ASTUT-W155-PC1S
ASTUT-W153-PC1S
ASTUT-W153-PC

Industrial All-in-One Panel PC

User's Manual

Version 1.0a
(Jan. 2018)

iBASE

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Compliance

CE

This is a class A product. In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.

FC

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.
Operation is subject to the following two conditions:

- This product may not cause harmful interference
- This product must accept any interference received including interference that may cause undesired operation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception which can be determined by turning the equipment off and on, you may correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the distributor or an experienced radio/TV technician for help.

WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

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Green IBASE

This product is compliant with the current RoHS restrictions and prohibits use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

Important Safety Information

Carefully read the precautions before using the device.

Environmental conditions:

- Lay the device horizontally on a stable and solid surface during installation in case the device may fall, causing serious damage.
- Leave plenty of space around the device for ventilation.
- Use this product in environments with ambient temperatures between 0˚C and 50˚C.
- DO NOT LEAVE THIS DEVICE IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY BE BELOW -20° C OR ABOVE 60° C. To prevent from damages, the device must be used in a controlled environment.
- Keep the device away from humidity to avoid fog or condensation from accumulating on the inner surface of the panel.

Care for your IBASE products:

- Before cleaning the device, turn it off and unplug all cables such as power in case a small amount of electrical current may still flow.
- Use neutral cleaning agents or diluted alcohol to clean the device chassis with a cloth. Then wipe the chassis with a dry cloth.
- Vacuum the dust with a computer vacuum cleaner to prevent the air vent or slots from being clogged.

WARNING

Attention during use:

- Operate with fingers on the panel. Sharp-pointed articles are prohibited.
- Do not use this product near water.
- Do not spill water or any other liquids on your device.
- Do not place heavy objects on the top of the device.
- Operate this device from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your distributor or local power company.
- Ensure that you apply correctly the power supply voltage.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure that the total ampere rating of the product plugged into the extension cord does not exceed its limits.

Avoid Disassembly

You are not suggested to disassemble, repair or make any modification to the device. Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, even bodily injury or property damage, and will void any warranty.

CAUTION

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

* Products, however, that fail due to misuse, accident, improper installation or unauthorized repair shall be treated as out of warranty and customers shall be billed for repair and shipping charges.

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Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - The error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software in use (such as OS and application software, including the version numbers)

3. If repair service is required, you can download the RMA form at http://www.ibase.com.tw/english/Supports/RMAService/. Fill out the form and contact your distributor or sales representative.

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Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Overview
- Dimensions

1.1 Introduction

ASTUT-W155-PC1S, ASTUT-W153-PC1S and ASTUT-W153-PC are 15.6" industrial projected touch panel PCs. With the Intel® Pentium® N3710 / 7th or 6th Gen. Core™ i5 based processor, the device carries the level of IP65 ingress protection for the front bezel to provide good quality of water-tight. It is able to be operated at the ambient operating temperature ranging from 0 to 50 °C, and even from -20 to 60 °C for storage.

1.2 Features

- Full flat bezel design with projected capacitive touch screen
- Optional digitizer touch pen
- Optional integrated wireless communications, such as WiFi / BT / 3G / 4G LTE / RFID
- I/O cover for cables arrangement
- Integrated aluminum housing and perfect thermal design
- Wide-range DC power input 12V to 24V
- Intel® Pentium® N3710 / 7th or 6th Gen. Core™ i5 6300U/7300U

1.3 Packing List

Your product package should include the items listed below. If any of the items below is missing, contact the distributor or the dealer from whom you purchased the product.

- ASTUT-W155-PC1S / ASTUT-W153-PC1S / ASTUT-W153-PC x 1
- I/O Cover x 1
- 3-pin Terminal Block Connector (male) x 1
- Wall Mount Kit x 1
- Screws for Wall Mount Kit x 12
- Ground Cable x 1
- Cable Tie Base x 1

1.4 Optional Accessories

IBASE provides optional accessories as follows. Please contact us or your dealer if you need any.

- Power Adapter
- Power Cord
- HDD Bracket (for ASTUT-W155-PC1S only)
- WiFi Cable Kit

1.5 Specifications

Product Name	ASTUT-W155-PC1S	ASTUT-W153-PC1S	ASTUT-W153-PC
System			
Motherboard	IBP900	IBP800-3710	
Operating System	Windows • 10 (64-bit) • 8.1 (64-bit) • 7 (64-bit) (for CPU i5-6300U 2.4 GHz SKU only)	Windows • 10 (64-bit) • 8.1 (64-bit) • 7 (64-bit)	
CPU	Intel® 7th / 6th Core™ • i5-6300U 2.4 GHz • i5-7300U 2.4 GHz	Intel® Pentium® N3710 1.6 GHz	
Chipset	Integrated		
Memory	2 x DDR4 2133 SO-DIMM 4 GB, up to 16 GB	1 x DDR3L SO-DIMM 4 GB, up to 8 GB	
Storage	M.2 (M2280) (**Optional:** 2.5” HDD /SSD)	2.5” HDD/SSD	
Graphics	Integrated Intel® Gfx	Intel® HD graphics Gen. 8	
Super I/O	Fintek F81846AD	Fintek F81866AD	
Audio Codec	Realtek ALC283	Realtek ALC269	
Power Supply	DC-In 12 ~ 24V		
BIOS	AMI BIOS		
Watchdog	Watchdog Timer 256 segments, 0, 1, 2…255 sec/min		
iSmart	N/A	Yes (auto-scheduler / power resume)	
Chassis	Aluminum silver with front bezel hairline		
Membrane Control	None		
Mounting	Panel mount / VESA 75 x 75 mm, 100 x 100 mm		
Dimensions (W x H x D)	468 x 260 x 51.1 mm (18.43” x 10.24” x 2.01”)		
Net Weight	7 kg (15.43 lb)	6 kg (13.23 lb)	
Ingress Protection	IP65 for front bezel		
Certificate	CE, FCC Class B, LVD		

Product Name	ASTUT-W155-PC1S	ASTUT-W153-PC1S	ASTUT-W153-PC
Display & Touchscreen			
Display Type	15.6” TFT-LCD		
Resolution	Max. 1366 x 768		
Color	Max. 16.7M		
Viewing Angle	H/V: 160° / 160°		
Light Transmission	90 %		
Luminance	300 cd/m2		
Contrast	500:1		
Backlight Lifetime	50000 hrs		
Touch Type	Projected capacitive touch		
Touch Interface	USB		
Light Transmission	85%		
Point of Touch	2		
I/O Ports			
Power	3-pin terminal block		
LAN	2 x GbE RJ45 LAN		
Serial	**4 COM ports:** • COM1: RS-232/422/485 for jumper-less selection under BIOS • COM2/3/4: RS-232 only (COM3/4 are onboard headers.)		
SATA	1 x SATA III connector on board		
USB	4 x USB 3.0	3 x USB 3.0	
Display	• 1 x HDMI • 1 x LVDS dual-channel 24-bit	1 x LVDS dual-channel 24-bit	
Storage	1 x M.2 (M2280) default 64 GB / 1 x 2.5” HDD (optional)	1 x 2.5” SATA slot	
Audio	None	1 x Line-Out	
Internal Expansion Bus	• 1 x Mini-PCIe (x1) slot (full/half-size) with USB • 1 x M.2 (E2230)	• 1 x Mini-PCIe (x1) slot (full/half-size) with USB • 1 x Mini-PCIe (x1) slot (half-size) with USB	• 1 x Mini-PCIe (x1) slot (full/half-size) with USB • 1 x Mini-PCIe (x1) slot (half-size) with USB
Expansion Slot	1 x PCIe (x4)	1 x PCIe (x1) slot	N/A

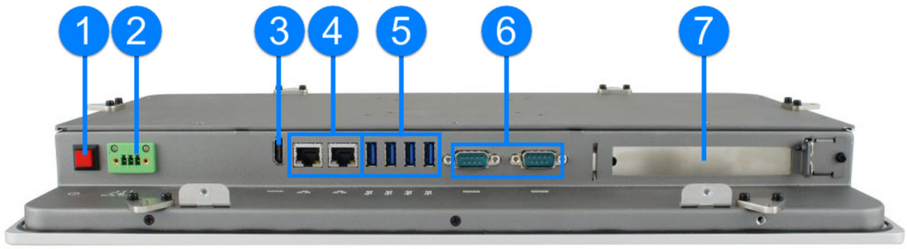
Product Name	ASTUT-W155-PC1S	ASTUT-W153-PC1S	ASTUT-W153-PC
Environment			
Temperature	• **Operating:** 0 ~ 50 °C (32 ~ 122 °F) • **Storage:** --20 ~ 60 °C (-4 ~ 140 °F)		
Relative Humidity	10 ~ 90% (non-condensing)		

All specifications are subject to change without prior notice.

1.6 Overview - ASTUT-W155-PC1S

1.6.1 Oblique & Rear View

1.6.2 I/O View

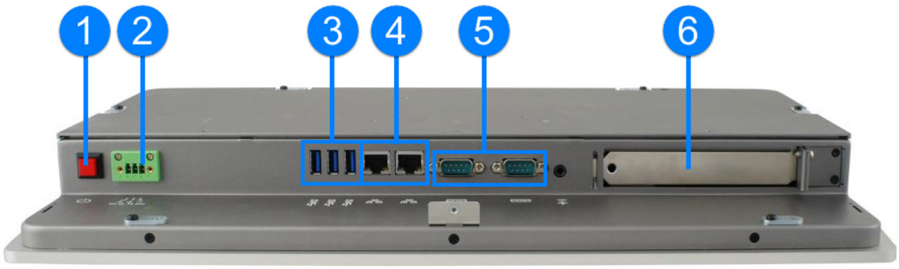


No.	Name	No.	Name
1	Power Button	5	USB 3.0 Port
2	Power Connector	6	COM1 & COM2 Port (from left to right)
3	HDMI Port	7	Expansion PCIe Slot
4	LAN Port (GbE)		

1.7 Overview - ASTUT-W153-PC1S

1.7.1 Oblique & Rear View

1.7.2 I/O View

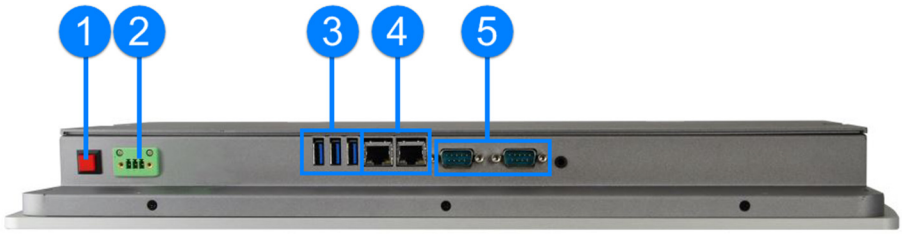


No.	Name	No.	Name
1	Power Button	4	LAN Port (GbE)
2	Power Connector	5	COM1 & COM2 Port (from left to right)
3	USB 3.0 Port	6	Expansion PCIe Slot

1.8 Overview - ASTUT-W153-PC

1.8.1 Oblique & Rear View

1.8.2 I/O View

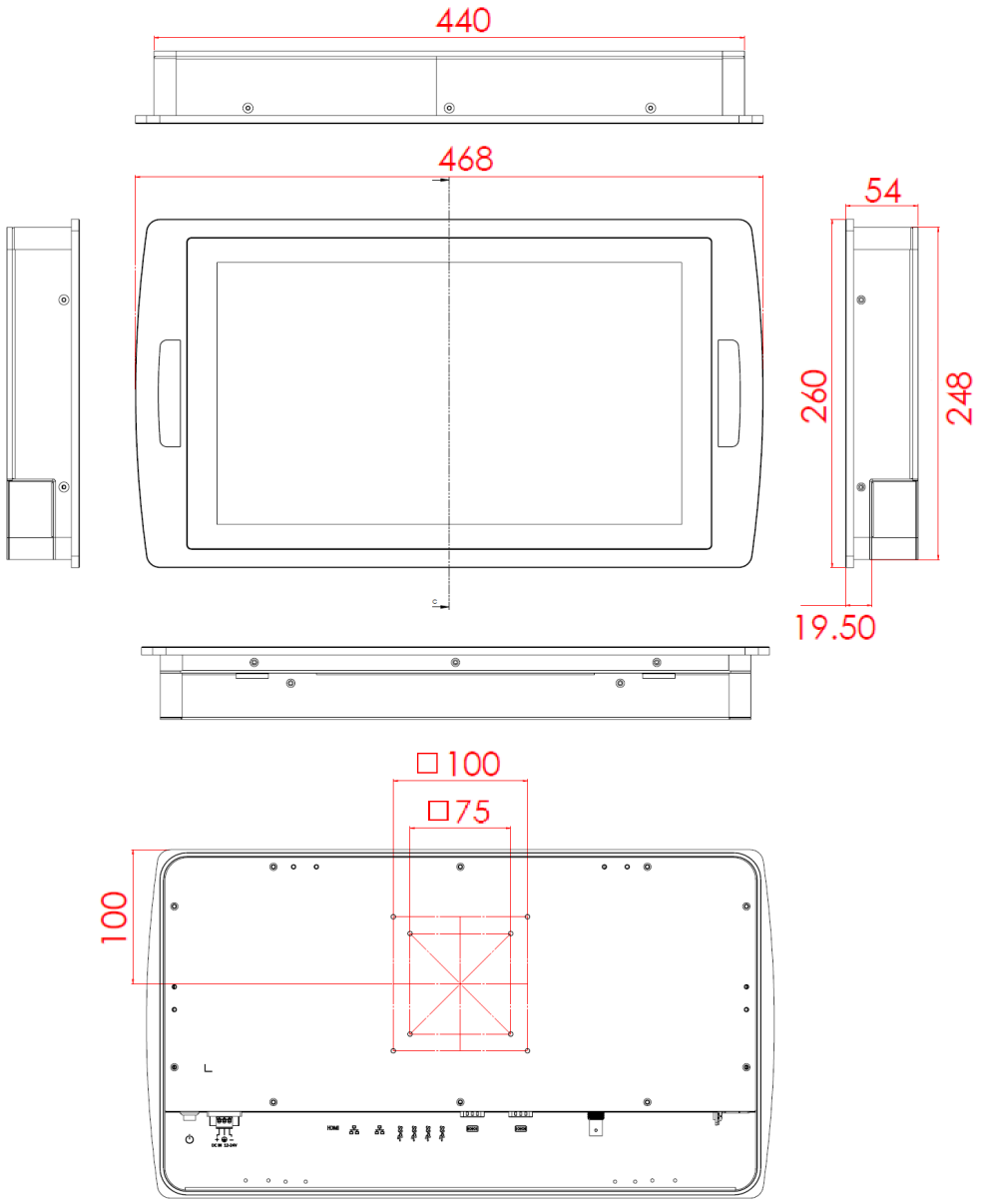


No.	Name	No.	Name
1	Power Button	4	LAN Port (GbE)
2	Power Connector	5	COM1 & COM2 Port (from left to right)
3	USB 3.0 Port		

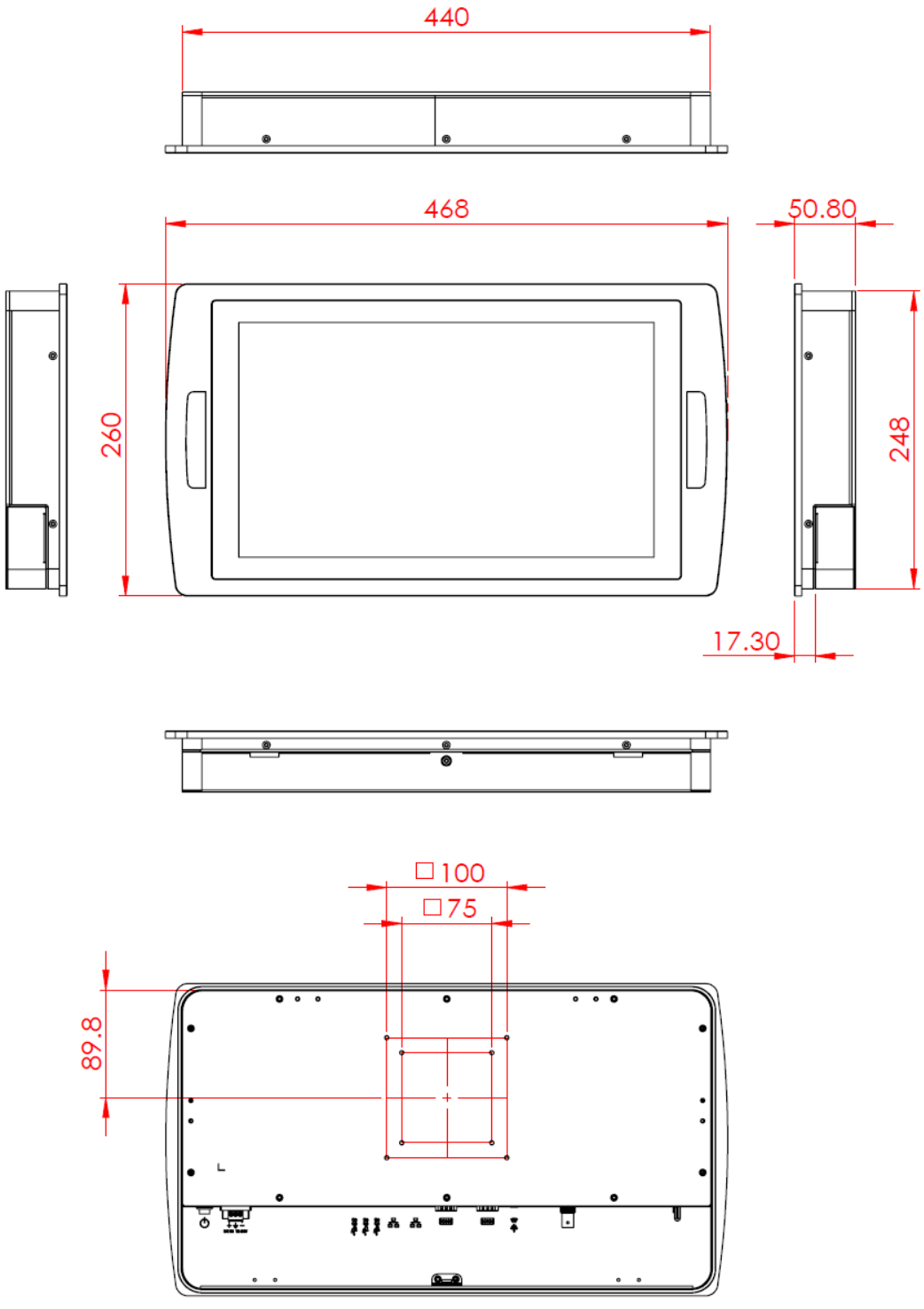
1.9 Dimensions

Unit: mm

ASTUT-W155-PC1S

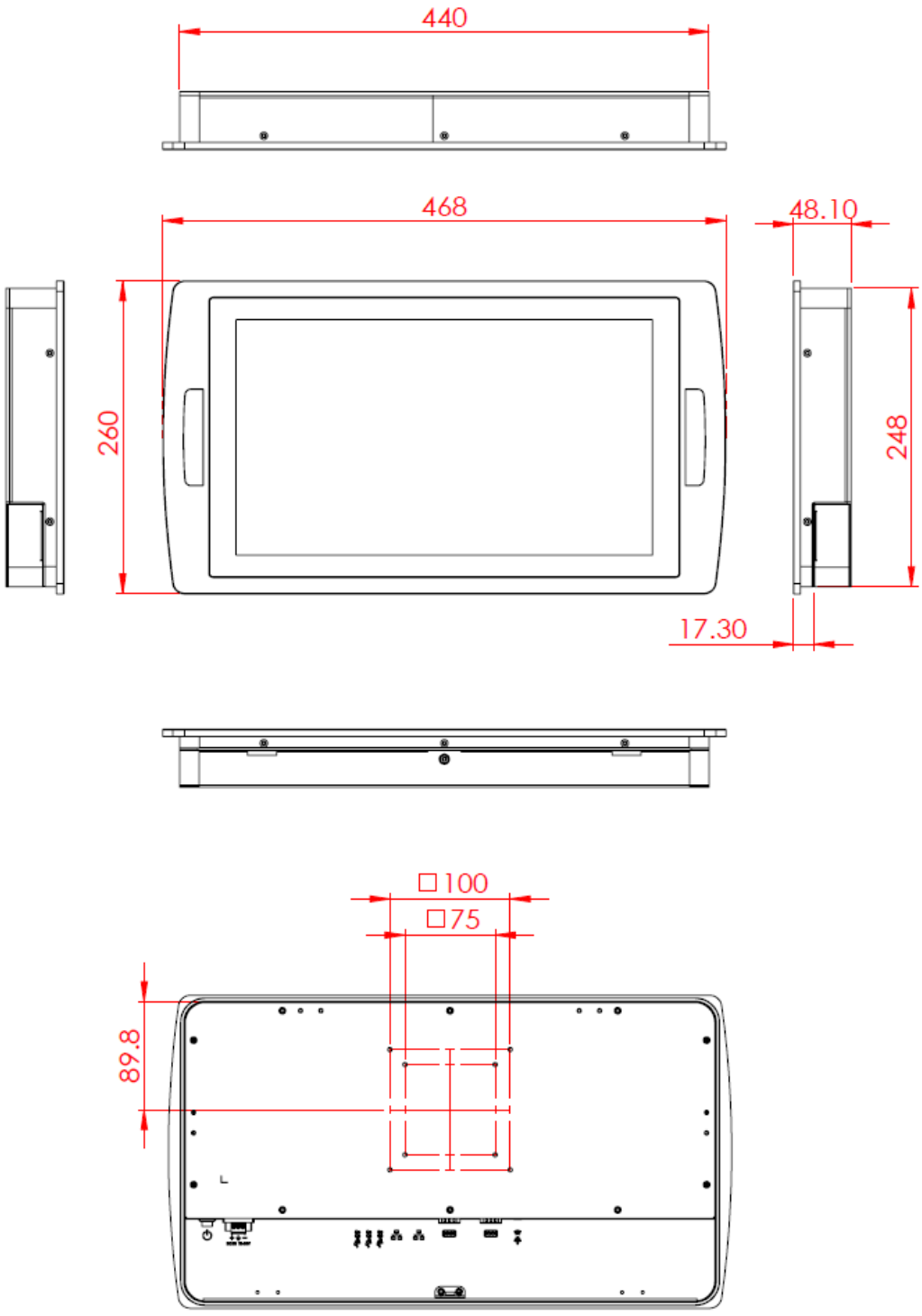


ASTUT-W153-PC1S



Unit: mm

ASTUT-W153-PC



Chapter 2
Hardware Installation & Motherboard Information

The information provided in this chapter includes:

- Memory installation and membrane keypad extension
- Information and locations of connectors

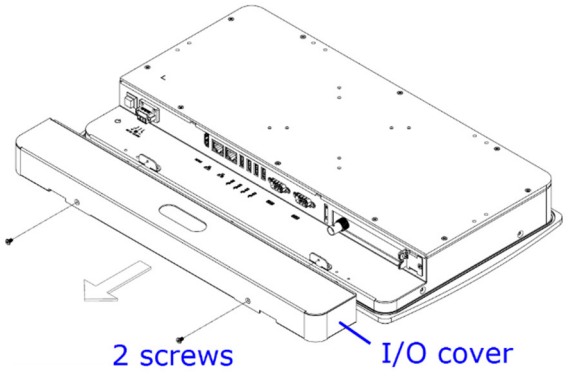
2.1 Hardware Installation

This section is all illustrated by the example of ASTUT-W155-PC1S.

Avoid device disassembly: You are not suggested to disassemble, repair or make any modification to the device. Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, even bodily injury or property damage, and will void any warranty. If you need to make any change to the device, be sure to unplug the power cord of the device and have qualified engineers or technicians for disassembly or installation.

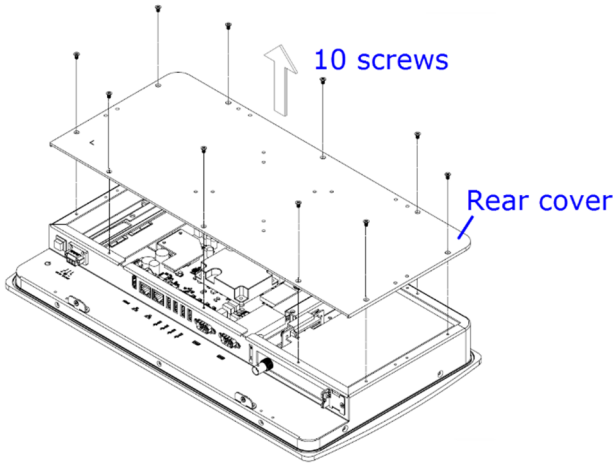
2.1.1 I/O Cover Disassembly

For cables installation, disassemble the I/O cover by putting the device on a solid, stable and completely plane surface with the panel side downwards, and then removing two screws to pull out the cover.



2.1.2 Rear Cover Disassembly

You need to disassemble the device rear cover for the installations of memory module, mini-PCIe card, M.2 card and expansion card. Release 10 screws as shown below to remove the rear cover.

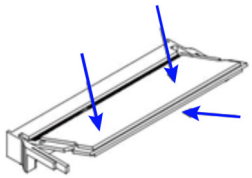


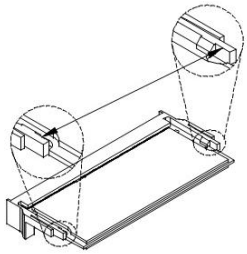
2.1.3 Memory Installation / Replacement

If you need to replace or install the memory modules, perform the following steps after disassembling the device rear cover.

1. Locate the memory slot and align the key of the memory module with that on the memory slot.

2. Insert the module slantwise and gently push the module straight down until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.



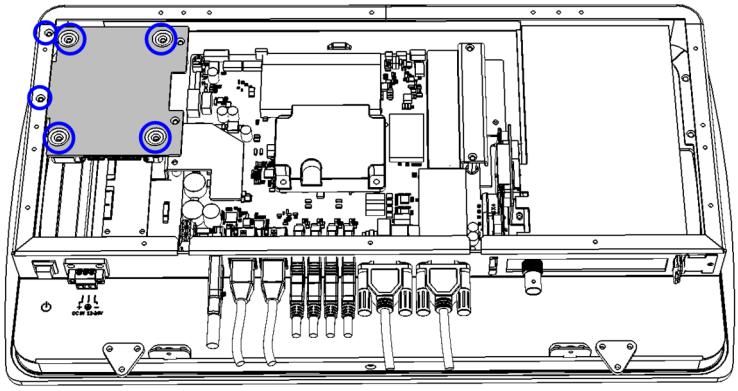


To remove the module, press the clips outwards with both hands.

3. Secure the rear cover back to the device.

2.1.4 HDD Installation / Replacement

1. After disassembling the device rear cover, loosen the following 6 screws to remove the HDD heatsink.



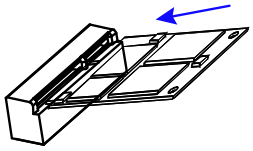
2. Unplug the cables for HDD. Install or replace the HDD, connect it to the motherboard and secure the HDD heatsink.
3. Put and secure the rear cover back to the device.

2.1.5 Mini-PCIe & M.2 Card Installation

If you need to replace or install the mini-PCIe card or M.2 card, perform the following steps after disassembling the device rear cover.

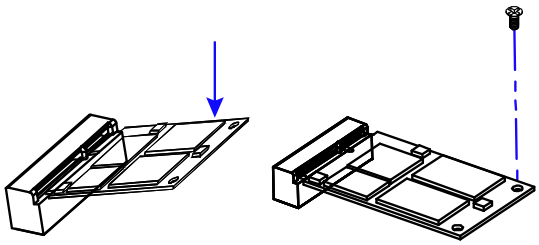
1. Locate the mini-PCIe or M.2 slot, align the key of the card to the interface, and insert the card slantwise.

   (Insert the M.2 card in the same way.)



2. Push the card down, fix it with the supplied flat head screw.

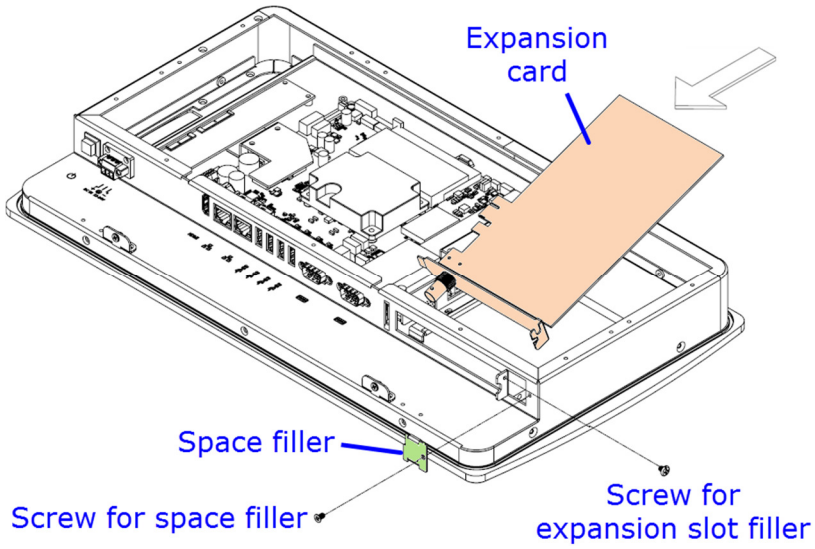
   (Fix the M.2 card with a supplied round head screw.)



