SI-60E-6H

User Manual

Revision	Release Date
V1.0	2017/08/04
V1.1	2017/12/21

Table of Contents

Safety Information

Your SI-60E-6H is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. ***Never insert objects of any kind into the ventilation openings***.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0˚C and 45˚C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY

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CHAPTER 1 INTRODUCTION

1.1 General Description

The “Signature Book™” SI-60E-6H is a professional digital signage system powered by 4th Gen. Intel® Core™ I Desktop Processors with AMD Radeon™ E8860 graphics. The SI-60E-6H integrates six (6) HDMI ports with independent video output and one DVI-I for console. Additionally, SI-60E-6H has two quad-channel DDR3L-1600 sockets to provide up to 32GB of memory. It also has dual Gigabit Ethernet, dual extended SSD drive, Intel AMT for remote control and IBASE’s iSMART green technology for power on/off scheduling and power resume functions. The ruggedized designed chassis provides passive cooling for better system reliability and quiet operation.

SI-60E-6H overview

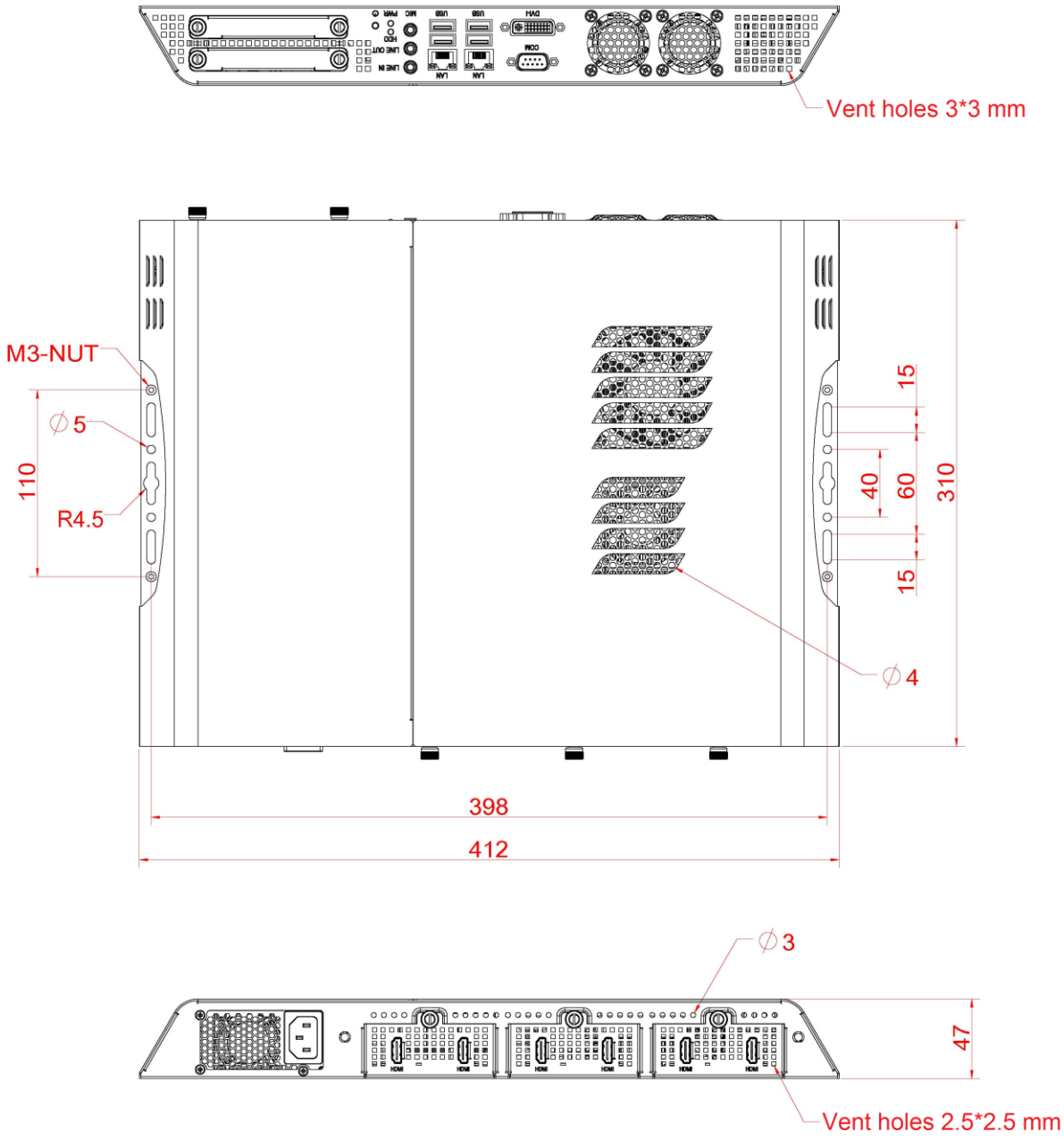
1.2 System Specifications

1.2.1 Hardware specifications

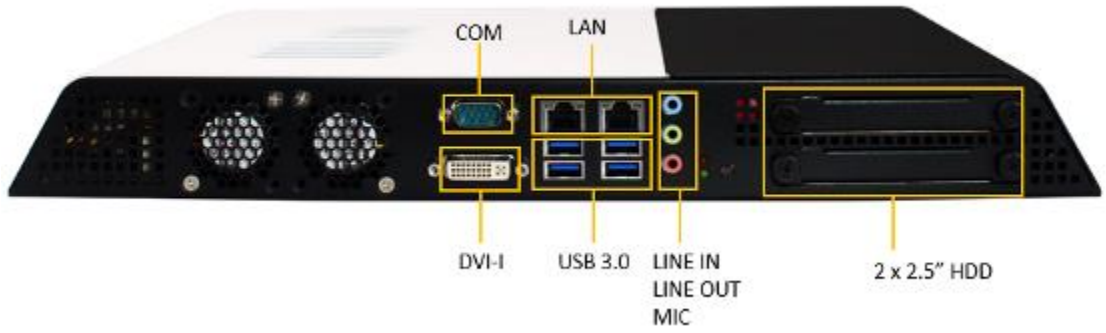
Model Name	SI-60E-6H
System Mainboard	MBD60E
CPU	4th Generation Intel® Core™ i7/i5/i3 and Pentium® QC/DC processors; Up to 3.5GHz
Memory	4x DDR3 1600 MHz, Max. 32GB
I/O Interface	6x HDMI with independent video output 1x DVI-I for console 4x USB 3.0 ports 2x RJ45 for Gigabit LAN 1x DSUB 9 pin for RS-232/422/485 3x Microjack audio connectors for Line-in / Line-out/MIC-in Power LED for power on/off & HDD 1x power button 1x AC power inlet
Storage	1x mSATA 2x SATA 3.0 2.5” HDD Dock (support Raid 1)
Expansion Slots	Dual mPCI-E(x1) slots for WiFi, 3G/LTE, capture card and TV tuner options
Construction	SGCC
Mounting	Standard system bracket
Dimensions	412mm(W) x 310mm(D) x 47mm(H) 16.22”(W) x 12.2”(D) x 1.85”(H)
Operating Temperature	0°C~ 45°C (32°F~113°F)
Storage Temperature	-20°C ~ 80°C (-4°F~176°F)
Relative Humidity	5~90% @ 45°C, (non-condensing)
Vibration	mSATA: 5 grms / 5~500Hz / random operation
RoHS	Available
Certification	CE, FCC, CCC, UL

·This specification is subject to change without prior notice.

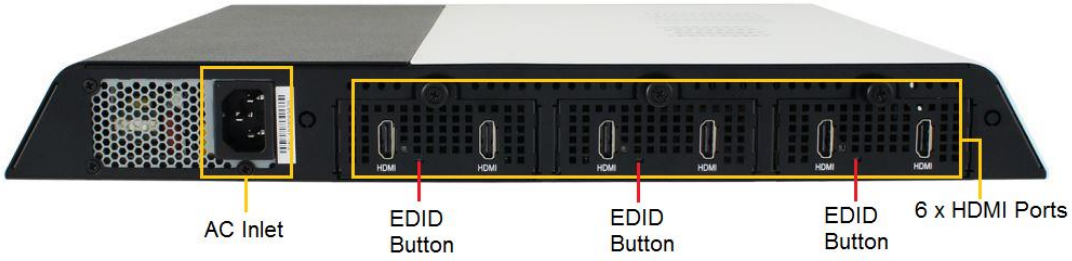
1.2.2 Dimensions



1.2.3 I/O view



SI-60E-6H front side



SI-60E-6H rear side

Note: Be sure to press the EDID button shortly so as to clear the EDID register if any connected display/monitor is unable to be recognized, or when the image displayed cannot not be resampled to fit the screen.

1.3 Packing List

Description	Qty
Driver CD	1
Power cord	1

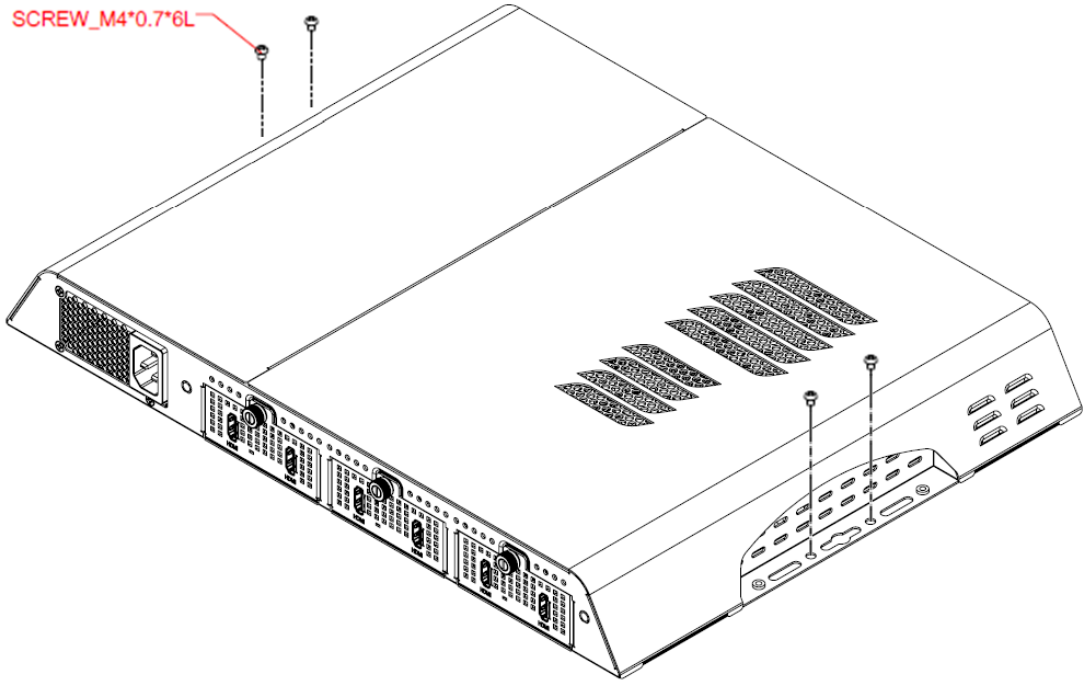
1.3.1 Optional items module

WiFi Solution	Description	
WiFi module	Wireless; PCI-E Mini Card 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	
External Antenna 2pcs	WiFi Antenna (A055RFA02C2M20800P)	
Internal cable 1pcs	Internal Antenna 300mm [BTC130-1-70B-300] RoHS (A055RFA0000020100P)	
Internal cable 1pcs	Internal Antenna 200mm [BTC130-1-70B-200-1] RoHS (A055RFA0000020000P)	
Screw, 2pcs	Screw; A44-N NI 3.4 NYLOK M2*L3.8 P0.4mm [LHS] RoHS (H02203A0442200N00P)	
Bracket, -1set	Component BOM; MPCIE-EXT V-B2 Bracket (SC2MPCIEEXT0B2100P)	
3G Solution	**Description**	
3G	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
3G+GPS	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
WW-350U	Wireless; 3.75G UMTS/HSPA [NAVISYS WW-350U] RoHS (A008WIRELESS00530P)	
Cable	Cable; SMA IPX Cable For 3G 30CM [RF11030A] RoHS (A012INTENAL010000P)	
Antenna	3G [ANT0921Q2P] RoHS (A055ANT0921Q2P000P)	

