# **SI-606**

## **User Manual**



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V1.0	2015/10/20
V1.1	2017/06/19
V1.2	2017/12/21



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## Safety Information

Your SI-606 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.

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#### 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<sup>™</sup>" SI-606 is a professional digital signage system powered by 4<sup>th</sup> Gen. Intel<sup>®</sup> Core<sup>™</sup> I Desktop Processors with AMD Radeon<sup>™</sup> E8860 graphics. The SI-606 integrates six (6) DP ports with independent video output and one DVI-I for console. Additionally, SI-606 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-606 overview



## **1.2 System Specifications**

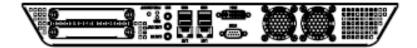
## **1.2.1 Hardware Specifications**

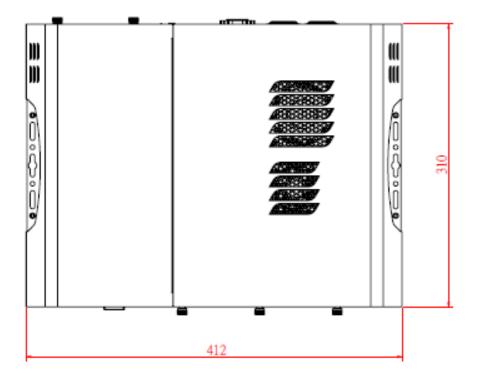
Model Name	SI-606	
System Mainboard	MBD60E	
CPU	4th Generation Intel® Core™ i7/i5/i3 and Pentium® QC/DC	
	processors; Up to 3.5GHz	
Memory	4x DDR3 1600 MHz, Max. 32GB	
I/O Interface	6x DP with independent video output	
	1x DVI-I for console	
	4x USB 3.0 ports	
	2x RJ45 for Gigabit LAN	
	1x DSUB 9 pin 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	0°C~ 45°C (32°F~113°F)	
Temperature		
Storage	-20°C ~ 80°C (-4°F~176°F)	
Temperature		
Relative Humidity	5~90% @ 45°C, (non-condensing)	
Vibration	mSATA: 5 grms / 5~500Hz / random operation	
RoHS	Available	
Certification	CE, FCC, CCC, UL	

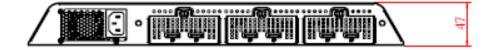
·This specification is subject to change without prior notice.



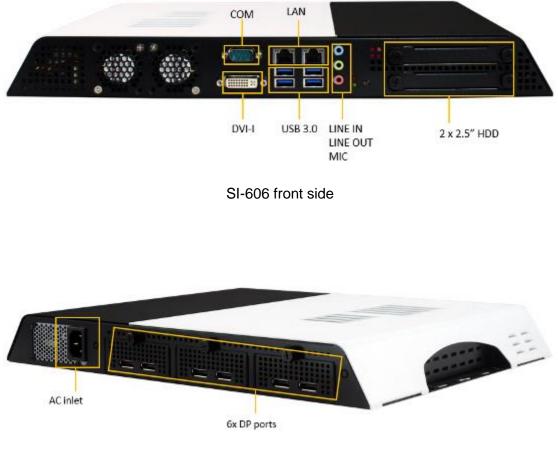
#### 1.2.2 Dimensions





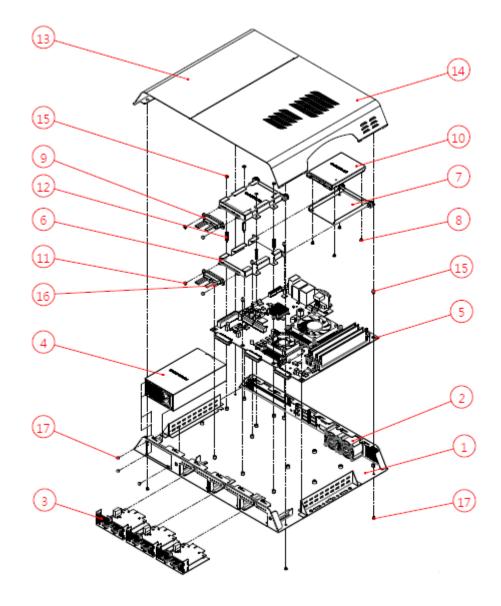


## 1.2.3 I/O View



SI-606 rear side





## 1.3 Exploded View of the SI-606 Assembly

Part No.	Description	Part No.	Description
1	SI-606_BASE	2	4028_fan
3	DP Board Module	4	Power module
5	SI-606 Main Board	6	SI-606_HDD-TRAY
7	SI-606_HDD-BRK	8	Screw F Type M3*0.5
9	SATA Cable	10	2.5" SATA HDD
11	M3 nut	12	M3 double screw bolt
13	SI-606_top-cover_L	14	SI-606_top-cover_r
15	Screw PW Type M3*0.5	16	M3 screw
17	Screw F Type M3*0.5 BK		

## 1.3.1 Parts Description



## 1.4 Packing List

Description	Qty
Driver CD	1
Power cord	1

## 1.4.1 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)	And Provide Linkson
Internal cable 1pcs	Internal Antenna 300mm [BTC130-1-70B-300] RoHS (A055RFA0000020100P)	1.1
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)	

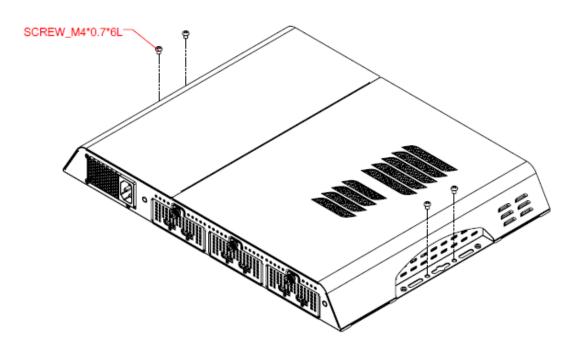
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#### **1.5 HARDWARE INSTALLATION**