2.1.6 Expansion Card Installation

Note: Expansion card slot is usable for ASTUT-W155-PC1S & ASTUT-W153-PS1S only.

This is illustrated by the example of ASTUT-W155-PC1S.

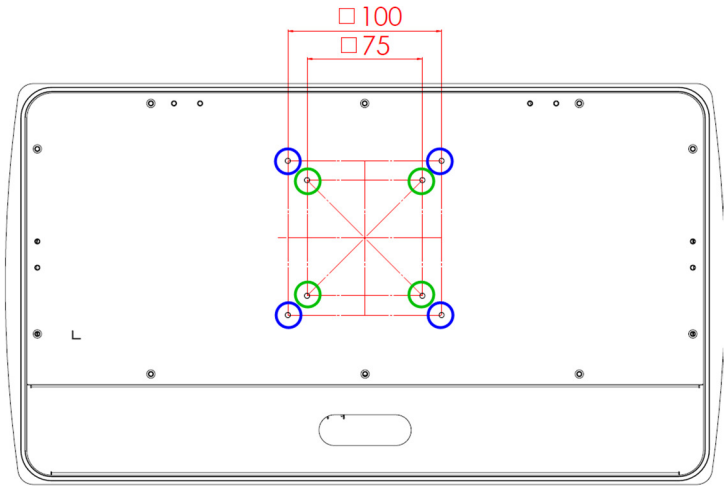


1. After disassembling the device rear cover, loosen the screw for the space filler on the rightmost of the I/O ports as shown below.
2. Loosen the screw for the expansion slot filler and take out the filler.
3. Install your expansion card and secure the two screws mentioned ablove.
4. Secure the rear cover back to the device.

2.1.7 VESA Mount & Wall Mount Installation

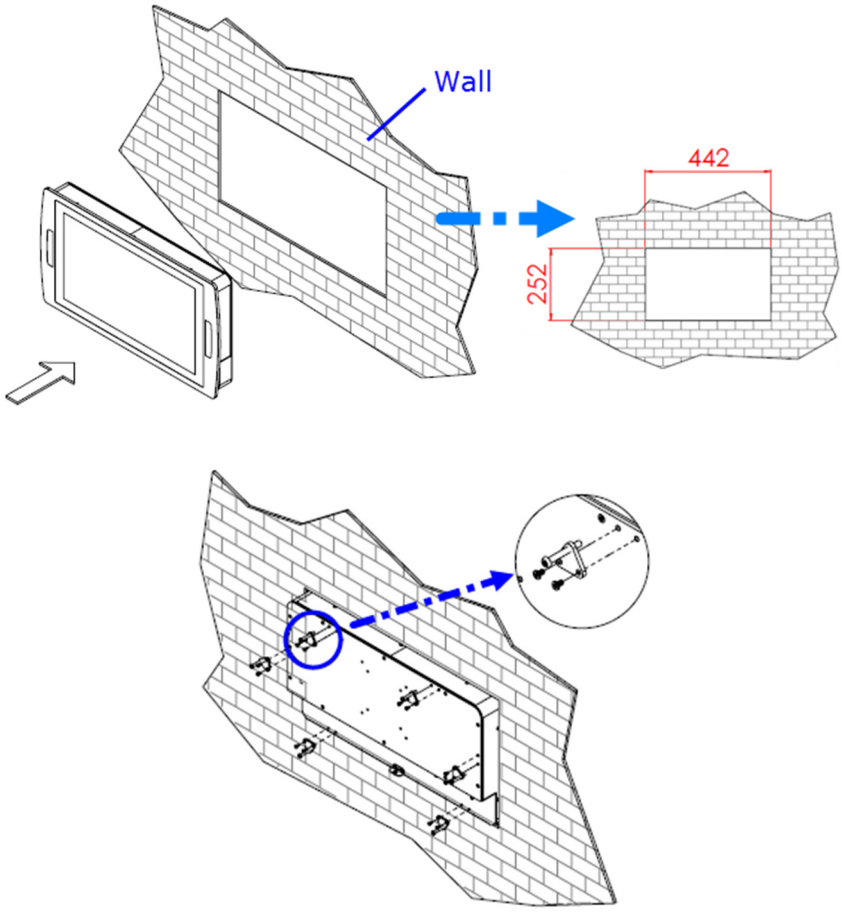
1. VESA Mount

You will need to prepare the VESA mount bracket in advance. Tighten 4 screws as below to attach the device to the bracket.



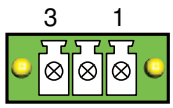
2. Wall Mount

Attach the supplied triangle mounting plates to the rear of the panel and tighten the screws to secure the panel on wall.



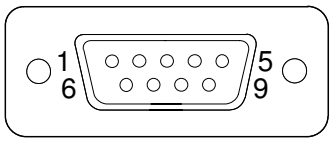
2.1.8 Pinout for COM1, COM2, & Power Input

- **Power Input (3-pin terminal block)**



Pin	Assignment	Pin	Assignment
1	Ground	3	Power (12 ~ 24V)
2	Earth Ground		

- **COM1 RS232/422/485 Port**

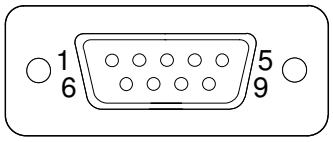


COM 1 is jumperless for RS-232/422/485 selection and configurable in BIOS.

Pin	Assignment	Pin	Assignment
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	Ground		

Pin	Assignment		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

- **COM2 RS-232 Port**



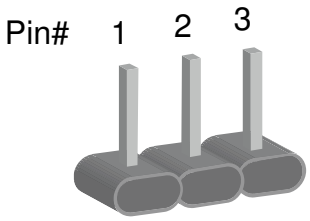
Pin	Assignment	Pin	Assignment
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	Ground		

2.2 Setting the Jumpers

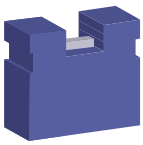
Set up and configure your product by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

2.2.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

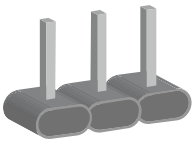
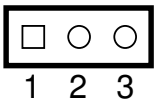
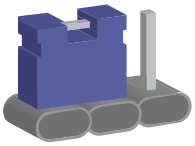
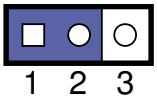
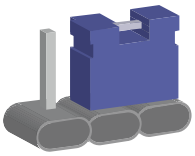
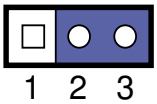


A 3-pin jumper



A jumper cap

Refer to the illustration below to set jumpers.

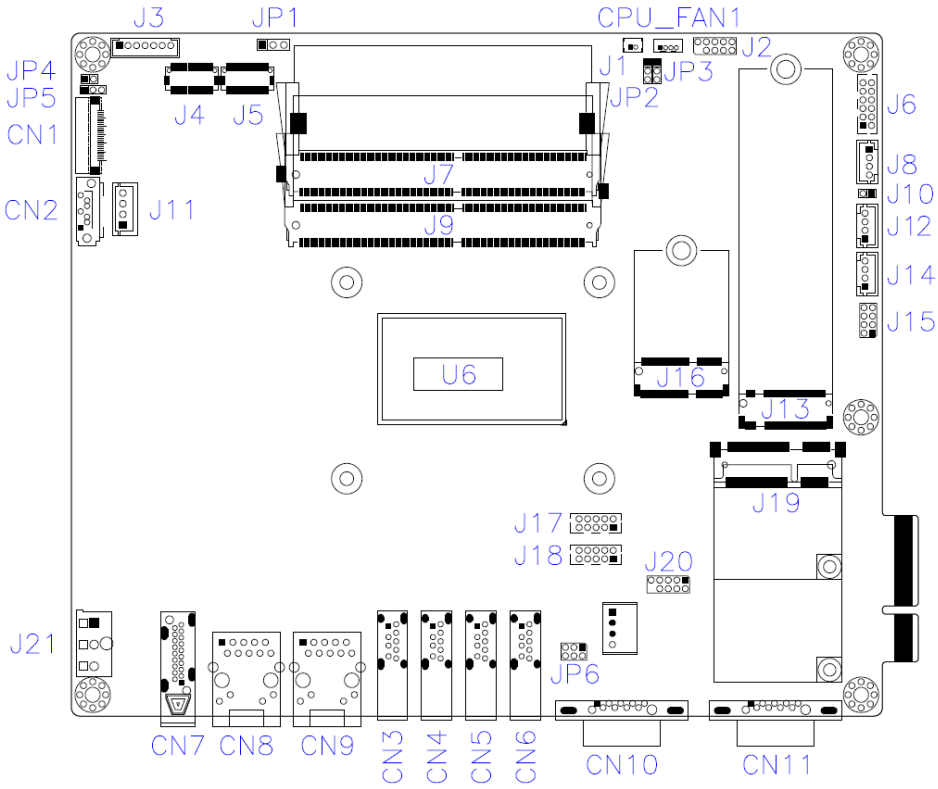
Pin closed	Oblique view	Schematic illustration in the manual
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

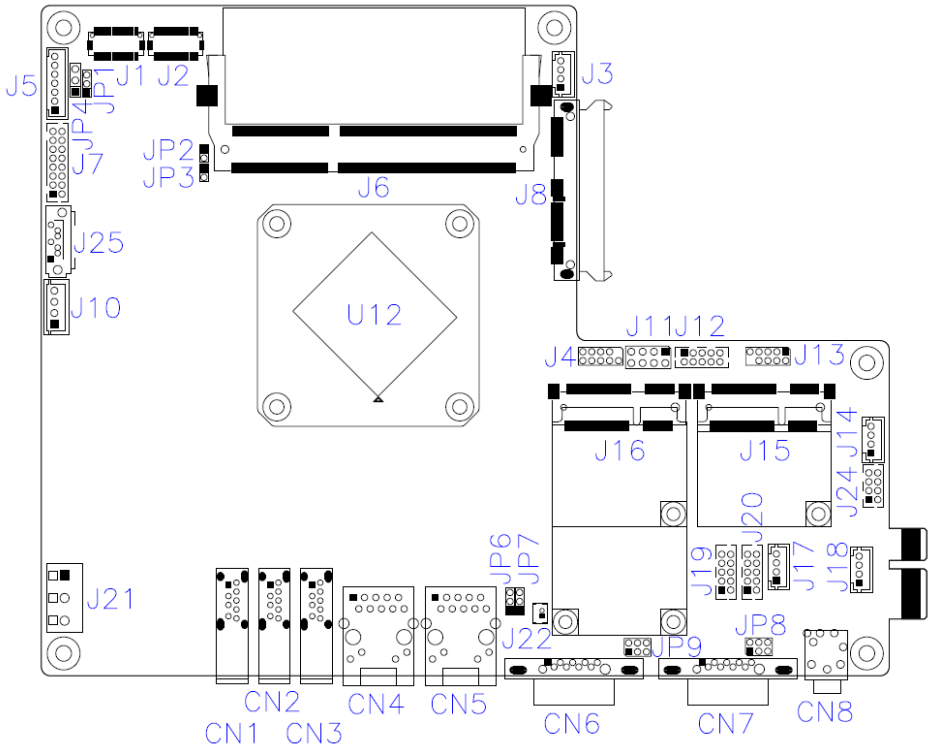
When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3 Jumper & Connector Locations

Motherboard for **ASTUT-W155-PC1S**: IBP900S-6300



Motherboard for **ASTUT-W153-PC / PC1S**: IBP800-3710



2.4 Jumpers & Connectors Quick Reference for ASTUT-W155-PC1S

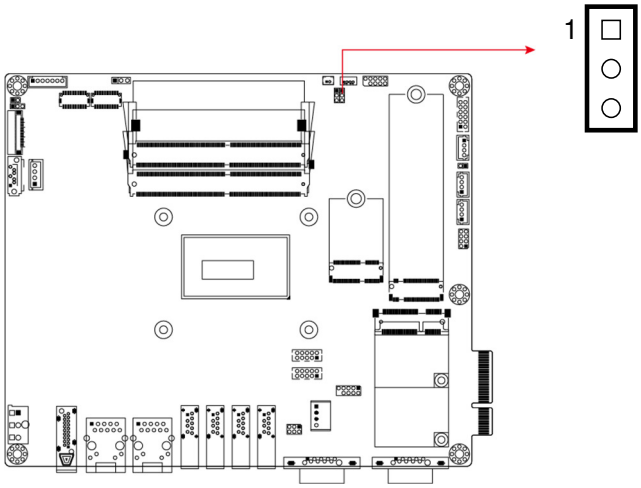
Jumpers:

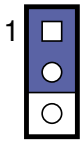
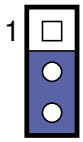
Function	Connector Name	Page
CMOS Data Clearance	JP3	24
LVDS Panel Power Selection	JP1	- -
eDP Panel Power Selection	JP5	- -
COM1 RS-232/422/485 Power Selection	JP6	- -
ME Register Clearance	JP2	- -

Connectors:

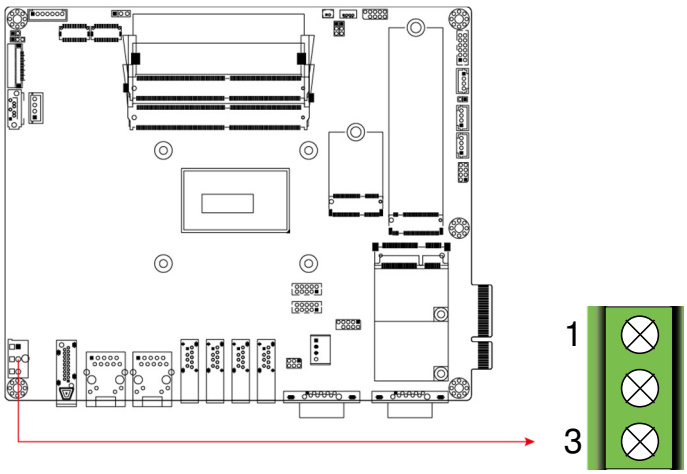
Function	Connector Name	Page
Motherboard Power Input Connector	J21	24
SATA HDD Power Connector	J11	- -
USB 2.0 Connector	J12, J14	- -
Front Panel Setting Connector	J15	- -
COM3 & COM4 RS-232 Port	J17 (COM4), J18 (COM3)	- -
eDP Connector	CN1	- -
SATA Connector	CN2	- -
USB 3.0 Port	CN3, CN4, CN5, CN6	- -
HDMI Port	CN7	- -
LAN Port	CN8, CN9	- -
COM1 RS-232-422/485 Port	CN10	- -
COM2 RS-232/422/485 Port	CN11	- -
LCD Backlight Connector	J3	- -
LVDS Connector	J4 (2nd channel), J5 (1st channel)	- -
Audio connector	J6	- -
Amplifier Connector	J8	- -
Factory Use Only	J2, J20	- -

2.4.1 CMOS Data Register Clearance (JP3)



Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

2.4.2 Motherboard Power Input Connector (J21)



Pin	Assignment	Pin	Assignment
1	Ground	3	Power (12~ 24V)
2	Earth Ground		

2.5 Jumpers & Connectors Quick Reference for ASTUT-W153-PC/PC1S

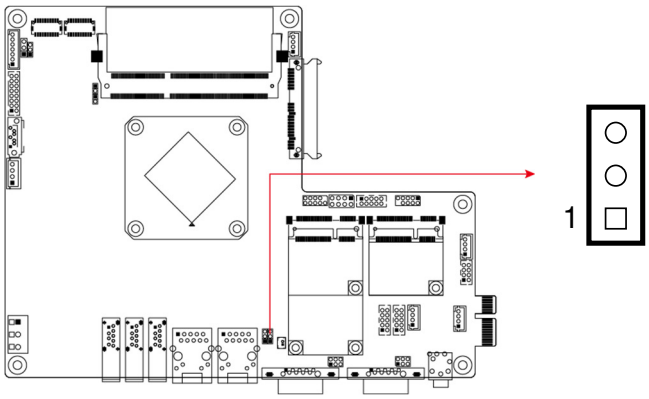
Jumpers:

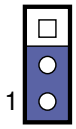
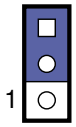
Function	Connector Name	Page
CMOS Data Clearance	JP7	26
LVDS Panel Brightness Control Selection	JP1	- -
LVDS Panel Power Selection	JP4	- -
ME Register Clearance	JP6	- -
COM1 & COM2 RS-232 Power Selection	JP8 (COM1), JP9 (COM2)	- -

Connectors:

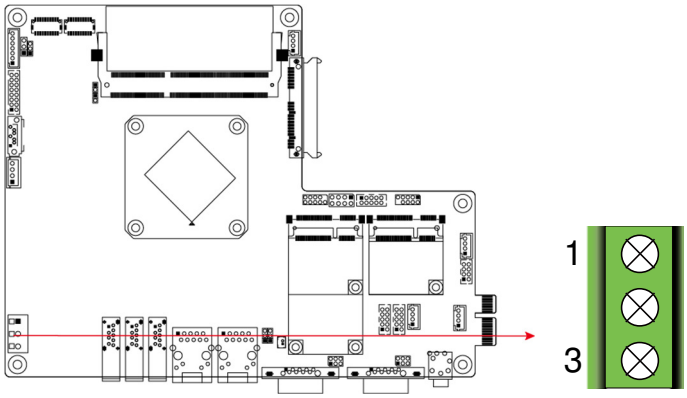
Function	Connector Name	Page
Motherboard Power Input Connector	J21	26
SATA HDD Power Connector	J10	- -
Digital I/O Connector	J12	- -
COM3 & COM4 RS-232 Port	J19 (COM4), J20 (COM3)	- -
USB 3.0 Port	CN1, CN2, CN3	- -
LAN Port	CN4, CN5	- -
COM1 & COM2 Port	CN6 (COM1), CN7 (COM2)	- -
Audio Line-Out Connector	CN8	- -
LVDS Connector	J1 (2nd channel), J2 (1st channel)	- -
LCD Backlight Connector	J5	- -
DDR3L	J6	- -
VGA Connector	J7	
SATA III Connector (22 pins)	J8	- -
Front Panel Setting Connector	J11	- -
Mini-PCie Connector	J15, J16	- -
Microphone Input Connector	J17	- -
Amplifier Connector	J18	- -
USB 2.0 Port	J24	- -
SATA III Port	J25	- -
Factory Use Only	J3, J4, J13, J14	- -

2.5.1 CMOS Data Clearance (JP7)



Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

2.5.2 Motherboard Power Input Connector (J21)



Pin	Assignment	Pin	Assignment
1	Ground	3	Power (12 ~ 24V)
2	Earth Ground		

Chapter 3
Driver Installation for ASTUT-W155-PC1S

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Graphics Driver Installation
- HD Audio Driver Installation
- Intel® PRO LAN Network Drivers Installation
- Intel® Management Engine Drivers Installation
- LAN Drivers Installation

3.1 Introduction

This section describes the installation procedures for software drivers. The software drivers are in a disk enclosed with the product package. If you find anything missing, please contact the distributor where you made the purchase.

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

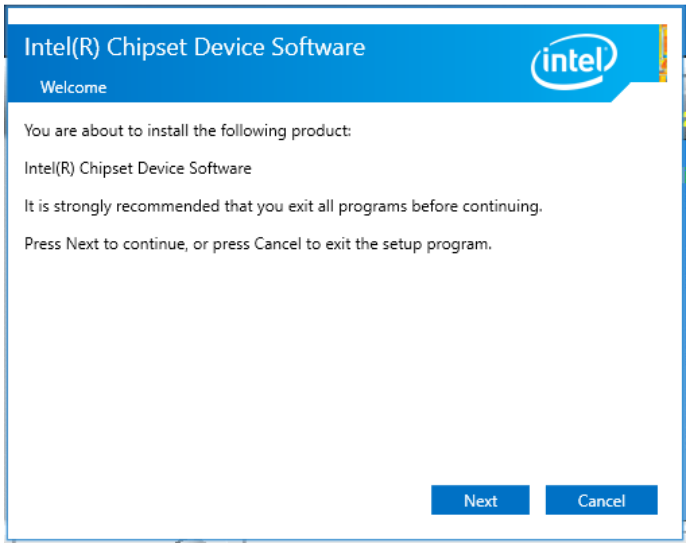
3.2 Intel® Chipset Software Installation Utility

The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for the chipset components. Follow the instructions below to complete the installation.

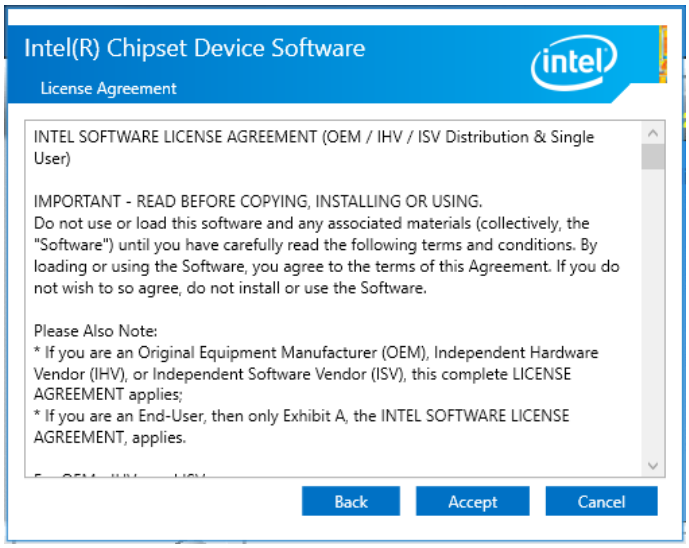
1. Insert the disk enclosed in the package. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.

2. Click **Intel(R) Chipset Software Installation Utility**.

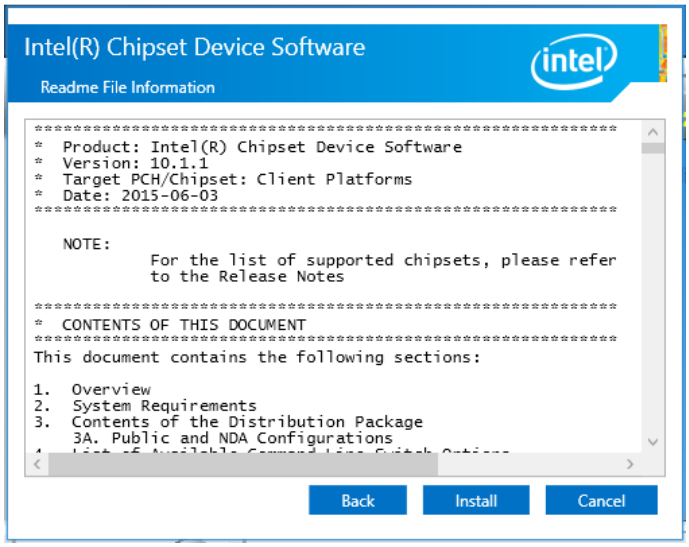
3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.



4. Click **Yes** to accept the software license agreement and proceed with the installation process.



5. Read the *Readme File Information* and then click **Install** to start installation.



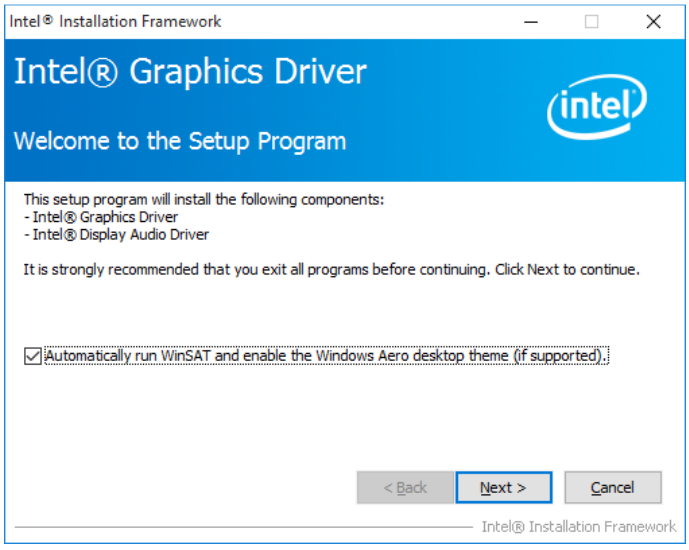
6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

3.3 Graphics Driver Installation

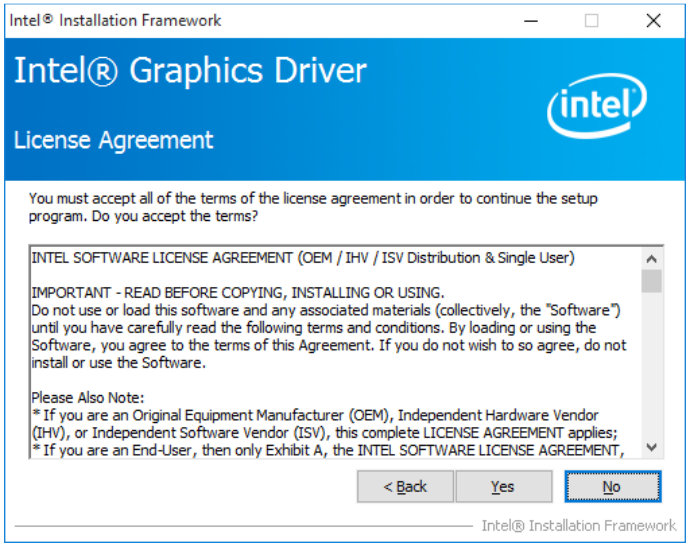
1. Click **Intel** and then **Intel(R) Braswell Chipset Drivers**.

2. Click **Intel(R) Braswell Graphics Driver**.

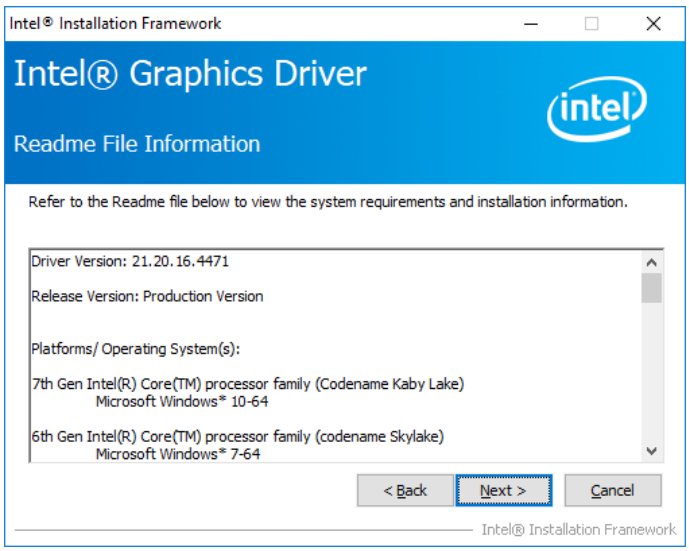
3. When the *Welcome* screen appears, click **Next** to continue.



4. Click **Yes** to agree with the license agreement and continue the installation.



5. Read the *Readme File Information* and then click **Next**.



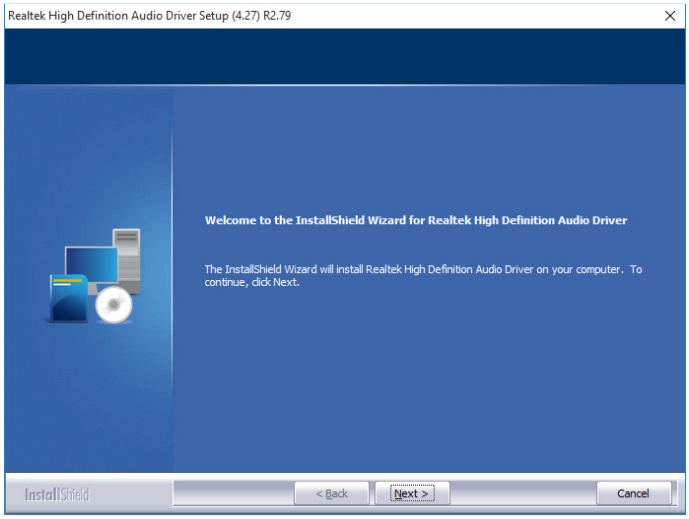
6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

3.4 HD Audio Driver Installation

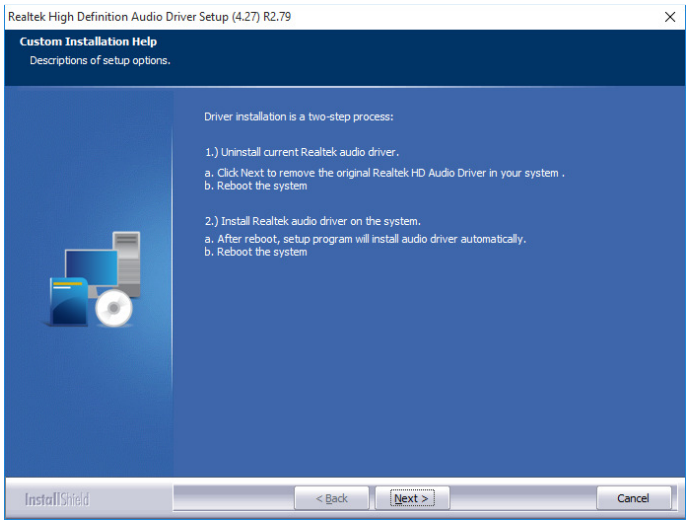
1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.