1.4 Hardware Installation

1.4.1 Mounting installation

1. Please install SI-60E-6H to the intended location using 4x M4*0.7*6L screws, as shown in the picture.



1.4.2 Installing the storage

1. Remove the two screws on the HDD cover and draw the HDD out.

2. Install the HDD/SSD to the HDD bracket with 4 screws.

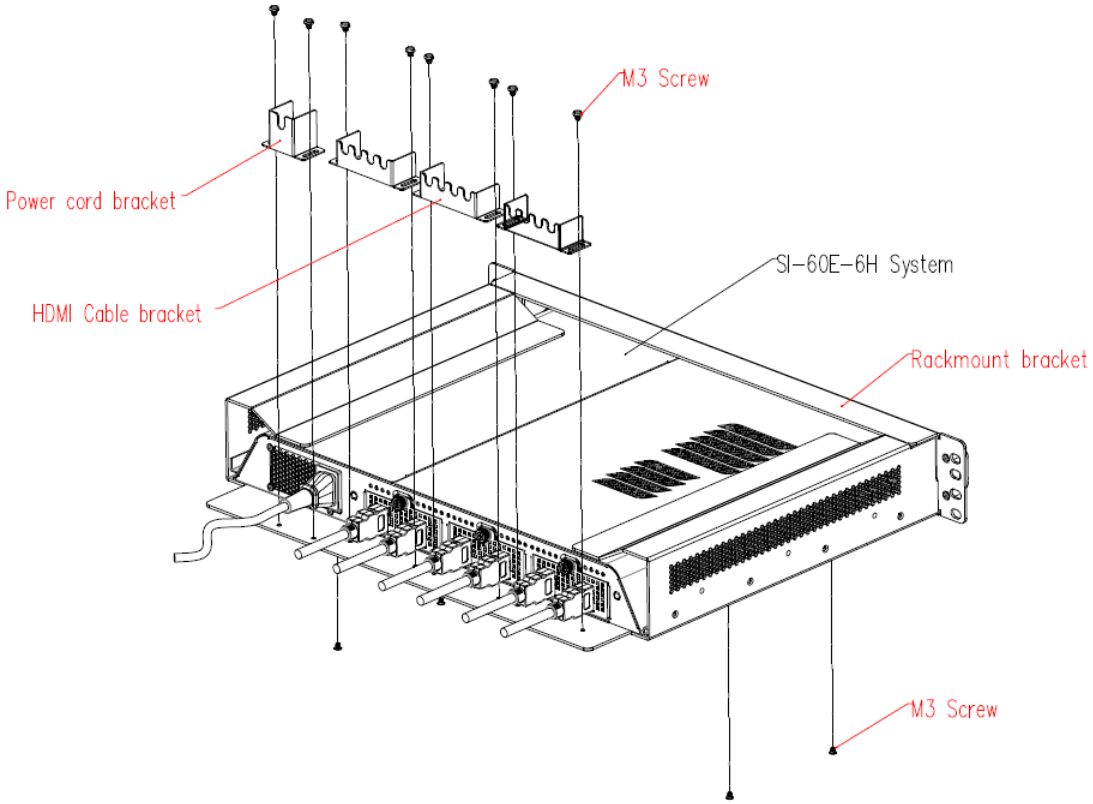
1.4.3 Replacing the HDMI module

1. Release the screw(s) on the HDMI module.

2. Pull out the HDMI module and replace with a new one.

1.4.4 Installing the rackmount

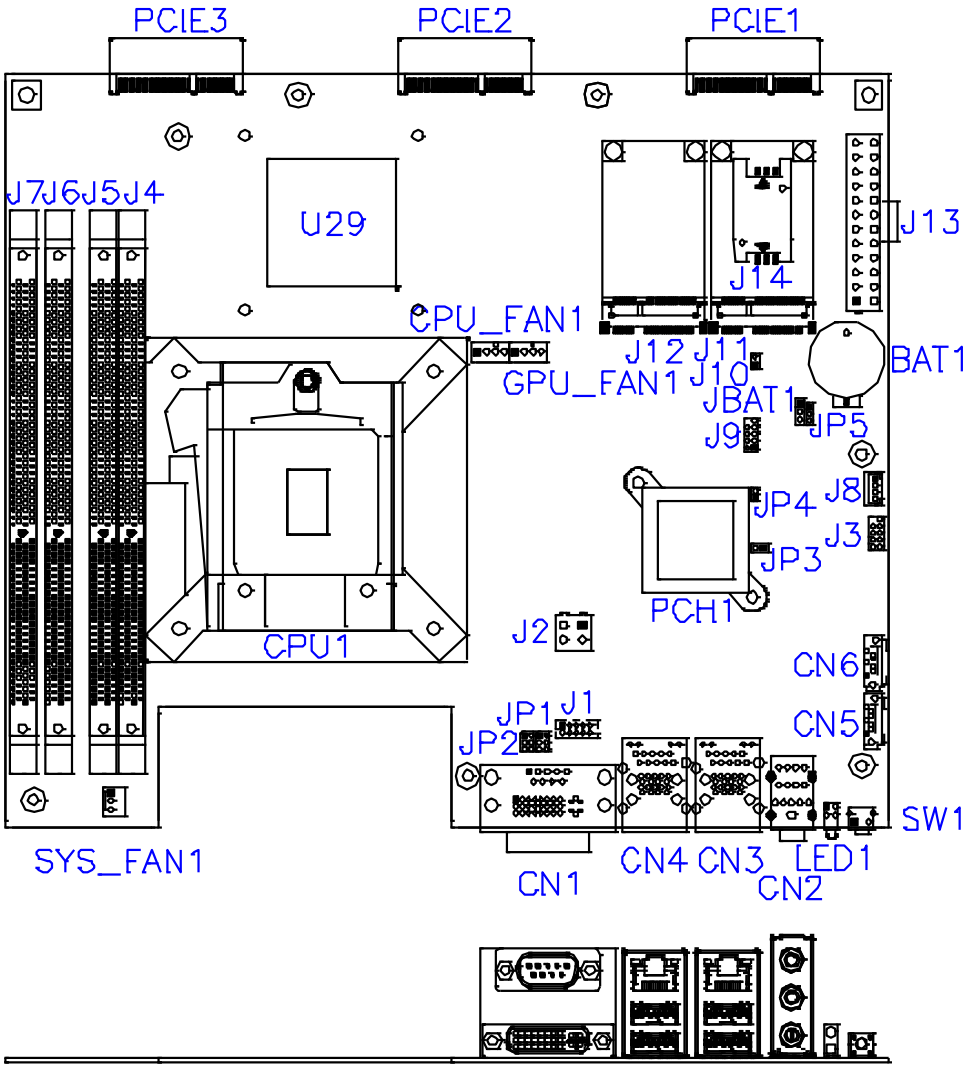
1.Install the system to the intended location using M3 screws as shown in the picture below.



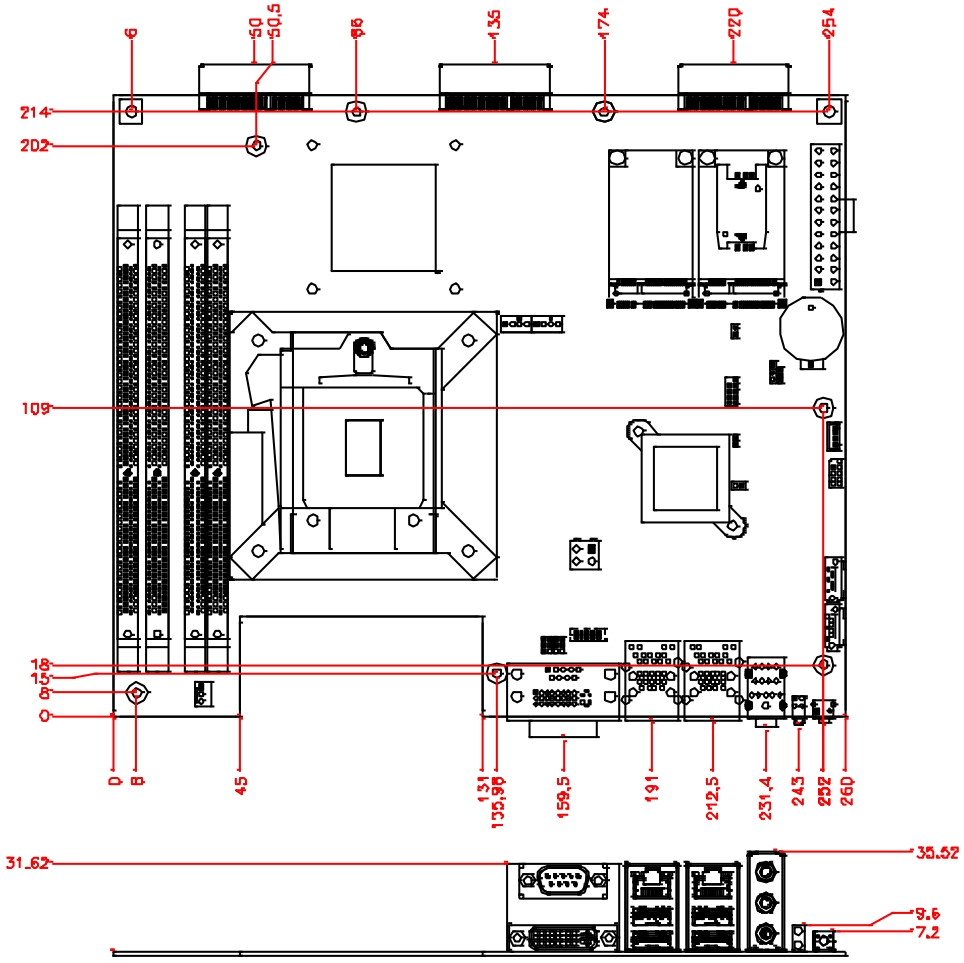
CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

MBD60E Jumpers and Connectors



IMBD60E Board Dimensions



2.2 Installations

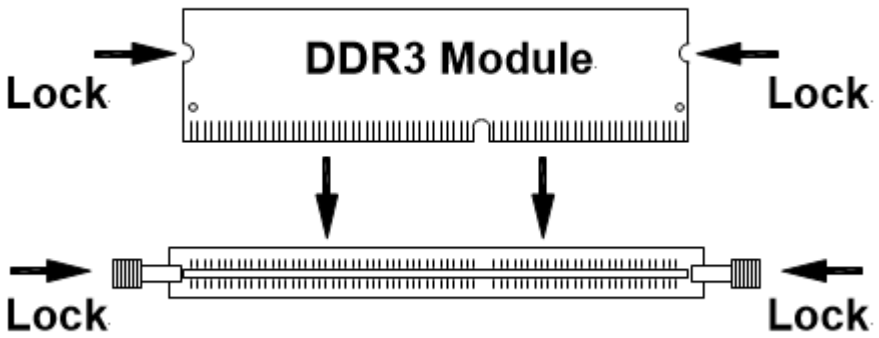
2.2.1 Installing the memory

The MBD60E board supports Four DDR3 memory modules for a maximum total of 32GB in DDR3 SODIMM memory type.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

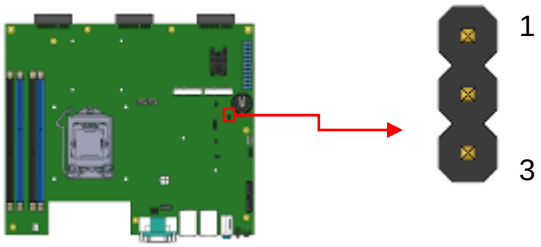
1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
3. To remove the DDR3 module, press the clips with both hands.



2.3 Setting the Jumpers

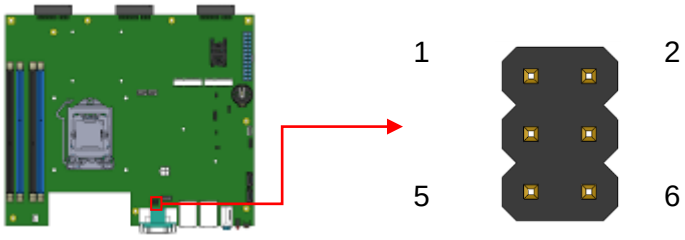
Jumpers are used on MBD60E to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on MBD60E and their respective functions.

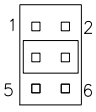
JBAT1: Clear CMOS Contents



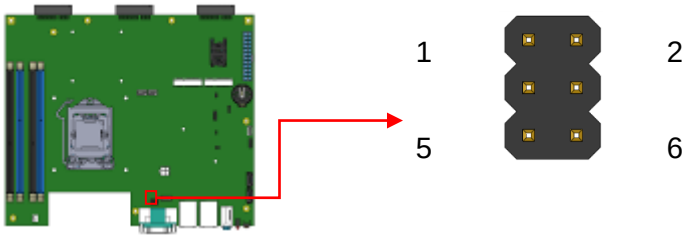
JBAT1	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

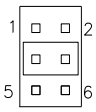
JP1: COM2 RS232 RI/+5V/+12V Power Setting



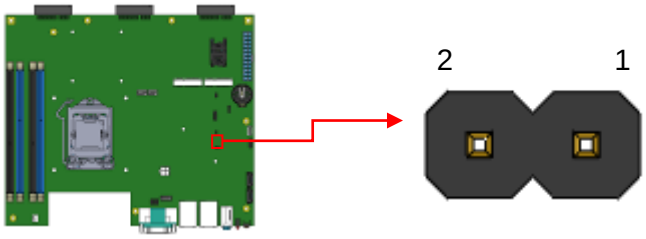
JP1	Setting	Function
	Pin 1-3 Short/Closed	+12V
	Pin 3-4 Short/Closed	RI
	Pin 5-3 Short/Closed	+5V

JP2: COM1 RS232 RI/+5V/+12V Power Setting



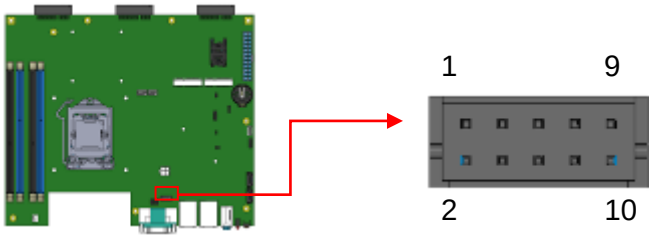
JP2	Setting	Function
	Pin 1-3 Short/Closed	+12V
	Pin 3-4 Short/Closed	RI
	Pin 5-3 Short/Closed	+5V

JP3: Flash Descriptor Security Override (Factory use only)



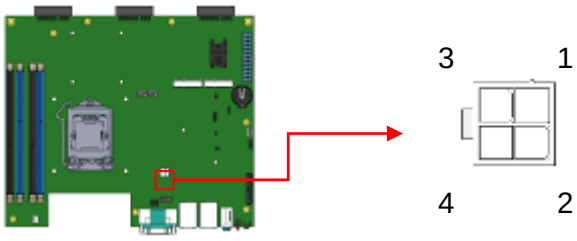
2.4 Connectors on MBD60E

J1: COM2 Connector



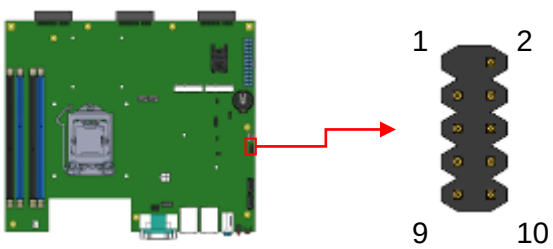
Signal Name	Pin #	Pin #	Signal Name
Data carrier detect	1	2	Receive data
Transmit data	3	4	Data terminal ready
Ground	5	6	Data set ready
Request to send	7	8	Clear to send
Ring indicator	9	10	Not Used

J2: ATX +12V Jack

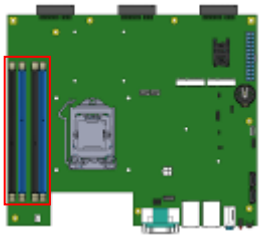


Pin #	Signal Name
1	Ground
2	Ground
3	DC_IN
4	DC_IN

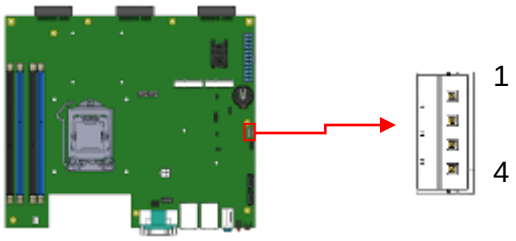
J3: For SPI Debug tools Pin Header



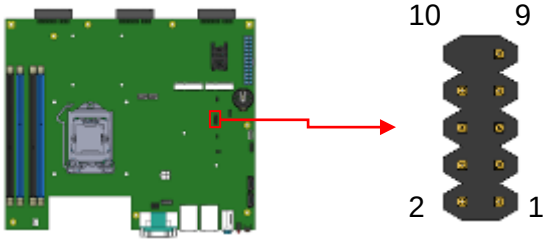
J4, J5, J6, J7 DDR III Socket



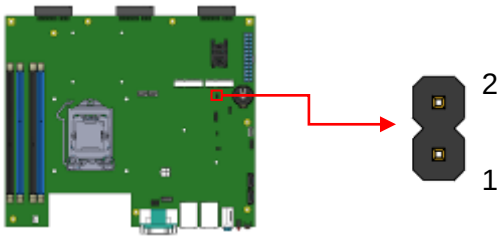
J8: MCU Flash Connector (factory use only)



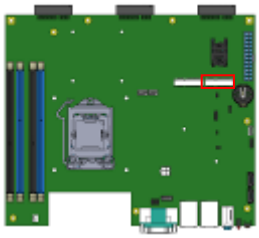
J9: Debug Port Connector (Factory use only)



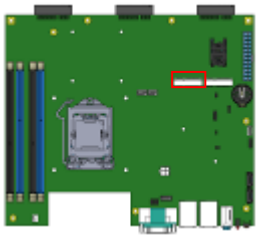
J10: Reset Pin Header



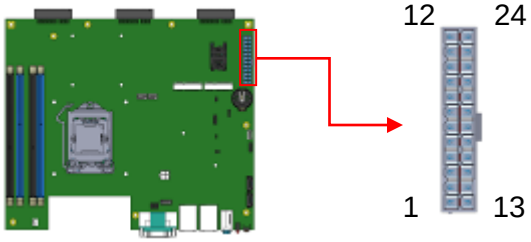
J11: Mini PCIe Slot (Full size with SIM Card)



J12: Mini PCIe Slot (Full size with mSATA)

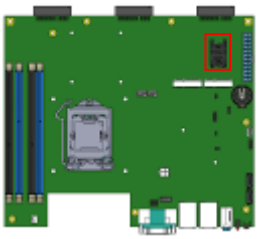


J13: ATX Power Supply Connector

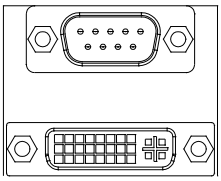


Signal Name	Pin #	Pin #	Signal Name
3.3V	13	1	3.3V
-12V	14	2	3.3V
Ground	15	3	Ground
PS-ON	16	4	+5V
Ground	17	5	Ground
Ground	18	6	+5V
Ground	19	7	Ground
-5V	20	8	Power good
+5V	21	9	5VSB
+5V	22	10	+12V
+5V	23	11	+12V
Ground	24	12	+3.3V

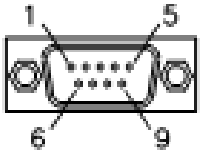
J14: SIM Card Slot



CN1: COM1 / DVI-I Connector

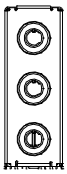


Signals of COM1 Connector:

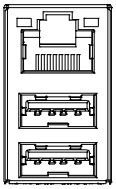


Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC

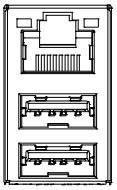
CN2: Audio Jack



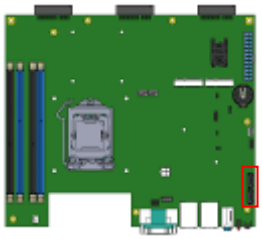
CN3: RTL8111G-CG /USB3.0 Connector



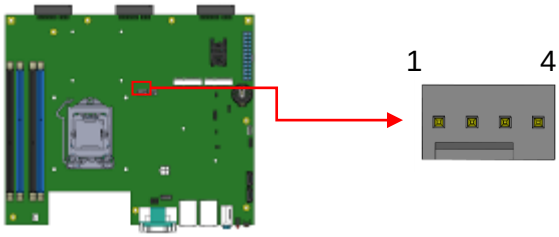
CN4: I218LM / USB3.0 Connector



CN5/6:SATA 3 Connector

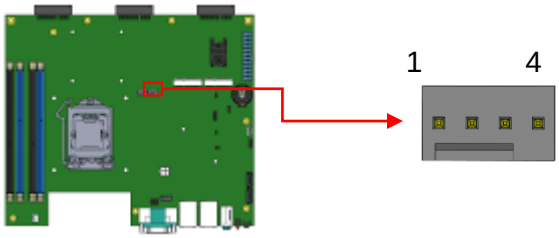


CPU_FAN1: CPU Fan Power Connector



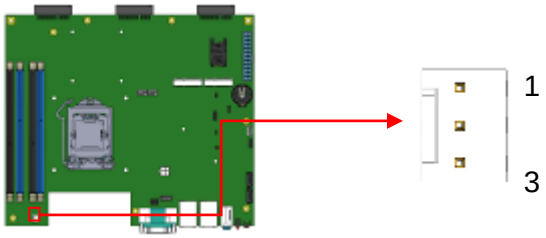
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

GPU_FAN1: GPU Fan Power Connector



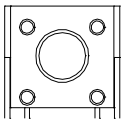
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

SYS_FAN1: System Fan1 Power Connector

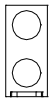


Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

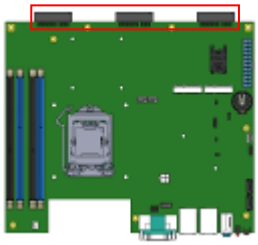
SW1: Power On Button



LED1: PWR (Green)/ HDD LED (Red)



PCIE1, PCIE2, PCIE3: HDMI Signal from AMD E8860 to IDD104



CHAPTER 3 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:

3.1 BIOS Introduction

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

3.2 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. Pressing 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 wish 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, you 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 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 cause the system to become unstable and crash in some cases.*

Main Settings

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
System Language		[English]			
System Date		[Tue			
System Time		01/20/2009]			
		[21:52:06]			
Access Level		Administrator			

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

System Language

Choose the system default language.

