SI-61S
Digital Signage Player

User's Manual

Version 1.0
(Oct. 2018)

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Disclaimer

Trademarks

Compliance

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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.

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Table of Contents

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Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Optional Accessories
- Overview
- Dimensions

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1.1 Introduction

The SI-61S is powered by Intel® 7th / 6th Gen. desktop processors and supports three display outputs for HDMI, DVI-D and DisplayPort high definition video playback as well as iSmart energy-saving features such as 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

- Extreme performance digital signage player
- iSmart for auto-scheduling and EuP/ErP power saving and power resume
- Intel® 7th / 6th Gen. Core™ desktop processor
- 2 x DDR4-2133 SO-DIMM, dual channel, expandable to 32GB
- 3 x display outputs through HDMI, DVI-D, and DisplayPort
- Gigabit Ethernet, RS232/422/482 and RS-232 serial ports
- 1 x Mini-PCIe (full-size) for Wi-Fi, Bluetooth, 4G LTE or capture card options
- 1 x Mini-PCIe (half-size) for Wi-Fi, Bluetooth or 4G LTE options
- 2 x 2.5" SATA SSD with RAID 1 support
- 1 x PCIe (x16) or 2 x PCIe (x8) based on the selection of add-on graphics card (Matrox / AMD / NVIDIA GPU cards)

1.3 Packing List

If you buy a barebone SI-61S, 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-61S Digital Signage Player   x 1
- Power Cord   x 1
- 2-Pin Terminal Block for Power Button   x 1
- Screws for Graphics Card (M2.5 x 6 mm)   x 4
- Mini-HDMI Holder   x 1
- Screws for Mini-HDMI Cable Holder (M3 x 6 mm)   x 2
- Wall Mount Kit   x 1
- Screws for Wall Mount Kit (M3 x 12 mm)   x 8

1.4 Specifications

Product	SI-61S
System	
Mainboard	MI991AF
Operating System	• Windows 10 Enterprise (64-bit) • Windows 8.1 (64-bit) for Intel Skylake solution series only • Windows 7 (64-bit)
CPU	Intel® 7th / 6th Gen. Core™ desktop processor with up to 8 MB cache, socket LGA1151
Chipset	Intel® Q170
Memory	2 x DDR4 SO-DIMM 2133 MHz, dual channel, expandable to 32 GB
Graphics	Intel® processor HD Graphics 530
Network	Intel® I219LM GbE LAN & Intel® I211AT (2nd GbE LAN) controllers
Super I/O	Fintek F81846D
Storage	2 x 2.5" SATA SSD with RAID 1 support
Power Requirement	AC 110 ~ 240V
Power Supply	Internal 400W PSU

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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)	436 x 93 x 345 mm (17.16" x 3.66" x 13.58")
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	• 1 x Mini-PCIe (full-sized) for WiFi, BT, 4G LTE options or capture card options • 1 x Mini-PCIe (half-sized) for WiFi, BT or 4G LTE • 1 x PCIe (x16) or 2 x PCIe (x8) based on the selection of add-on graphics card (Matrox / AMD / NVIDIA graphics cards)
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 Overview

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

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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
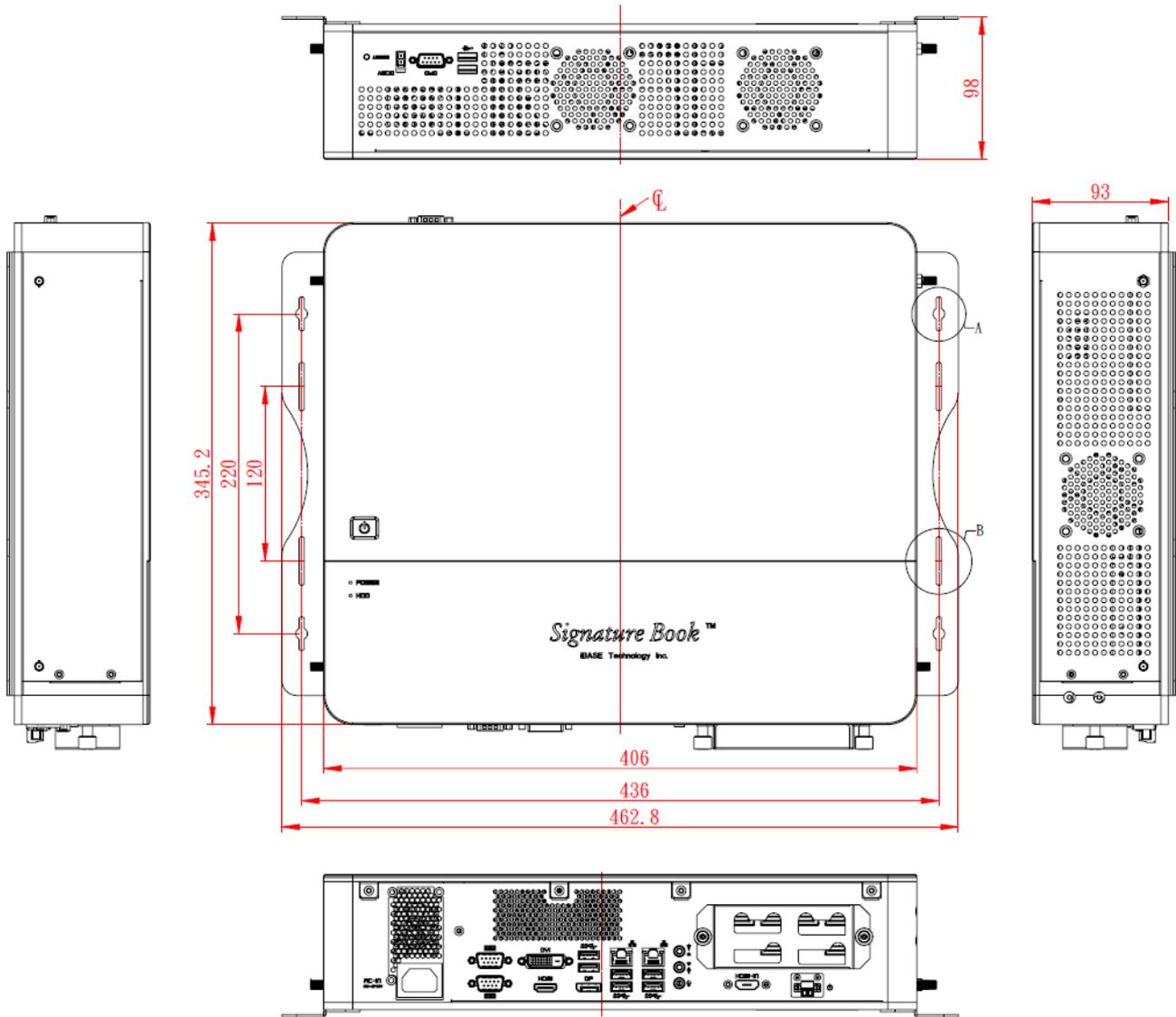
Chapter 2
Hardware Installation &
Motherboard Information

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.
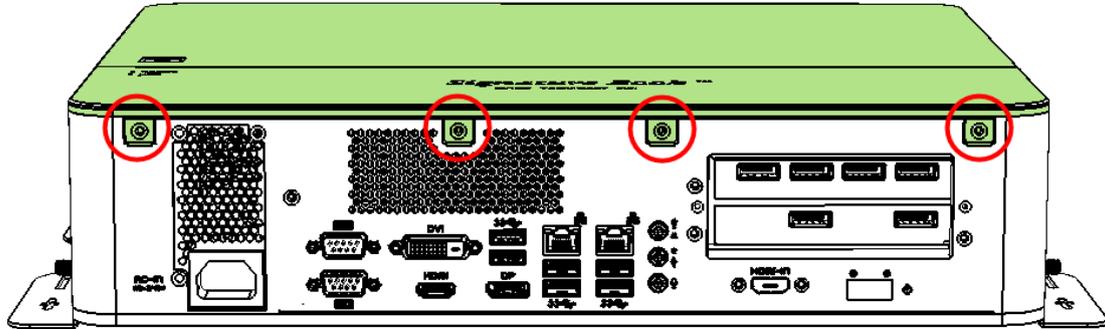
2.1.1 Memory Module Installation

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.
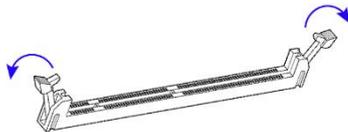
2. Hold the memory module and align the key of the module with that on the memory slot.
3. Gently push the module in an upright position unitl the ejector tabs of the memory slot close to hold the module in place when the module touches the bottom of the slot.
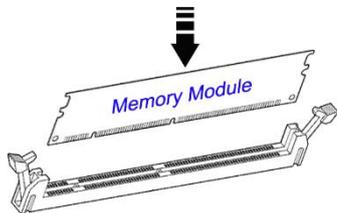
To remove the module, press the ejector tabs outwards with your fintertips to eject the module.

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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.
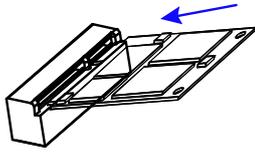
2. Push the mini PCIe card downwards as shown in the picture, and fix it with a screw.
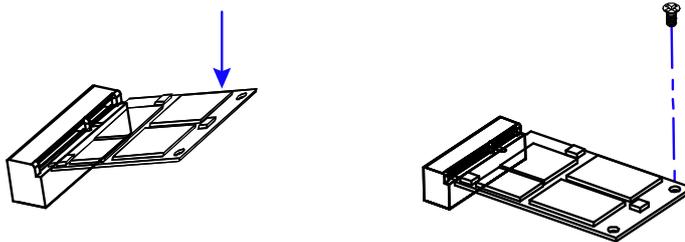
2.1.3 WiFi / 3G / 4G Antenna Installation

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-61S 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.
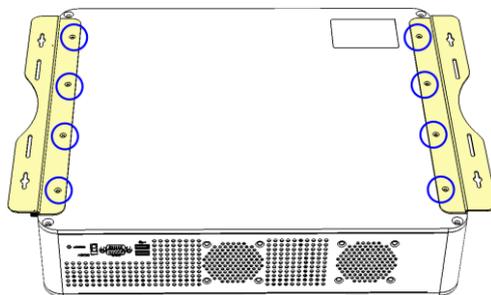
2. Prepare at least 4 screws (M3) to install the device on the wall as shown.
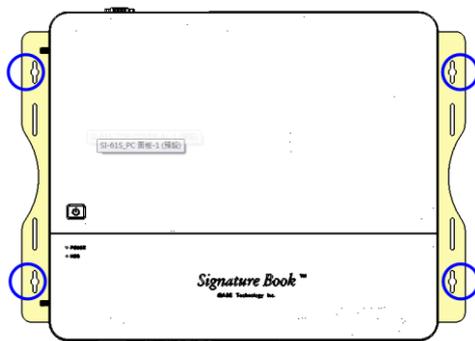
2.1.5   Pin Assignment for Power Input Connector

Pin	Signal	Pin	Signal
1	Ground	2	PWR_SW

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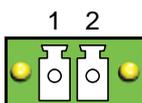
2.2 Setting the Jumpers

Configure your SI-61S 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.

Pin#   1   2   3

A 3-pin jumper   **A jumper cap**
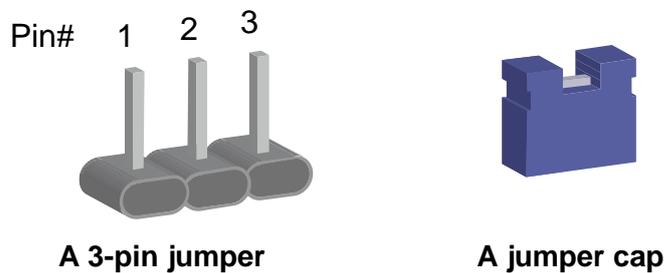
Refer to the illustration below to set jumpers.

Pin closed	Oblique view	Illustration in the manual
Open		□ ○ ○ 1 2 3
1-2		□ ○ ○ 1 2 3
2-3		□ ○ ○ 1 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 on Motherboard

Motherboard: MI991AF

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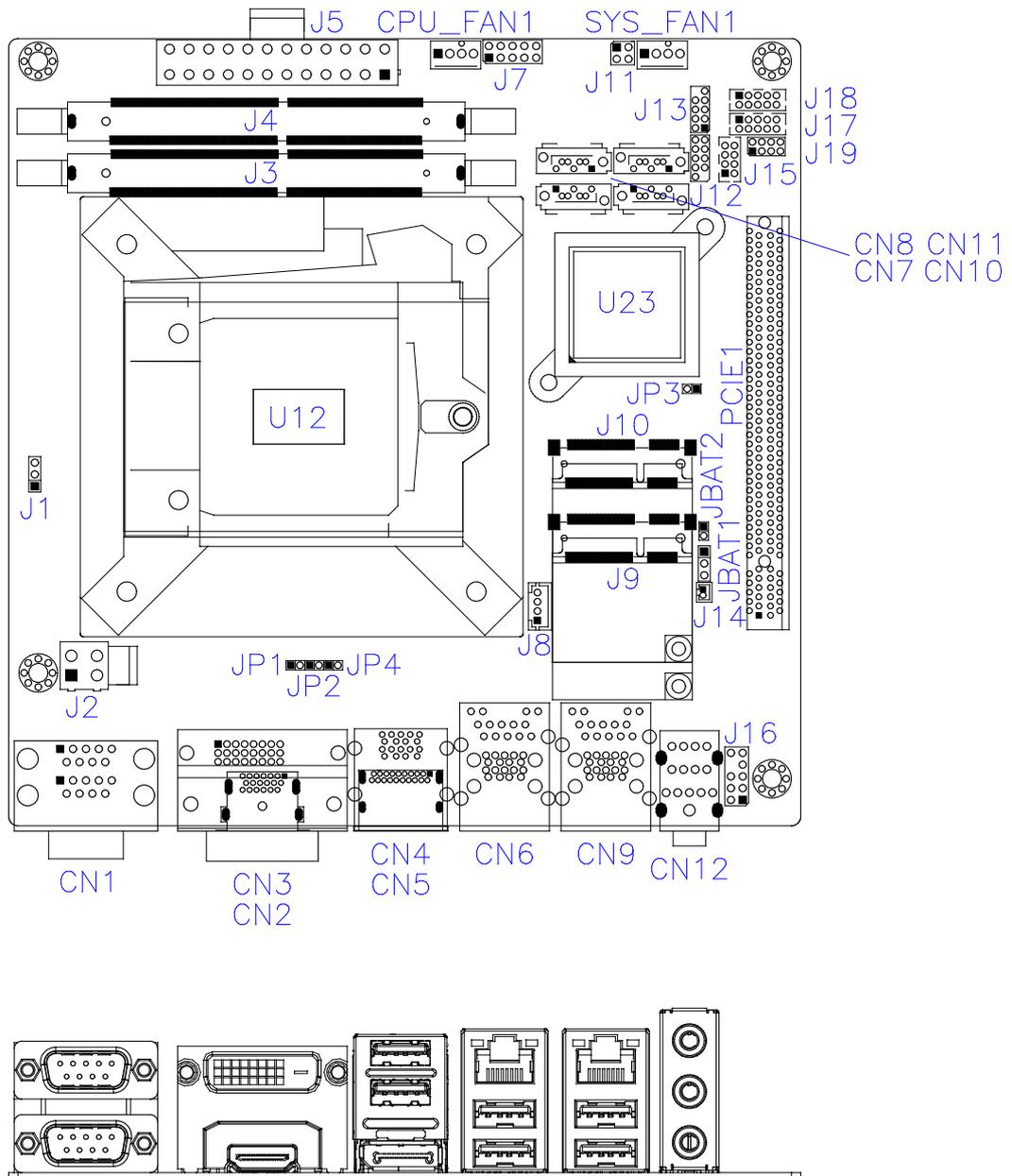
2.4 Jumpers Quick Reference

Function	Connector Name	Page
Clearing CMOS Data	JBAT1	14
Clearing RTC Content	JBAT2	14
PCIe (x16) Mode Selection	JP1, JP2	15
Factory Use Only	JP3	--

2.4.1 Clearing CMOS Data (JBAT1)
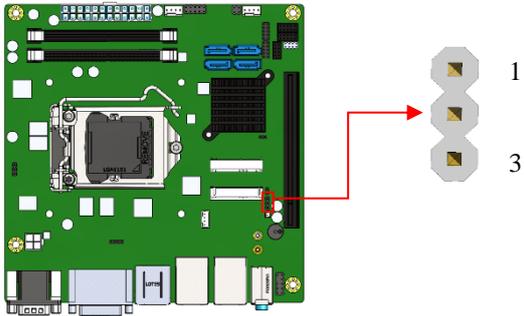
Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

2.4.2 Clearing RTC Content (JBAT2)
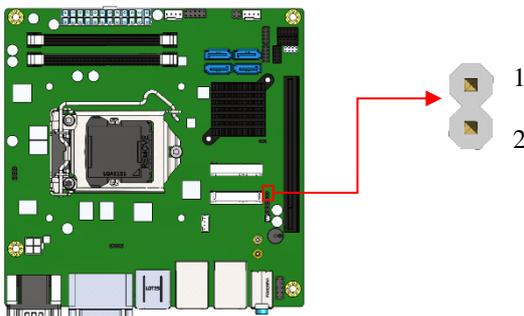
Function	Pin closed	Illustration
Normal (default)	Open	
Clear RTC	Close	