2. Click **Realtek High Definition Audio Driver**.

3. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



4. Read the descriptions of setup progress and click **Next**.



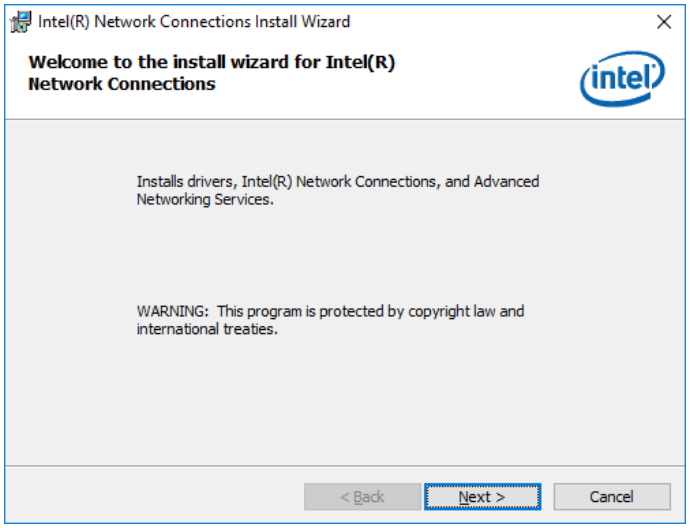
5. Choose a destination folder for installation.
6. The driver has been completely installed. Click **Finish** to restart the computer and for changes to take effect.

3.5 LAN Network Driver Installation

1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.

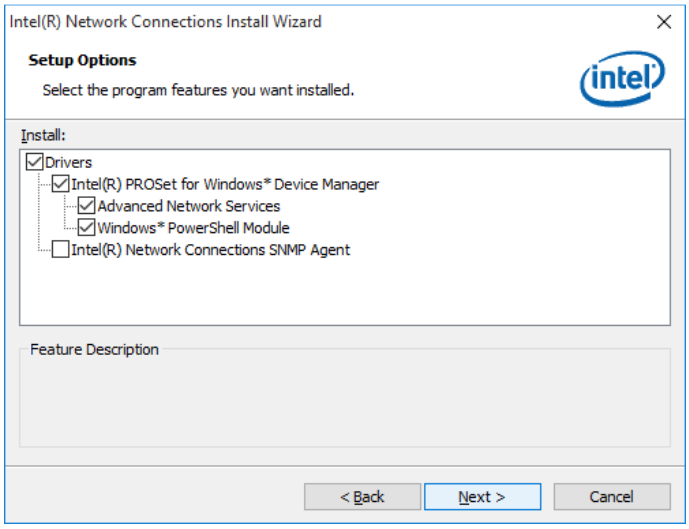
2. Click **Intel(R) PRO LAN Network Drivers**.

3. On the *Welcome* screen of the InstallShield Wizard, click **Next** for installation.



4. Accept the license agreement and click **Next**.

5. On the Setup Options screen, select the desired drivers and click **Next** and then **Install**.



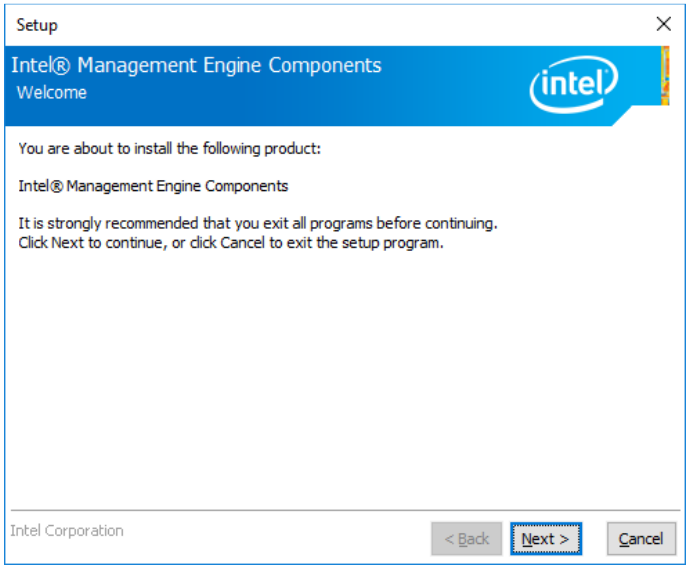
6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

3.6 Intel® Management Engine Drivers Installation

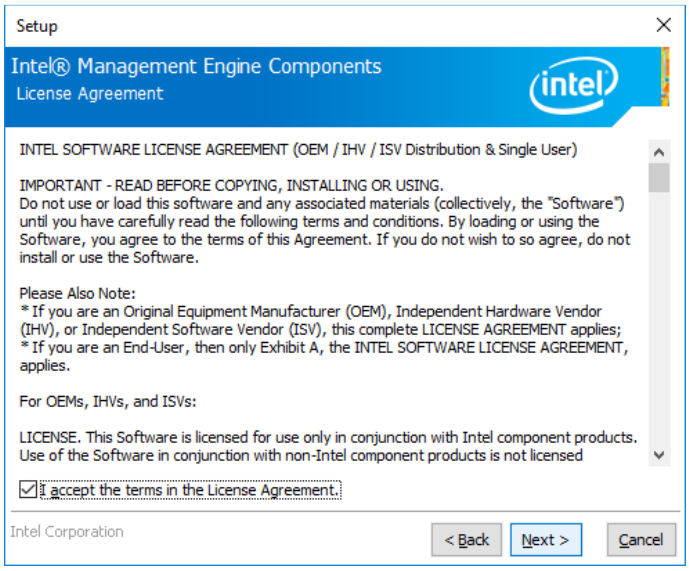
1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.

2. Click **Intel(R) ME 11.x Drivers**.

3. When the *Welcome* screen appears, click **Next** to continue.



4. Accept the licence agreement and click **Next** to continue.

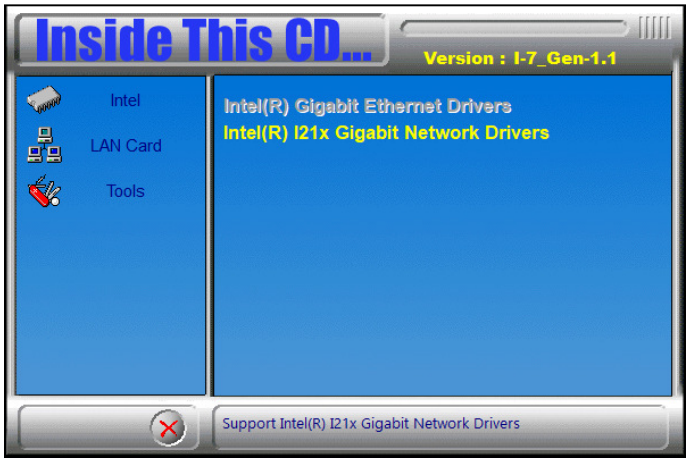


5. Choose a destination folder for installation.
6. The driver has been completely installed. You are suggested to restart the computer for changes to take effect.

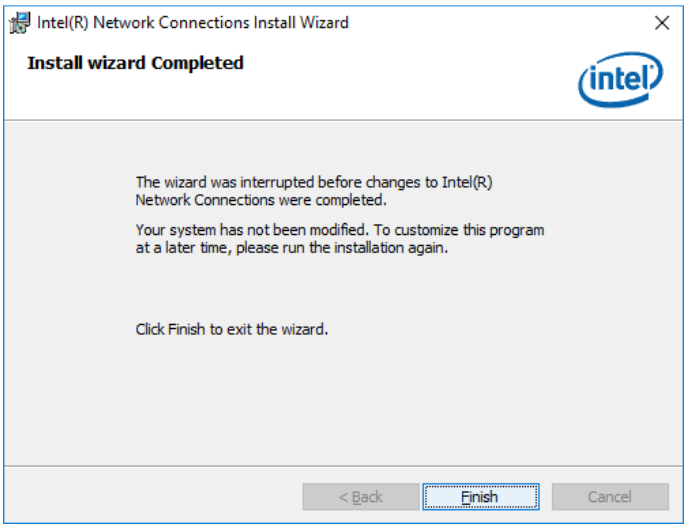
3.7 LAN Controller Drivers Installation

1. Click **LAN Card** and then **Intel LAN Controller Drivers**.

2. Click **Intel(R) I21x Gigabit Network Drviers**.



3. Choose a destination folder for installation.
4. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.



Chapter 4
Driver Installation for ASTUT-W153-PC / PC1S

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Graphics Driver Installation
- HD Audio Driver Installation
- Intel® Trusted Execution Engine Drivers Installation
- LAN Controller Driver Installation

4.1 Introduction

This section describes the installation procedures for software drivers. The software drivers are in a disk enclosed with the product package. If you find anything missing, please contact the distributor where you made the purchase.

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

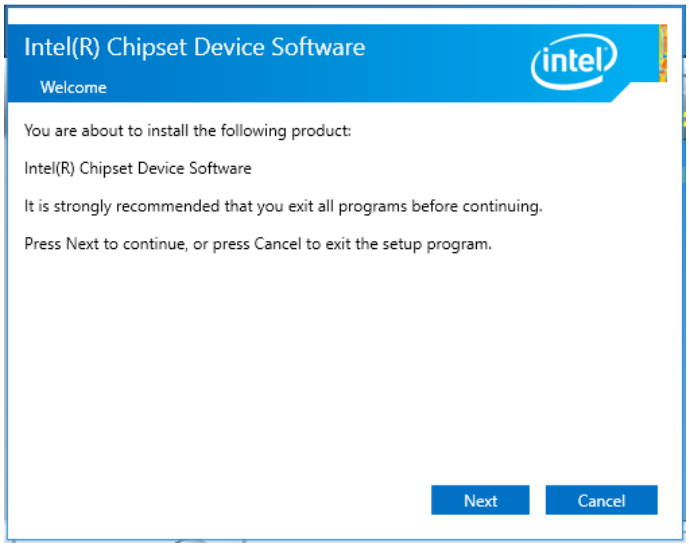
4.2 Intel® Chipset Software Installation Utility

The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for the chipset components. Follow the instructions below to complete the installation.

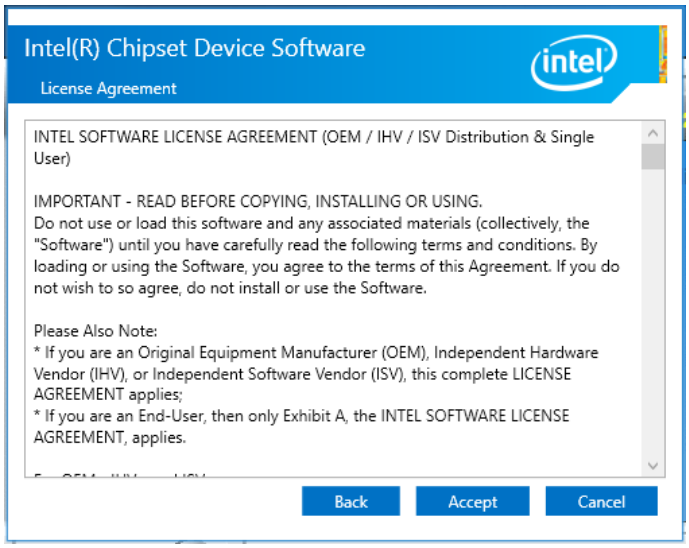
1. Insert the disk enclosed in the package. Click **Intel** and then **Intel(R) Braswell Chipset Drivers**.

2. Click **Intel(R) Chipset Software Installation Utility**.

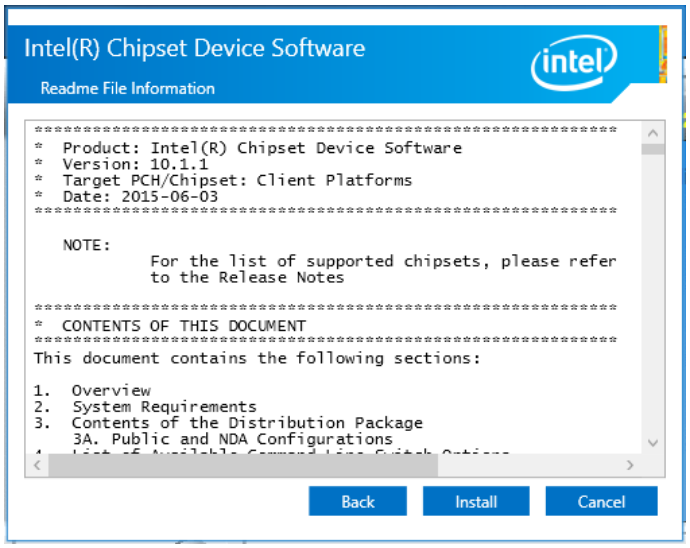
3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.



4. Click **Yes** to accept the software license agreement and proceed with the installation process.



5. Read the *Readme File Information* and then click **Install** to start installation.

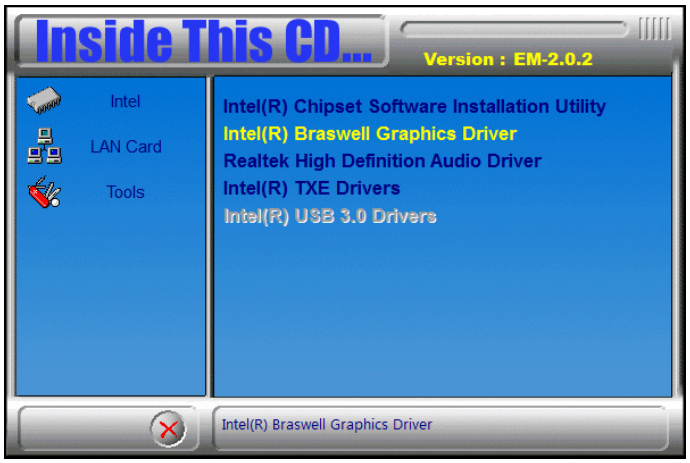


6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

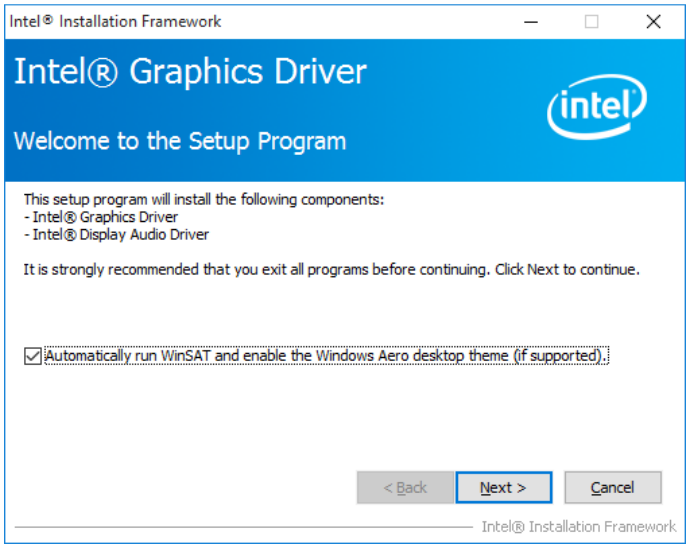
4.3 Graphics Driver Installation

1. Click **Intel** and then **Intel(R) Braswell Chipset Drivers**.

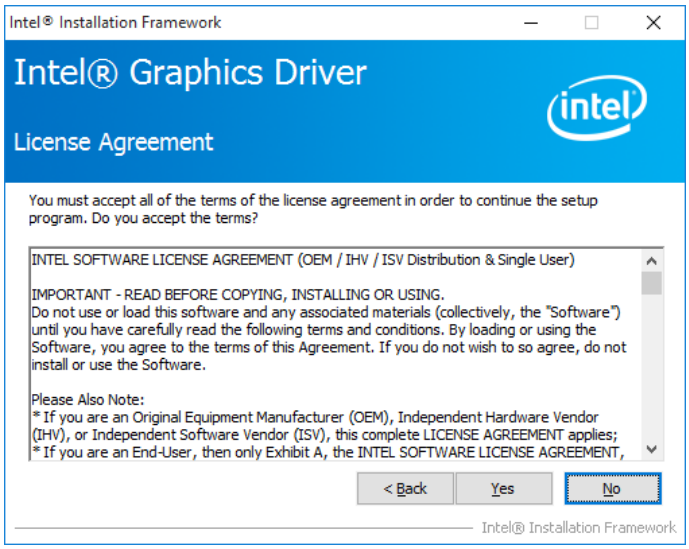
2. Click **Intel(R) Braswell Graphics Driver**.



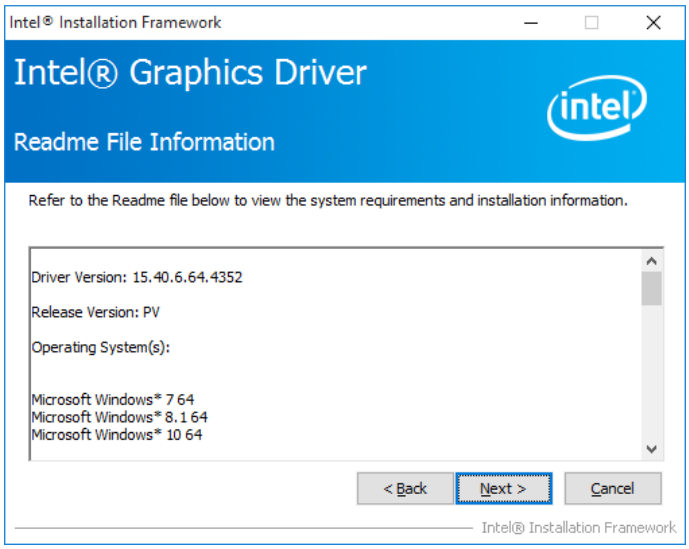
3. When the *Welcome* screen appears, click **Next** to continue.



4. Click **Yes** to agree with the license agreement and continue the installation.



5. Read the *Readme File Information* and then click **Next**.



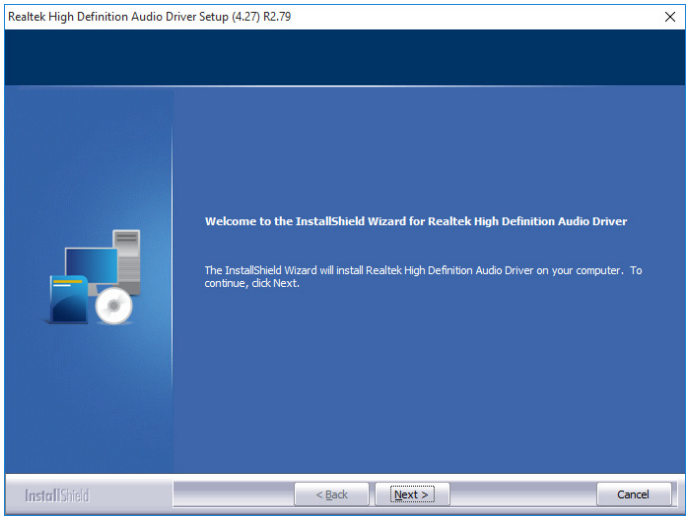
6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

4.4 HD Audio Driver Installation

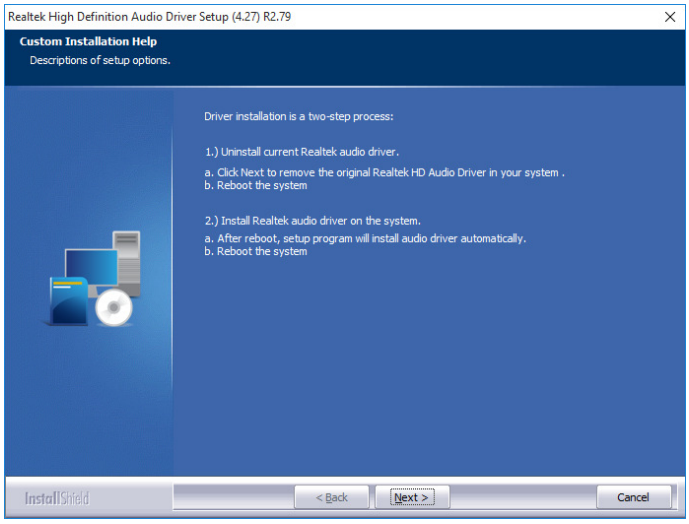
1. Click **Intel** and then **Intel(R) Braswell Chipset Drivers**.

2. Click **Realtek High Definition Audio Driver**.

3. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



4. Read the descriptions of setup progress and click **Next** for installation.



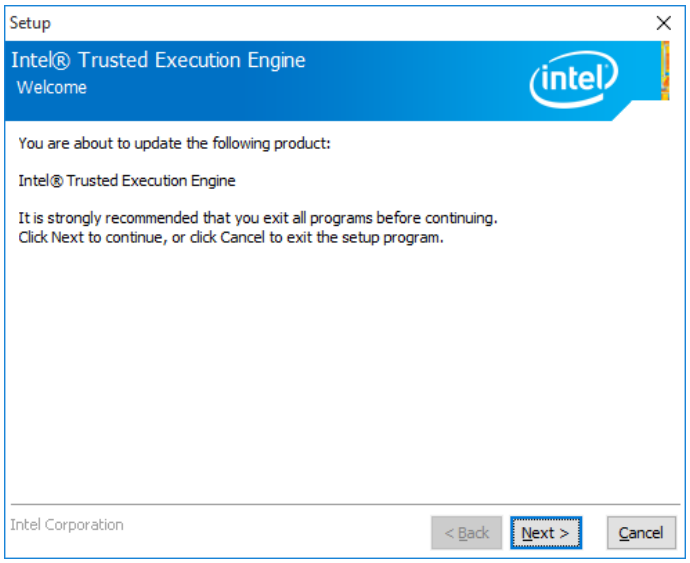
5. Choose a destination folder for installation.
6. The driver has been completely installed. Click **Finish** to restart the computer and for changes to take effect.

4.5 Intel® Trusted Execution Engine Installation

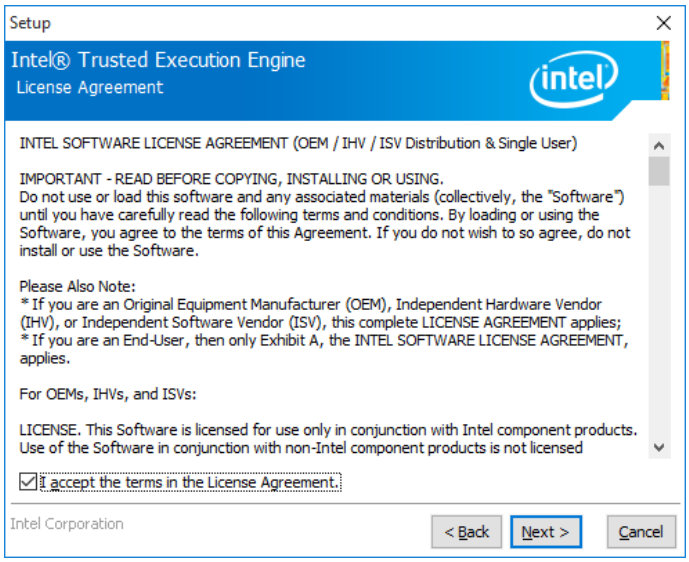
1. Click **Intel** and then **Intel(R) Braswell Chipset Drivers**.

2. Click **Intel** and then **Intel(R) TXE Drivers**.

3. When the *Welcome* screen appears, click **Next** to contiune.



4. Agree the license agreement and click **Next** until the wizard starts to install the driver.

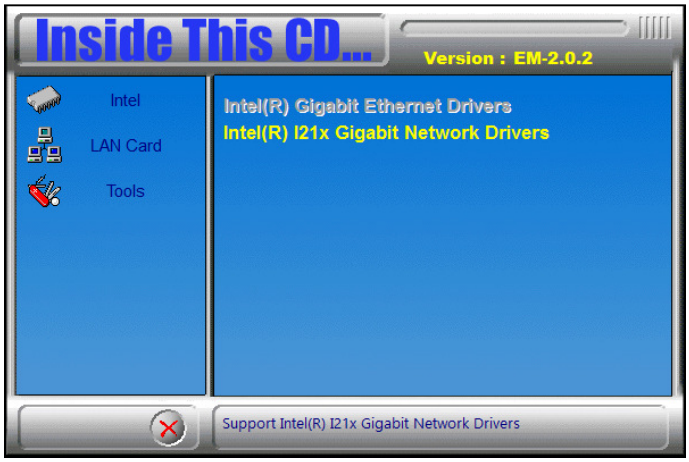


5. Choose a destination folder for installation.
6. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

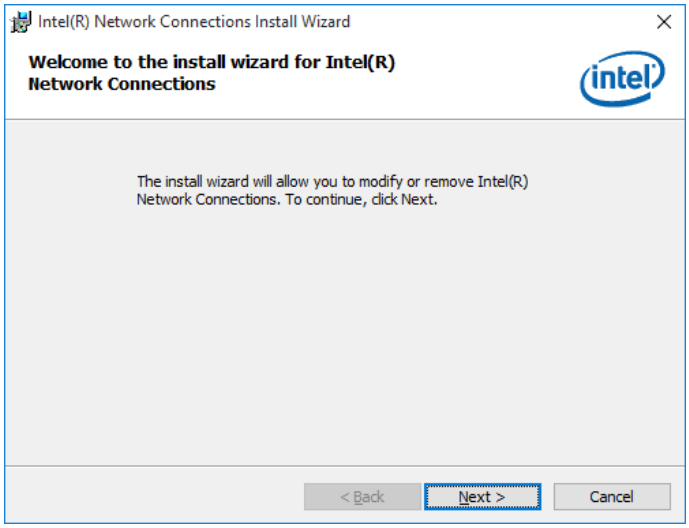
4.6 LAN Controller Driver Installation

1. Click **LAN Card** and then **Intel LAN Controller Drivers**.

2. Click **Intel(R) I21x Gigabit Network Drviers**.

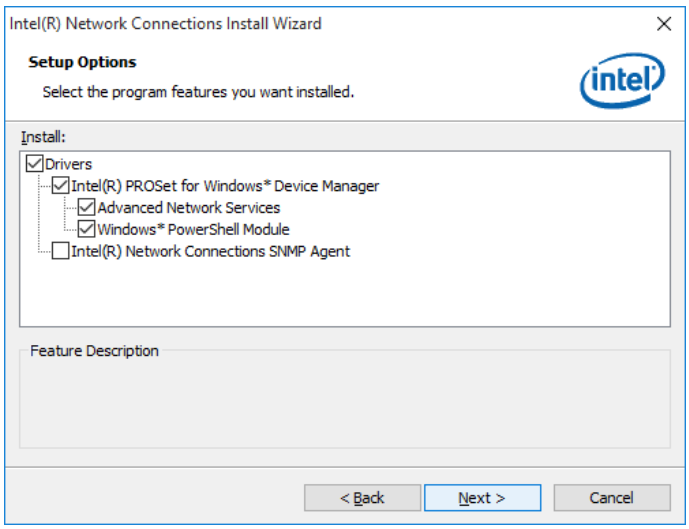


3. On the *Welcome* screen of the InstallShield Wizard, click **Next** to continue.



4. Accept the license agreement and click **Next**.

5. On the Setup Options screen, select the desired drivers and click **Next** and the **Install** for installation.



6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish** and restart the computer for changes to take effect.