## **1.5.1 Mounting Installation**

1. Please install SI-606 to the intended location using 4x M4\*0.7\*6L screws, as shown in the picture.





## 1.5.2 Installing the storage

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



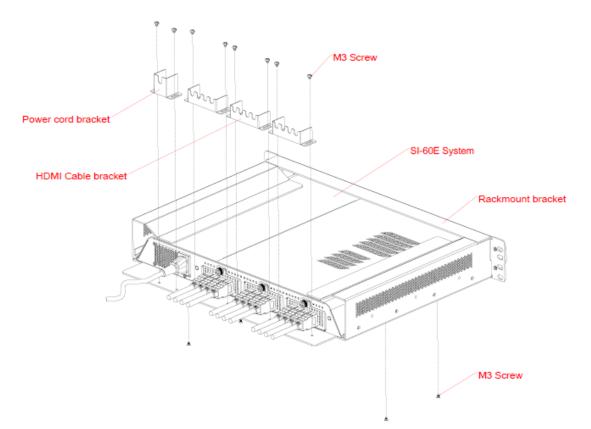


2. Install the HDD/SSD to the HDD bracket with 4 screws.



## 1.5.3 Installing the Rackmount

1. Please install system to the intended location using 12x M3 screws, as shown in the picture.

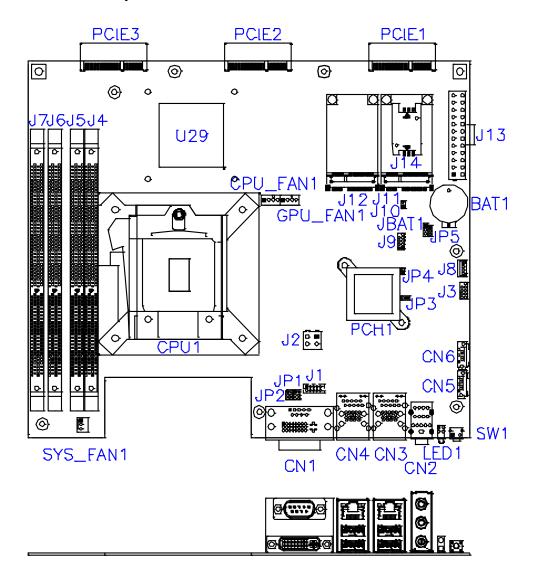


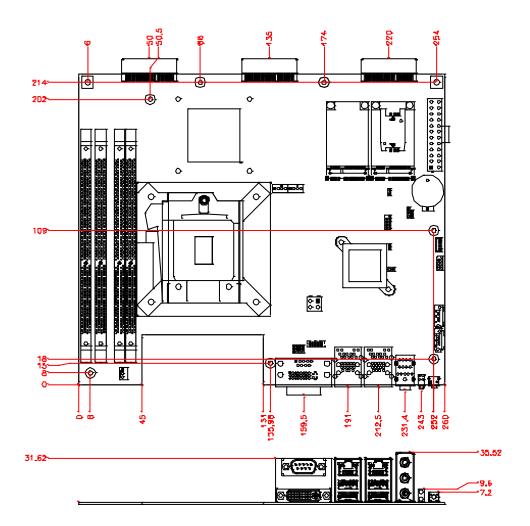


## **CHAPTER 2 MOTHERBOARD INTRODUCTION**

#### **2.1 Introduction**

#### **MBD60E Jumpers and Connectors**





#### **IMBD60E Board Dimensions**



#### 2.2 Installations

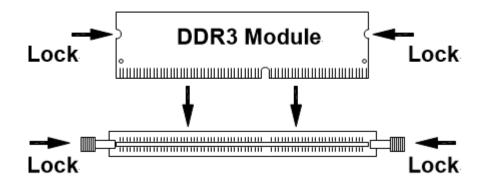
#### 2.2.1 Installing the Memory

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

#### Installing and Removing Memory Modules

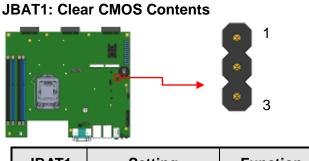
To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

- 1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
- 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.



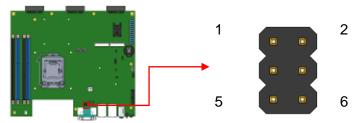
#### 2.3 Setting the Jumpers

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.



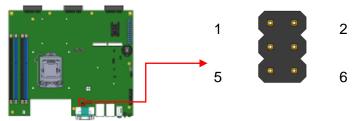
0		
JBAT1	Setting	Function
	Pin 1-2	Normal
123	Short/Closed	Normai
	Pin 2-3	Clear CMOS
123	Short/Closed	Clear CIVIOS

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



JP1	Setting	Function	
	Pin 1-3	. 40\/	
1 0 0 2	Short/Closed	+12V	
	Pin 3-4	DI	
5 0 0 6	Short/Closed	RI	
	Pin 5-3	. 5)/	
	Short/Closed	+5V	

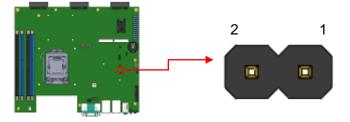




#### JP2: COM1 RS232 RI/+5V/+12V Power Setting

JP2	Setting	Function
	Pin 1-3	121/
1 0 0 2	Short/Closed	+12V
	Pin 3-4	
5 0 0 6	Short/Closed	RI
	Pin 5-3	. 5) (
	Short/Closed	+5V

#### JP3: Flash Descriptor Security Override (Factory use only)

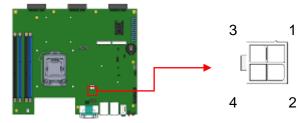


#### 2.4 Connectors on MBD60E

### J1: COM2 Connector [HRS DF11-10DP-2DSA(08)]

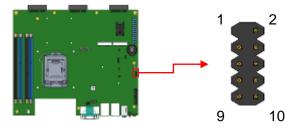
Signal Name	Pin #	Pin #	Signal Name
Data carrier detect	1	2	Receive data
Transmit data 3		4	Data terminal ready
Ground	5	6	Data set ready
Request to send	7	8	Clear to send
Ring indicator	9	10	Not Used

#### J2: ATX +12V Jack [HAOGUO ATX4PT-NY46]



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

#### J3: For SPI Debug tools Pin Header

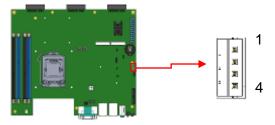




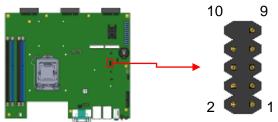
#### J4, J5, J6, J7 DDR III Socket



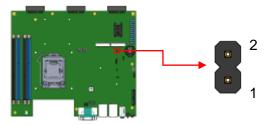
#### J8: MCU Flash Connector (factory use only)



