SI-62S

Digital Signage Player

User's Manual

Version 1.2
(Oct. 2020)

iBASE

Copyright

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Trademarks

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Compliance

CE

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

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.

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.

Green IBASE

This product complies with the current RoHS directives restricting the use of the following substances in concentrations not to exceed 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)

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Important Safety Information

Carefully read the following safety information before using this device.0

Setting up your system:

- Put the device horizontally on a stable and solid surface.
- Do not use this product near water or any heated source.
- Leave plenty of space around the device and do not block the ventilation openings. Never drop or insert any objects of any kind into the openings.
- Use this product in environments with ambient temperatures between 0˚C and 45˚C.

Care during use:

- Do not place heavy objects on the top of the device.
- Make sure to connect the correct voltage to the device. Failure to supply the correct voltage could damage the unit.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure the total ampere rating of all devices plugged into the extension cord does not cord's ampere rating.
- Do not spill water or any other liquids on your device.
- Always unplug the power cord from the wall outlet before cleaning the device.
- Only use neutral cleaning agents to clean the device.
- Vacuum dust and particles from the vents by using a computer vacuum cleaner.

Product Disassembly

Do not try to repair, disassemble, or make modifications to the device. Doing so will void the warranty and may result in damage to the product or personal injury.

CAUTION

There is a danger of explosion if the lithium-ion battery is replaced with an incorrect battery. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries by observing local regulations.

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 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adaptor, display panel and touch screen.

* 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.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you encounter any technical problems and require assistance from your distributor or sales representative, please prepare and send the following information:
   - Product model name
   - Product serial number
   - Detailed description of the problem
   - Error messages in text or screenshots if any
   - The arrangement of the peripherals
   - Software used (such as OS and application software)
3. If repair service is required, please download the RMA form at http://www.ibase.com.tw/english/Supports/RMAService/.
   Fill out the form and contact your distributor or sales representative.

Table of Contents

Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Optional Accessories
- Product View
- Dimensions

1.1 Introduction

The SI-62S is powered by Intel® 7th / 6th Gen. desktop processors and supports three display outputs for HDMI, DVI-D and DisplayPort as well as the iSMART energy-saving technology that features power on/off scheduling and power resume function. It comes with a standard system bracket and measures 436 x 93 x 345 mm.

1.2 Features

- 9th/8th Gen Intel® Core™ / Pentium® / Celeron® processors
- 2x DDR4 SO-DIMM, Max. 32GB, ECC compatible
- Intel® Processor integrated graphics, supports DVI-D, HDMI,
- DisplayPort
- Dual Intel® Gigabit LAN
- 6x USB3.0, 2x USB2.0, 4x COM, 4x SATA III
- 1x PCI-E(x16), 2x M.2
- Watchdog timer, Digital I/O, iAMT (11.6), TPM (2.0)
- 1x PCI-E(x16) or 2x PCI-E(x8) based on PCI-E x16 connectors for Matrox / AMD / Nvidia GPU card options

1.3 Packing List

If you buy a barebone SI-62S, 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 have purchased the product.

Drivers and this user manual are downloadable from our website.

- SI-62S Digital Signage Player x 1
- Power Cord x 1
- 2-Pin Terminal Block for Power Button x 1
- Wall Mount Kit x 1
- Screws for Wall Mount Kit (M3 x 12 mm) x 8

1.4 Specifications

Product	SI-62S
System	
Mainboard	MI998AF
Operating System	• Windows 10 Enterprise (64-bit) • Windows 8.1 (64-bit) for Intel Skylake solution series only • Windows 7 (64-bit)
CPU	Intel® 9th / 8th Gen. Core™ desktop processor TDP<=65W
Chipset	Intel® Q370 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKU)
Graphics	Intel® processor HD Graphics P630
Network	1x Intel® I219LM Gigabit LAN controller 1x Intel® I211AT PCI-E Gigabit LAN (as 2nd LAN)
Storage	2x 2.5” SATA SSD slots with RAID 1
Power Supply	Internal 500W PSU
Watchdog	Watchdog Timer 256 segments, 0, 1, 2…255 sec/min
iSMART	Yes

Chassis	Aluminum and SGCC, black & white
Mounting	Standard system bracket
Dimensions (W x H x D)	406mm(W) x 345mm(D) x 93mm(H) 17.16”(W) x 15.9”(D) x 3.66”(H)
Net Weight	8 kg (17.64 lb)
Compliance	CE, FCC class B
I/O Ports	
Display	• 1 x HDMI • 1 x HDMI-In for capture card option • 1 x DVI-D • 1 x Display Port
LAN	2 x GbE RJ45 LAN port
Serial	**2 COM ports:** • COM1 RS-232/422/485, jumperless selectable and configurable in BIOS • COM2 RS-232 only
USB	• 6 x USB 3.0 • 2 x USB 2.0
Digital I/O	1 x GPIO 4-In / 4-Out
Audio Jack	• 1 x Line-In • 1 x Line-Out • 1 x Mic-In
Power Jack	1 x DC-in power jack
Expansion	• 1x M.2 (E-key, type:2230) • 1x M.2 (M-key, type:2280) • 1x PCI-E (x16) or 2x PCI-E (x8) based on PCI-E x16 connectors for Matrox / AMD / NVIDIA graphics card
Environment	
Temperature	• **Operating:** 0°C ~ 45°C (32°F ~ 113°F) • **Storage:** -20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	10 ~ 90% (non-condensing)
Vibration Protection	mSATA: 5 grms, 5 ~ 500 Hz, random operation

All specifications are subject to change without prior notice.

1.5 Product View

Top View

Front View

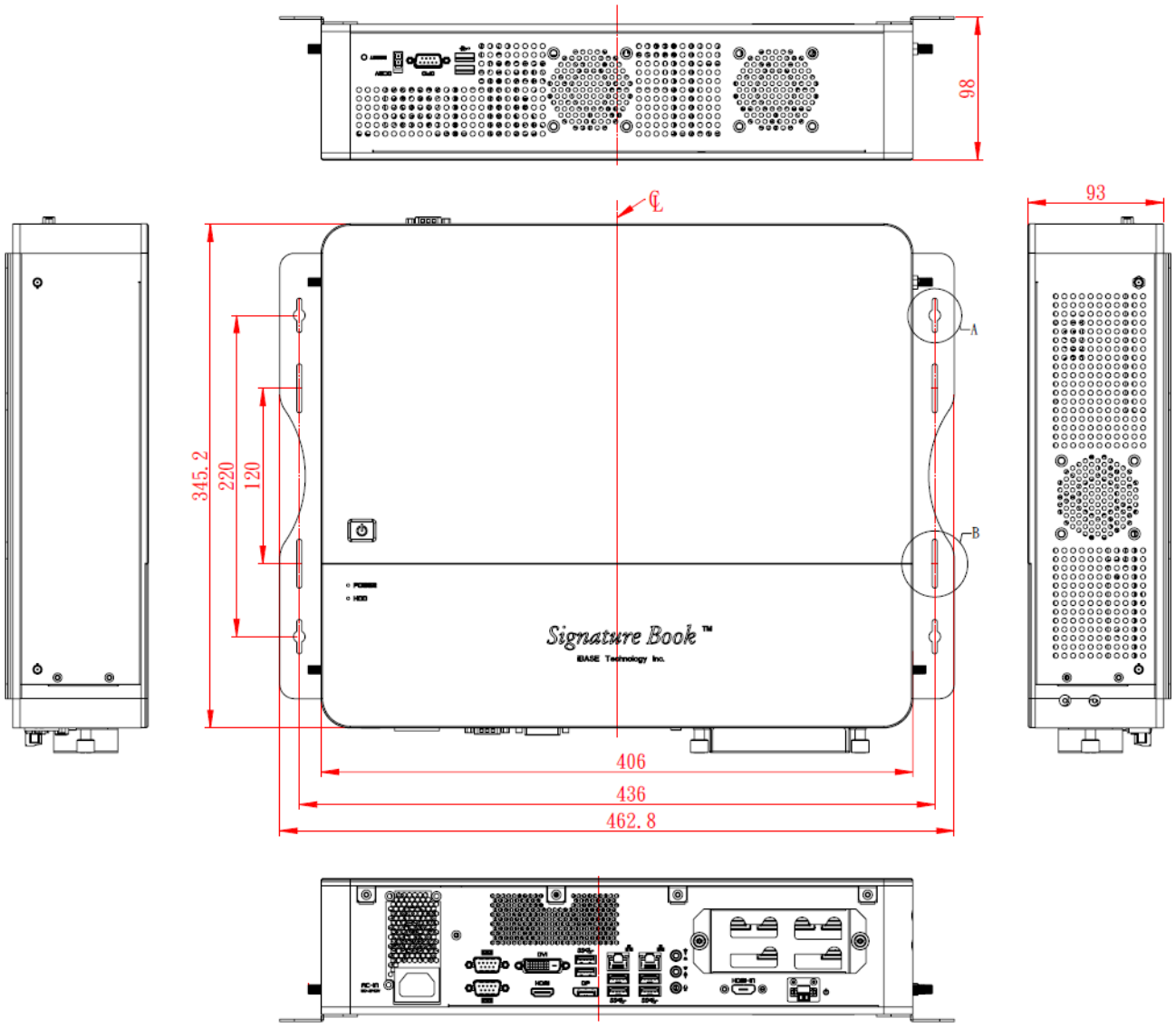
No.	Name	No.	Name
1	Power Button	4	GPIO 4-In & 4-Out Port
2	LED Indicators for Power & HDD	5	DC-In 12V Connector
3	USB 2.0 Ports	6	Reset Button

Rear View

No.	Name	No.	Name
7	AC Power Input	14	LAN Ports
8	COM1 & COM2 Ports	15	HDMI Input
9	DVI-D Port	16	2-Pin Terminal Block (For remote power button)
10	HDMI Output	17	Expansion Slots for PCIe (x16) or PCIe (x8)
11	DisplayPort	18	Antenna Holes
12	USB 3.0 Ports	19	Mounting Kit
13	Audio Jacks (From top to buttom: Line-In, Line-Out, Mic-In)		

1.6 Dimensions

Unit: mm



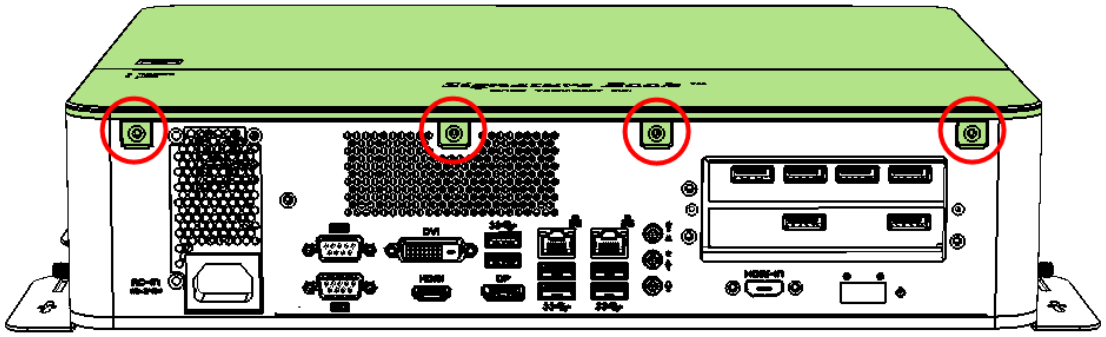
Chapter 2
Hardware Installation & Motherboard Information

This section contains general information about:

- Installations
- Jumper and connectors

2.1 Installations

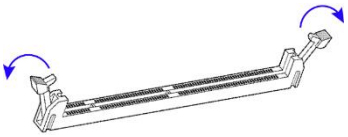
Before installing any card or module into the device, remove the screws shown in the picture below to pull out and remove the cover.



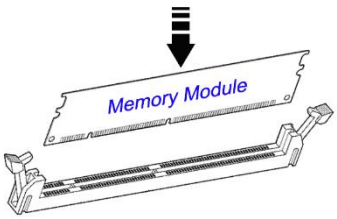
2.1.1 Memory Module Installation

To install the modules, locate the memory slot on the motherboard and perform the following steps:

1. Press the ejector tab of the memory slot down and outwards with your fingertips.



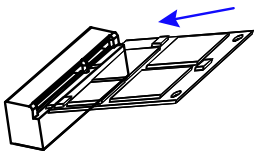
2. Hold the memory module and align the key of the module with that on the memory slot.
3. Gently push the module in an upright position unitl the ejector tabs of the memory slot close to hold the module in place when the module touches the bottom of the slot.



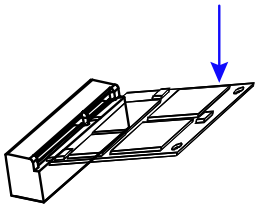
To remove the module, press the ejector tabs outwards with your fintertips to eject the module.

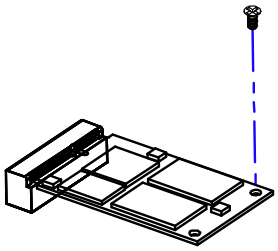
2.1.2 Mini-PCIe Card Installation

1. Align the mini-PCIe card's bus connector with the mini-PCIe slot, and insert the card slantwise.



2. Push the mini PCIe card downwards as shown in the picture, and fix it with a screw.

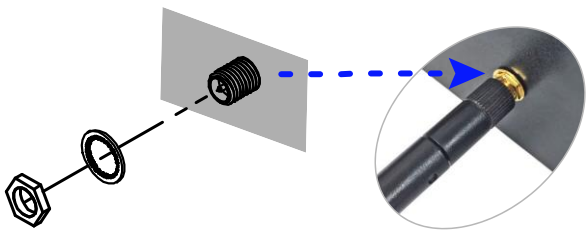




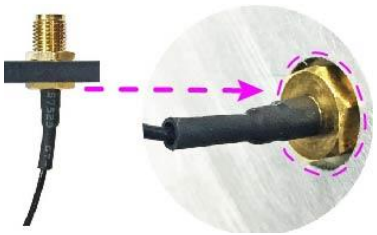
2.1.3 WiFi / 3G / 4G Antenna Installation

Insert the WiFi / 3G / 4G antenna extension cable through the antenna hole of the front I/O cover and fasten the antenna as shown below. Then apply adhesive around the hex nut behind the front I/O cover to prevent the extension cable from falling off if the cable becomes loose.

1. Fasten the hex nut and the washer. Then install the antenna.



2. Apply adhesive around here.



Info: The diameter of the nut is around 6.35 mm (0.25"-36UNC).

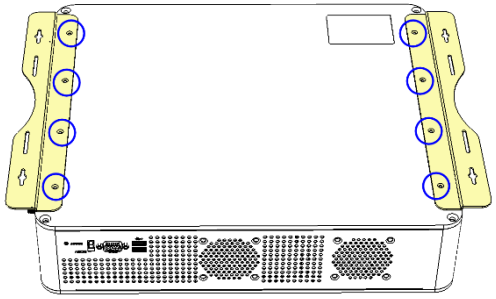
2.1.4 Mounting Installation

Requirements

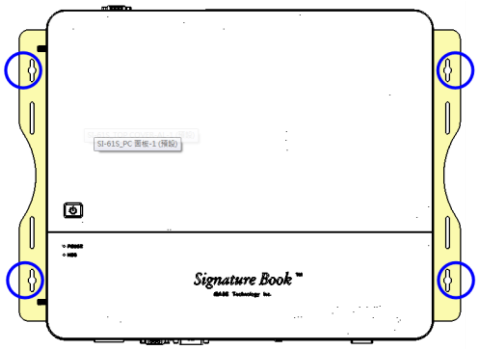
Before mounting the system, ensure that you have enough room for the power adaptor and signal cable routing, and have good ventilation for the power adaptor. The method of mounting must be able to support weight of the SI-62S plus the weight of the suspending cables attached to the system. Use the following methods for mounting your system:

Wall Mounting Installation

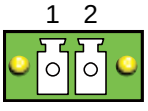
1. Turn your device upside down. Attach the wall-mount kit to the device and secure with the supplied 8 screws.



2. Prepare at least 4 screws (M3) to install the device on the wall as shown.



2.1.5 Pin Assignment for Power Input Connector



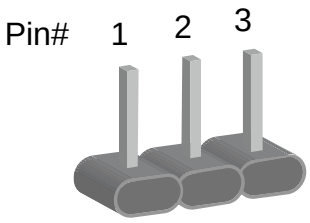
Pin	Signal	Pin	Signal
1	Ground	2	PWR_SW

2.2 Setting the Jumpers

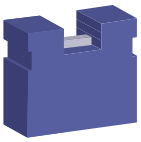
Configure your SI-62S by using jumpers to enable the features that you need based on your applications. Contact your supplier if you have doubts about the best configuration for your use.

2.2.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a base mounted on the circuit board. Jumper caps are placed (or removed) on the pins to enable or disable functions or features. If a jumper has 3 pins, you can connect Pin 1 with Pin 2 or Pin 2 with Pin 3 by shorting the jumper.