2.4.3   PCIe (x16) Mode Selection   (JP1, JP2)
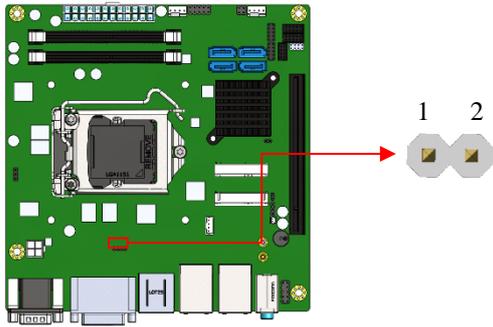
Function	Pin closed	Illustration
1 x 16 (default)	**JP1:** Open **JP2:** Open	1 ▢ ○ 1 ▢ ○
2 x 8	**JP1:** Open **JP2:** Close	1 ▢ ○ 1 ▢ ●
1 x 8, 2 x 4	**JP1:** Close **JP2:** Close	1 ▢ ● 1 ▢ ●

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2.5 Connectors Quick Reference

Function	Connector Name	Page
COM1 and COM2 Serial Ports	CN1	17
ATX 12V Power Connector	J2	18
ATX Power Supply Connector	J5	18
Digital I/O Connector	J7	19
ACPI Status LED	J11	19
Battery Connector	J14	20
USB 2.0 Connector	J15	20
Audio Pin Header for Chassis Front Panel	J16	21
COM3 & COM4 RS-232 Serial Ports	J17 (COM3), J18 (COM4)	21
Front Panel Function Connector	J19	22
CPU Fan Power Connector	CPU_FAN1	22
System Fan Power Connector	SYS_FAN1	23
DVI-D and HDMI Connector	CN2, CN3	--
Display Port + USB3.0 Ports	CN4, CN5	--
GbE LAN & Two USB3.0 Ports	CN6, CN9	--
SATA III Connectors	CN7, CN8, CN10, CN11	--
HD Audio Connector	CN12	--
PCIe (x16) Slot	PCIE1	--
DDR4 SO-DIMM Slot	J3, J4	--
Mini-PCIe Slot	J9, J10	--
Factory Use Only	J12, J13	--

2.5.1 COM1 and COM2 Serial Ports (CN1)
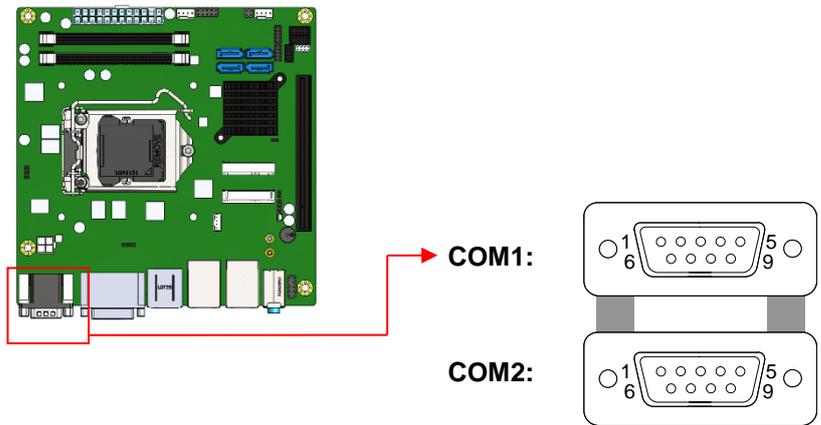
COM1:

COM2:

COM1 RS-232/422/485 port:

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

COM2 RS-232 port:

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		

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2.5.2 ATX 12V Power Connector (J2)
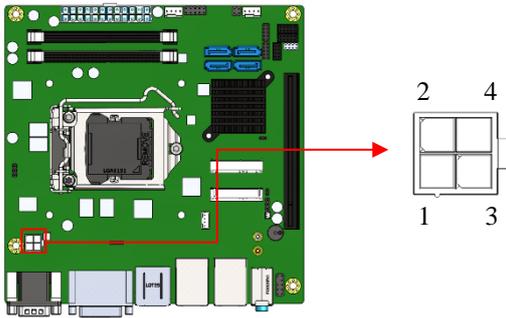
Pin	Signal	Pin	Signal
1	Ground	3	+12V
2	Ground	4	+12V

2.5.3 ATX Power Supply Connector (J5)
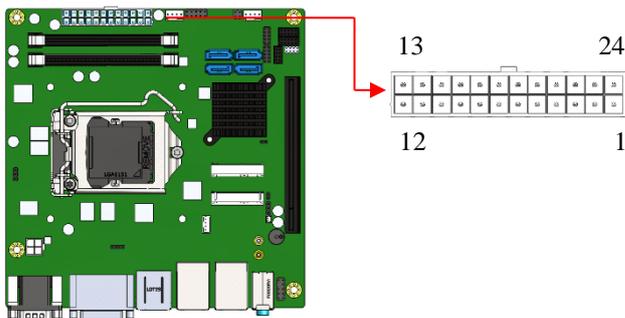
Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS-ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

2.5.4　Digital I/O Connector　(J7)
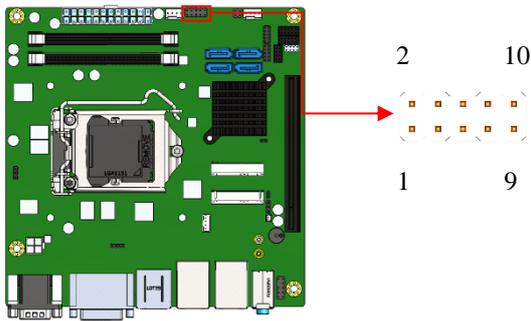
Pin	Signal	Pin	Signal
1	Ground	2	VCC
3	OUT3	4	OUT1
5	OUT2	6	OUT0
7	IN3	8	IN1
9	IN2	10	IN0

2.5.5　ACPI Status LED　(J11)
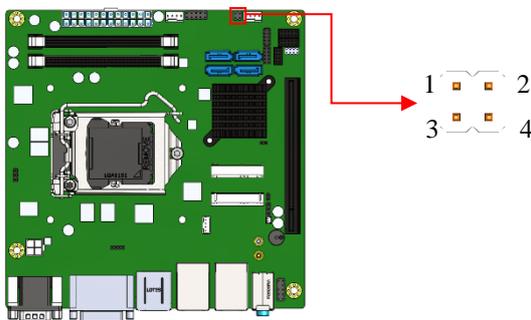
Pin	Signal	Pin	Signal
1	+3VDUAL	2	Ground
3	+VCC3	4	Ground

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2.5.6　Battery Connector　(J14)
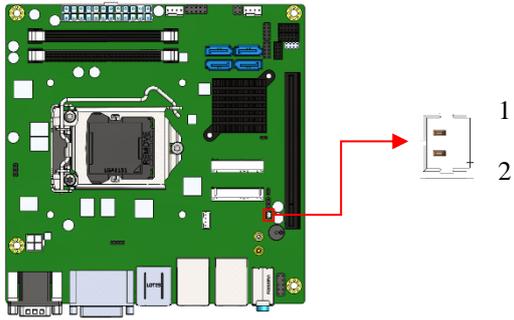
Pin	Signal	Pin	Signal
1	Battery+	2	Ground

2.5.7　USB 2.0 Connectors　(J15)
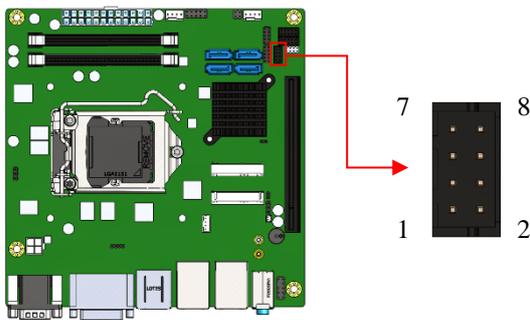
Pin	Signal	Pin	Signal
1	VCC	2	Ground
3	D0-	4	D1+
5	D0+	6	D1-
7	Ground	8	VCC

2.5.8 Audio Pin Header for Chassis Front Panel (J16)
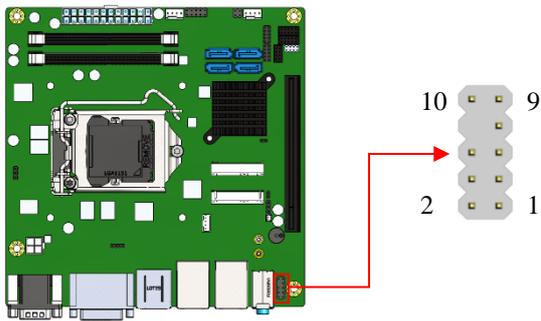
Pin	Signal	Pin	Signal
1	MIC IN_L	2	Ground
3	MIC IN_R	4	DET
5	LINE_R	6	Sense Ground
7	Sense	8	Key
9	LINE_L	10	Sense Ground

2.5.9 COM3 & COM4 RS-232 Serial Ports (J17, J18)
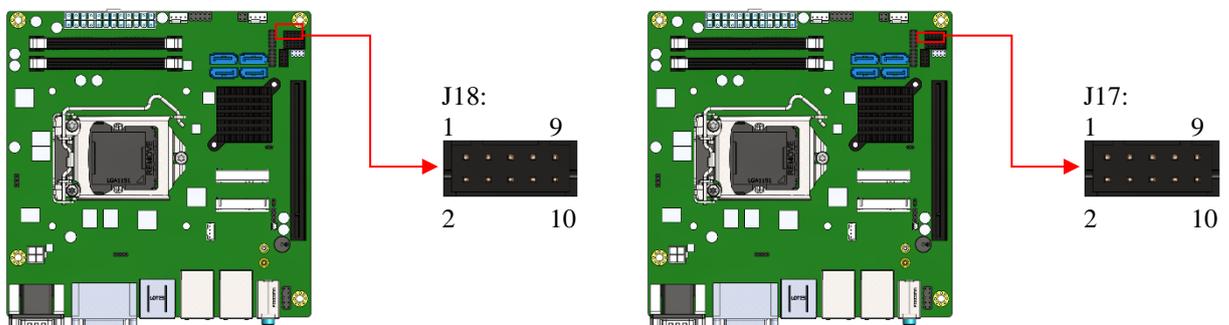
Pin	Signal	Pin	Signal
1	DCD#	2	SIN
3	SOUT	4	DTR#
5	Ground	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	KEY

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2.5.10 Front Panel Function Connector (J19)
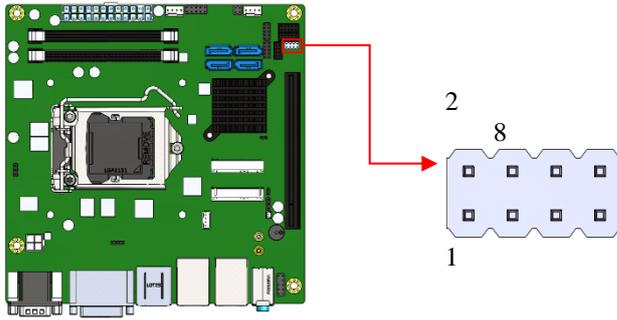
Pin	Signal	Pin	Signal
1	Ground	2	PWR_SW
3	PWR_LED+	4	PWR_LED- (Ground)
5	HDD_LED+	6	HDD_LED-
7	Ground	8	Reset

2.5.11 CPU Fan Power Connector (CPU_FAN1)
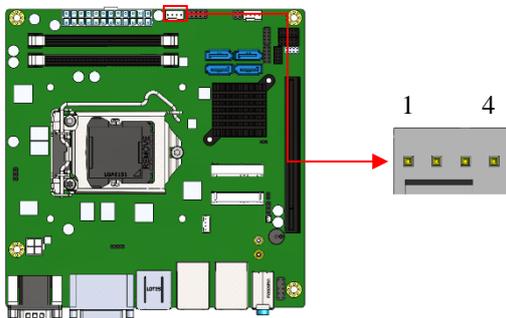
Pin	Signal	Pin	Signal
1	Ground	3	Rotation detection
2	+12V	4	Control

2.5.12 System Fan1 Power Connector (SYS_FAN1)
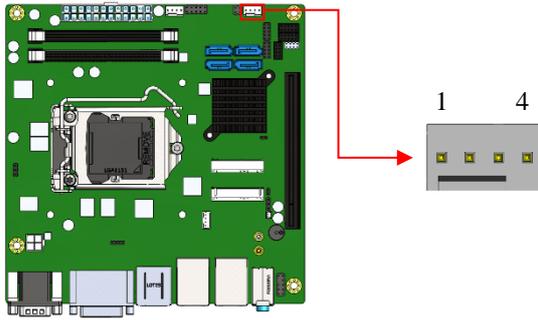
Pin	Signal	Pin	Signal
1	Ground	3	Rotation detection
2	+12V	4	Control

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

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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.

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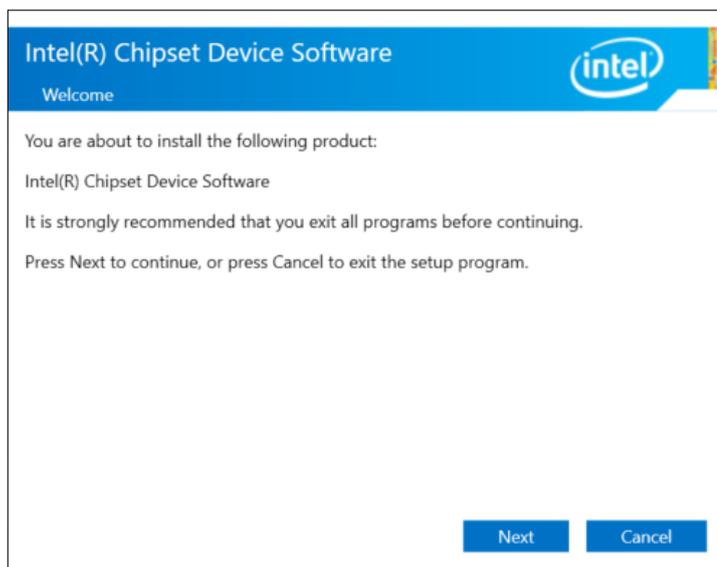
3. Accept the license agreement and proceed with the installation process.
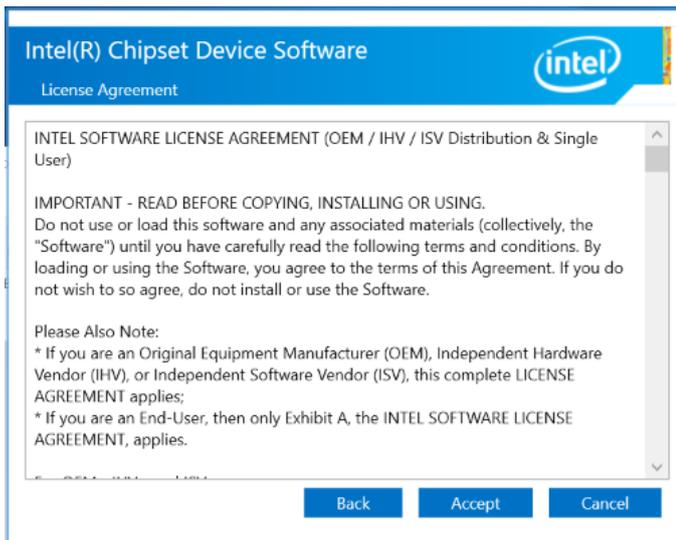
4. On the *Readme File Information* screen, click **Install**.
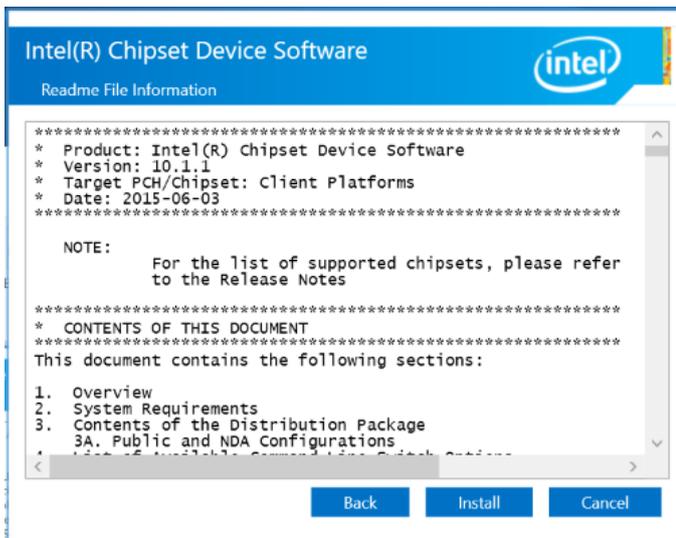
5. Installation is now complete. Restart the system for changes to take effect.