#### J9: Debug Port Connector (Factory use only)



#### J10: Reset Pin Header



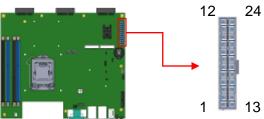
#### J11: Mini PCIe Slot (Full size with SIM Card)



#### J12: Mini PCIe Slot (Full size with mSATA)

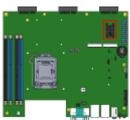


#### J13: ATX Power Supply Connector



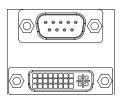
Signal Name	Pin #	Pin #	Signal Name
3.3V	13	1	3.3V
-12V	14	2	3.3V
Ground	15	3	Ground
PS-ON	16	4	+5V
Ground	17	5	Ground
Ground	18	6	+5V
Ground	19	7	Ground
-5V	20	8	Power good
+5V	21	9	5VSB
+5V	22	10	+12V
+5V	23	11	+12V
Ground	24	12	+3.3V

#### J14: SIM Card Slot

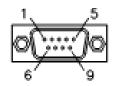




#### CN1: COM1 / DVI-I Connector



#### Signals of COM1 Connector:



Pin #	Signal Name					
F III #	RS-232	R2-422	RS-485			
1	DCD	TX-	DATA-			
2	RX	TX+	DATA+			
3	ТΧ	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			

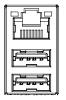
#### **CN2: Audio Jack**



#### CN3: RTL8111G-CG /USB3.0 Connector



#### CN4: I218LM / USB3.0 Connector



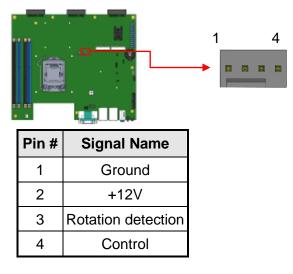
#### CN5/6:SATA 3 Connector



#### CPU\_FAN1: CPU Fan Power Connector

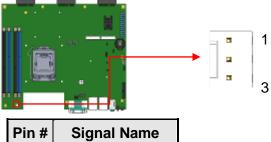
		4
Pin #	Signal Name	
1	Ground	
2	+12V	
3	Rotation detection	
4	Control	

#### **GPU\_FAN1: GPU Fan Power Connector**





#### 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: DP Signal from AMD E8860 to IDD101



## **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 Ac	lvanced	Chipset	Boot	Security	Save & Exit	
System Langu	age	[En	glish]			
				→ ←Select		
System Date		[Tue			↑↓Select Item Enter: Select	
System Time		01/20/20091		+- Change F1:General	-	
		[21:	52:06]	F2:Previou	us Values	
Access Level		Adr	ninistrator	F3: Optim: F4: Save a ESC: Exit	-	
				ESC: EXIL		

#### 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.

Main	Advanced	Chipset	Boot	Security	Save & Exit
<ul><li>► ACPI Se</li><li>► Trusted</li></ul>	ettings Computing				
	p event setting				
	Configuration				
	n Temperature Co Controller 3.1	onfiguration			ct Screen ect Item Select
	onfiguration			F1:Gene F2:Prev	ge Opt. eral Help vious Values
	Super IO Configu H/W Monitor	ration			imized Defaults ve & Exit xit

Aptio Setup Utility – Copyright $\textcircled{\mbox{$\odot$}}$ 2012 American Megatrends, Inc.	
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#### **ACPI Settings**

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

Main	Advanced	Chips	et Boot	Secur	ity Save & Exit
ACPI Settii	ngs				→ ←Select Screen ↑↓Select Item
ACPI Sleep StateS3 only (Suspend to)Lock Legacy ResourcesDisabledS3 Video RepostDisabled		o)	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**

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

Main	Advanced	Chipset	Boot	Security	Save & Exit
Configur	ation			→ ←Seled	ct Screen
Security Device Support Disabled			Disabled	↑ $\downarrow$ Select Item	
				Enter: +- Chan	
	<b>.</b>				ral Help
Current Status Information				F2:Prev	ious Values
SUPPORT TURNED OFF				-	imized Defaults
				F4: Sav ESC: Ex	e & Exit it

#### 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 P	CIE Wake Ever	nt	Disabled	↑↓Se Enter +- Ch F1: G F2: P F3: 0	lect Screen elect Item : Select ange Opt. eneral Help revious Values ptimized Defaults ave & Exit Exit

#### Wake on PCIE Wake Event

The options are Disabled and Enabled.

#### **CPU Configuration**

This section shows the CPU configuration parameters.

Main Advanced	Chipset	Boot S	ecurity	Save & Exit
CPU Configuration				
Intel(R) Core(TM) i7-4770S	CPU @ 3.1	0GHz		
CPU Signature	30	6c3		
Processor Family	6			
Microcode Patch	17			
FSB Speed	10	0 MHz		
Max CPU Speed	31	00 MHz		
Min CPU Speed	80	0 MHz		
CPU Speed	35	00 MHz		
Processor Cores	4			
Intel HT Technology	Su	pported		
Intel VT-x Technology	Su	pported		
Intel SMX Technology	Su	pported		
64-bit	Su	pported		
EIST Technology	Su	pported		
Hyper-threading	En	abled		
Active Processor Cores	All			
Overclocking lock	Dis	sabled		
Limit CPUID Maximum	Dis	sabled		
Execute Disable Bit	Dis	sabled	→ ←Sel	ect Screen
Intel Virtualization Technolo	ogy Dis	sabled	↑↓Sel	ect Item
Hardware Prefetcher	Dis	sabled		Select nge Opt.
Adjacent Cache Line Prefet	tch Dis	sabled		neral Help evious Values
EIST	En	abled	F3: Opt	timized Defaults
Turbo Mode	En	abled	ESC: EX	ve & Exit xit

Aptio Setup Utility –	Copyright © 2	2012 American	Megatrends, Inc.
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#### 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**