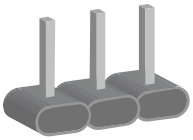
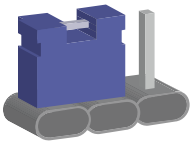
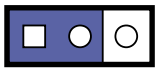
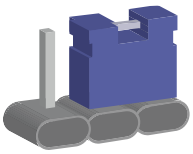
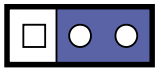


A 3-pin jumper



A jumper cap

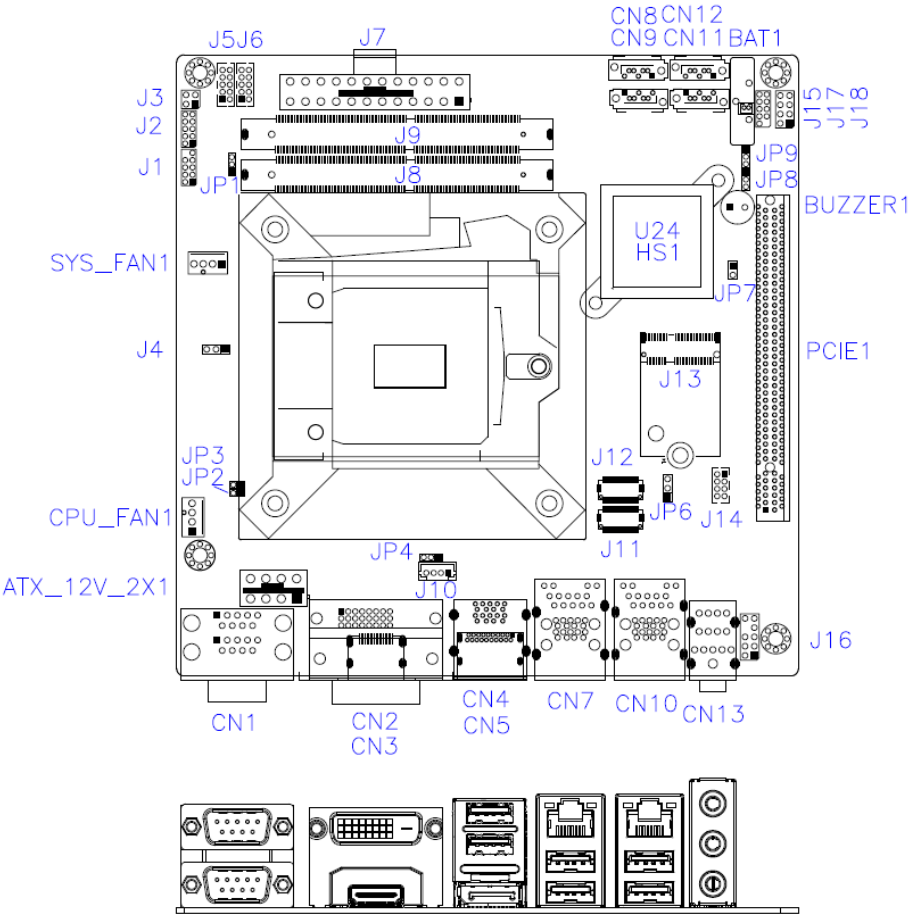
Refer to the illustration below to set jumpers.

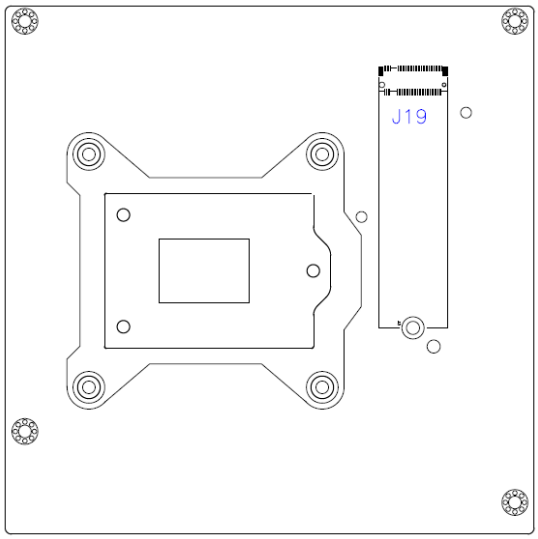
Pin closed	Oblique view	Illustration in the manual
Open		
1-2		
2-3		

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**.

2.1 Jumper & Connector Locations


J5J6
J7
CN8 CN12
CN9 CN11 BAT1
J3
J2
J1
J9
J8
JP1
J15 J17 J18
JP9
JP8
BUZZER1
SYS_FAN1
U24
HS1
JP7
J4
PCIE1
J13
JP3
JP2
J12
CPU_FAN1
JP6
J14
J11
JP4
J10
ATX_12V_2X1
J16
CN1
CN2
CN3
CN4
CN5
CN7
CN10
CN13


J19

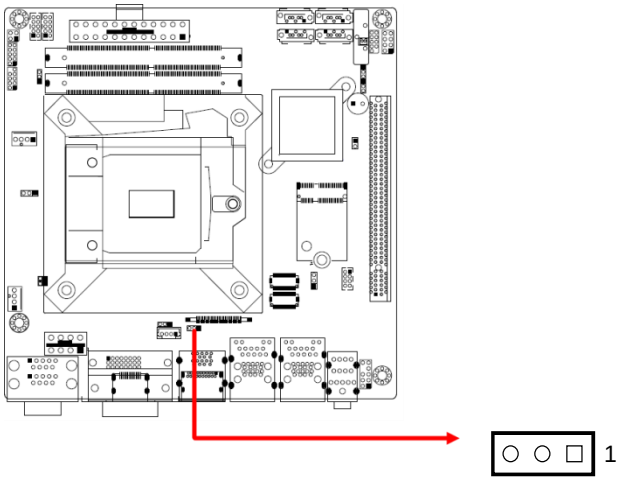
MI998AF

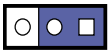
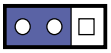
2.2 Jumpers Quick Reference

Function	Jumper
eDP Panel Power Selection	JP5
Clear CMOS Data	JP9
Clear ME Register	JP8
ATX & AT Power Mode Select	JP1
LVDS Panel Brightness Selection	JP4
LVDS Panel Power Selection	JP6
PCIe Bifurcation Selection	JP2, JP3
Factory Use Only	JP7

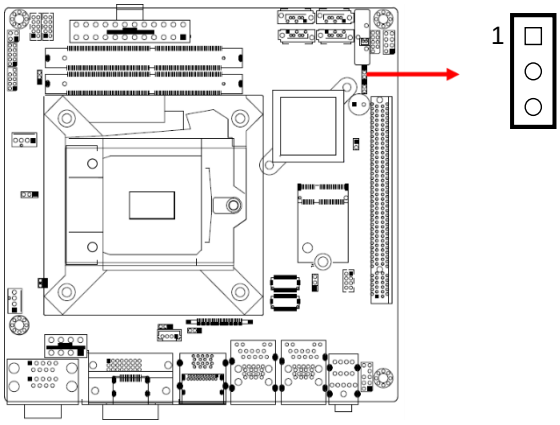
Note: The board drawings below include all the connectors of different models.

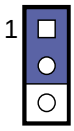
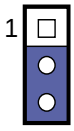
2.4.1 eDP Panel Power Selection (JP5)



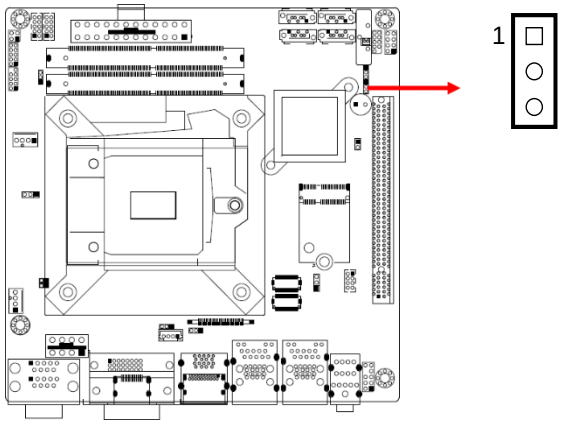
Function	Pin closed	Illustration
3.3V (default)	1-2	 1
5V	2-3	 1

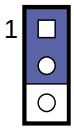
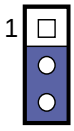
2.4.2 Clear CMOS Data (JP9)



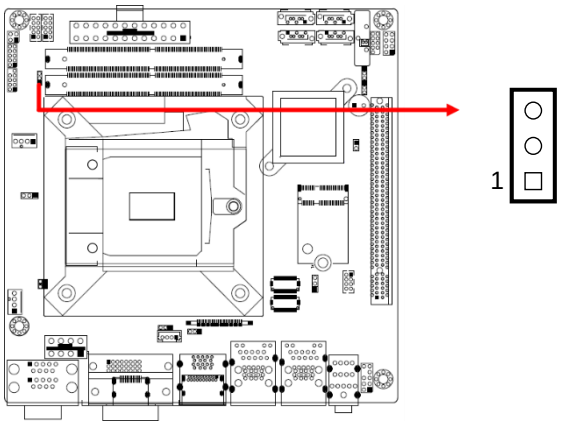
Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

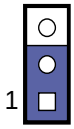
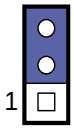
2.4.3 Clear ME Register (JP8)



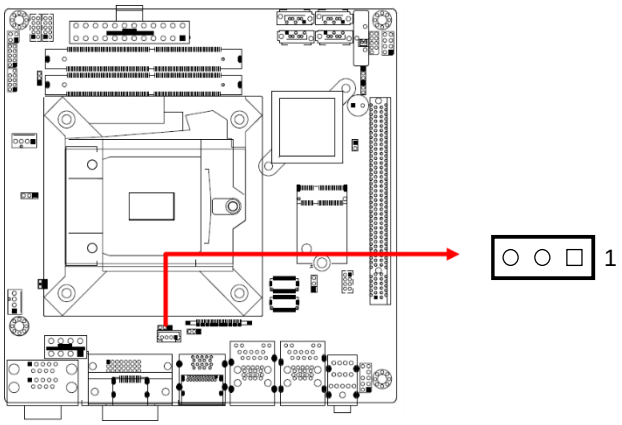
Function	Pin closed	Illustration
Normal (default)	1-2	
Clear ME	2-3	

2.4.4 ATX & AT Power Mode Selection (JP1)



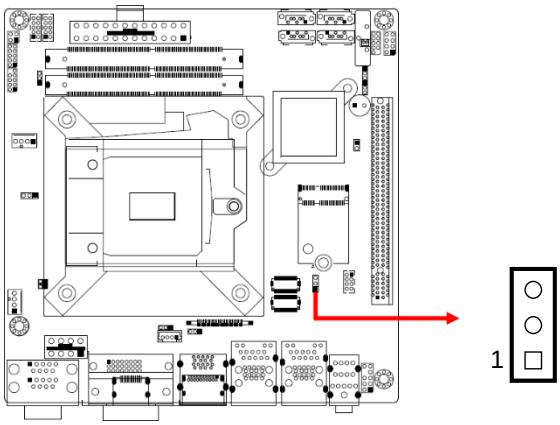
Function	Pin closed	Illustration
ATX Mode (default)	1-2	
AT Mode	2-3	

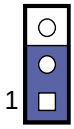
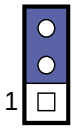
2.4.5 LVDS Power Brightness Selection (JP4)



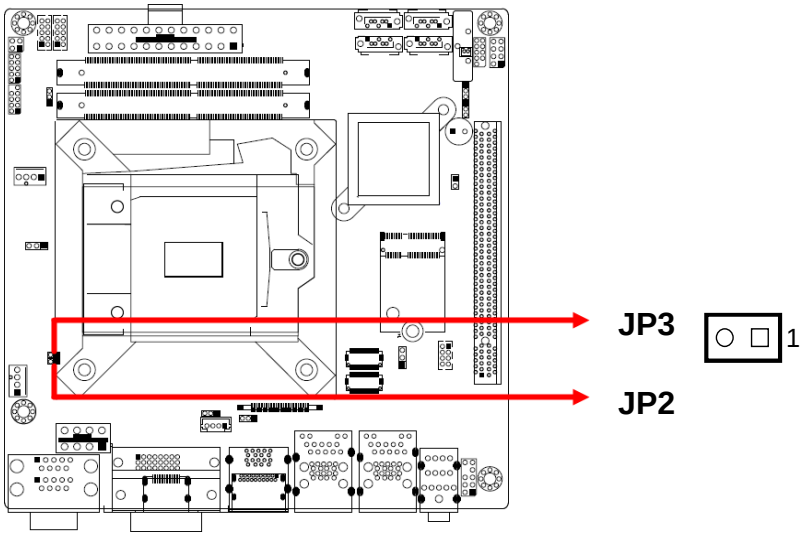
Function	Pin closed	Illustration
3.3V (default)	1-2	1
5V	2-3	1

2.4.6 LVDS Panel Power Selection (JP6)



Function	Pin closed	Illustration
3.3V (default)	1-2	
5V	2-3	

2.4.7 PCIe (x16) Bifurcation Selection (JP2 & JP3)

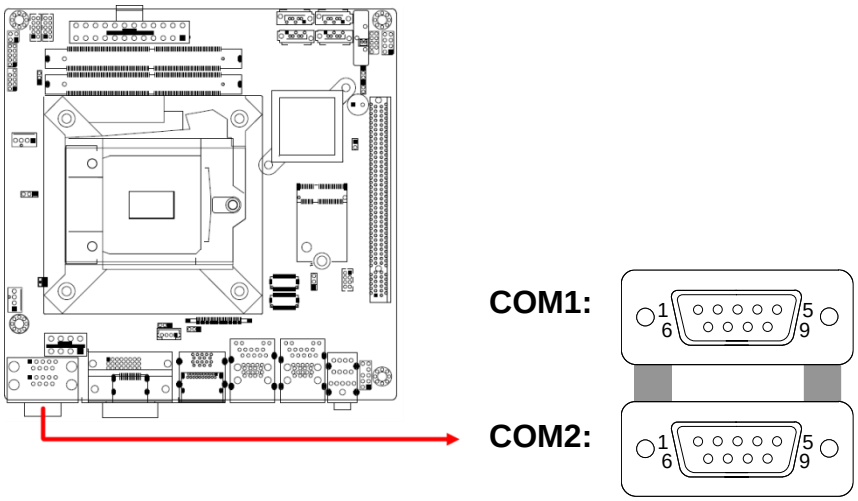


Function	Pin closed	Illustration
1 x PCIe (x16) (default)	**JP3:** Open	1
	JP2: Open	1
2 x PCIe (x8)	**JP3:** Open	1
	JP2: Close	1
1 x PCIe (x8) 2 x PCIe (x4)	**JP3:** Close	1
	JP2: Close	1

2.3 Connectors Quick Reference

Function	Connector Name
COM1 & COM2 RS-232/422/485 Ports	CN1
COM3 & COM4 RS-232 Ports	J5 (COM3), J6 (COM4)
eDP Connector	CN6
Digital I/O Connector	J2
LCD Backlight Connector	J10
ATX Power Connector	J7
ATX 12V Power Connector	ATX_12V_2X1
Dual USB 2.0 Connector	J14
Front Panel Audio Connector	J16
Front Panel Settings Connector	J18
LVDS Connector	J11, J12
Fan Power Connector	CPU_FAN1, SYS_FAN1
RTC Lithium Battery Cell Connector	BAT1
DVI-D	CN2
HDMI Port	CN3
Dual USB 3.1 Ports	CN4
DisplayPort	CN5
SATA III Port	CN2, CN8, CN9, CN11
GbE LAN & Dual USB 3.1 Ports	CN7, CN10
DDR4 SO-DIMM Slot	J8, J9
M.2 M2280 Slot	J19
M.2 E2230 Slot	J13
PCIe (x16) Slot	PCIE1
Factory Use Only	J1, J4, J17

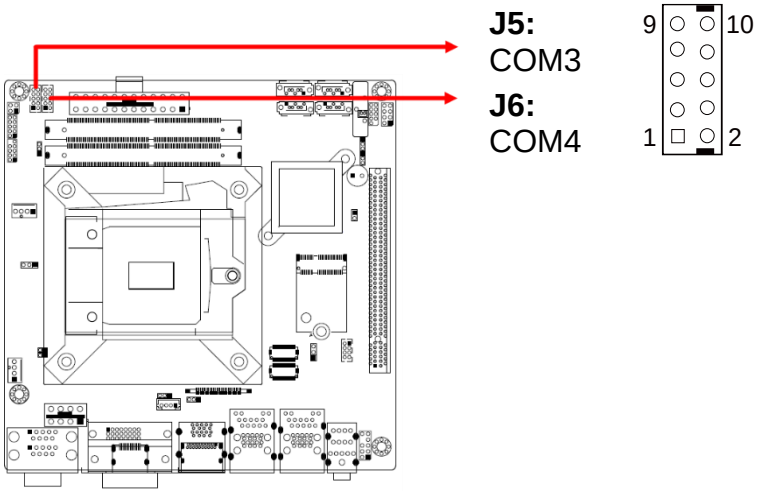
2.5.1 COM1 & COM2 RS-232/422/485 Ports (CN1)