System Date

Set the Date. Use Tab to switch between Data elements.

System Time

Set the Time. Use Tab to switch between Data elements.

Advanced Settings

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

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

► ACPI Settings	
► Trusted Computing	
► Wake up event setting	
► CPU Configuration	
► SATA Configuration	
►Shutdown Temperature Configuration	→ ←Select Screen
► iSmart Controller 3.1	↑ ↓Select Item
► AMT Configuration	Enter: Select
► USB Configuration	+- Change Opt.
► F81846 Super IO Configuration	F1:General Help
► F81846 H/W Monitor	F2:Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit

ACPI Settings

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

ACPI Settings

ACPI Sleep State	S3 only (Suspend to …)
Lock Legacy Resources	Disabled
S3 Video Repost	Disabled

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

ACPI Sleep State

Select ACPI sleep state the system will enter when the SUSPEND button is pressed.

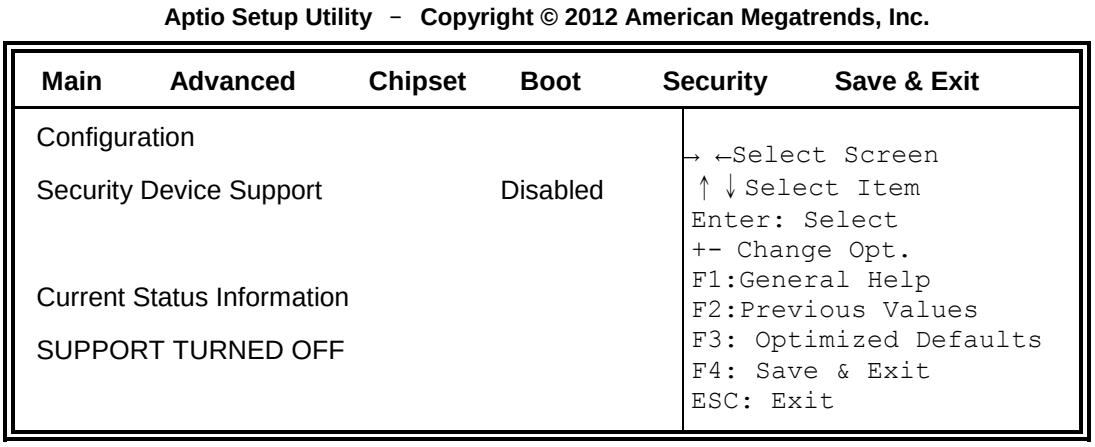
Lock Legacy Resources

Enables or Disables Lock of Legacy Resources

S3 Video Repost

Enable or Disable S3 Video Repost

Trusted Computing



Security Device Support

Enables or disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

TPM State

Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.

Pending operation

Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

Wake up event settings

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
Wake on PCIE Wake Event			Disabled		

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

Wake on PCIE Wake Event

The options are Disabled and Enabled.

CPU Configuration

This section shows the CPU configuration parameters.

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

CPU Configuration	
Intel(R) Core(TM) i7-4770S CPU @ 3.10GHz	
CPU Signature	306c3
Processor Family	6
Microcode Patch	17
FSB Speed	100 MHz
Max CPU Speed	3100 MHz
Min CPU Speed	800 MHz
CPU Speed	3500 MHz
Processor Cores	4
Intel HT Technology	Supported
Intel VT-x Technology	Supported
Intel SMX Technology	Supported
64-bit	Supported
EIST Technology	Supported
Hyper-threading	Enabled
Active Processor Cores	All
Overclocking lock	Disabled
Limit CPUID Maximum	Disabled
Execute Disable Bit	Disabled
Intel Virtualization Technology	Disabled
Hardware Prefetcher	Disabled
Adjacent Cache Line Prefetch	Disabled
EIST	Enabled
Turbo Mode	Enabled

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

Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.

Active Processor Cores

Number of cores to enable in each processor package.

Overclocking lock

FLEX_RATIO(194) MSR

Limit CPUID Maximum

Disabled for Windows XP

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

Hardware Prefetcher

Enable the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

Enable the Mid Level Cache (L2) prefetching of adjacent cache lines.

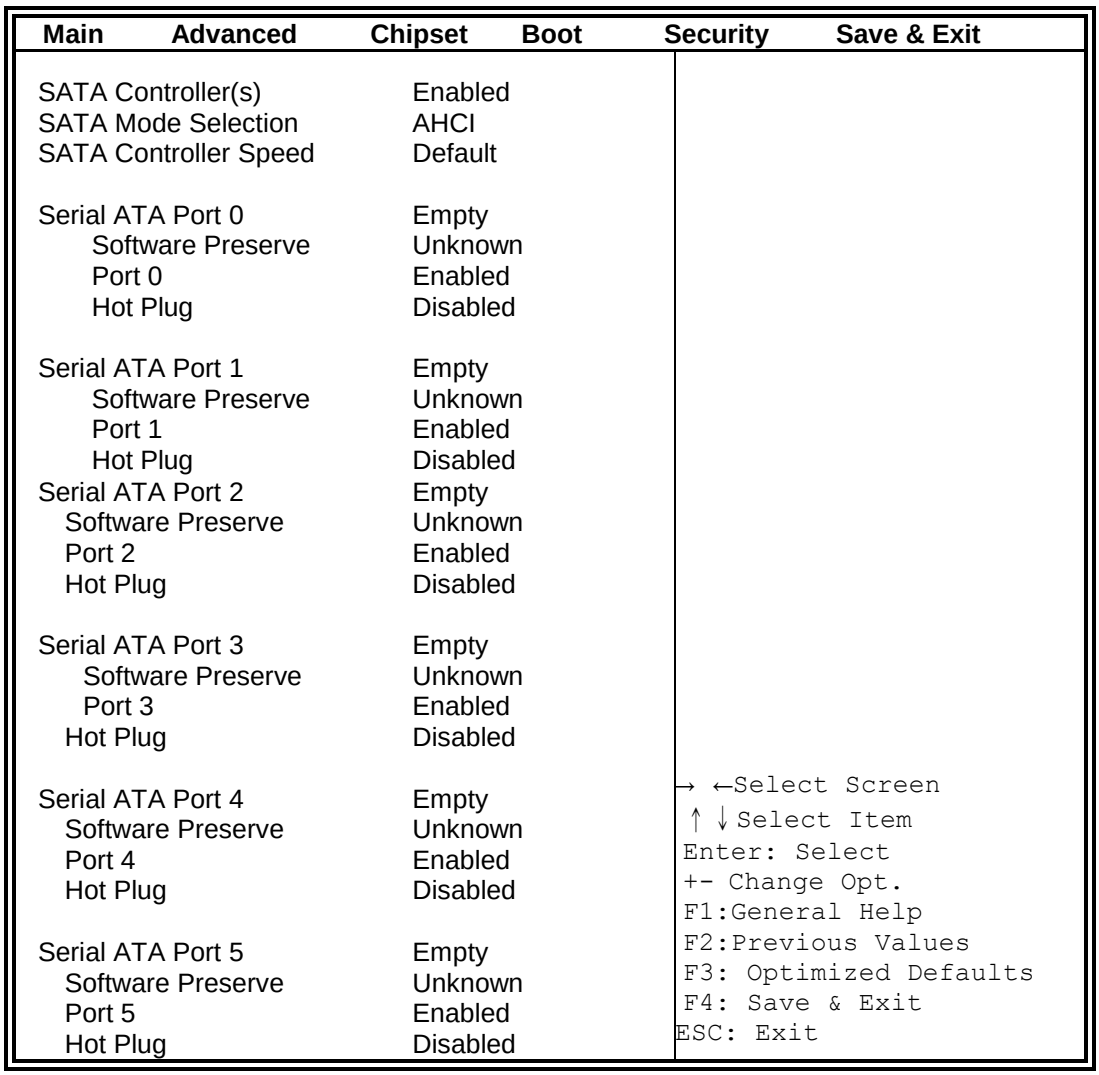
EIST

Enable/Disable Intel Speedstep

Turbo Mode

Turbo Mode.

SATA Configuration



SATA Controller(s)

Enable or disable SATA Device.

SATA Mode Selection

Determines how SATA controller(s) operate.

(1) IDE Mode.

(2) AHCI Mode.

(3) RAID Mode.

SATA Controller Speed

Indicates the maximum speed the SATA controller can support.

Port 0

Enable or Disable SATA Port

Hot Plug

Designates this port as Hot Pluggable.

Shutdown Temperature Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
APCI Shutdown Temperature			Disabled		

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

ACPI Shutdown Temperature

The default setting is Disabled.

iSmart Controller 3.1

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
iSmart Controller 3.1					
Power-On after Power failure			Enable		
PWR Resume Delay			Enable		
PWR Resume Delay Value(Seconds)			5		
Temperature Guardian			Disable		
Schedule Slot 1			None		
Schedule Slot 2			None		

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

Power-On after Power failure

This field sets the system power status whether Disable or Enable when power returns to the system from a power failure situation.

Temperature Guardian

Generate the reset signal when system hangs up on POST.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.

AMT Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
Intel AMT			Enabled		
BIOS Hotkey Pressed			Disabled		
MEBx Selection Screen			Disabled		
Hide Un-Configure ME Confirmation			Disabled		
Un-Configure ME			Disabled		
Amt Wait Timer			0		
Activate Remote Assistance Process			Disabled		
USB Configure			Enabled		
PET Progress			Enabled		
AMT CIRA Timeout			0		
Watchdog			Disabled		
OS Timer			0		
BIOS Timer			0		

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

Intel AMT

Enable/Disable Intel (R) Active Management Technology BIOS Extension.

Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution.

If enabled, this requires additional firmware in the SPI device.

BIOS Hotkey Pressed

OEMFLag Bit 1:

Enable/Disable BIOS hotkey press.

AMT Configuration

OEMFLag Bit 2:

Enable/Disable MEBx selection screen.

Hide Un-Configure ME Configuration

OEMFlag Bit 6:

Hide Un-Configure ME without password Confirmation Prompt

Un-Configure ME

OEMFlag Bit 15:

Un-Configure ME without password.

Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

Activate Remote Assistance Process

Trigger CIRA boot.

USB Configure

Enable/Disable USB Configure function.

PET Progress

User can Enable/Disable PET Events progress to receive PET events or not.

Watchdog Timer

Enable/Disable Watchdog Timer.

USB Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
USB Configuration					
USB Module Version			8.10.28		
USB Devices:					
Legacy USB Support			Enabled		
USB3.0 Support			Enabled		
XHCI Hand-off			Enabled		
EHCI Hand-off			Enabled		
USB Mass Storage Driver Support			Enabled		
USB hardware delays and time-outs:					
USB Transfer time-out			20 sec		
Device reset tine-out			20 sec		
Device power-up delay			Auto		

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

Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option will keep USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off

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

EHCI Hand-off

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

USB Mass Storage Driver Support

Enable/Disable USB Mass Storage Driver Support.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

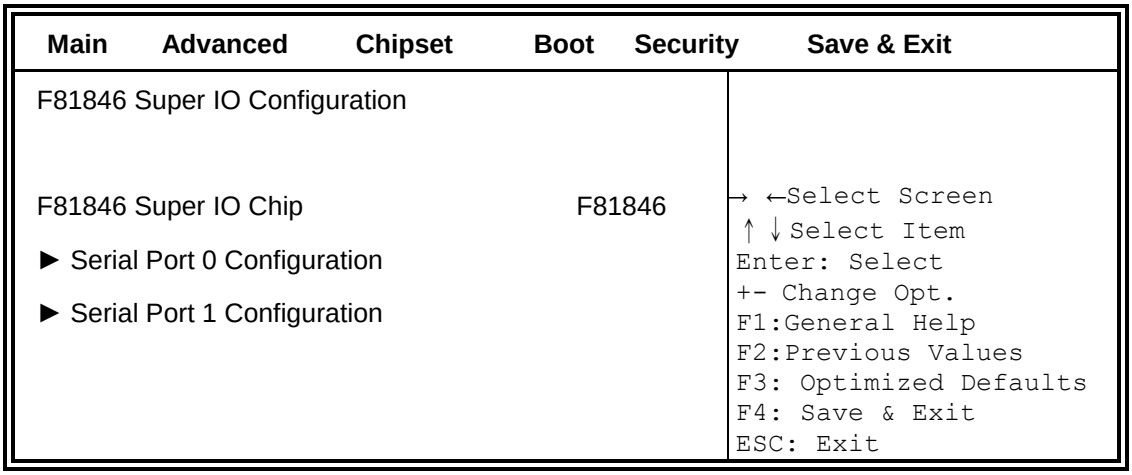
Device reset tine-out

USB mass Storage device start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. ‘Auto’ uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

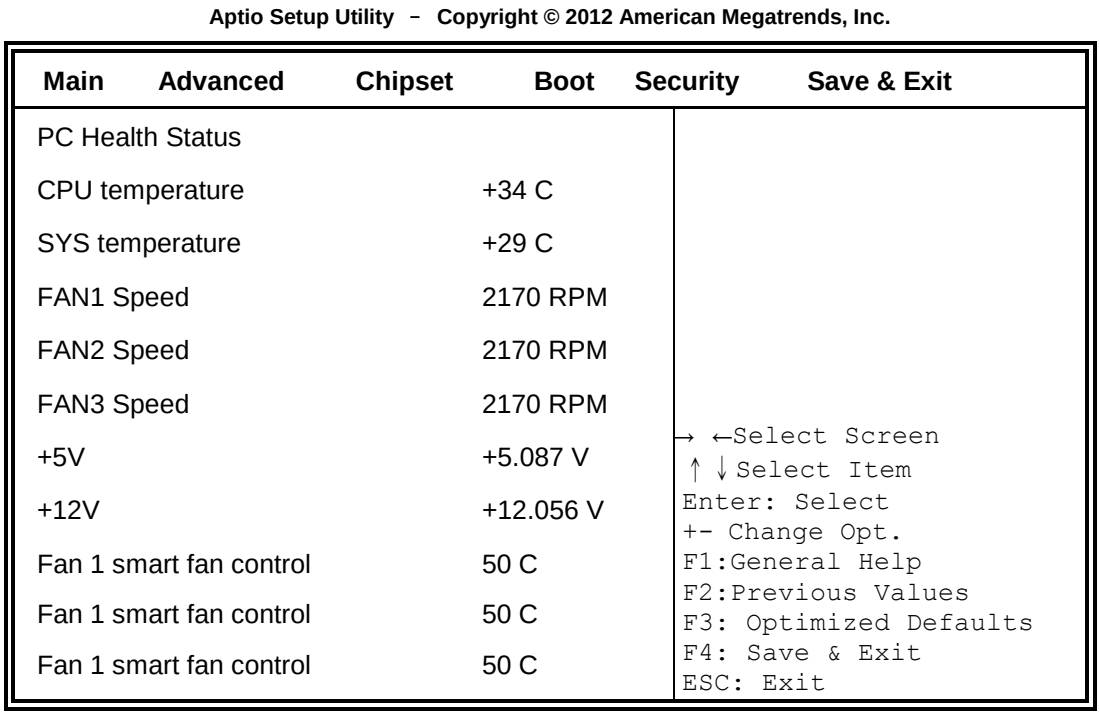
F81846 Super IO Configuration



Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

F81846 H/W Monitor



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.