3.3   Intel® HD Graphics Driver Installation

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

2.   When the *Welcome* screen appears, click **Next** to continue.
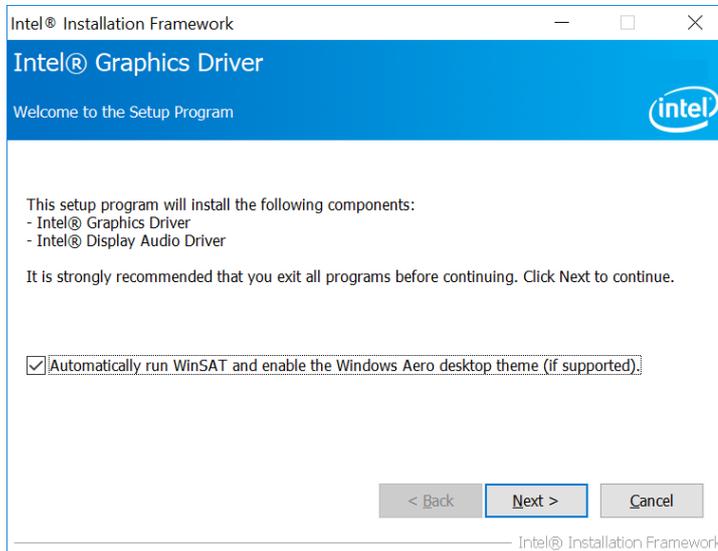
3.   Click **Yes** to agree with the license agreement and continue the installation.
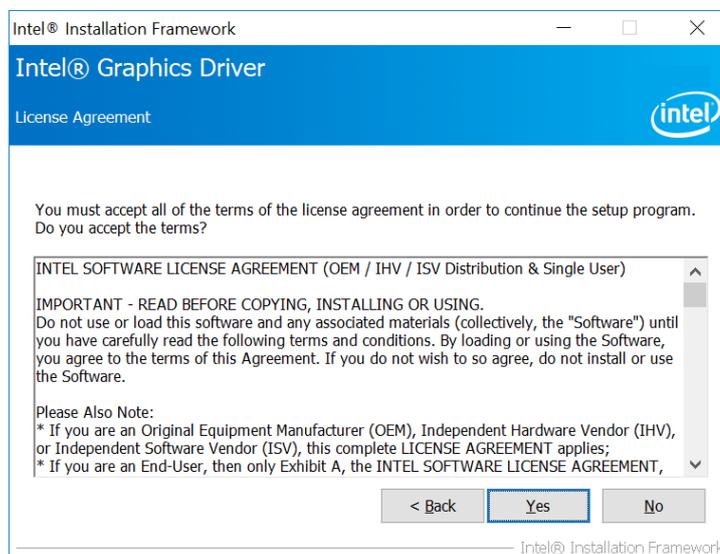
4.   On the *Readme File Information* and *Setup Progress* screen, click **Next** and then **Install**.

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

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3.4 HD Audio Driver Installation

1. Run the **Setup.exe** file and the wizard starts.
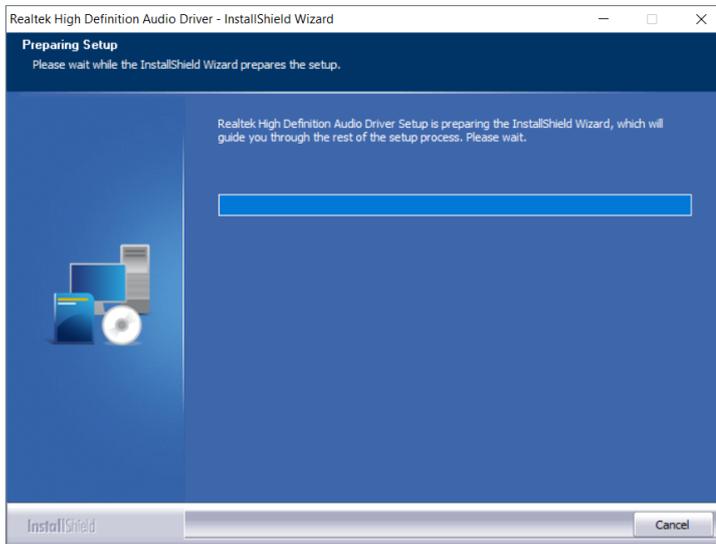
2. On the *Welcome* screen of the InstallShield Wizard, click **Next** to start installing the audio driver on your system.
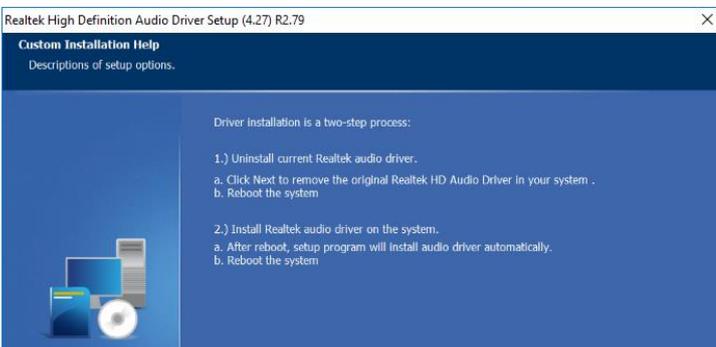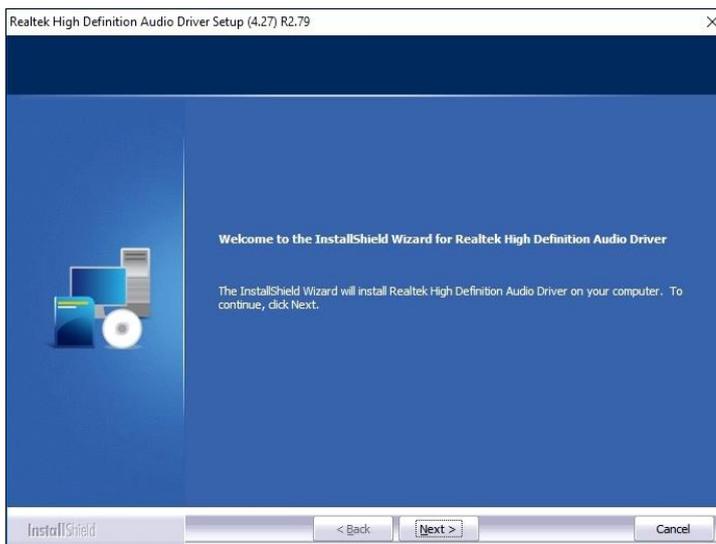
3. Installation is now complete. Restart the system for changes to take effect.

3.5   LAN Network Driver Installation

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

2. Click **Install Drivers and Software**.
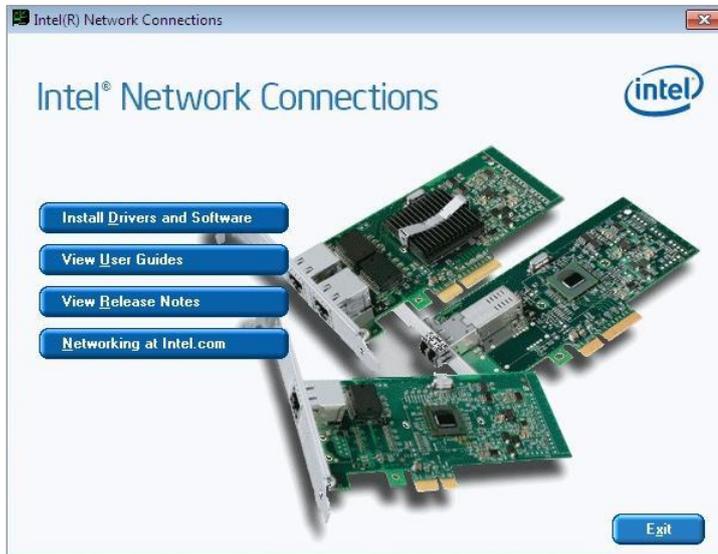
3. On the *Welcome* screen of the InstallShield Wizard, click **Next** to continue.
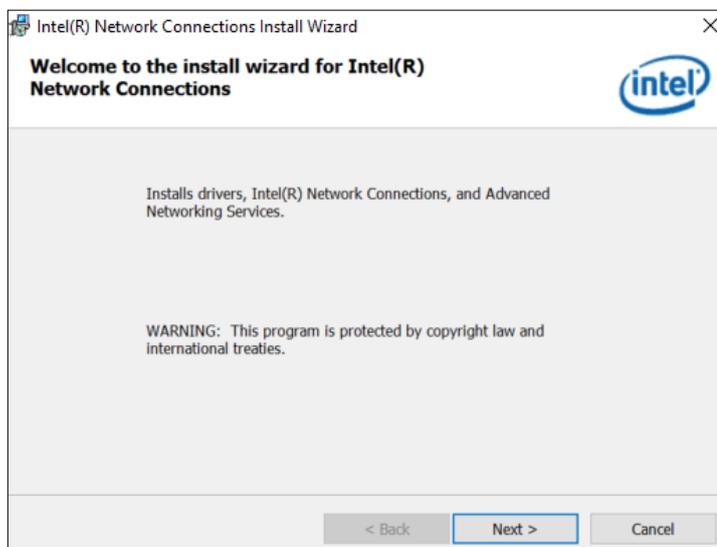
4. Accept the license agreement and click **Next**.

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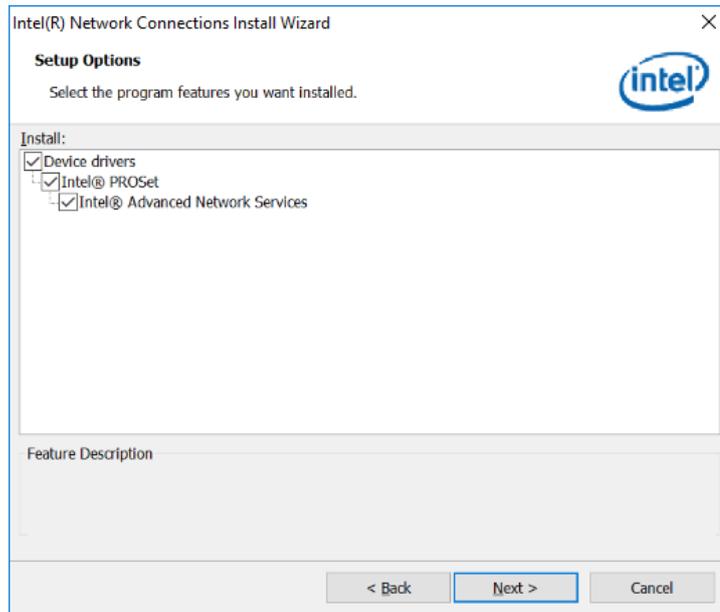
6. Click **Install**.

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**.
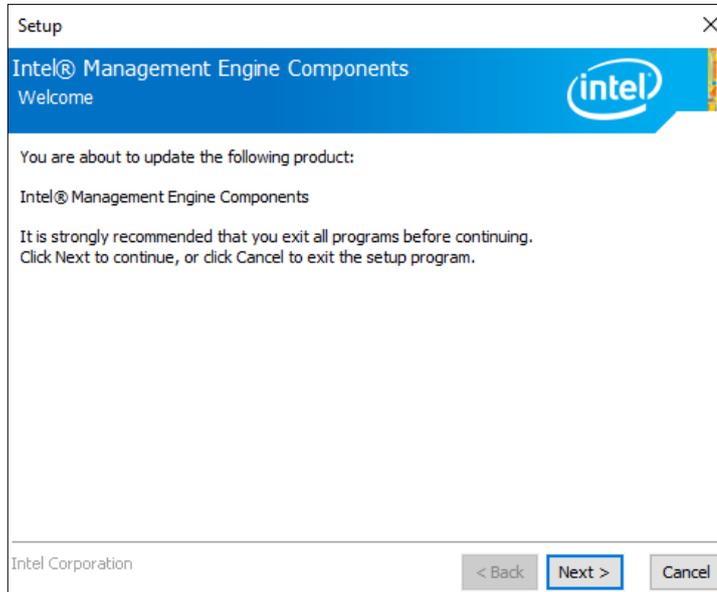
3. Accept the license agreement and click **Next** for installation.
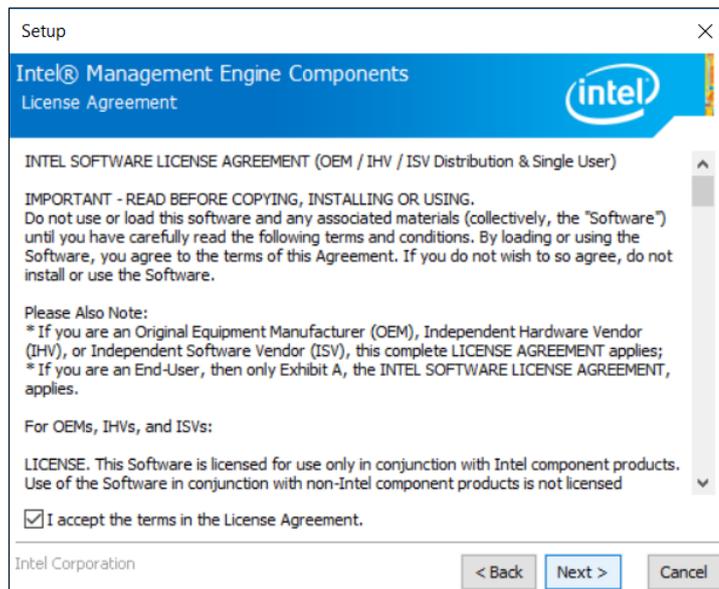
4. Installation is now complete. Restart the system for changes to take effect.

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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.
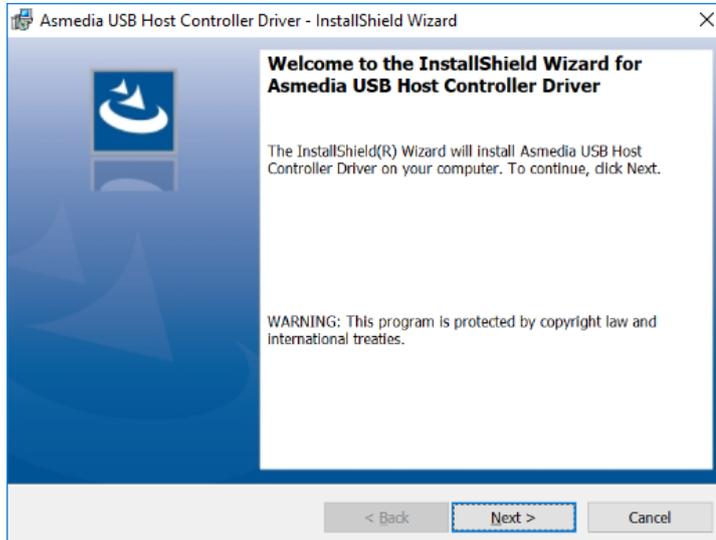
3. Accept the license agreement and click **Next**.
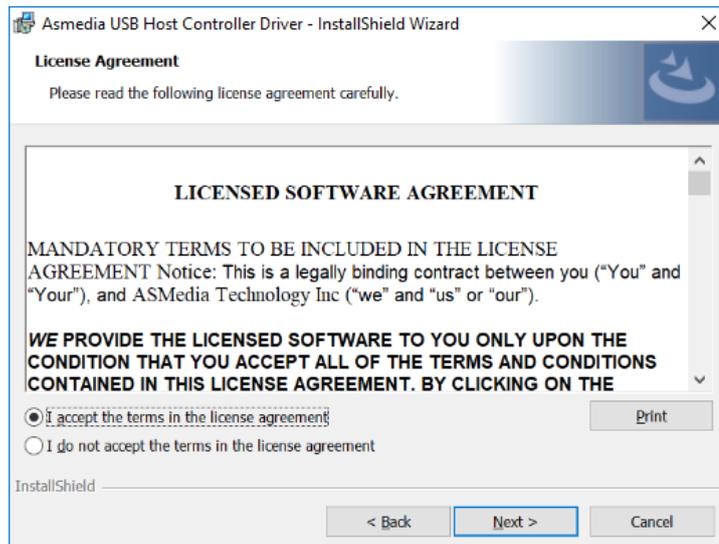
4. Click **Install**.

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.
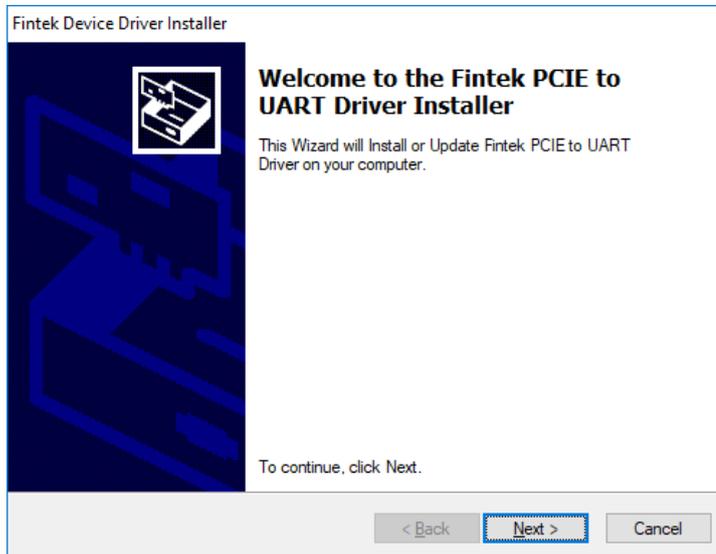
3. Click **Install**.

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.

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4.3 Main Settings

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit

Total Memory                    16384 MB            Set the Date. Use Tab to
Memory Frequency                 2400 MHz           switch between Date elements.


System Date                     [Mon 07/23/2018]
System Time                     [00:30:49]




                                                   →←: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit




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```

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.

```
              Aptio Setup Utility — Copyright (C) 2017 American Megatrends, Inc.
      Main   Advanced   Chipset   Security   Boot   Save & Exit

  ▶ CPU Configuration                                      CPU Configuration Parameters
  ▶ Power & Performance
  ▶ PCH-FW Configuration
  ▶ Trusted Computing
  ▶ ACPI Settings
  ▶ iSmart Controller
  ▶ F81846 Super IO Configuration
  ▶ Hardware Monitor
  ▶ CSM Configuration
  ▶ USB Configuration

                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

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```

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4.4.1   CPU Configuration

```
              Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Advanced

   CPU Configuration                                          When enabled, a VMM can
                                                              utilize the additional
   Intel(R) Core(TM) i3-6100E CPU @ 2.70GHz                   hardware capabilities provided
   CPU Signature                      506E3                   by Vanderpool Technology
   Microcode Patch                    BA
   Processor Cores                    2
   Hyper Threading  Technology        Supported
   Intel VT-x Technology              Supported
   Intel SMX Technology               Not Supported
   64-bit                             Supported
   EIST Technology                    Supported

   Intel Virtualization Technology    [Enabled]
   Intel(R) Speed Shift Technology    [Enabled]              →←: Select Screen
   Intel(R) SpeedStep(tm)             [Enabled]              ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit

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```

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: A11, 1, 2, 3
AES	Enables / 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.