Pin	Signal Name	Pin	Signal Name
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		

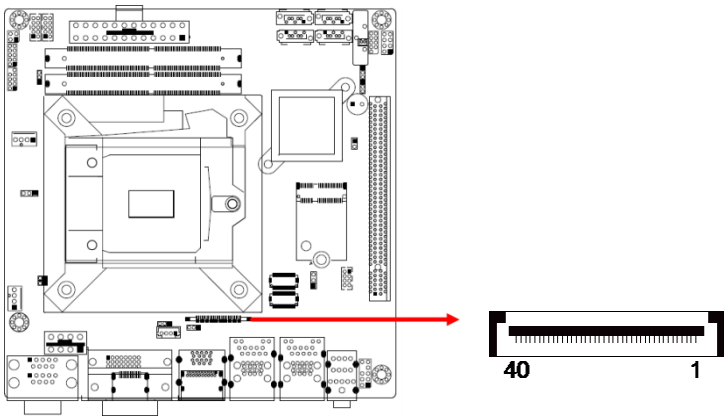
Pin	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.5.2 COM3 & COM4 RS-232 Ports (J5, J6)



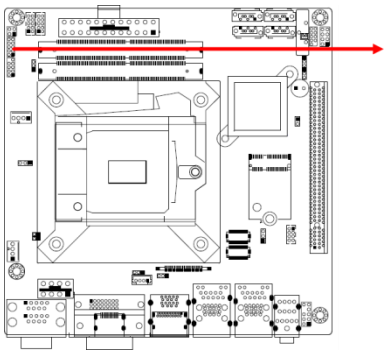
Pin	Signal Name	Pin	Signal Name
1	DCD, Data carrier detect	2	RXD, Receive data
3	TXD, Transmit data	4	DTR, Data terminal ready
5	Ground	6	DSR, Data set ready
7	RTS, Request to send	8	CTS, Clear to send
9	RI, Ring indicator	10	Key

2.5.3 eDP Connector (CN6)

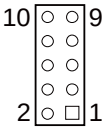


Pin	Signal Name	Pin	Signal Name
1	eDP VCC	21	TXN0
2	eDP VCC	22	TXP0
3	eDP VCC	23	Ground
4	eDP VCC	24	AUXP
5	eDP VCC	25	AUXN
6	Ground	26	X
7	Ground	27	+3.3V
8	Ground	28	+12V
9	Ground	29	X
10	Hot Plug detect	30	Ground
11	Ground	31	+5V
12	NC	32	X
13	NC	33	Back Light Control
14	Ground	34	Back Lignt Enable
15	NC	35	+12V
16	NC	36	+3.3V
17	Ground	37	Ground
18	TXN1	38	X
19	TXP1	39	X
20	Ground	40	X

2.5.4 Digital I/O Connector (J2)

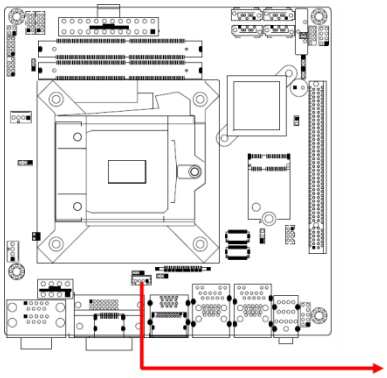


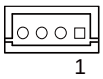
(4-In, 4-Out)



Pin	Signal Name	Pin	Signal Name
1	Ground	2	+5V
3	OUT3	4	OUT1
5	OUT2	6	OUT0
7	IN3	8	IN1
9	IN2	10	IN0

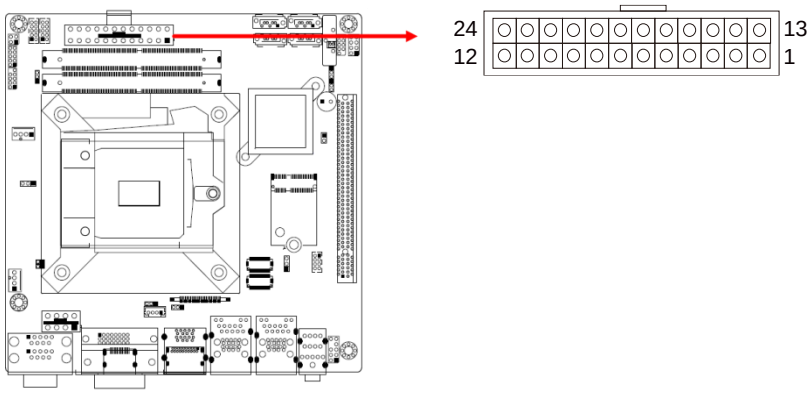
2.5.5 LCD Backlight Connector (J10)





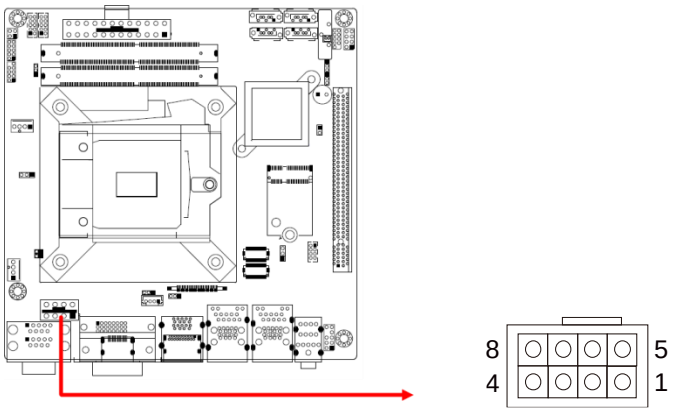
Pin	Signal Name	Pin	Signal Name
1	+12V	3	Brightness Control
2	Backlight Enable	4	Ground

2.5.6 ATX Power Connector (J7)



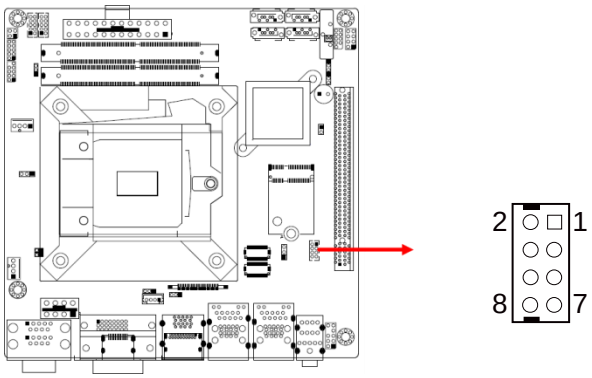
Pin	Signal Name	Pin	Signal Name
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS-ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	Ground

2.5.7 ATX 12V Power Connector (ATX_12V_2x1)



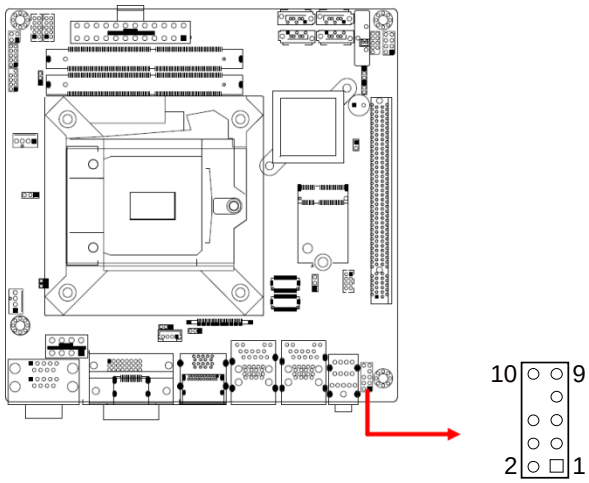
Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

2.5.8 Dual USB 2.0 Connector (J14)



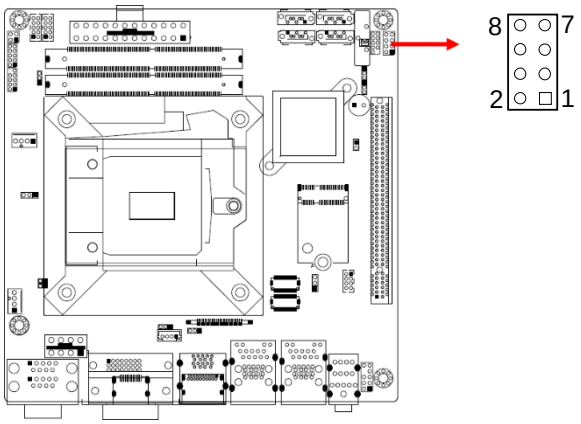
Pin	Signal Name	Pin	Signal Name
1	VCC	2	Ground
3	D0-	4	D1+
5	D0+	6	D1-
7	Ground	8	VCC

2.5.9 Front Panel Audio Connector (J16)



Pin	Signal Name	Pin	Signal Name
1	MIC IN_L	2	Ground
3	MIC IN_R	4	DET
5	LINE_R	6	Ground
7	Sense	8	Key
9	LINE_L	10	Ground

2.5.10 Front Panel Settings Connector (J18)



Pin	Signal Name	Pin	Signal Name
1	Power BTN	2	Power BTN
3	HDD LED+	4	HDD LED-
5	Reset BTN	6	Reset BTN
7	Power LED+	8	Power LED-

J18 is utilized for system indicators to provide light indication of the computer activities and switches to change the computer status. It provides interfaces for the following functions.

- **ATX Power ON Switch (Pins 1 and 2)**

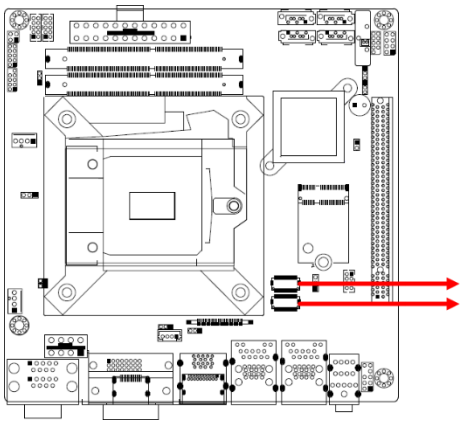
  The 2 pins make an “ATX Power Supply On/Off Switch” for the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will power off the system.
- **Hard Disk Drive LED Connector (Pins 3 and 4)**

  This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.
- **Reset Switch (Pins 5 and 6)**

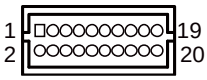
  The reset switch allows you to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.
- **Power LED (Pins 7 and 8)**

  This connector connects to the system power LED on control panel. This LED will light when the system turns on.

2.5.11 LVDS Connector (J11, J12)

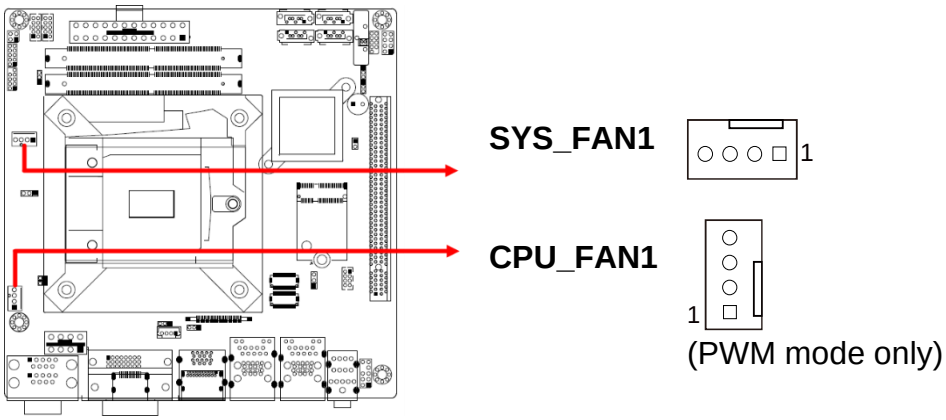


J12: 2nd channel
J11: 1st channel



Pin	Signal Name	Pin	Signal Name
1	TX0P	2	TX0N
3	Ground	4	Ground
5	TX1P	6	TX1N
7	Ground	8	Ground
9	TX2P	10	TX2N
11	Ground	12	Ground
13	CLKP	14	CLKN
15	Ground	16	Ground
17	TX3P	18	TX3N
19	VDD	20	VDD

2.5.12 Fan Power Connector (SYS_FAN1, CPU_FAN1)



Pin	Signal Name	Pin	Signal Name
1	Ground	3	Rotation detection
2	+12V	4	Control

Chapter 3
Driver Installation

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Intel® HD Graphics Drivers
- HD Audio Drivers
- LAN Network Drivers
- Intel® Management Engine Components Drivers
- ASMedia USB 3.1 Driver
- Fintek 8150x Serial Port Drivers

3.1 Introduction

This section describes the installation procedures for software drivers. The software drivers are available on IBASE website www.ibase.com.tw. Register as a member on our website to download all the necessary drivers.

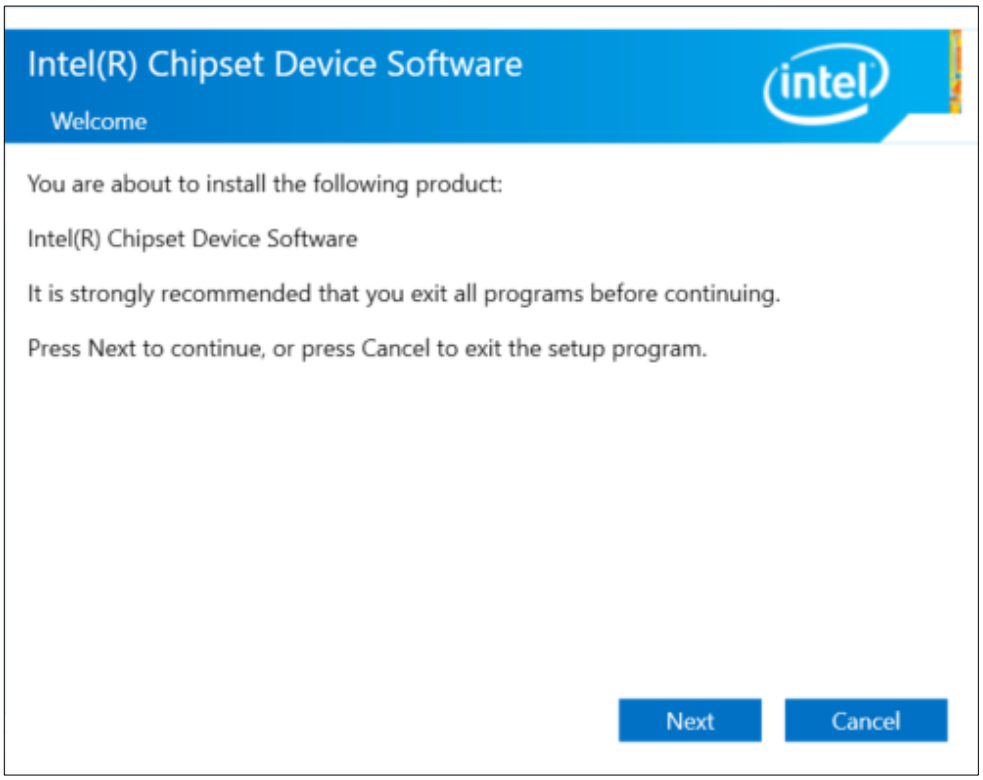
Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

3.2 Intel® Chipset Software Installation Utility

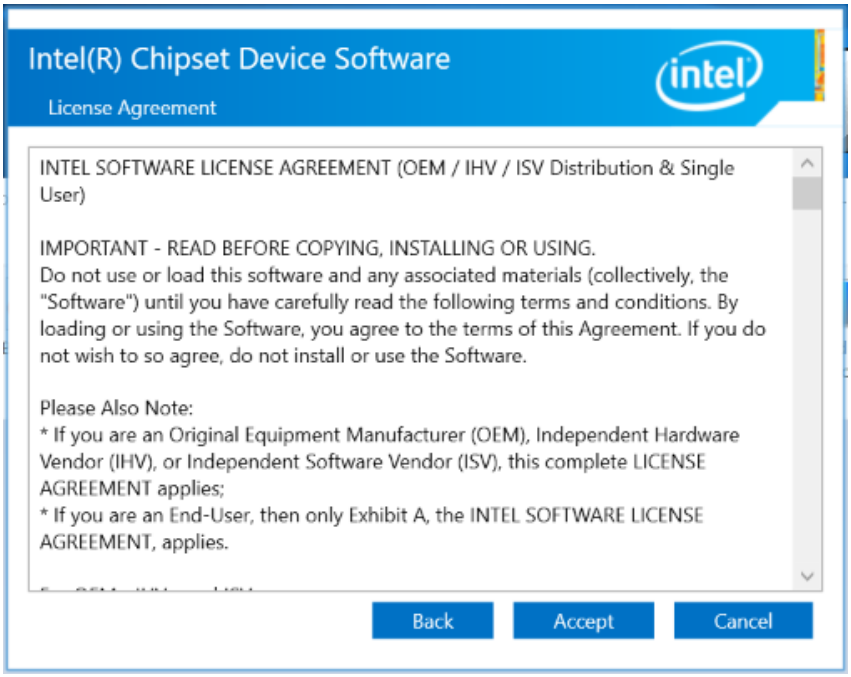
The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for the chipset components. Follow the instructions below to complete the installation.