Chapter 5
BIOS Setup for ASTUT-W155-PC1S

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

5.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives, serial ports and parallel ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

5.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Press the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

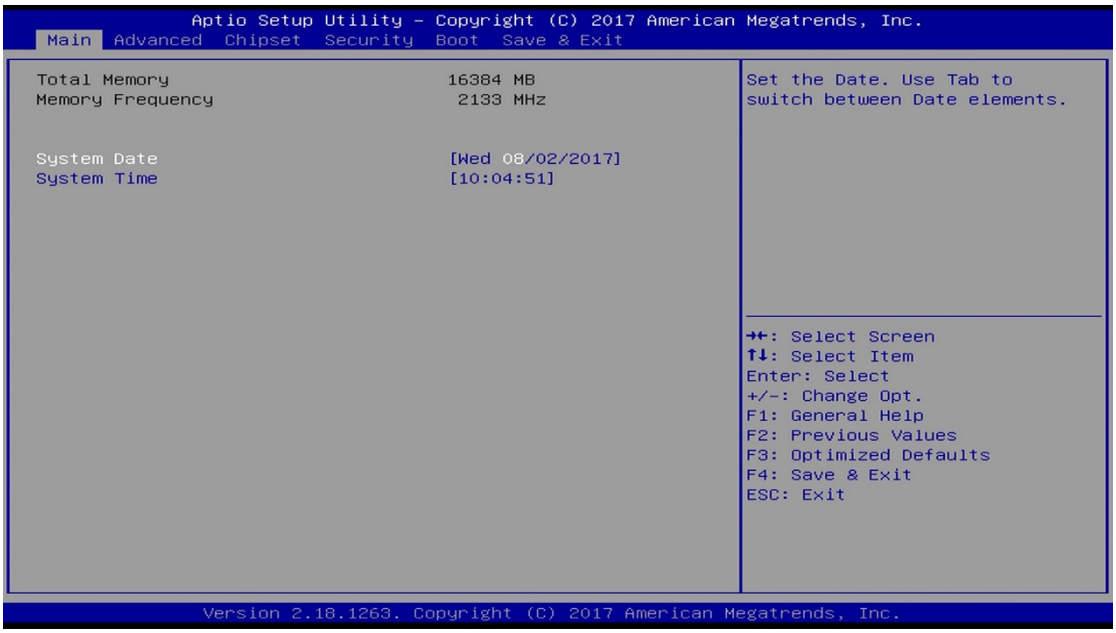
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

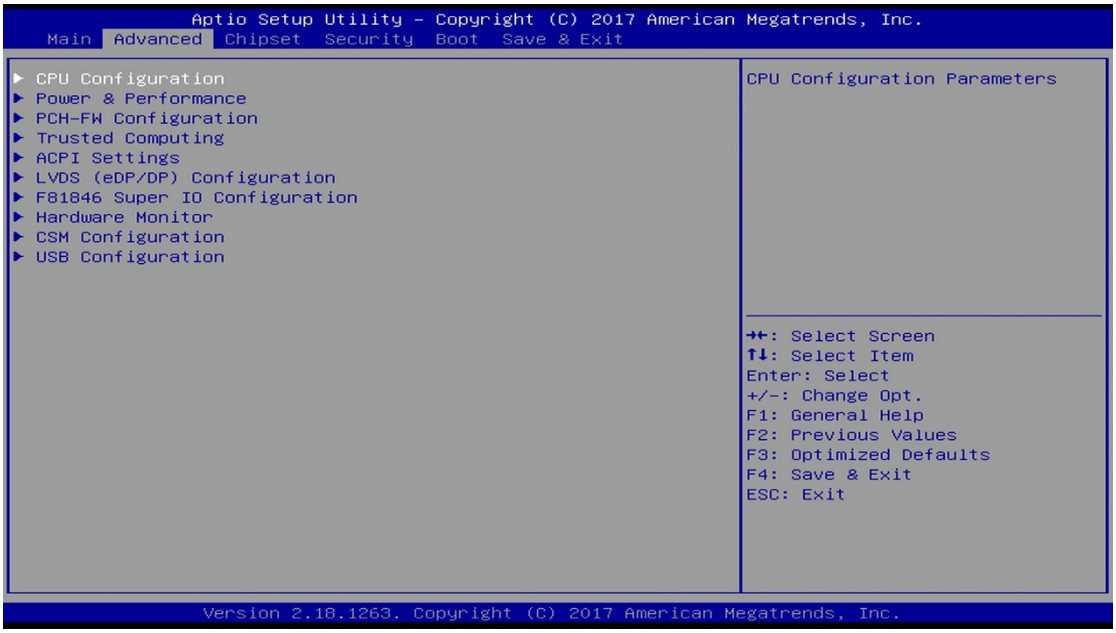
5.3 Main Settings



BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

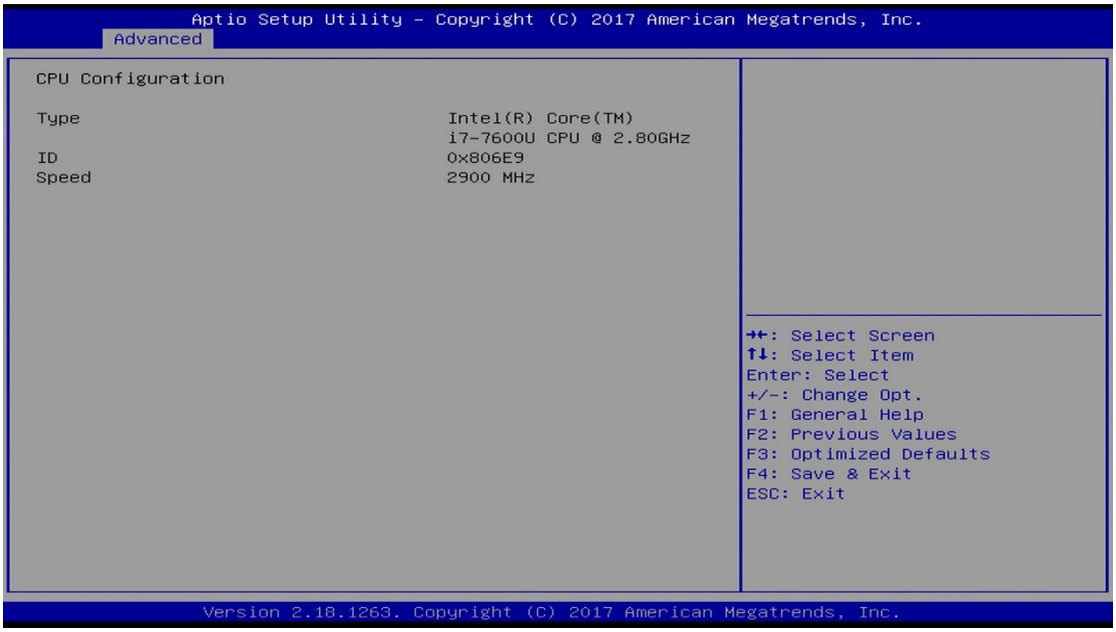
5.4 Advanced Settings

This section allows you to configure, improve your system and allows you to set up some system features according to your preference.



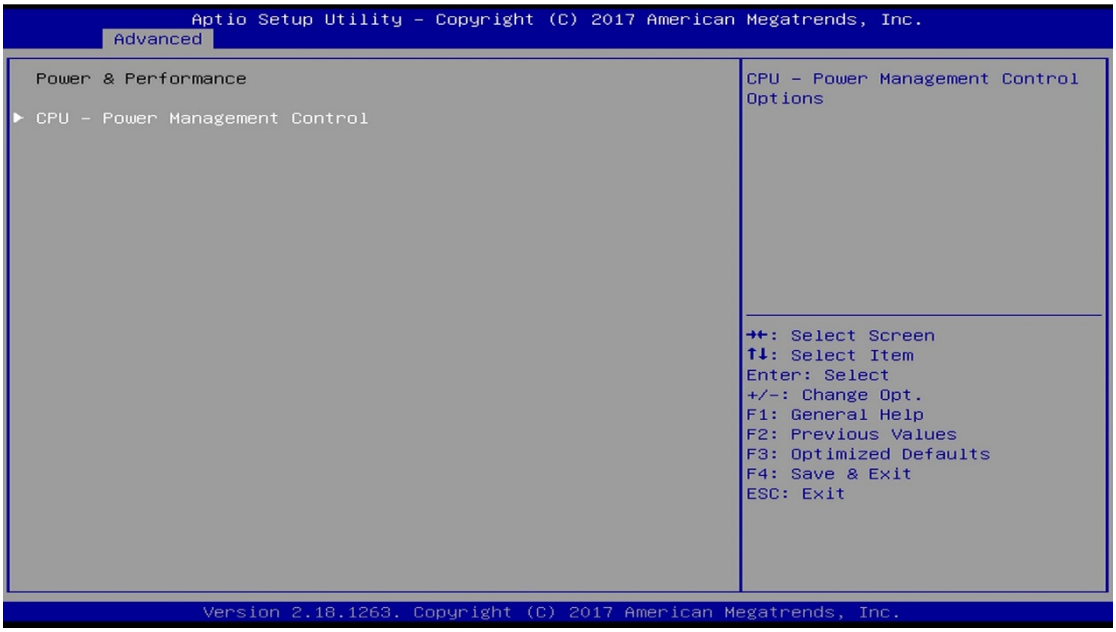
BIOS Setting	Description
CPU Configuration	Displays CPU configuration parameters.
Power & Performance	Shows power and performance options.
PCH-FW Configuration	Configures management engine technology parameters.
Trusted Computing	Trusted computing settings.
ACPI Settings	Displays system ACPI parameters.
LVDS (eDP/DP) Configuration	Configures LVDS (eDP/DP).
F81846 Super IO Configuration	Displays super IO chip parameters.
Hardware Monitor	Shows super IO monitor hardware status.
CSM Configuration	Enables / Disables option ROM execution settings, etc.
USB Configuration	Displays USB configuration parameters.

5.4.1 CPU Configuration

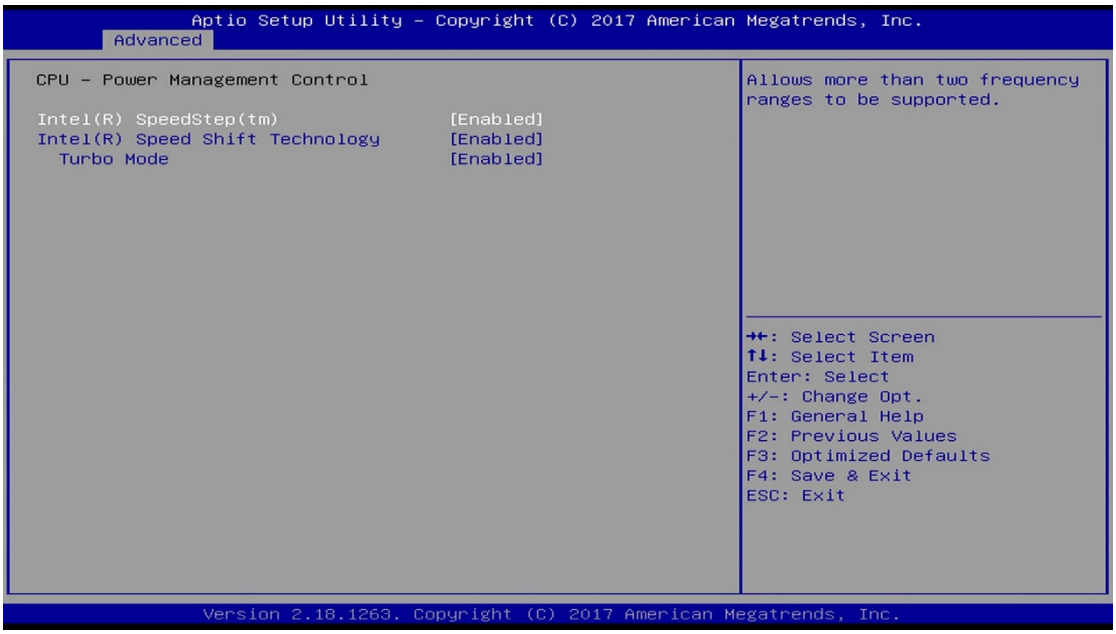


Displays the type and speed of your CPU.

5.4.2 Power & Performance

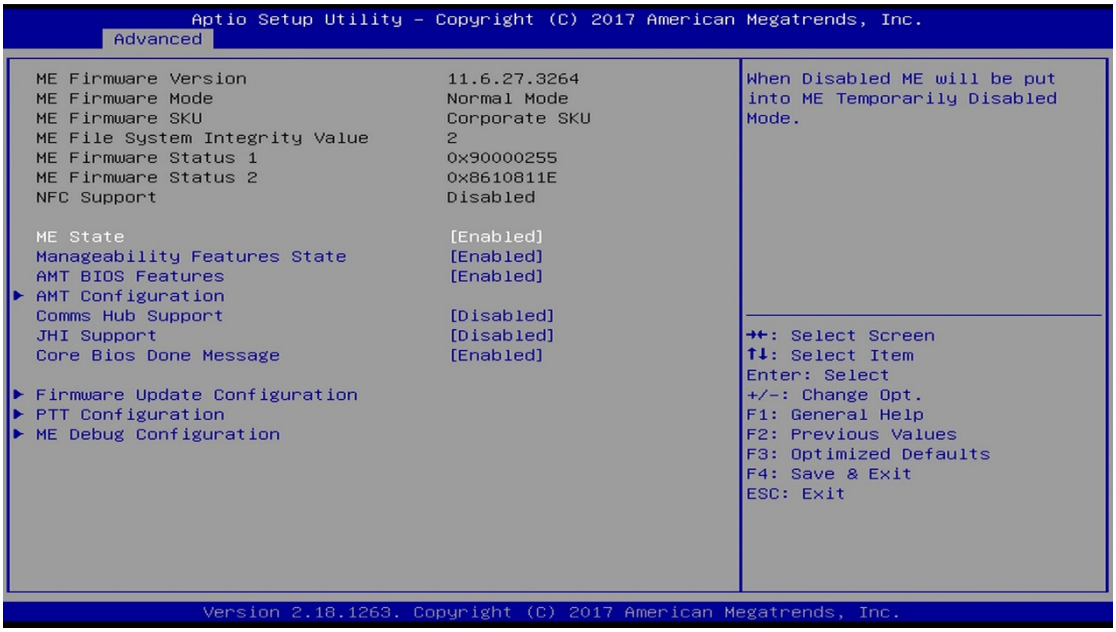


BIOS Setting	Description
CPU – Power Management Control	Shows CPU power management control options.



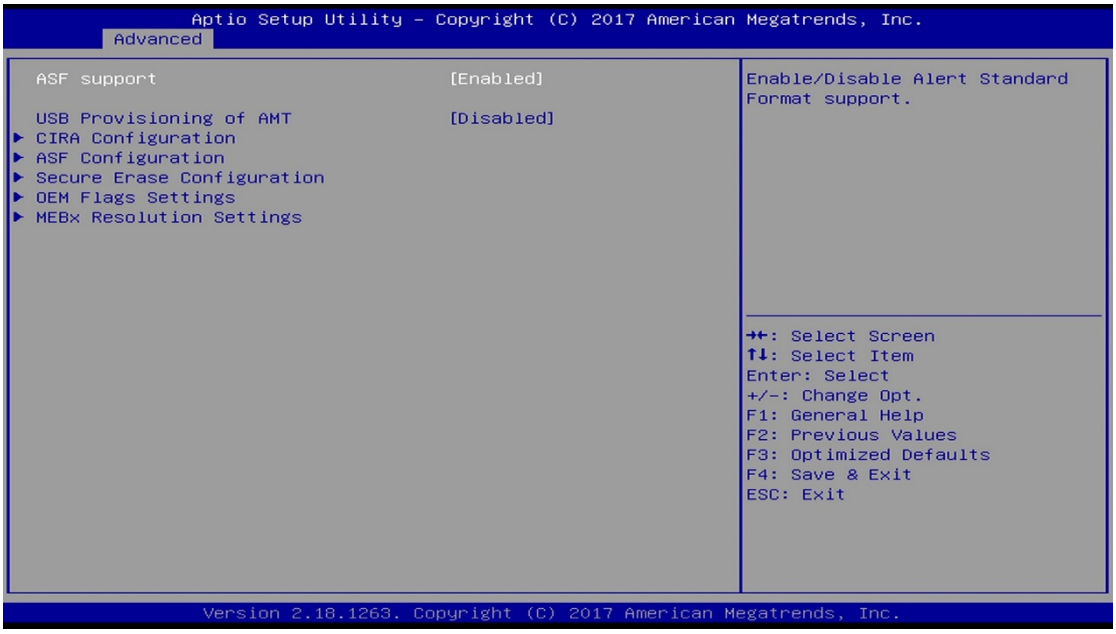
BIOS Setting	Description
Intel(R) SpeedStep(tm)	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Enables / Disables the support of Intel(R) Speed Shift Technology. Enabling the function will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Enables / Disables processor Turbo Mode (requires EMTTM enabled too). “Auto” means enabled unless max turbo ratio is bigger than 16-SKL A0 W/A.

5.4.3 PCH-FW Configuration



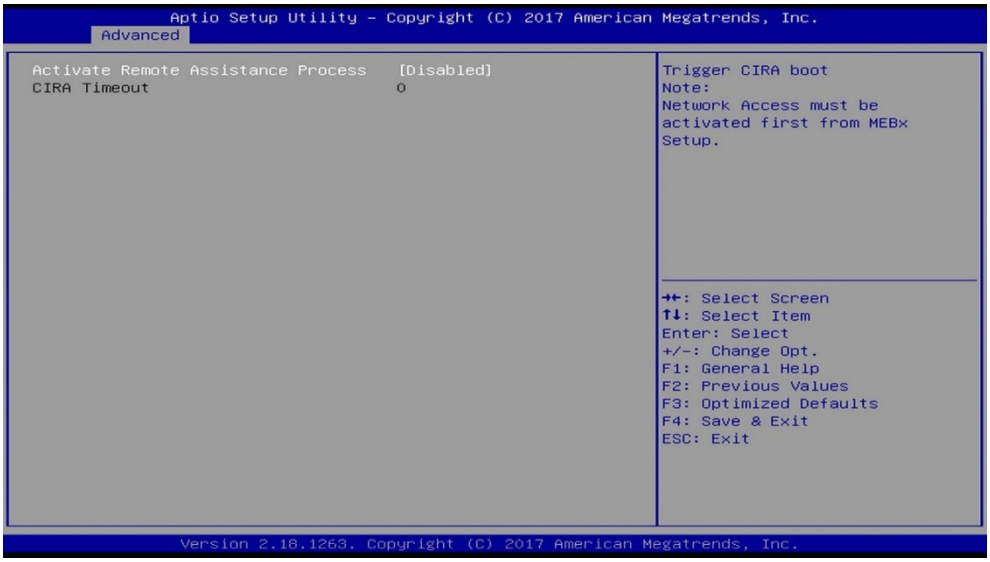
BIOS Setting	Description
ME State	When disabled ME will be put into ME Temporarily Disabled Mode.
Manageability Features State	Enables / Disables Intel(R) manageability features in FW. To disable support platform must be in an unprovisioned state first.
AMT BIOS Features	When disabled AMT BIOS features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable manageability features in FW.
AMT Configuration	Configures Intel(R) Active Management Technology Parameters.
Comms Hub Support	Enables / Disables support for Comms Hub.
JHI Support	Enables / Disables Intel(R) DAL Host Interface Service (JHI).
Core BIOS Done Message	Enables / Disables Core BIOS done message sent to ME.
Firmware Update Configuration	Configures Management Engine Technology parameters.
PTT Configuration	Configures PTT capability or state.
ME Debug Configuration	Configures ME debug options (Default is suggested.)

5.4.3.1. AMT Configuration



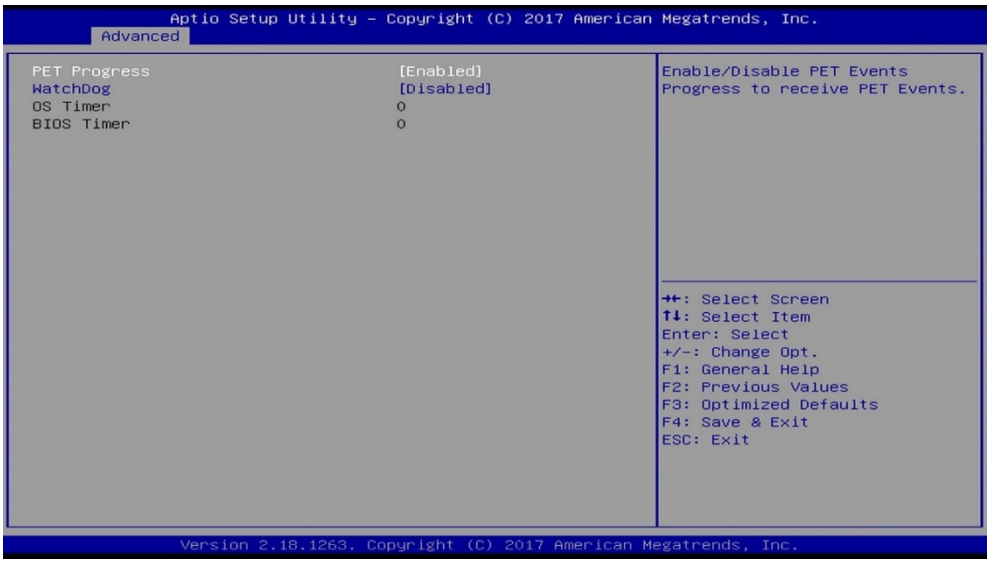
BIOS Setting	Description
ASF Support	Enables / Disables Alert Standard Format support.
USB Provisioning of AMT	Enables / Disables of AMT USB provisioning.
CIRA Configuration	Configures remote assistance process parameters.
ASF Configuration	Configures Alert Standard Format parameters.
Secure Erase Configutation	Secures erase configuration menu.
OEM Flags Settings	Configures OEM Flags.
MEBx Resolution Settings	Shows resolution settings for MEBx display modes.

CIRA Configuration



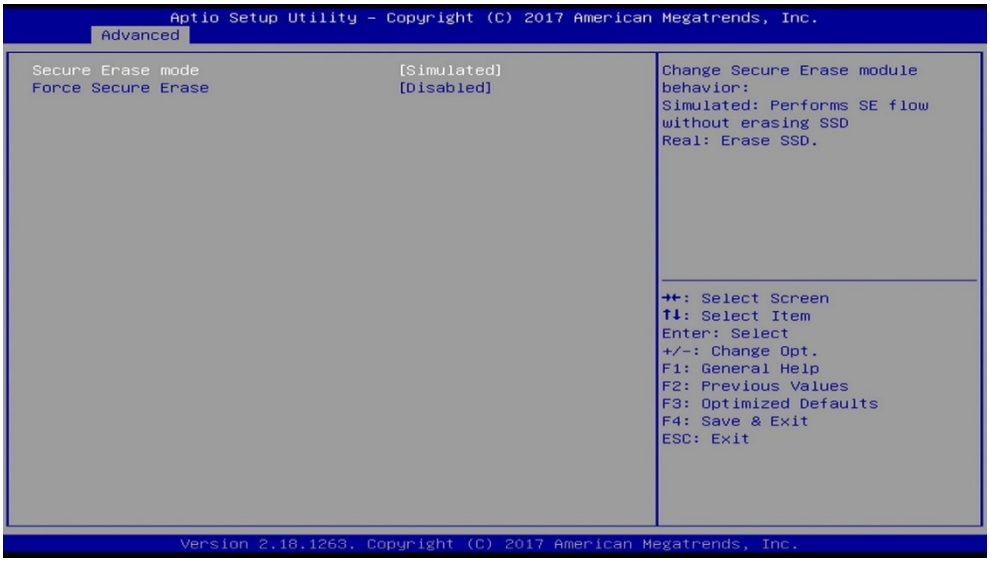
BIOS Setting	Description
Activate Remote Assistance Process	Trigger CIRA boot. Note: Network Access must be activated first from MEBx Setup.

ASF Configuration



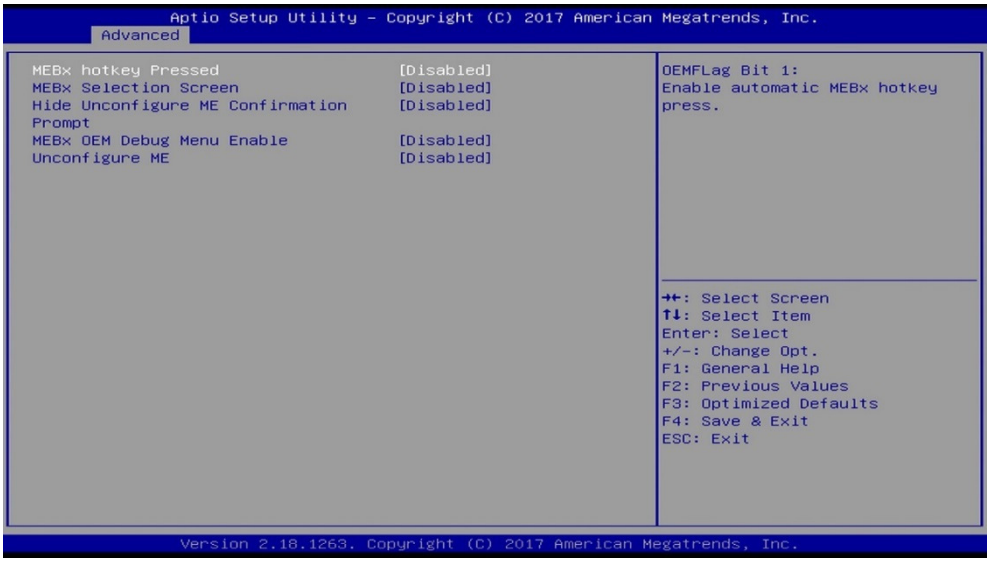
BIOS Setting	Description
PET Progress	Enables / Disables PET events progress to receive PET events.
WatchDog	Enables / Disables the watchdog timer.

Secure Erase Configuration:



BIOS Setting	Description
Secure Erase Mode	Changes Secure Erase module behavior. • **Simulated** performs SE flow without erasing SSD. • **Real** erases SSD.
Force Secure Erase	Force Secure Erase on next boot.

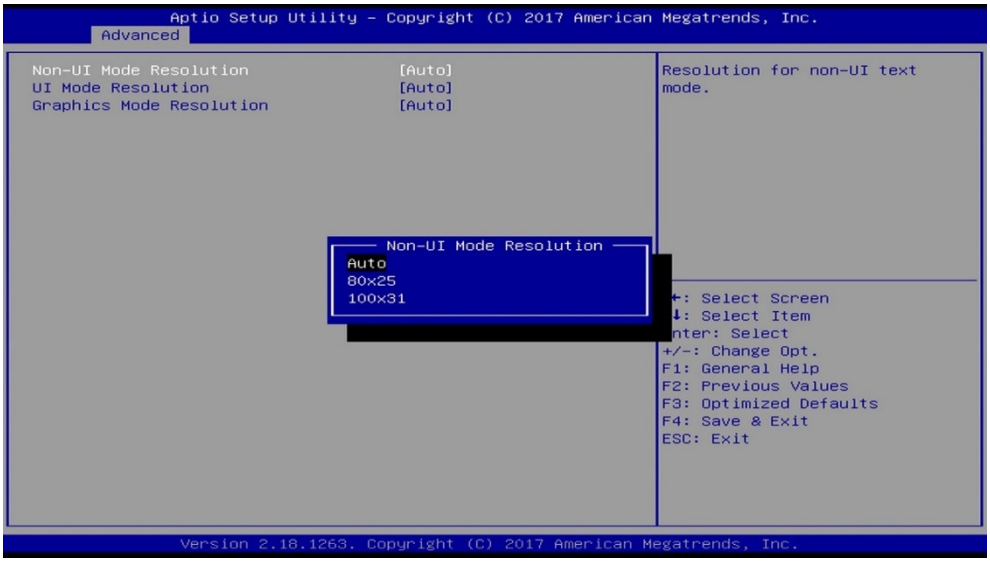
OEM Flags Settings



BIOS Setting	Description
MEBx hotkey Pressed	OEMFlag Bit 1: enables automatic MEBx hotkey press.

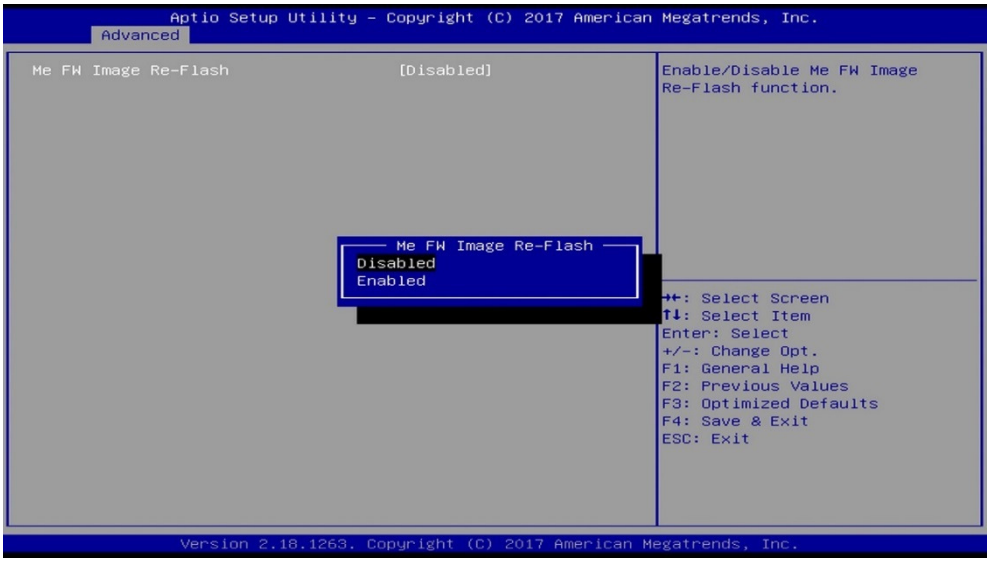
BIOS Setting	Description
MEBx Selection Screen	OEMFlag Bit 2: enables MEBx selection screen with 2 options. • Press **1** to enter ME configuration screens. • Press **2** to initiate a remote connection. Note: Network access must be activated from MEBx Setup for this screen to be displayed.
Hide Unconfigure ME Confirmation Prompt	OEMFlag Bit 6: hides the unconfigure ME confirmation prompt when attempting ME unconfiguration.
MEBx OEM Debug Menu Enable	OEMFlag Bit 14: enables OEM debug menu in MEBx.
Unconfigure ME	OEMFlag Bit 15: Unconfigures ME with resetting MEBx password to default.