Aprio Serup Unity - Copyright © 2012 American Megatienus, inc.					
Main Advanced	Chipset Boot	Security Save & Exit			
SATA Controller(s) SATA Mode Selection SATA Controller Speed	Enabled AHCI Default				
Serial ATA Port 0 Software Preserve Port 0 Hot Plug	Empty Unknown Enabled Disabled				
Serial ATA Port 1 Software Preserve Port 1 Hot Plug Serial ATA Port 2 Software Preserve Port 2 Hot Plug	Empty Unknown Enabled Disabled Empty Unknown Enabled Disabled				
Serial ATA Port 3 Software Preserve Port 3 Hot Plug	Empty Unknown Enabled Disabled				
Serial ATA Port 4 Software Preserve Port 4 Hot Plug	Empty Unknown Enabled Disabled	<pre>→ ←Select Screen</pre>			
Serial ATA Port 5 Software Preserve Port 5 Hot Plug	Empty Unknown Enabled Disabled	F2:Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			

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

### 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**

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Main	Advanced	Chipset	Boot	Security	y Save & Exit
APCI Sh	utdown Temper	ature	Disable	ed	→ ←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	Secu	urity	Save & Exit
iSmart Co	ontroller 3.1					
Power-Or	n after Power fa	ilure	Enable			
PWR Res	sume Delay		Enable			
PWR Resume Delay Value(Seconds)			5		→ ←Sel	ect Screen
Temperat	ture Guardian		Disable		↑↓Sei Enter:	lect Item : Select ange Opt.
Schedule	Slot 1		None			neral Help evious Values
Schedule	Slot 2		None		F3: Op	otimized Default ave & 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**

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Main /	Advanced	Chipset	Boot	Securi	ity Save & Exit
	ction Screen		Enable Disabl Disabl	ed ed	
Un-Configur Amt Wait Ti			Disabl Disabl 0 Disabl	ed	
USB Config PET Progre	ure ss		Enable Enable	ed ed	→ ←Select Screen ↑↓Select Item Enter: Select
Watchdog OS Time BIOS Tir	er		Disabl 0 0		<pre>+- Change Opt. F1:General Help F2:Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

#### 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	Secu	ırity	Save & Exit
USB Co	nfiguration					
USB Mo	dule Version		8.10.28			
USB De	vices:					
Legacy I	JSB Support		Enabled			
USB3.0	Support		Enabled			
XHCI Ha	and-off		Enabled			
EHCI Ha	and-off		Enabled			
USB Ma	ss Storage Drive	er Support	Enabled		→ ←Sei	lect Screen
						lect Item
USB har	dware delays ar	nd time-outs:				: Select ange Opt.
USB Tra	insfer time-out		20 sec			neral Help evious Values
Device r	eset tine-out		20 sec		-	otimized Defaults ave & Exit
Device p	ower-up delay		Auto		ESC: H	

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### 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

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Main	Advanced	Chipset	Boot	Securit	y Save & Exit
F81846	Super IO Config	uration			
F81846	Super IO Chip		F8′	846	→ ←Select Screen
► Serial	Port 0 Configur	ation			↑↓Select Item Enter: Select
► Serial	Port 1 Configur	ation			+- Change Opt. F1:General Help F2:Previous Values F3: Optimized Defaults F4: Save & Exit
					ESC: Exit

# **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.

Main	Advanced	Chipset	Boot	Sec	curity	Save & Exit
PC Heal	th Status					
CPU ten	nperature		+34 C			
SYS terr	nperature		+29 C			
FAN1 S	peed		2170 RPM			
FAN2 S	peed		2170 RPM			
FAN3 S	peed		2170 RPM			
+5V			+5.087 V			elect Screen elect Item
+12V			+12.056 V			: Select ange Opt.
Fan 1 sr	nart fan control		50 C		F1:Ge	neral Help
Fan 1 sr	nart fan control		50 C			evious Values ptimized Defaults
Fan 1 sr	nart fan control		50 C		F4: S ESC:	ave & Exit Exit

#### F81846 H/W Monitor

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### **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 °C
- 60 °C
- 70 °C
- **80** °C



# **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.

Main	Advanced	Chipset	Boot	Security	Save & Exit
	IO Configuration				
Syste	m Agent (SA) C	onfiguration			

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### **PCH-IO Configuration**

This section allows you to configure the North Bridge Chipset.

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Main	Advanced	Chipset	Boot	Sec	curity	Save & Exit
Intel PCI	HRC Version					
1.8.0.0						
Intel PCI	H SKU Name	Q87				
Intel PCI	H Rev ID	05/C2				
► PCI E	xpress Configur	ation				
► USB (	Configuration					ct Screen ct Item
► PCH	Azalia Configura	ation			Inter: S	
					Chang 1:Gener	ge Opt. cal Help
PCH LAI	N Controller	Enabled				ious Values imized Defaults
Wa	ake on LAN	Enabled		E	-	e & Exit

### **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**

Main Advanced Chipset	Boot Sec	urity Save & Exit
PCI Express Configuration		
DMI Link ASPM Control DMI Link Extended Synch Control PCIe-USB Glitch W/A Subtractive Decode	Enabled Disabled Disabled Disabled	
<ul> <li>PCI Express Root Port 1</li> <li>PCI Express Root Port 2</li> <li>PCI Express Root Port 3</li> <li>PCI Express Root Port 4</li> <li>PCI Express Root Port 5         <ul> <li>PCI-E Port 6 is assigned to LAN</li> <li>PCI Express Root Port 7</li> <li>PCI Express Root Port 8</li> </ul> </li> </ul>	۷	<ul> <li>→ ←Select Screen</li> <li>↑ ↓ Select Item</li> <li>Enter: Select</li> <li>+- Change Opt.</li> <li>F1:General Help</li> <li>F2:Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>

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# **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 Co	nfiguration				→ ←Select Screen
USB Pre	econdition		Disat	bled	↑↓Select Item Enter: Select
xHCI Mo	ode		Auto		+- Change Opt. F1:General Help F2:Previous Values
USB Po	rts Per-Port Disa	able Control	Disat	bled	F3: Optimized Defaults F4: Save & Exit ESC: Exit

### **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

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Main	Advanced	Chipset	Boot	Security	Save & Exit	
PCH Az	alia Configuratio	n				
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

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Main	Advanced	Chipset	Boot	Securi	ty Save & Exit
System Agent Bridge Name		ŀ	laswell		
System	Agent RC Versi	on	1.8.0.0		
VT-d Ca	pability		Support	ed	
VT-d			Enabled		→ ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Opt. F1:General Help
•	hics Configuration				F2:Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

# VT-d

Check to enable VT-d function on MCH.