1. Run the **Setup.exe** file.

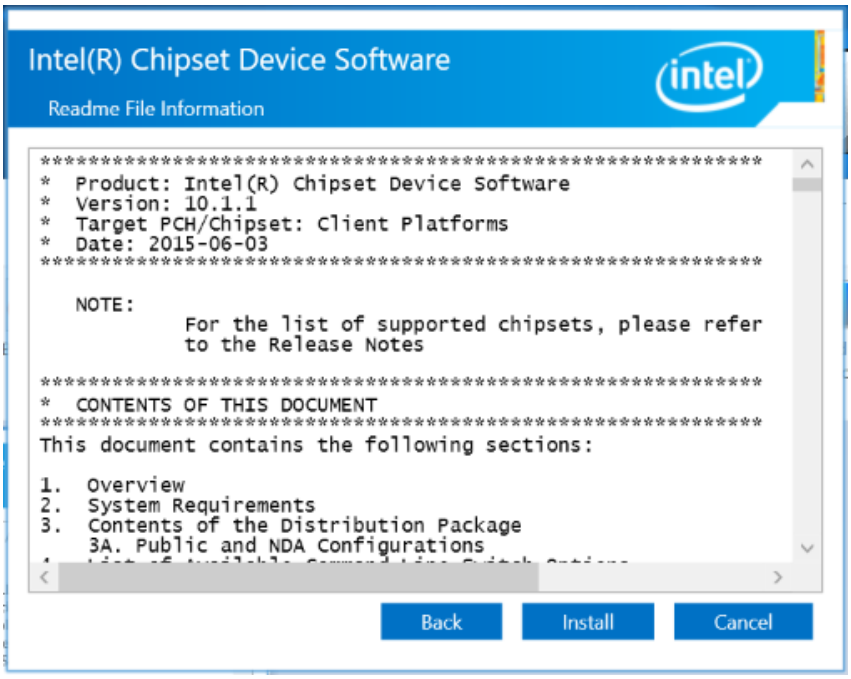
2. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.



3. Accept the license agreement and proceed with the installation process.



4. On the *Readme File Information* screen, click **Install**.

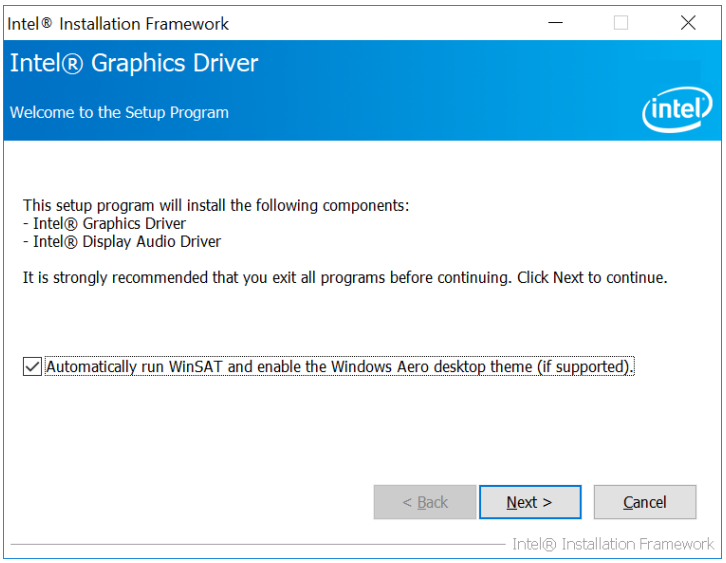


5. Installation is now complete. Restart the system for changes to take effect.

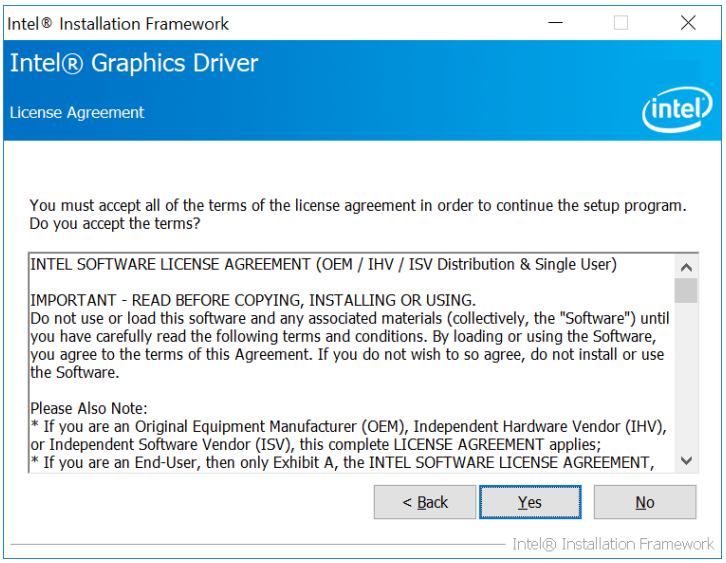
3.3 Intel® HD Graphics Driver Installation

1. Run the **Setup.exe** file.

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



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

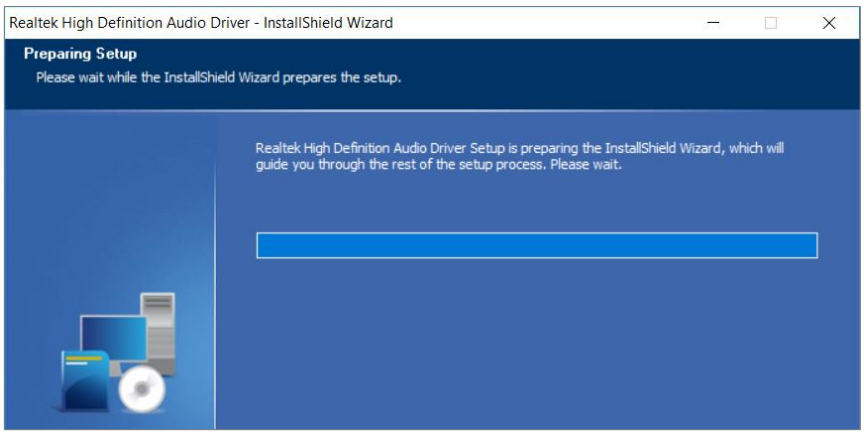


4. On the *Readme File Information* and *Setup Progress* screen, click **Next** and then **Install**.

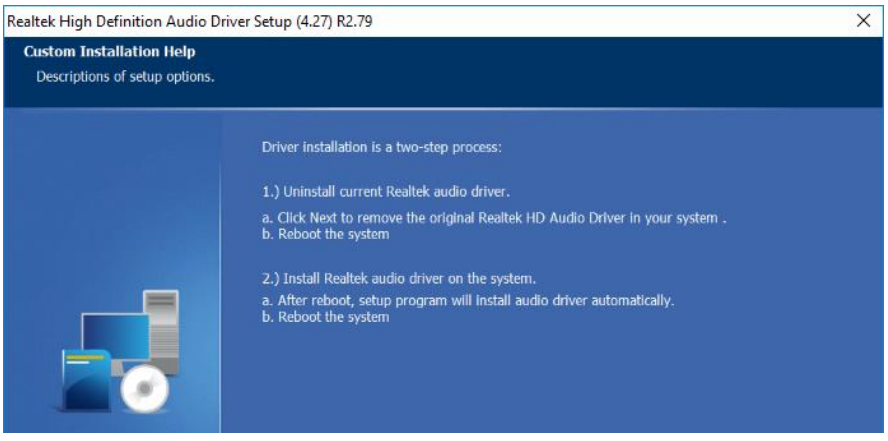
5. Installation is now complete. Restart the system for changes to take effect.

3.4 HD Audio Driver Installation

1. Run the **Setup.exe** file and the wizard starts.



2. On the *Welcome* screen of the InstallShield Wizard, click **Next** to start installing the audio driver on your system.

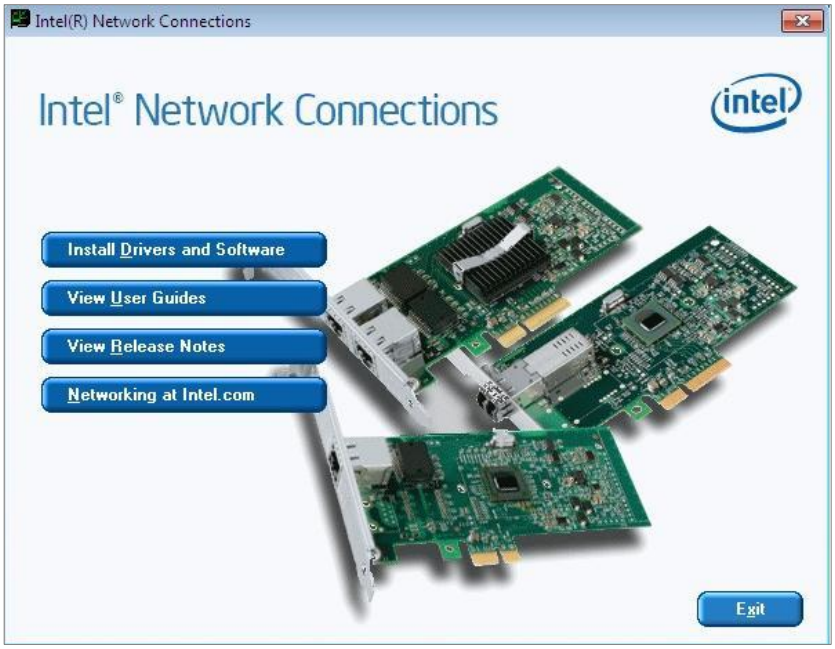


3. Installation is now complete. Restart the system for changes to take effect.

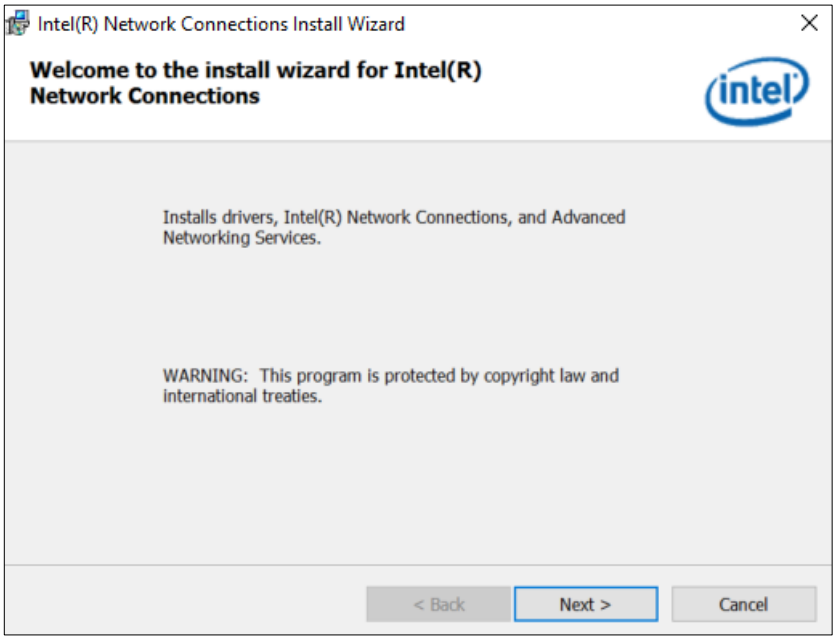
3.5 LAN Network Driver Installation

1. Run the **Setup.exe** file.

2. Click **Install Drivers and Software**.

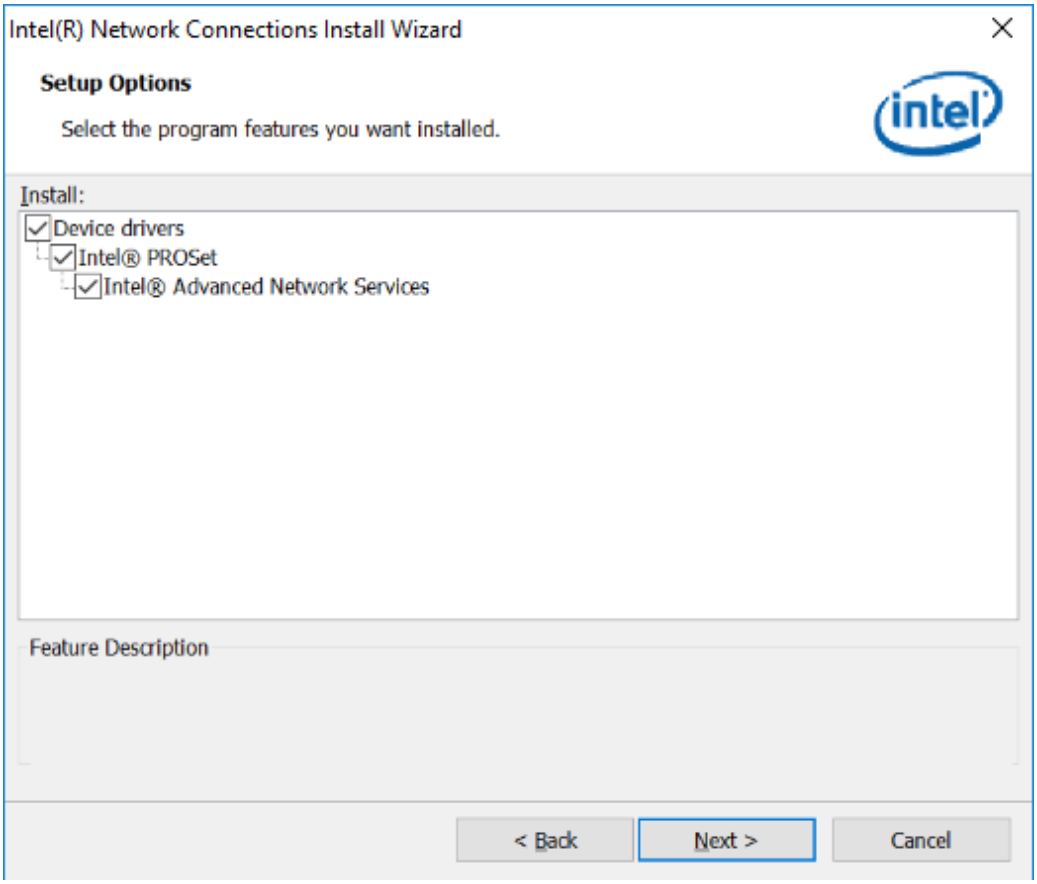


3. On the *Welcome* screen of the InstallShield Wizard, click **Next** to continue.



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

5. On the *Setup Options* screen, tick the checkbox to select the desired driver(s) and click **Next**.



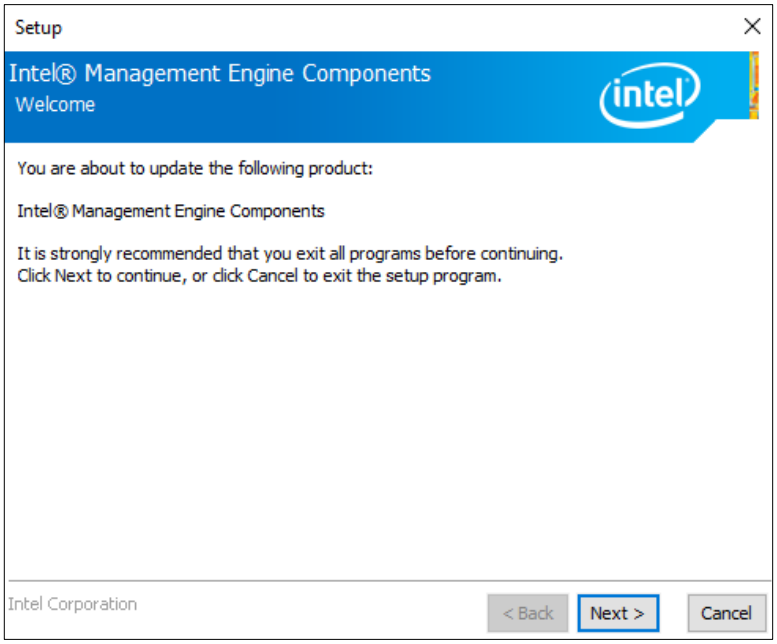
6. Click **Install**.

