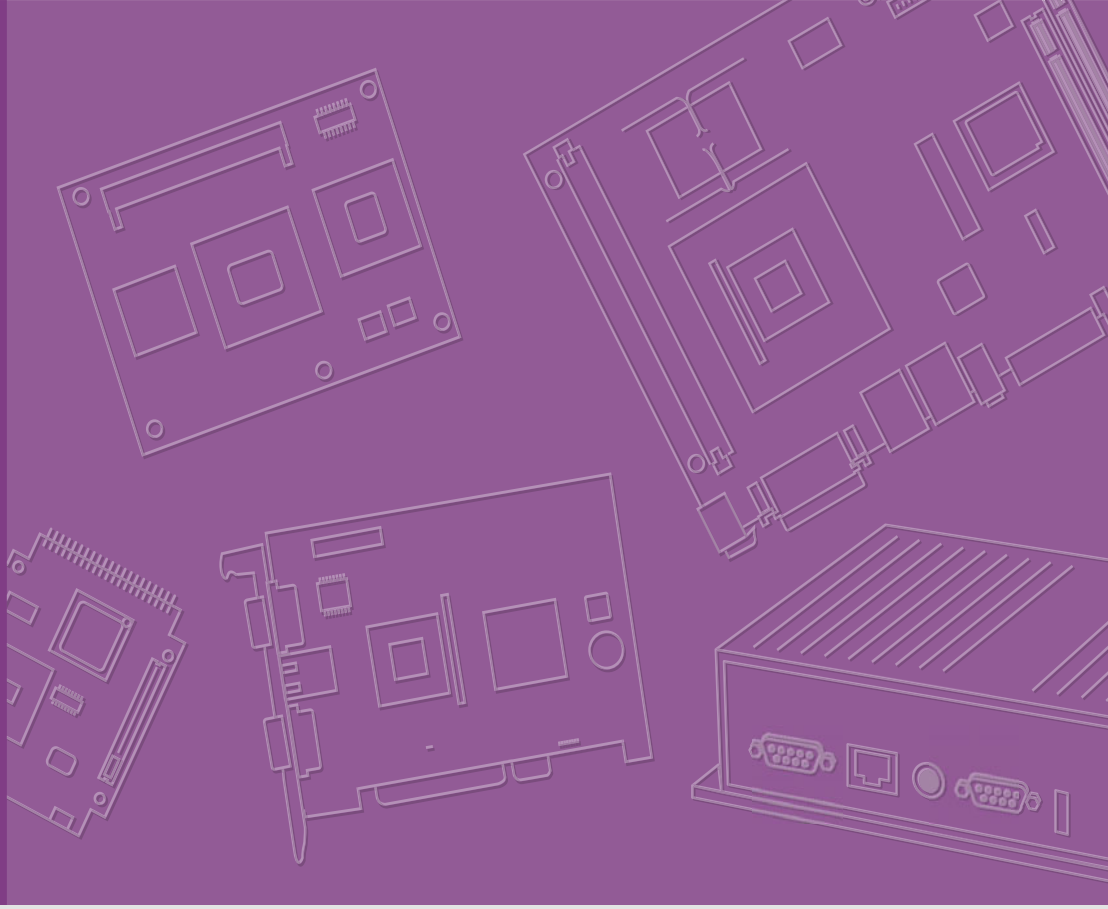


User Manual

AIIS-1200

Embedded IPC

ADVANTECH

Enabling an Intelligent Planet

Attention!

Please note:

This package contains a hard-copy user manual in Chinese for China CCC certification purposes, and there is an English user manual included as a PDF file on the CD. Please disregard the Chinese hard copy user manual if the product is not to be sold and/or installed in China.

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4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions in which there is a chance of personal injury!*



Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.:*



There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*



Safety Instructions

1. Please read these safety instructions carefully.
2. Please keep this User's Manual for later reference.
3. Please disconnect this equipment from AC outlet before cleaning. Use a damp cloth. Don't use liquid or sprayed detergent for cleaning. Use moist sheet or cloth for cleaning.
4. For pluggable equipment, the socket-outlet shall near the equipment and shall be easily accessible.
5. Please keep this equipment from humidity.
6. Lay this equipment on a reliable surface when installing. A drop or fall could cause injury.
7. The openings on the enclosure are for air convection hence protecting the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source when connecting the equipment to the power outlet.
9. Place the power cord such a way that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
12. Never pour any liquid into ventilation openings; this could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40° C (-40° F) OR ABOVE 85° C (185° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
17. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).
18. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Packing List

Before installation, please ensure the following items have been shipped:

- AIIS-1200 bare-bone system x1
- Startup manual x1
- Driver CD x 1
- 2-pin phoenix connector x 1
- Wall mounting bracket x 2
- Din Rail maounting bracket x 1

Ordering Information

Part number	Camera interface	Display	USB3.0	Isolated DIO	COM1	COM2
AIIS-1200P-S6A1E	2-CH GigE PoE	VGA + DP++	4	8-CH	1	1
AIIS-1200U-S6A1E	2-CH USB3.0	VGA + DP++	4	8-CH	1	1

Optional Accessories

Part Number	Description
1950016395T102	DIN-Rail Bracket
96PSA-A65W19P2-2	DC24 Adapter 65Watt
1700023217-01	8-CH DIO Cable for Wiring Board
ADAM-3925-AE	8-CH DIO DB-25 Wiring Terminal, DIN-rail Mount

Contents

Chapter 1 General Introduction 1

1.1 Introduction 2
1.2 Product Features 2
1.2.1 General 2
1.2.2 Display 2
1.2.3 Ethernet 2
1.3 Chipset 3
1.3.1 Functional Specification 3
1.4 Mechanical Specifications 4
1.4.1 Dimensions 4
Figure 1.1 AIIS-1200P Mechanical Dimension Drawing 4
Figure 1.2 AIIS-1200U Mechanical Dimension Drawing 4
1.4.2 Weight 4
1.5 Power Requirements 4
1.5.1 System power 5
1.5.2 RTC battery 5
1.6 Environment Specification 5
1.6.1 Operating temperature 5
1.6.2 System safety certification test temperature 5
1.6.3 Relative humidity 5
1.6.4 Storage temperature 5
1.6.5 Vibration during operation 5
1.6.6 Shock during operation 5
1.6.7 Safety 5
1.6.8 EMC 5

Chapter 2 H/W Installation 7

2.1 Introduction 8
2.2 Jumpers 8
2.2.1 Jumper description 8
2.2.2 Jumper list 9
Table 2.1: Jumper List 9
2.3 Connectors 10
2.3.1 AIIS-1200 External I/O Connectors 10
Figure 2.1 AIIS-1200 I/O connectors 10
Table 2.2: COM Connector Pin Assignments 11
Figure 2.2 Ethernet Connector 11
Table 2.3: Ethernet Connector Pin Assignments 11
Figure 2.3 Audio Connector 12
Table 2.4: Audio Connector Pin Assignments 12
Figure 2.4 USB 3.0 Connector 12
Table 2.5: USB 3.0 Connector Pin Assignment 12
Figure 2.5 VGA Connector 13
Table 2.6: VGA Connector Pin Assignments 13
Figure 2.6 DP++ Connector 13
Table 2.7: DP Port Connector Pin Assignments 13
Figure 2.7 2-pin header 14
Table 2.8: Pin Assignments for Power Connector Pin Header 14
Figure 2.8 Power Button 14
2.4 Installation 15
2.4.1 HDD installation 15
Figure 2.9 Open case 15
Figure 2.10 HDD Rack assembly 15

Figure 2.11HDD assembly 16
2.4.2 m-SATA/Mini-PCIe Installation 16
2.4.3 AIIS-1200 MB IO connector 17

Chapter 3 AMI BIOS Setup 19

3.1 Introduction 20
3.2 Entering Setup 21
3.2.1 Main Setup 21
3.2.2 Advanced BIOS Features Setup 23
3.2.3 Chipset 34
3.2.4 Security 37
3.2.5 Boot 38
3.2.6 Save & Exit 39

Chapter 4 Software Installation 41

4.1 Chipset Software Installation Utility 42
4.1.1 Before you begin 42
4.1.2 Introduction 42
4.1.3 Windows 10 / Windows 8.1/ Windows 7 43
4.2 Integrated Graphic Device Setup 43
4.2.1 Introduction 43
4.2.2 Windows 10 /Windows 8.1 /Windows 7 Driver Setup 43
4.3 LAN Configuration 44
4.3.1 Introduction 44
4.3.2 Features 44
4.3.3 Installation 44
4.3.4 Windows 10 /Windows 8.1 /Windows 7 44
4.4 Intel TXE (Trusted Execution Engine) Setup 45
4.5 Install USB3.0 45
4.5.1 Introduction 45

Appendix A Programming the Watchdog Timer . 47

A.1 Programming the Watchdog Timer 48
A.1.1 Watchdog Timer Overview 48
A.1.2 Programming the Watchdog Timer 48
Table A.1: Watchdog Timer Registers 50
A.1.3 Example Program 51

Appendix B Programming the GPIO 55

B.1 Supported GPIO Register 56
B.1.1 GPIO Registers 56
B.1.2 GPIO Example Program 57

Chapter 1

General Introduction

This chapter gives background information on AIIS-1200.

1.1 Introduction

AIIS-1200 is a compact fanless system incorporating latest Intel® Braswell SoC(System On Chip) platform and target at machine vision application. The AIIS-1200 is an independent, fanless, Compact Embedded Box with a wide range of DC power inputs. The rugged aluminum case provides not only a great thermal solution, but also resists high EMI/shock/vibration. AIIS-1200 compact fanless computer features Intel® Brasell 4 cores processor and a proprietary 2-channel camera modules, PoE or USB3.0, which it is a proper solution for machine vision applications. Moreover, it features rich I/O interfaces including Ethernet, USB 3.0, serial ports, and one Mini PCIes for different applications.

1.2 Product Features

1.2.1 General

- **CPU:** Intel® Celeron® Processor N3160
- **PCH:** N/A
- **System Memory:** On board DDR3L 1600 8GB
- **Storage:**
  - Supports 1 drive bay space for SATA 2.5" HDD/SSD
- **Graphic:** VGA + DP++
- **Ethernet Port:** 1 x RJ45
- **Watchdog Timer:** Single chip Watchdog 255-level interval timer, setup by software
- **I/O Interface:** 1 x RS232/422/485 / 1 x RS-232
- **USB:** 4 x USB3.0
- **Audio:** High Definition Audio (HD), Line-out, Mic-in
- **Expansion interface:** 1 x Mini PCIe sockets (m-SATA/PCIe)

1.2.2 Display

- **Chipset:** Intel® HD Graphics 400, support DirectX 12
- **Graphics Video Max Memory:** 1.7 GB
- **Resolution:**
  - VGA: Supports up to 1920 x 1080 @ 60 Hz
  - DP: Supports up to 3840 x1080 @ 30 Hz

1.2.3 Ethernet

- **Chipset:**
  - LAN 1: Intel® i210IT
- **Speed:** 10/100/1000 Mbps
- **Interface:** 1 x RJ45
- **Standarsd:** Compliant with IEEE 802.3, IEEE802.3U, IEEE 802.ab.

1.3 Chipset

1.3.1 Functional Specification

Processor	Intel® Celeron® Processor N3160 Lithography: 14nm
Memory	Support on board DDR3L-1600MHz 8 GB
Chipset integrated Intel HD Graphic	Intel® HD Graphics 400 – Supports DirectX 12 (Windows 10) – Supports DirectX 11.x (Windows 7/8.1) – Supports OpenGL 4.2 – Supports Intel® Quick Sync Video IO interface – VGA: Support resolution up to 1920 x 1200 @ 60 Hz (VGA connector: On-board D-SUB 15P) – DP++: Support resolution up to 3840x2160 @ 30 Hz
SATA interface	One SATA 3.0 ports
USB interface	USD host interface for 4 x USB3.0 ports ■ Supports high-speed, full-speed, and low-speed capable ■ Supports legacy keyboard/mouse software
Power Management	■ Supports ACPI 5.0 ■ ACPI Power Management Logic Supported ■ Power Connector: Plug-in block 2Px1
BIOS	AMI 64Mb Flash BIOS via SPI
Serial ports	Nuvoton NCT 6106D supported ■ Up to 6 serial ports by Nuvoton NCT6106D supported ■ High speed NS16C550A compatible UARTs with date rates to 1.5 Mbps ■ Supports IRQ sharing among serial port on XPE ■ COM 1: Support to RS-232/422/485 and setting mode by BIOS and ■ supports auto flow control ■ COM 2: Support to RS-232 Serial ports connector: D-SUB CON.9P
LAN	LAN1: Intel® i210IT ■ Compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.ab. ■ Supports 10/100/1000 Mbps ■ Supports Wake on LAN
Audio	Audio Codec: Realtek ALC892: ■ Compliant with HD Audio specifications ■ Supports to 16/20/24-bit DAC and 16/20/24-bit ADC resolution ■ Support: Line-out, Mic-in ■ DAC supports 16/20/24-bit PCM format, multiple stereo recording
Battery	BR2032 3 V/190mAh

1.4 Mechanical Specifications

1.4.1 Dimensions

(Unit: mm)

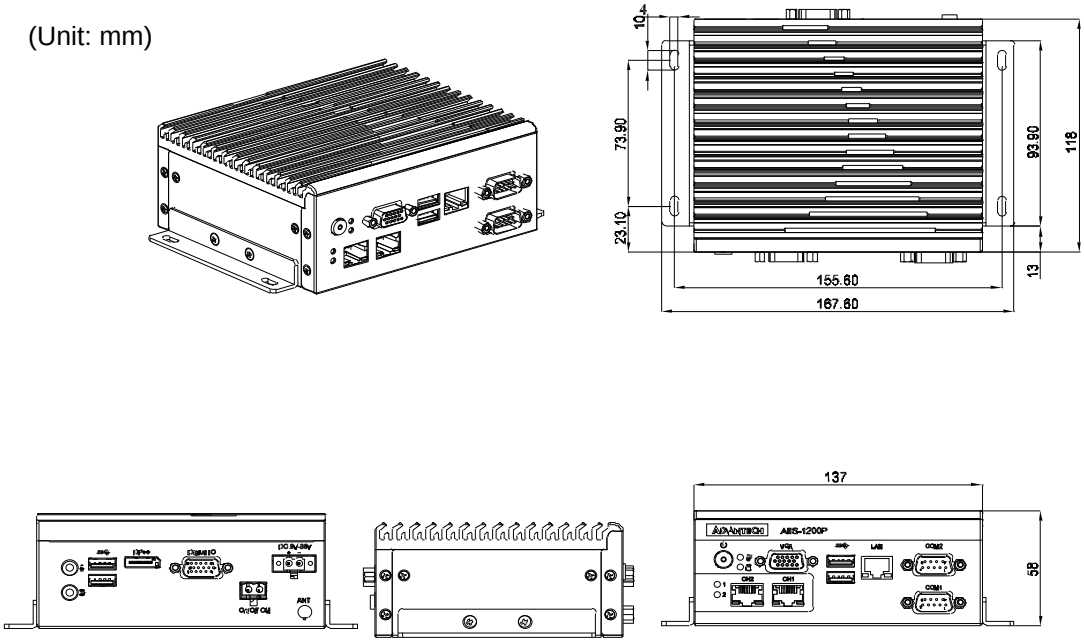


Figure 1.1 AIIS-1200P Mechanical Dimension Drawing

(Unit: mm)