# **Graphics Configuration**

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Main Adva	anced Chi	pset	Boot	Security	Save & Exit
Graphics Config	uration				ect Screen .ect Item
Primary Display		PEG			Select nge Opt.
Primary PEG		Auto		F1:Gen	eral Help vious Values
Primary PCIE		Auto		F3: Op	timized Defaults
Internal Graphic	s	Disal	bled	F4: Sa ESC: E	ve & Exit xit



### **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**

Main	Advanced	Chipset	Boot	Secur	ity Save & Exit
Memory	Information				
Memory	RC Version		1.8.0.0		
Memory	Frequency		1600 MHz		
Total Me	emory		32768MB (	DDR3)	
Memory	Voltage		1.50V		→ ←Select Screen ↑↓Select Item
DIMM#0	)		8192 MB (I	DDR3)	Enter: Select +- Change Opt.
DIMM#1	1		8192 MB (I	DDR3)	F1:General Help
DIMM#2	2		8192 MB (I	DDR3)	F2:Previous Values F3: Optimized Defaults
DIMM#3	3		8192 MB (I	DDR3)	F4: Save & Exit ESC: Exit

Aptio Setup Utility

#### **Boot Settings**

This section allows you to configure the boot settings.

Main	Advanced	Chipset	Boot	Secu	urity Save & Exit
Setup Pr Bootup N Quiet Bo Fast Boo			1 On Disabled Disabled LEGACY		
Boot Op Boot Op Boot Op Boot Op Boot Op Boot Op	tion #2 tion #3 tion #4 tion #5 tion #6	riorities	Hard Disk CD/DVD USB Hard I USB CD/D USB Key USB Floppy Network	/D	<pre>→ ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Opt. F1:General Help F2:Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

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### **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.

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Main	Advanced	Chipset	Boot	Security	Save & Exit
Launch (	CSM		Enabled		
Boot opt	ion filter		UEFI and I	_egacy	
Launch PXE OpROM policy			Do not lau	nch	→ ←Select Screen ↑↓Select Item
Launch S	Storage OpROM p	olicy	Legacy on	ly	Enter: Select +- Change Opt.
Launch	∕ideo OpROM poli	су	Legacy on	ly	F1:General Help F2:Previous Values
Other P0	CI device ROM pric	prity	Legacy Op	ROM	F3: Optimized Defaults F4: Save & Exit ESC: Exit

### 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.

Main	Advanced	Chipset	Boot	Security	y Save & Exit
Passwor	d Description				
If ONLY 1	the Administrator'	s password is set,			
then this	s only limit access	to Setup and is			
only aske	ed for when enteri	ng Setup.			
If ONLY 1	the User's passwo	ord is set, then this	8		
is a powe	er on password ar	d must be entered	d to boot		
or enter S	Setup. In Setup th	e User will			
have Adr	ministrator rights.				
The pass	sword length must	be			
in the foll	owing range:				→ ←Select Screen ↑↓Select Item
Minimum	length		3		Enter: Select
Maximun	n length		20		+- Change Opt. F1:General Help
					F2:Previous Values F3: Optimized Defaults
Administ	rator Password				F4: Save & Exit ESC: Exit
User Pas	sword				

### **Administrator Password**

Set Administrator Password

#### **User Password**

Set User Password



#### Save & Exit Settings

Main	Advanced	Chipset	Boot	Security	Save & Exit
Discard (	anges and Exit Changes and Exit anges and Reset				
	Changes and Rese	t			
Save Op Save Ch Discard (	anges			↑↓Sel Enter:	ect Screen lect Item Select nge Opt.
	Defaults User Defaults User Defaults			F2:Pre F3: Op	eral Help vious Values vtimized Defaults ve & Exit xit

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#### 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**

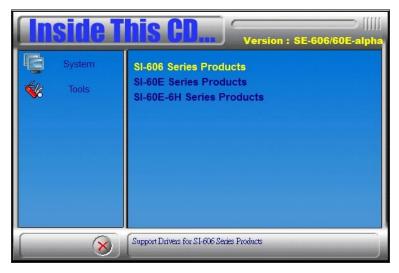
The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

#### **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-606 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.

Read	lme File I	nformation				-	
≏ V ≏ Τ	ersion: arget P	10.0		Device S Datform	enseessaan oftware	***********	.0
N	OTE:	For the to the	list of Release M	supported Notes	chipsets,	please refer	
****	ONTENTS	OF THIS	DOCUMENT		sections:	***********	
2.	Content	Requirem s of the lic and	Distribu	ution Pack igurations	age	ō.	

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

Intel(R) Chipset Device Software Completion	(intel)
You have successfully installed the following product:	
Intel(R) Chipset Device Software	
Press Finish to complete the setup process.	
View Log Files	
	Finish

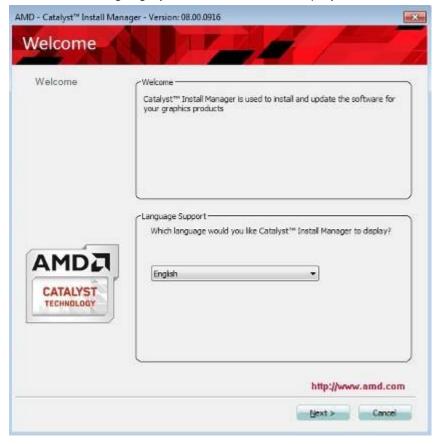


# 4.2 AMD Radeon E8860 Graphics Driver

1. Insert the DVD that comes with the board. Click *System* and then *SI-606 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.

MD - Catałyst <sup>™</sup> I	nstall Manager - Version: 08.00.0916	
Select Ir	stallation Operation	
( What do you v	ent to do?	
<i>3</i> 2	Install Allow users to install AMD software components	
2	Uninstall Remove AMD software components	
1		http://www.amd.com
		Cancel

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

- Catalyst <sup>™</sup> Install I staller W	Manager - Version: 08.00.0916
Welcome	~Welcome
Welcome	Select Express or Custom Install and then click Next:
Analyze	Express
Customize	Custom
	Default Installation Location:
Install	CLProgram Files ATT Technologies Browse
Finished	
CATALYST TECHNOLOGY	http://www.amd.com
	Back Next > Cancel
	Daox Uext > Cancel



Click Accept to accept the End User License Agreement.