Smart SYS_FAN1/CPU_FAN1 Function

This field enables or disables the smart fan feature.

Disabled (default)

50 ℃

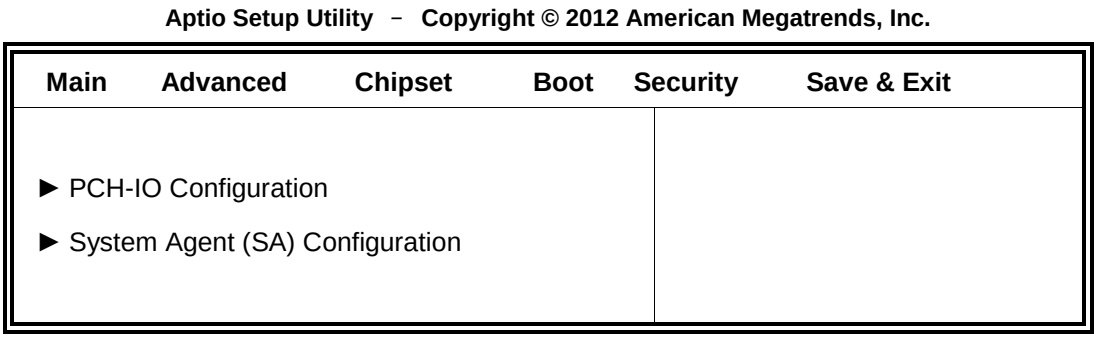
60 ℃

70 ℃

80 ℃

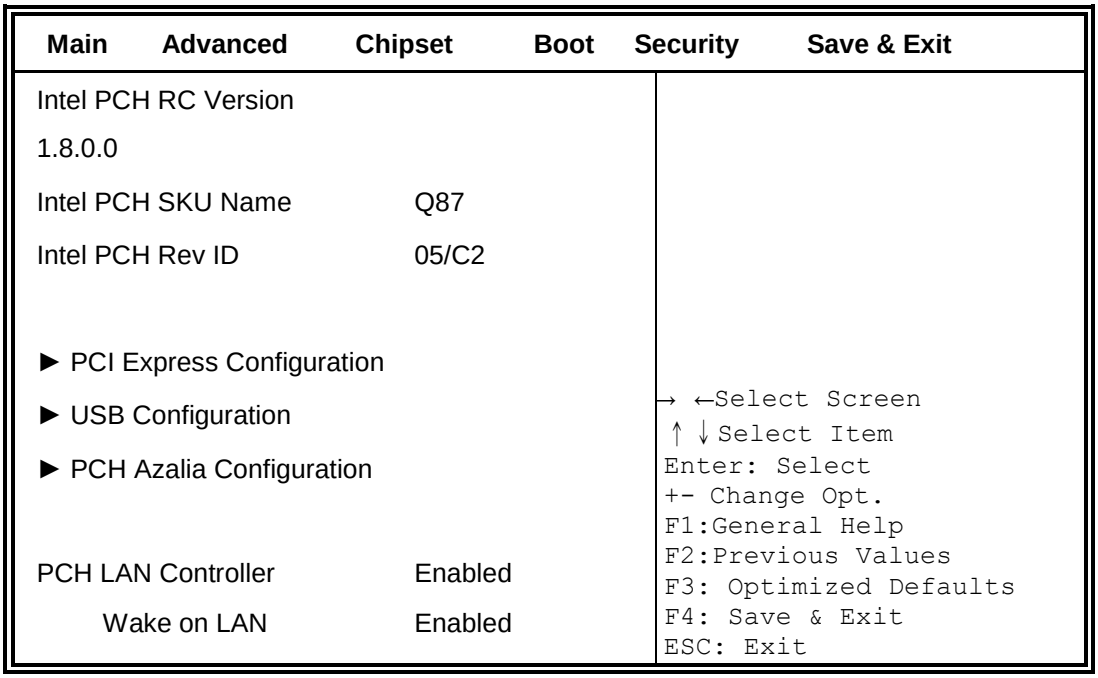
Chipset Settings

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



PCH-IO Configuration

This section allows you to configure the North Bridge Chipset.



PCH LAN Controller

Enable or disable onboard NIC.

Wake on LAN

Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

PCI Express Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

PCI Express Configuration	
DMI Link ASPM Control	Enabled
DMI Link Extended Synch Control	Disabled
PCIe-USB Glitch W/A	Disabled
Subtractive Decode	Disabled
► PCI Express Root Port 1	
► PCI Express Root Port 2	
► PCI Express Root Port 3	
► PCI Express Root Port 4	
► PCI Express Root Port 5	
PCI-E Port 6 is assigned to LAN	
► PCI Express Root Port 7	
► PCI Express Root Port 8	

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

DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link.

DMI Link Extended Synch Control

The control of Extended Synch on SB side of the DMI Link.

PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG port.

Subtractive Decode

Enable or disable PCI Express Subtractive Decode.

USB Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit
USB Configuration					
USB Precondition			Disabled		→ ←Select Screen ↑ ↓Select Item Enter: Select +- Change Opt. F1:General Help F2:Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
xHCI Mode			Auto		
USB Ports Per-Port Disable Control			Disabled		

USB Precondition

Precondition work on USB host controller and root ports for faster enumeration.

xHCI Mode

Mode of operation of xHCI controller.

USB Ports Per-Port Disable Control

Control each of the USB ports (0~13) disabling.

PCH Azalia Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
PCH Azalia Configuration					
Azalia			Auto		

Azalia

Control Detection of the Azalia device.

Disabled = Azalia will be unconditionally disabled.

Enabled Azalia will be unconditionally Enabled.

Auto = Azalia will be enabled if present, disabled otherwise.

System Agent (SA) Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

System Agent Bridge Name	Haswell	
System Agent RC Version	1.8.0.0	
VT-d Capability	Supported	
VT-d	Enabled	
► Graphics Configuration		
► Memory Configuration		

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

VT-d

Check to enable VT-d function on MCH.

Graphics Configuration

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit

Graphics Configuration

Primary Display	PEG
Primary PEG	Auto
Primary PCIE	Auto
Internal Graphics	Disabled

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

Primary Display

Select which of IGFX/PEG/PCI graphics device should be Primary Display or select SG for switchable Gfx.

Primary PEG

Select PEG0/PEG1/PEG2/PEG3 Graphics device should be Primary PEG.

Primary PCIE

Select PCIE0/PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6PCIE7 Graphics device should be Primary PCIE.

Internal Graphics

Keep IGD enabled based on the setup options.

Memory Configuration

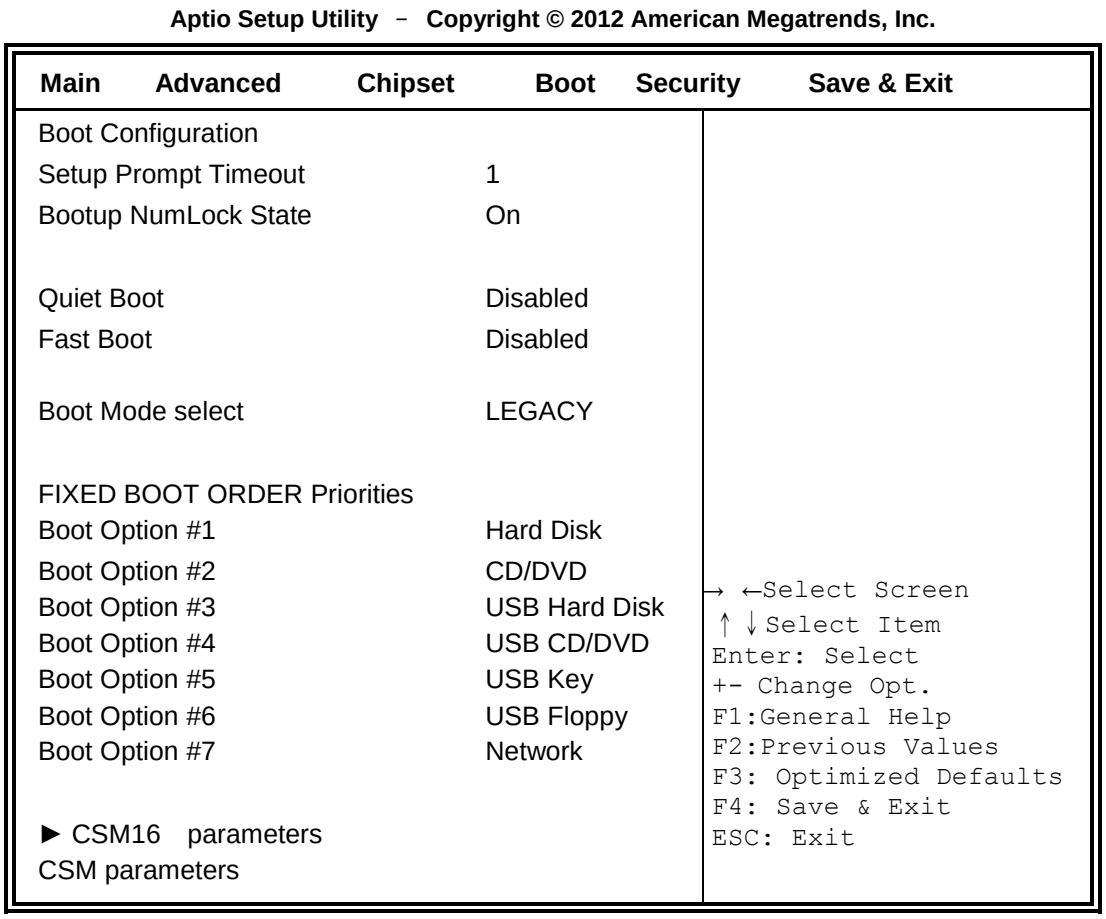
Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
Memory Information					
Memory RC Version		1.8.0.0			
Memory Frequency		1600 MHz			
Total Memory		32768MB (DDR3)			
Memory Voltage		1.50V			
DIMM#0		8192 MB (DDR3)			
DIMM#1		8192 MB (DDR3)			
DIMM#2		8192 MB (DDR3)			
DIMM#3		8192 MB (DDR3)			

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

Boot Settings

This section allows you to configure the boot settings.



Setup Prompt Timeout

Number of seconds to wait for setup activation key.

65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state

Quiet Boot

Enables or disables Quiet Boot option

Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Boot Mode select

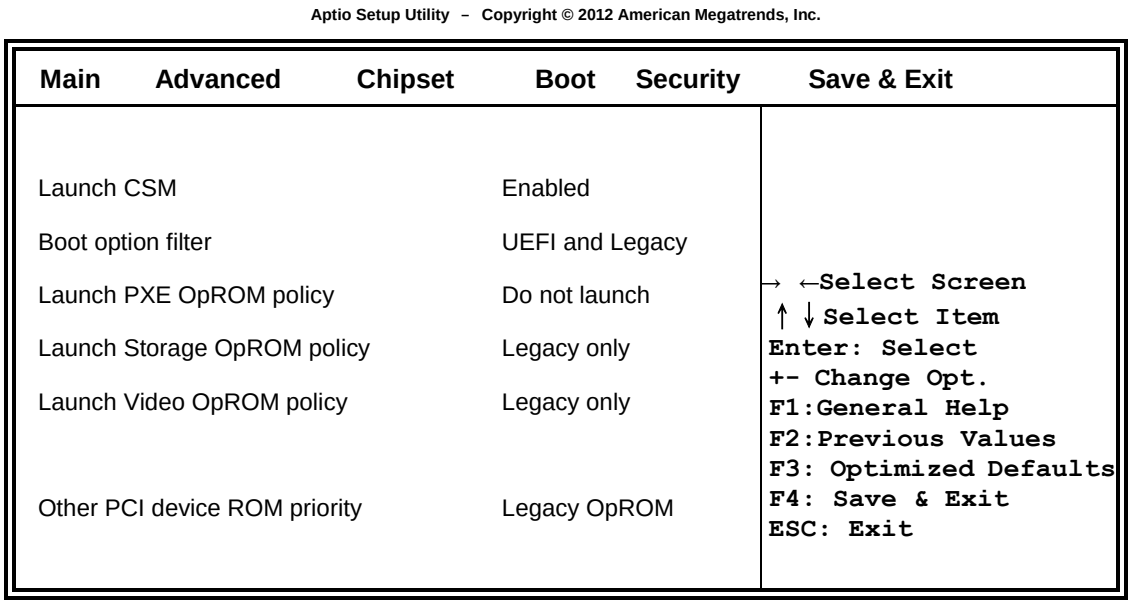
Select boot mode LEGACY/UEFI

FIXED BOOT ORDER Priorities

Sets the system boot order

CSM parameters

This section allows you to configure the boot settings.



Launch CSM

This option controls if CSM will be launched

Boot option filter

This option controls what devices system can boot to

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM

Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM

Launch Video OpROM policy

Controls the execution of UEFI and Legacy Video OpROM

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch

Security Settings

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

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
Password Description					
If ONLY the Administrator's password is set, then this only limit 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:					→←Select Screen ↑↓Select Item Enter: Select +- Change Opt. F1:General Help F2:Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Minimum length			3		
Maximum length			20		
Administrator Password					
User Password					

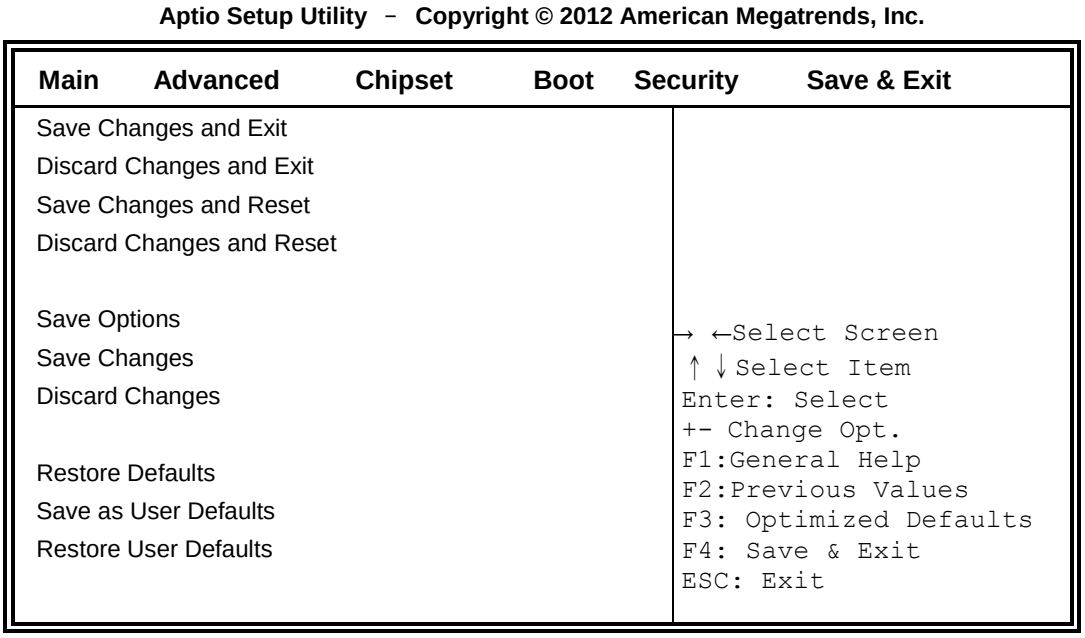
Administrator Password

Set Administrator Password

User Password

Set User Password

Save & Exit Settings



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Defaults values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

CHAPTER 4 DRIVERS INSTALLATION

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

IMPORTANT NOTE:

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

4.1 Intel Chipset Software Installation Utility

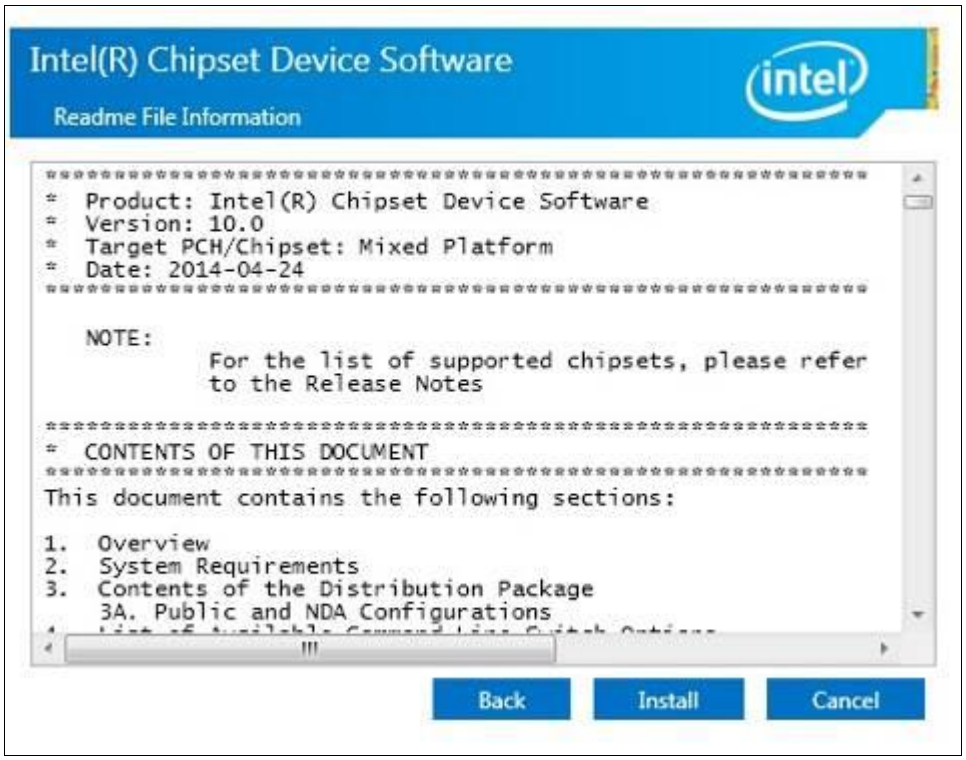
1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***.