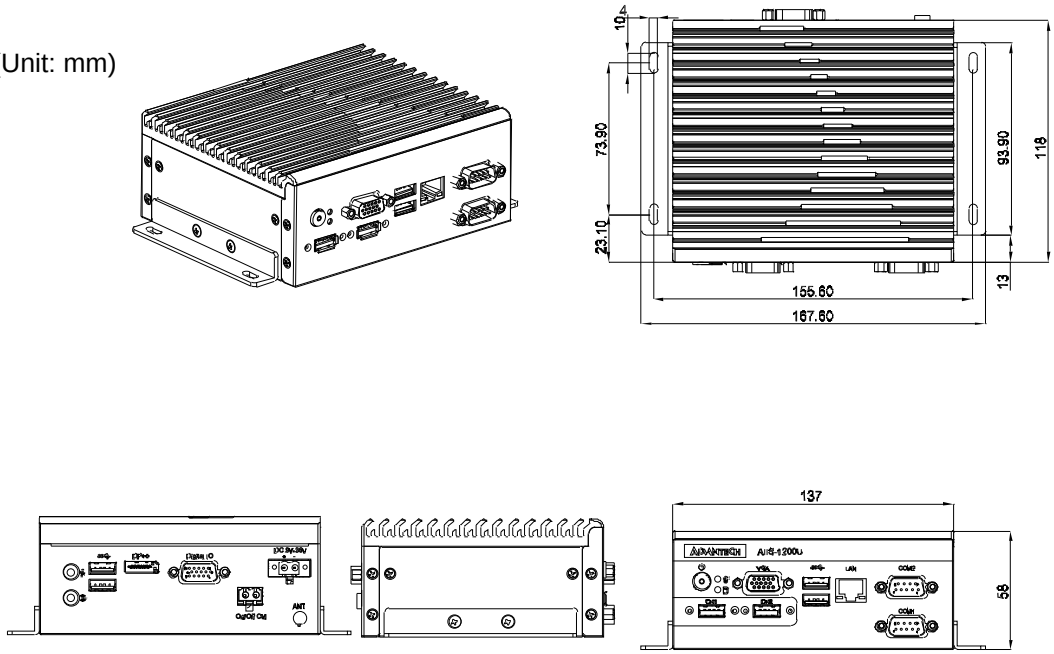


Figure 1.2 AIIS-1200U Mechanical Dimension Drawing

1.4.2 Weight

1.1Kg (2.43lb)

1.5 Power Requirements

1.5.1 System power

- Minimum power input: DC12V (-25%) -30V (+20%), Absolute Maximum Ratings Voltage is 9V - 36V

1.5.2 RTC battery

- BR2032 3 V/190 mAh

1.6 Environment Specification

1.6.1 Operating temperature

- -10 ~ 60 °C with 0.7m/sec air flow: with 1 x Industrial SSD

1.6.2 System safety certification test temperature

- 0 ~ 40 °C with 2.5” HDD

1.6.3 Relative humidity

- 95% @ 40 °C (non-condensing)

1.6.4 Storage temperature

- -40 ~ 85 °C (-40 ~ 185 °F)

1.6.5 Vibration during operation

- When system is equipped with SSD only: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 Oct/min., 1 hr/axis, x,y,z 3 axes.
- When system is equipped with 2.5-inch HDD: 0.5 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 Oct/min., 1 hr/axis, x,y,z 3 axes.

1.6.6 Shock during operation

- When system is equipped with SSD only: 20 G, IEC 60068-2-27, half sine, 11 ms duration.

1.6.7 Safety

- CCC, UL

1.6.8 EMC

- CE, FCC, CCC, BSMI

Chapter 2

H/W Installation

This chapter introduces external IO and the installation of AIIS-1200 hardware.

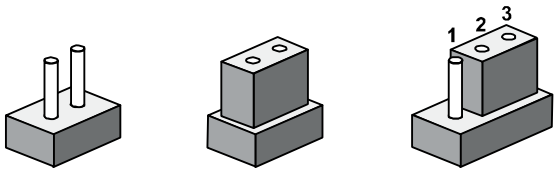
2.1 Introduction

The following sections show the internal jumper settings and the external connectors and pins assignment for applications.

2.2 Jumpers

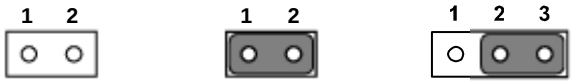
2.2.1 Jumper description

You may configure the AIIS-1200 to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you connect the pins with the clip. To open a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



open **closed** **closed 2-3**

The jumper settings are schematically depicted in this manual as follows.



open **closed** **closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

2.2.2 Jumper list

Table 2.1: Jumper List

Label	Function
JCMOS1	Clear CMOS
PSON1	System AT/ATX mode option
JWDT1_JOBS1	Watch-Dog mode option

2.2.2.1 Clear CMOS

AIIS-1200 single board computer contains a jumper that can erase CMOS data and reset the system BIOS information. Normally this jumper should be set with pins 1-2 closed. If you want to reset the CMOS data, set CMOS1 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed. This procedure will reset the CMOS to its default setting.

CMOS1	**Clear CMOS**
Footprint	3x1 Pin
Setting	**Function**
(1-2)	Normal (default)
(2-3)	Clear CMOS

2.2.2.2 System AT/ATX mode function option

AIIS-1200 support AT or ATX mode and Default is ATX module. if you want to change to AT mode that you can find AT/ATX mode jumper in motherboard.

PSON1	**System AT/ATX mode option**
FootPrint	**3x1 Pin**
Setting	**Function**
(1-2)	AT module
(2-3)	ATX module

2.2.2.3 System Watch-Dog mode function option

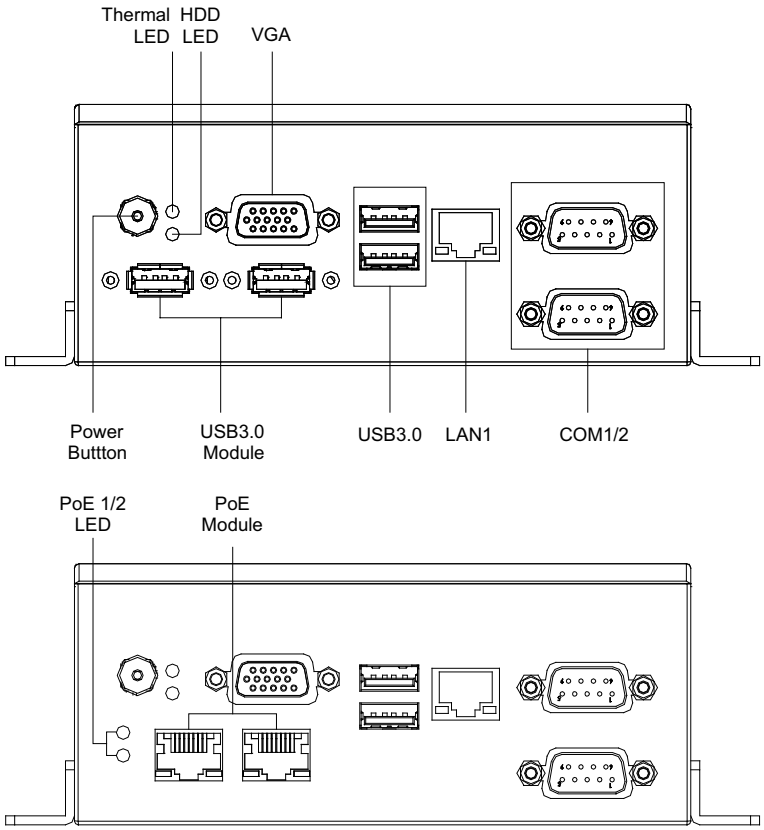
AIIS-1200 single board computer contains a jumper that can set Watch-Dog mode.

JWDT1_JOBS1	**Watch-Dog mode function option**
FootPrint	**5x1 pin**
Setting	**Function**
(2-3)	Watch Dog
(4-5)	ERR_BEEP

2.3 Connectors

2.3.1 AIIS-1200 External I/O Connectors

Front View



Rear View

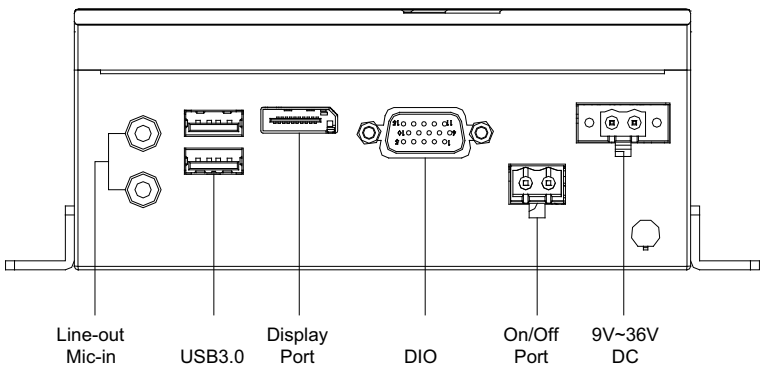


Figure 2.1 AIIS-1200 I/O connectors

2.3.1.1 COM connector

AIIS-1200 provides four 9-pin D-sub connectors, two of which offer RS-232/422/485 and the other two offer RS-232 serial communication interface ports. Default setting is RS-232, but this can be modified by BIOS setting. You can find detailed setting methods in Chapter 3.

Table 2.2: COM Connector Pin Assignments

	RS-232	RS-422	RS-485
Pin	**Signal Name**	**Signal Name**	**Signal Name**
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Note! *NC represents "No Connection".*

2.3.1.2 Ethernet connector (LAN)

AIIS-1200 is equipped with two Ethernet controllers that are fully compliant with IEEE 802.3u 10/100/1000 Mbps CSMA/CD standards. LAN1 is equipped with Intel i210IT. The Ethernet port provides a standard RJ45 jack connector with LED indicators on the front side to show its Active/Link status and

Speed status.

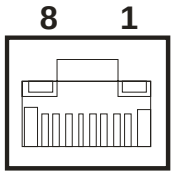


Figure 2.2 Ethernet Connector

Table 2.3: Ethernet Connector Pin Assignments

Pin	10/100/1000BaseT Signal Name
1	TX+
2	TX-
3	RX+
4	MDI2+
5	MDI2-
6	RX-
7	MDI3+
8	MDI3-

2.3.1.3 Audio connector

AIIS-1200 has two stereo audio ports with phone jack connectors, one Line_Out, one Mic_In. The audio chip is controlled by ACL892, and it's compliant with AZALIA standard.

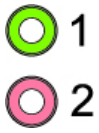


Figure 2.3 Audio Connector

Table 2.4: Audio Connector Pin Assignments

Pin	Audio Signal Name
1	Line_Out
2	Mic_In

2.3.1.4 USB 3.0 connector

AIIS-1200 provides 4 USB 3.0 interface connectors, which give complete Plug & Play and hot swapping for up to 127 external devices. The USB interface complies with USB XHCI, Rev. 3.0. Please refer to the table below for pin assignments.

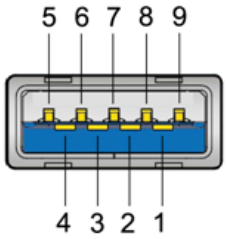


Figure 2.4 USB 3.0 Connector

Table 2.5: USB 3.0 Connector Pin Assignment

Pin 1	+5V
Pin 2	USB Data -
Pin 3	USB Data +
Pin 4	GND
Pin 5	SSRX-
Pin 6	SSRX+
Pin 7	GND
Pin 8	SSTX-
Pin 9	SSTX+

2.3.1.5 VGA Connector

The AIIS-1200 provides a high resolution VGA interface with a 15-pin D-sub connector to support a VGA CRT monitor. It supports display resolution of up to 2048 x 1152 @ 60 Hz.

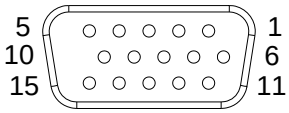


Figure 2.5 VGA Connector

Table 2.6: VGA Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DDC_DAT
13	H-SYNC	14	V-SYNC
15	DDC_CLK		

2.3.1.6 DP++ Connector

AIIS-1200 provides a high resolution DVI-D, powered by Intel® QM170 accelerator. It integrates both analog and digital video signal. It supports display resolution of up to 1920 x 1080 @ 60 Hz.

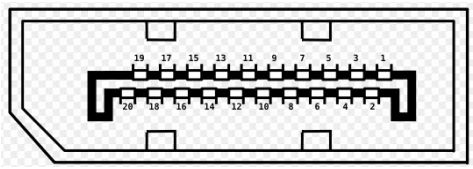


Figure 2.6 DP++ Connector

Table 2.7: DP Port Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	TMDS Data 2-	2	TMDS Data 2+
3	GND	4	N/C
5	N/C	6	DDC Clock
7	DDC data	8	N/C
9	TMDS Data 1-	10	TMDS Data 1+
11	GND	12	N/C
13	N/C	14	+5V
15	GND	16	Hot plug detect
17	TMDS Data 0-	18	TMDS Data 0+
19	GND	20	N/C
21	N/C	22	GND
23	TMDS Clock +	24	TMDS Clock -
C1	N/C	C2	N/C
C3	N/C	C4	N/C
C5	N/C		

2.3.1.7 Power Input Connector

AIIS-1200 comes with a four-pin header as default that carries 9VDC - 36VDC external power input.

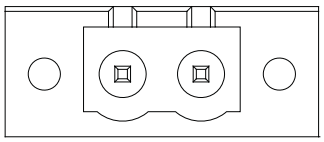


Figure 2.7 2-pin header

Table 2.8: Pin Assignments for Power Connector Pin Header

Pin	Signal Name
1	GND
2	+9 V_{DC} ~ 36 V_{DC}

2.3.1.8 Power ON/OFF button

AIIS-1200 comes with a Power On/Off button with LED indicators on the front side to show its On status (Green LED) and Off/Suspend status (RED LED), that supports dual function of Soft Power-On/Off (instant off or delay 4 seconds), and suspend.



Figure 2.8 Power Button

2.3.1.9 LED Indicators

AIIS-1200 provides HDD and thermal LED for date transmission status monitoring.

2.4 Installation

2.4.1 HDD installation

1. Remove chassis screws and extract the bottom cover
2. Remove 4 screws to extract HDD tray.
3. Secure the 4xHDD screws (P/N:1930004607)
4. Assemble SATA cable/power cable and replace HDD tray to secure 4x screws.
5. Replace Bottom cover.