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



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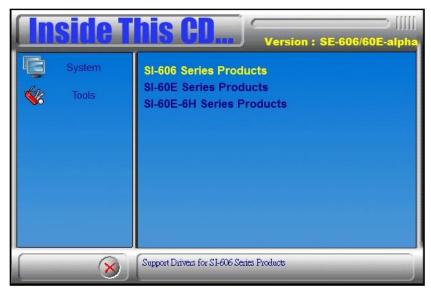
8. To reboot the system, click Yes.





# 4.3 Realtek High Definition Audio Driver

1. Insert the DVD that comes with the board. Click **System** and then **SI-606 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.



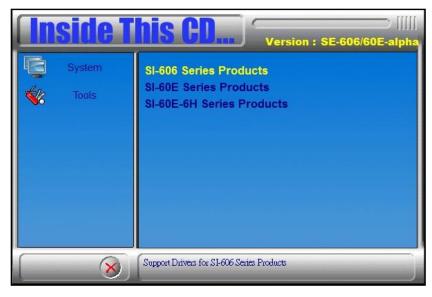
4. The InstallShield Wizard Complete. Click *Finish* to restart the computer and for changes to take effect.





# 4.4 Intel<sup>®</sup> I21x Gigabit Network Driver

1. Insert the DVD that comes with the board. Click **System** and then **SI-606 Series** *Products*.



2. Click Intel® I21x Gigabit Network Driver.



	<u> </u>
Installs drivers, Intel(R) Network Connections, and A Networking Services.	Advanced
WARNING: This program is protected by copyright la international treaties.	aw and

3. When the Welcome screen appears, click Next.

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

Intel(R) Network Connections Install Wizard	×
License Agreement Please read the following license agreement carefully.	(intel)
INTEL SOFTWARE LICENSE AGREEP	AENT
IMPORTANT - READ BEFORE COPYING, INSTAL	LING OR USING.
IMPORTANT - READ BEFORE COPYING, INSTAL Do not copy, install, or use this software and any assoc (collectively, the "Software") provided under this licens ("Agreement") until you have carefully read the followin By copying, installing, or otherwise using the Software, the terms of this Agreement. If you do not agree to the t do not copy, install, or use the Software.	iated materials e agreement g terms and conditions. you agree to be bound by
Do not copy, install, or use this software and any assoc (collectively, the "Software") provided under this licens ("Agreement") until you have carefully read the followin By copying, installing, or otherwise using the Software, the terms of this Agreement. If you do not agree to the t	iated materials e agreement g terms and conditions. you agree to be bound by



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

Setup Options	lintal
Select the program features you want installed.	unter
nstall:	
Crivers  Convers  Co	
Feature Description Drivers for all wired Intel Network Connections	

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

닝 Intel(R) Network Connections Install Wizard	×
Ready to Install the Program	(intal)
The wizard is ready to begin installation.	uncer
Click Install to begin the installation.	
If you want to review or change any of your installation setting exit the wizard,	gs, click Back. Click Cancel to
< Back	Install Cancel

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





# 4.5 Intel<sup>®</sup> Management Engine(ME) Driver



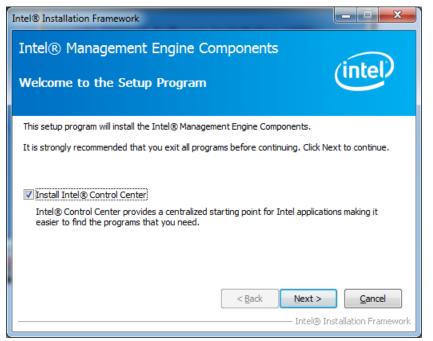
The following application requires Microsoft .NET Framework 3.5 or later: Intel® Management Engine Components. Please install the latest version of Microsoft .NET Framework from Microsoft Download Center to run this application correctly.

#### Follow the steps below to install the Intel Management Engine.

1. Insert the DVD that comes with the board. Click **System** and then **SI-606 Series Products**.and then **Intel® Management Engine(ME) Driver**.

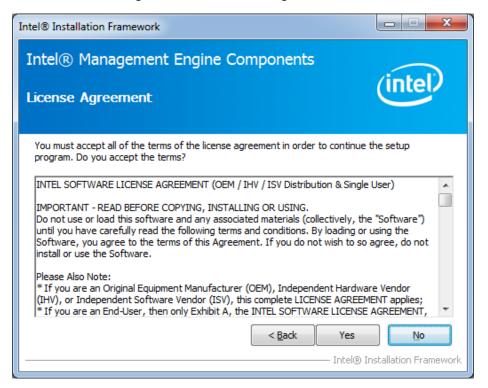


2. When the Welcome screen for Intel® Management Engine Components, click the checkbox for **Install Intel® Control Center** & click **Next**.



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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 Progress	intel
Please wait while the following setup operations are performed:	
Creating Process: regsvr32.exe Copying File: C:\Windows\system32\drivers\IntelMEFWVer.dll Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Comport Installing: Intel® Control Center Deleting File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Component Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Component Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Component Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Component Click Next to continue.	ts\FWServic ts\FWServic onents\FWS onents\FWS
	•
	<u>N</u> ext >
	lation Framework





# 4.6 Intel<sup>®</sup> USB 3.0 eXtensible Host Controller Driver

1. Insert the DVD that comes with the board. Click **System** and then **SI-606 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*.