7. Installation is now complete. Restart the system for changes to take effect.

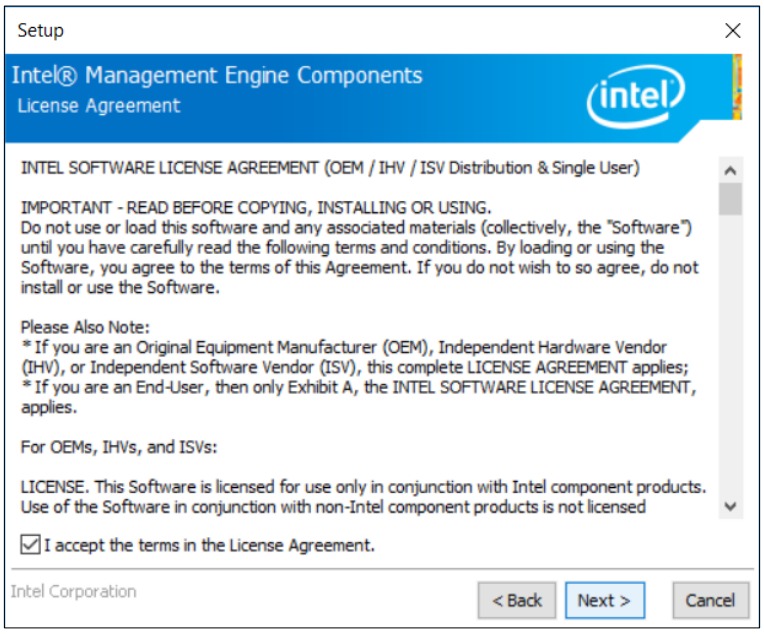
3.6 Intel® Management Engine Components Drivers Installation

1. Run the **Setup.exe** file.

2. When the *Welcome* screen appears, click **Next**.



3. Accept the license agreement and click **Next** for installation.

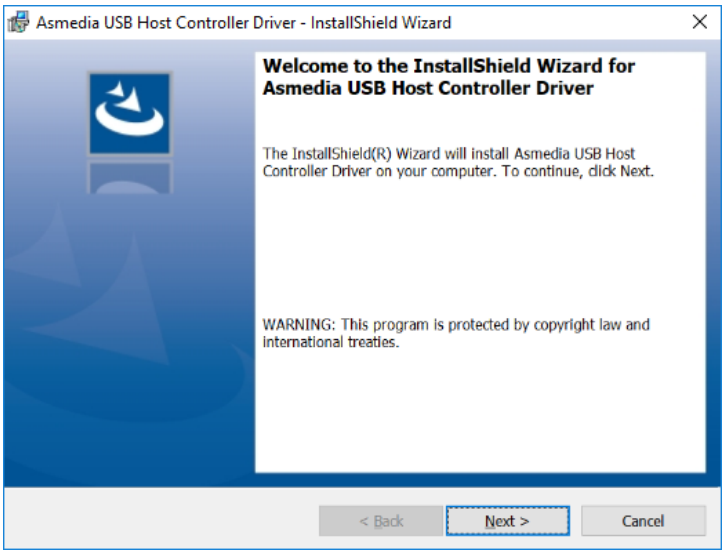


4. Installation is now complete. Restart the system for changes to take effect.

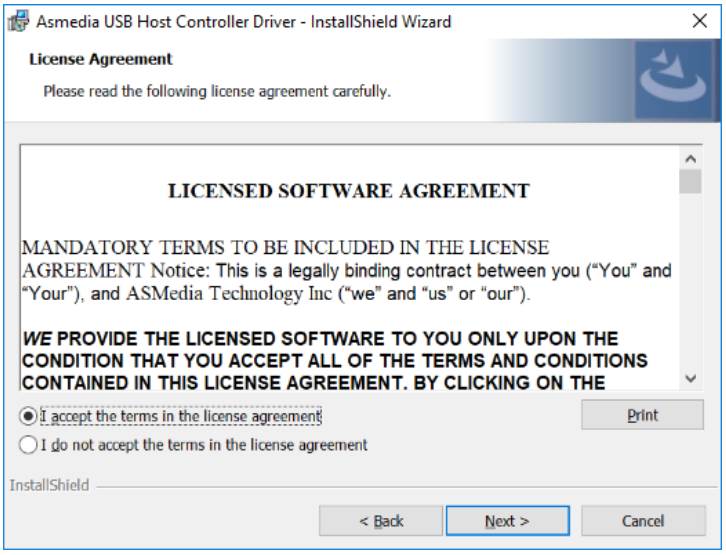
3.7 ASMedia USB 3.1 Drivers Installation

1. Run the **Setup.exe** file.

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



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



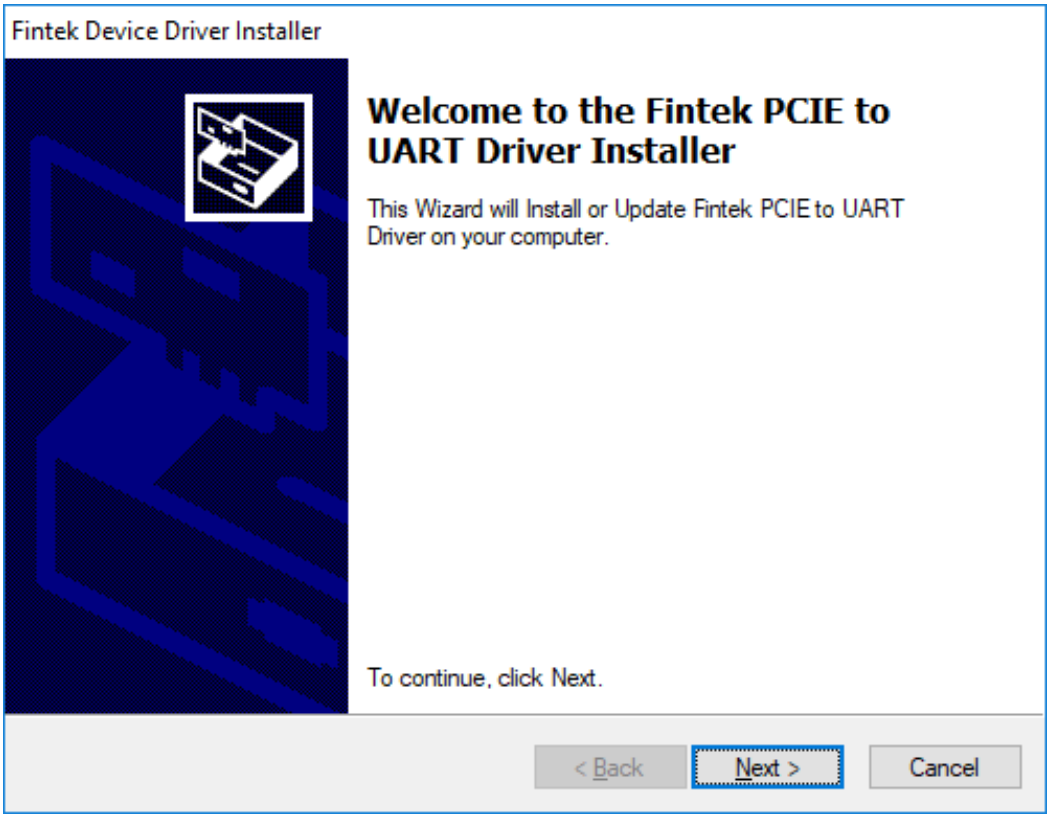
4. Click **Install**.

5. Installation is now complete. Restart the system for changes to take effect.

3.8 Fintek 8150x Serial Port Drivers Installation

1. Run the **Setup.exe** file.

2. On the *Welcome* screen of the installer, click **Next** to continue.



3. Click **Install**.

4. Installation is now complete. Restart the system for changes to take effect.

Chapter 4
BIOS Setup

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

4.1 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.