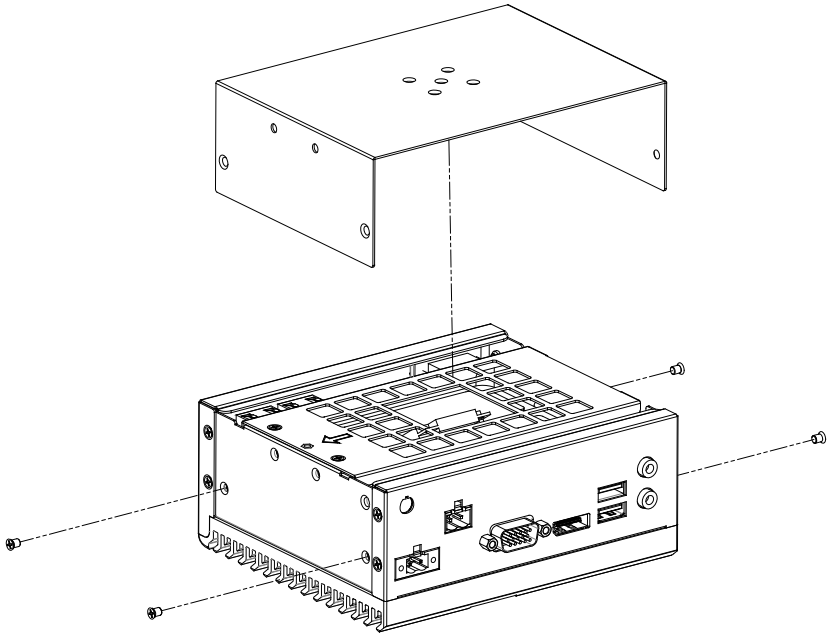


Figure 2.9 Open case

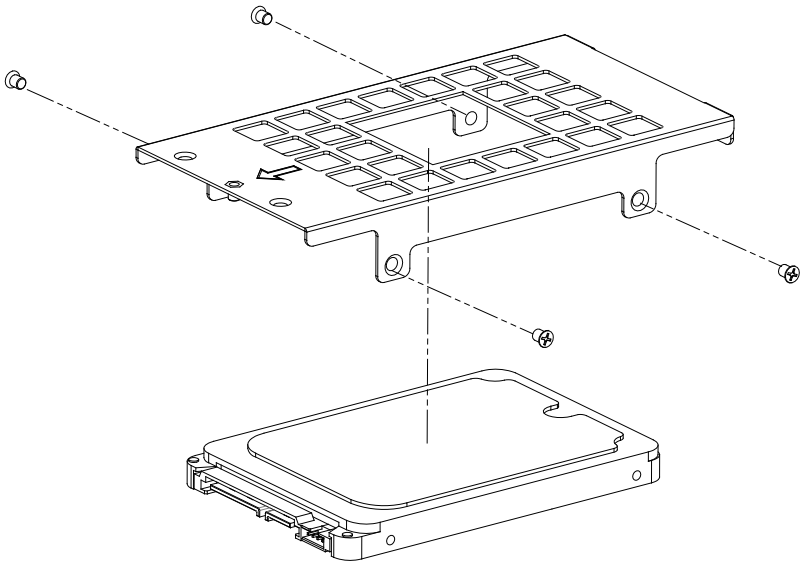


Figure 2.10 HDD Rack assembly

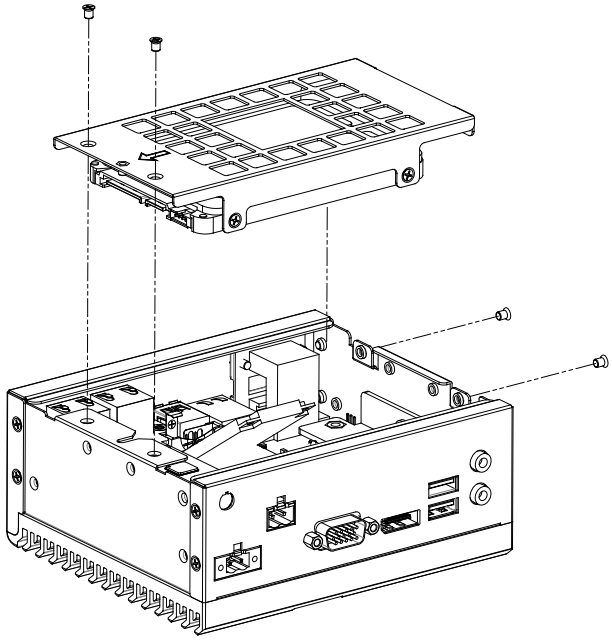


Figure 2.11 HDD assembly

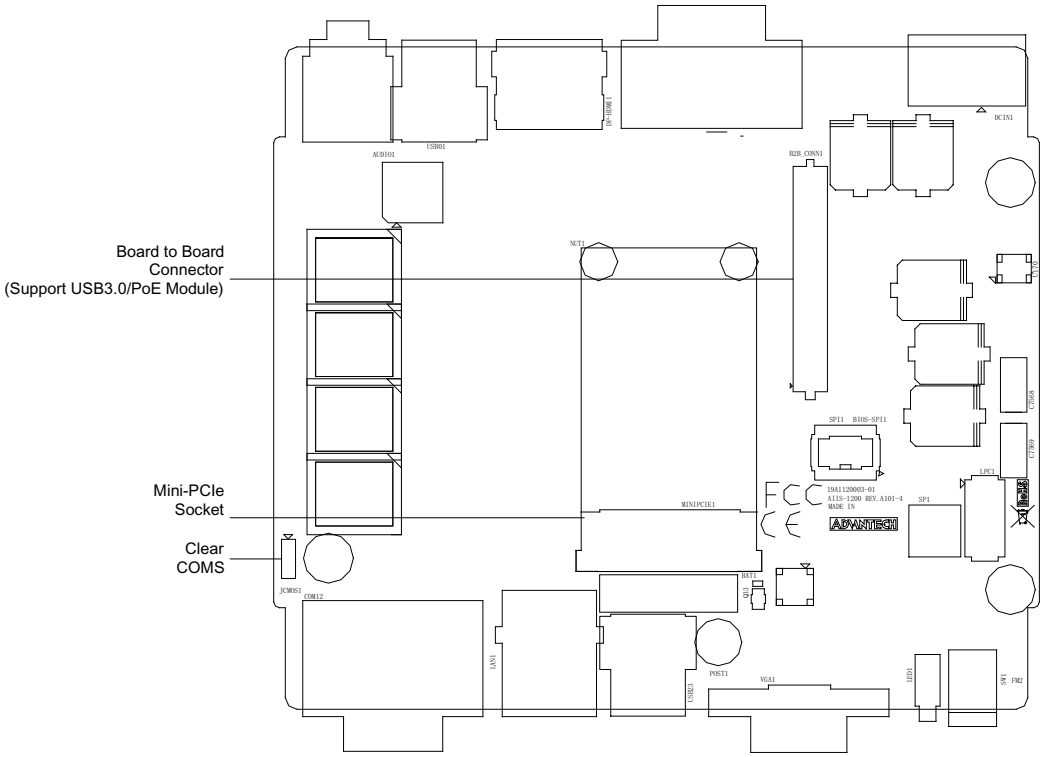
2.4.2 m-SATA/Mini-PCIe Installation

AIIS-1200 series support 1 Mini-PCIE socket with PCIex1/mSATA/USB links.

- Mini-PCIe socket: Support PCIex1/mSATA/USB links

1. Remove chassis screws and extract the bottom cover.
2. Install the module at Mini-PCIe socket and secure with screws.
3. Replace bottom cover and secure with screws.

2.4.3 AIIS-1200 MB IO connector



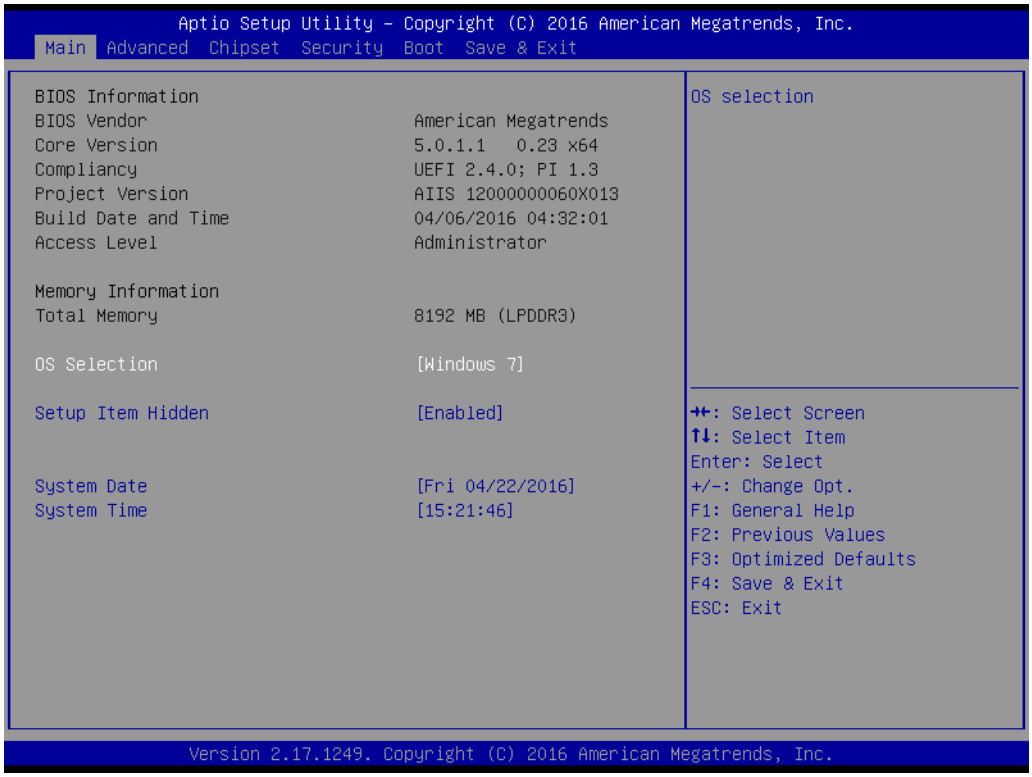
Chapter 3

AMI BIOS Setup

This chapter introduces how to set BIOS configuration data.

3.1 Introduction

With the AMI BIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning special features on or off. This chapter describes the basic navigation of the AIIS-1200 setup screens.

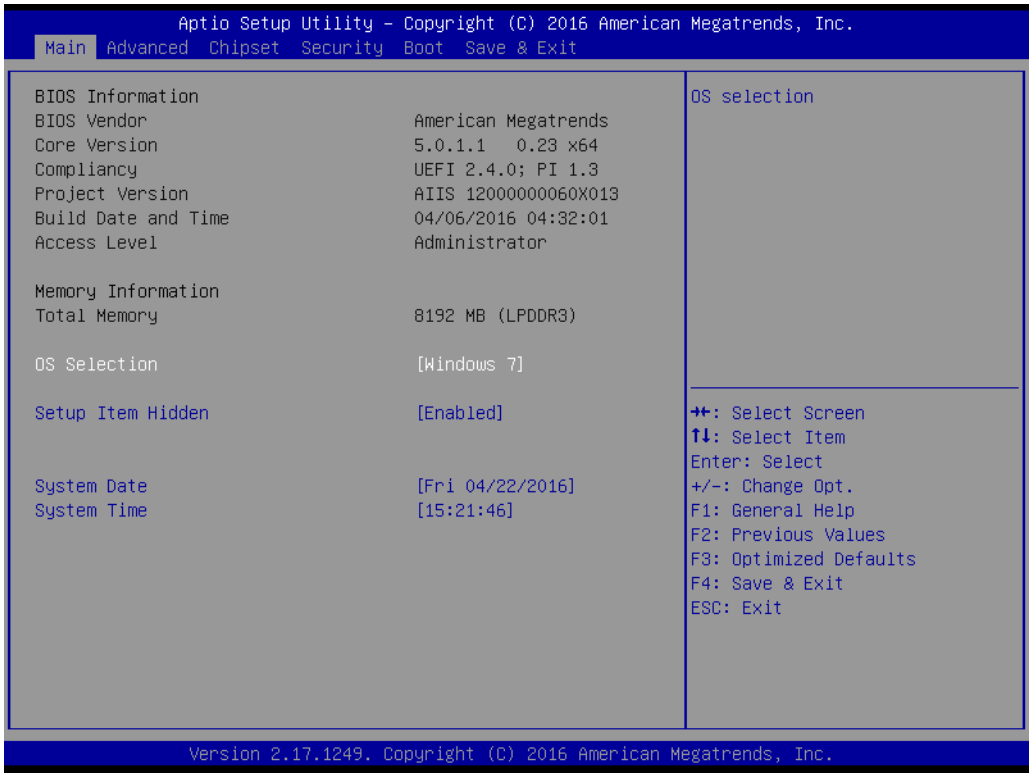


3.2 Entering Setup

Press the "Del" or "Esc." key during the Power On Self Test (POST) process to enter the BIOS setup screen, otherwise the system will continue the POST process.

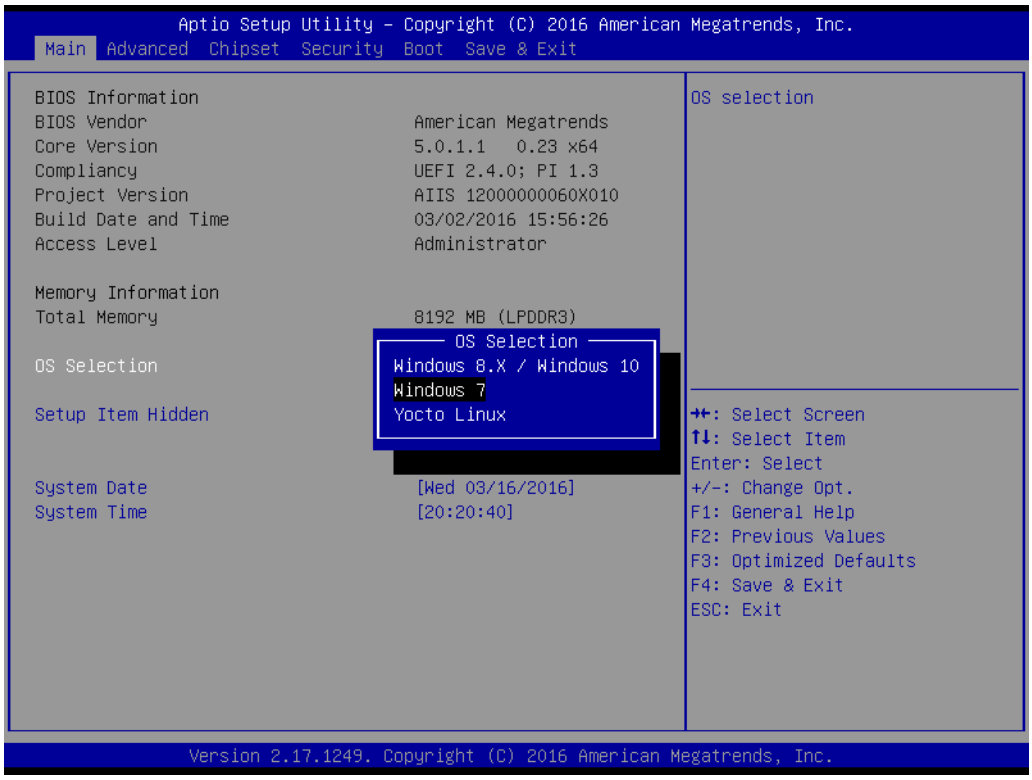
3.2.1 Main Setup

When you first enter the BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.