Intel® Installation Framework			
Intel® USB 3.0 eXtensible Host Welcome to the Setup Program	: Controlle	er Driver	intel
This setup program will install the following compon • Intel® USB 3.0 eXtensible Host Controller Driver • Intel® USB 3.0 Hub Driver • Intel® USB 3.0 Hub Driver • Intel® USB 3.0 Monitor Click Next to continue.	ents:		
	< Back	Next >	Cencel allation Pramework



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

ntel® USB 3.0 eXtensible Host	Controller Dr	iver
icense Agreement		inter
You must accept all of the terms of the license agre program. Do you accept the terms?	sement in order to cor	ntinue the setup
INTEL SOFTWARE LICENSE AGREEMENT (Alpha / B	Beta, Organizational L	
IMPORTANT - READ BEFORE COPYING, INSTALLIN	VG OR USING.	
Do not use or load this software and any associate until you have carefully read the following terms a Software, you agree to the terms of this Agreeme install or use the Software.	nd conditions. By load	ing or using the
and the second se	a" code, which may no	
The Software contains pre-release "alpha" or "beta and which Intel Corporation ("Intel") may substant of the Software. Intel can provide no assurance t	tally modify in product	

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

ntel® USB 3.0 eXtensible Host Con	
eadme File Information	(intel)
Refer to the Readme file below to view the system require	ements and installation information.
WARNING Do not run this driver's installer (Setup.exe) from a USB storage device (ie. external USB hard drive or USB thumb drive). For proper installation, please copy driver files to a local hard drive folder and run from there.	
* * Production Version Release	
* Microsoft Windows* 7	
* Microsoft Windows* 7 * Intel(R) USB 3.0 eXtensible Host Controller: 3.0.4.65	
* Intel(R) USB 3.0 eXtensible Host Controller: 3.0.4.65	Back Next > Cancel

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



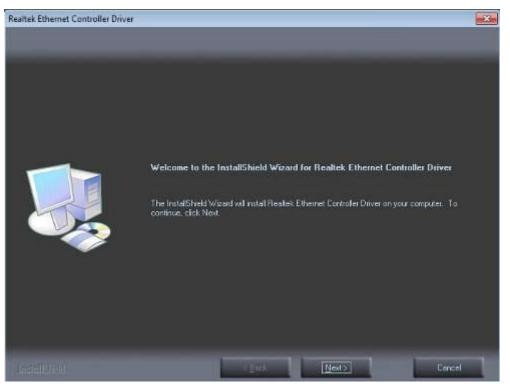


## 4.7 Realtek RTL8111G LAN Driver

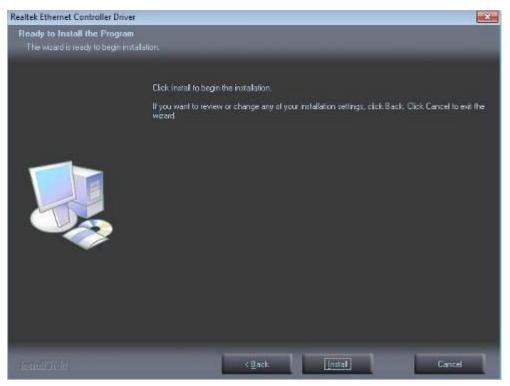
1. Insert the DVD that comes with the board. Click **System** and then **SI-606 Series** *Products*. Click *Realtek RTL8111G LAN Driver.* 



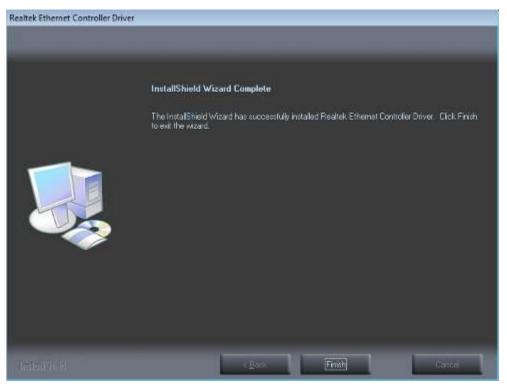
### 2. In the Welcome screen, click Next.



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-606

SI-606 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-606 enables a single GPU to support up to 6 independent displays output simultaneously. Before using the AMD Eyefinity functions on SI-606, 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: <u>https://wwwd.amd.com/amd/devsite.nsf/edg/e6760.htm</u>. 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.

Note: The resolution of your display configuration should be no more than 16K either in width or in height.

Number of Displays	Grid Configuration	Supported
(pipelines)		
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

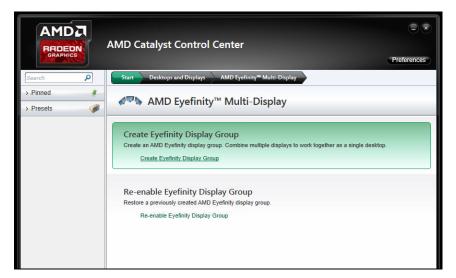


#### 4. AMD Eyefinity Configuration

**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.

	AMD Catalyst Control Cer	nter	Preferences
Search 👂 <	Create Eyefinity Display Group		* ?
> Pinned	Create an AMD Eyefinity display group.	Combine multiple displays to work	together as a single desktop.
→ Presets     ✓	Supported configurations for your disp standard mixed dimension mi		Show more
AMD Eyefinity™ Multi-Display Create Eyefinity Display			
Group My Digital Flat- Panels			
> Video 🥁		*	
> Gaming		$\sim$	
> Performance	9	(1)	2
> Power			
> Audio			
→ Information	<ul> <li>Select a display arrangement for yo</li> <li>Use the current arrangement</li> <li>Use a new arrangement</li> </ul>	ur display group:	Identify All
			Next

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

	AMD Catalyst Control Ce	nter	
	And catalyst control Ce	Inter	Preferences
Search 👂 <	Create Eyefinity Display Group		<b>*</b> ?
> Pinned 🦸	Create an AMD Eyefinity display group.	Combine multiple displays to work	together as a single desktop.
> Presets	Supported configurations for your disp	olay group:	Show more
Desktop     Management     Common Display     Tasks	standard mixed dimension m	ixed alignment	
AMD Eyefinity™ Multi-Display			
Create Eyefinity Display Group			
> My Digital Flat- Panels			
> Video		*	
> Gaming	0		୍
> Performance	$\odot$	(1)	$\bigcirc$
> Power 👔			
> Audio			
> Information			
			T.I
			Identify All
	Select a display arrangement for yo	our display group:	
	Use the current arrangement		
	Use a new arrangement		
			Next



Step 5:	Select a display	to start the displa	ay group arrangement	, and click Next

	AMD Catalyst Control Center			
GRAPHILS			Prefe	rences
Search 👂 候	Create Eyefinity Display Group			* ?
> Pinned 🦸	Create an AMD Eyefinity display group. Combine	e multiple displays to work	together as a single desktop.	
> Presets 🦪			-	
> Desktop Management	Supported configurations for your display group		Show	more
Common Display	standard mixed dimension mixed alig	nment		
AMD Eyefinity™ Multi-Display	Select the desktop for which you want to cr	eate a display group.		
Create Eyefinity Display Group	Select the desicop for which you want to c	cate a alspidy group.		
Re-enable Eyefinity Display Group				
> My Digital Flat-	*			
> Video 🛛 📸			0	
> Gaming	(3)	(1)	(2)	
> Performance				
> Power				
> Audio				
> Information				
			Identif	y All
	<ul> <li>All connected displays (all other deskto</li> </ul>	ps will be disabled)		
	L			
			Back	lext