MEBx Resolution Settings:



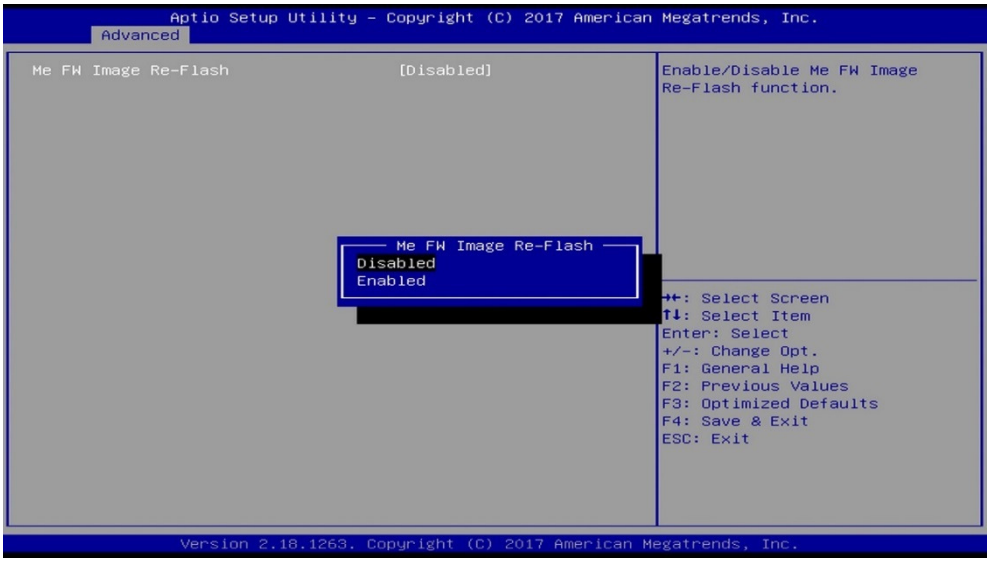
BIOS Setting	Description
Non-UI Mode Resloution	Sets resolution fro non-UI text mode. Options: Auto, 80 x 25, 100 x 31
UI Mode Resolution	Sets resolution for UI text mode. Options: Auto, 80 x 25, 100 x 31
Graphics Mode Resolution	Sets resolution for graphics mode. Options: Auto, 640 x 480, 800 x 600, 1024 x 768

5.4.3.2. Firmware Update Configuration



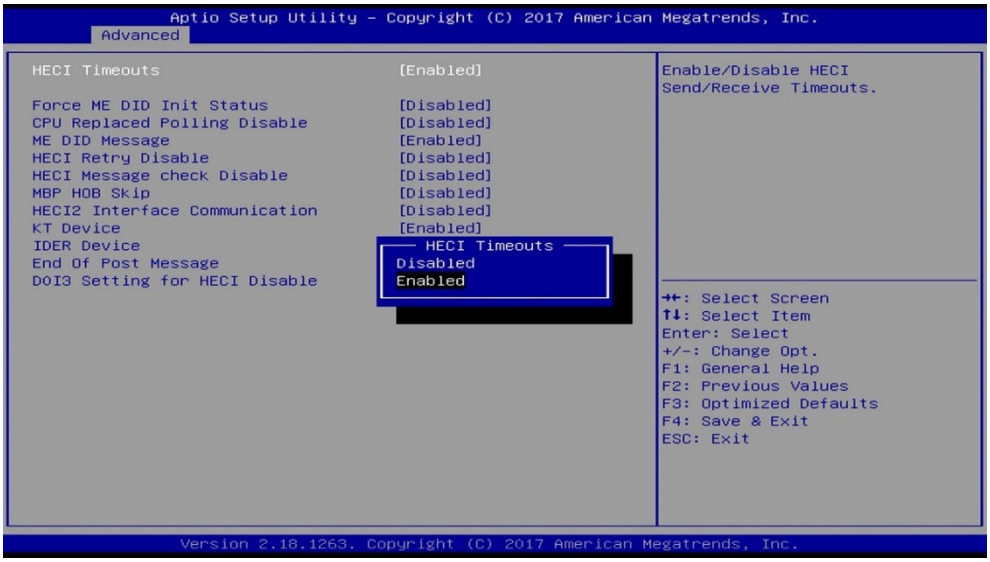
BIOS Setting	Description
ME FW Image RE-Flash	Enables / Disables ME FW Image Re-Flash function.

5.4.3.3. PTT Configuration



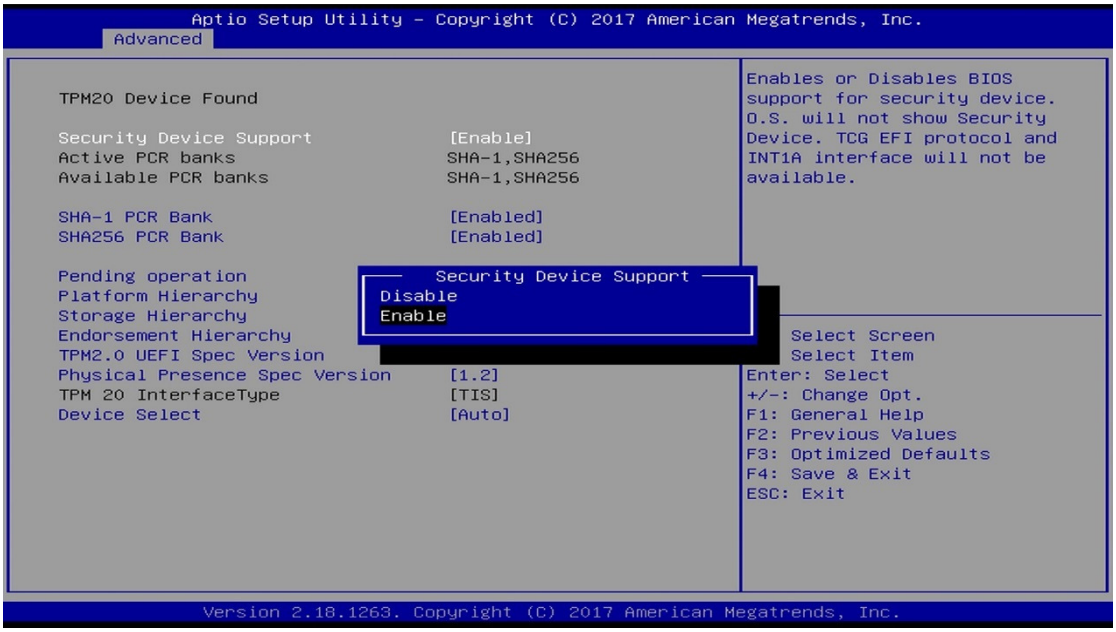
BIOS Setting	Description
TPM Device Selection	• **PTT** enables PTT in SkuMgr. • **dTPM 1.2** disables PTT in SkuMgr warning. PTT/dTPM will be disabled and all data saved on it will be lost.
PTP aware OS	Select whether or not the OS you will boot to will be PTP aware.

5.4.3.4. ME Debug Configuration



BIOS Setting	Description
HECI Timeouts	Enables / Disables HECI sending/receiving timeouts.
Force ME DID Init Status	Forces the DID initialization status value.
CPU Replaced Polling Disable	Disables CPU replacement polling loop.
ME DID Message	Enables / Disables ME DID message (disable will prevent the DID message from being sent).
HECI Retry Disable	Setting this option disables retry mechanism for all HECI APIs.
HECI Message Check Disable	Disables message check for BIOS boot path when sending messages.
MBP HDB Skip	Enables / Disables skip of MBP HDB.
HECI2 Interface Communicationn	Adds / Removes HECI2 device from PCI space.
KT Device	Enables / Disables KT device.
IDER Device	Enables / Disables IDER device.
End of Post Message	Enables / Disables end of Post message sent to ME.
DOI3 Setting for HECI Disable	Disables setting DOI3 bit for all HECI devices.

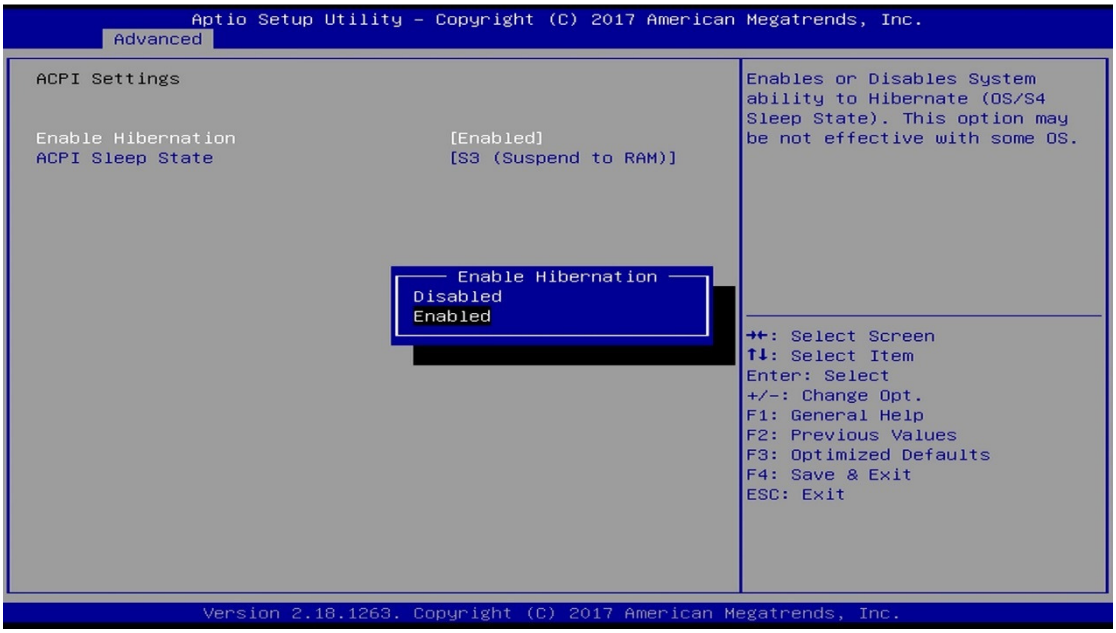
5.4.4 Trusted Computing



BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INTIA interface will not be available.
SHA-1 PCR Bank	Enables / Disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enables / Disables SHA256 PCR Bank.
Pending operation	Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device.
Platform Hierarchy	Enables / Disables platform hierarchy.
Storage Hierarchy	Enables / Disables storage hierarchy.
Endorsement Hierarchy	Enables / Disables endorsement hierarchy.
TPM2.0 UEFI Spec Version	Selects the supported TCG version based o your OS. • TCG_1_2: supports Windows 8 /10. • TCG_2: supports new TCG2 protocol and event format for Windows 10 or later.
Physical Presence Spec Version	Selects to show the PPI Spec Version (1.2 or 1.3) that the OS supports. Note: Some HCK tests might not support 1.3.

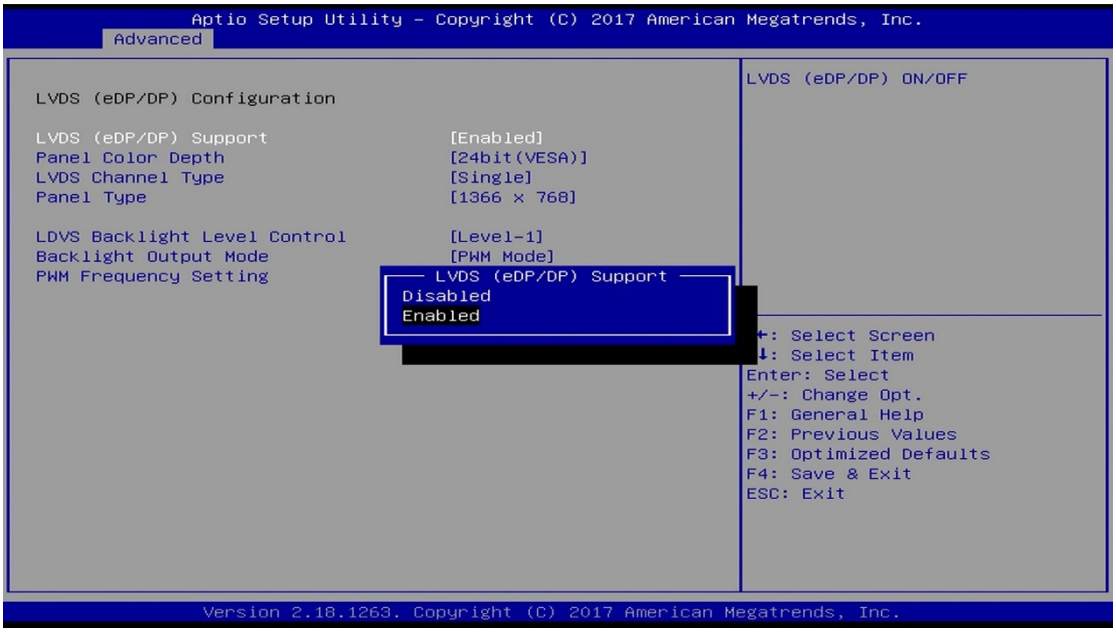
BIOS Setting	Description
Device Select	• **TPM 1.2** will restrict support to TPM 1.2 devices only. • **TPM 2.0** will restrict support to TPM 2.0 devices only. • **Auto** will support both with the default being set to TPM 2.0 deices if not found, and TPM 1.2 device will be enumerated.

5.4.5 ACPI Settings



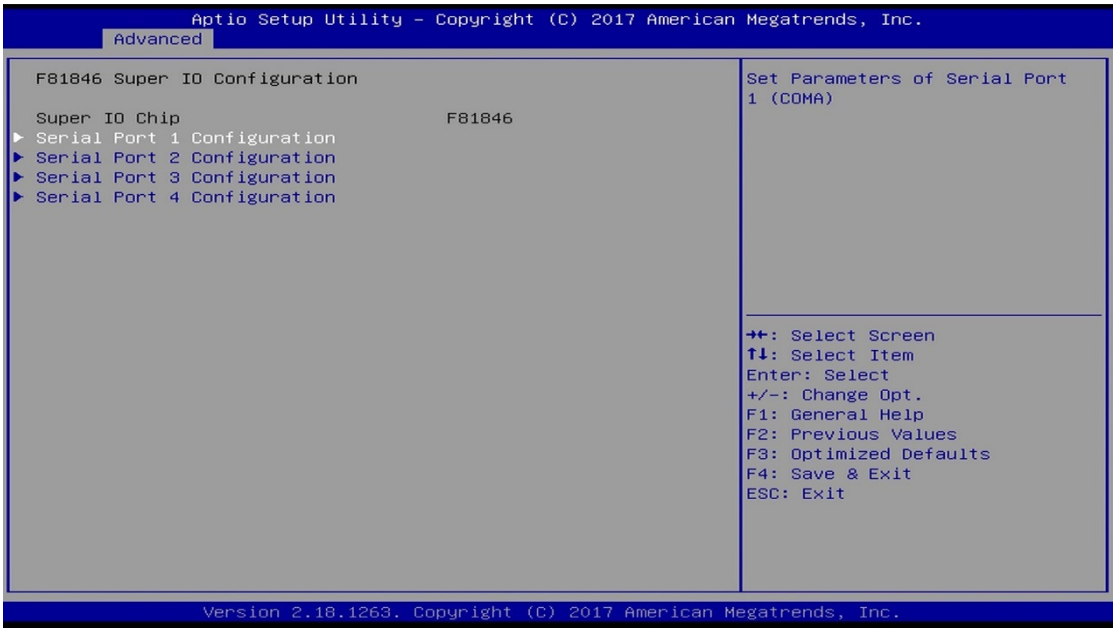
BIOS Setting	Description
Enable Hibernation	Enables or disables the System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
ACPI Sleep State	Selects ACPI sleep state that the system will enter when the **suspend** button is pressed.

5.4.6 LVDS (eDP/DP) Configuration



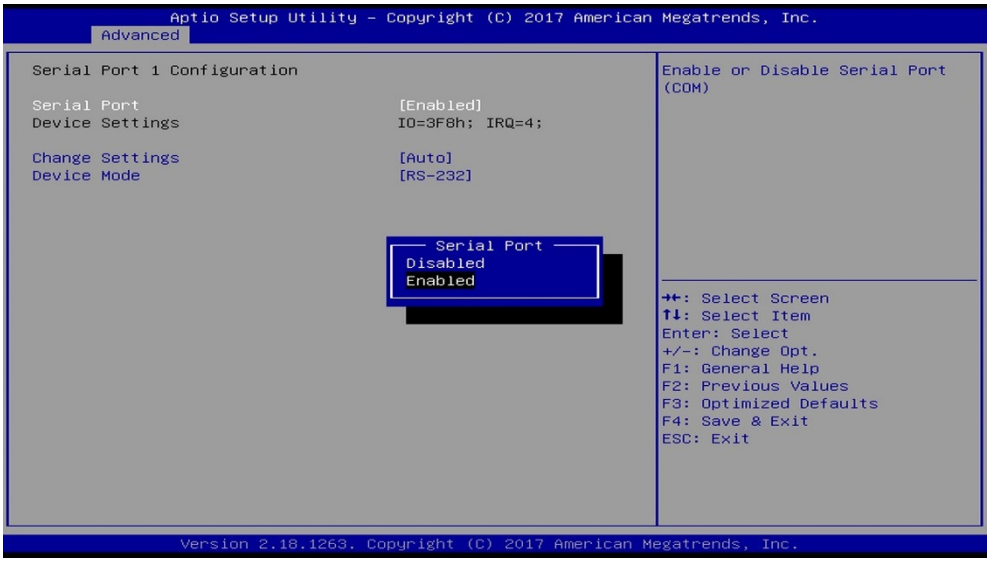
BIOS Setting	Description
LVDS (eDP/DP) Support	Enables / Disables the support of LVDS (eDP/DP).
Panel Color Depth	Sets the depth of the panel color as 18 / 24 bits.
LVDS Channel Type	Sets the LVDS display mode as the single or dual channel.
Panel Type	Sets the resolution identical with your panel. Options: 800 x 600, 1024 x 768, 1280 x 800, 1366 x 768, 1440 x 900, 1600 x 900, 1920 x 1080
LVDS Backlight Level Control	Enables / Disables the brightness control. Options: Level-1 ~ Level-7.
Backlight Output Mode	Selects the backlight output mode as DC or PWM mode.
PWM Frequancy Setting	4 PWM frequencies are available: 23.5 KHz, 11.75 KHz, 5.875 KHz, 220 Hz.

5.4.7 F81846 Super IO Configuration



BIOS Setting	Description
Serial Ports Configuration	Sets parameters of serial ports. Enables / Disables the serial port and select an optimal setting for the Super IO device.

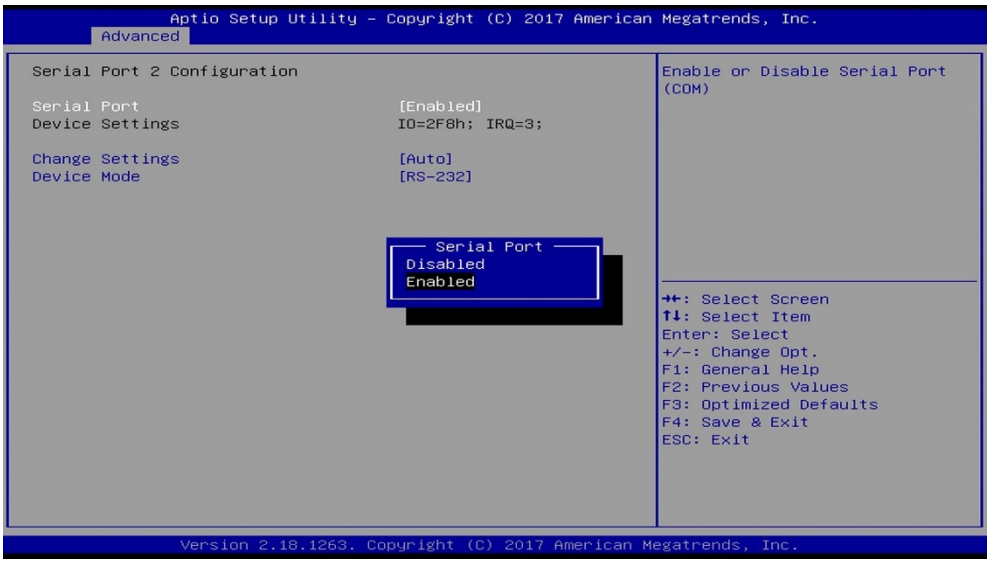
5.4.7.1. Serial Port 1 Configuration



BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).

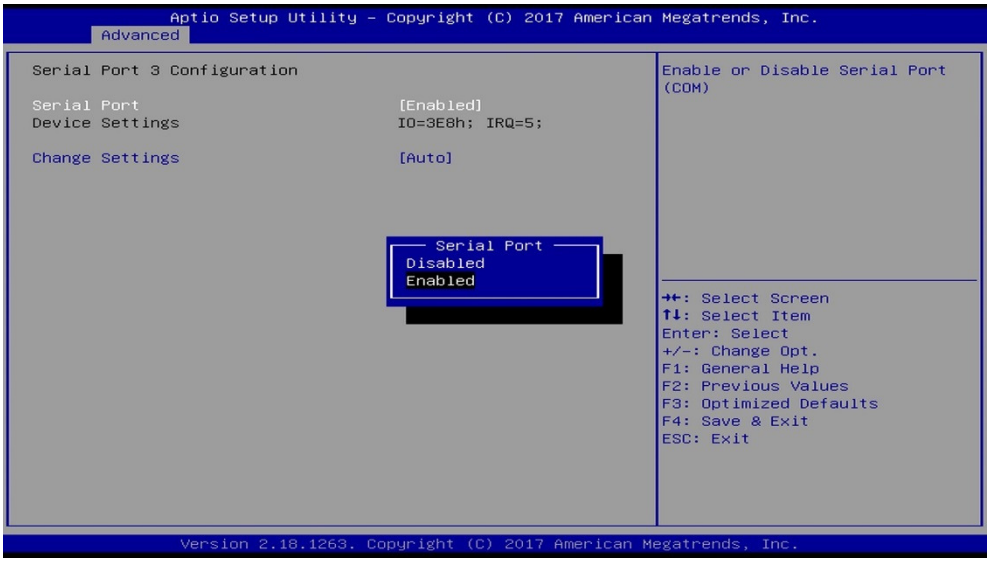
BIOS Setting	Description
Change Settings	Selects an optimal settings for Super I/O device. Options: • Auto • IO = 3F8h; IRQ = 4 • IO = 3F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12
Device Mode	Changes the serial port mode to RS-232 / 422 / 485.

5.4.7.2. Serial Port 2 Configuration



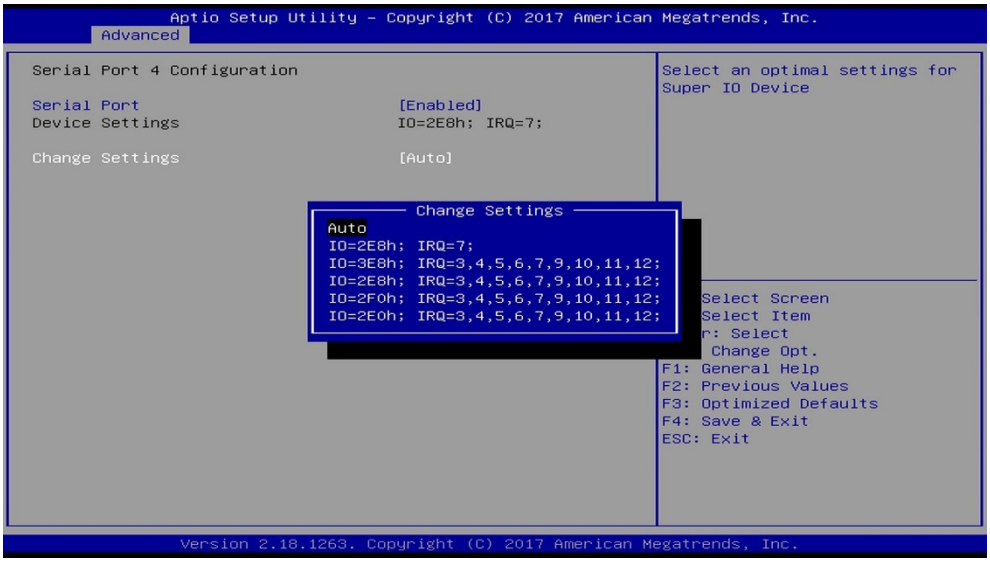
BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).
Change Settings	Selects an optimal settings for Super I/O device. Options: • Auto • IO = 2F8h; IRQ = 3 • IO = 3F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12
Device Mode	Changes the serial port mode to RS-232 / 422 / 485.

5.4.7.3. Serial Port 3 Configuration



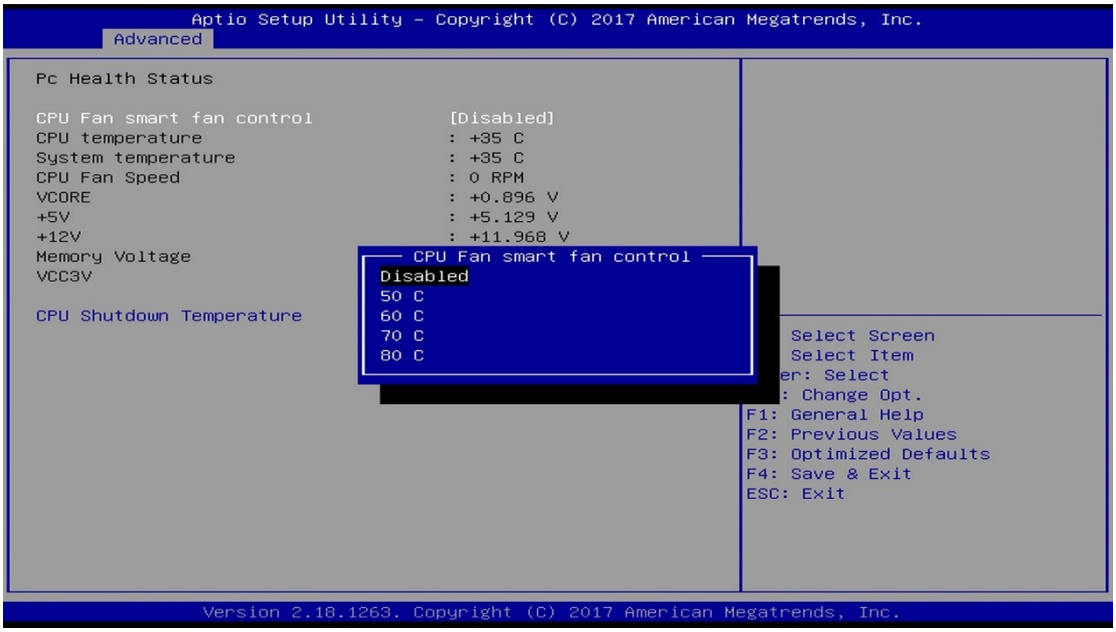
BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).
Change Settings	Selects an optimal settings for Super I/O device. Options: • Auto • IO = 3E8h; IRQ = 7 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F0h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E0h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12

5.4.7.4. Serial Port 4 Configuration



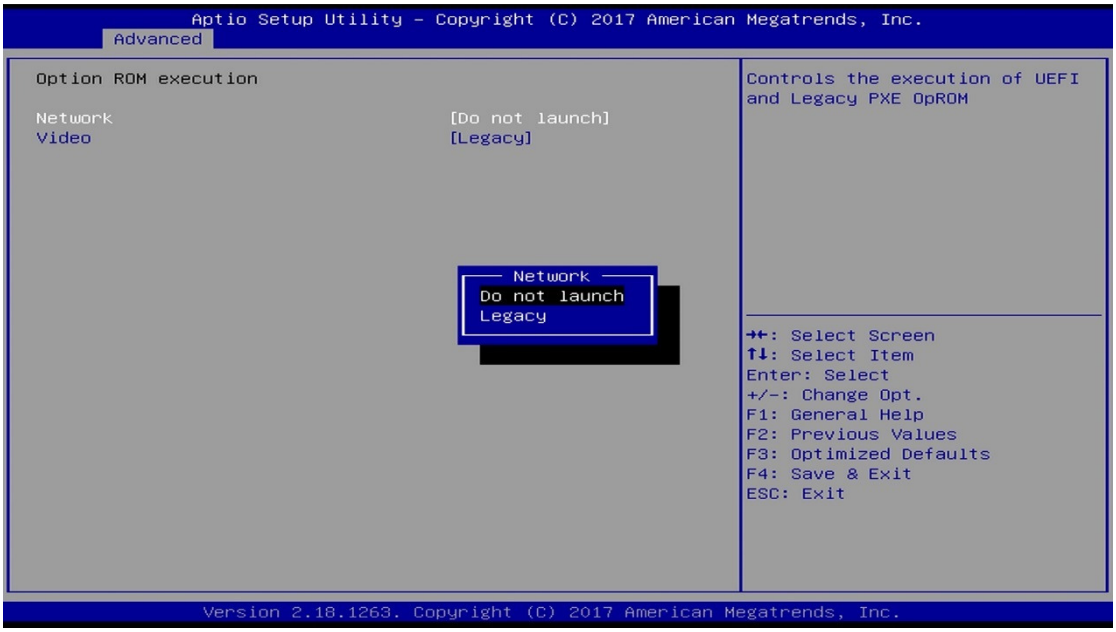
BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).
Change Settings	Selects an optimal settings for Super I/O device. Options: • Auto • IO = 2E8h; IRQ = 7 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F0h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E0h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12