3.2.1.1 OS selection

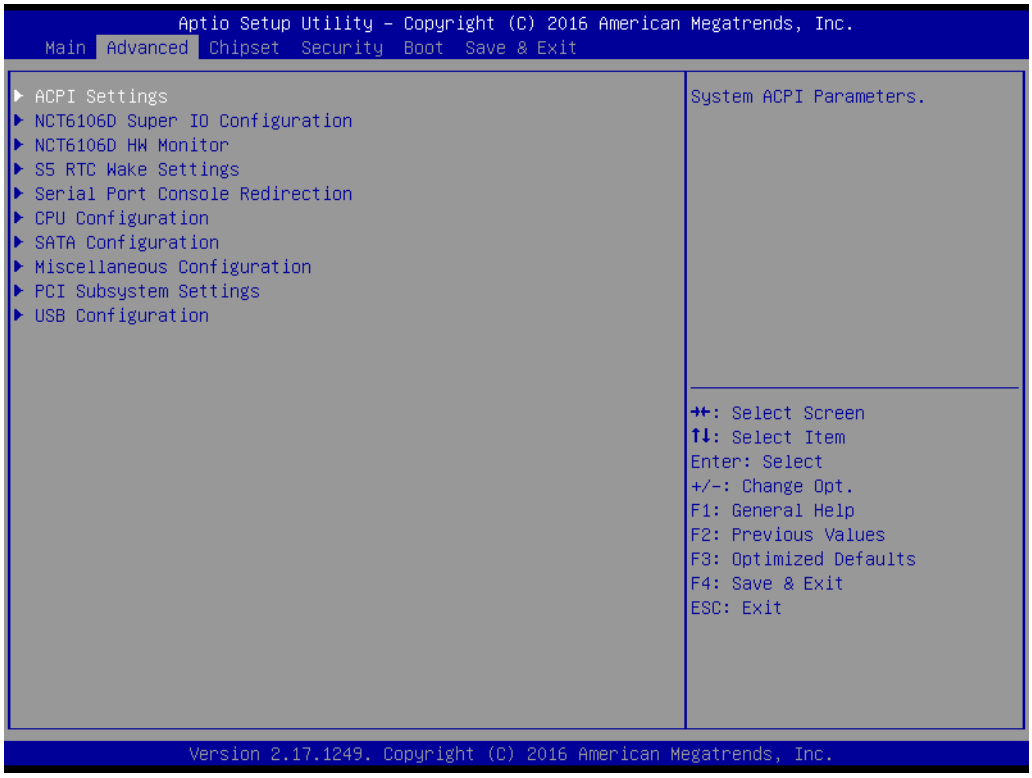
Please select proper OS system in bios menu

3.2.1.2 System Time / System Date

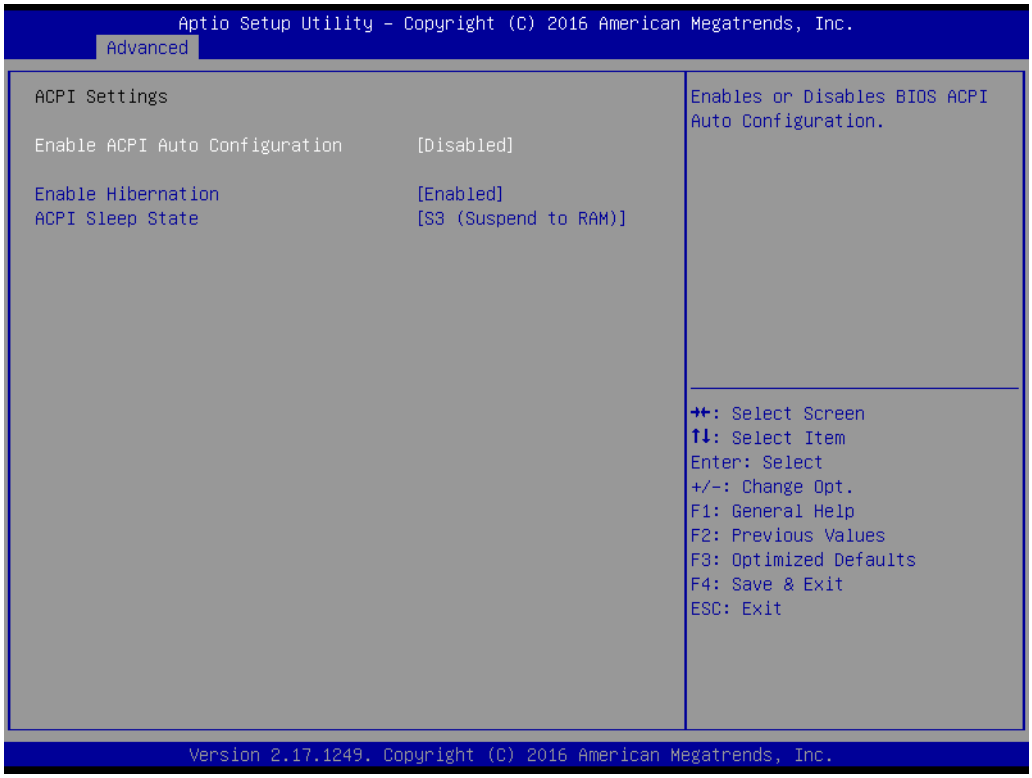
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the AIIS-1200 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as ACPI Settings and hit <enter> to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.

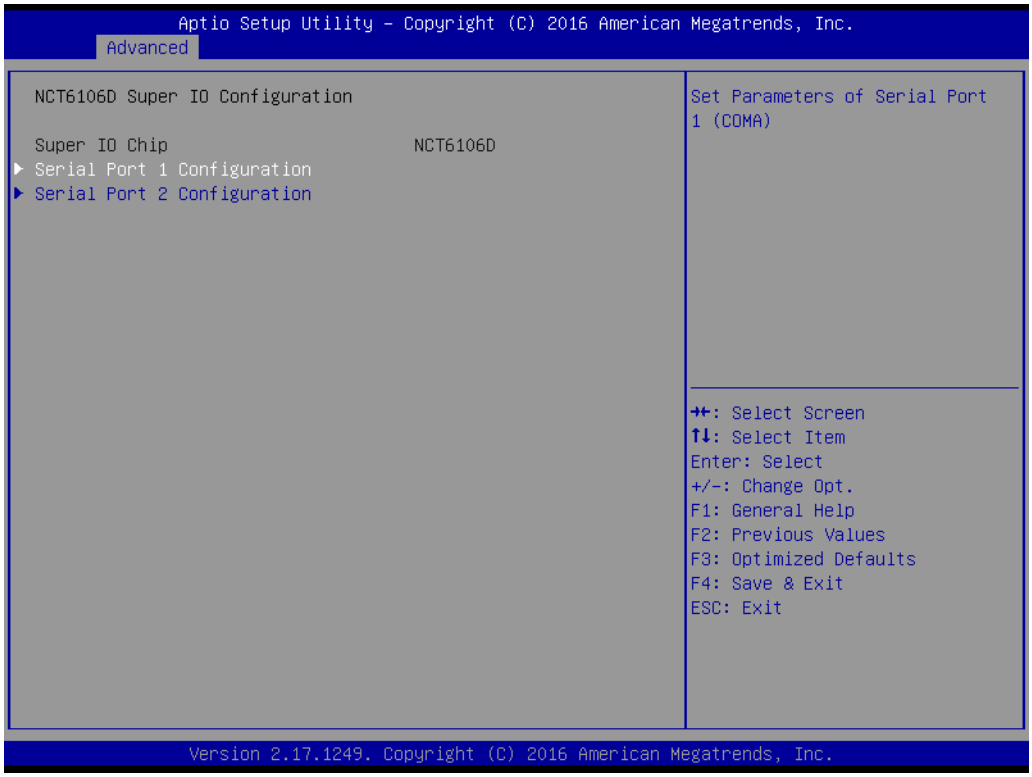


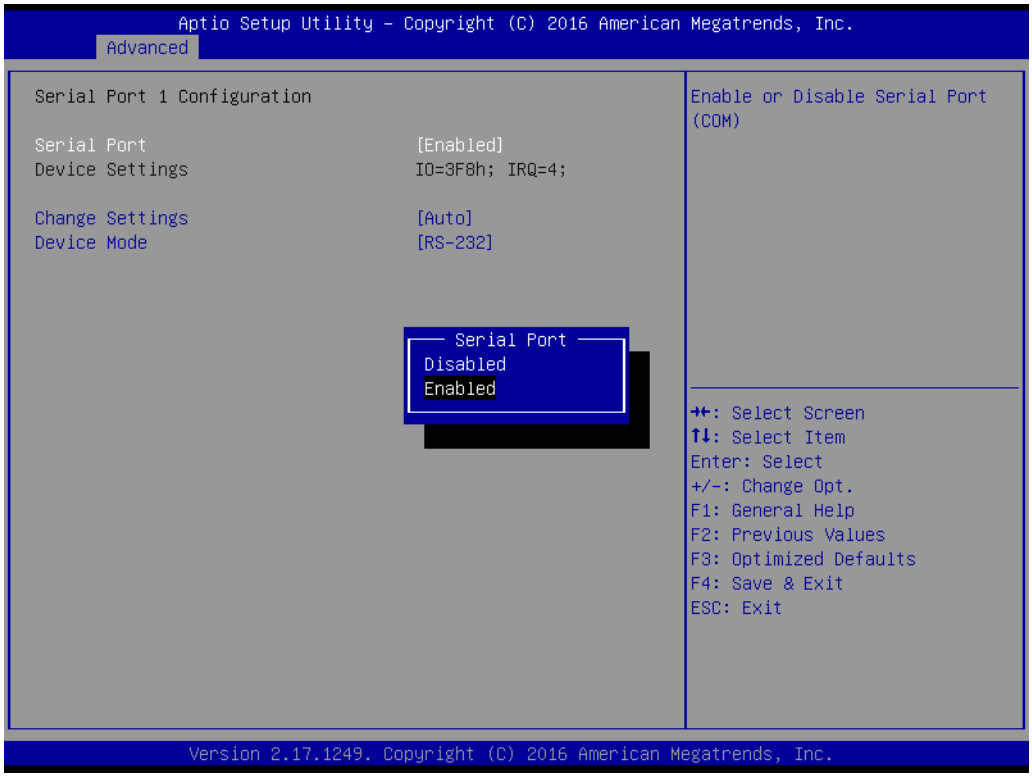
3.2.2.1 ACPI Setting

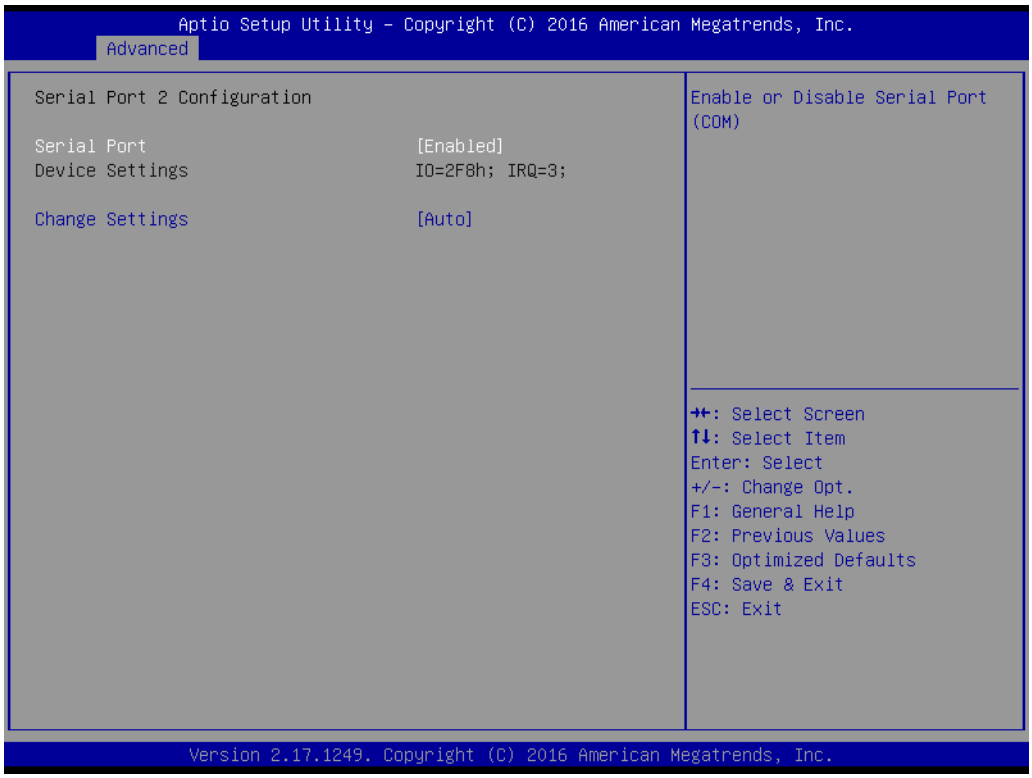


- **Security Device Support**
  This item allows users to enable or disable “Security Device Support”.
- **Enable ACPI Auto Configuration**
  Enable or disables BIOS ACPI auto configuration
- **Enable Hibernation**
  Enable or disables Hibernation
- **ACPI Sleep State**
  This item allows users to set ACPI mode S3 (Suspend to RAM) or to Disable
- **“ACPI Sleep State”.**
  ACPI Sleep State

3.2.2.2 NCT6106D Super IO Configuration







Serial Port 1 Configuration

- **Serial Port**

  This item allows users to enable or disable for "Serial Port".

- **Change Settings**

  This item allows users to Change Settings of Serial Ports. The default setting is "Auto".

- **Device Mode**

  This item allows users to set the mode of serial port. The default setting is "RS-232/422/485".

Serial Port 2 Configuration

- **Serial Port**

  This item allows users to enable or disable for "Serial Port".