4.4.2   Power & Performance

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

4.4.2.1. CPU – Power Management Control

BIOS Setting	Description
Intel(R) SpeedStep(tm)	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Enables / Disables Intel(R) Speed Shift Technology support. Enabling 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.

4.4.3   PCH-FW Configuration

```
              Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
       Advanced

    ME Firmware Version              11.6.27.3264            When disabled AMT BIOS
    ME Firmware Mode                 Normal Mode             Features are no longer
    ME Firmware SKU                  Corporate SKU           supported and user is no
    ME File System Integrity Value   2                       longer able to access MEBx
    ME Firmware Status 1             0x90000245              Setup.
    ME Firmware Status 2             0x8010834E              Note:
                                                             This option does not disable
    AMT BIOS Features                [Enabled]               Manageability Features in FW.


                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


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```

BIOS Setting	Description
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 mamageability feature in FW.

4.4.4 Trusted Computing

```
         Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
      Advanced

    Configuration                                      Enables or Disables BIOS
      Security Device Support          [Disable]       support for security device.
      NO Security Device Found                         O.S. will not show Security
                                                       Device. TCG EFI protocol and
                                                       INT1A interface will not be
                                                       available.


                          ┌─── Security Device Support ───┐
                          │ Disable                        │
                          │ Enable                         │
                          └────────────────────────────────┘        Select Screen
                                                                     Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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```

BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. O.S. will not show the security device. TCG EFI protocol and INT1A interface will not be available.

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4.4.5 ACPI Settings
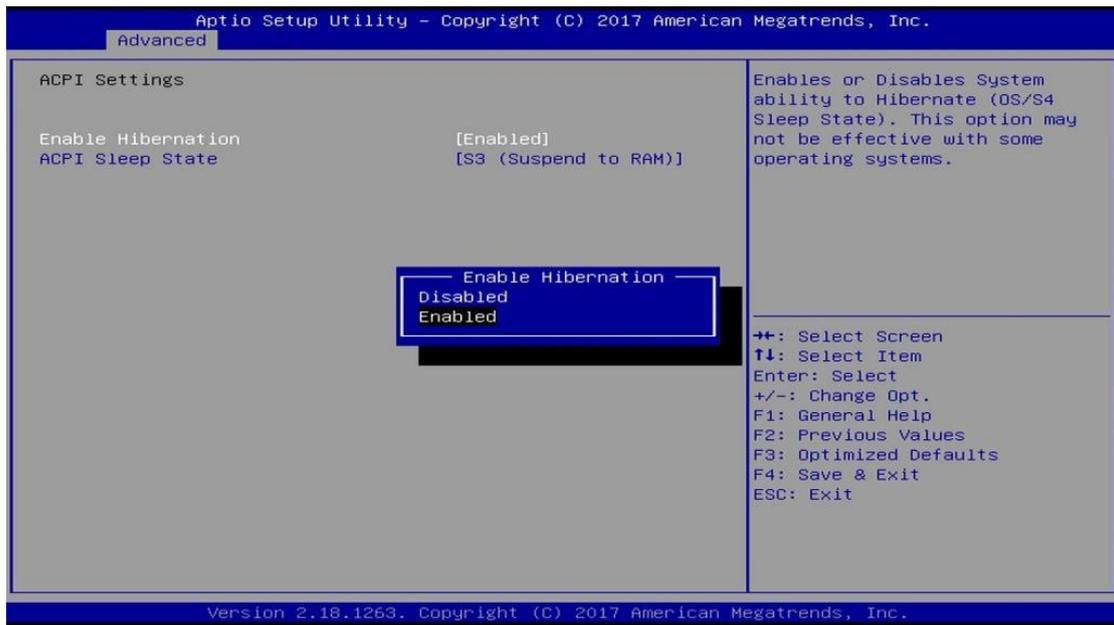
BIOS Setting	Description
Enable Hibernation	Enables / Disables system aility to hibernate (OS/S4 sleep state). This option may not be effective with some operating systems.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Options: Suspend Disabled, S3 (Suspend to RAM)

4.4.6 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 for system powe-on. **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.

4.4.7   F81846 Super IO Configuration

```
         Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
   Advanced

    F81846 Super IO Configuration                              Set Parameters of Serial Port
                                                               1 (COMA)
    Super IO Chip                    F81846


  ▶ Serial Port 1 Configuration
  ▶ Serial Port 2 Configuration
  ▶ Serial Port 3 Configuration
  ▶ Serial Port 4 Configuration


                                                               →←: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/–: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit



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```

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

4.4.7.1. Serial Port 1 Configuration

```
           Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
     Advanced

  Serial Port 1 Configuration                              Enable or Disable Serial Port
                                                           (COM)
  Serial Port                          [Enabled]
  Device Settings                      IO=3F8h; IRQ=4;

  Change Settings                      [Auto]

  F81846 SERIAL PORT1 MODE SELECT      [RS232 Mode]




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit


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```

BIOS Setting	Description
Serial Port	Sets parameters of serial ports.
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
F81846 Serial Port1 Mode Selection	F81846 serial port 1 mode selection: RS232, RS422, RS485 modes.

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4.4.8   Hardware Monitor

```
                Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
        Advanced

    Pc Health Status

    CPU smart fan control              [Disabled]
    System smart fan control          [Disabled]
    CPU temperature                   : +31 C
    System temperature                : +29 C
    CPU Fan Speed                     : 6024 RPM
    SYS Fan Speed                     : 4983 RPM
    VCORE                             : +1.056 V
    +5V                     ┌──────── CPU smart fan control ────────┐
    +12V                    │ Disabled                              │
    Memory Voltage          │ 50 C                                  │
    +3.3V                   │ 60 C                                  │
                            │ 70 C                          →: Select Screen
    CPU Shutdown Temperature│ 80 C                          ↓: Select Item
                            │                               nter: Select
                            │                               /-: Change Opt.
                            └───────────────────────────────F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


                Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```
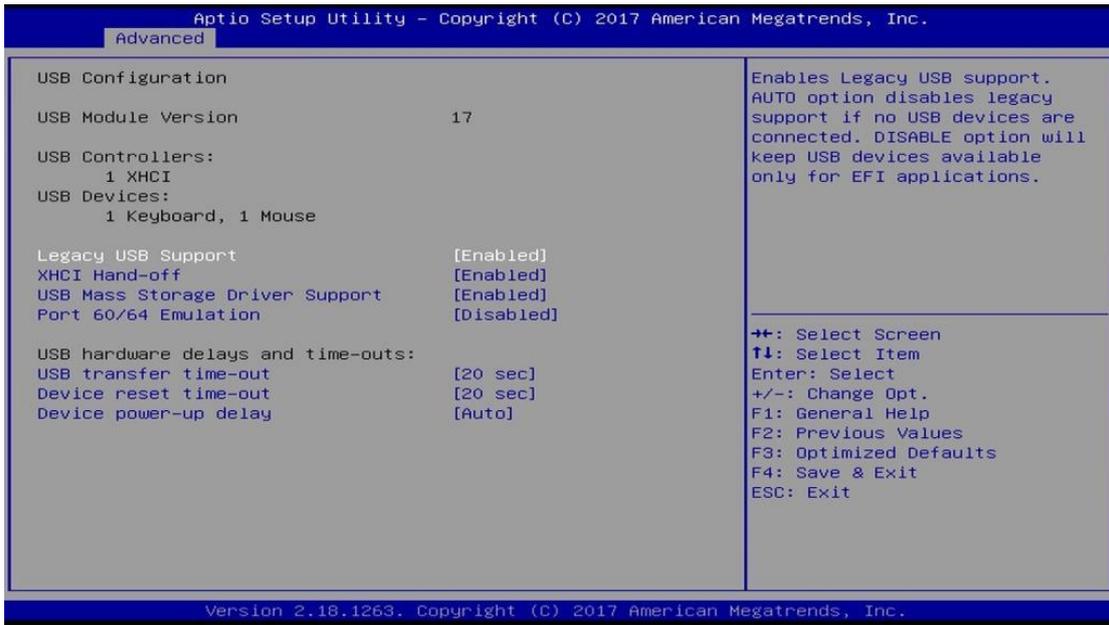
BIOS Setting	Description
CPU & System Smart Fan Control	Selects the smart fan mode. Options: Diabled, 50°C, 60°C, 70°C, 80°C
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system 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

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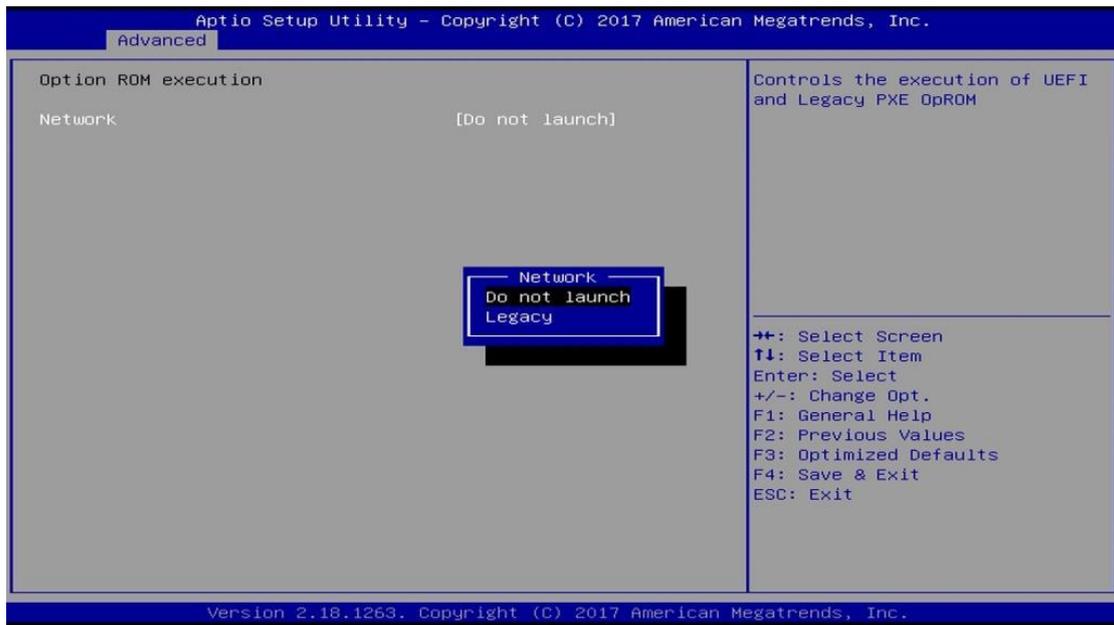
BIOS Setting	Description
Network	Controls the execution of UEFI and Legacy PXE OpROM.

4.4.10   USB Configuration

```
            Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
    Advanced

 USB Configuration                                       Enables Legacy USB support.
                                                         AUTO option disables legacy
 USB Module Version              17                      support if no USB devices are
                                                         connected. DISABLE option will
 USB Controllers:                                        keep USB devices available
     1 XHCI                                              only for EFI applications.
 USB Devices:
     1 Keyboard, 1 Mouse

 Legacy USB Support             [Enabled]
 XHCI Hand-off                  [Enabled]
 USB Mass Storage Driver Support [Enabled]
 Port 60/64 Emulation           [Disabled]
                                                        →←: Select Screen
 USB hardware delays and time-outs:                     ↑↓: Select Item
 USB transfer time-out          [20 sec]                Enter: Select
 Device reset time-out          [20 sec]                +/-: Change Opt.
 Device power-up delay          [Auto]                  F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


            Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

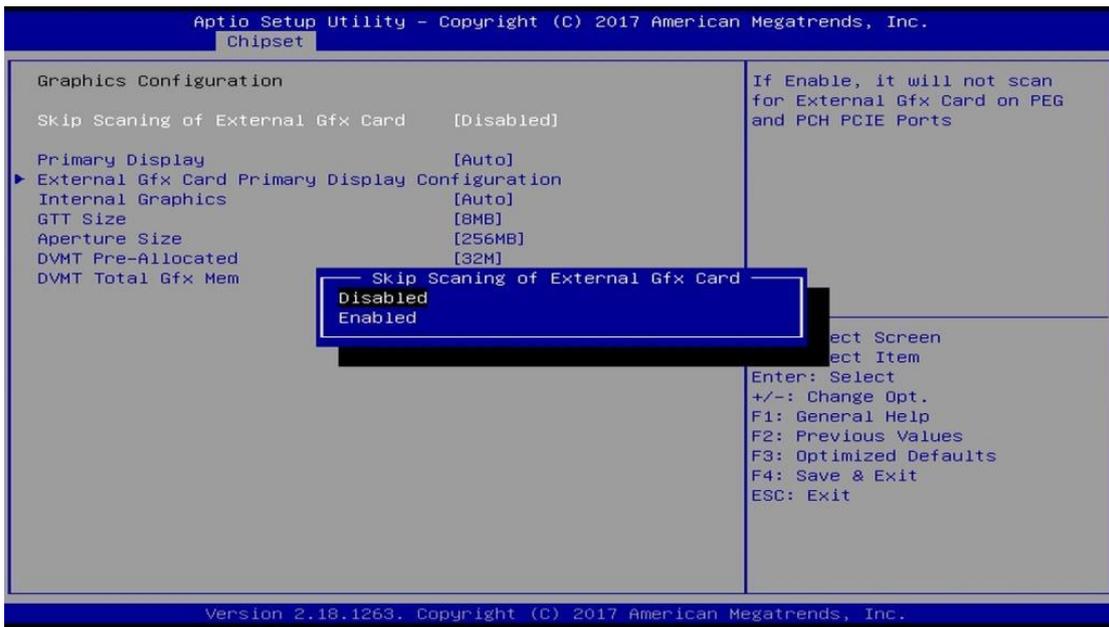| BIOS Setting	Description
Legacy USB SUpport	• **Enable:** Enables Ledacy USB Support. • **Auto:** Disables legacy support if no USB devices are connected. • **Disable:** Keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI / EHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables the support for USB mass storage driver.
Port 60/64 Emulation	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
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.

4.5 Chipset Settings

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

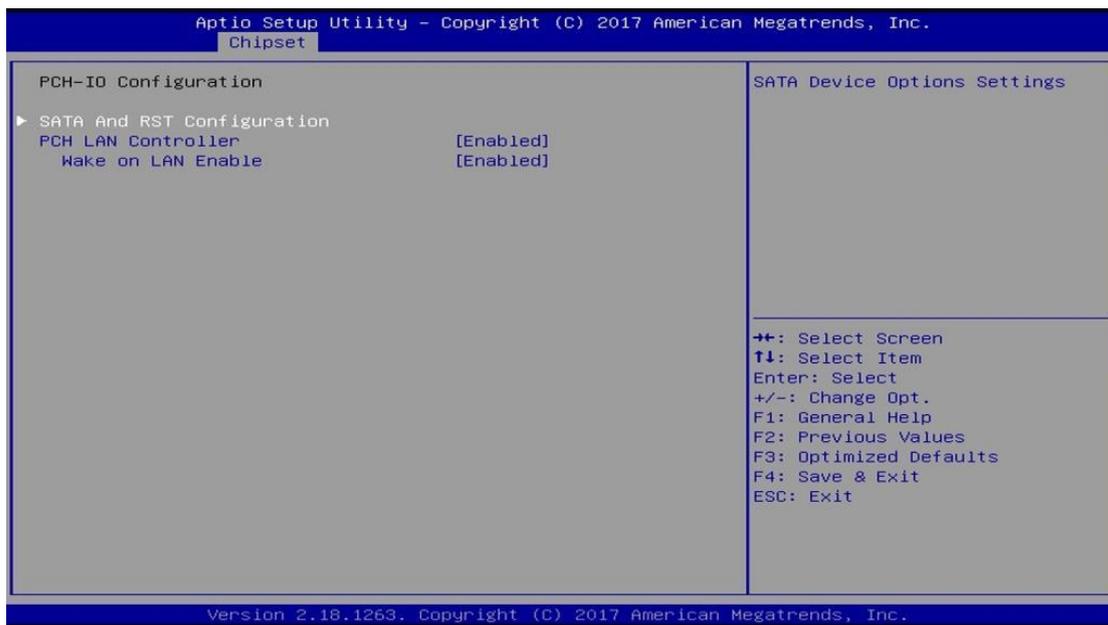### 4.5.1 System Agent Bridge Name

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

4.5.1.1. Graphics Configuration

BIOS Setting	Description
Skip Scaning of External Gfx Card	If enabled, it will not scan for external Gfx card on PEG and PCM PCIe ports.
Primary Display	Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable Gfx.
External Gfx Card Primary Display Configuration	External Gfx card primary display configuration.
Internal Graphics	Keepp IGFX enabled based on the setup options.
GTT Size	Selects the GTT size as 2, 4 or 8 MB.
Aperture Size	Selects the Aperture size as 128, 256, 512, 1024, 2048 MB. Note: Above 4 GB MMIO BIOS assignment is automatically enabled when selecting 2048 MB aperture. To use this feature, please disable CSM Support.
DVMT Pre-Allocated	Selects DVMT 5.0 pre-allocated (fixed) graphics memory size (0M, 4M, 8M, 12M, 16M, 20M, 24M, 28M, 32M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, 60M) used by the internal graphics device
DVMT Total Gfx Mem	Selects DVMT5.0 total graphics memory size (256M, 128M, Max) used by the internal graphics device.