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

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

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

5. On the Readme File Information screen, click ***Install*** to continue the installation.

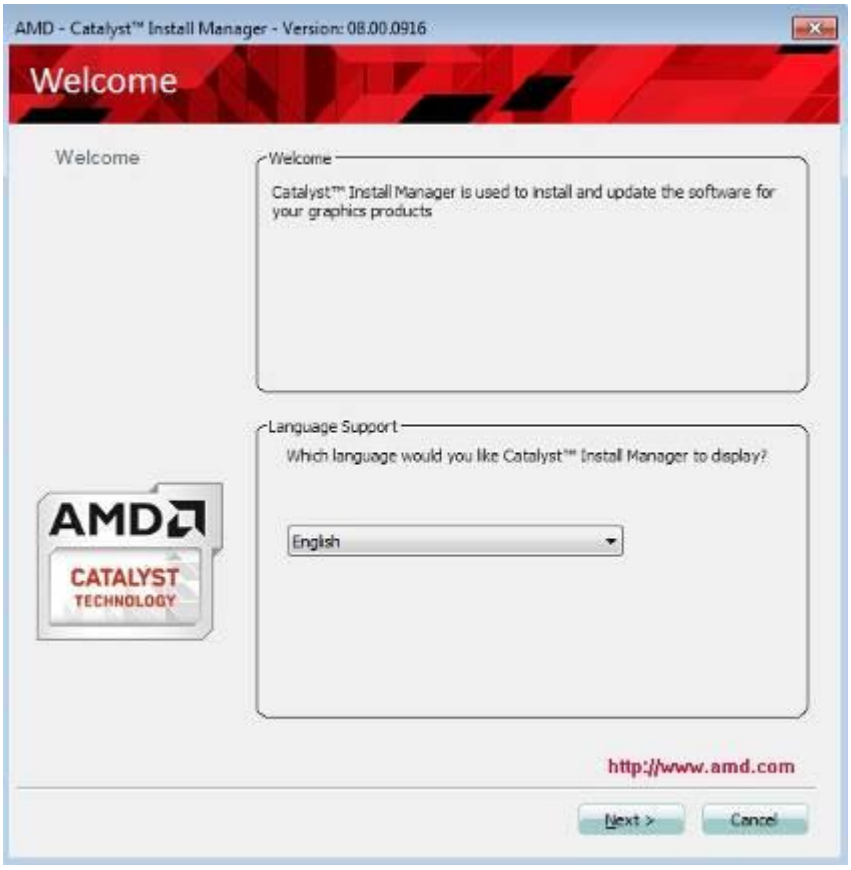


6. The Setup process is now complete. Click ***Finish*** to restart the computer and for changes to take effect.

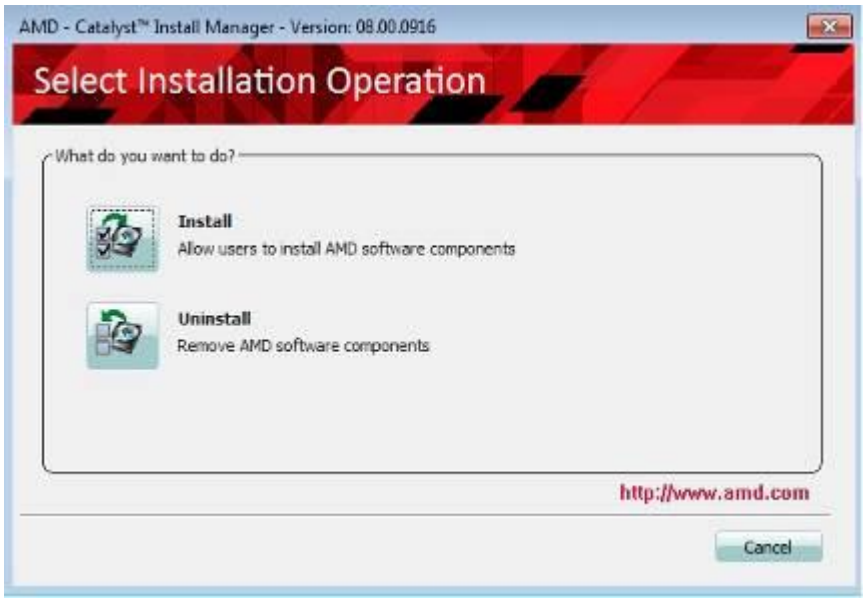
4.2 AMD Radeon E8860 Graphics Driver

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***. Click ***AMD Radeon E8860 Graphics Driver***.

2. When the Welcome screen appears, click ***Next*** to continue.
3. Select the language you would like to be displayed and click ***Next***.

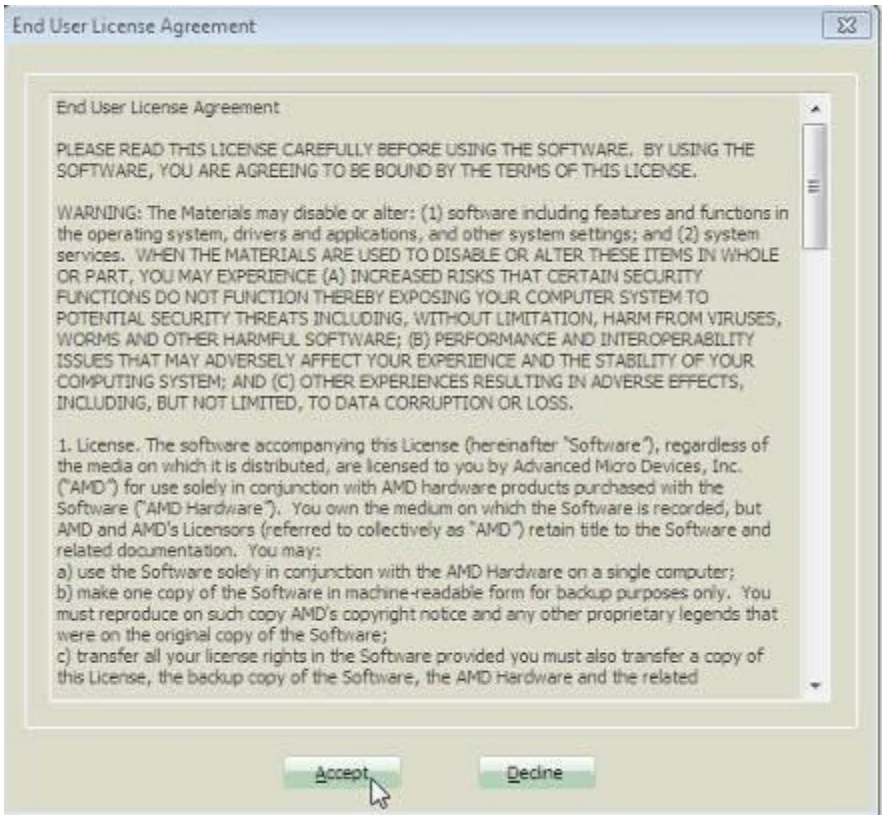


4. Click ***Install*** to continue the installation process.



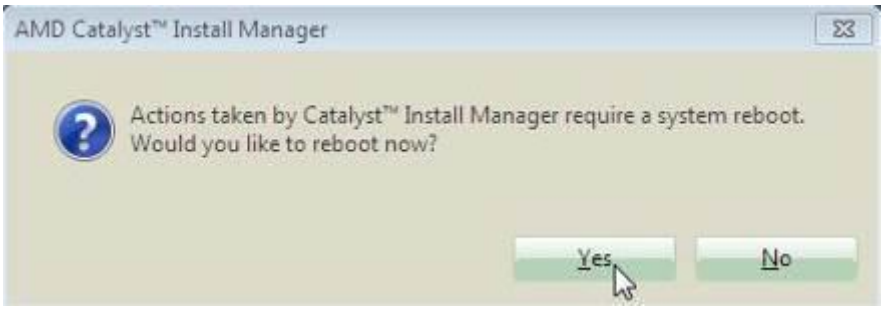
5. Select Express and the installation location and click Next.

6. Click ***Accept*** to accept the End User License Agreement.



7. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

8. To reboot the system, click ***Yes***.

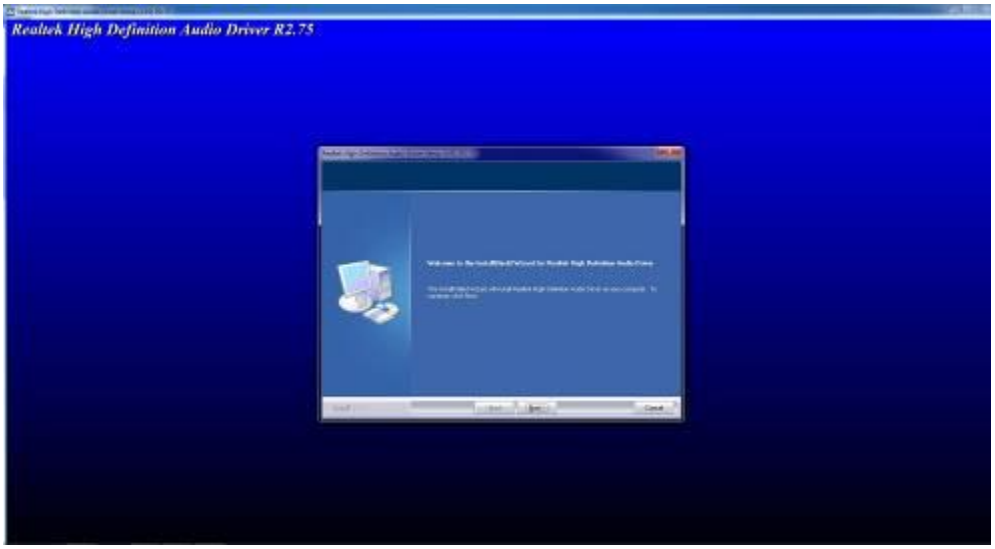


4.3 Realtek High Definition Audio Driver

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***.

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

3. On the Welcome to the InstallShield Wizard screen, click ***Yes*** to proceed with and complete the installation process.



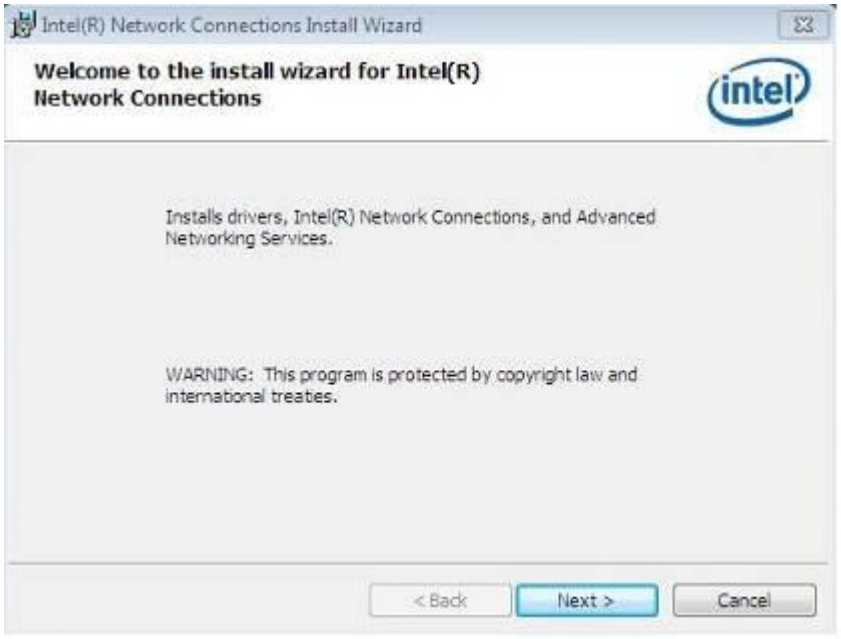
4. The InstallShield Wizard Complete. Click ***Finish*** to restart the computer and for changes to take effect.

4.4 Intel® I21x Gigabit Network Driver

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***.

