

**EMB-CV2**

Intel® Atom™ D2550 B3 Processor

Mini-ITX

10/100/1000Base-TX Ethernet

8 USB2.0, 2 COM, 8-bit Digital I/O

6 SATA 3.0 Gb/s, 1 PCI-E[x4]

## Copyright Notice

This document is copyrighted, 2014. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, the original manufacturer assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

The original manufacturer reserves the right to make changes in the product design without notice to its users.

## Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- AMI is a trademark of American Megatrends Inc.
- CompactFlash™ is a trademark of the Compact Flash Association.
- Intel® and Atom™ are trademarks of Intel® Corporation.
- Microsoft Windows® is a registered trademark of Microsoft Corporation.
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.
- SoundBlaster is a trademark of Creative Labs, Inc.

**Please be notified that all other products' name or trademarks not be mentioned above are properties of their respective owners.**

# Packing List

(Standard, not bulk pack)

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 Cable Set (SATA Cable, SATA Power Cable)
- 1 Metal I/O Bracket
- 1 Product CD
- 1 EMB-CV2

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

# Contents

## Chapter 1 General Information

1.1 Features .....	1-2
1.2 Specifications .....	1-3

## Chapter 2 Quick Installation Guide

2.1 Safety Precautions .....	2-2
2.2 Location of Connectors and Jumpers .....	2-3
2.3 Mechanical Drawing .....	2-4
2.4 List of Jumpers .....	2-6
2.5 List of Connectors .....	2-7
2.6 Setting Jumpers .....	2-9
2.7 AT/ATX Power Type Selection (AT_ATX_SEL1)....	2-10
2.8 Clear CMOS/ RTC (CLRRTC1) .....	2-10
2.9 LVDS Backlight Brightness Control (LVDSBRC1) ..	2-10
2.10 LVDS Panel Voltage Selection (LVDS_PVSEL1) .	2-10
2.11 LVDS Inverter Voltage Selection (LVDS_PVSEL1)	
.....	2-10
2.12 Serial Port 2 External Power Selection (CN10) ....	2-11
2.13 Front Panel Connector (FP1) .....	2-11
2.14 LVDS Output (Single Channel 18/24-bit) (LVDS1)	2-11
2.15 SATA Power Connector (SATA_PWR1).....	2-12
2.16 USB 4 / 5 / 6 / 7 Pin Header (USB45_1) (USB67_1)	
.....	2-12

2.17 Digital I/O (CN2) .....	2-12
2.18 PS/2 Keyboard Mouse Pin Header (KBMS1) .....	2-12
2.19 CPU Fan & System Fan Connector (CPU_FAN1) (SYS_FAN1).....	2-13
2.20 ATX AUX in +12V Connector (ATX1) .....	2-13
2.21 ATX Power Board Control Pin Header (CN11) .....	2-13
2.22 COM Port Connector (COM2).....	2-13

### **Chapter 3 AMI BIOS Setup**

3.1 System Test and Initialization. ....	3-2
3.2 AMI BIOS Setup .....	3-3

### **Chapter 4 Driver Installation**

4.1 Installation.....	4-3
-----------------------	-----

### **Appendix A Programming The Watchdog Timer**

A.1 Programming .....	A-2
A.2 W83627DHG Watchdog Timer Initial Program.....	A-6

### **Appendix B I/O Information**

B.1 I/O Address Map .....	B-2
B.2 1 <sup>st</sup> MB Memory Address Map.....	B-4
B.3 IRQ Mapping Chart .....	B-5
B.4 DMA Channel Assignments.....	B-7

### **Appendix C Mating Connector**

C.1 List of Mating Connectors and Cables.....	C-2
---	-----

## Appendix D AHCI & RAID Settings

D.1 Setting AHCI .....	D-2
D.2 Setting RAID .....	D-9

Chapter

1

**General  
Information**



## 1.1 Features

---

- Onboard Intel® Atom™ D2550 Processor
- Intel® ICH10R
- Intel® Graphics Media Accelerator Supports DirectX 10, OpenGL 3.0
- DDR3 800/1066 SO-DIMM x 2, Max. 4GB
- VGA, Dual Channel 24-bit LVDS, DVI, Dual Independent Display
- Dual Gigabit Ethernet
- COM x 2 (RS232 x 1, RS232/422/485 x 1)
- USB2.0 x 8, Serial ATA 3Gb/s x 6
- PCIe [x4] x 1
- 6 CH Audio Channel