4.5.2 PCH-IO Configuration

```
            Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Chipset

   PCH-IO Configuration                                     SATA Device Options Settings

 ► SATA And RST Configuration
   PCH LAN Controller                    [Enabled]
     Wake on LAN Enable                  [Enabled]


                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

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

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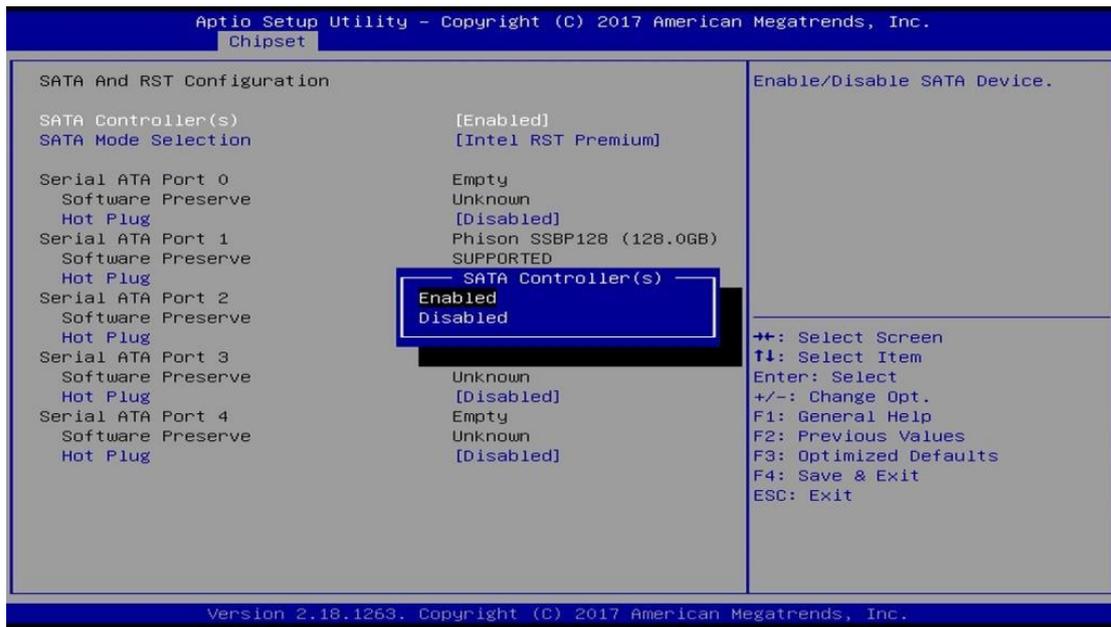
BIOS Setting	Description
SATA Controller(s)	Enables / Disables SATA device.
SATA Mode Selection	Determines how SATA controller(s) operate. Options: AHCI, Intel RST Premium
Serial ATA Ports	Enables / Disables serial ports.
Hot Plug	Designates this port as hot pluggable.

4.6 Security Settings

```
              Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

   Password Description                                  Set Administrator Password

   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                    3
   Maximum length                    20
                                                       →←: Select Screen
                                                       ↑↓: Select Item
   Administrator Password                              Enter: Select
   User Password                                       +/–: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
   HDD Security Configuration:                         F3: Optimized Defaults
   P1:Phison SSBP128GTMCO–S10C                         F4: Save & Exit
   P2:TS128ASTMM16KI                                   ESC: Exit



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```

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

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4.7   Boot Settings
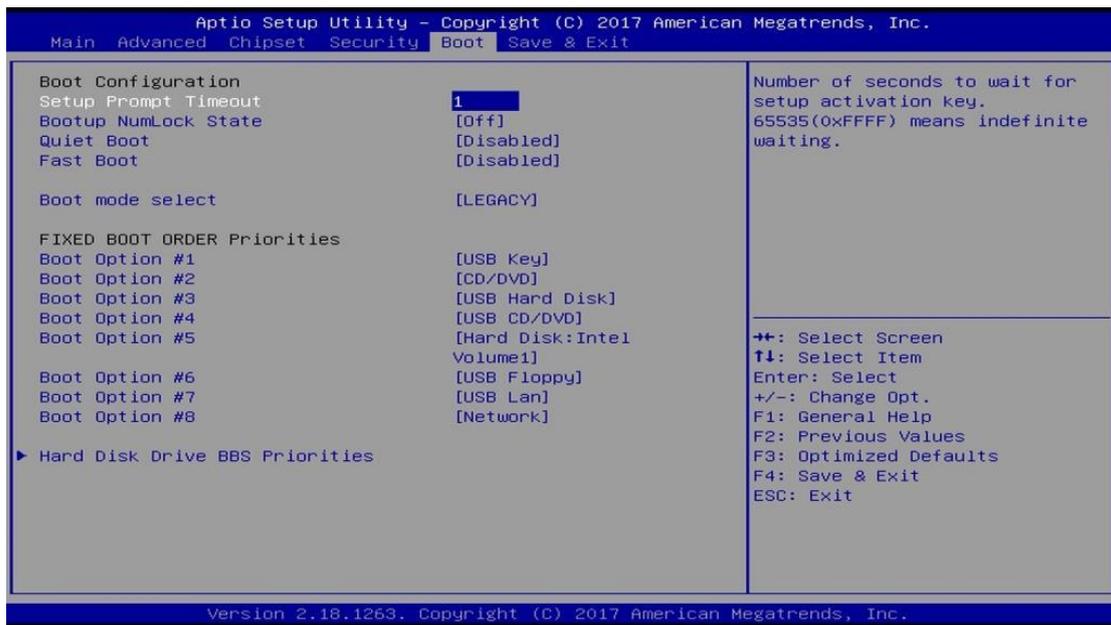
BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
Fast Boot	Enables / Disables boot with initialization of 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.
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.

- AMD Eyefinity Multiple Displays
- Video Walls Configuration for Matrox C900 Graphics Card
- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Watchdog Timer Configuration

A. AMD Eyefinity Multiple Displays

This document provides information and step-by-step instructions on how to set up and configure AMD Eyefinity.   The contents of this document are organized into the following sections:

- AMD Eyefinity Overview
- Setting Up AMD Eyefinity Using Quick Setup
- Setting Up AMD Eyefinity Using Advanced Setup
- Optional AMD Eyefinity Settings
    - Correcting Bezel Compensation
    - Resizing AMD Eyefinity Desktop Image
    - Adjusting AMD Eyefinity Desktop Resolution
    - Positioning the Windows® Taskbar in an AMD Eyefinity Group

A.1 AMD Eyefinity Overview

AMD Eyefinity technology allows two or more displays to be combined into a single large desktop. When displays are combined together the desktop resolution and workspace area increase per the number of displays in the group, with each display showing a portion of the desktop. The final resolution is the horizontal and/or vertical sum of the individual monitors.

For example: Three 1920x1080 displays arranged in a horizontal 3x1 AMD Eyefinity mode would create a desktop area of 5760x1080.

Note:

1. AMD Eyefinity is currently supported on Microsoft® Windows 7, Windows 8.1 and Windows 10.

2. Only one AMD Eyefinity group can be created per graphics card.

3. An AMD Eyefinity group cannot span across multiple graphics cards.

More information about AMD Eyefinity can be found here: Multi-Display Eyefinity Technology

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iBASE

A.2   Setting Up AMD Eyefinity Using Quick Setup

The fastest way to create an AMD Eyefinity group is to use the Quick Setup option. This option is ideal for displays that are equal in size and resolution. AMD Radeon Setting will automatically create the Eyefinity group based on the order of the connected displays.

In this example, Quick Setup is used to create a 3x1 AMD Eyefinity group.

Open **AMD Radeon Settings**. This can be done in any of the following ways:

i.   Right click on your desktop and select **AMD Radeon Settings**.
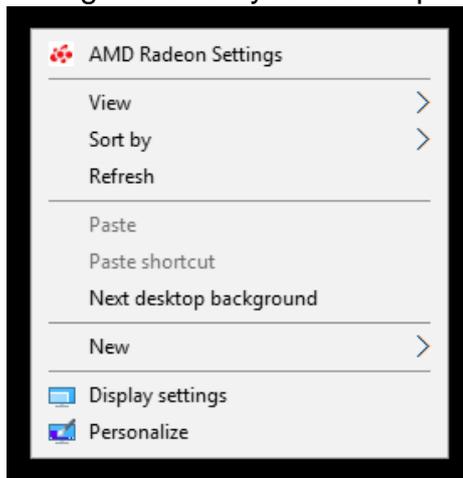
ii. Click on the **Radeon Settings** icon in the System Tray.
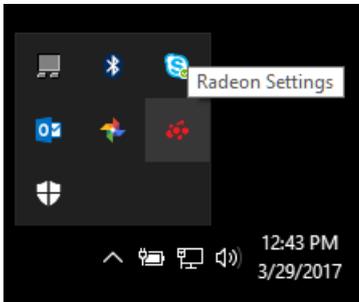
iii. Select **Radeon Settings** from the Programs menu.

In the Eyefinity section, there are two options available:

i. **Quick Setup** – Automatically create an AMD Eyefinity group
ii. **Advanced Setup –** Allows full customization of the AMD Eyefinity group. This is covered in the **Setting Up AMD Eyefinity Using Advance Setup** section of this document

Once the display group has been created, the following options will be made available:

i. **Discard** – Removes the display group and revert to the previous display configuration
ii. **Arrange Displays** – Adjust the position of each display in the AMD Eyefinity display group
iii. **Try Advanced Setup** – Additional display group settings. Refer to the **Setting Up AMD Eyefinity Using Advanced Setup** section of the document.

If the mouse does not move as expected across the displays, use the **Arrange Displays** option to specify the physical placement of the displays.

i. Within the AMD Eyefinity section of **AMDRadeonSettings**, Click **Arrange Displays**
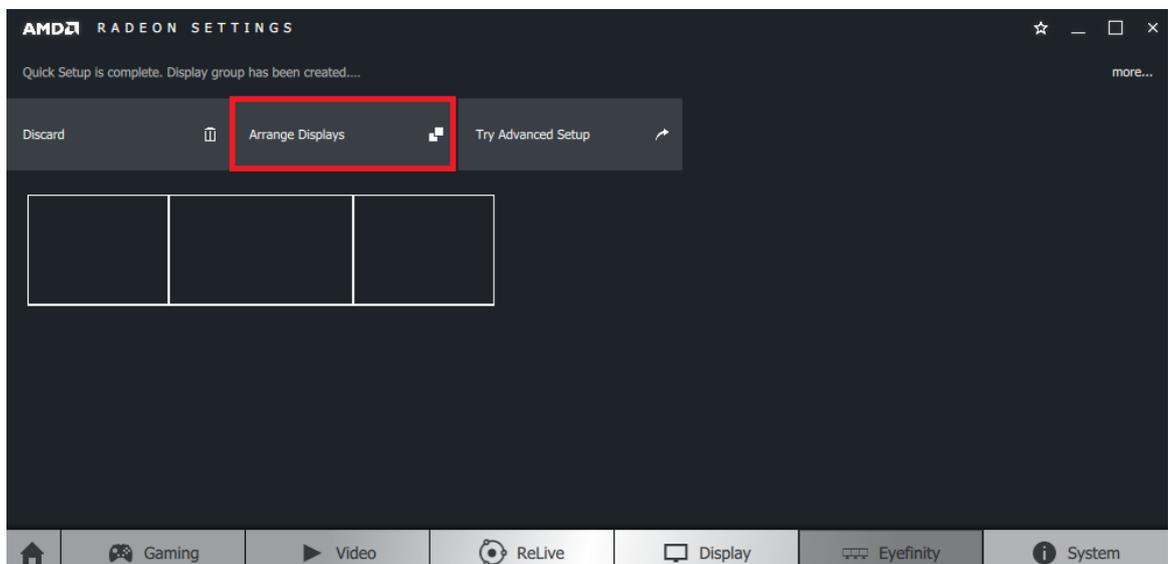
ii. The onscreen guide will show a grid representation of the display group and one of the physical displays will have a blue background. Click on the box in the grid that matches the location of the highlighted display.

In this example, the display on the left has a blue background. Click on the left most box in grid to confirm its position.
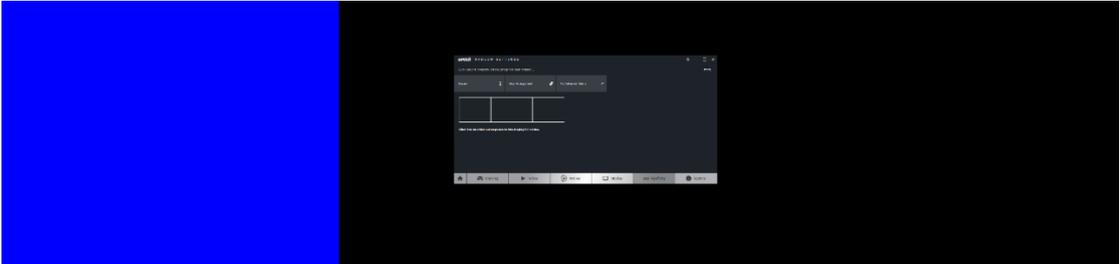
iii. Once the first displays position has been confirmed, another display will appear with a blue background. Click on the box in the grid that matches the physical position of the display. This process continues depending on the number of displays used in the group. However, the last display's position will be applied automatically.
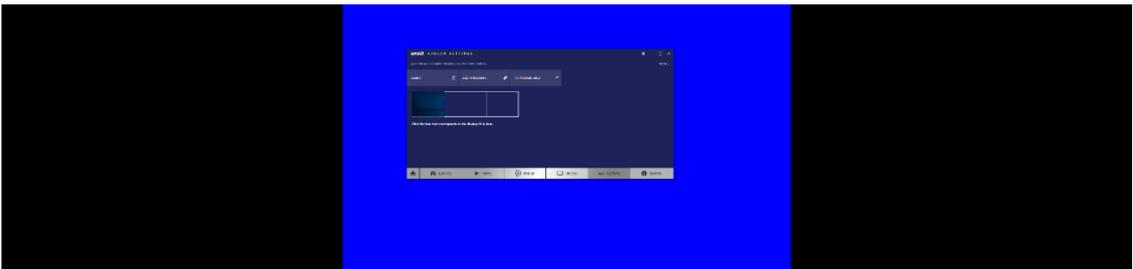
iv. The display arrangement is now complete, close **Radeon Settings** to exit.

A.3   Setting Up AMD Eyefinity Using Advanced Setup

The Advanced Setup option offers full customization when creating an AMD Eyefinity group, such as:

- **Arrange Eyefinity Display Group –** Allows rearranging the displays in an AMD Eyefinity display group when the displays have been moved or the cables have been reconnected in a different order.
- **Mixed Alignment –** Adjust the displays in an AMD Eyefinity group where the edges of adjacent displays do not line up with one another.
- **Mixed Dimensions –** Adjust the displays in an AMD Eyefinity group where the displays have different sizes and orientation (portrait, landscape).
- **Bezel Compensation** – Adjust the image to allow it to appear continuous across all displays in the AMD Eyefinity group, by compensating for the physical edges (bezels) of the displays.
- **Position Windows Task Bar** – Adjust the Taskbar to stretch across all the displays in the AMD Eyefinity group or positioned on a selected display.

In this example, Advanced Setup is used to create a 3x1 AMD Eyefinity group.

5. Open **AMD Radeon Settings**. This can be done in any of the following ways:

    i.   Right click on your desktop and select **AMD Radeon Settings**.
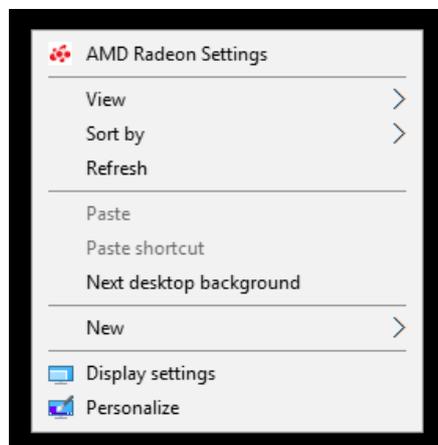
    ii. Click on the **Radeon Settings** icon in the System Tray.
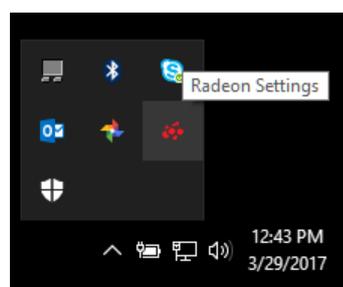
    iii. Select **Radeon Settings** from the Programs menu.

6. Click **Eyefinity** tab.

7. In the Eyefinity section there are two options available:

    i. **Quick Setup** - Automatically create an AMD Eyefinity group. This is covered in the <u>Setting Up AMD Eyefinity Using Quick Setup</u> section of this document.

    ii. **Advanced Setup –** Allows full customization of the AMD Eyefinity group.