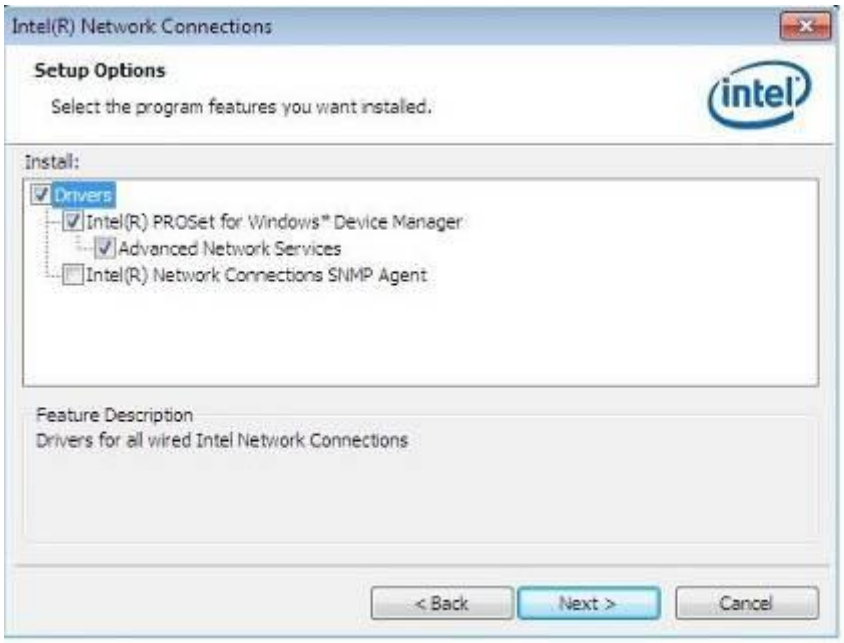
2. Click ***Intel® I21x Gigabit Network Driver.***

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

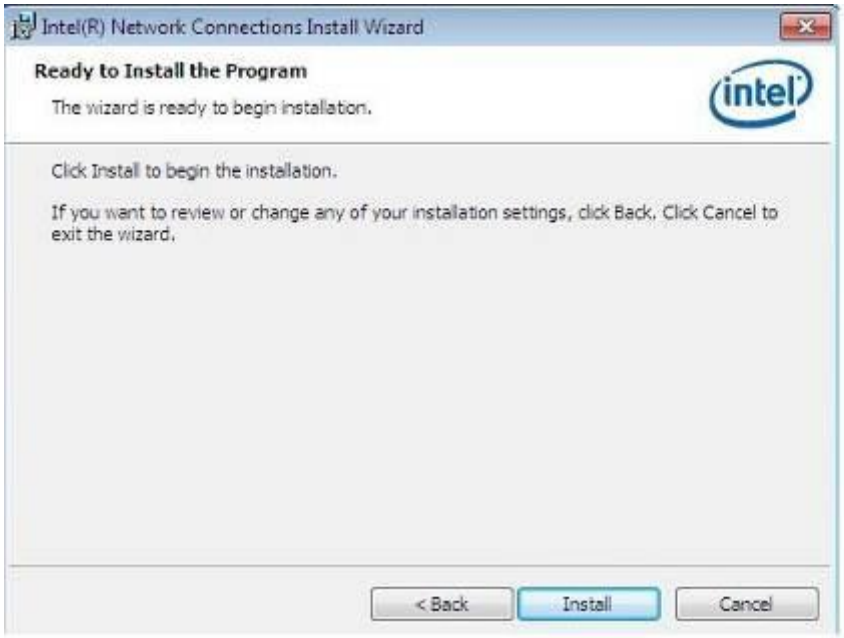


4. Click ***Next*** to to agree with the license agreement.

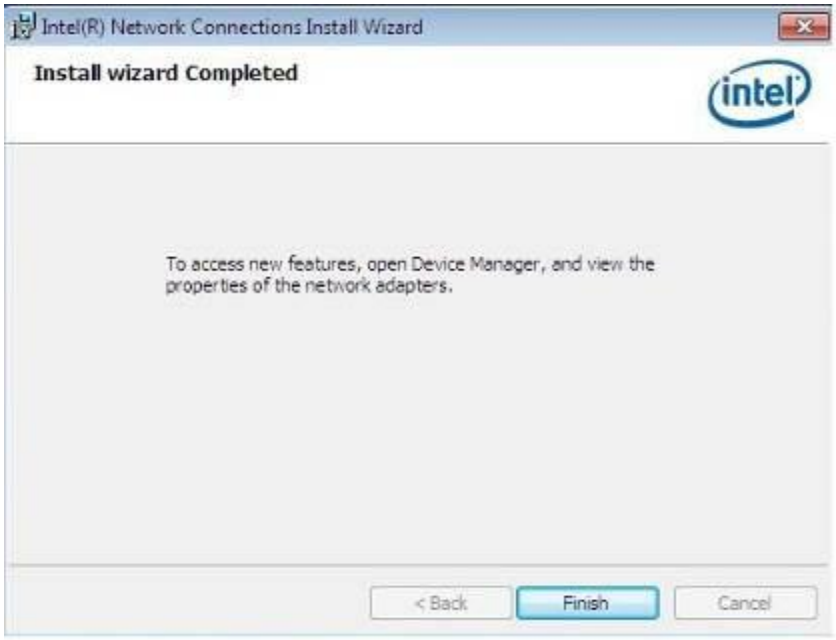
5. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.



6. The wizard is ready to begin installation. Click ***Install*** to begin the installation.



7. When InstallShield Wizard is complete, click ***Finish***.

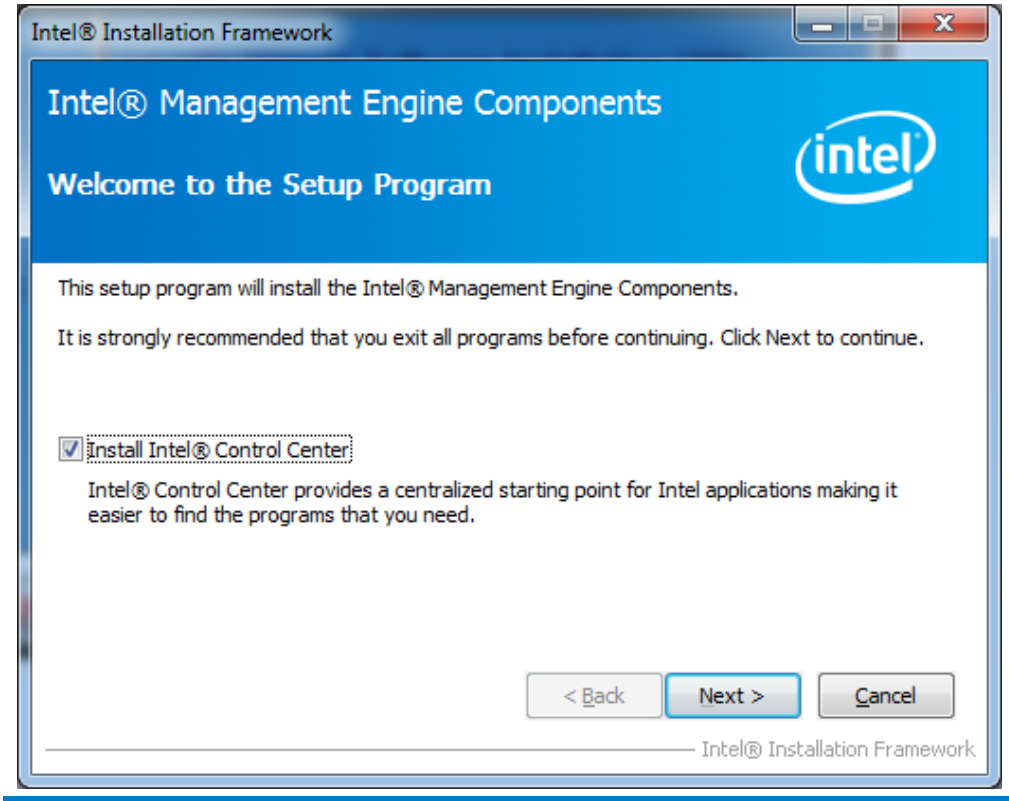


4.5 Intel® Management Engine(ME) Driver

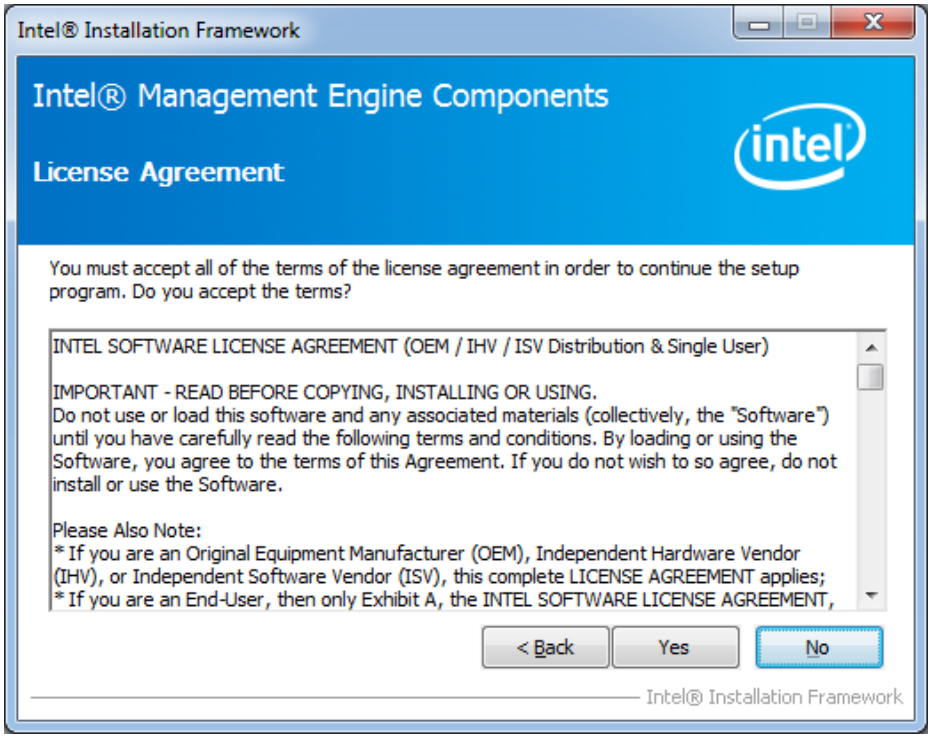
Follow the steps below to install the Intel Management Engine.

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***.and then ***Intel® Management Engine(ME) Driver***.

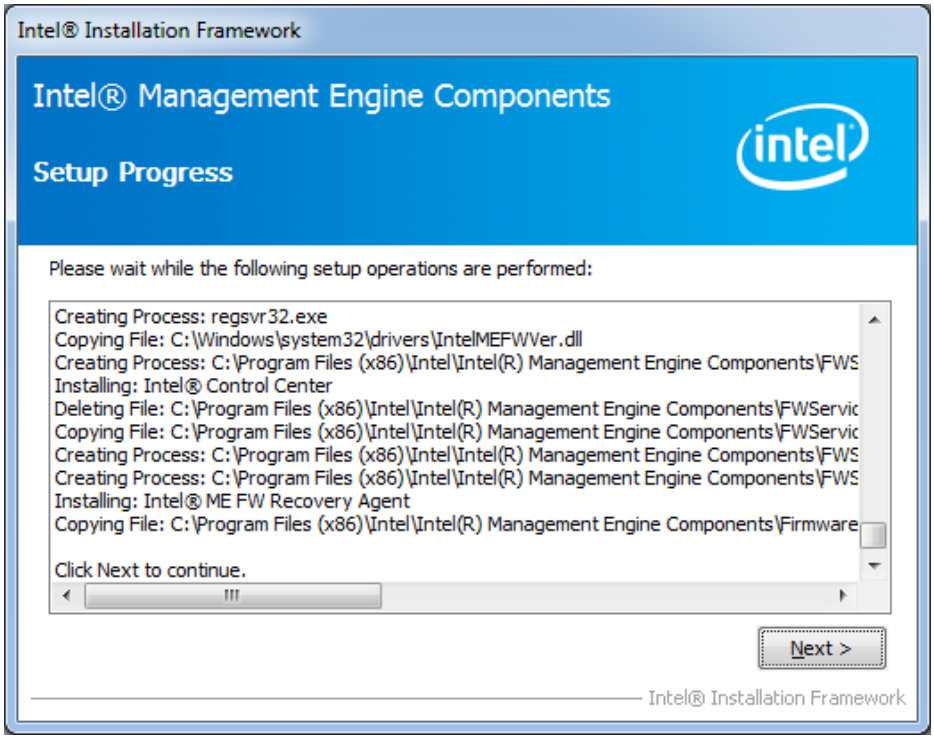
2. When the Welcome screen for Intel® Management Engine Components, click the checkbox for **Install Intel® Control Center** & click ***Next***.



3. Click ***Yes*** to to agree with the license agreement.



4. When the Setup Progress screen appears, click ***Next***. Then, click ***Finish*** when the setup progress has been successfully installed.




Intel® Installation Framework
Intel® Management Engine Components
Setup Is Complete
The setup program successfully installed the following components:
- Intel® Management Engine Interface
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Serial Over LAN
- Intel® Management and Security Status
- Local Management Service
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

4.6 Intel® USB 3.0 eXtensible Host Controller Driver

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***. Click ***Intel® USB 3.0 eXtensible Host Controller Driver.***

2. When the Welcome screen to the InstallShield Wizard for Intel® USB 3.0 eXtensible Host Controller Driver, click ***Next***.

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

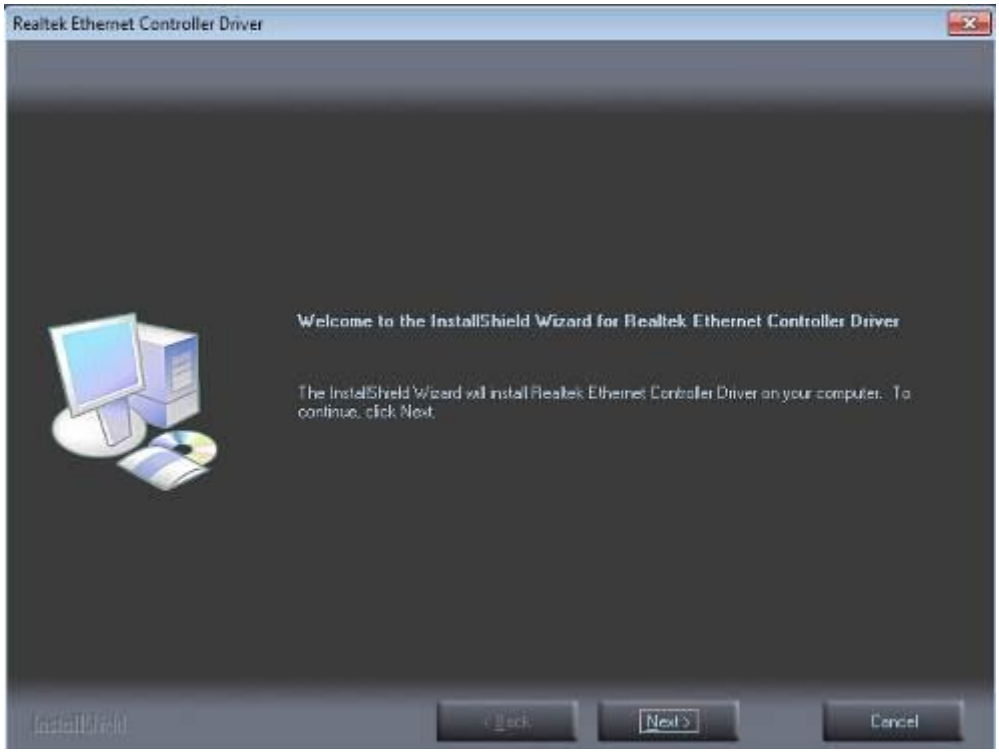
4. On the Readme File Information screen, click ***Next*** to continue the installation of the Intel® USB 3.0 eXtensible Host Controller Driver.

5. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

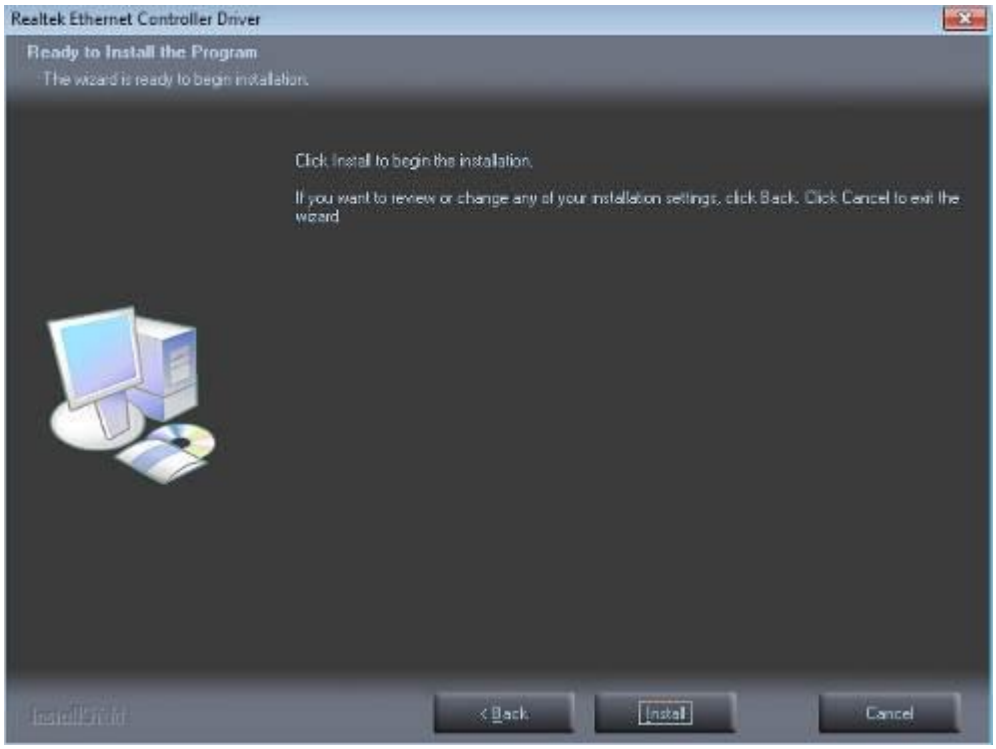
4.7 Realtek RTL8111G LAN Driver

1. Insert the DVD that comes with the board. Click ***System*** and then ***SI-60E-6H Series Products***. Click ***Realtek RTL8111G LAN Driver.***