5.4.8 Hardware Monitor



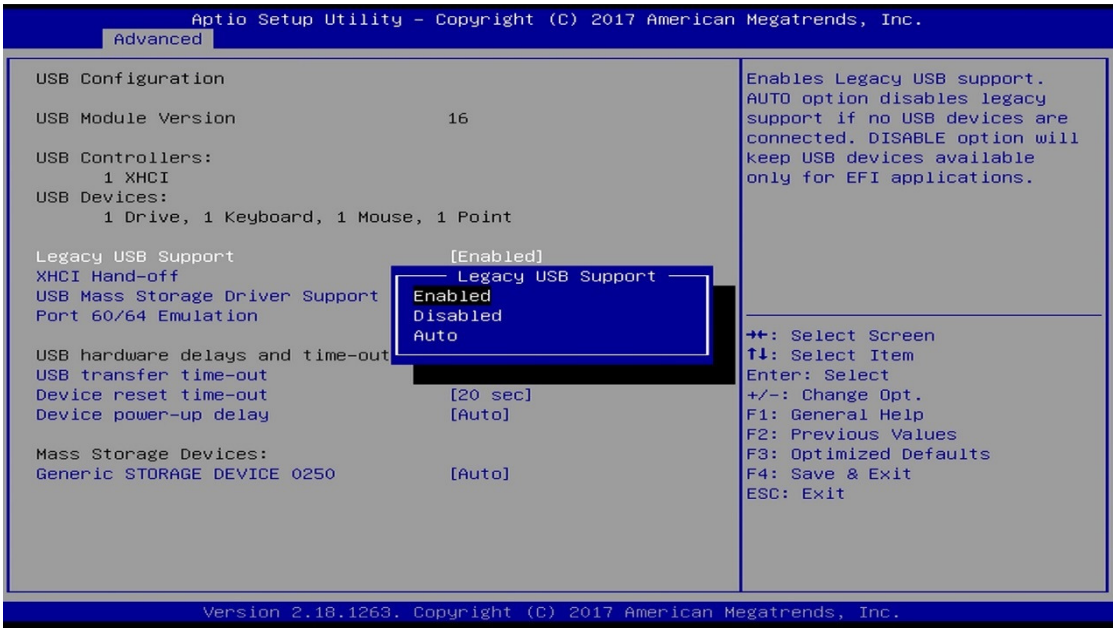
BIOS Setting	Description
CPU Fan smart fan control	Enables / Disables smart fan control. Options: Disabled, 50 °C, 60 °C, 70 °C, 80 °C
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.
CPU Shutdown Temperature	Sets a threshold of temperature to shut down if CPU goes overheated. Options: Disabled, 70 °C, 75 °C, 80 °C, 85 °C, 90 °C, 95 °C

5.4.9 CSM Configuration



BIOS Setting	Description
Network	Controls the execution of UEFI and Legacy PXE OpROM. Options: Do not launch, Legacy
Video	Controls the execution of UEFI and Legacy Video OpROM. Options: Do not launch, UEFI, Legacy

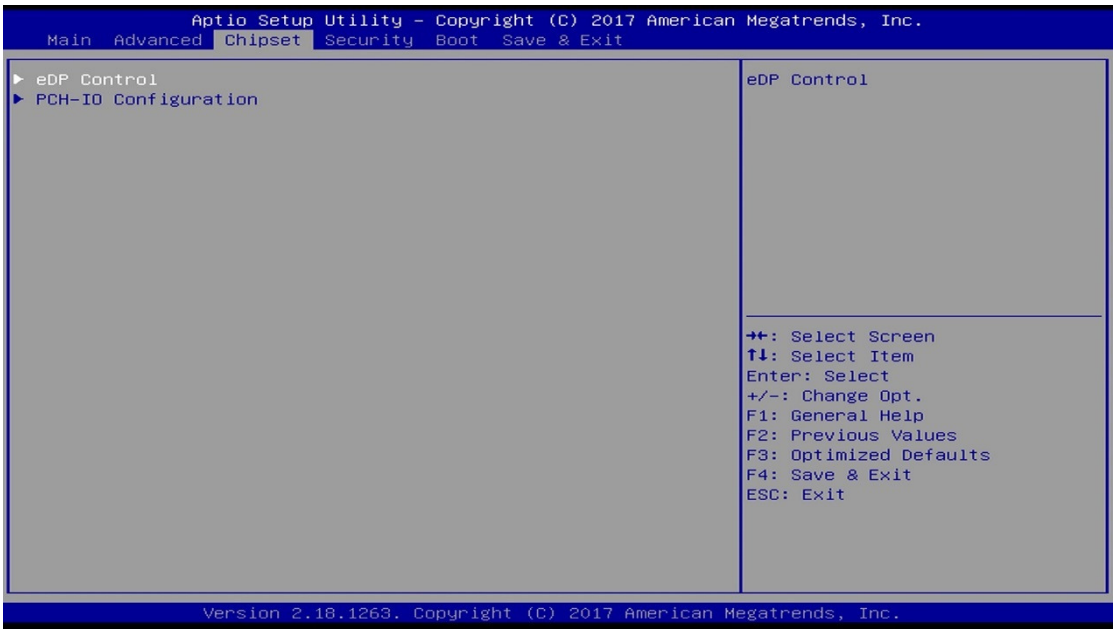
5.4.10 USB Configuration



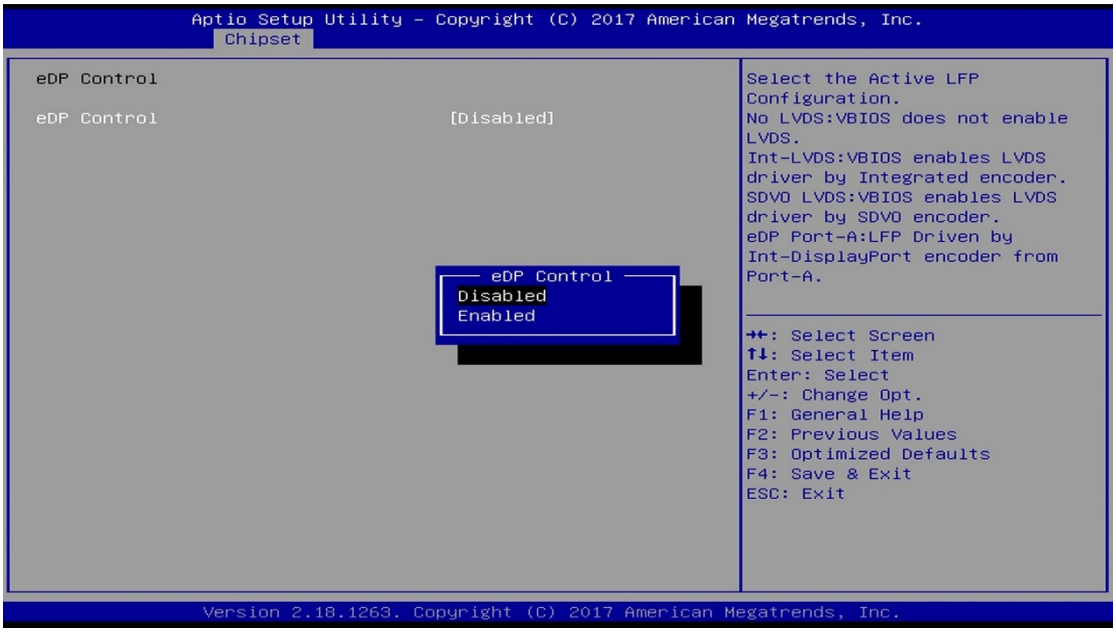
BIOS Setting	Description
Legacy USB Support	Enables / Disables Legacy USB support. • **Auto** disables legacy support if there is no USB device connected. • **Disable** keeps USB devices available only for EFI applications.
XHCI Hand-pff	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables USB mass storage driver support.
Port 60/64 Emulation	Enables I/O port 60h / 64h emulation support. This is should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB Transfer time-out	Sets the time-out value 1, 5, 10 or 20 sec(s) for Control, Bulk, and Interrupt transfers.
Device reset time-out	Sets the seconds (10, 20, 30, 40 secs) of delaying execution of start unit command to USB mass storage device.

BIOS Setting	Description
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 100 ms, and for a hub port the delay is taken from hub descriptor.
Generic Storage Device 0250	Mass storage device eumulation type. “Auto” enumerates devices according to their media format. Optical drives are emulated as “CD-ROM”, drivers with no media will be emulated according to a drive type. Options: Auto, Floppy, Forced FDD, Hard Disk, CD-ROM.

5.5 Chipset Settings

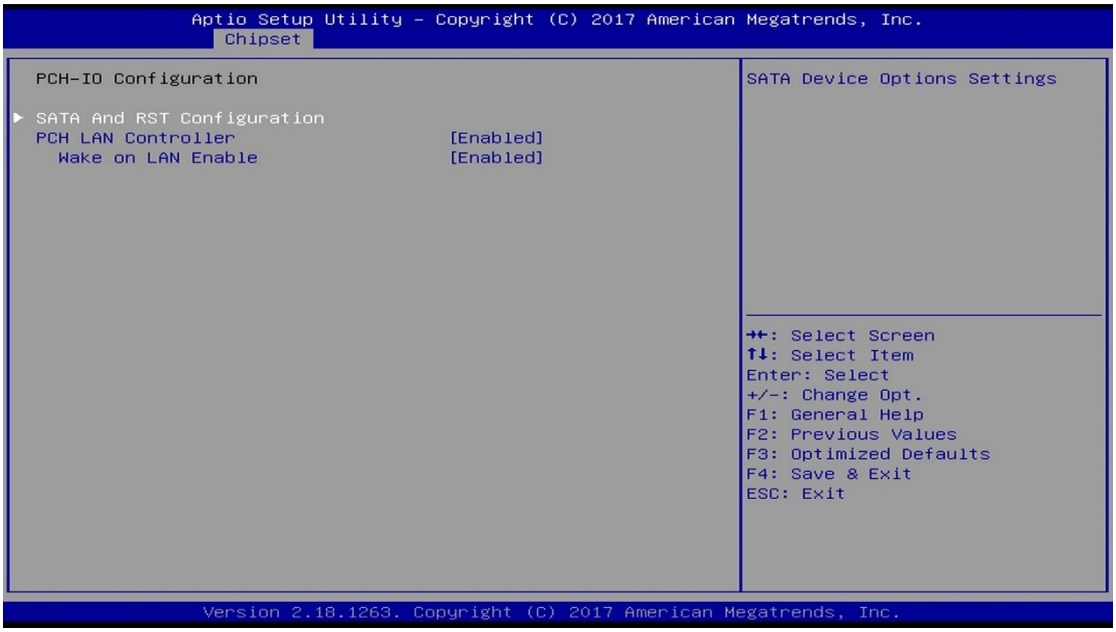


5.5.1 eDP Control



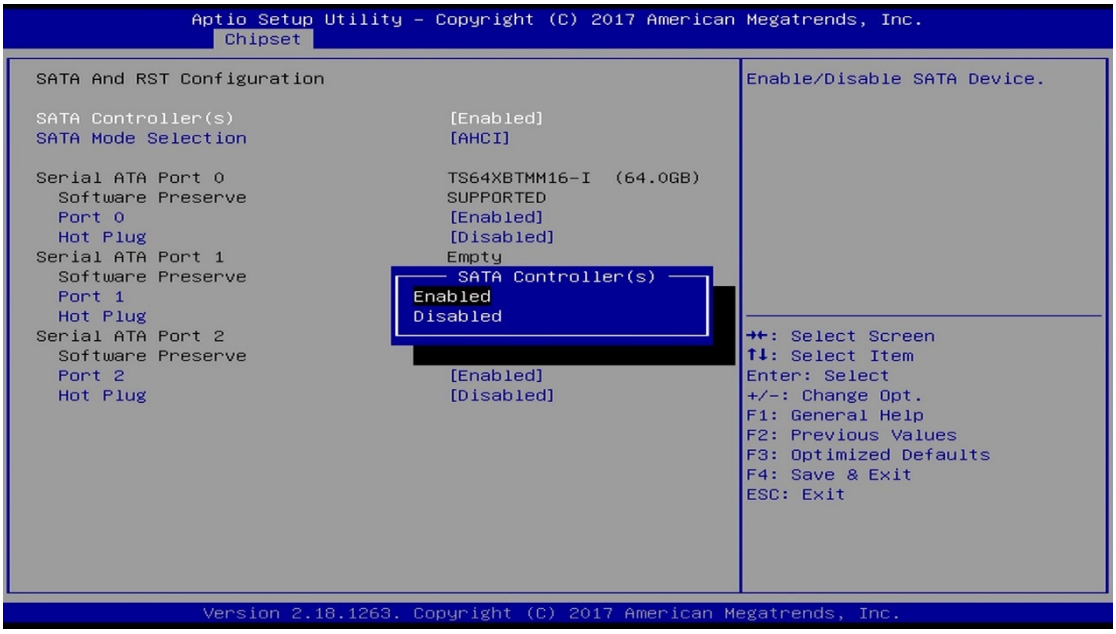
BIOS Setting	Description
eDP Control	Enables / Disables the Active LFP configuration. No LVDS: VBIOS does not enable LVDS. Int-LVDS: VBIOS enables LVDS driver by integreated encorder. SDVD LVDS VBIOS enables LVDS driver by SDVD encorder. eDP Port-A: LFP driven by Int-DisplayPort encorder from Port-A.

5.5.2 PCH-IO Configuration



BIOS Setting	Description
SATA and RST Configuration	SATA device options and settings
PCH LAN Controller	Enables / Disables onboard NIC.
Wake on LAN Enable	Enables / Disables integrated LAN to wake the system.

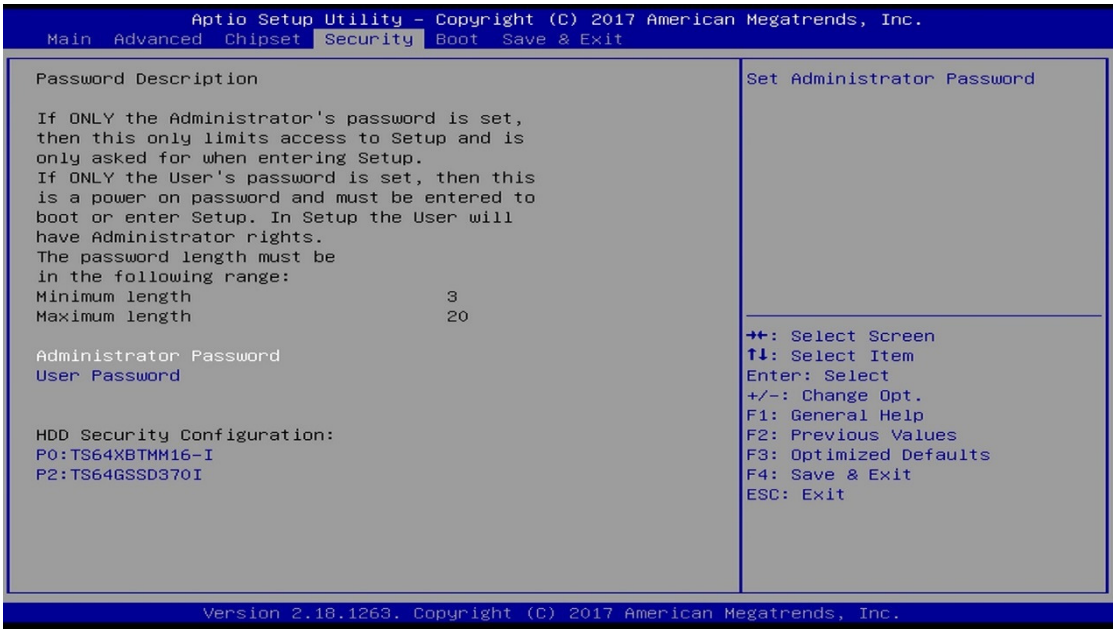
5.5.2.1. SATA and RST Configuration



BIOS Setting	Description
SATA Controller(s)	Enables / Disables the Serial ATA.
SATA Mode Selection	Determines how SATA controller(s) works. AHCI Mode or Intel RST Premium.
Serial ATA Port 0~2	Enables / Disables Serial Port 0 ~ 2.
SATA Ports Hot Plug	Enables / Disables SATA Ports HotPlug.

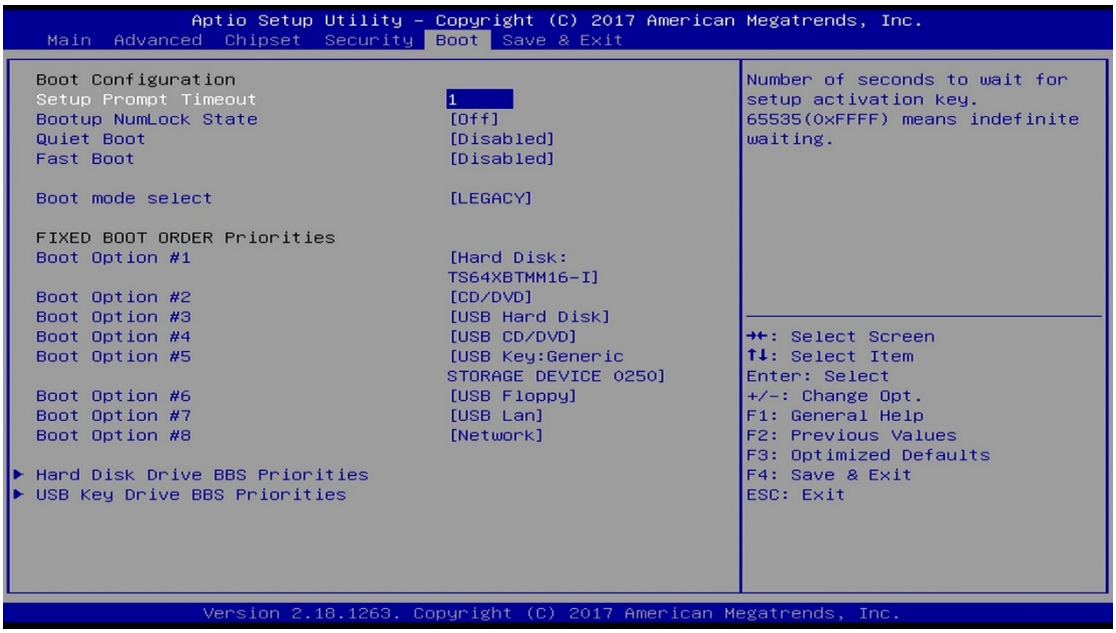
5.6 Security Settings

This section allows you to configure, improve your system, and set up some system features according to your preference.



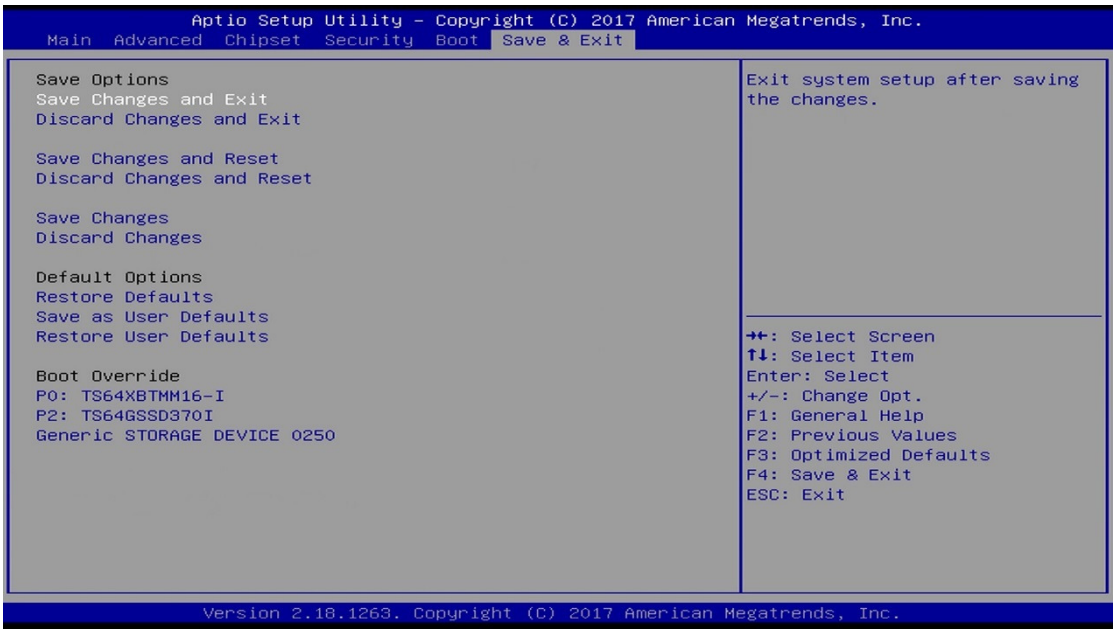
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.

5.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
Fast Boot	Enables / Disables boot with initialization of a minimal set of devices required to launch the active boot option. There no effect for BBS boot options.
Boot mode select	Selects a Boot mode, Legacy / UEFI.
Boot Option Priorities	Sets the system boot order priorities for hard disk, CD/DVD, USB, Network.
Hard Disk Drive BBS priorities	Sepcifies the boot device priority sequence from available hard disk drives.
USB Key Drive BBS Priorities	Specifies the boot device priority sequence from available USB Key drives.

5.8 Save & Exit Settings



BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores / Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as user defaults.
Restore User Defaults	Restores the user defaults to all the setup options.

Chapter 6
BIOS Setup for ASTUT-W153-PC / PC1S

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

6.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives, serial ports and parallel ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

6.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Press the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

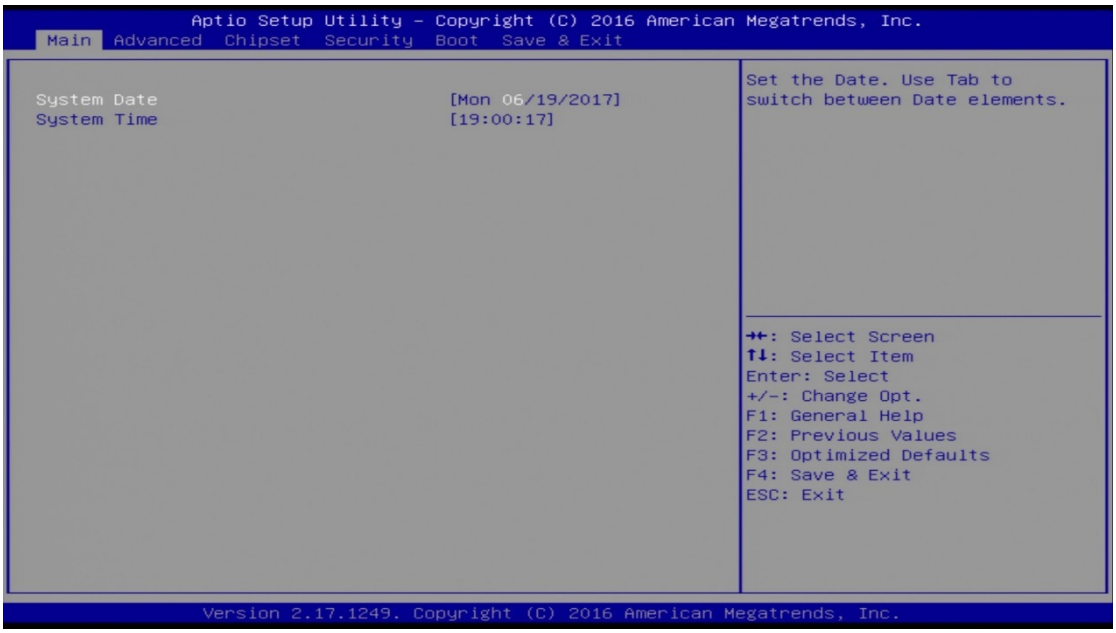
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

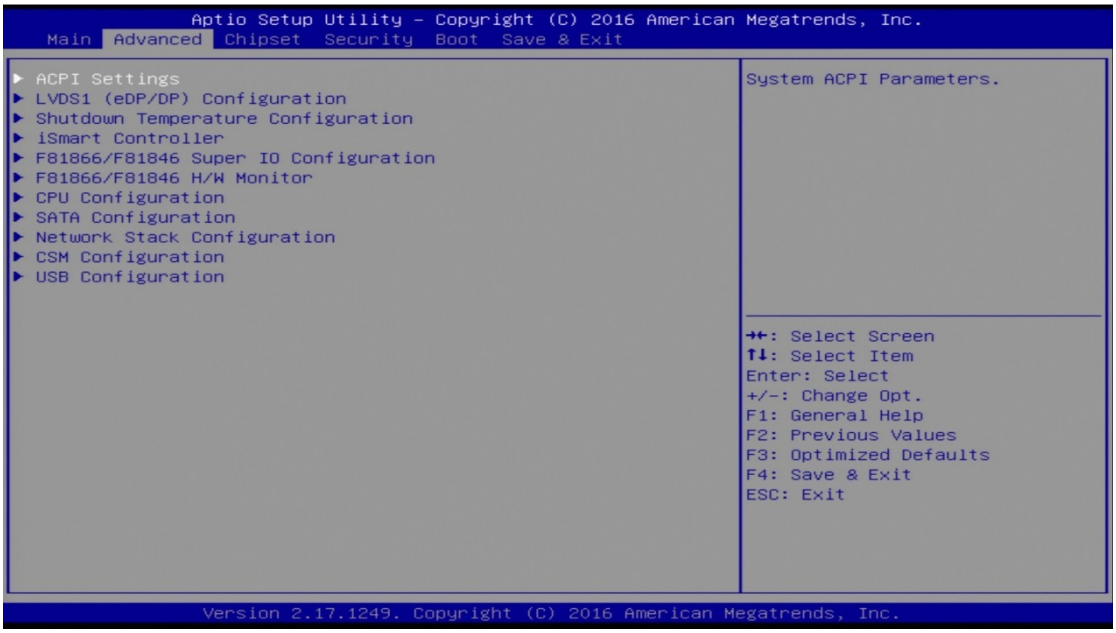
6.3 Main Settings



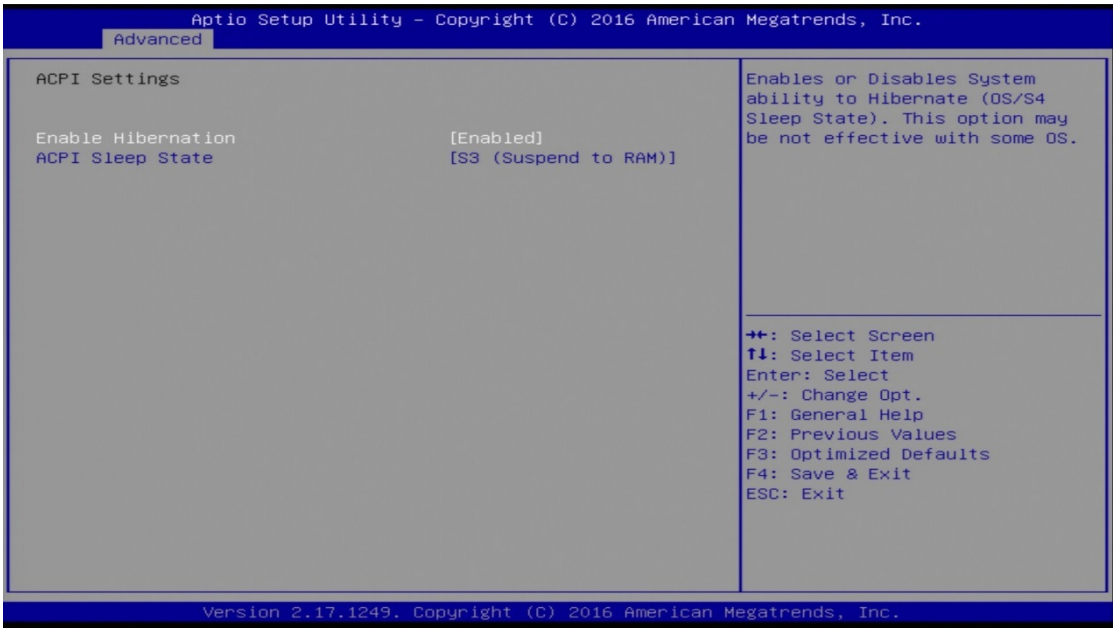
BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

6.4 Advanced Settings

This section allows you to configure, improve your system and allows you to set up some system features according to your preference.