## 1.2 Specifications

---

### System

- Processor Intel® Atom™ D2550 processor  
Dual Core 1.86GHz (TDP 10W)
- System Memory Single Channel with two 204-pin  
DDR3 800 /1066 SODIMM, up to  
4 GB, non-ECC, un-buffered  
memory with 0.6mm pitch SMT  
socket
- Chipset Intel® ICH10R
- I/O Chipset Winbond W83627DHG-P
- Ethernet Realtek 8111E for  
10/100/1000Base-TX, RJ-45 x 2
- BIOS AMI BIOS, 32MB ROM
- Wake On LAN Yes
- Watchdog Timer System reset: 1~255 steps  
programmable
- H/W Status Monitoring Supports Power Supply Voltage,  
Fan Speed, and Temperature  
Monitoring
- Expansion Interface PCIe [x4] x 1
- Battery Lithium 3V/220mAh with vertical  
socket type
- Power Requirement DC 12V (selectable AT/ATX mode  
for power on)
- Board Size 6.7”(L) x 6.7”(W)  
(170 mm x 170 mm)
- Gross Weight 1.1 lb (0.5 Kg)
- Operating Temperature 32°F~ 140°F (0°C ~ 60°C)

- Storage Temperature -40°F ~176°F (-40°C ~80°C)
- Operating Humidity 5%~95%RH, non-condensing

### Display

- Chipset Intel® Graphics Media Accelerator 3650  
(Gfx frequency 640MHz / DX10.1)
- Resolution Up to 1920 x 1200 / 60Hz at 355MHz Max for CRT  
Up to 1920 x 1080 / 60Hz, 24bps for Dual Channel LVDS (from eDP w/chrontel CH7511)  
Up to 1920 x1200 / 60Mz for DVI
- LVDS Interface Dual Channel 24-bit LVDS
- Video Interface VGA x 1, DVI-D x 1

### I/O

- Storage SATA 3.0Gb/s x 6 with RAID 0/1/5/10
- Serial Port RS-232 (COM1) x 1 via D-sub 9 connector on rear IO  
RS-232/422/485 (COM2) x 1 via D-sub 9 connector on rear IO with +12V / +5V powered
- Parallel Port SPP/EPP
- USB USB 2.0 x 8  
USB 1 & 2 via double deck USB and RJ-45 connector on rear IO  
USB 3 & 4 via double deck USB and RJ-45 connector on rear IO  
USB 5-8 via internal 2 x 5 pin

- Digital I/O 2.0mm pin header
- PS/2 Port Supports 8-bit (Programmable)
- Audio Keyboard/ Mouse x 1  
Line-in, Mic-in, Line-out