8. Click on **Advanced Setup** to create and customize an AMD Eyefinity display group.
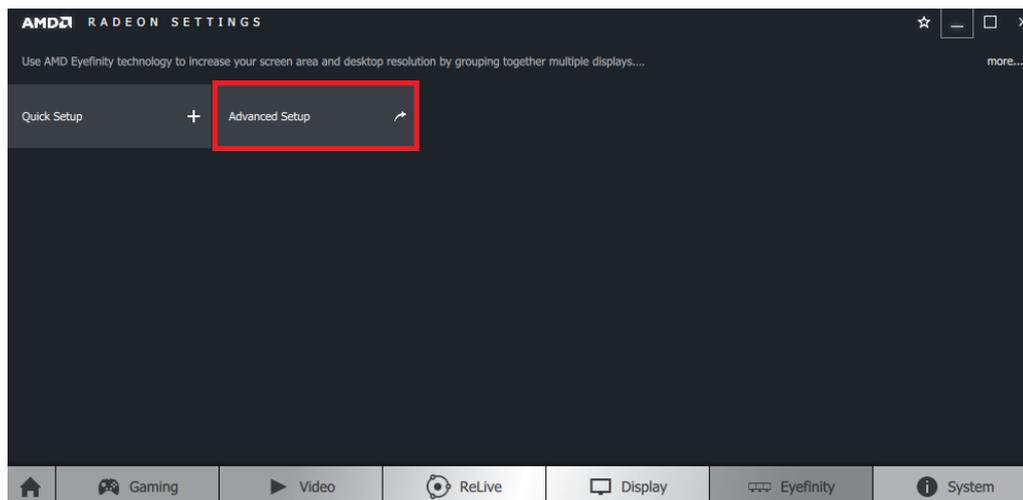
Note: If you have previously created an AMD Eyefinity display group, click **Try Advanced Setup** to customize the display group.

9. If an AMD Eyefinity display group was previously created and the display arrangement does not require adjustment, click **Use the current arrangement** then click **Next** to continue customizing the display group.

    However, if a new AMD Eyefinity display group is being created, click **Use a new arrangement** and then click **Next.**
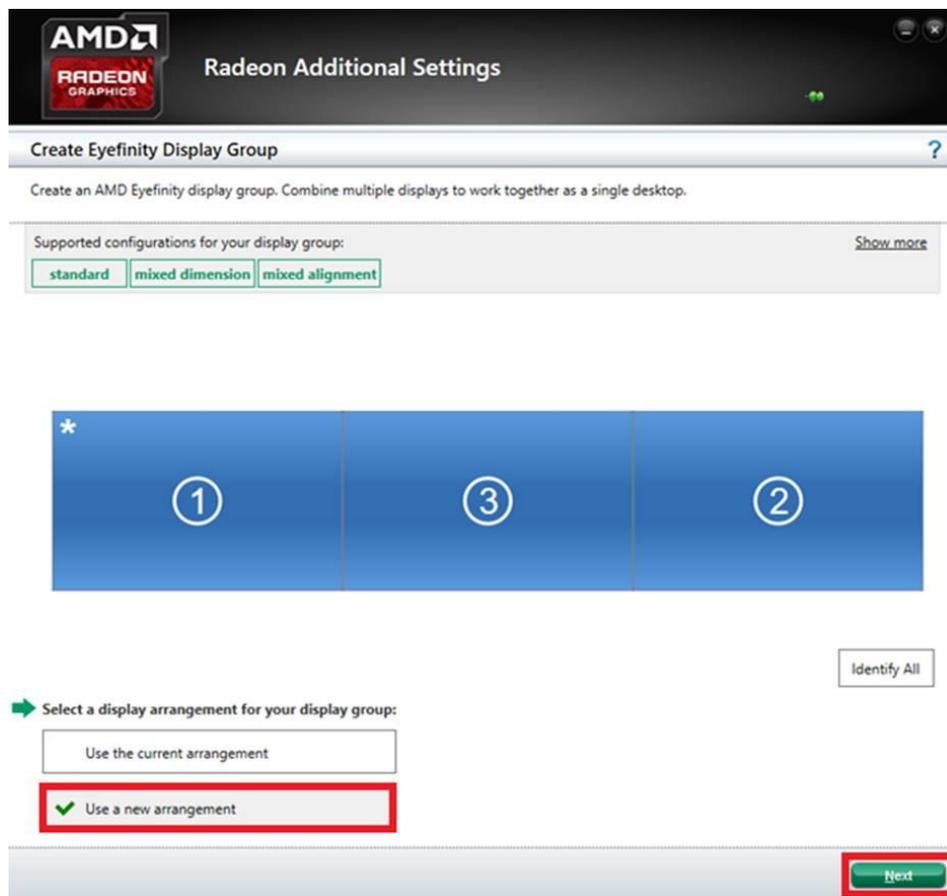
Note: In the example above, a new AMD Eyefinity display group is being configured using 3 displays currently in Extended Desktop mode.

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iBASE

10. The display device with an asterisk (*) in the top left corner is currently set as the main display – The display where the Windows Start button/menu is positioned. To change this, click on the preferred display device and click **Next.**
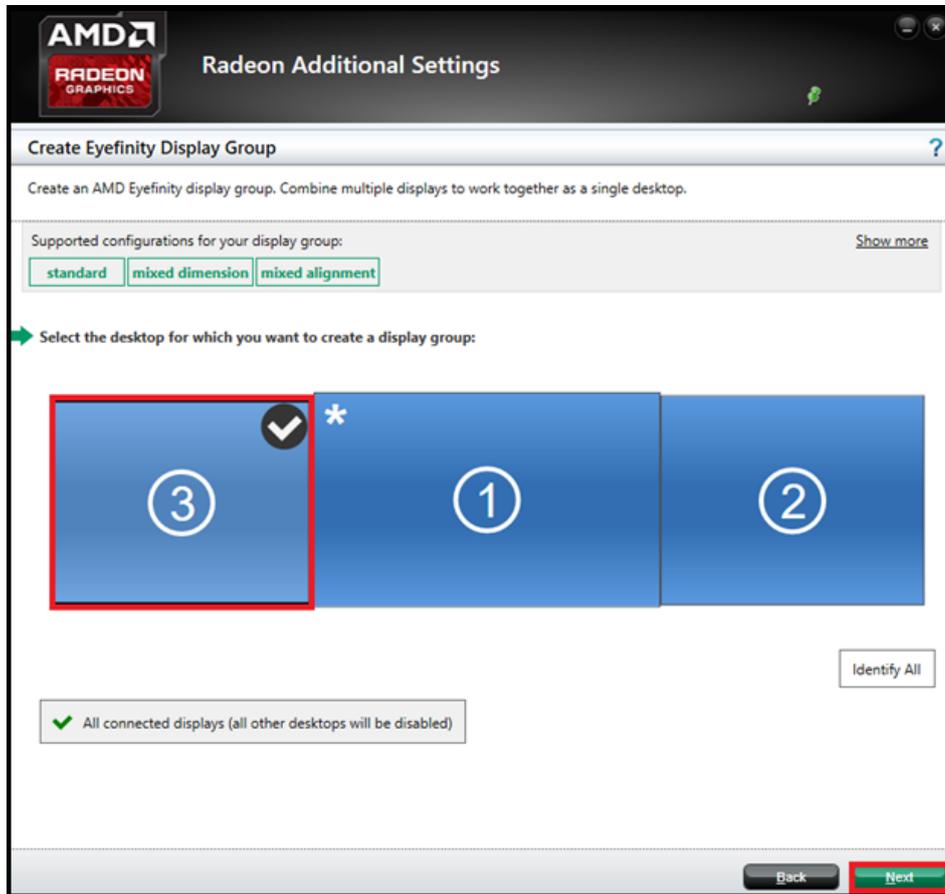
Note: All but the main display will go blank during this step. The Taskbar, programs icons, and any open applications will now appear on the main display.

11. Select a layout for the AMD Eyefinity display group and click **Next**. In this example, a 3x1 display group is selected.
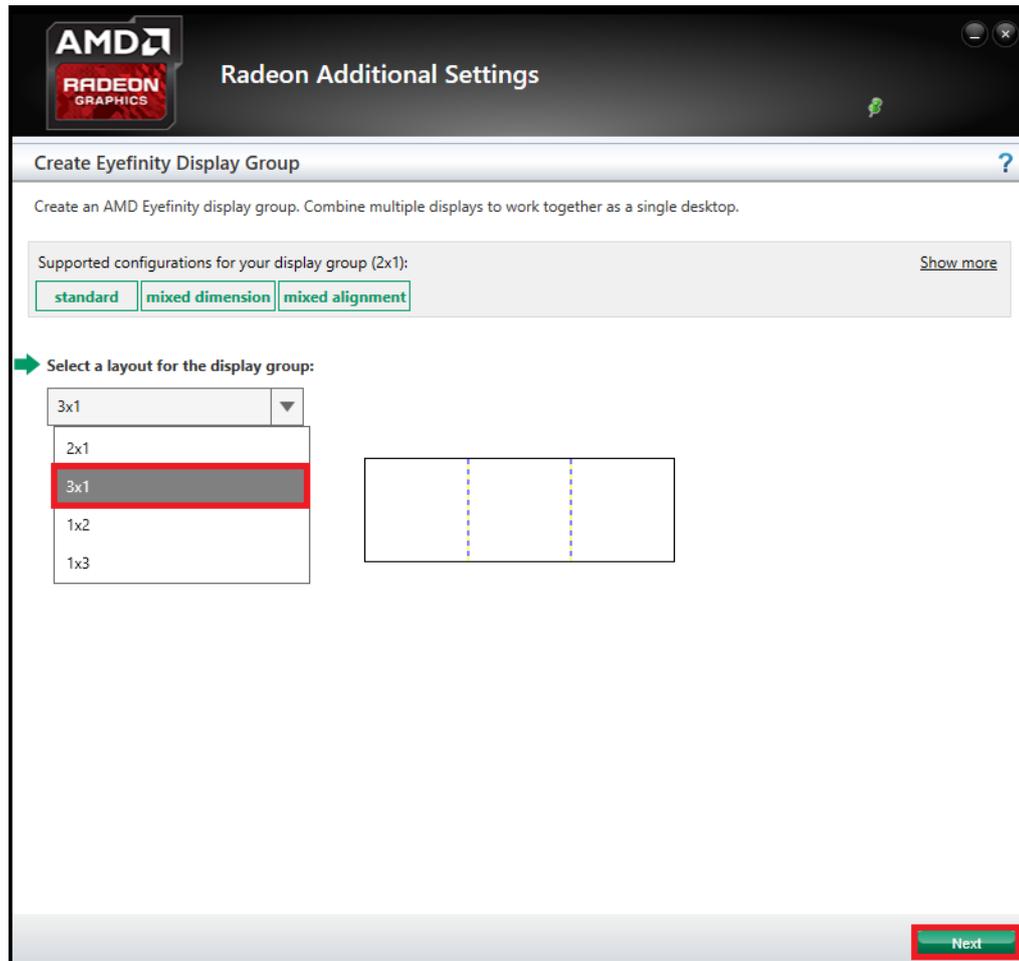
Note: The layout options in the drop-down menu will vary depending on the number of displays connected. A visual representation of each layout is displayed.

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12. Click **StartArrangement**, then click **Next.**
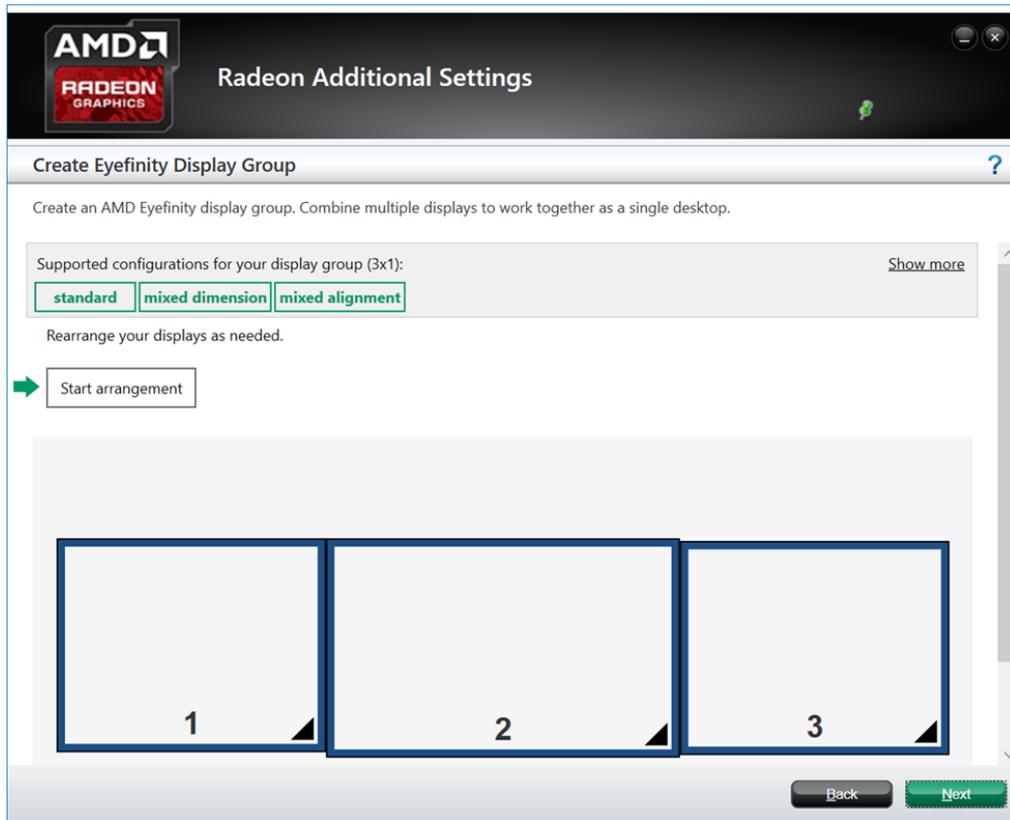
13. The onscreen guide will show a grid representation of the display group and one of the physical display will have a blue background. Click on the box in the grid that matches the location of the highlighted display.
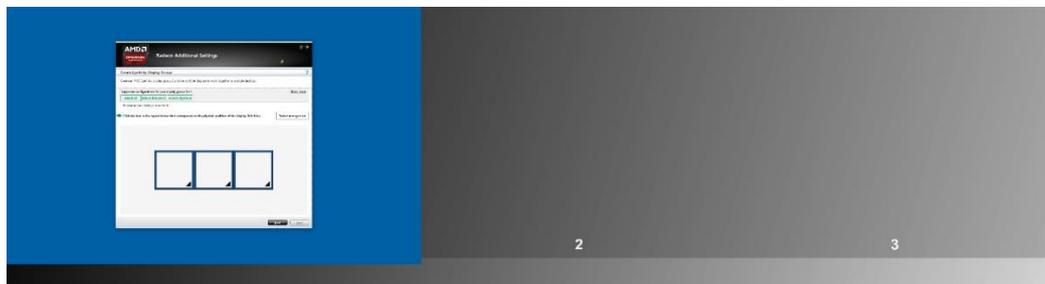
14. Once the first displays position has been confirmed, another display will appear with a blue background. Click on the box in the grid that matches the physical position of the display. This process continues depending on the number of displays used in the group. However, the last display's position will be applied automatically.

15. The "**Arrangement is complete**" message will be displayed. Click **Next** to align the displays**.**
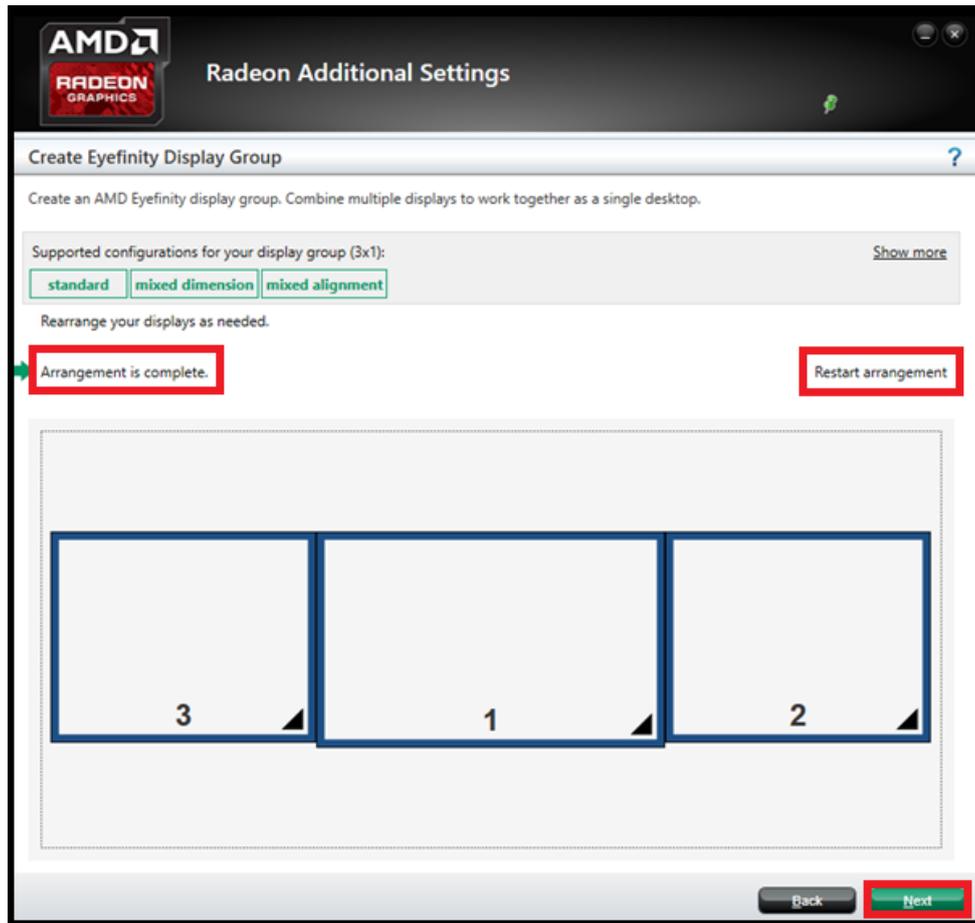
Note: If you made a mistake or want to rearrange the displays, click **Restart arrangement**