4.2 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
```

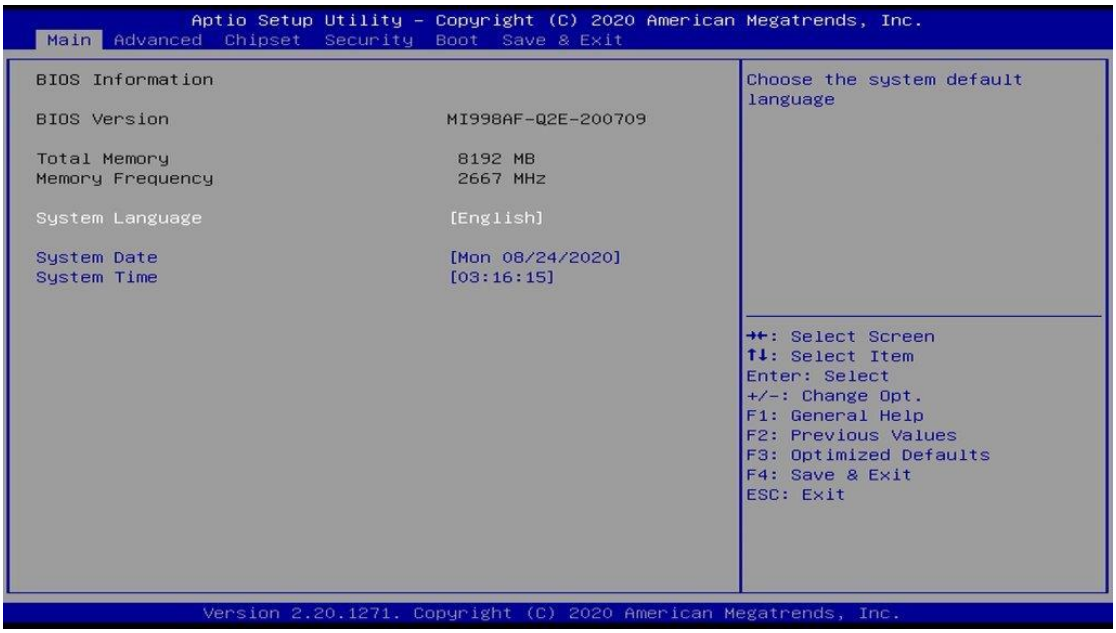
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

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.

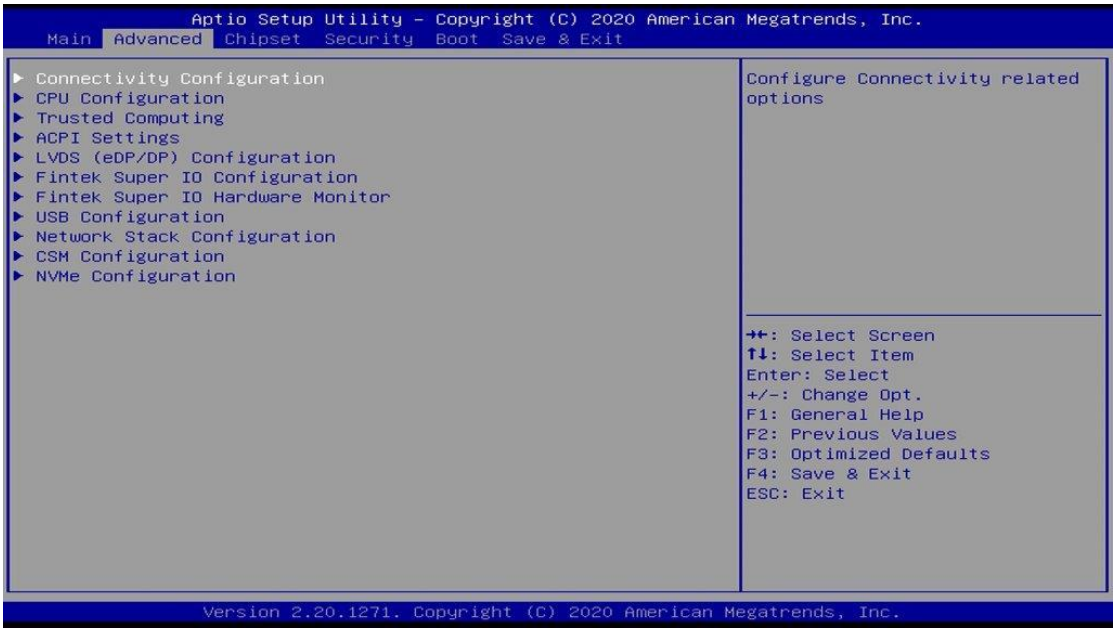
4.3 Main Settings



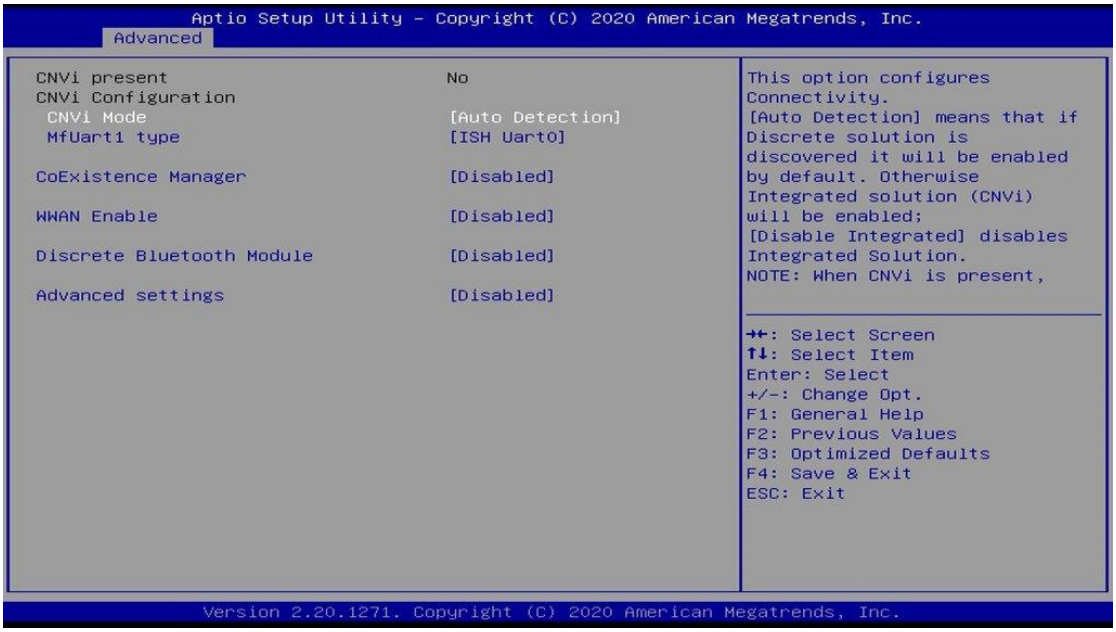
BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

4.4 Advanced Settings

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

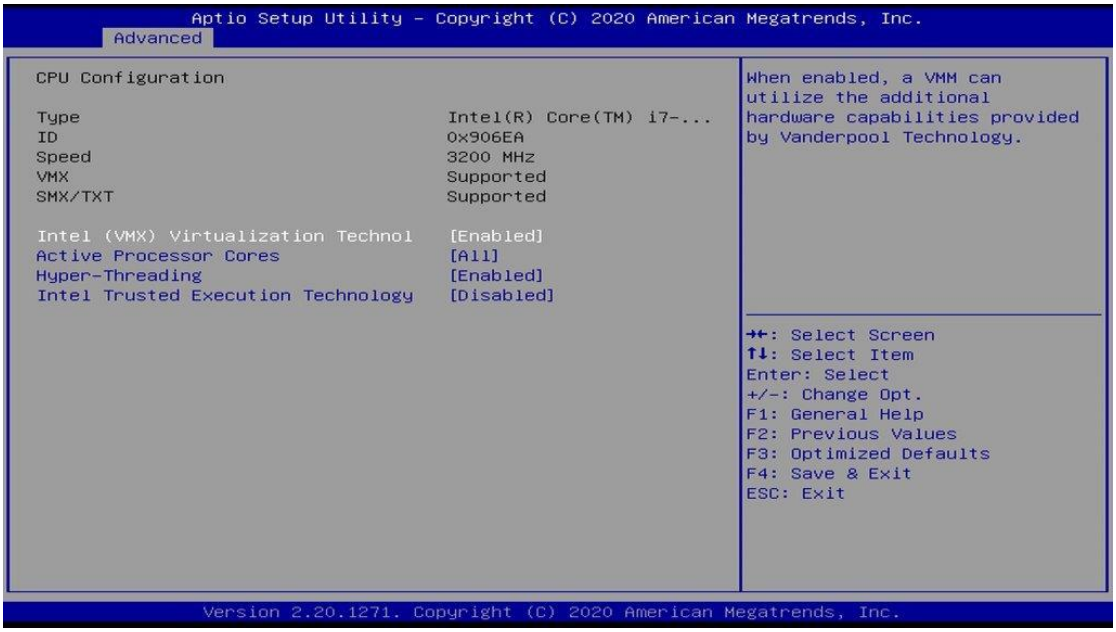


4.4.1 Connectivity Configuration



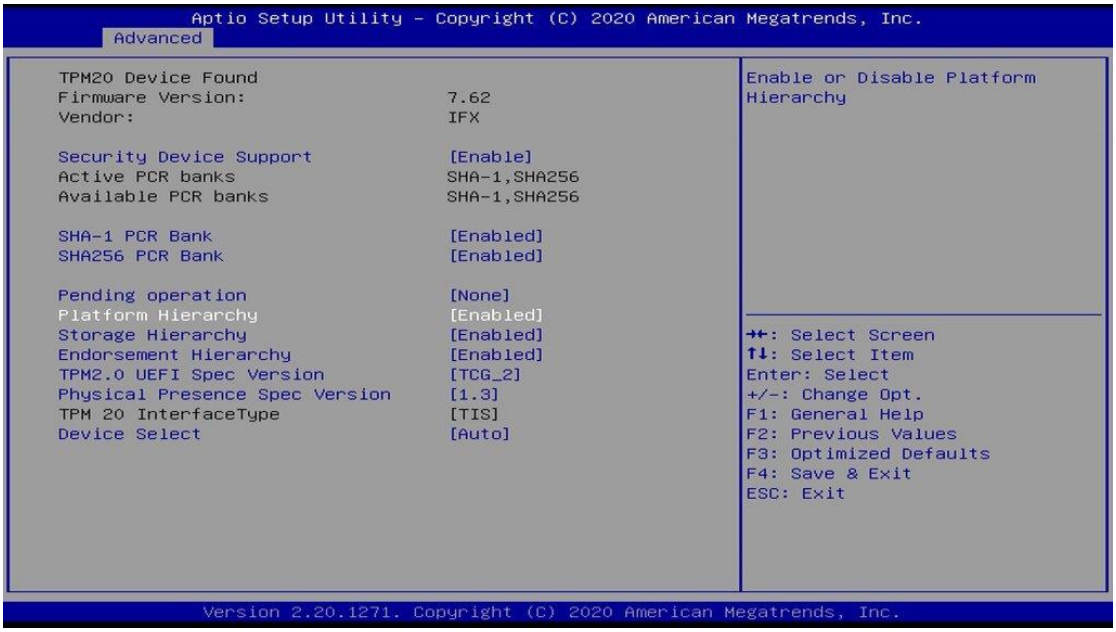
BIOS Setting	Description
CNV1 Mode	This option configures connectivity. **Auto Detection** means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNV1) will be enabled. **Disable Integrated** disagles
MfUart1 type	This is a test option which allows configuration of UART type for WiFi side band communication. Options: ISH UART0, SerialIO UART2, UART over external pads, Not connected
CoExistence Manager	CoEx Manager mitigates radio coexistence issues between Intel WWAN (modem) and Intel WLAN (WiFi/BT). This should be enabled only if both WWAN and WLAN solution are based on Intel components.
WWAN Enable	Enables / Disables M.2 WWAN module. WWAN can only be enabled for re-work boards.
Discrete Bluetooth Module	Serial I/O UART0 needs to be enabled to select BT module.
Advanced settings	Configures ACPI objects for wireless devices.

4.4.2 CPU Configuration



BIOS Setting	Description
Intel Virtualization Technology	When the function is enabled,a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	Number of cores to enable in each processor package. Options: All, 1, 2, 3, 4, 5
AES	Enables / Disables Advanced Encryption Standard).
Hyper-Threading	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Sisabled for other OS (OS not optimizd for Hyper-Threading Technology). s / Disables Advanced Encryption Standard).
Intel Trusted Execution Tecnology	Enables utilization of additional hardware capabilities provided by Intel(R) Trusted Execution Technology. Changes require a full power cycle to take effect.

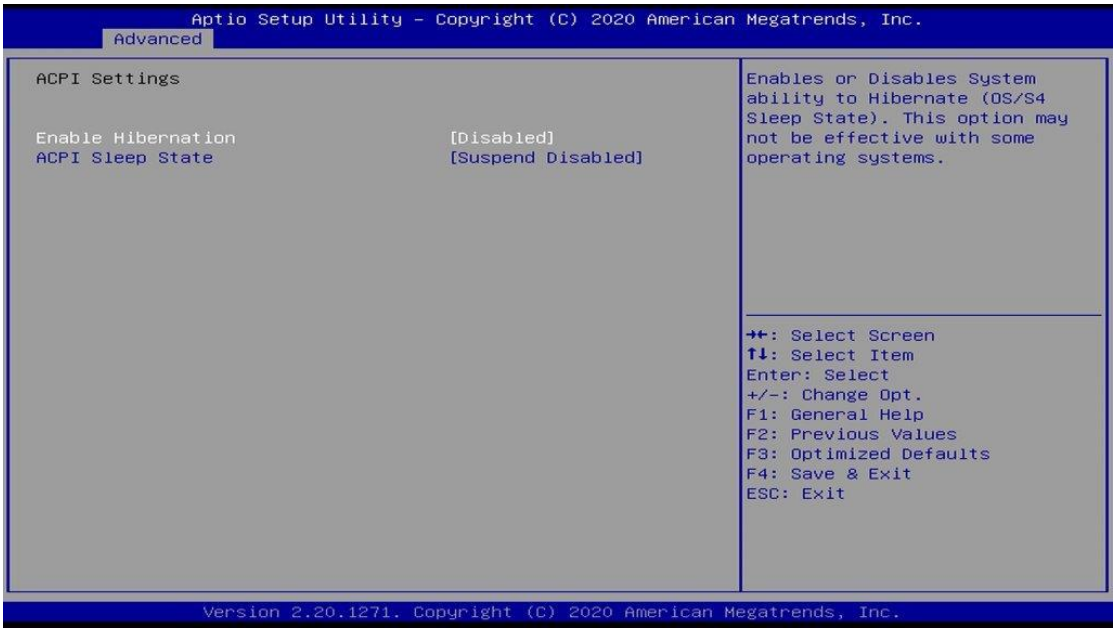
4.4.3 Trusted Computing



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.

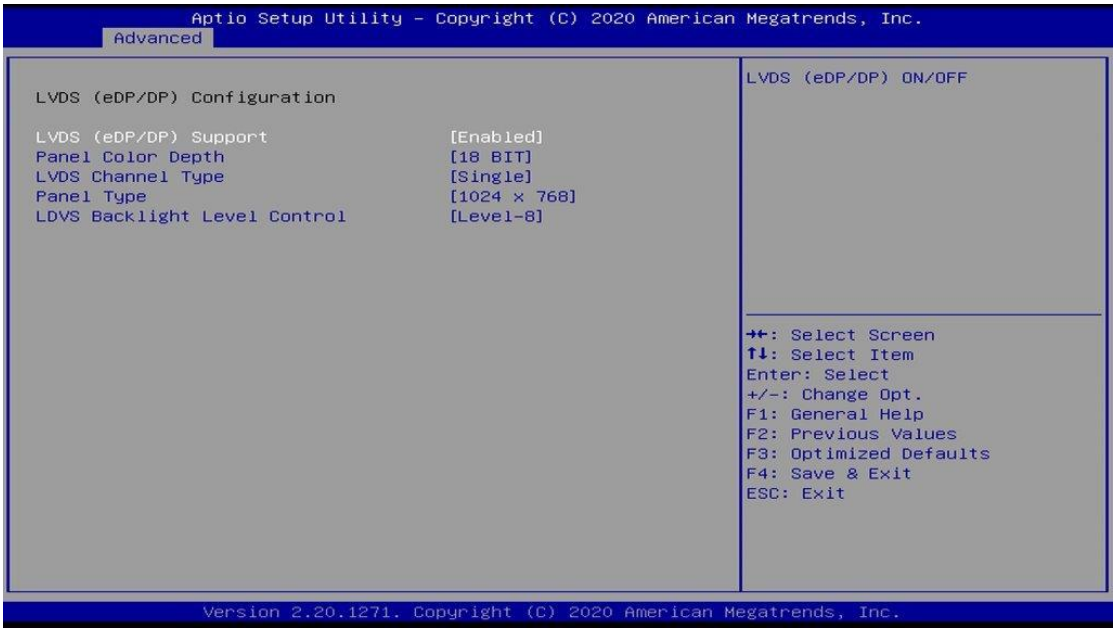
BIOS Setting	Description
Physical Presence Spec Version	Selects to show the PPI Spec Version (1.2 or 1.3) that the OS supports. **Note:** Some HCK tests might not support 1.3.
Device Select	• **TPM 1.2** will restrict support to TPM 1.2 devices only. • **TPM 2.0** will restrict support to TPM 2.0 devices 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.

4.4.4 ACPI Settings

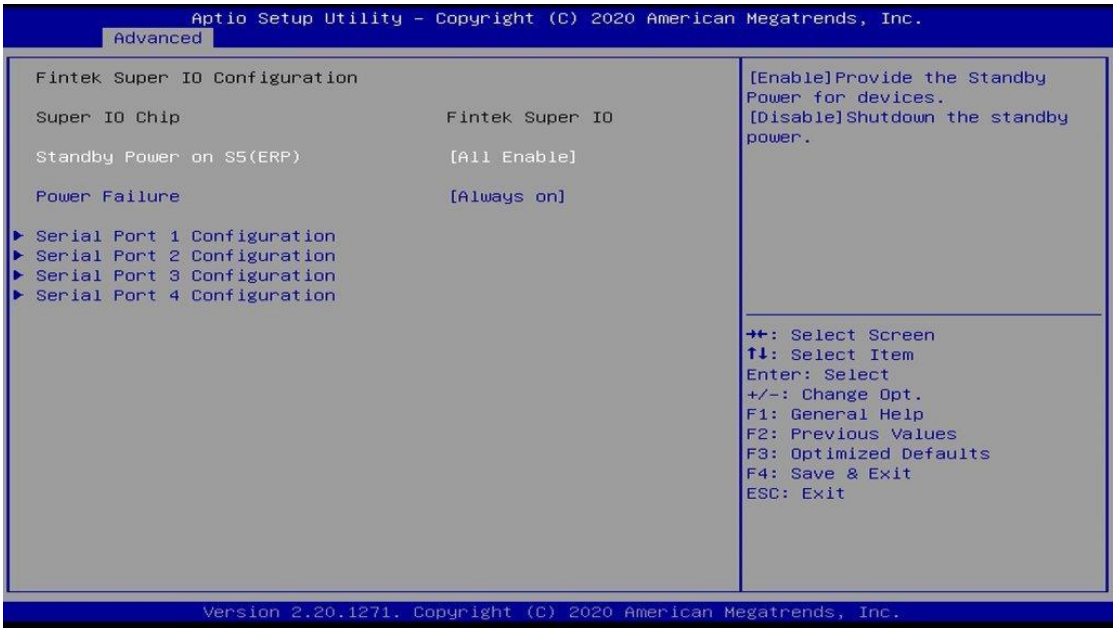


BIOS Setting	Description
Enable Hibernation	Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Selects an ACPI sleep state (Suspend Disabled or S3) where the system will enter when the Suspend button is pressed.

4.4.5 LVDS (eDP/DP) Configuration



4.4.6 Fintek Super IO Configuration

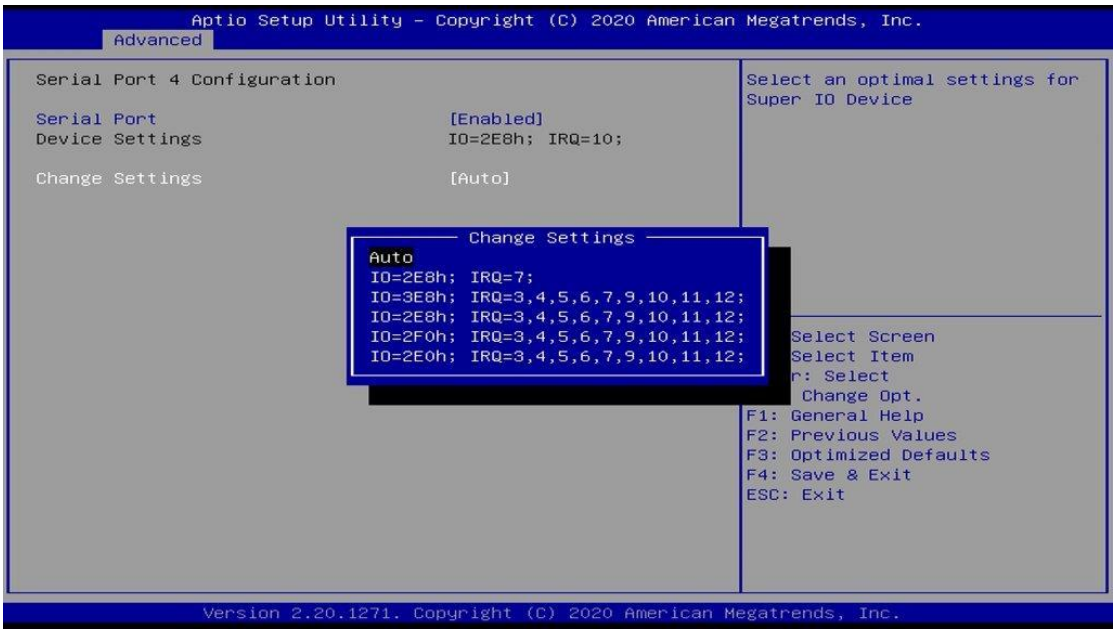


Standby Power on S5

[All Enable] Provide the Standby Power for devices.[All Disable] Shutdown the Standby power.

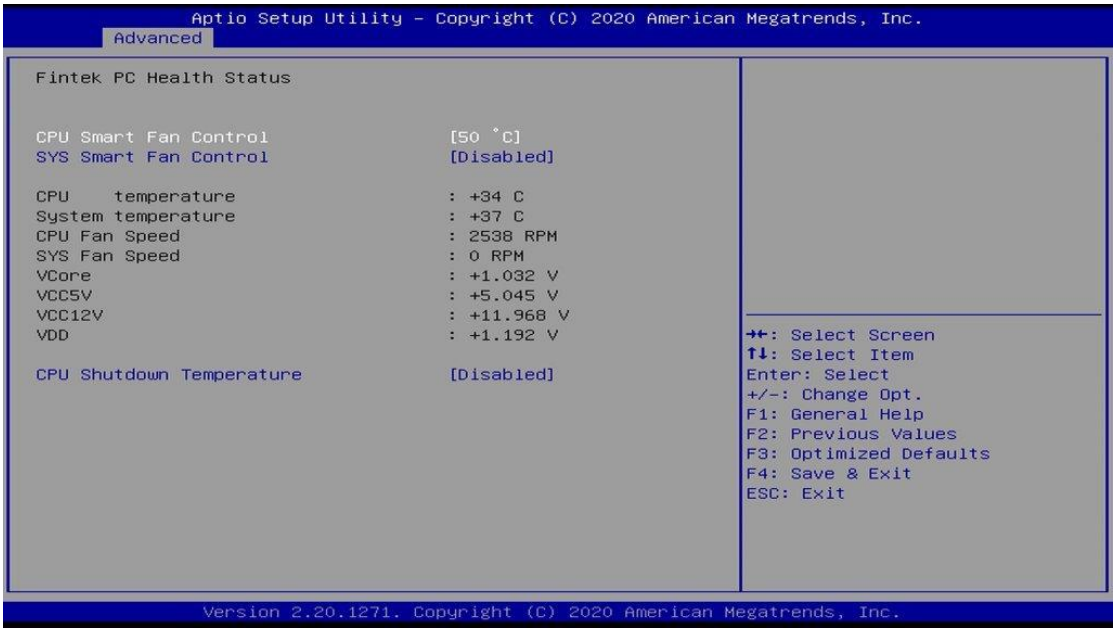
BIOS Setting	Description
Standby Power on S5	[Enable] Provide the Standby Power for devices. [Disable] Shutdown the Standby power.
Power Failure	Options are: Always on (default) Always off
Serial Port 1 Configuration	Set parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set parameters of Serial Port 1 (COMB).
Parallel Port Configuration	Set parameters of parallel port (LPT/LPTE).
Panel Brightness	Enables / Disables the control of panel brightness. Brightness percentage options: 100%, 90%, 80%, 70%, 60%, 50% PWM Frequency Selection options: 23.5 KHz, 11.75 KHz, 5.875 KHz, 220 Hz

Serial Ports Configuration



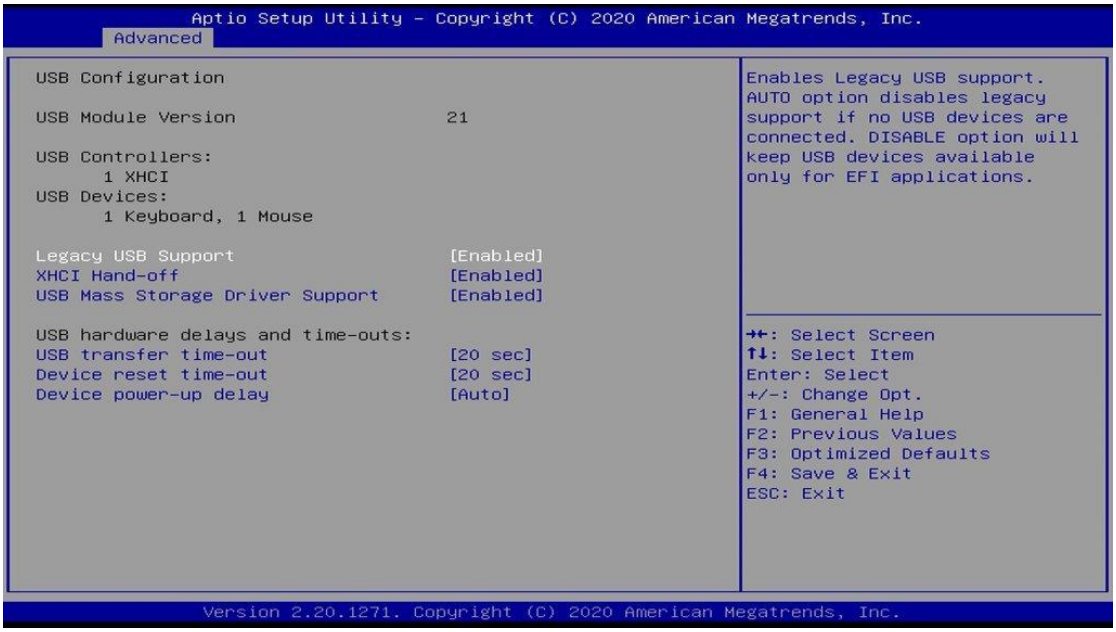
BIOS Setting	Description
Serial Port	Enables / Disables the serial port.
Change Settings	Auto (default)

4.4.7 Fintek Super IO Hardware Monitor



BIOS Setting	Description
CPU & System Smart Fan Control	Selects the smart fan mode. Options: Diabled, 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	This field enables or disables the Shutdown Temperature Options: Disabled, 70°C, 75°C, 80°C, 85°C, 90°C, 95°C

4.4.8 USB Configuration

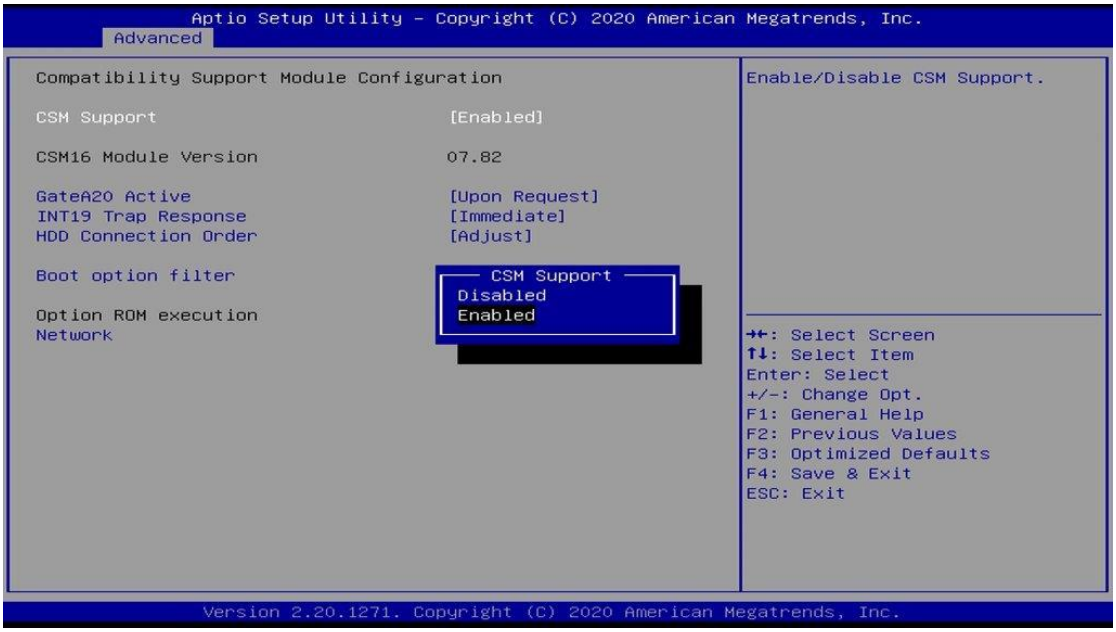


BIOS Setting	Description
Legacy USB SUpport	• **Enable:** Enables Ledacy USB Support. • **Auto:** Disables legacy support if no USB devices are connected. • **Disable:** Keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI / EHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables the support for USB mass storage driver.
USB Transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	Seconds of delaying execution of start unit command to USB mass storage device.
Device power-up delay	The maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor.

4.4.9 Network Stack Configuration

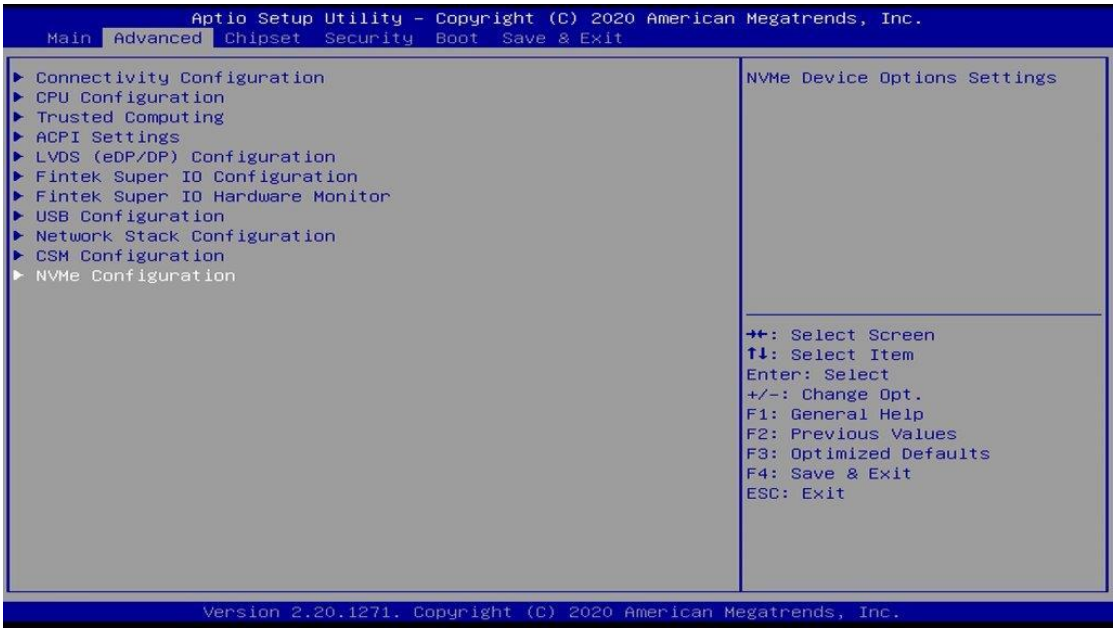
BIOS Setting	Description
Network	Controls the execution of UEFI and Legacy PXE OpROM.

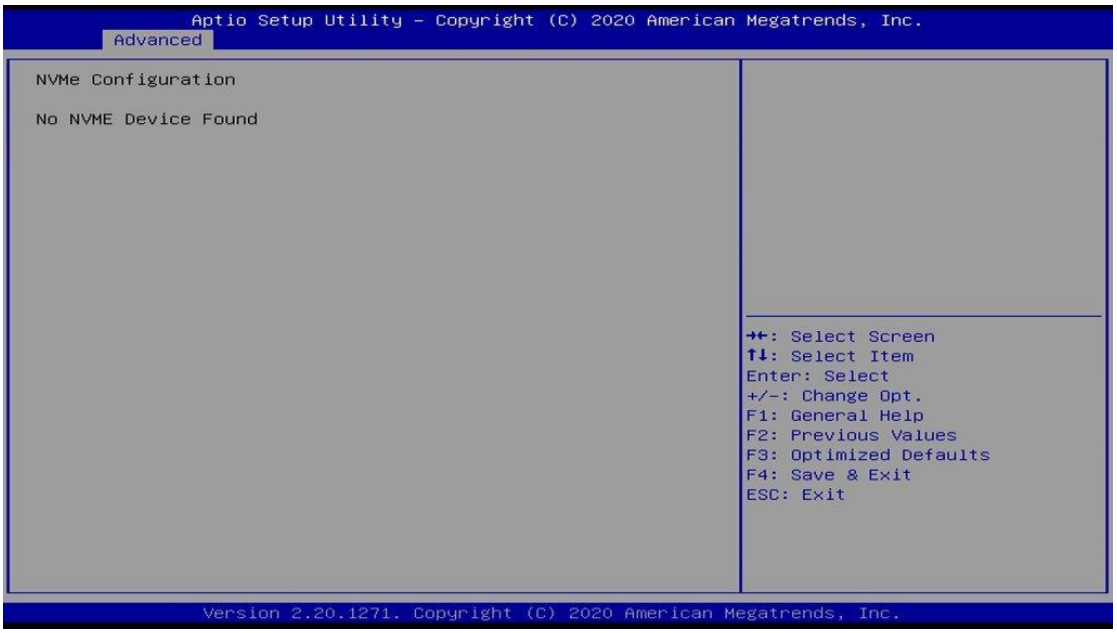
4.4.10 CSM Configuration



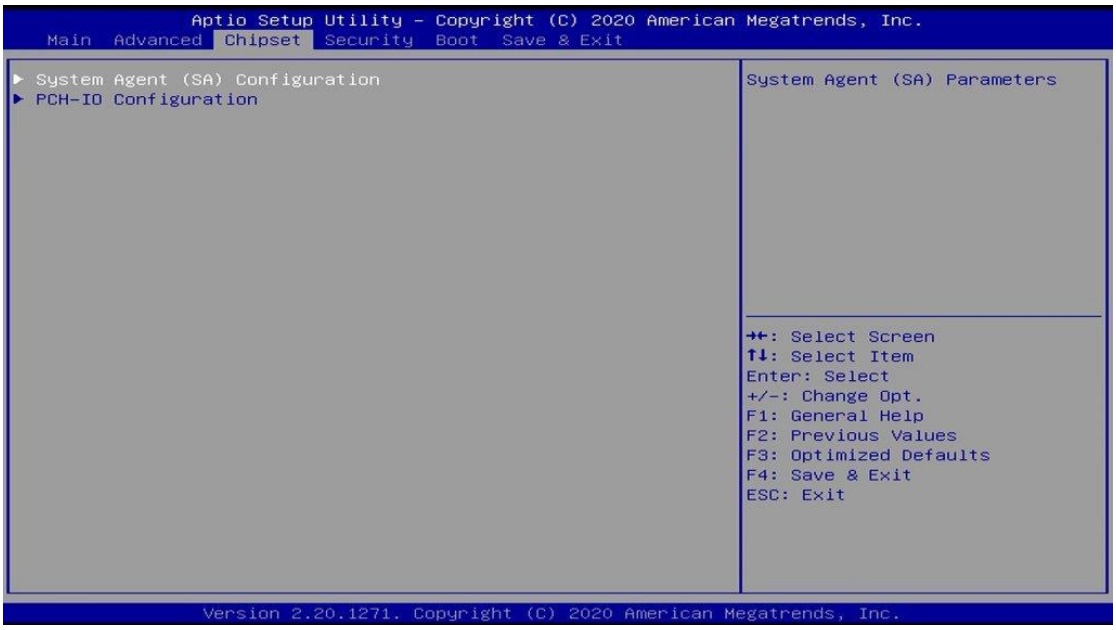
BIOS Setting	Description
CSM Support	• Enables / Disables CSM support.
GateA20 Active	• Upon Request disables GA20 when using BIOS services. • Always cannot disable GA20, but is useful when any RT code is executed above 1 MB.
INT19 Trap Response	Sets how BIOS reacts on INT19 trap by Option ROM. • **Immediate** executes the trap right away. • **Postponed** executes the trap during legacy boot.
Boot option filter	Controls the priority of Legacy and UEFI ROMs. Options: UEFI and Legacy / Legacy only / UEFI only