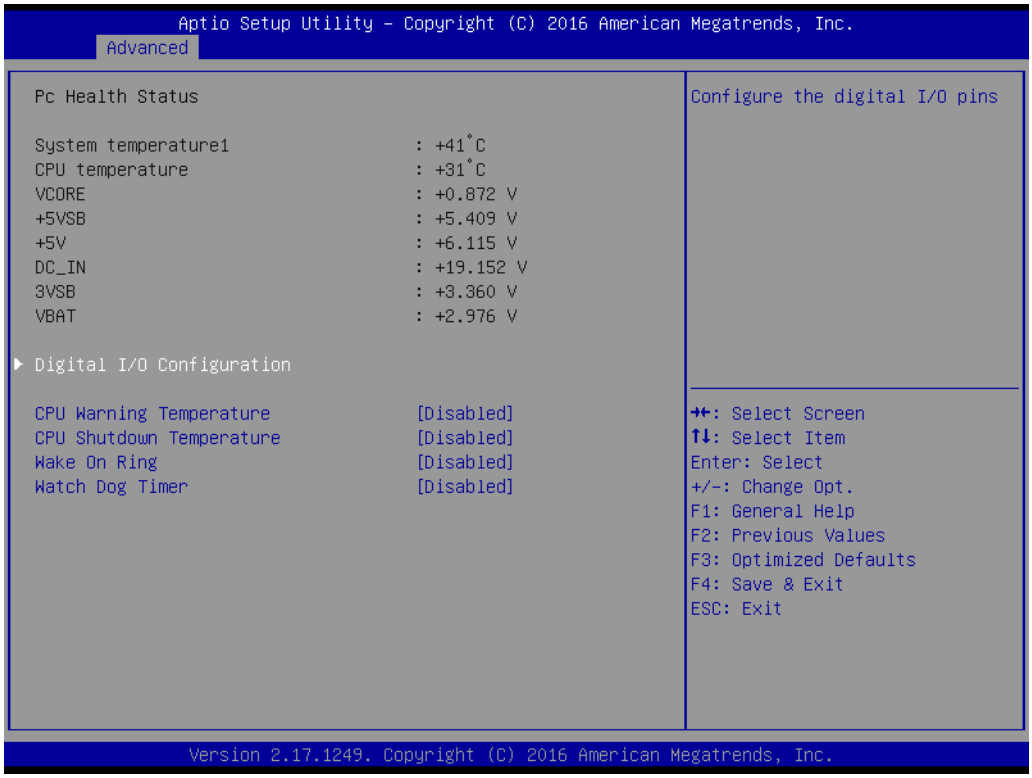
- **Change Settings**

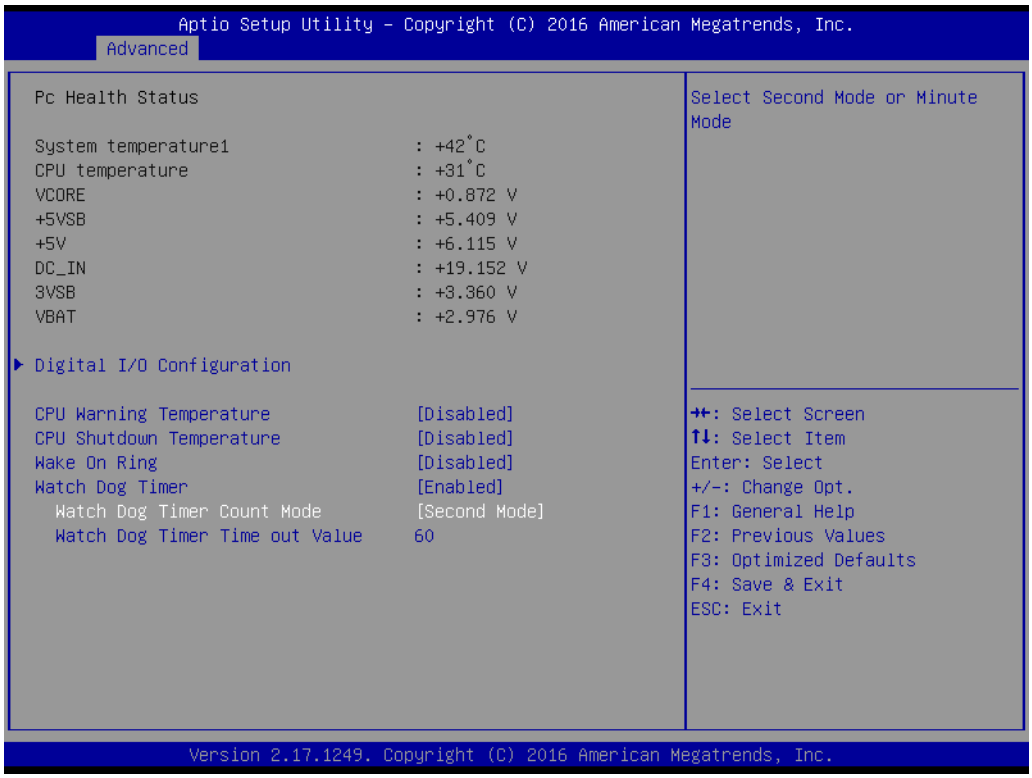
  This item allows users to change settings of serial ports. The default setting is "Auto".

- **Device Mode**

  This item allows users to set the mode of serial port. The default setting is "RS-232".

3.2.2.3 NCT6106D HW Monitor

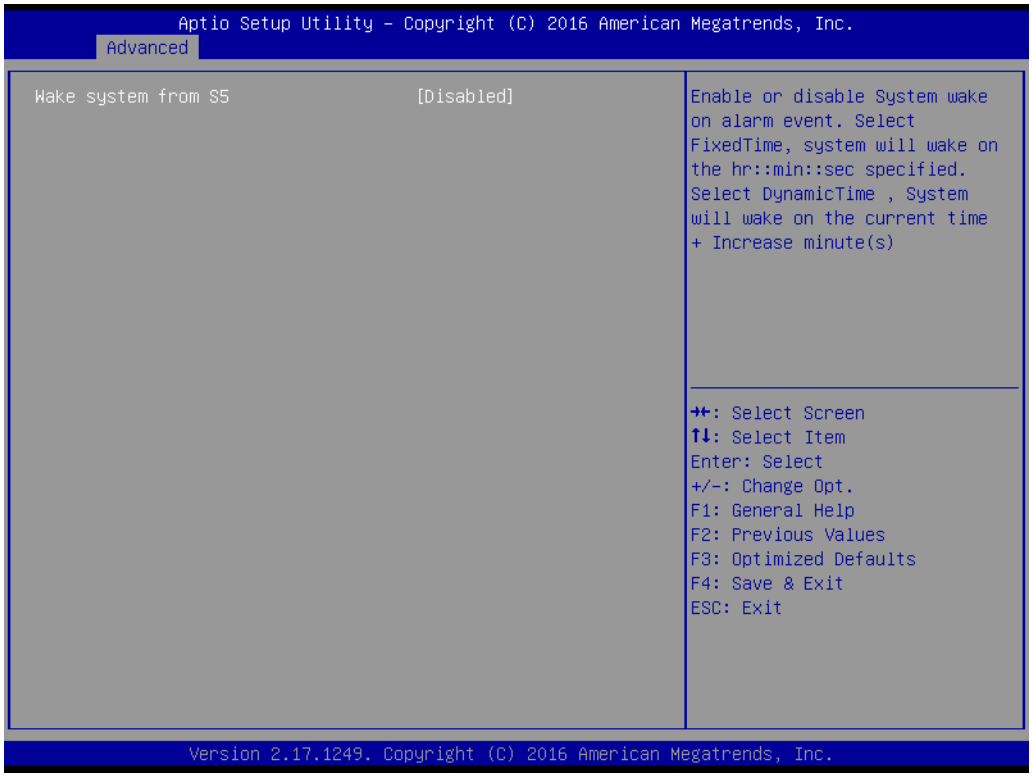




- **Digital I/O Configuration**
  Configure the digital I/O pins
- **CPU Warning Temperature**
  This item allows users to change settings of CPU(PECI) Warning Temperature. The default setting is "Disable".

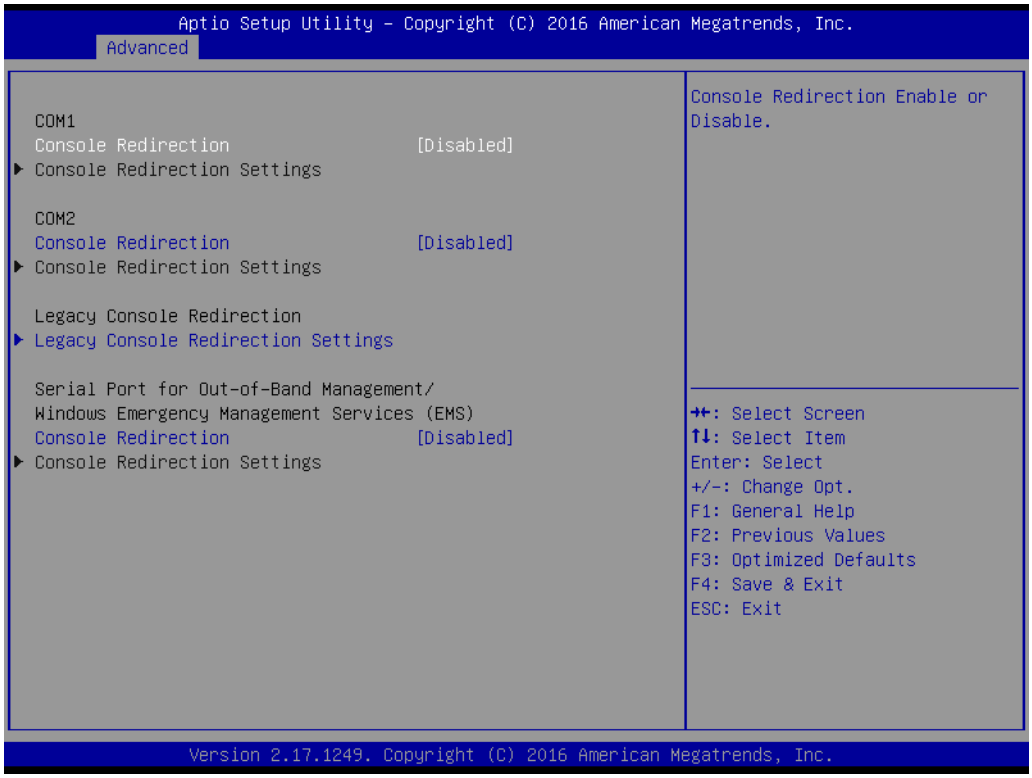
- **CPU Shutdown Temperature**
  This item allows users to Change Settings of CPU(PECI) ACPI Shutdown Temperature.
  The default setting is "Disable".
- **Wake on Ring**
  Enable or disable wake on ring
- **Watch Dog Timer**
  Enable or Disable WatchDog and timer setting.

3.2.2.4 S5 RTC Wake Setting



- **Wake system from S5**
  Enable or disable system wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Slelect DynamicTime, system will wake on the current time + Increase minutes.

3.2.2.5 Serial Port Console Redirection



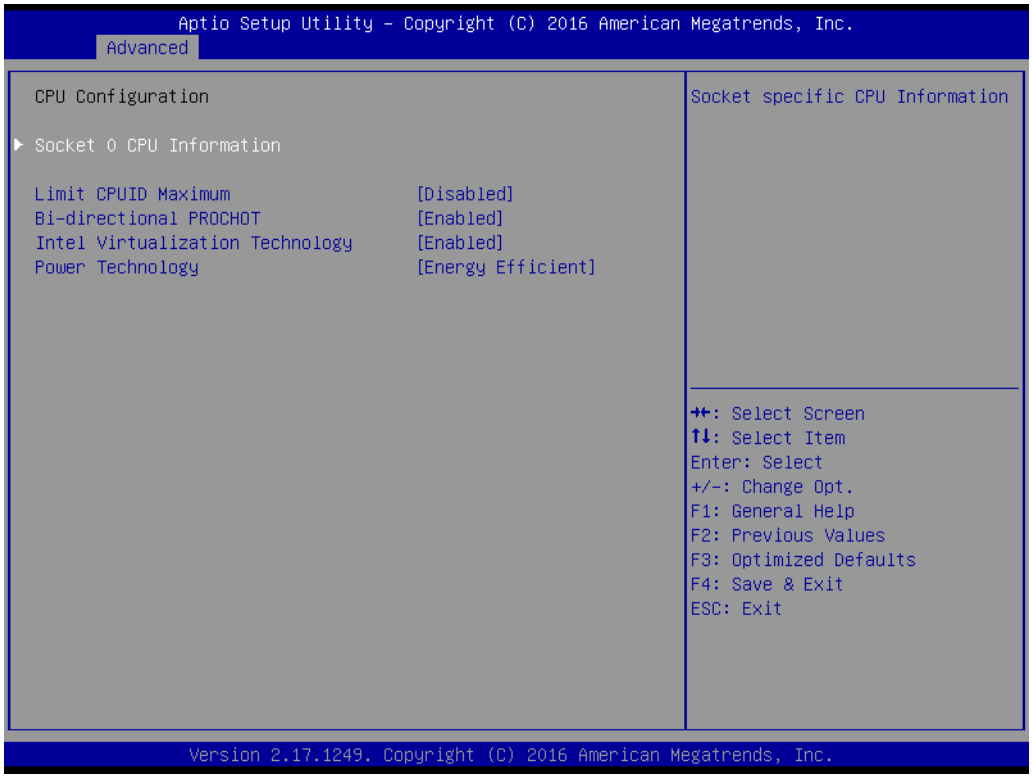
COM1

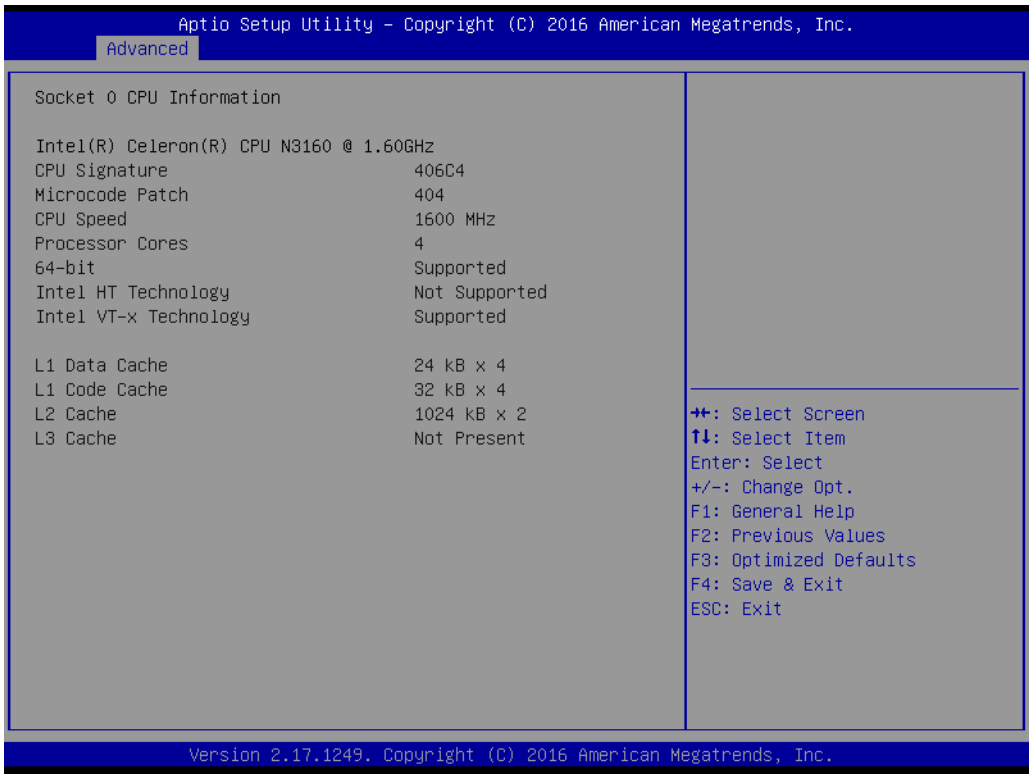
- **Console Redirection**
  This item allows users to enable or disable for "Console Redirection".