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16. To align the displays, use one of the following two options:

 i. Align All – All displays are aligned automatically based on the size, resolution, and the layout of the displays used in the AMD Eyefinity group.
 ii. Align each display separately – Use the single or double arrows to align incrementally or align to the upper/lower limit, respectively.
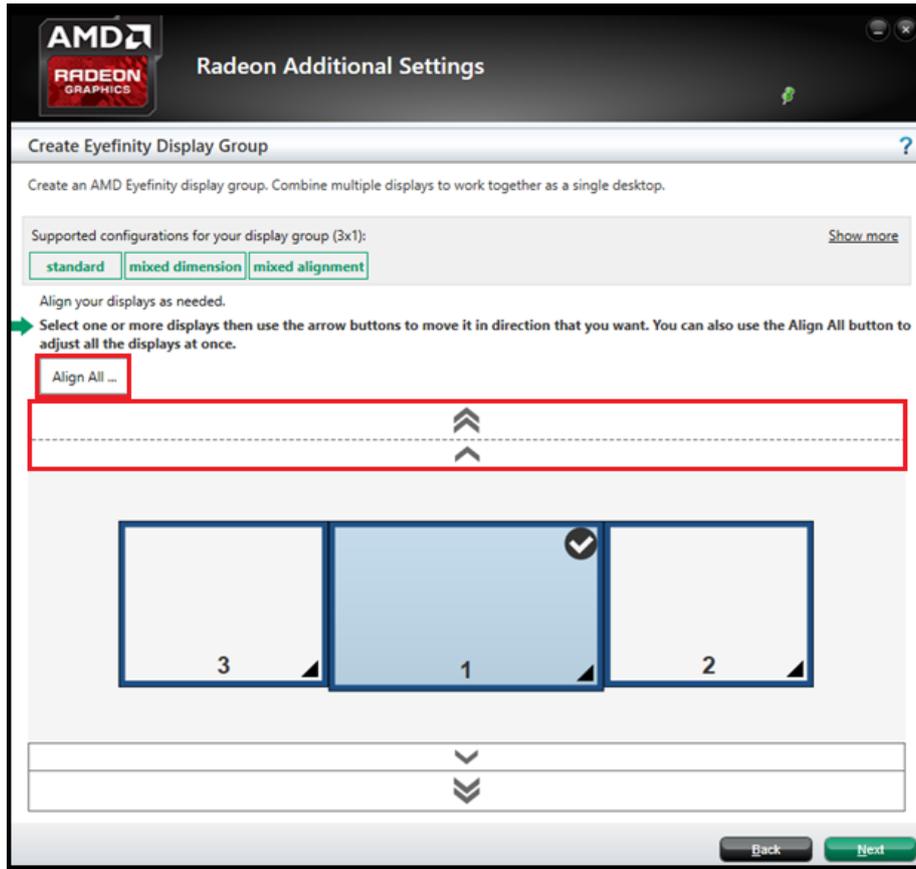
Note: Guide lines will be appeared on each display to show its current alignment to adjacent display(s). In the example below, an alignment is being performed on a 3x1 AMD Eyefinity display group.
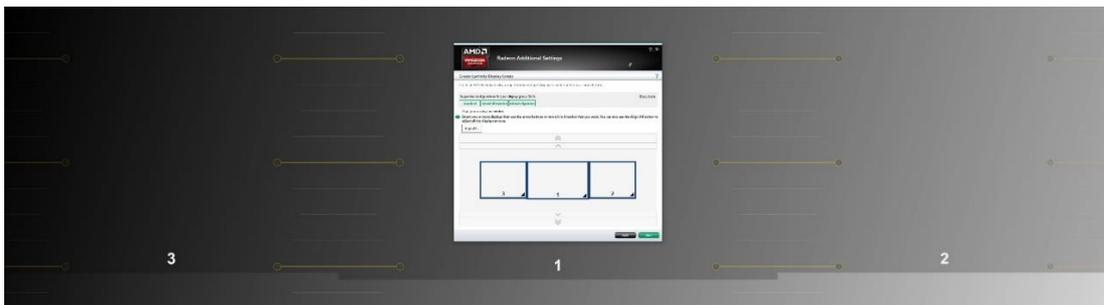
17. After display alignment is complete, click **Next** to complete and save the setup.

18. In an AMD Eyefinity group consisting of displays with mixed dimensions (different sizes, resolutions, orientations), the AMD Eyefinity setup can be further customized to adjust the Desktop image shown across all displays. The mixed dimension options include:

    i. **Fill**—Fill the entire area of each display with its portion of the Desktop. The Desktop may appear stretched on certain displays.

ii. **Fit**—Show the entire desktop across all displays without cropping or stretching the Desktop. Certain areas of your displays may appear blank.

iii. **Expand**—Resize the Desktop to the height of the tallest display. This may lead to portions of the Desktop, including the Windows® Start menu and taskbar, appear cropped or missing on certain displays.

Select the preferred mixed dimension, then click **Next** to complete and save the setup
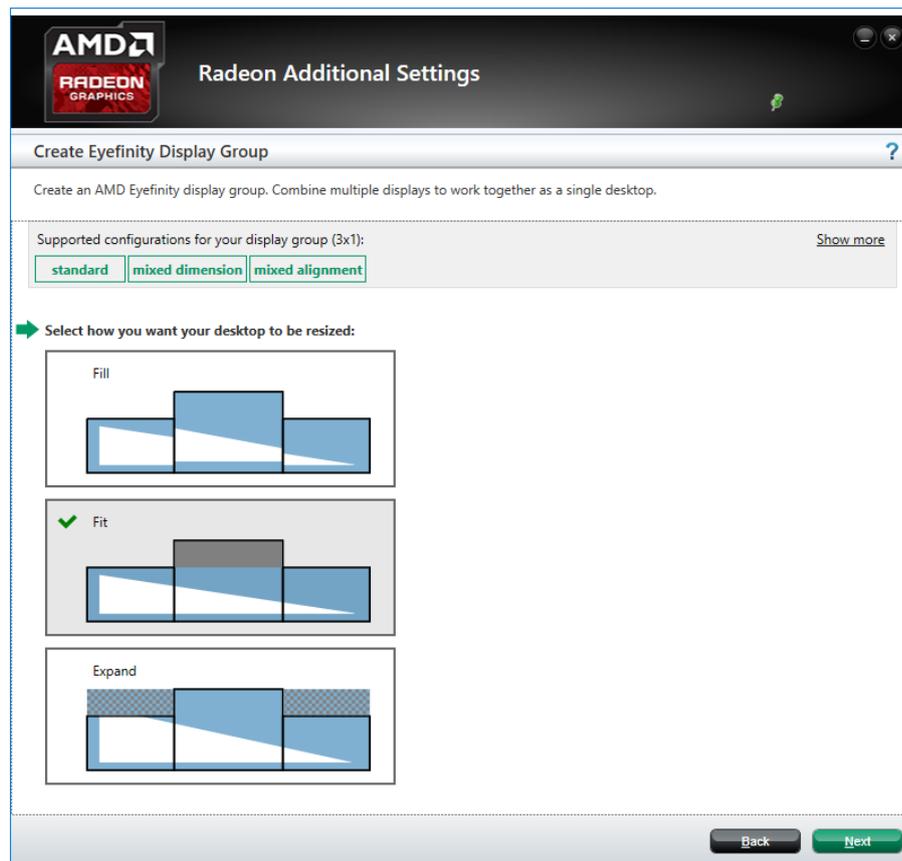
19. The AMD Eyefinity display group has now been created.

20. An AMD Eyefinity display group can be further customized using the options listed in the Tasks section of the AMD Eyefinity menu. These options include:

i. **Bezel Compensation** - Adjust the image to allow it to appear continuous across all displays in the AMD Eyefinity group, by compensating for the physical edges (bezels) of the displays.

ii. **Resize Desktop –** When displays in an AMD Eyefinity display group are configured to use different resolutions, rotations, or alignments, the desktop image may appear stretched or cropped. You can change how the desktop image is shown across your displays by resizing it.

iii. **Customize Eyefinity Desktop Resolution –** Allows customizing the resolution of the AMD Eyefinity display group.

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iv. **Position Windows Taskbar -** Adjust the Taskbar to stretch across all the displays in the AMD Eyefinity group or positioned on a selected display.
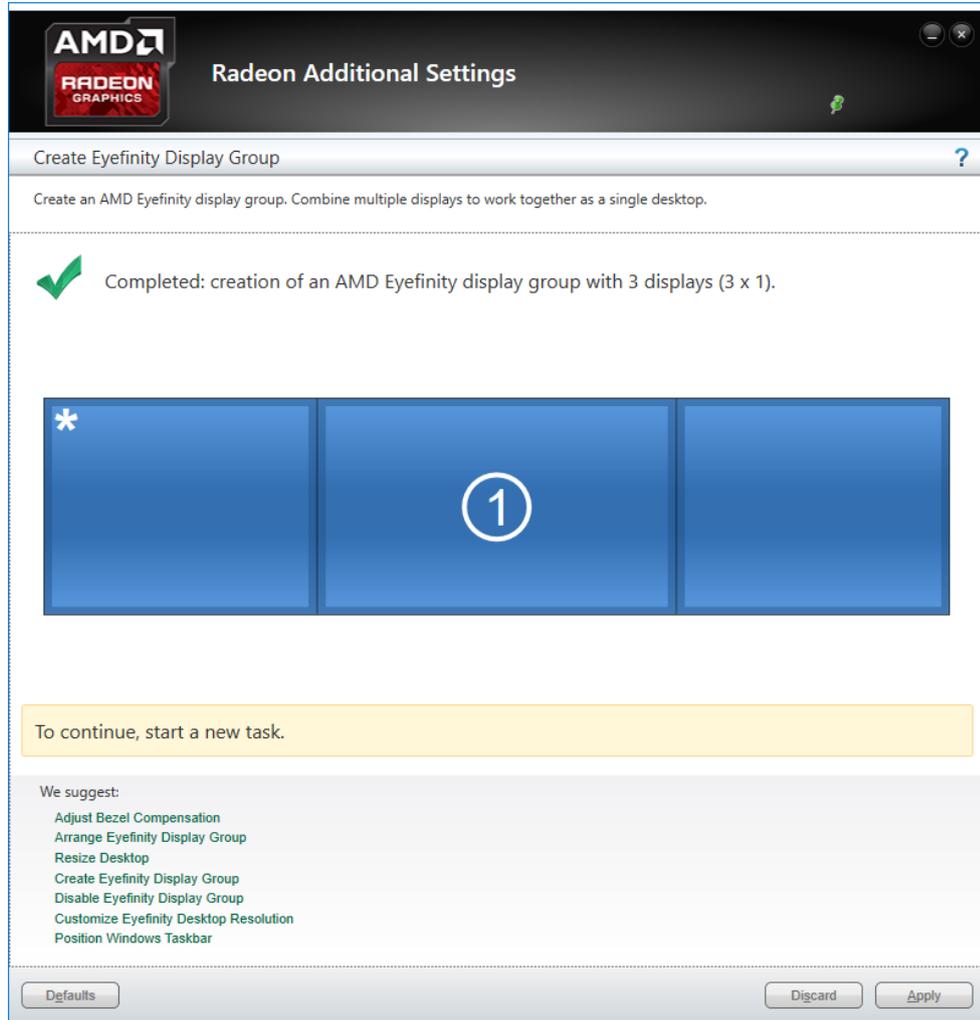
A.4　Optional AMD Eyefinity Settings

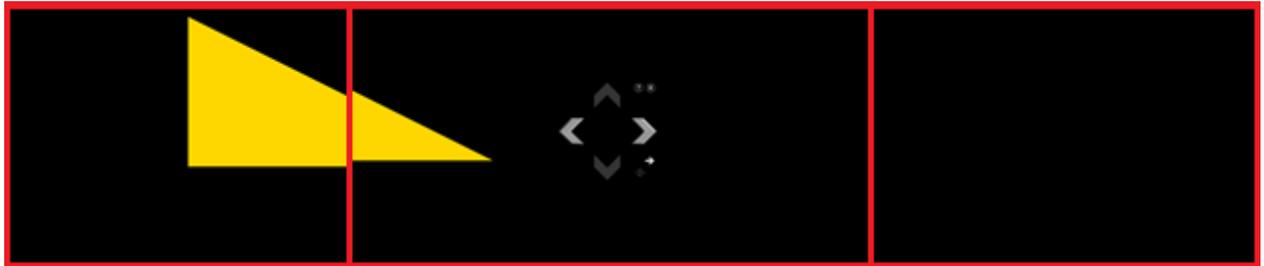Depending on the AMD Eyefinity display group configuration, the following options may be useful.

A.4.1.　Correcting Bezel Compensation

In an AMD Eyefinity group the edges (bezels) of the displays may cause the image on the displays to appear disjointed or not continuous across all or some of the displays. To rectify this, use the **AdjustBezel Compensation** option.
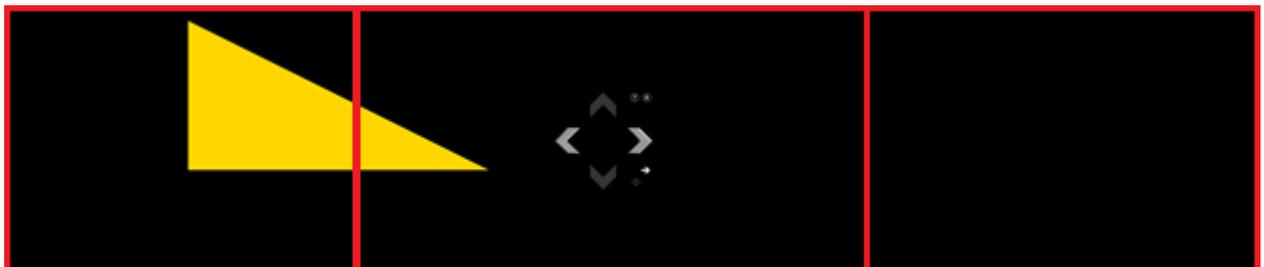

Note: This is option is available in the Radeon Additional Setting menu. To access Radeon Additional Settings please refer to document: How to Access Radeon Additional Settings for More Graphics Options.

In the Adjust Bezel Compensation mode use the **Chevrons** (arrow heads) to move the triangle (test pattern) until it is aligned.

Before

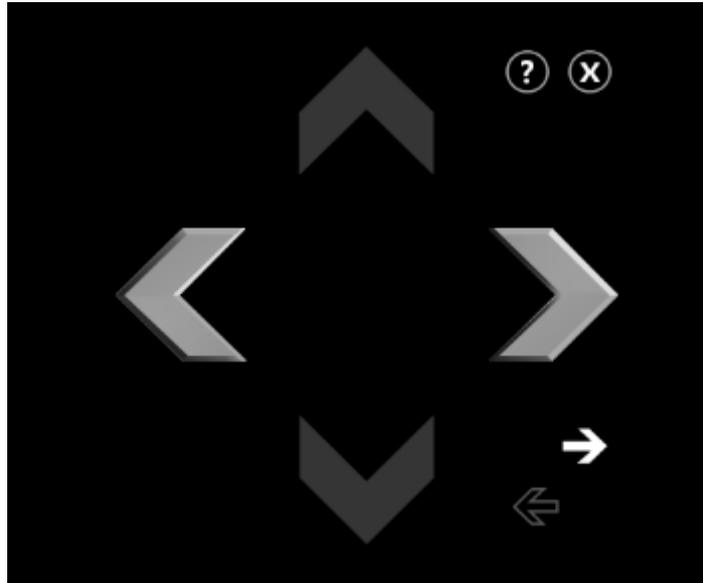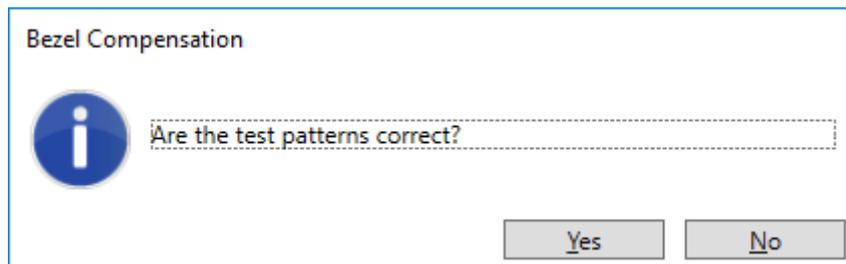**After**

In this example, the adjustment is now complete for the first set of bezels in the AMD Eyefinity display group. Click on the directional arrow to repeat this step and adjust the next set of bezels.

When complete, click the **X** button and **Yes** to confirm and close the tool.

A.4.2. Resizing AMD Eyefinity Desktop Image

When displays in an AMD Eyefinity display group are configured to use different resolutions, rotations, or alignments, the desktop image may appear stretched or cropped. You can change how the desktop image is shown across your displays by resizing it.

- **Fill**—Fill the entire area of each display with its portion of the Desktop. The Desktop may appear stretched on certain displays.
- **Fit**—Show the entire desktop across all displays without cropping or stretching the Desktop. Certain areas of your displays may appear blank.
- **Expand**—Resize the Desktop to the height of the tallest display. This may lead to portions of the Desktop, including the Windows® Start menu and taskbar, appear cropped or missing on certain displays.