Chapter

2

**Quick  
Installation  
Guide**

## 2.1 Safety Precautions

---

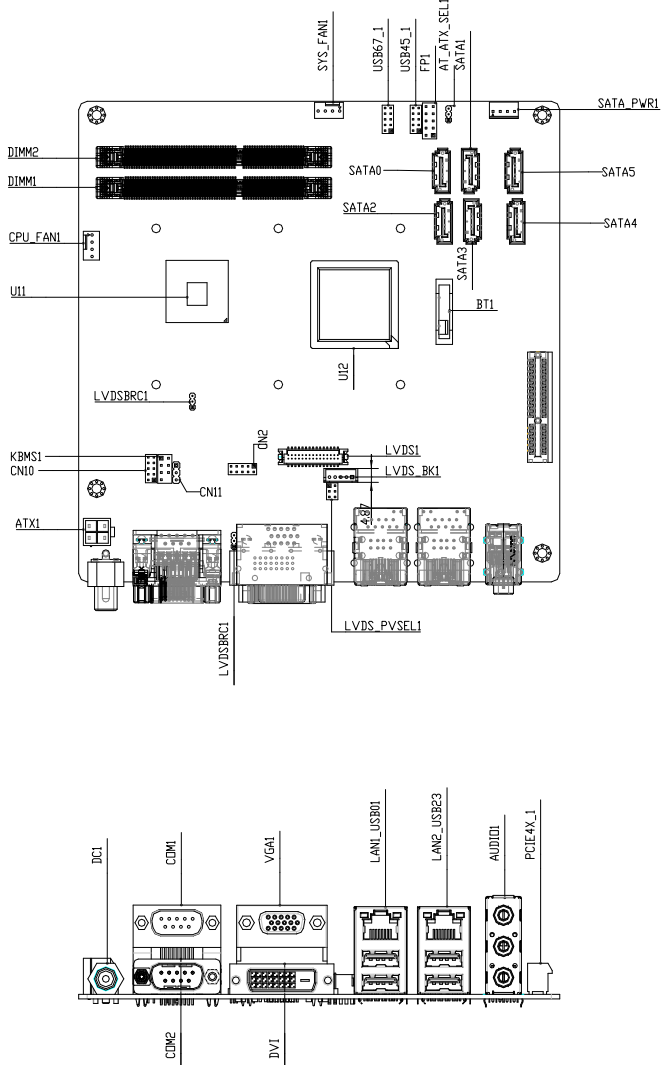
**Warning!**

*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

**Caution!**

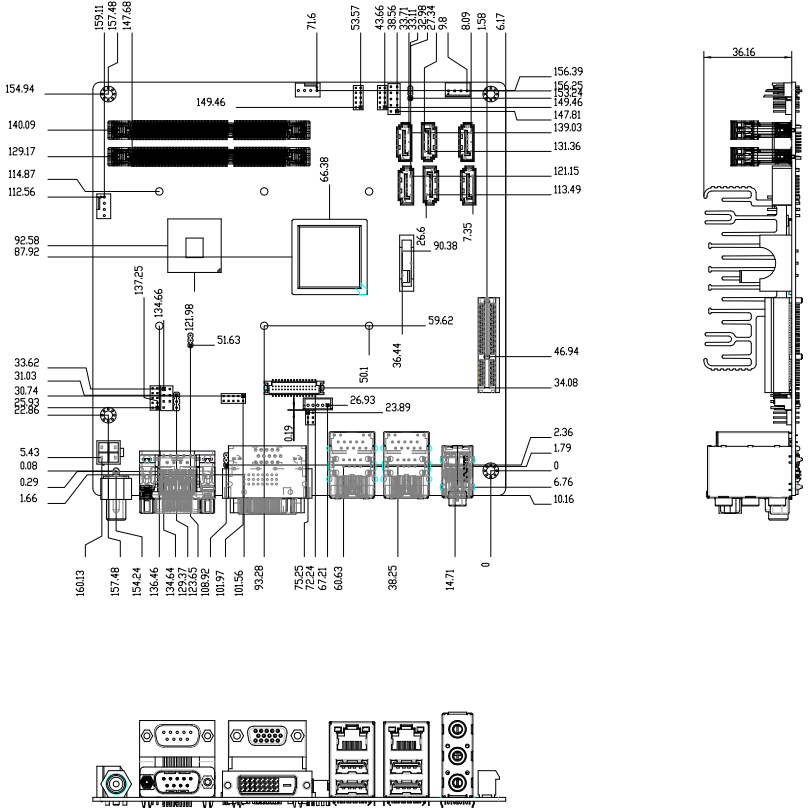
*Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis*

## 2.2 Location of Connectors and Jumpers



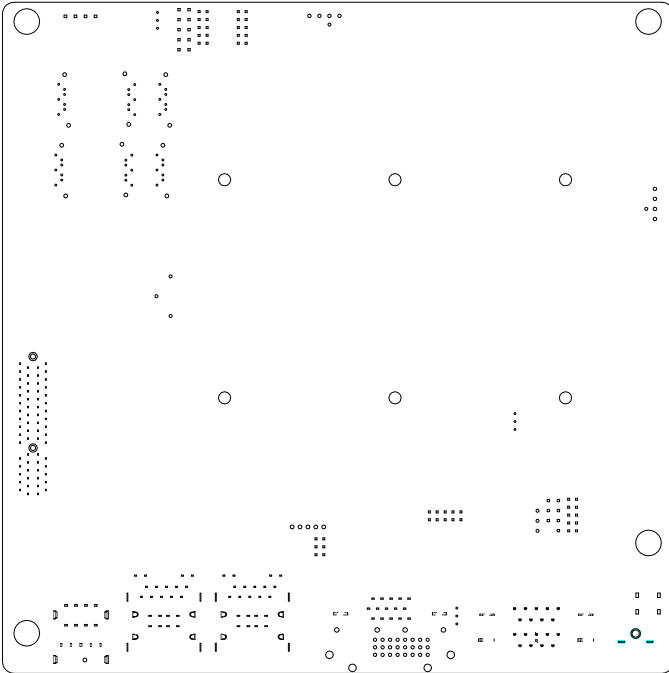
### 2.3 Mechanical Drawing

#### Component Side





Solder Side



## 2.4 List of Jumpers

---

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

<b>Label</b>	<b>Function</b>
AT_ATX_SEL1	AT/ATX Power Type Select
CLRRTC1	Clear CMOS / RTC
LVDSBRC1	LVDS Backlight Brightness Control
LVDS_PVSEL1	LVDS Panel Voltage Select
LVDS_PVSEL1	LVDS Inverter Voltage Select
CN10	Serial port2 external power select
FP1	Front panel connector