COM2

- **Console Redirection**
  This item allows users to enable or disable for "Console Redirection".
- **Legacy Console Redirection**
  Select a COM port to display redirection of Legacy OS and Legacy OPROM Message.
- **Console Redirection setting**
  This item allows users to enable or disable for "Console Redirection".
  Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

3.2.2.6 CPU Configuration



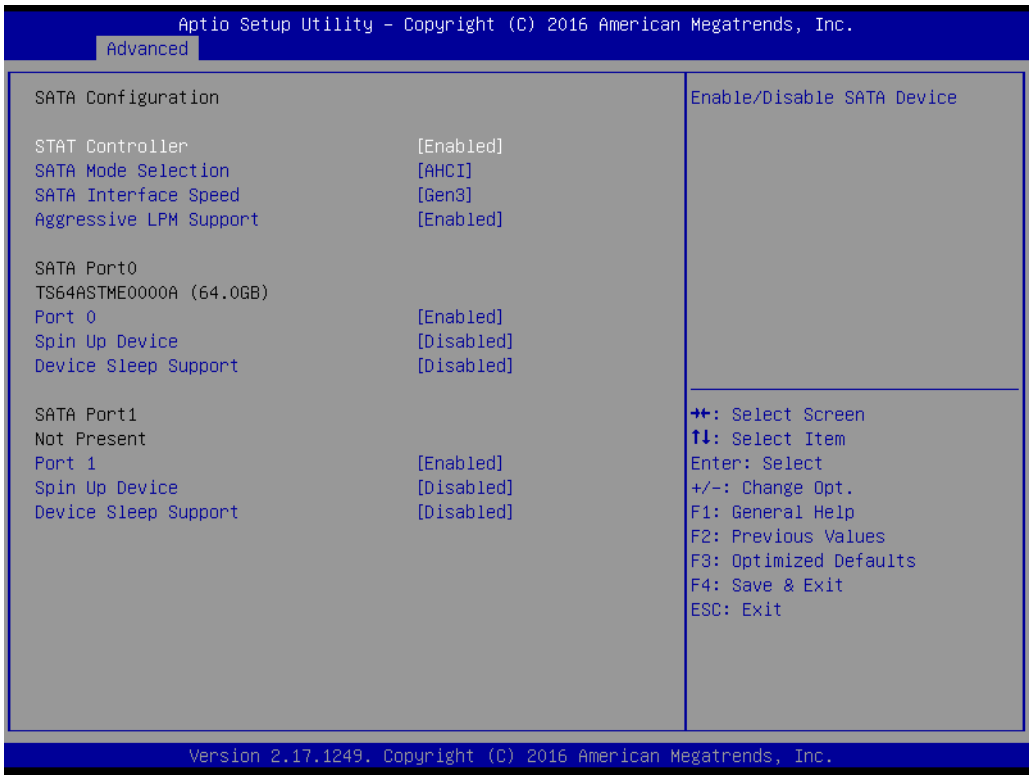


- **Socket 0 CPU Information**
  CPU information overview
- **Limit CPUID Maximum**
  To limit CPUID Maximum

- **Bi-directional PROCHOT**
  Enable or disable Bi-directional PROCHOT.
- **Intel Virtualization Technology**
  Intel Virtualization Technology.
- **Power Technology**
  Disable, Energy Efficient, custom Power management features.

Note! *Selecting custom feature can modify setting of EIST, Turbo, P-Sate coordination, and Package C state limit.*

3.2.2.7 SATA Configuration

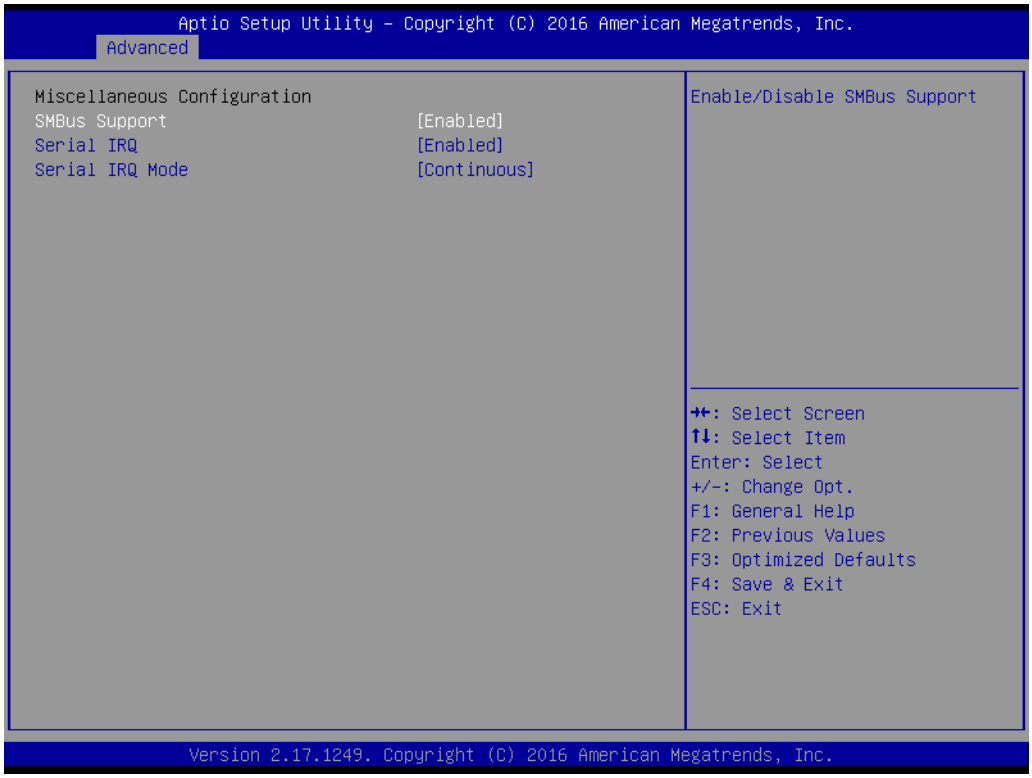


- **SATA Controller(S)**
  Enable or disable for "SATA Controller(S)".
- **SATA Mode Selection**
  AHCI mode only
- **SATA Interface Speed**
  To select Gen3/Gen2/Gen1
- **Aggressive LPM Support**
  Enable or disable PCH to aggressively enter link power state.

Serial ATA Port 0~1

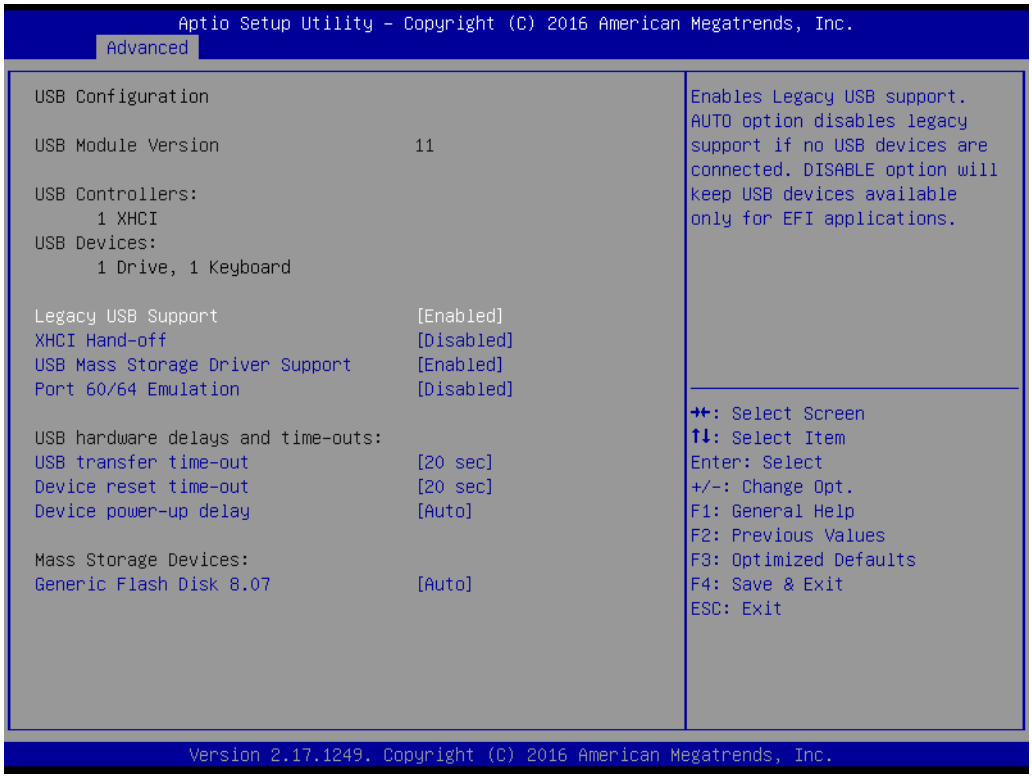
- **Port 0~1**
  Enable or disable Port 0 device
- **Spin Up Device**
  Enable or disable Spin Up Device.
- **Device Sleep Support**
  Enable or disable device sleep support

3.2.2.8 Miscellaneous Configuration



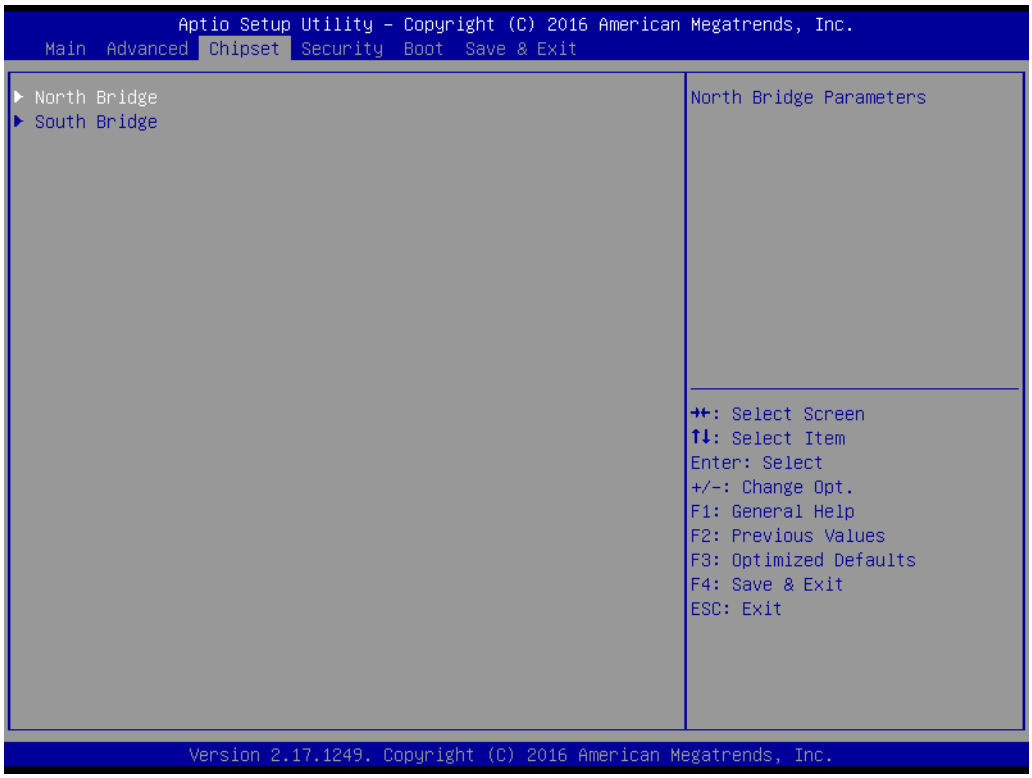
- **SMBus Support**
  Enable or disable SMBus support
- **Serial IRQ**
  Enable or disable Serial IRQ support
- **Serial IRQ Mode**
  Setup Serial IRQ mode and the default is continous

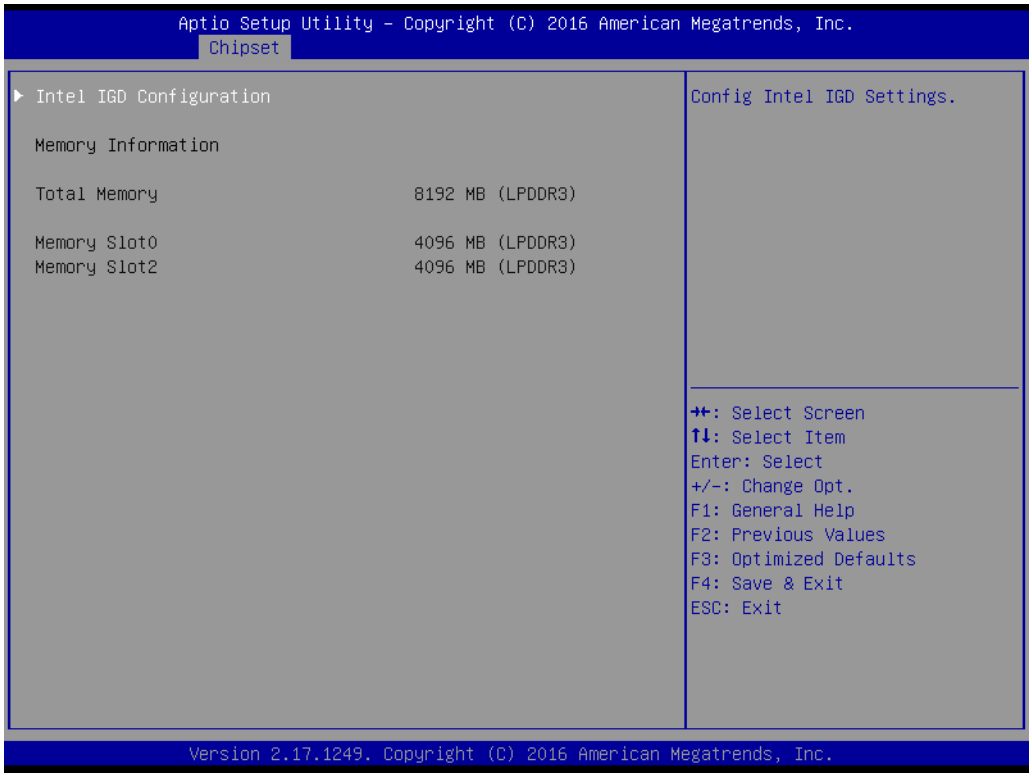
3.2.2.9 USB Configuration

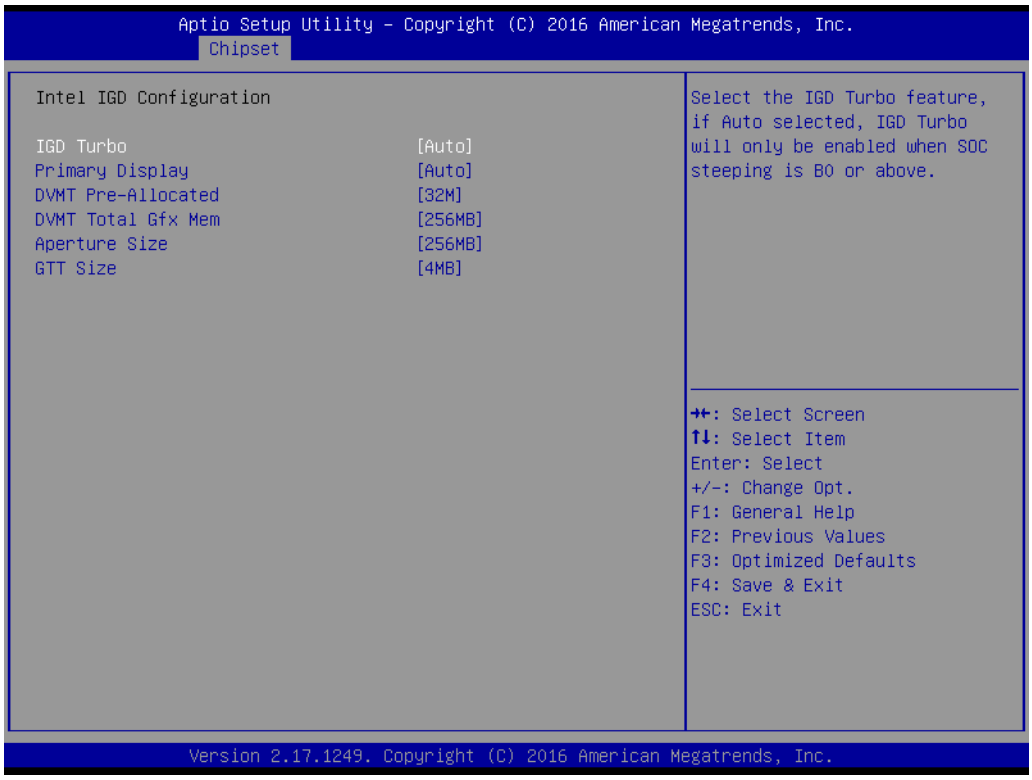


- **Legacy USB Support**
  Enable or disable or set Auto for Legacy USB Support.
- **XHCI Hand-off**
  Enable or disable XHCI Hand-off.
- **USB Mass Storage Driver Support**
  Enable or disable USB Mass Storage Driver Support.
- **Port 60/64 Emulation**
  Enable or disable Port 60/64 Emulation.
- **USB transfer Time-out**
  To set different time mode for USB transfer Time-out.
- **Device reset Time-out**
  To set different time modes for Device reset Time-out.
- **Device power-up delay**
  To set different time mode for Device power-up delay.