Select the preferred mixed dimension, then click **Next** to complete and save the setup

iBASE
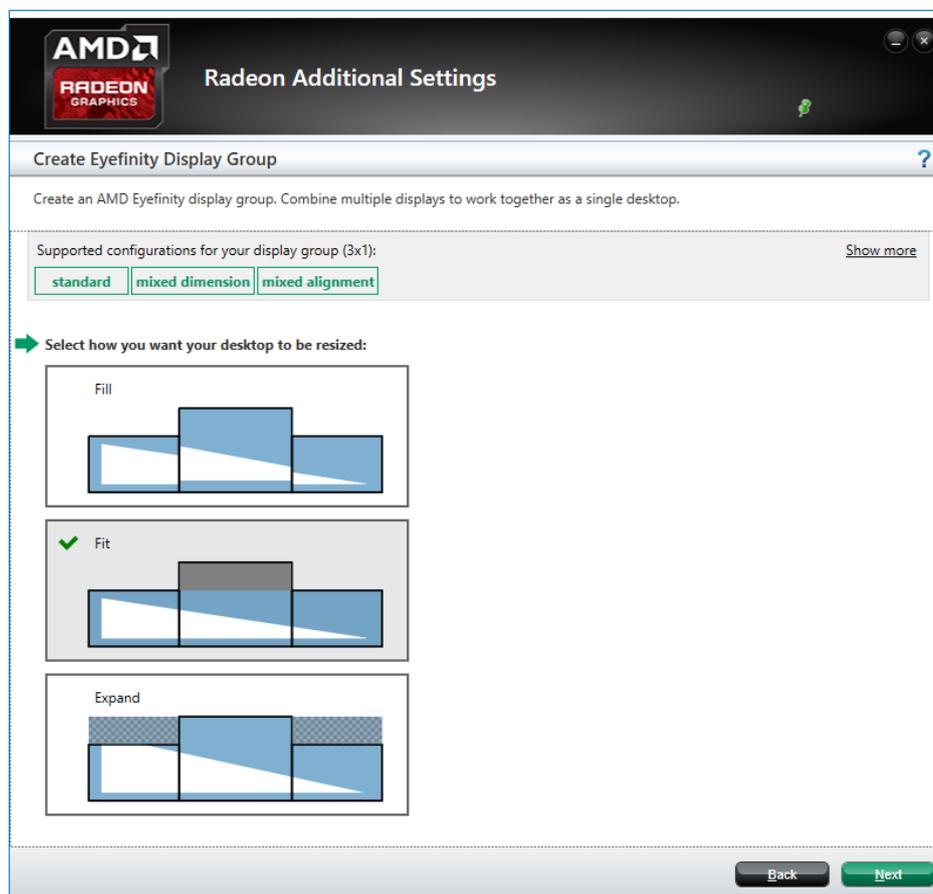
A.4.3. Adjusting AMD Eyefinity Desktop Resolution

The Desktop size of an AMD Eyefinity display group can be changed to any resolution that is listed in the Custom Resolution drop-down menu.

In this section the **Current Desktop Resolution** is displayed along with the **Minimum Resolution** and **Maximum Resolution**. The minimum and maximum resolutions are automatically determined based on your displays and cannot be changed. Use the **Custom Resolution** drop-down menu to select from a list of supported resolutions.
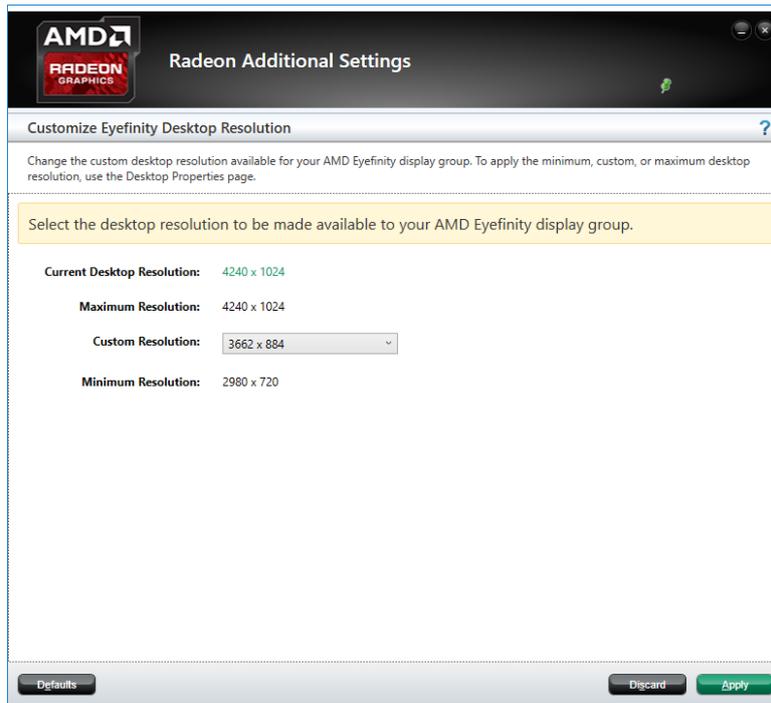
Select your preferred **Custom Resolution** and click **Apply.**
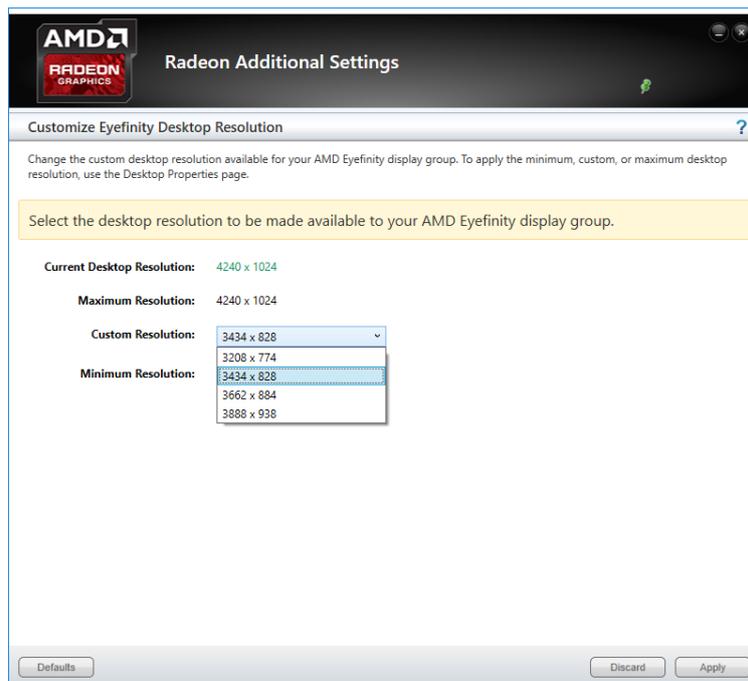
A.4.4. Positioning the Windows® Taskbar in an AMD Eyefinity Group

By default, the Windows taskbar extends across all displays in a single row AMD Eyefinity display group. In a multi-row AMD Eyefinity display groups, the Windows taskbar extends across the bottom row of displays. The Position Windows Taskbar option allows positioning the Taskbar on a single display.

Note: This is option is available in the Radeon Additional Setting menu. To access Radeon Additional Settings please see KB: How to Access Radeon Additional Settings for More Graphics Options.

When in Position Windows Taskbar mode, check the box for **Position the Windows taskbar on a single display** to position the taskbar on the main display and click **Continue.**
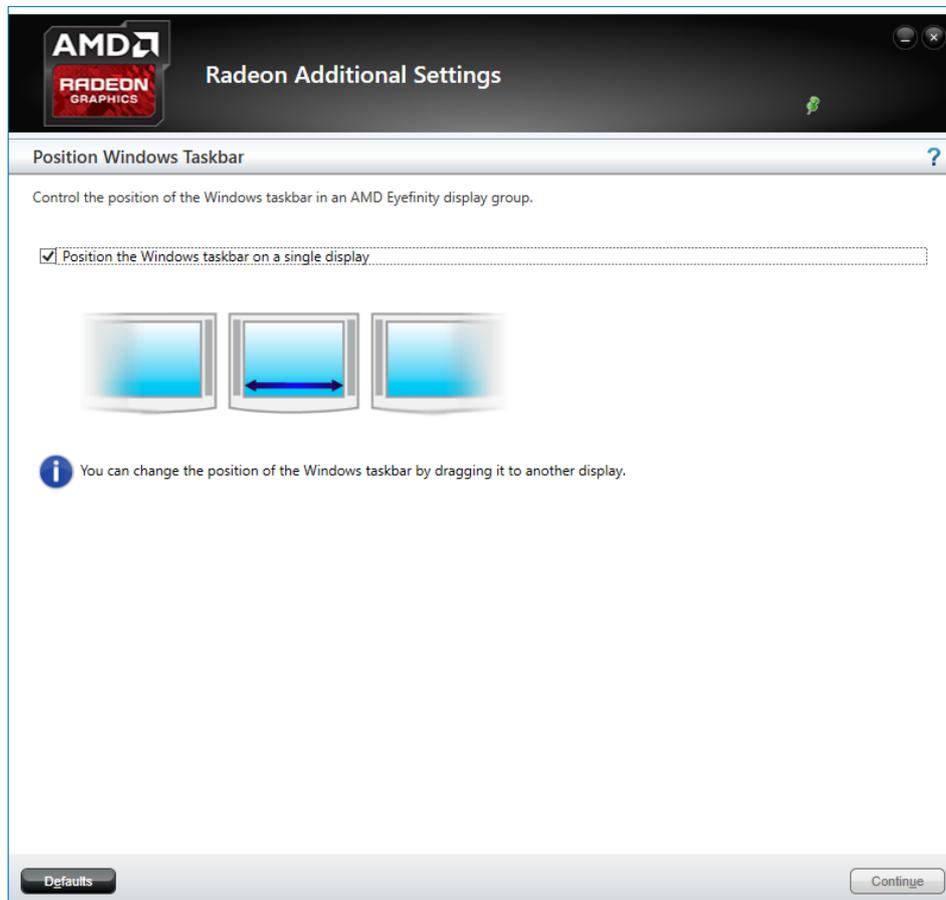
Note: To move the Taskbar to another display, simply drag and drop it to the preferred display.

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To return to the default setting, uncheck the box for **Position the Windows taskbar on a single display** and click **Continue.**
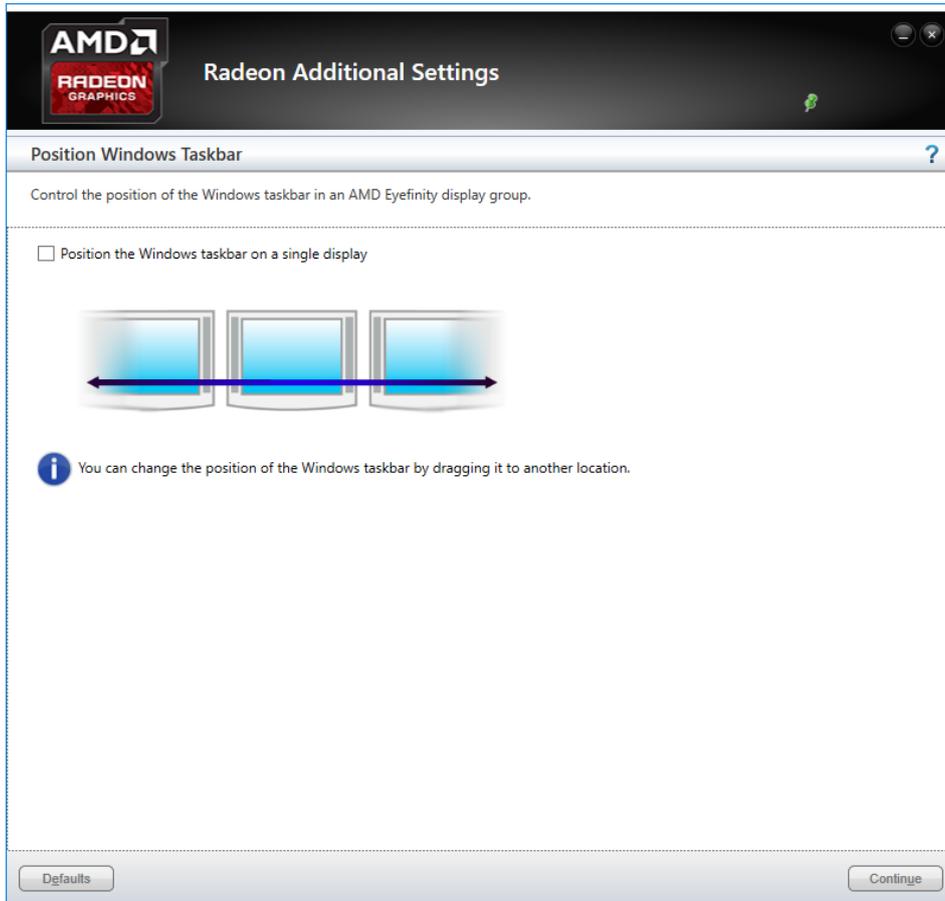
B. Video Walls Configuration for Matrox C900 Graphics Card

Matrox C900 graphics card features stretched desktop1 mode to deliver a single, ultra-large desktop across all displays attached to one card — ideal for video wall, digital signage, and presentation applications. In stretched desktop mode all the video outputs are synchronized, and they must be set to run at the same resolution.

B.1   Single-Card Configuration

With a Matrox C900, you can create a display configuration of 9 screens as the most popular layouts below:
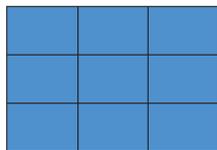
3 x 3 Landscape   **3 x 3 Portrait**
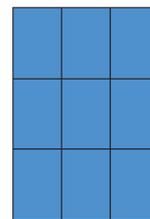
9 x 1 Landscape   **1 x 9 Portrait**

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B.2   Dual-Card Configuration

Two Matrox C900 cards combined within a single system support configurations up to 15 and 18 screens.
When operating a dual-board configuration, stretched desktop mode is available across the displays attached to one card; the board-to-board framelock feature available with C900 ensures that all the displays are running in synch and refreshed at the same time.

The most popular dual-card configuration options are as follows. Please contact us if you can't find the configuration you are looking for.
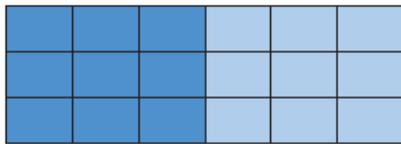
6 x 3 Landscape   **6 x 3 Portrait**
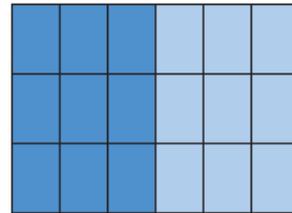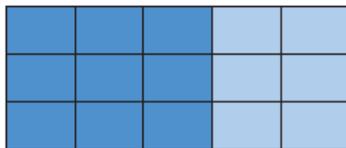
5 x 3 Landscape   **5 x 3 Portrait**
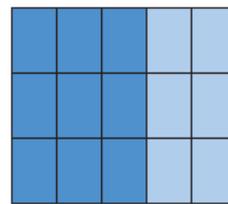
C. I/O Port Address Map

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
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
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

iBASE

Address	Device Description
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
0x00000800-0x0000087F	Motherboard resources
0x0000E000-0x0000EFFF	Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #6 - A115
0x0000E000-0x0000EFFF	Realtek 8821AE Wireless LAN 802.11ac PCI-E NIC
0x000000F0-0x000000F0	Numeric data processor
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x00001854-0x00001857	Motherboard resources
0x0000F090-0x0000F097	Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
0x0000F080-0x0000F083	Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
0x0000F060-0x0000F07F	Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x0000F0A0-0x0000F0A7	Intel(R) Active Management Technology - SOL (COM5)

Address	Device Description
0x0000F000-0x0000F03F	Intel(R) HD Graphics 630
0x000003B0-0x000003BB	Intel(R) HD Graphics 630
0x000003C0-0x000003DF	Intel(R) HD Graphics 630
0x0000FF00-0x0000FFFE	Motherboard resources
0x0000F040-0x0000F05F	Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard
0x0000D000-0x0000DFFF	Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #7 - A116

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D. 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 14	Motherboard resources
IRQ 4294967290	Intel(R) I211 Gigabit Network Connection
IRQ 4294967287	Intel(R) I211 Gigabit Network Connection
IRQ 4294967286	Intel(R) I211 Gigabit Network Connection
IRQ 4294967285	Intel(R) I211 Gigabit Network Connection
IRQ 4294967284	Intel(R) I211 Gigabit Network Connection
IRQ 4294967283	Intel(R) I211 Gigabit Network Connection
IRQ 4294967282	Intel(R) Ethernet Connection (2) I219-LM
IRQ 4294967293	Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #6 - A115
IRQ 13	Numeric data processor
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 5	Communications Port (COM3)
IRQ 7	Communications Port (COM4)
IRQ 0	System timer
IRQ 4294967291	Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
IRQ 54 ~ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ 511	Microsoft ACPI-Compliant System
IRQ 4294967294	Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
IRQ 19	Intel(R) Active Management Technology - SOL (COM5)
IRQ 4294967281	Intel(R) Management Engine Interface
IRQ 8	System CMOS/real time clock
IRQ 4294967289	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
IRQ 11	Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123

Level	Function
IRQ 11	Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
IRQ 1	Standard PS/2 Keyboard
IRQ 12	Microsoft PS/2 Mouse
IRQ 4294967292	Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #7 - A116
IRQ 4294967288	Realtek 8821AE Wireless LAN 802.11ac PCI-E NIC
IRQ 16	High Definition Audio Controller
IRQ 16	MZ0380 PCI

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E. 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
```

iBASE

```
}
//------------------------------------------------------------------------




//------------------------------------------------------------------------
//
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//
//------------------------------------------------------------------------
#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
//---------------------------------------------------------------------------
```

iBASE

```
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
```