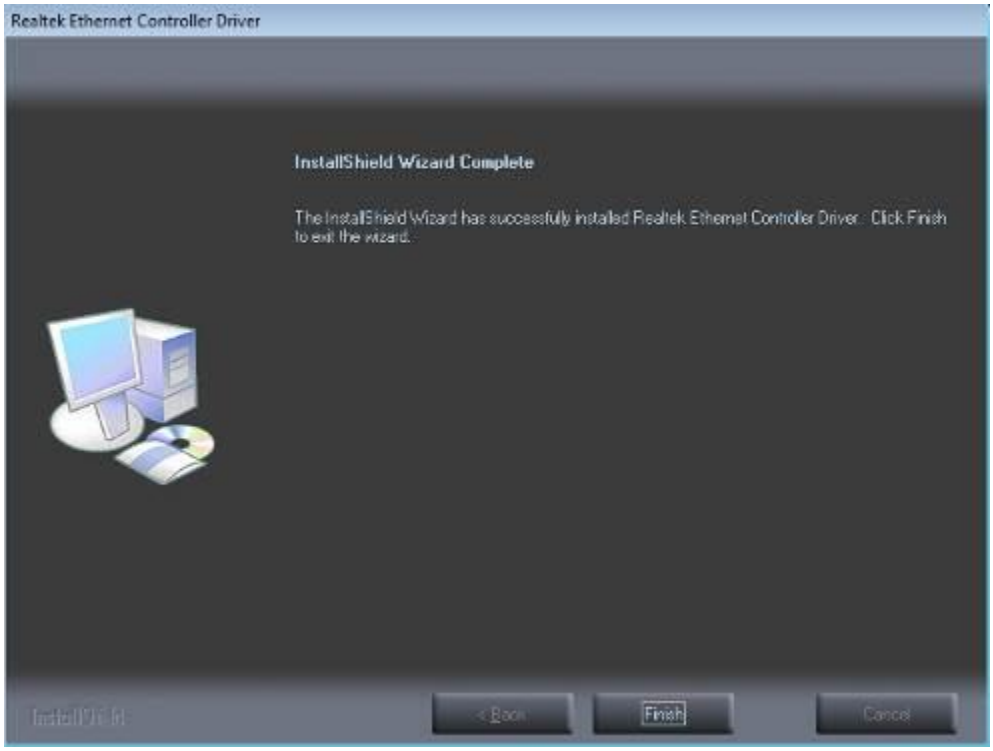
2. In the Welcome screen, click ***Next***.



3. When the Ready to Install the Program screen appears, click ***Install*** to continue.



4. When InstallShield Wizard is complete, click ***Finish***.



Appendix

A. AMD Eyefinity Multiple Display

1. What is AMD Eyefinity Technology?

AMD Eyefinity Technology provides advanced multiple monitor technology delivering an incredibly immersive graphic and computing experience with innovative display capabilities, supporting massive desktop workspaces and super-high resolution signage applications.

An AMD Eyefinity system" means a computer system employing AMD Eyefinity technology and an "AMD Eyefinity resolution" means a resolution achievable using AMD Eyefinity technology.

2. Software versions for SI-60E-6H

SI-60E-6H series	MB Version: (MBD60E V-B1)
VGA driver	14.301.1001.0

3. Settings

- **Supported operating systems:**
  Windows 7 / 8.1
- **Driver Installation:**
  AMD Eyefinity technology with SI-60E-6H enables a single GPU to support up to 6 independent displays output simultaneously. Before using the AMD Eyefinity functions on SI-60E-6H, you must install both AMD VGA driver and Microsoft .NET Framework 4.0.

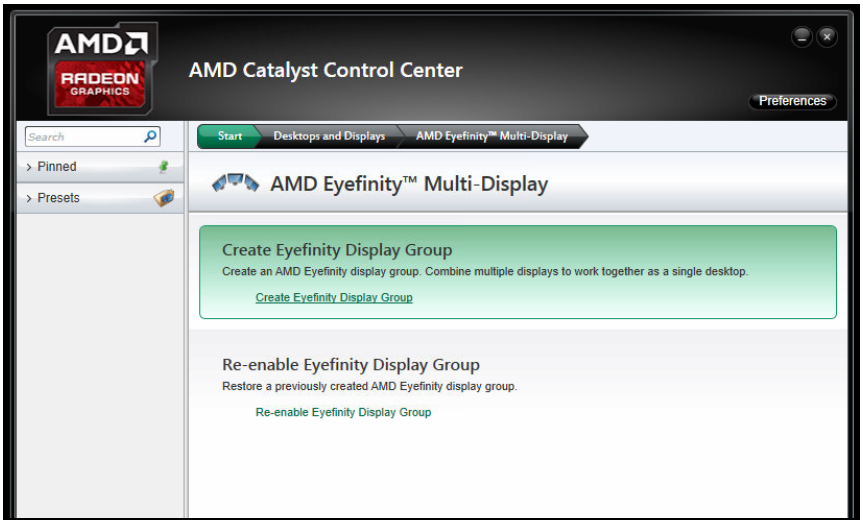
AMD Catalyst Driver is now available on the AMD Embedded Developer website: https://wwwd.amd.com/amd/devsite.nsf/edg/e6760.htm. The driver supports up to 6 displays with various AMD Eyefinity SLS grid configurations. Refer to the following table for the supported AMD Eyefinity modes.

Number of Displays (pipelines)	Grid Configuration	Supported
6	6 x 1 Landscape	No
6	6 x 1 Portrait	Yes
6	1 x 6 Landscape	Yes
6	1 x 6 Portrait	No
5	5 x 1 Landscape	No
5	5 x 1 Portrait	Yes
5	1 x 5 Landscape	Yes
5	1 x 5 Portrait	No
4	4 x 1 Landscape	Yes
4	4 x 1 Portrait	Yes
4	1 x 4 Landscape	Yes
4	1 x 4 Portrait	Yes
6	2 x 3 Landscape	Yes
6	2 x 3 Portrait	Yes
6	3 x 2 Landscape	Yes
6	3 x 2 Portrait	Yes
4	2 x 2 Landscape	Yes
4	2 x 2 Portrait	Yes
3	3 x 1 Landscape	Yes
3	3 x 1 Portrait	Yes
3	1 x 3 Landscape	Yes
3	1 x 3 Portrait	Yes
2	2 x 1 Landscape	Yes
2	2 x 1 Portrait	Yes
2	1 x 2 Landscape	Yes
2	1 x 2 Portrait	Yes

4. AMD Eyefinity Configuration

Step 1: Click ***AMD Eyefinity Multi-Display*** for Video wall display configuration setting.

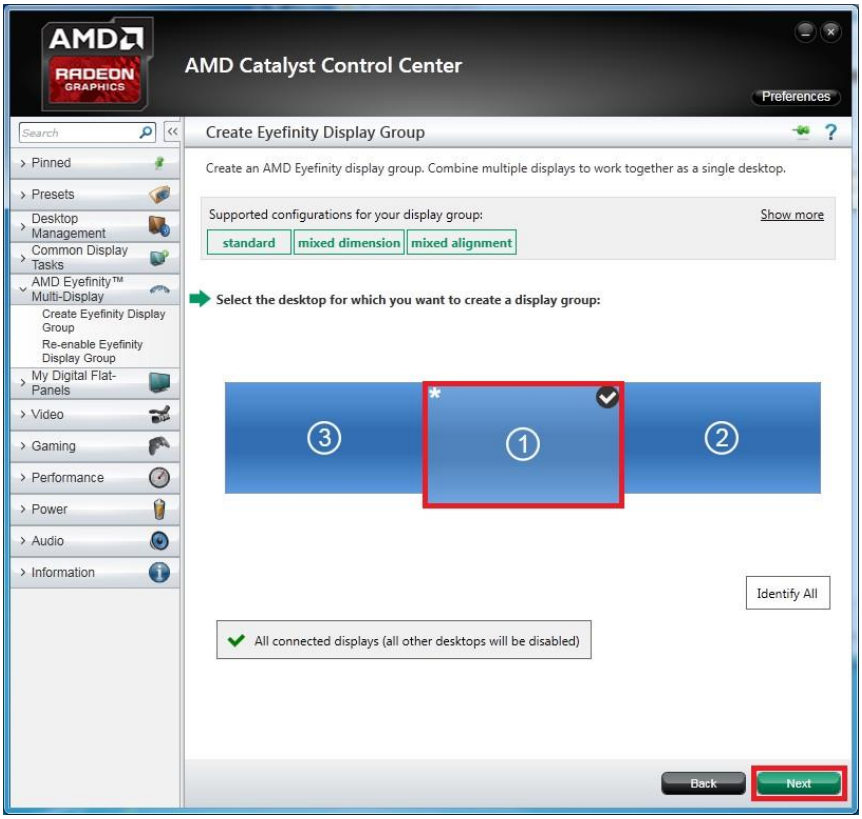
Step 2: Click ***Create Eyefinity Display Group***.



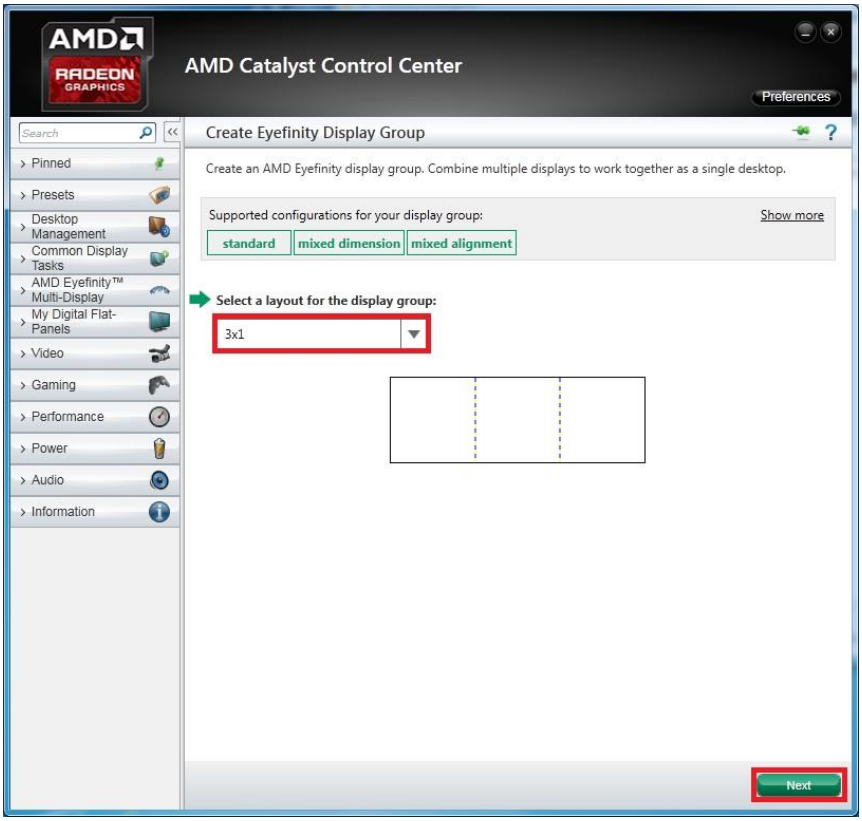
Step 3: Click ***Show More*** for information on the available Mixed Mode. If the box does not show on your screen, your device does not support Mixed Mode.

Step 4: Click ***Use a new arrangement***, then click ***Next***.

Step 5: Select a display to start the display group arrangement, and click **Next**.



Step 6: Select a layout for the display group from the dropdown list. Click ***Next***.



For 2 displays output:

- 2 x 1 Landscape Display Group

- 2 x 1 Portrait Display Group

- 1 x 2 Landscape Display Group

- 1 x 2 Portrait Display Group

For 3 displays output:

- 3 x 1 Landscape Display Group

- 3 x 1 Portrait Display Group

- 1 x 3 Landscape Display Group

- 1 x 3 Portrait Display Group

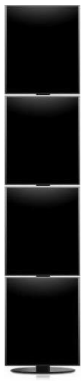
For 4 displays output:

- 4 x 1 Landscape Display Group

- 4 x 1 Portrait Display Group

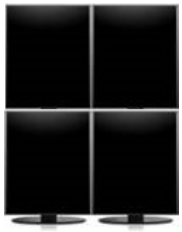
- 1 x 4 Landscape Display Group

- 1 x 4 Portrait Display Group



- 2 x 2 Landscape Display Group

- 2 x 2 Portrait Display Group



For 5 displays output:

- 5 x 1 Portrait Display Group

- 1 x 5 Landscape Display Group

For 6 displays output:

- 6 x 1 Portrait Display Group

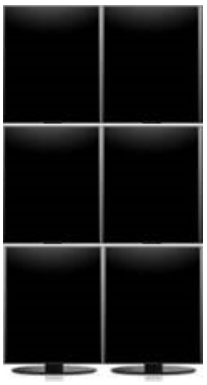
- 1 x 6 Landscape Display Group

- 3 x 2 Landscape Display Group

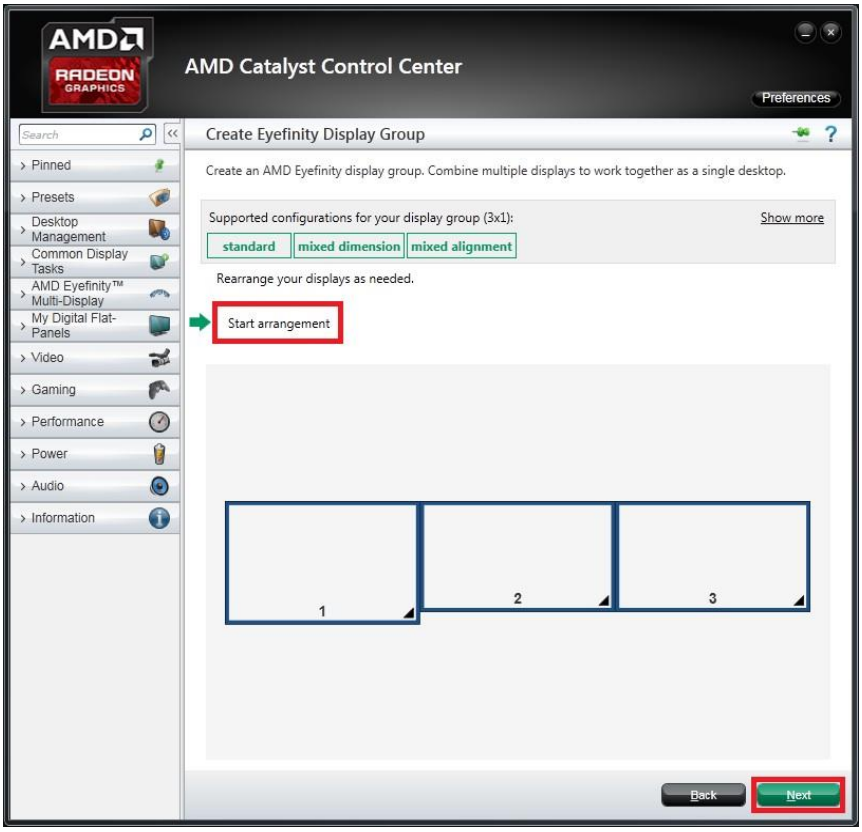
- 3 x 2 Portrait Display Group

- 2 x 3 Landscape Display Group

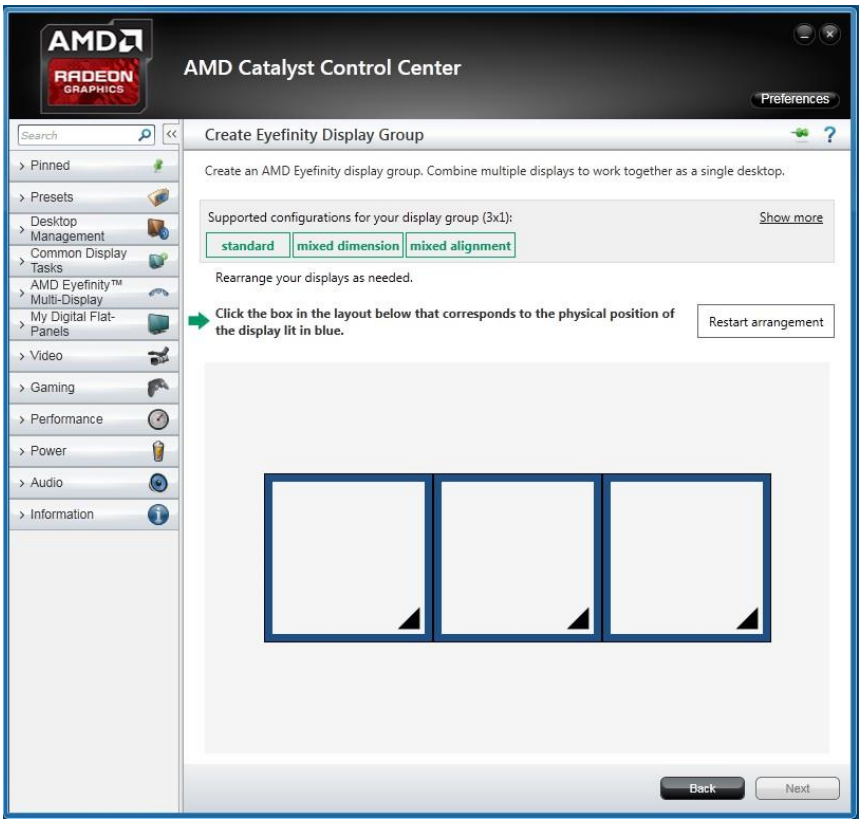
- 2 x 3 Portrait Display Group



Step 7: Click Start arrangement to synchronize the display arrangement in the AMD Catalyst Control Center with your actual physical setup. Then click ***Next*** and go to **Step 11**.