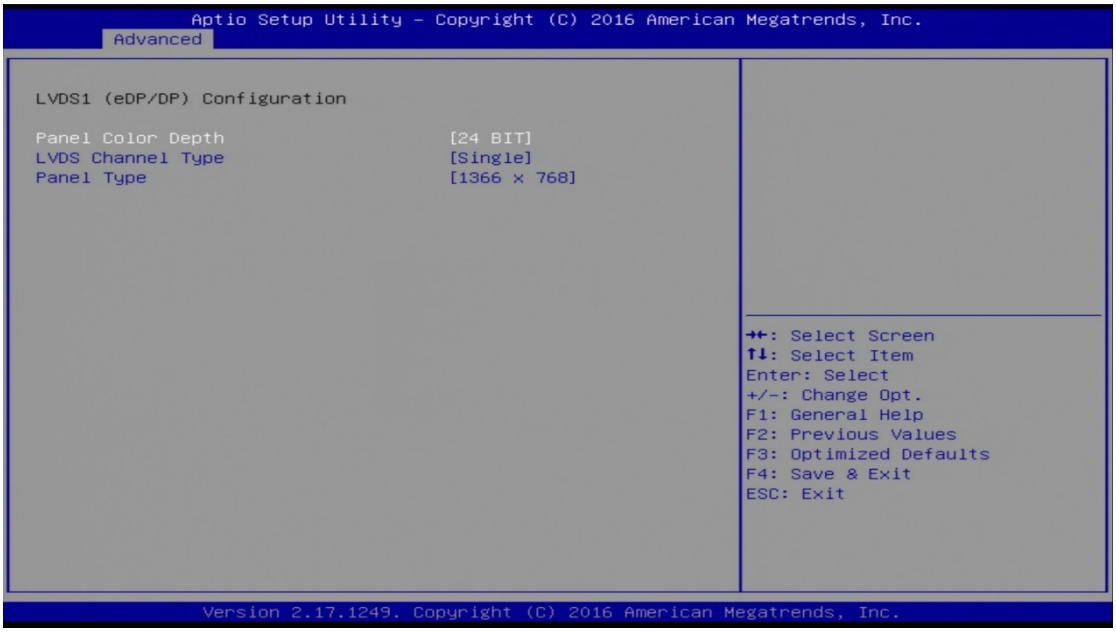


6.4.1 ACPI Settings



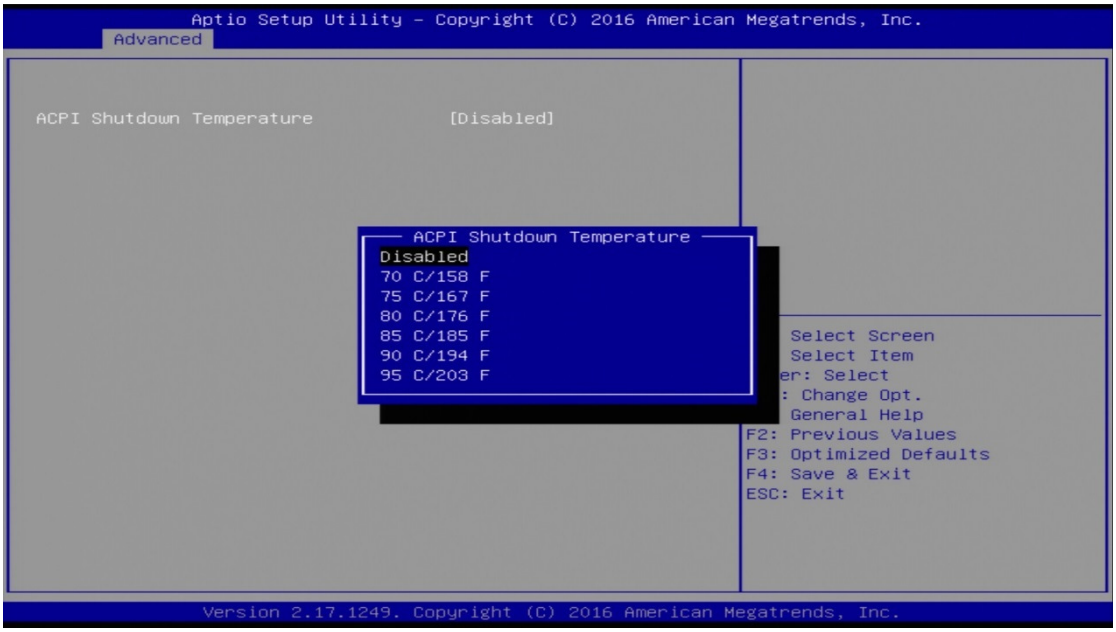
BIOS Setting	Description
Enable Hibernation	Enables or disables the System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
ACPI Sleep State	Selects ACPI sleep state that the system will enter when the **suspend** button is pressed.

6.4.2 LVDS (eDP/DP) Configuration



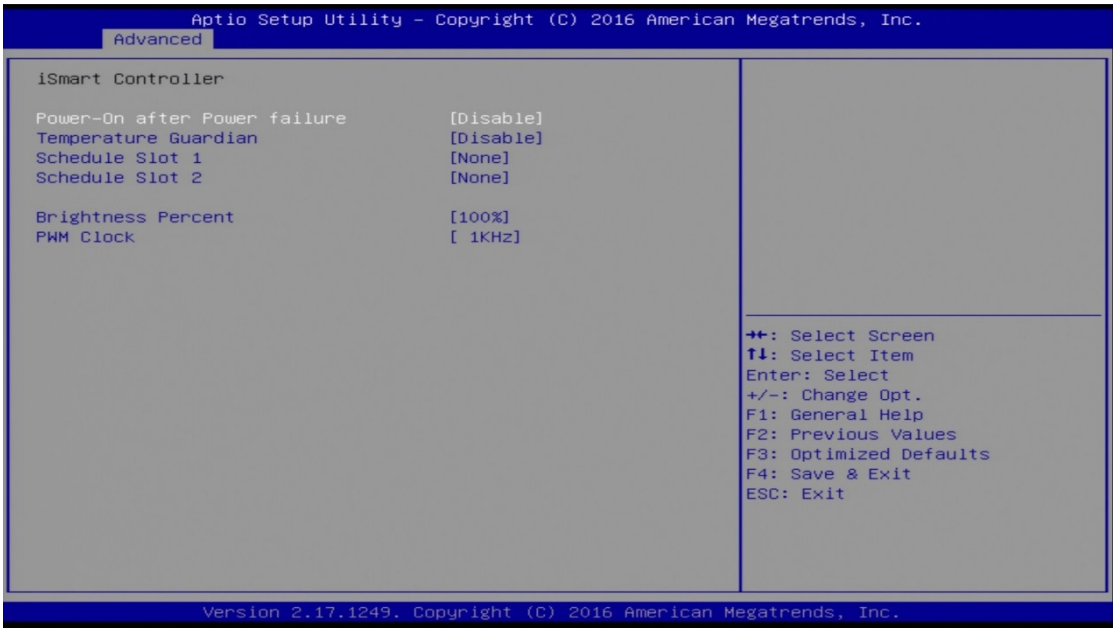
BIOS Setting	Description
Panel Color Depth	Sets the depth of the panel color as 18 / 24 bits.
LVDS Channel Type	Sets the LVDS display mode as the single or dual channel.
Panel Type	Sets the resolution identical with your panel. Options: 800 x 600, 1024 x 768, 1366 x 768, 1440 x 900, 1600 x 900, 1280 x 800, 1920 x 1080

6.4.3 Shutdown Temperature Configuration



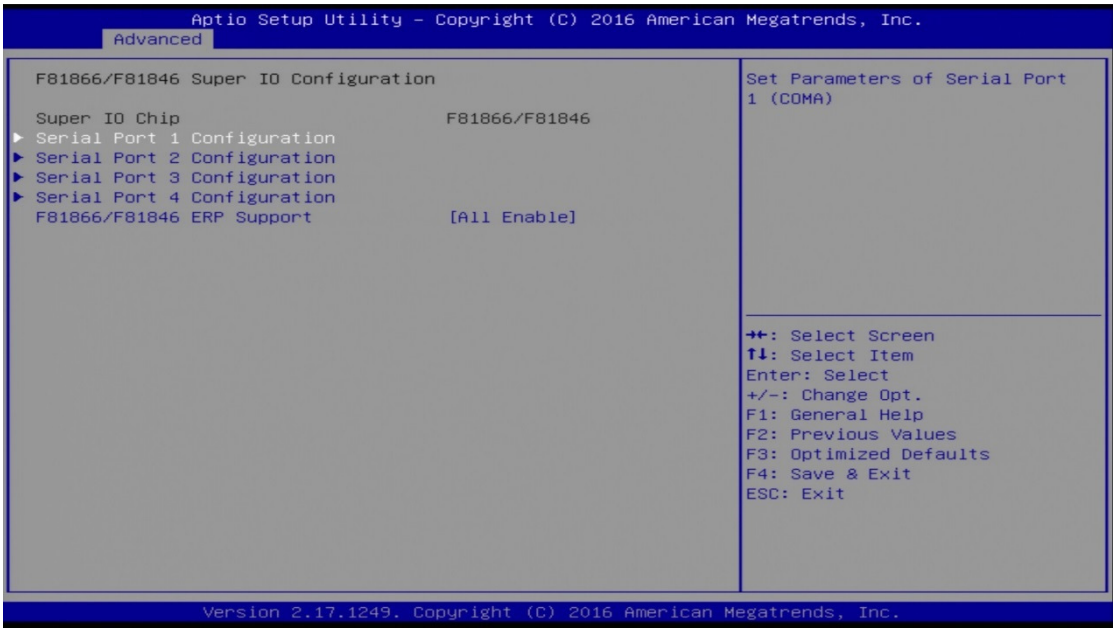
BIOS Setting	Description
ACPI Shutdown Temperature	This field enables or disables the Shutdown Temperature Options: Disabled (default). 70 °C, 75 °C, 80 °C, 85 °C, 90 °C, 95 °C

6.4.4 iSmart Controller



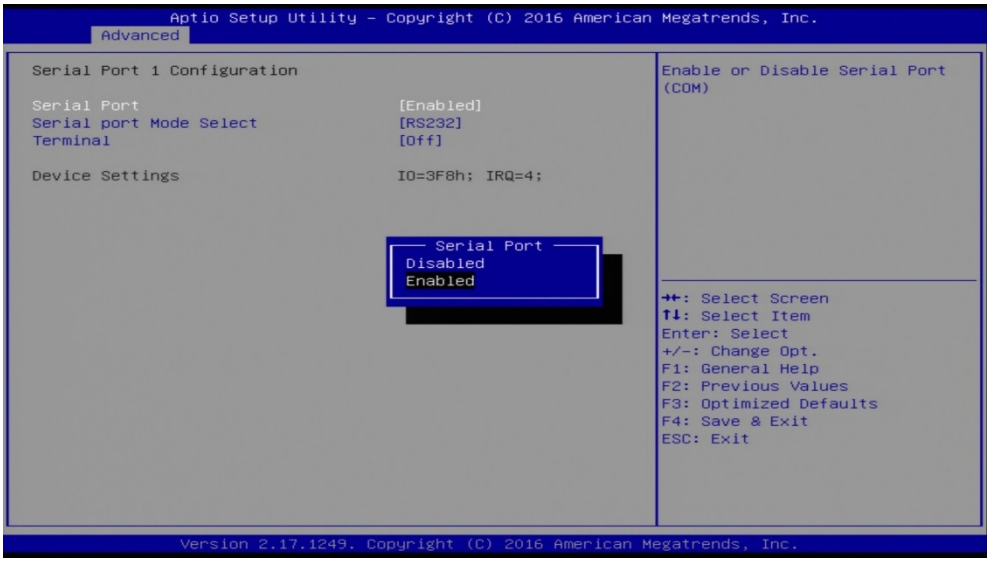
BIOS Setting	Description
Power-On after Power failure	Enables / Disables the system to be turned on automatically after a power failure.
Temperature Guardian	Generate the reset signal when system hands up on POST.
Schedule Slot 1 / 2	Sets up the hour / minute / day for the power-on schedule for the system. Options: • None • Power On • Power On / Off **Important:** If you would like to set up a schedule between adjacent days, configure two schedule slots. For example, if setting up a schedule from Wednesday 5 p.m. to Thursday 2 a.m., configure two schedule slots. But if setting up a schedule from 3 p.m to 5 p.m. on Wednesday, configure only a schedule slot.
Brghtness Percent	Sets the brightness percentage as 100%, 75%, 50%.
PWM Clock	Sets the PWM clock as 200 Hz, 1K Hz, 5K Hz.

6.4.5 F81866 / F81846 Super IO Configuration



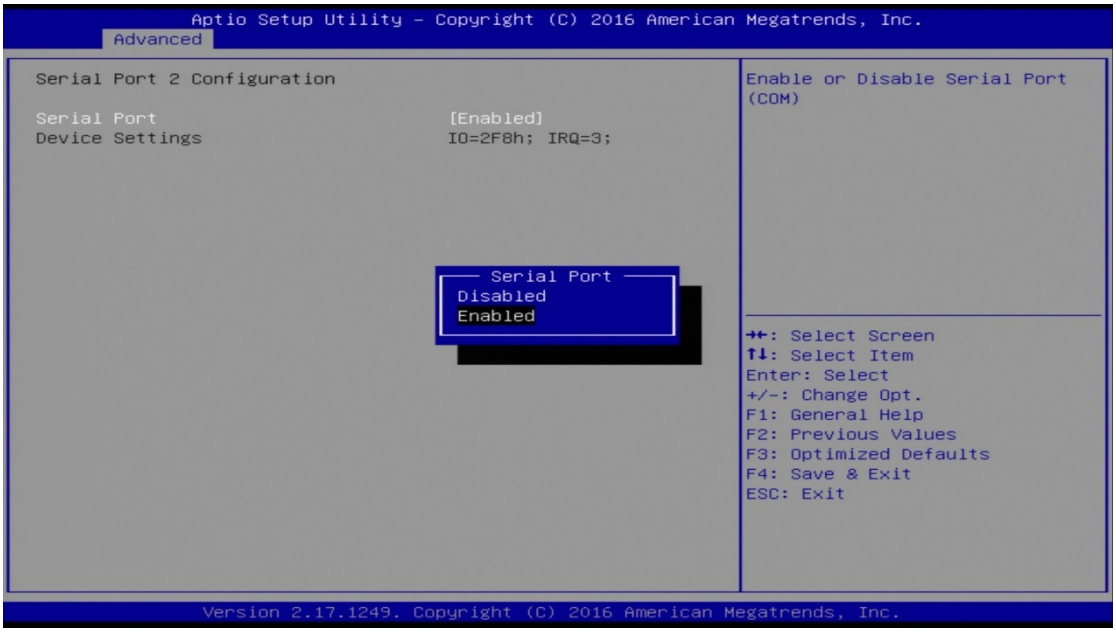
BIOS Setting	Description
Serial Ports Configuration	Sets parameters of serial port 1~4 (COMA).
F81866 / F81846 ERP Support	Selects an ERP mode for the supoer I/O chip. Options: All Enable, Enable Ethernet for WOL, All Disable

6.4.5.1. Serial Port 1 Configuration



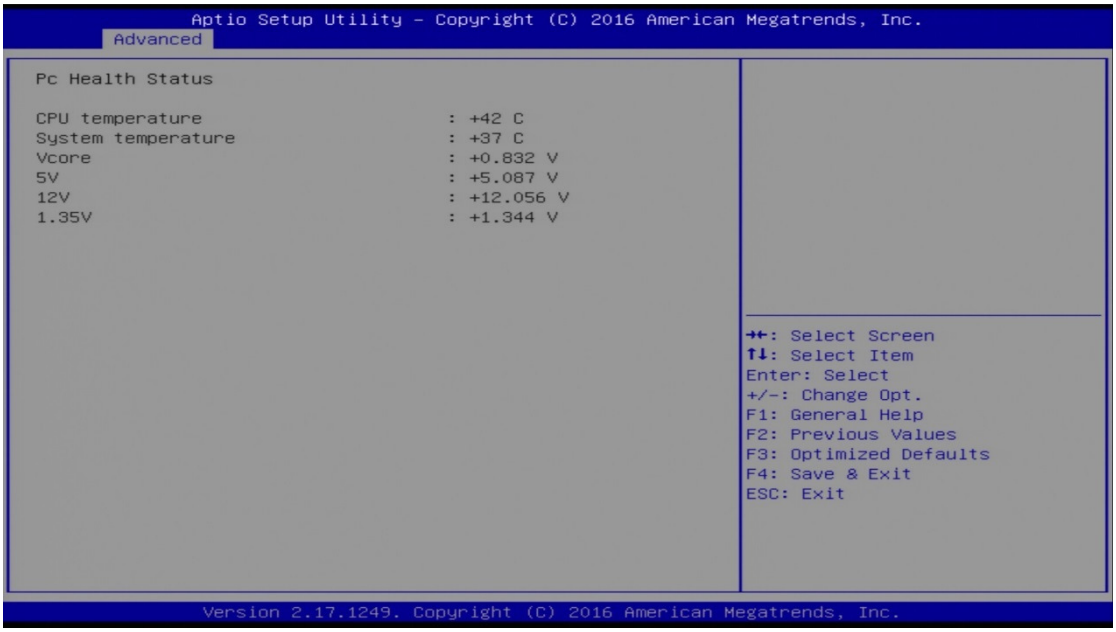
BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).
Serial Port Mode Select	Changes the mode of serial port to RS-232, RS-422, RS-485.
Terminal	Turns on or off the terminal.

6.4.5.2. Serial Port 2 / 3 / 4 Configuration



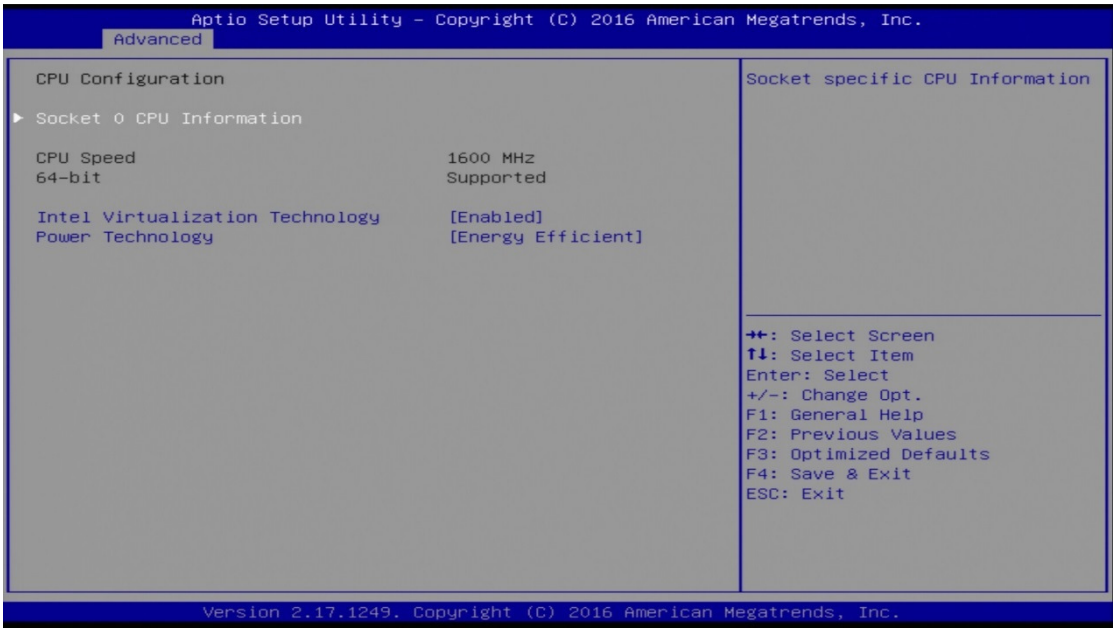
BIOS Setting	Description
Serial Port	Enables / Disables serial port (COM).

6.4.6 F81866 / F81846 Hardware Monitor



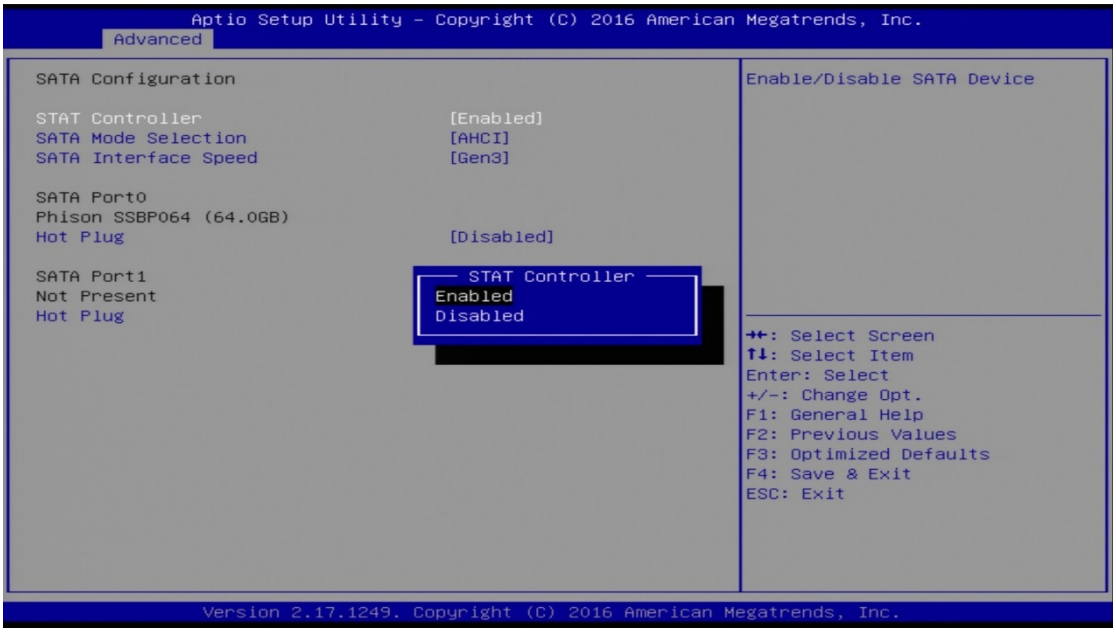
Displays the current device health status.

6.4.7 CPU Configuration



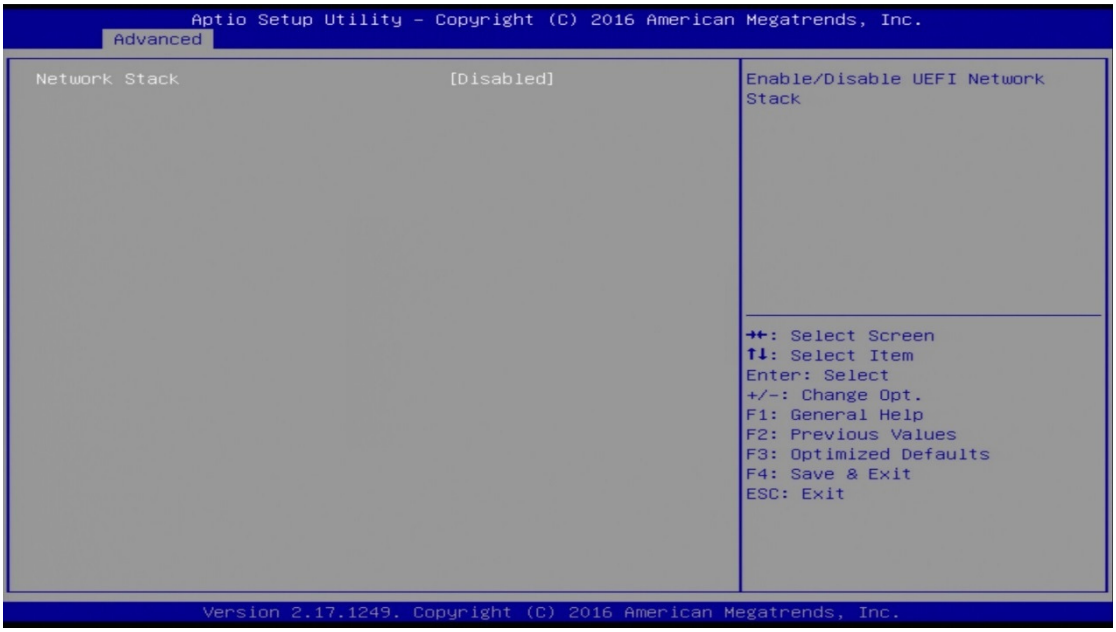
BIOS Setting	Description
Socket 0 CPU Information	Displays the specific socket CPU Information.
Intel Virtualization Technology	Enables / Disables for a VMM to utilize the additional hardware capabilities provided by Vanderpool Technology.
Power Technology	Enables / Disables the power management features. Option: Disable, energy Efficient, Custom

6.4.8 SATA Configuration



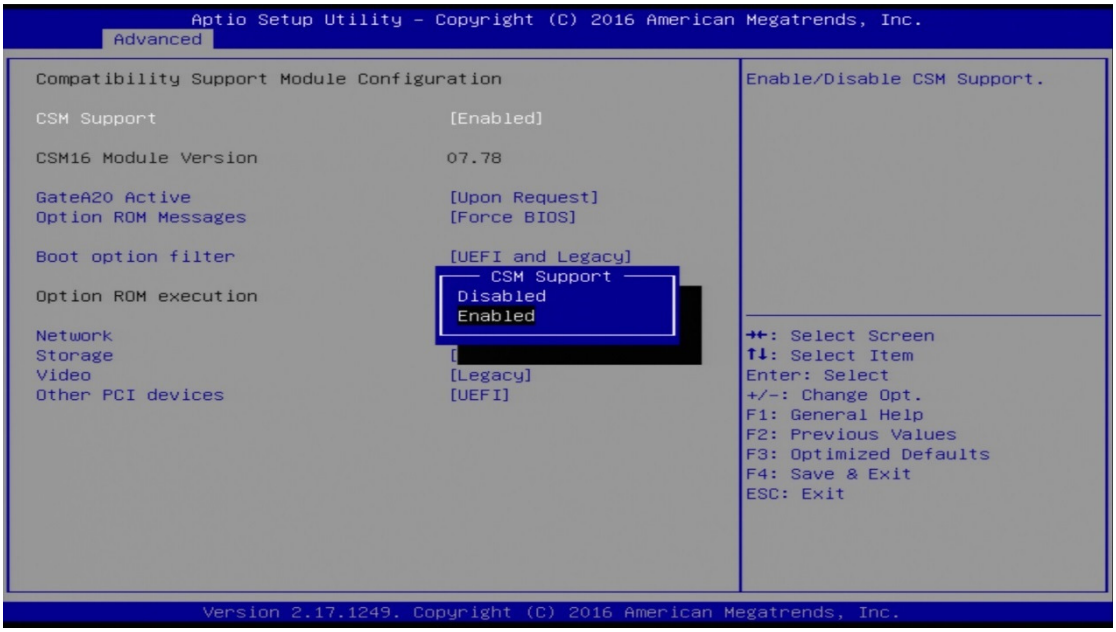
BIOS Setting	Description
SATA Controller	Enables / Disables SATA device.
SATA Mode Selection	Selects AHCI Mode.
SATA Interface Speed	Selects SATA interface speed CHV A1 always with Gen1 speed. Options: Gen1, Gen2, Gen3
SATA Port0 HotPlug	Enables / Disables SATA Port 0 HotPlug.
SATA Port1 HotPlug	Enables / Disables SATA Port 1 HotPlug.

6.4.9 Network Stack Configuration



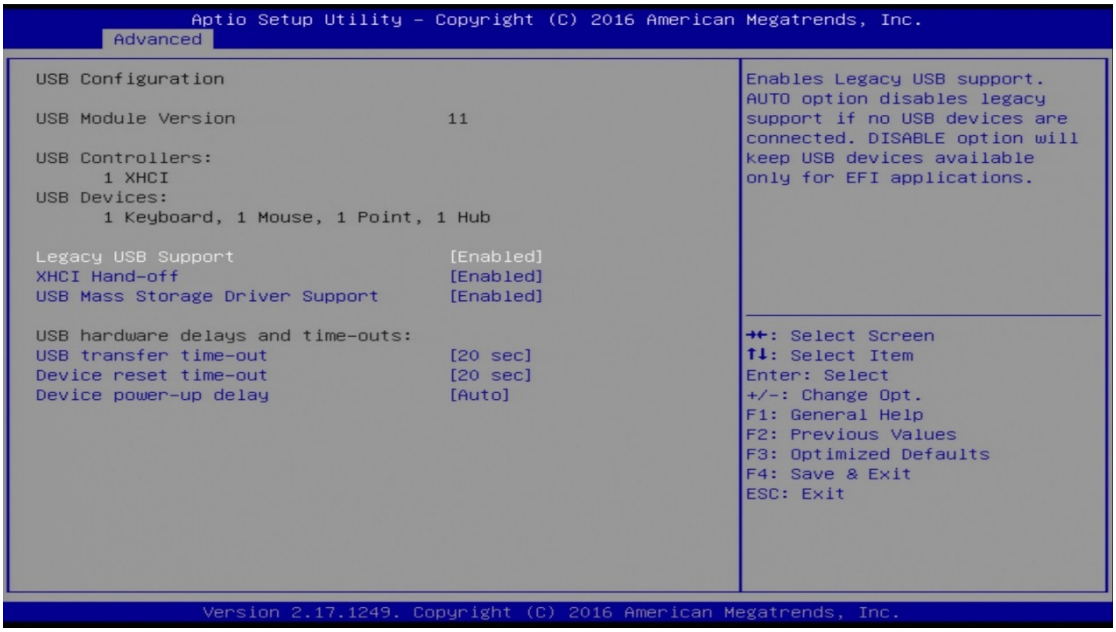
BIOS Setting	Description
Network Stack	Enables / Disables UEFI Network Stack.