3.2.3 Chipset

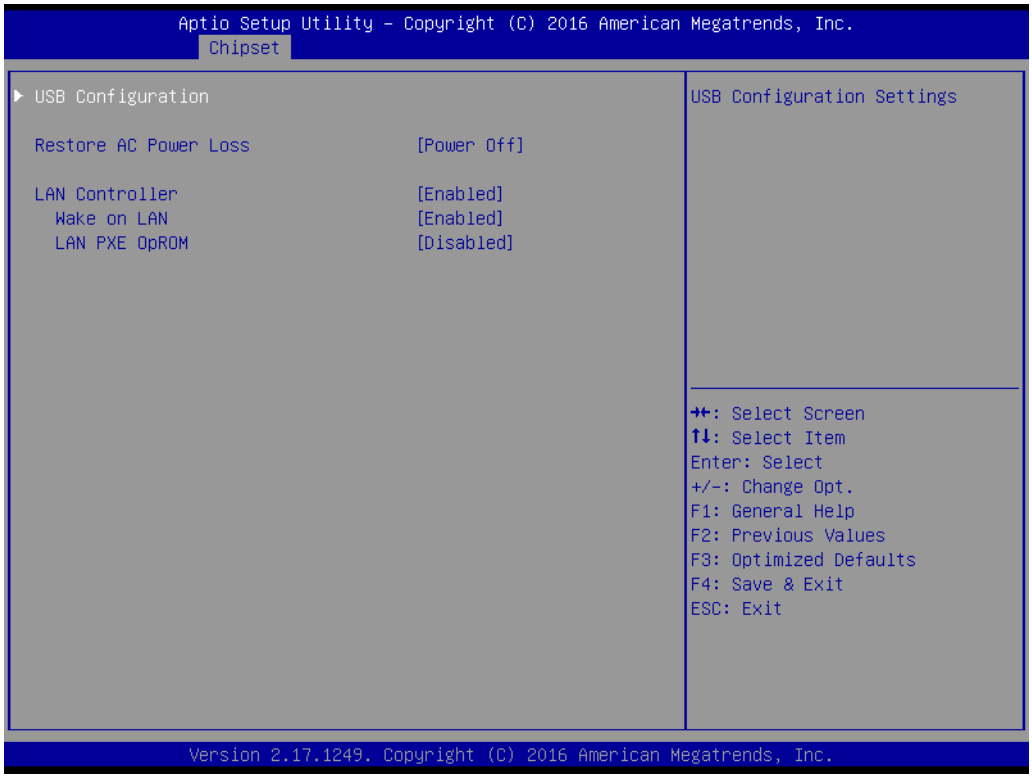

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
North Bridge
South Bridge
North Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.

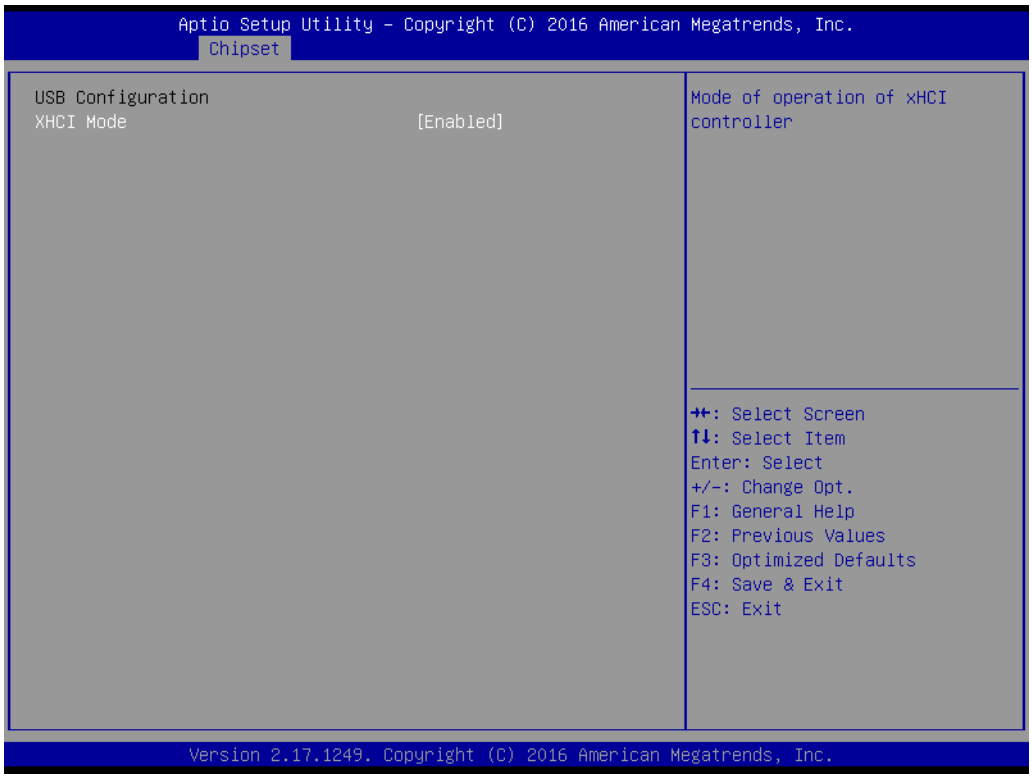

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
Chipset
Intel IGD Configuration
Memory Information
Total Memory 8192 MB (LPDDR3)
Memory Slot0 4096 MB (LPDDR3)
Memory Slot2 4096 MB (LPDDR3)
Config Intel IGD Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.



- **IGD Turbo**
  To enable/disable/auto Intel integrated graphic turbo support
- **Primary Display**
  To select primary display
- **DVMT Pre-Allocated**
  To set DVMT pre-allocated(fixed) capacity used by the internal graphics device.
- **DVMT Total Gfx Mem**
  To set DVMT Total Gfx Mem capacity
- **Aperture Size**
  To set Aperture Size
- **GTT Size**
  To GTT Size

3.2.3.1 USB Configuration

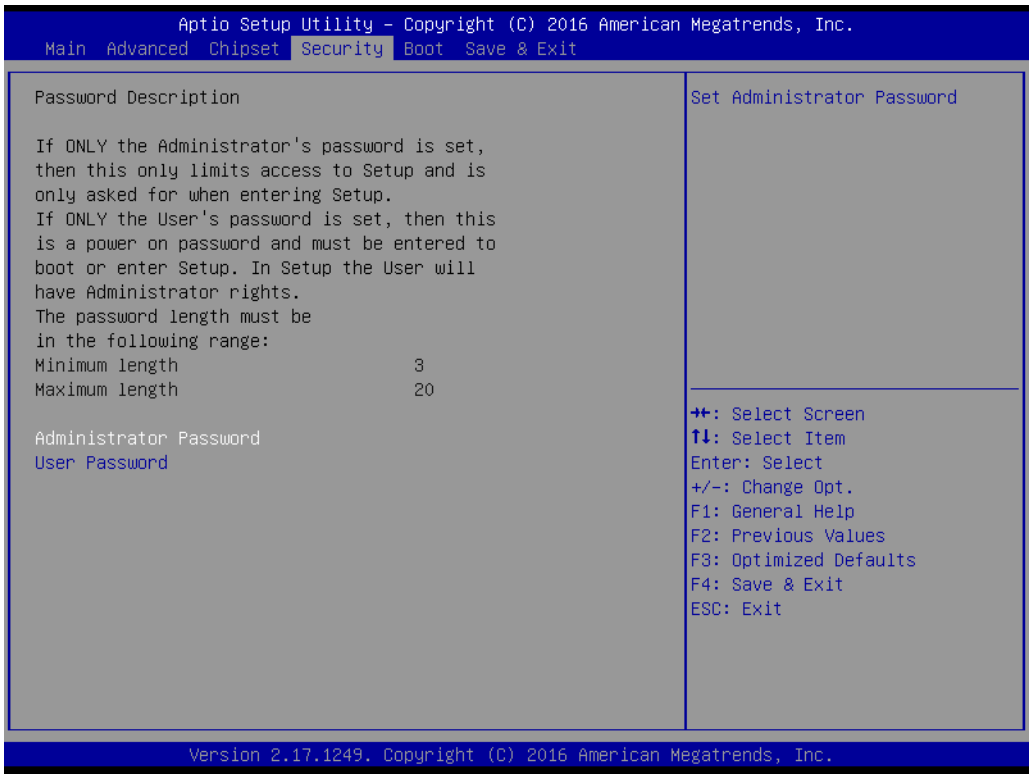




- **USB Configuration**
  Enable or disable XHCI mode
- **Restore AC Power Loss**
  Setup the behavior of Restore AC Power Loss

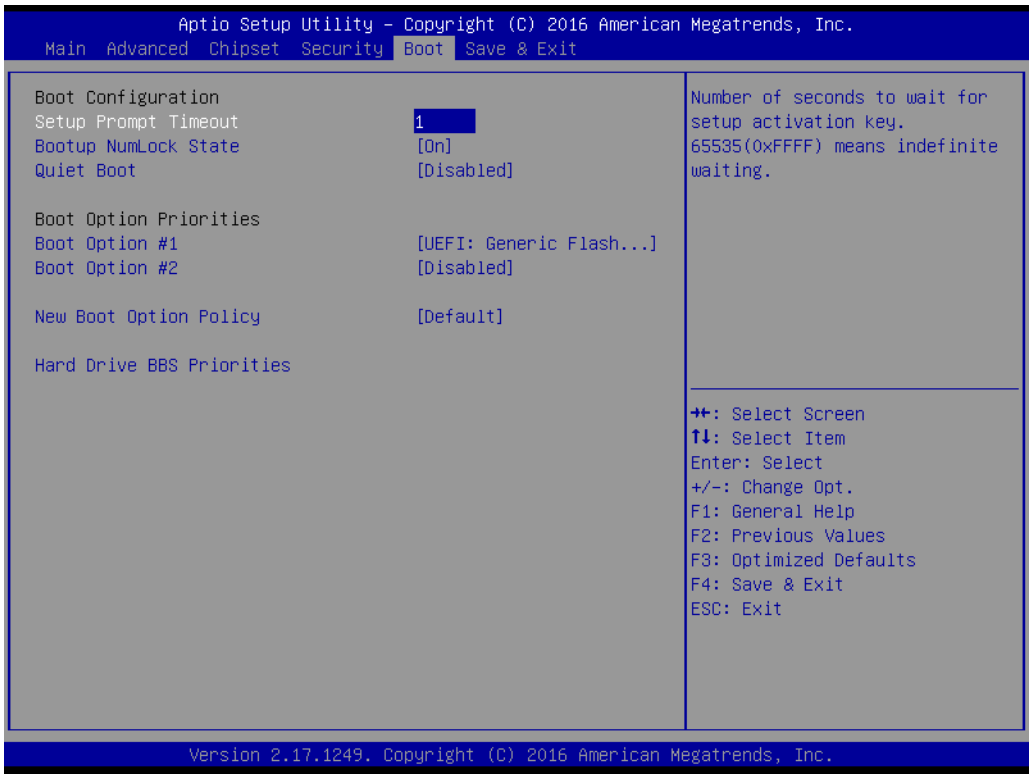
- **LAN Controller**
  Enable or disable Lan controller
- **Wake on LAN**
  Enable or disable Wake on LAN support
- **LAN PXE OpROM**
  Enable or disable LAN PXE support
- **Wake on LAN**
  Enable or disable integrated LAN to wake the system.
- **LAN PXE OpROM**
  Enable or disable boot option for LAN controller

3.2.4 Security



- **Administrator Password**
  This item allows users to set "Administrator Password" if desired.
- **User Password**
  This item allows users to set "User Password" if desired.

3.2.5 Boot

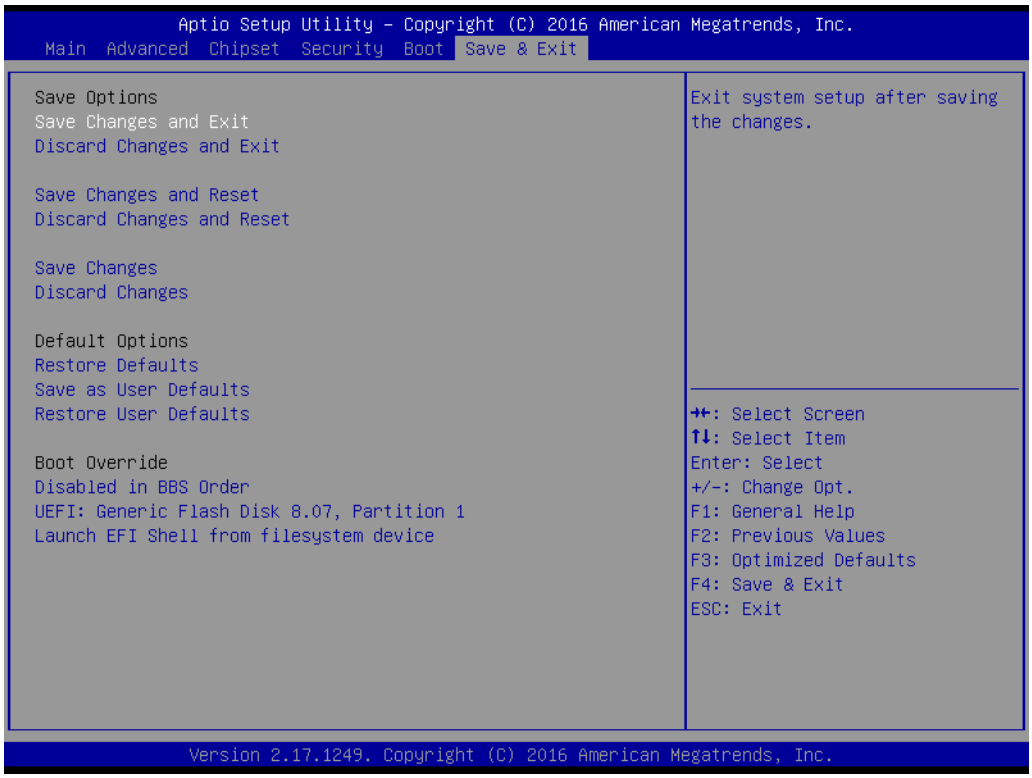


- **Setup Prompt Timeout**
  Number of Seconds to wait for setup activation kay. 65535 (0xFFFF) means indefinite waiting.
- **Bootup NumLock State**
  This item allows users to set "Bootup NumLock State" either On or Off.
- **Quiet Boot**
  This item allows users to disable or enable "Quiet Boot".
- **Boot Option Priorities**

Note! *These items will display based on how many devices are attached.*

– Boot Option #1
– Boot Option #2

3.2.6 Save & Exit



- **Save Changes and Exit**
  This item allows users to Save Changes and Exit.
- **Discard Changes and Exit**
  This item allows users to Discard Changes and Exit.
- **Save Changes and Reset**
  This item allows users to Save Changes and Reset.
- **Discard Changes and Reset**
  This item allows users to Discard Changes and Reset.
- **Save Changes**
  This item allows users to Save Changes.
- **Discard Changes**
  This item allows users to Discard Changes.
- **Restore Defaults**
  This item allows users to restore factory defaults.
- **Save as User Defaults**
  This item allows users to Save as User Defaults.
- **Restore User Defaults**
  This item allows users to Restore User Defaults.
- **Launch EFI Shell from file system device**
  Attempts to Launch EFI Shell application (Shell.efi) form one of the available file system devices.