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

	AMD Catalyst Control Center	Preferences
Search 👂 候	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as a single	e desktop.
> Presets	Supported configurations for your display group:	Show more
> Desktop Management	standard mixed dimension mixed alignment	SHOW MOLE
Common Display		
→ AMD Eyefinity™ Multi-Display	Select a layout for the display group:	
My Digital Flat- Panels	3x1 💌	
> Video		
> Gaming		
> Performance		
> Power		
> Audio		
> Information		
		Next

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# 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:

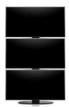
• 3 x 1 Landscape Display Group



• 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

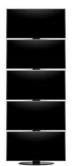


# For 5 displays output:

• 5 x 1 Portrait Display Group



1 x 5 Landscape Display Group



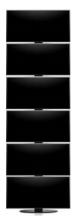
•

# 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.

	AMD Catalyst Control Center	Preferences
Search 👂 <	Create Eyefinity Display Group	* ?
> Pinned 🧳	Create an AMD Eyefinity display group. Combine multiple displays to work together as a s	ingle desktop.
Presets     Presets     Desktop     Desktop     Common Display     Tasks     AMD Eyefinity <sup>na</sup> My Digital Flat-     Panels     Video     Gaming     Performance     O     Power     Power     Audio     Information	Supported configurations for your display group (3x1);       standard     mixed dimension       Rearrange your displays as needed.       Start arrangement	Show more
	8*	k <u>N</u> ext

**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.

		Preferences
Search 🔎 <	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as	a single desktop.
Presets     Desktop     Management	Supported configurations for your display group (3x1):	Show more
Common Display	standard mixed dimension mixed alignment	
Yasks AMD Eyefinity™ Multi-Display	Rearrange your displays as needed.	
> My Digital Flat-	Click the box in the layout below that corresponds to the physical position of the display lit in blue.	Restart arrangement
> Video 🛃		
> Gaming		
> Performance		
> Power		
> Audio		
→ Information ()		ack Next



**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.

	AMD Catalyst Control Center	Preferences
Search 👂 <	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as a	single desktop.
Presets     Desktop     Management     Common Display	Supported configurations for your display group (3x1):           standard         mixed dimension         mixed alignment	Show more
Tasks AMD Eyefinity™ Multi-Display	Rearrange your displays as needed.	
> My Digital Flat- Panels	Arrangement is complete.	Restart arrangement
> Video 🛃		
> Gaming		
> Performance		
> Power		
> Audio		
> Information	3 1	2
		ack Next

**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.

	AMD Catalyst Control Center
GRAPHICS	Preference:
Search 🔎	Create Eyefinity Display Group
> Pinned 🦸	Create an AMD Eyefinity display group. Combine multiple displays to work together as a single desktop.
> Presets 🛛 🥡	
> Desktop Management	Supported configurations for your display group (3x1): Show more
Common Display	standard mixed dimension mixed alignment
AMD Evefinity <sup>TM</sup>	Align your displays as needed.
Multi-Display	Select one or more displays then use the arrow buttons to move it in direction that you want. You can
My Digital Flat-	also use the Align All button to adjust all the displays at once.
Video 📷	Align All
Gaming	
Performance	
Power	
Audio	
> Information	
	3 4 2 4
	<u>č</u>
	×
	Back Next

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.

	AMD Catalyst Control Center	
		Preferences
Search 👂 <	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as a sing	jle desktop.
> Presets 🦪		
> Desktop Management	Supported configurations for your display group (3x1):	Show more
Common Display	standard mixed dimension mixed alignment	
AMD Evefinity™		
Multi-Display My Digital Flat-	Select how you want your desktop to be resized:	
' Panels 🔛	Fill	
> Video 🛛 😹		
> Gaming 🧖		
> Performance		
> Power		
> Audio	✓ Fit	
Information		
	Expand	
	Back	Next

	AMD Catalyst Control Center	
GRAPHICS		Preferences
Search P	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work toget	her as a single desktop.
> Presets	0	
> Desktop Management	Save Eyefinity Display Group	ith 3 displays (3 x
Common Display		
AMD Eyefinity™ Multi-Display	~	
> My Digital Flat- Panels	*	
> Video	0	
> Gaming		
> Performance (	3	-
> Power		
> Audio	0	
> Information	Save this display group as:	
	My Display Group 2015Jun17_1337	
	OK	
	- OK	
	To continue, start a new task.	
	We suggest:	
	Adjust Bezel Compensation	
	Arrange Eyefinity Display Group Resize Desktop	
	Create Eyefinity Display Group	
	Defaults	Discard Apply

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);
\frac{1}{10} = 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();
{
                                                       }
```

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return 0;

} //----void EnableWDT(int interval) { unsigned char bBuf;  $bBuf = Get_F81846_Reg(0x2B);$ bBuf &= ( $\sim 0x20$ ); 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 &= ( $\sim 0x0F$ ); 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);

bBuf = Get\_F81846\_Reg(0xF5); bBuf |= 0x20; Set\_F81846\_Reg(0xF5, bBuf);

}

//-----void DisableWDT(void)

unsigned char bBuf;

Set\_F81846\_LD(0x07);

//start counting

//enable WDTO output

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//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" V // KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING B // IMPLIED WARRANTIES OF MERCHANTABILITY AND/OF // PURPOSE.	UT NOT LIMITED TO THE
// #include "F81846.H" #include <dos.h></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); }	

}

iBASE

```
//-----
                              -------
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;
}
.
//-----
```

// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING B // IMPLIED WARRANTIES OF MERCHANTABILITY AND/OF // PURPOSE. //	
// #ifndefF81846_H #defineF81846_H	
//	1
#define	F81846_INDEX_PORT
#define	(F81846_BASE) F81846_DATA_PORT
//	(F81846_BASE+1)
#define	F81846_REG_LD
	0x07
// #define F81846_UNLOCK	
#define	0x87 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