6.4.10 CSM Configuration



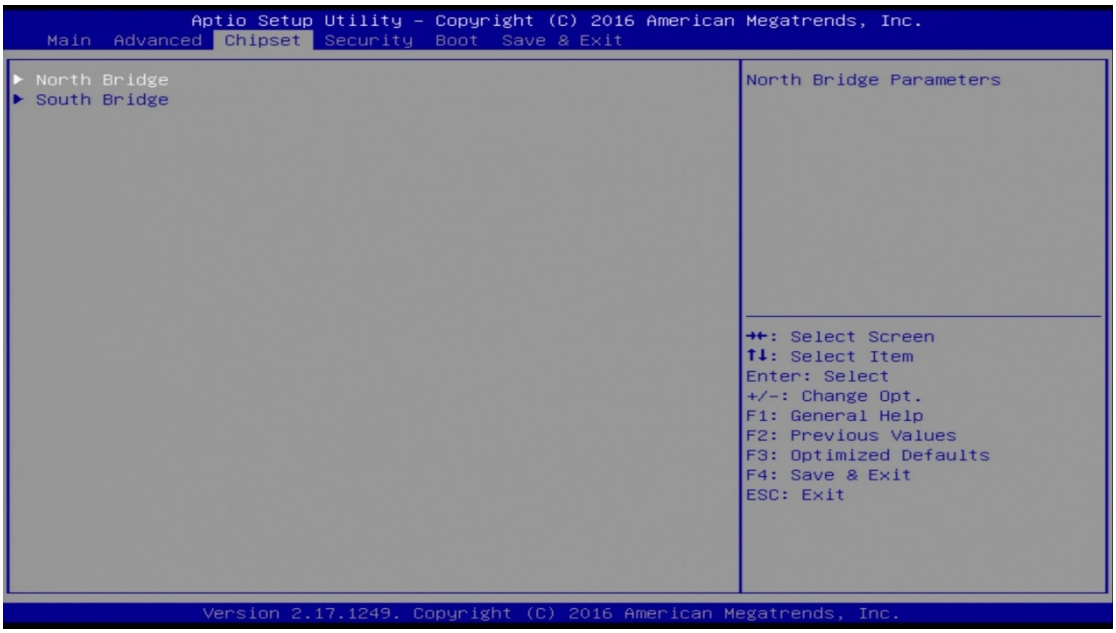
BIOS Setting	Description
CSM Support	Enables / Disables CSM support.
GateA20 Active	• **Upon Request** disables GA20 when using BIOS services. • Always cannot disable GA20, but is useful when any RT code is executed above 1 MB.
Option ROM Messages	Sets a display mode, Force BIOS or Keep Current, for Option ROM.
Boot option filter	Controls the priority of Legacy and UEFI.
Network	Controls the execution of UEFI and Legacy PXE OpROM.
Storage	Controls the execution of UEFI and Legacy Storage OpROM.
Video	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	Determines OpROM execution policy for devices other than network, storage or video.

6.4.11 USB Configuration

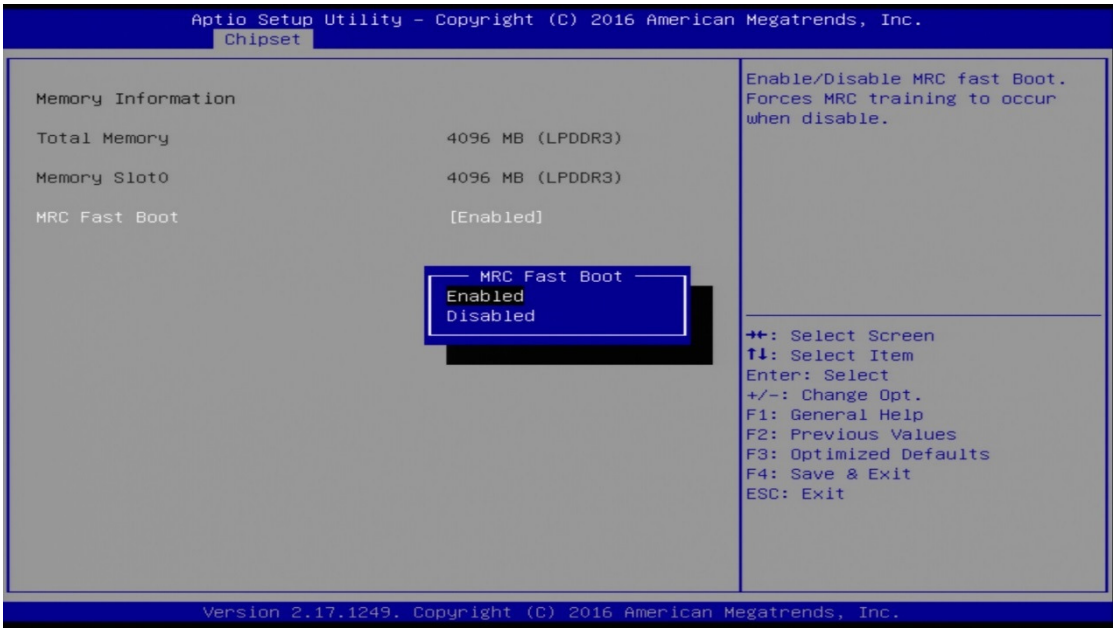


BIOS Setting	Description
Legacy USB Support	Enables / Disables Legacy USB support. • **Auto** disables legacy support if there is no USB device connected. • **Disable** keeps USB devices available only for EFI applications.
XHCI Hand-pff	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables USB mass storage driver support.
USB Transfer time-out	Sets the time-out value 1, 5, 10 or 20 sec(s) for Control, Bulk, and Interrupt transfers.
Device reset time-out	Sets the seconds (10, 20, 30, 40 secs) of delaying execution of start unit command to USB mass storage device.
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 100 ms, and for a hub port the delay is taken from hub descriptor.

6.5 Chipset Settings

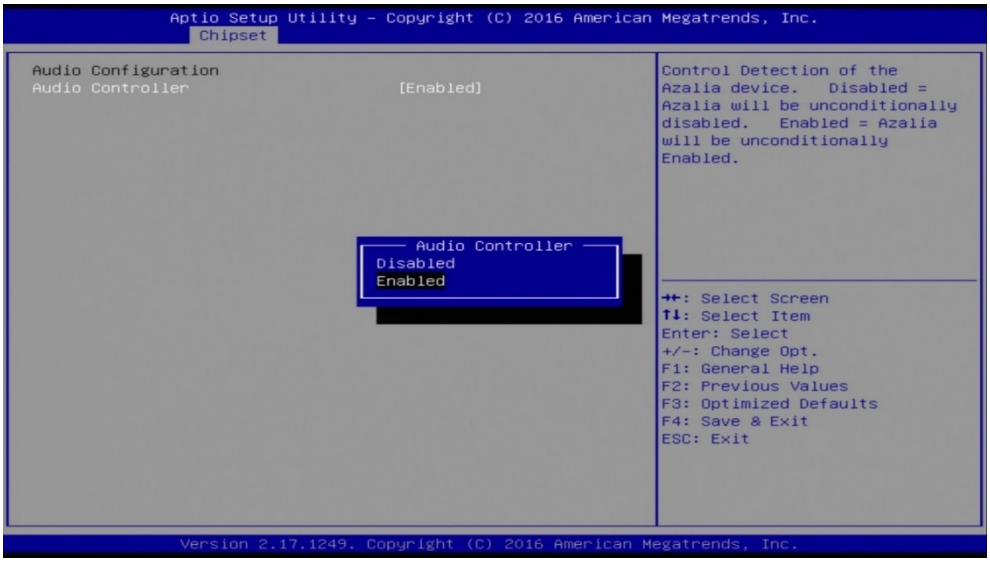


6.5.1 North Bridge



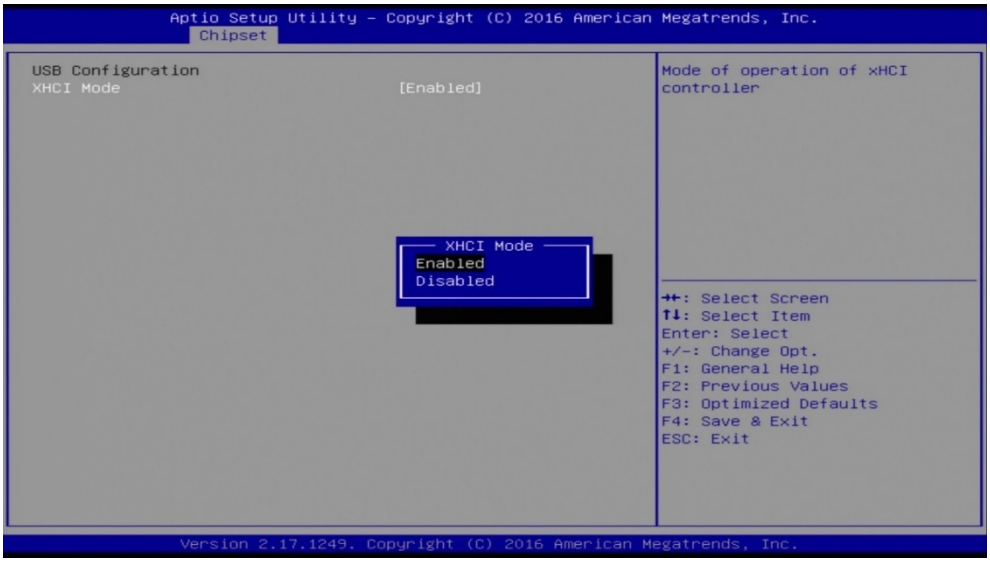
BIOS Setting	Description
MRC Fast Boot	Enables / Disables MRC fast boot. Forces MRC training to occur when disable.

6.5.1.1. Azalia Configuration



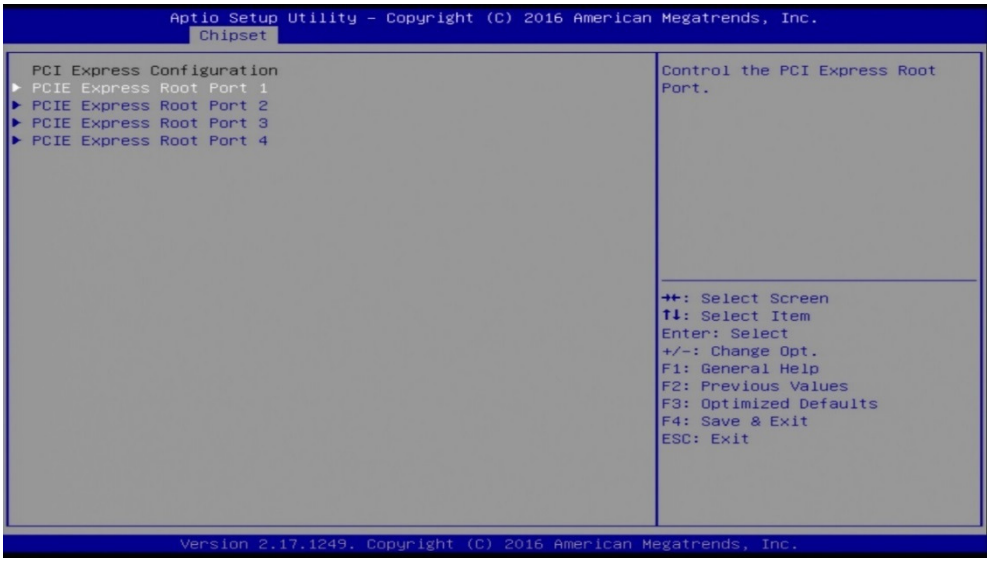
BIOS Setting	Description
Audio Controller	Enables / Disables the unconditional control detection of the Azalia device.

6.5.1.2. USB Configuration

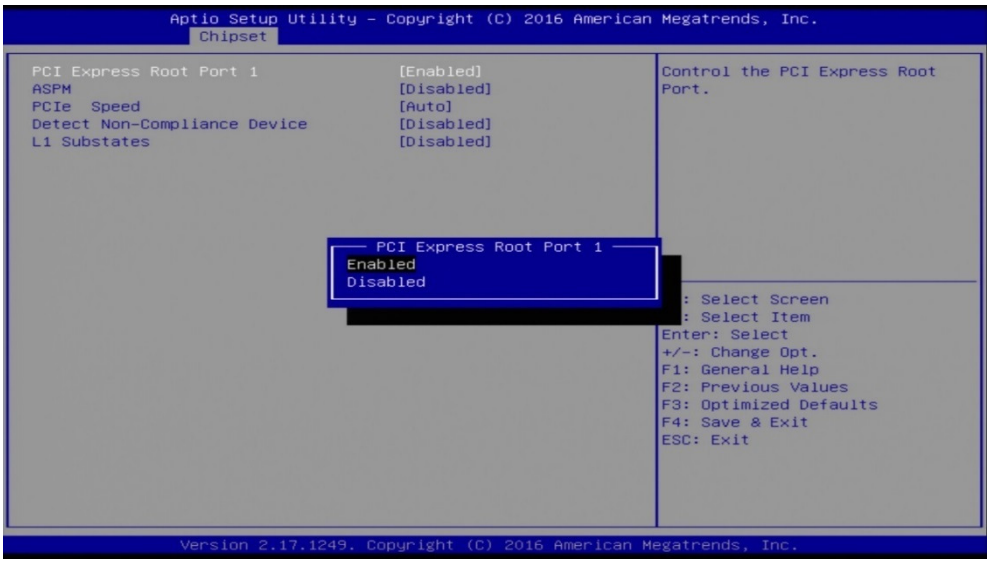


BIOS Setting	Description
XHCI Mode	Enables / Disables the mode of operation of XHCI controller.

6.5.1.3. PCI Express Configuration



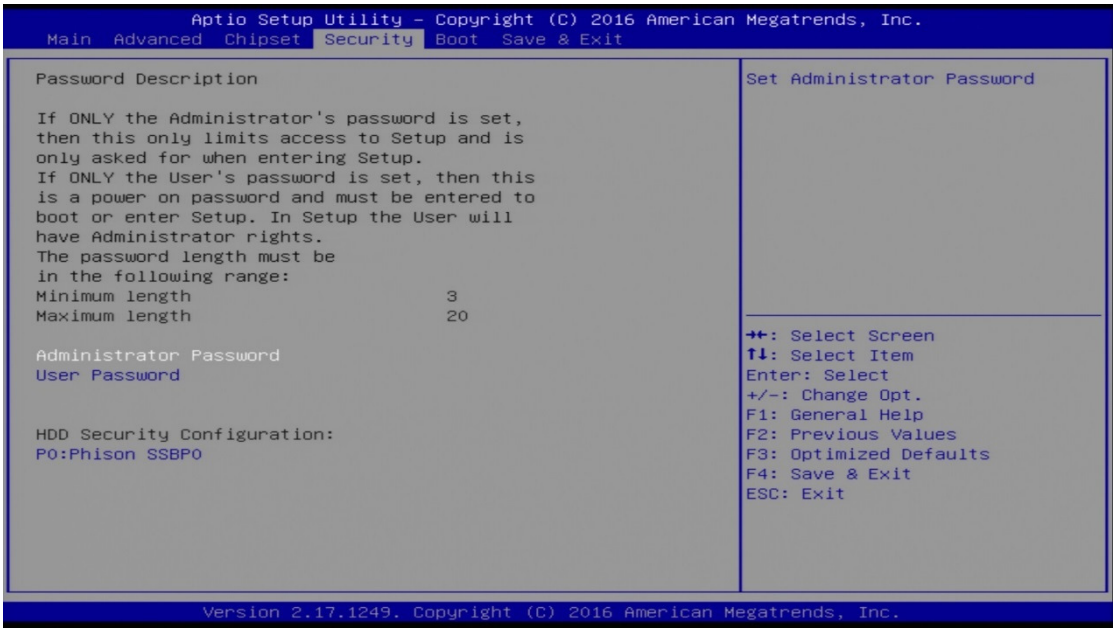
BIOS Setting	Description
PCIE Express Root Port 1 ~ 4.	Controls the PCI Express root port.



BIOS Setting	Description
ASPM	PCIe Active State Power Management settings.
PCIe Speed	Configures PCIe speed. CHV A1 always with Gen1 Speed. Options: Auto, Gen2, Gen1
Detect Non-Complicance Device	Detects non-compliance PCIe device. If enabled, it will take more time at POST time.
L1 Substates	PCIe L1 substates settings. Options: Disabled, L1.1, L1.2, L1.1 & L1.2

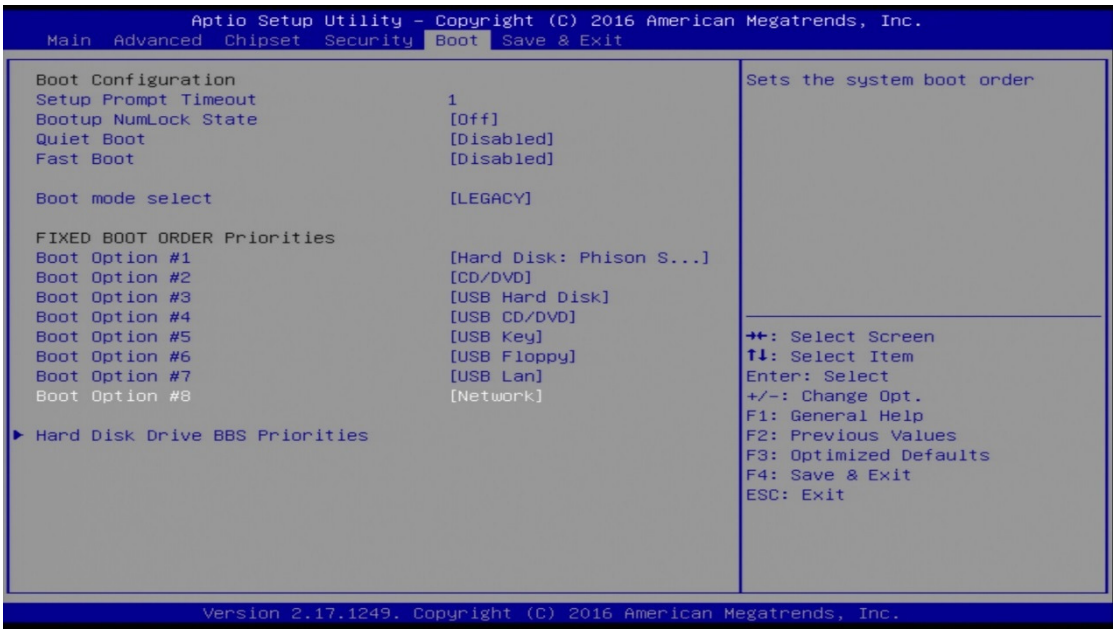
6.6 Security Settings

This section allows you to configure, improve your system, and set up some system features according to your preference.



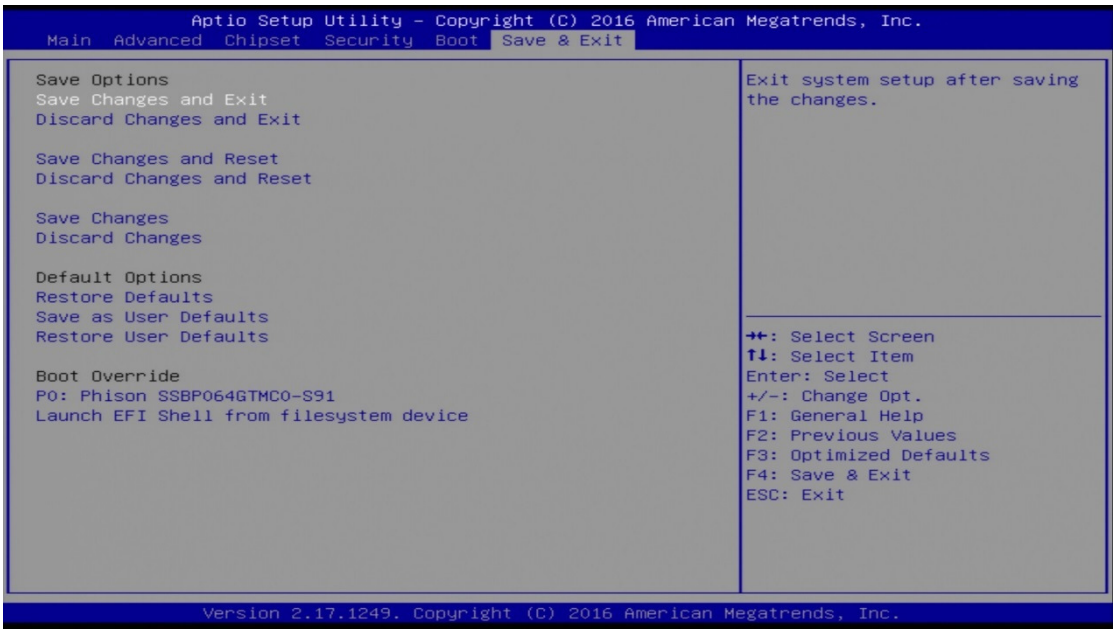
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.
P0: Phison SSBP0	HDD security configuration for selected drive.

6.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
Fast Boot	Enables / Disables boot with initialization of a minimal set of devices required to launch the active boot option. There no effect for BBS boot options.
Boot mode select	Selects a Boot mode, Legacy / UEFI.
Boot Option Priorities	Sets the system boot order.
Boot Option Priorities	Sets the system boot order priorities for hard disk, CD/DVD, USB, Network.
Hard Disk Drive BBS priorities	Sepcifies the boot device priority sequence from available hard disk drives.

6.8 Save & Exit Settings



BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores / Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as user defaults.
Restore User Defaults	Restores the user defaults to all the setup options.

Appendix

This section provides the mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Digital I/O Sample Code
- Watchdog Timer Configuration

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

ASTUT-W155-PC1S:

Address	Device Description
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000070-0x00000070	System CMOS/real time clock
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x00001800-0x000018FE	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)

Address	Device Description
0x0000F0A0-0x0000F0A7	Intel(R) Active Management Technology - SOL (COM5)
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x0000F000-0x0000F03F	Intel(R) HD Graphics 620
0x000003B0-0x000003BB	Intel(R) HD Graphics 620
0x000003C0-0x000003DF	Intel(R) HD Graphics 620
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x0000E000-0x0000EFFF	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #10 - 9D19
0x00001854-0x00001857	Motherboard resources
0x0000F040-0x0000F05F	Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
0x0000FF00-0x0000FFFE	Motherboard resources
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard

Address	Device Description
0x0000F090-0x0000F097	Standard SATA AHCI Controller
0x0000F080-0x0000F083	Standard SATA AHCI Controller
0x0000F060-0x0000F07F	Standard SATA AHCI Controller

ASTUT-W153-PC / PC1S:

Address	Device Description
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000290-0x0000029F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000070-0x00000070	System CMOS/real time clock
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x0000E000-0x0000EFFF	PCI-to-PCI bridge
0x0000F060-0x0000F07F	Standard SATA AHCI Controller
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x0000F040-0x0000F05F	Intel(R) Celeron(R)/Pentium(R) SM Bus Controller - 2292

Address	Device Description
0x0000F000-0x0000F03F	Intel(R) HD Graphics
0x000003B0-0x000003BB	Intel(R) HD Graphics
0x000003C0-0x000003DF	Intel(R) HD Graphics
0x00000000-0x0000006F	PCI Express Root Complex
0x00000078-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x0000D000-0x0000DFFF	PCI-to-PCI bridge

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

ASTUT-W155-PC1S:

Level	Function
IRQ 0	System timer
IRQ 1	Standard PS/2 Keyboard
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 5	Communications Port (COM3)
IRQ 7	Communications Port (COM4)
IRQ 8	System CMOS/real time clock
IRQ 11	Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
IRQ 11	Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31
IRQ 12	Microsoft PS/2 Mouse
IRQ 14	Motherboard resources
IRQ 16	High Definition Audio Controller
IRQ 19	Intel(R) Active Management Technology - SOL (COM5)
IRQ 54 ~ IRQ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967285	Intel(R) Management Engine Interface
IRQ 4294967286	Intel(R) HD Graphics 620
IRQ 4294967287	Intel(R) I211 Gigabit Network Connection
IRQ 4294967288	Intel(R) I211 Gigabit Network Connection
IRQ 4294967289	Intel(R) I211 Gigabit Network Connection
IRQ 4294967290	Intel(R) I211 Gigabit Network Connection
IRQ 4294967291	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
IRQ 4294967292	Intel(R) Ethernet Connection I219-LM
IRQ 4294967293	Standard SATA AHCI Controller
IRQ 4294967294	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #10 - 9D19

ASTUT-W153-PC / PC1S:

Level	Function
IRQ 0	System timer
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 5	Communications Port (COM3)
IRQ 10	Communications Port (COM4)
IRQ 11	Intel(R) Celeron(R)/Pentium(R) SM Bus Controller - 2292
IRQ 22	High Definition Audio Controller
IRQ 54 ~ IRQ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967279	Intel(R) I211 Gigabit Network Connection
IRQ 4294967280	Intel(R) I211 Gigabit Network Connection
IRQ 4294967281	Intel(R) I211 Gigabit Network Connection
IRQ 4294967282	Intel(R) I211 Gigabit Network Connection
IRQ 4294967283	Intel(R) I211 Gigabit Network Connection
IRQ 4294967284	Intel(R) I211 Gigabit Network Connection
IRQ 4294967285	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967286	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967287	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967288	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967289	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967290	Intel(R) I211 Gigabit Network Connection #2
IRQ 4294967291	Intel(R) Trusted Execution Engine Interface
IRQ 4294967292	Intel(R) USB 3.0 Extensible Host Controller - 1.0 (Microsoft)
IRQ 4294967293	Intel(R) HD Graphics
IRQ 4294967294	Standard SATA AHCI Controller

C. Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for the use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

Sample Code (for Fintek F81846 / F81866):

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A
PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81866.H"
//---------------------------------------------------------------------------
int main (int argc, char *argv[]); void EnableWDT(int);
void DisableWDT(void);
//---------------------------------------------------------------------------
int main (int argc, char *argv[])
{
        unsigned char bBuf;
        unsigned char bTime;
        char **endptr;

        char SIO;
        printf("Fintek 81866 watch dog program\n");
        SIO = Init_F81866();
        if (SIO == 0)
        {
                printf("Can not detect Fintek 81866, program abort.\n");
                return(1);
        }//if (SIO == 0)

        if (argc != 2)
        {
                printf(" Parameter incorrect!!\n");
                return (1);
        }
```

```
        bTime = strtol (argv[1], endptr, 10);
        printf("System will reset after %d seconds\n", bTime);

        if (bTime)
        {       EnableWDT(bTime); }
        else
        {       DisableWDT();  }
        return 0;
}
//---------------------------------------------------------------------------
void EnableWDT(int interval)
{
        unsigned char bBuf;

        bBuf = Get_F81866_Reg(0x2B);
        bBuf &= (~0x20);
        Set_F81866_Reg(0x2B, bBuf);             //Enable WDTO

        Set_F81866_LD(0x07);                    //switch to logic device 7
        Set_F81866_Reg(0x30, 0x01);             //enable timer

        bBuf = Get_F81866_Reg(0xF5);
        bBuf &= (~0x0F);
        bBuf |= 0x52;
        Set_F81866_Reg(0xF5, bBuf);             //count mode is second
        Set_F81866_Reg(0xF6, interval);         //set timer
        bBuf = Get_F81866_Reg(0xFA);
        bBuf |= 0x01;
        Set_F81866_Reg(0xFA, bBuf);             //enable WDTO output

        bBuf = Get_F81866_Reg(0xF5);
        bBuf |= 0x20;
        Set_F81866_Reg(0xF5, bBuf);             //start counting
}
//---------------------------------------------------------------------------
void DisableWDT(void)
{
        unsigned char bBuf;
        Set_F81866_LD(0x07);                    //switch to logic device 7
        bBuf = Get_F81866_Reg(0xFA);
        bBuf &= ~0x01;
        Set_F81866_Reg(0xFA, bBuf);             //disable WDTO output

        bBuf = Get_F81866_Reg(0xF5);
        bBuf &= ~0x20;
        bBuf |= 0x40;
        Set_F81866_Reg(0xF5, bBuf);             //disable WDT
}
//---------------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A
PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "F81866.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81866_BASE; void Unlock_F81866 (void); void Lock_F81866 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81866(void)
{
	unsigned int result;
	unsigned char ucDid;

	F81866_BASE = 0x4E;
	result = F81866_BASE;

	ucDid = Get_F81866_Reg(0x20);
	if (ucDid == 0x07)			//Fintek 81866
	{	goto Init_Finish;}

	F81866_BASE = 0x2E;
	result = F81866_BASE;

	ucDid = Get_F81866_Reg(0x20);
	if (ucDid == 0x07)			//Fintek 81866
	{	goto Init_Finish;}

	F81866_BASE = 0x00;
	result = F81866_BASE;

Init_Finish:
	return (result);
}
//---------------------------------------------------------------------------
void Unlock_F81866 (void)
{
	outportb(F81866_INDEX_PORT, F81866_UNLOCK);
	outportb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_F81866 (void)
{
	outportb(F81866_INDEX_PORT, F81866_LOCK);
}
//---------------------------------------------------------------------------
void Set_F81866_LD( unsigned char LD)
{
	Unlock_F81866();
```

```
	outportb(F81866_INDEX_PORT, F81866_REG_LD);
	outportb(F81866_DATA_PORT, LD); Lock_F81866();
}
//----------------------------------------------------------------------------
void Set_F81866_Reg( unsigned char REG, unsigned char DATA)
{
	Unlock_F81866();
	outportb(F81866_INDEX_PORT, REG);
	outportb(F81866_DATA_PORT, DATA);
	Lock_F81866();
}
//----------------------------------------------------------------------------
unsigned char Get_F81866_Reg(unsigned char REG)
{
	unsigned char Result;
	Unlock_F81866();
	outportb(F81866_INDEX_PORT, REG);
	Result = inportb(F81866_DATA_PORT);
	Lock_F81866();
	return Result;
}
//----------------------------------------------------------------------------
```

```
//----------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A
PARTICULAR
// PURPOSE.
//
//----------------------------------------------------------------------------
#ifndef	F81866_H
#define	F81866_H	1
//----------------------------------------------------------------------------
#define	F81866_INDEX_PORT	(F81866_BASE)
#define	F81866_DATA_PORT	(F81866_BASE+1)
//----------------------------------------------------------------------------
#define	F81866_REG_LD	0x07
//----------------------------------------------------------------------------
#define F81866_UNLOCK 0x87
#define	F81866_LOCK	0xAA
//----------------------------------------------------------------------------
unsigned int Init_F81866(void);
void Set_F81866_LD( unsigned char);
void Set_F81866_Reg( unsigned char, unsigned char); unsigned char
Get_F81866_Reg( unsigned char);
//----------------------------------------------------------------------------
#endif //	F81866_H
```