Network	Controls the execution of UEFI and Legacy PXE OpROM. Options: Do not launch / Legacy

4.4.11 NVMe Configuration





4.5 Chipset Settings

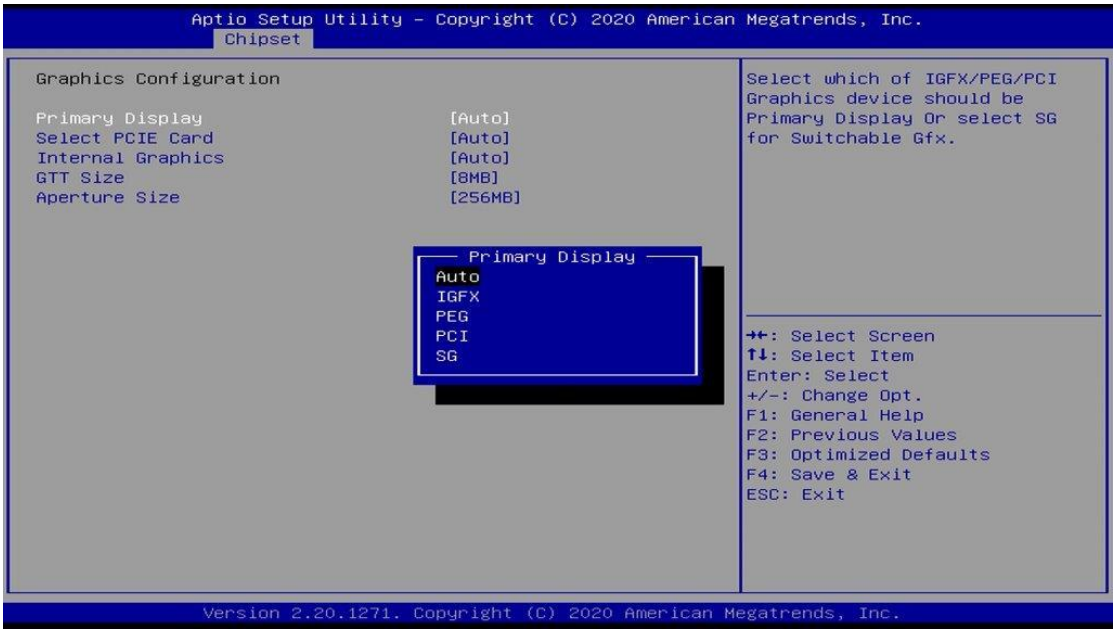


BIOS Setting	Description
System Agent (SA) Configuration	System Agent parameters
PCH-IO Configuration	PCH parameters

4.5.1 Graphics Configuration

BIOS Setting	Description
Graphics Configuration	Configures the Graphics
VT-d	Enables / Disables VT-d capability.

4.5.1.1. Graphics Configuration

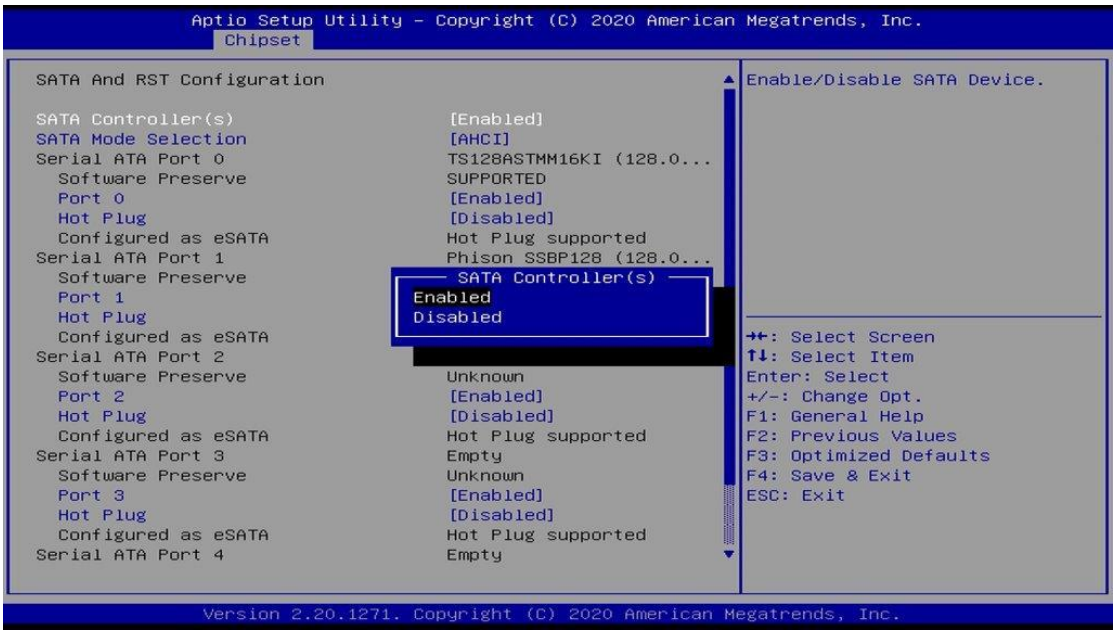


BIOS Setting	Description
Primary Display	Select which of IGFX/PEG/PCI Graphics device should be primary display or select SG for switchable Gfx. Options: Auto, IGFX, PEG, PCI, SG
Select PCIE Card	Selects the card used on the platform. **Auto** skips GPIO based Power Enable to dGPU. **E1k Creek 4:** DGPU Power Enable = Active Low. **PEG Eva1:** DGPU Power Enable = Active High.
Internal Graphics	Keep IGFX enabled based on the setup options. Options: Auto, Disabled, Enabled
GTT Size	Sets the GTT size as 2 MB, 4 MB, or 8 MB.
Aperture Size	Sets the aperture size as 128 MB, 256 MB, 512 MB, 1024 MB or 2048 MB. **Note:** Above 4 GB MMIO BIOS assignment is automatically enabled when selecting 2048 MB aperture. To use this feature, disable CSM support.

4.5.2 PCH-IO Configuration

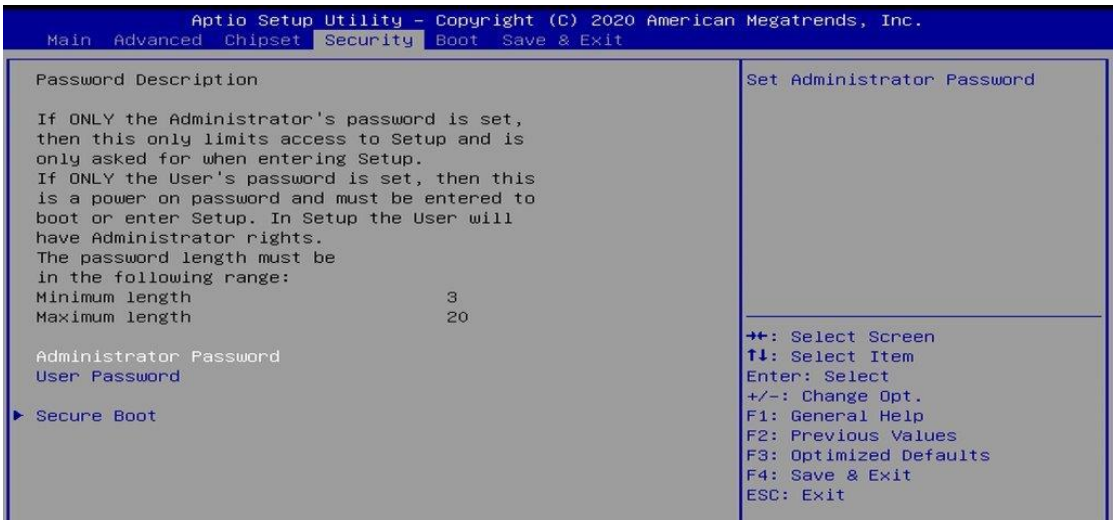
BIOS Setting	Description
SATA and RST Configuration	Configures SATA devices.
PCH LAN Controller	Enables / Disables the onboard NIC.
Wake on LAN Enable	Enables / Disables the integrated LAN to wake up the system.
PS_ON Enable	Enables / Disables PS_ON support a new C10 state from the CPU on desktop SKUs that enables a lower power target that will be required by the California Energy commission (CEC).

4.5.2.1. SATA and RST Configuration



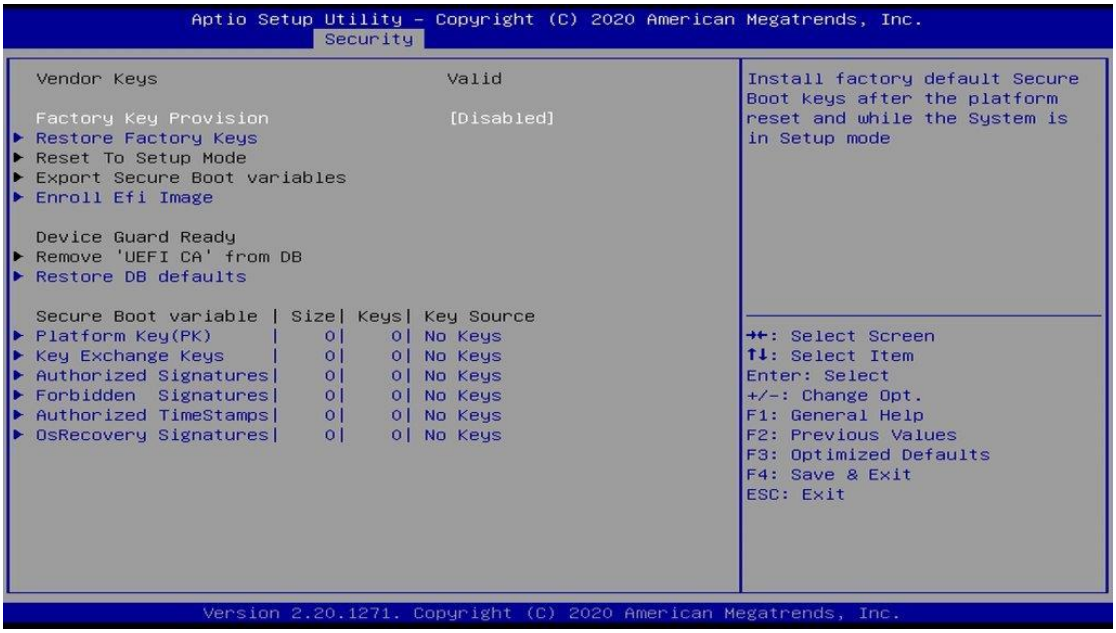
BIOS Setting	Description
SATA Controller(s)	Enables / Disables SATA device.
SATA Mode Selection	Determines how SATA controller(s) operate. Options: AHCI, Intel RST Premium
Serial ATA Ports	Enables / Disables serial ports.
Hot Plug	Designates this port as hot pluggable.

4.6 Security Settings



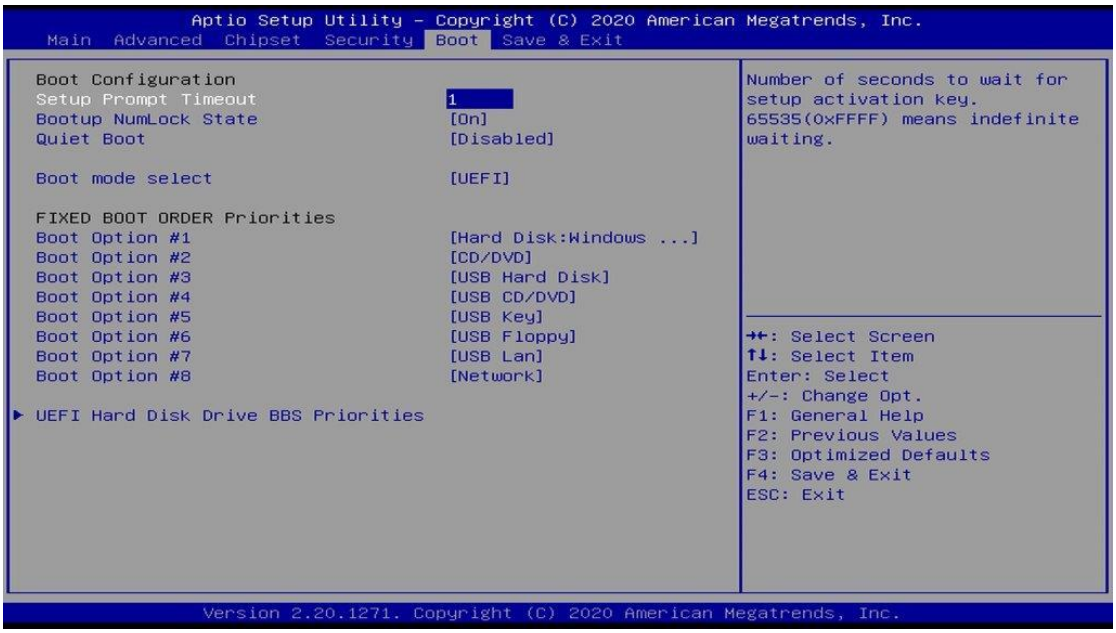
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.
Secure Boot	Configures Secure Boot.

BIOS Setting	Description
Secure Boot	Secure Boot feature is Active if Secure Boot is enabled. Platform Key (PK) Is enrolled and the system is in User mode. The mode change requires platform reset.
Secure Boot Mode	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	Forces system to user mode. Install factory default Secure Boot key databases.
Key Management	Enables expert users to modify Secure Boot Policy variables without full authentication.



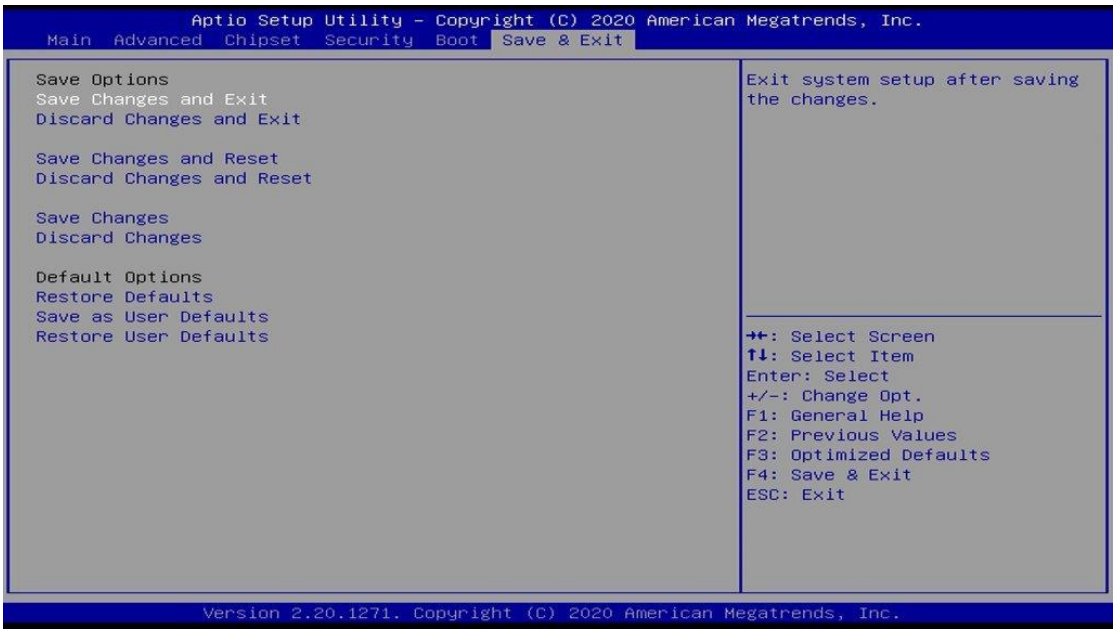
BIOS Setting	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode.
Restore Factory Keys	Forces system to use mode. Install factory default Secure Boot Key databases.
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).
Restore DB defaults	Restore DB variable to factory defaults.
Secure Boot variable	Enroll factory defaults or load certificates from a file. 1. Public key certificate: EFI_SIGNATIRE_LIST, EFI_CERT_X509 (DER), EFI_CERT_RSA2048 (bin), EFI_CERT_SHAxxx 2. Authenticated UEFI Variable 3. EFI PE/COFF image (SHA256)

4.7 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.
Boot Mode Select	Selects a Boot mode.
Boot Option Priorities	Sets the system boot order priorities for hard disk, CD/DVD, USB, Network.
Hard Disk Drive BBS Priorities	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

4.8 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)
- 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.

Address	Device Description
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	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
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
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
0x00001854-0x00001857	Motherboard resources
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x00001800-0x000018FE	Motherboard resources
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x000000F0-0x000000F0	Numeric data processor
0x00004090-0x00004097	Standard SATA AHCI Controller
0x00004080-0x00004083	Standard SATA AHCI Controller
0x00004060-0x0000407F	Standard SATA AHCI Controller
0x00002000-0x000020FE	Motherboard resources
0x00004000-0x0000403F	Intel(R) UHD Graphics 630
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00003000-0x00003FFF	Intel(R) PCI Express Root Port #12 - A333
0x0000EFA0-0x0000EFBF	Intel(R) SMBus - A323

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.

Level	Function
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 5	Communications Port (COM3)
IRQ 10	Communications Port (COM4)
IRQ 16	High Definition Audio Controller
IRQ 4294967280-87	Intel(R) I211 Gigabit Network Connection
IRQ 4294967292	Intel(R) PCI Express Root Port #12 - A333
IRQ 4294967294	Intel(R) PCIe Controller (x16) - 1901
IRQ 4294967293	Intel(R) PCIe Controller (x8) - 1905
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3450
IRQ 11	Intel(R) SMBus - A323
IRQ 11	Intel(R) Thermal Subsystem - A379
IRQ 4294967289	Intel(R) UHD Graphics 630
IRQ 4294967288	Intel(R) USB 3.1 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 54 ~ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ 511	Microsoft ACPI-Compliant System
IRQ 13	Numeric data processor
IRQ 1	Standard PS/2 Keyboard
IRQ 4294967291	Standard SATA AHCI Controller
IRQ 0	System timer

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:

```
//---------------------------------------------------------------------------
//
// 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 "F81846.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 81846 watch dog program\n");

	SIO = Init_F81846();
	if (SIO == 0)
	{

		printf("Can not detect Fintek 81846, 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_F81846_Reg(0x2B);
        bBuf &= (~0x20);
        Set_F81846_Reg(0x2B, bBuf);                     //Enable WDTO

        Set_F81846_LD(0x07);                            //switch to logic device 7
        Set_F81846_Reg(0x30, 0x01);                     //enable timer

        bBuf = Get_F81846_Reg(0xF5);
        bBuf &= (~0x0F);
        bBuf |= 0x52;
        Set_F81846_Reg(0xF5, bBuf);                     //count mode is second

        Set_F81846_Reg(0xF6, interval);                 //set timer

        bBuf = Get_F81846_Reg(0xFA);
        bBuf |= 0x01;
        Set_F81846_Reg(0xFA, bBuf);                     //enable WDTO output

        bBuf = Get_F81846_Reg(0xF5);
        bBuf |= 0x20;
        Set_F81846_Reg(0xF5, bBuf);                     //start counting
}
//---------------------------------------------------------------------------
void DisableWDT(void)
{
        unsigned char bBuf;

        Set_F81846_LD(0x07);                            //switch to logic device 7

        bBuf = Get_F81846_Reg(0xFA);
        bBuf &= ~0x01;
        Set_F81846_Reg(0xFA, bBuf);                     //disable WDTO output

        bBuf = Get_F81846_Reg(0xF5);
        bBuf &= ~0x20;
        bBuf |= 0x40;
        Set_F81846_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 "F81846.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81846_BASE;
void Unlock_F81846 (void);
void Lock_F81846 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81846(void)
{
	unsigned int result;
	unsigned char ucDid;

	F81846_BASE = 0x4E;
	result = F81846_BASE;

	ucDid = Get_F81846_Reg(0x20);
	if (ucDid == 0x07)                          //Fintek 81846
	{	goto Init_Finish; }

	F81846_BASE = 0x2E;
	result = F81846_BASE;

	ucDid = Get_F81846_Reg(0x20);
	if (ucDid == 0x07)                          //Fintek 81846
	{	goto Init_Finish; }

	F81846_BASE = 0x00;
	result = F81846_BASE;

Init_Finish:
	return (result);
}
//---------------------------------------------------------------------------
void Unlock_F81846 (void)
{
	outportb(F81846_INDEX_PORT, F81846_UNLOCK);
	outportb(F81846_INDEX_PORT, F81846_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_F81846 (void)
{
	outportb(F81846_INDEX_PORT, F81846_LOCK);
}
//---------------------------------------------------------------------------
void Set_F81846_LD( unsigned char LD)
{
	Unlock_F81846();
```

```
        outportb(F81846_INDEX_PORT, F81846_REG_LD);
        outportb(F81846_DATA_PORT, LD);
        Lock_F81846();
}
//-----------------------------------------------------------------------
void Set_F81846_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_F81846();
        outportb(F81846_INDEX_PORT, REG);
        outportb(F81846_DATA_PORT, DATA);
        Lock_F81846();
}
//-----------------------------------------------------------------------
unsigned char Get_F81846_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_F81846();
        outportb(F81846_INDEX_PORT, REG);
        Result = inportb(F81846_DATA_PORT);
        Lock_F81846();
        return Result;
}
//-----------------------------------------------------------------------



//-----------------------------------------------------------------------
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//
//-----------------------------------------------------------------------
#ifndef        F81846_H
#define         F81846_H                        1
//-----------------------------------------------------------------------
#defineF81846_INDEX_PORT                (F81846_BASE)
#defineF81846_DATA_PORT                 (F81846_BASE+1)
//-----------------------------------------------------------------------
#defineF81846_REG_LD                    0x07
//-----------------------------------------------------------------------
#define F81846_UNLOCK                   0x87
#defineF81846_LOCK                              0xAA
//-----------------------------------------------------------------------
unsigned int Init_F81846(void);
void Set_F81846_LD( unsigned char);
void Set_F81846_Reg( unsigned char, unsigned char);
unsigned char Get_F81846_Reg( unsigned char);
//-----------------------------------------------------------------------
#endif //       F81846_H
```