Chapter 4

Software Installation

This chapter introduces driver installation.

4.1 Chipset Software Installation Utility

4.1.1 Before you begin

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the AIIS-1200 are located on the software installation CD.

Note! *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.1.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0 support
- Identification of Intel chipset components in the Device Manager.

Note! *The chipset driver is used for the following versions of Windows, and it has to be installed before installing all the other drivers:*

- *Windows 10 (64bit)*
- *Windows 8.1 (64-bit)*
- *Windows 7 (32-bit)*
- *Windows 7 (64-bit)*

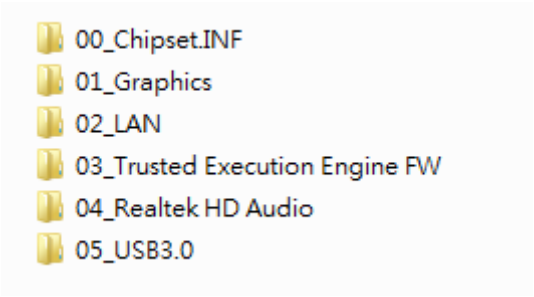
Caution! *Since Intel® Braswell Platform only features USB3.0 host controller and Windows 7 official OS image excludes USB3.0 driver, end-user can use a SATA interface driver (SATA CD-RAM or CFast or m-SATA) or USB3.0 driver preloaded Windows 7 image to install Windows 7 OS.*

Please contact with regional AE for preloaded Windows 7 image

Advantech supports a powerful Windows 7 OS that includes USB3.0 (EFI OS not supported). It can help you install Win7 OS easily. If you need this option, please contact your distributor or sales representative.

4.1.3 Windows 10 / Windows 8.1/ Windows 7

Put the driver CD into the system's CD-ROM drive. You will see driver folder items. Select "01 Chipset" folder and navigate to setup file to execute driver installation.



4.2 Integrated Graphic Device Setup

4.2.1 Introduction

Intel® Braswell processors are integrated graphics controller.You need to install the VGA driver to enable this function including the following features:

- Optimized integrated graphic solution: Intel® Graphics Flexible Display Interface supports versatile display options and 32-bit 3D graphics engine for dual independent displays, enhanced display modes for widescreen flat panels for extended, twin, and cloned dual display modes, and optimized 3D support delivers an intensive and realistic visual experience.

Caution! *Intel knewn issue: 15.40 series VGA drivers cannot complete driver installation once IGD turbo function is disable.*

4.2.2 Windows 10 /Windows 8.1 /Windows 7 Driver Setup

Note! *Before installing these drivers, make sure the INF driver has been installed in your system. See Chapter 4 for information on installing the INF driver.*

Insert the driver CD into your system's CD-ROM drive. You can see the driver folders. Navigate to the "02 Graphic" folder and click the executable file to complete the installation of the drivers for Windows 7, Windows 8 and Windows 10.

4.3 LAN Configuration

4.3.1 Introduction

AIIS-1200 has single Gigabit Ethernet LANs, I210IT, via dedicated PCI Express x1 lanes that offer bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet at 1000 Mbps.

4.3.2 Features

- 10/100/1000Base-T Ethernet controller
- 10/100/1000Base-T triple-speed MAC
- Full duplex at 10, 100, or 1000 Mbps and half duplex at 10 or 100 Mbps
- Wake-on-LAN (WOL) support
- PCIe x1 host interface

4.3.3 Installation

Note! *Before installing the LAN drivers, make sure the CSI utility has been installed on your system. See Chapter 4 for information on installing the CSI utility.*

The integrated Intel® gigabit Ethernet controller supports all major network operating systems. However, the installation procedure varies with different operating systems. In the following sections, refer to the one that provides the driver setup procedure for the operating system you are using.

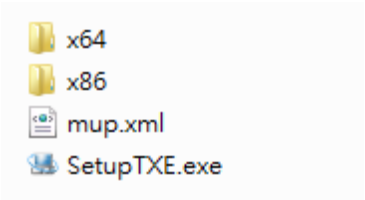
4.3.4 Windows 10 /Windows 8.1 /Windows 7

Insert the driver CD into your system's CD-ROM drive. Select folder "02_LAN" and navigate to sub-folder to find your proper OS and to finish the driver installation.



4.4 Intel TXE (Trusted Execution Engine) Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "02_LAN" and navigate to sub-folder to find your proper OS and to finish the driver installation.



4.5 Install USB3.0

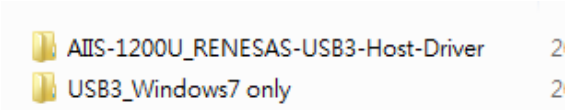
4.5.1 Introduction

AIIS-1200 provides 8x USB 3.0 and the data transfer rate of USB3.0 (5Gb/s) is 10 times to USB2.0 (480 Mbps).

Insert the driver CD into your system’s CD-ROM drive. Navigate to the "04_USB3.0" to install the drier.

Note!

- *Windows 7 driver is for Intel USB3.0 controller and Windows 8.1/10 includes in box USB3.0 driver*
- *AIIS-1200U_RENESAS-USB3-Host-Driver is for AISS-1200U sku*



Appendix A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

The AIIS-1200's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1.1 Watchdog Timer Overview

The watchdog timer is built into the super I/O controller NCT6106D. It provides the following user-programmable functions:

- It can be enabled and disabled by user program
- Timer can be set from 1 to 255 seconds or 1 to 255 minutes
- Generates an interrupt or resets signal if the software fails to reset the timer before time-out

A.1.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. You must first assign the address of register by writing an address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

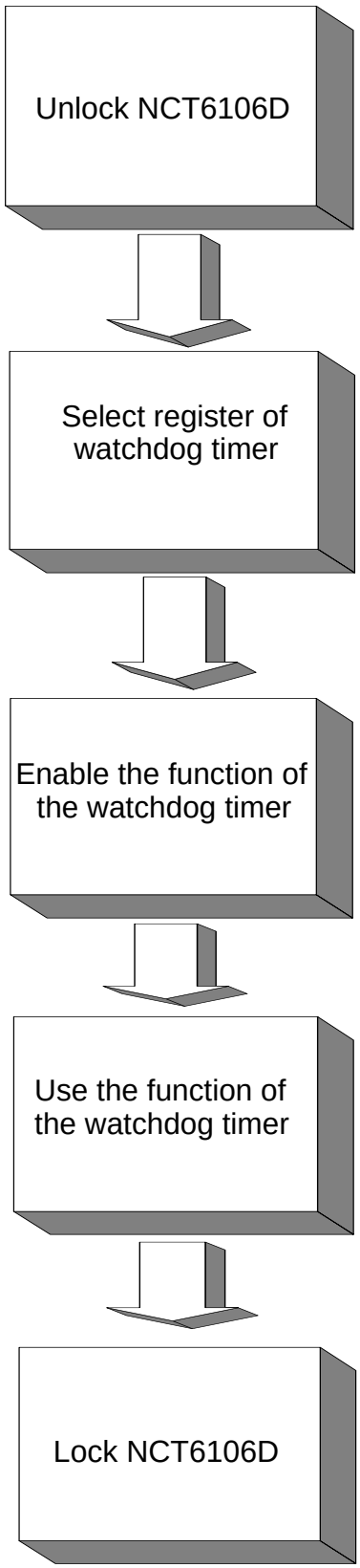

Unlock NCT6106D
Select register of watchdog timer
Enable the function of the watchdog timer
Use the function of the watchdog timer
Lock NCT6106D

Table A.1: Watchdog Timer Registers		
Address of Register (2E)	**Attribute**	
Read/Write	Value (2F) & description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock the NCT6106D.
07 (hex)	write	Write 08 (hex) to select register of watchdog timer.
30 (hex)	write	Write 01 (hex) to enable the function of the watch-dog timer. Disabled is set as default.
F0 (hex)	write	Set seconds or minutes as units for the timer. Write 0 to bit 3: set second as counting unit. [default] Write 1 to bit 3: set minutes as counting unit.
F1 (hex)	write	0: stop timer [default] 01~FF (hex): The amount of the count, in seconds or minutes, depends on the value set in register F5 (hex). This number decides how long the watch-dog timer waits for strobe before generating an interrupt or reset signal. Writing a new value to this register can reset the timer to count with the new value.
F2 (hex)	read/write	Bit 7:Write 1 to enable mouse to reset the timer, 0 to disable[default]. Bit 6: Write 1 to enable key-board to reset the timer, 0 to disable.[default] Bit 5: Write 1 to generate a timeout signal immedi-ately and automatically return to 0. [default=0] Bit 4: Read status of watchdog timer, 1 means timer is “timeout”.
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the watchdog timer 2.

A.1.3 Example Program

1. Enable watchdog timer and set 10 sec. as timeout interval

```
;----------------------------------------------------------
Mov dx,2eh ; Unlock NCT6106D
Mov al,87h
Out dx,al
Out dx,al
;----------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;----------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;----------------------------------------------------------
Dec dx ; Set second as counting unit
Mov al,0f0h
Out dx,al
Inc dx
In al,dx
And al,not 08h
Out dx,al
;----------------------------------------------------------
Dec dx ; Set timeout interval as 10 seconds and start counting
Mov al,0f1h
Out dx,al
Inc dx
Mov al,10
Out dx,al
;----------------------------------------------------------
Dec dx ; Lock NCT6106D
Mov al,0aah
Out dx,al
```

2. Enable watchdog timer and set 5 minutes as timeout interval

```
;----------------------------------------------------------
Mov dx,2eh ; Unlock NCT6106D
Mov al,87h
Out dx,al
Out dx,al
```

```
;-------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;-------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;-------------------------------------------------------
Dec dx ; Set minute as counting unit
Mov al,0f0h
Out dx,al
Inc dx
In al,dx
Or al,08h
Out dx,al
;-------------------------------------------------------
Dec dx ; Set timeout interval as 5 minutes and start counting
Mov al,0f1h
Out dx,al
Inc dx
Mov al,5
Out dx,al
;-------------------------------------------------------
Dec dx ; Lock NCT6106D
Mov al,0aah
Out dx,al
```

3. Enable watchdog timer to be reset by mouse

```
;-------------------------------------------------------
Mov dx,2eh ; Unlock NCT6106D
Mov al,87h
Out dx,al
Out dx,al
;-------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;-------------------------------------------------------
```

```
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be reset by mouse
Mov al,0f2h
Out dx,al
Inc dx
In al,dx
Or al,80h
Out dx,al
;--------------------------------------------------------
Dec dx ; Lock NCT6106D
Mov al,0aah
Out dx,al
```

4. Enable watchdog timer to be reset by keyboard

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock NCT6106D
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be strobed reset by keyboard
Mov al,0f2h
Out dx,al
Inc dx
In al,dx
Or al,40h
Out dx,al
```

```
;------------------------------------------------------------
Dec dx ; Lock NCT6106D
Mov al,0aah
Out dx,al
```

5. Generate a time-out signal without timer counting

```
;------------------------------------------------------------
Mov dx,2eh ; Unlock NCT6106D
Mov al,87h
Out dx,al
Out dx,al
;------------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;------------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;------------------------------------------------------------
Dec dx ; Generate a time-out signal
Mov al,0f2h
Out dx,al ;Write 1 to bit 5 of F7 register
Inc dx
In al,dx
Or al,20h
Out dx,al
;------------------------------------------------------------
Dec dx ; Lock NCT6106D
Mov al,0aah
Out dx,al
```

Appendix B

Programming the GPIO

B.1 Supported GPIO Register

Bellow are detailed description of the GPIO addresses and programming sample.

B.1.1 GPIO Registers

CRE4 (GP10-GP17 I/O selection register. Default 0xFF)

When set to '1', the respective GPIO port is programmed as an input port.

When set to '0', the respective GPIO port is programmed as an output port.

CRE5 (GP10-GP17 data register. Default 0x00)

If a port is programmed to be an output port, then its respective bit can be read/written.

If a port is programmed to be an input port, then its respective bit can only be read.

CRE6 (GP10-GP17 inversion register. Default 0x00)

When set to '1', the incoming/outgoing port value is inverted.

When set to '0', the incoming/outgoing port value is the same as in data register.

Extended Function Index Registers (EFIRs)

The EFIRs are write-only registers with port address 2Eh or 4Eh on PC/AT systems.

Extended Function Data Registers (EFDRs)

The EFDRs are read/write registers with port address 2Fh or 4Fh on PC/AT systems

B.1.2 GPIO Example Program

```
------------------------------------------------------------
Enter the extended function mode, interruptible double-write
------------------------------------------------------------
MOV DX, 2EH
MOV AL, 87H
OUT DX, AL
OUT DX, AL
------------------------------------------------------------
Configure logical device 7(GP10~GP17), configuration register CRE4,CRE5,CRE6
------------------------------------------------------------
MOV DX, 2EH
MOV AL, 07H ; Point to Logical Device Number Reg.
OUT DX, AL
MOV DX, 2FH
MOV AL, 07H ; Select logical device 7
OUT DX, AL
------------------------------------------------------------
Configure GPIO1 I/O Register
------------------------------------------------------------
MOV DX, 2EH
MOV AL, E4H
OUT DX, AL
MOV DX, 2FH
MOV AL, ??H ; 0: The respective GPIO1 PIN is programmed as an output port
                ;1: The respective GPIO1 PIN is programmed as an input port.
 OUT DX, AL
------------------------------------------------------------
Configure GPIO1 Inversion Register
------------------------------------------------------------
MOV DX, 2EH
MOV AL, E6H
OUT DX, AL
MOV DX, 2FH
MOV AL, 00H ; Set GPIO is normal not inverter
OUT DX, AL
------------------------------------------------------------
Configure GPIO1 Data Register
------------------------------------------------------------
MOV DX, 2EH
MOV AL, E5H
OUT DX, AL
MOV DX, 2FH
MOV AL, ??H ; Put the output value into AL
OUT DX, AL
------------------------------------------------------------
Exit extended function mode |
------------------------------------------------------------
MOV DX, 2EH
MOV AL, AAH
OUT DX, AL
```

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