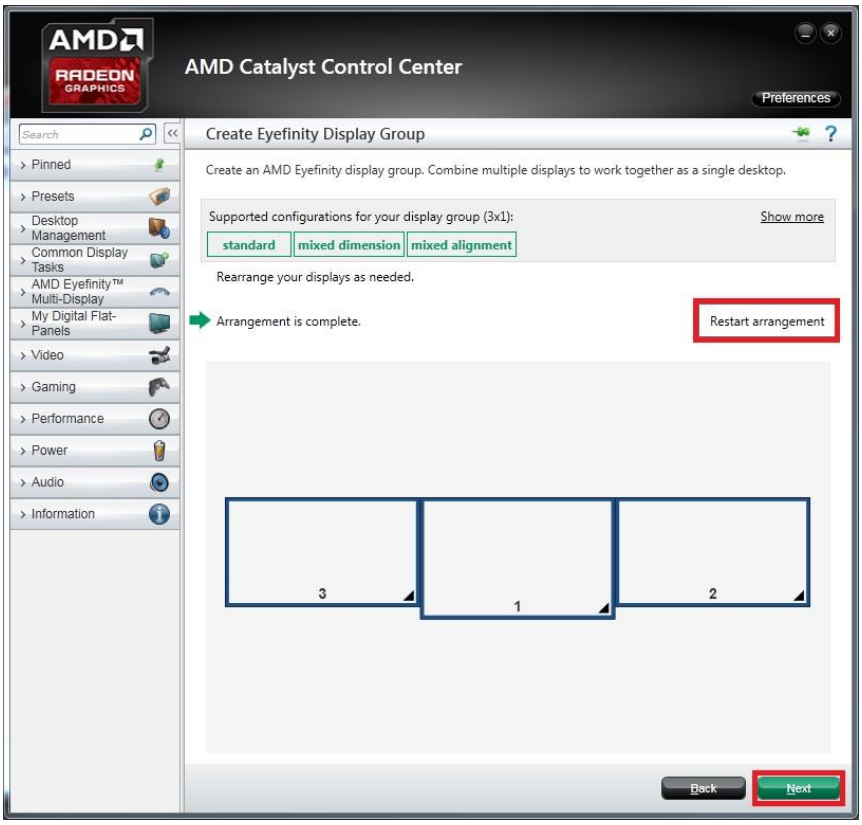


Step 8: Each display connected to your system will show a blue background, one at a time. Select a display by clicking a box in the schematic layout shown corresponding to the display currently identified with the blue background. Then the next display is identified by displaying the blue background. Continue this process until all displays have been identified and assigned to their corresponding position within the grid.

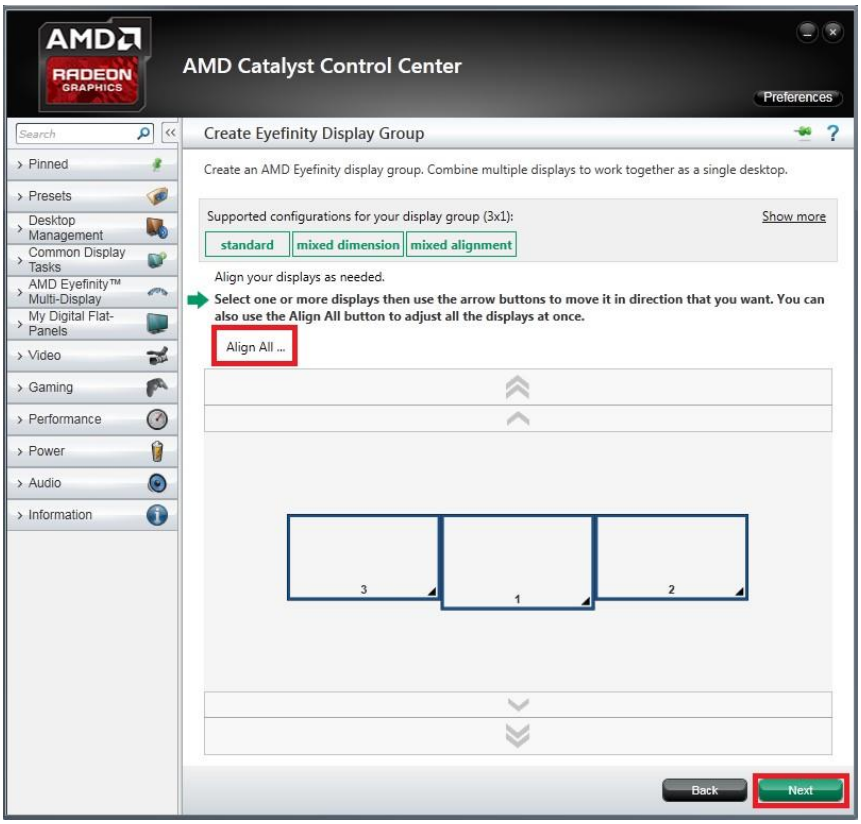


Step 9: Once all settings are done, the display group in the wizard should reflect your physical setup. If not, click **Restart arrangement** to start arrangement again. To continue, click **Next**.

If your device does not support the Mixed Dimension feature, go to **Step 12**.



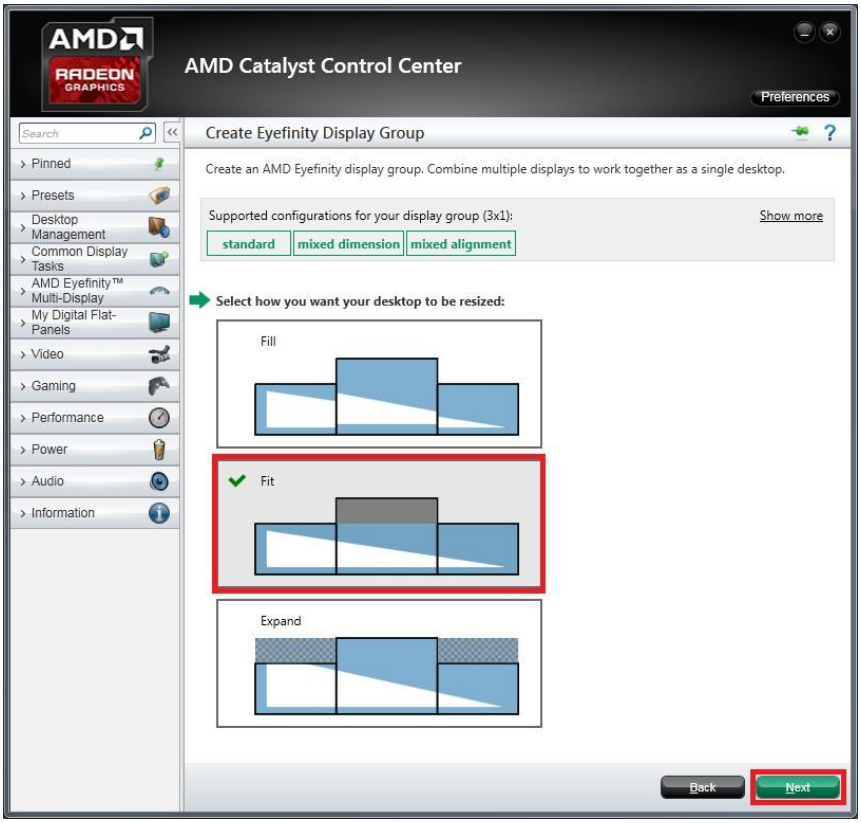
Step 10: Click ***Align All*** to align the displays automatically. You can perform the alignment manually by clicking one or more of the boxes and moving them up and down with the arrow keys in the wizard.



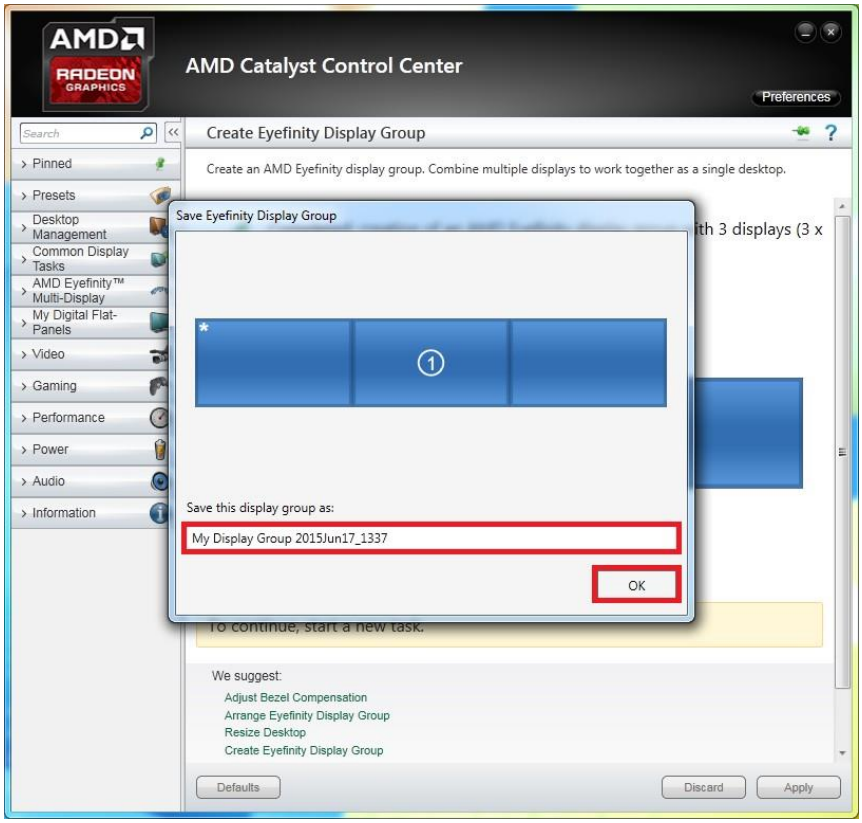
Use the rulers on the flanking sides of the displays for reference, as shown below. When done, click Next.

Step 11: Choose a resize mode: Full mode, Fit mode, or Expand mode and click ***Next***.

- Fill mode will utilize the full real estate of each display in the configuration by stretching the desktop as necessary.
- Fit mode will proportionally resize the desktop to the height of the shortest display. As a result, in this example, the higher resolution display will have unused space.
- Expand mode will proportionally resize the desktop to the height of the tallest display. In this example the lower resolution displays will appear to be missing areas of the desktop.



Step 12: Name the display group and click ***OK***.



The creation of a display group is completed.

B. 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
0000h-001Fh	Direct memory access controller
0000h-0CF7h	PCI bus
0040h-0043h	System timer
0050h-0053h	System timer
0070h-0077h	System CMOS/real time clock
0081h-0091h	Direct memory access controller
0093h-009Fh	Direct memory access controller
00C0h-00DFh	Direct memory access controller
00F0h-00F0h	Numeric data processor
02F8h-02FFh	Communications Port (COM2)
03B0h-03BBh	AMD Radeon E8860
03C0h-03DFh	AMD Radeon E8860
03F8h-03FFh	Communications Port (COM1)
0D00h-FFFFh	PCI bus
D000h-DFFFh	Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8C1C
E000h-E0FFh	AMD Radeon E8860
F040h-F05Fh	Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
F060h-F07Fh	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
F0A0h-F0A3h	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
F0B0h-F0B7h	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
F0C0h-F0C3h	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
F0D0h-F0D7h	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
F0E0h-F0E7h	Intel(R) Active Management Technology - SOL (COM3)

C. 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
IRQ0	System Timer
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ 5	Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
IRQ 13	Numeric data processor
IRQ 16	High Definition Audio Controller
IRQ 16	Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
IRQ 19	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
IRQ 19	Intel(R) Active Management Technology - SOL (COM3)
IRQ 22	High Definition Audio Controller
IRQ 23	Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26

D. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for 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, the user will 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 81866 watch dog program\n");

  SIO = Init_F81846();
if (SIO == 0)
{
printf("Can not detect Fintek 81866, program abort.\n");
return(1);
}//if (SIO == 0)

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

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

if (bTime)
{                                                    EnableWDT(bTime);
                                                     }
else
{                                                    DisableWDT();
                                                     }

return 0;
```

```
}
//-----------------------------------------------------------------------------
void EnableWDT(int interval)
{
unsigned char bBuf;

bBuf = Get_F81846_Reg(0x2B);
bBuf &= (~0x20);
Set_F81846_Reg(0x2B, bBuf);



                                                        //Enable WDTO

Set_F81846_LD(0x07);



                                                        //switch to logic device 7
Set_F81846_Reg(0x30, 0x01);

                                                        //enable timer

bBuf = Get_F81846_Reg(0xF5);
bBuf &= (~0x0F);
bBuf |= 0x52;
Set_F81846_Reg(0xF5, bBuf);

                                                        //count mode is second

Set_F81846_Reg(0xF6, interval);

                                                        //set timer

bBuf = Get_F81846_Reg(0xFA);
bBuf |= 0x01;
Set_F81846_Reg(0xFA, bBuf);

                                                        //enable WDTO output

bBuf = Get_F81846_Reg(0xF5);
bBuf |= 0x20;
Set_F81846_Reg(0xF5, bBuf);

                                                        //start counting

}
//-----------------------------------------------------------------------------
void DisableWDT(void)
{
unsigned char bBuf;

Set_F81846_LD(0x07);
```

```
                                                                    //switch to logic device 7
bBuf = Get_F81846_Reg(0xFA);
bBuf &= ~0x01;
Set_F81846_Reg(0xFA, bBuf);

                                                                    //disable WDTO output
bBuf = Get_F81846_Reg(0xF5);
bBuf &= ~0x20;
bBuf |= 0x40;
Set_F81846_Reg(0xF5, bBuf);

                                                                    //disable WDT
}
//---------------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "F81846.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81846_BASE;
void Unlock_F81846 (void);
void Lock_F81846 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81846(void)
{
unsigned int result;
unsigned char ucDid;

F81846_BASE = 0x4E;
result = F81846_BASE;

ucDid = Get_F81846_Reg(0x20);
if (ucDid == 0x07)



                                                        //Fintek 81866
{                                                       goto Init_Finish;
                                                        }

F81846_BASE = 0x2E;
result = F81846_BASE;

ucDid = Get_F81846_Reg(0x20);
if (ucDid == 0x07)



                                                        //Fintek 81866
{                                                       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;
}
//---------------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#ifndef __F81846_H
#define __F81846_H


                                                        1
//---------------------------------------------------------------------------
#define                                                 F81846_INDEX_PORT

                                                        (F81846_BASE)
#define                                                 F81846_DATA_PORT

                                                        (F81846_BASE+1)
//---------------------------------------------------------------------------
#define                                                 F81846_REG_LD


                                                        0x07
//---------------------------------------------------------------------------
#define F81846_UNLOCK

                                                        0x87
#define                                                 F81846_LOCK



                                                        0xAA
//---------------------------------------------------------------------------
unsigned int Init_F81846(void);
void Set_F81846_LD( unsigned char);
void Set_F81846_Reg( unsigned char, unsigned char);
unsigned char Get_F81846_Reg( unsigned char);
//---------------------------------------------------------------------------
#endif                                                  //__F81846_H
```