## 2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application.

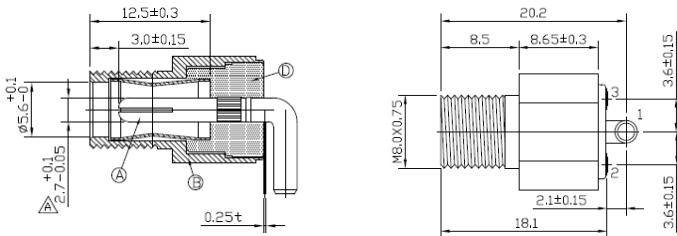
The table below shows the function of each of the board's connectors:

<b>Label</b>	<b>Function</b>
LVDS1	LVDS output (single channel 18/24bit)
VGA1	Analog CRT display connector
DVI1	DVI display connector
SATA0	SATA port0 connector
SATA1	SATA port1 connector
SATA2	SATA port2 connector
SATA3	SATA port3 connector
SATA4	SATA port4 connector
SATA5	SATA port5 connector
SATA_PWR1	SATA power connector
PCIE4X_1	PCI-Express[x4] slot
USB45_1	USB4 & 5 pin header
USB67_1	USB6 & 7 pin header
CN2	GPIO pin header
CN10	SMBUS & COM2 external power pin
COM1	RS-232 Serial port 1 connector
COM2	RS-232/422/485 serial port 2 connector
KBMS1	PS/2 keyboard mouse pin header

CPU_FAN1	CPU fan connector
SYS_FAN1	System fan connector
FP1	Front panel pin header
AUDIO1	Audio phone jack
LAN1_USB01	RJ-45 Ethernet 1 & USB 0/1 connector
LAN2_USB23	RJ-45 Ethernet 2 & USB 2/3 connector
ATX1	ATX AUX in +12v Connector
DC1	DC 12V in
CN11	ATX power board control pin header



**NOTE:** The +12V Power connector (Label: DC\_PWR) is lockable Jack type with screw. Please refer the inner and outer diameter dimension of connector as below to choose suitable adaptor.

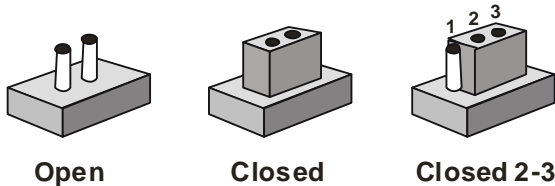


## 2.6 Setting Jumpers

---

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

## 2.7 AT/ATX Power Type Selection (AT\_ATX\_SEL1)

ATOMODE	Function
Close 1-2	AT
Close 2-3	ATX Mode (Default)

## 2.8 Clear CMOS/ RTC (CLRRTC1)

CLRRTC	Function
Close 1-2	Protected (Default)
Close 2-3	Clear

## 2.9 LVDS Backlight Brightness Control (LVDSBRC1)

LVDSBRC	Function
Close 1-2	Voltage control (Default)
Close 2-3	CH7511 PWM control

## 2.10 LVDS Panel Voltage Selection (LVDS\_PVSEL1)

LVDS_PVSEL	Function
Close 1-3	+5V
Close 3-5	+3.3V (Default)

## 2.11 LVDS Inverter Voltage Selection (LVDS\_PVSEL1)

LVDS_PVSEL	Function
Close 2-4	+5V (Default)
Close 4-6	+12V

## 2.12 Serial Port 2 External Power Selection (CN10)

POWER_SEL	Function
Close 5-6	+12V
Close 7-8	RI# (Default)
Close 9-10	+5V (Default)

## 2.13 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	PWRBTN-	2	PWRBTN+
3	IDELED-	4	IDELED+
5	BUZZER-	6	BUZZER+
7	POWERLED-	8	POWERLED+
9	RESET-	10	RESET+

## 2.14 LVDS Output (Single Channel 18/24-bit) (LVDS1)

Pin	Signal	Pin	Signal
1	BKLT_EN	2	BKLT_CTRL
3	LVDSVCC	4	GND
5	LVDS1_CLK#	6	LVDS1_CLK
7	LVDSVCC	8	GND
9	LVDS1_DATA0#	10	LVDS1_DATA0
11	LVDS1_DATA1#	12	LVDS1_DATA1
13	LVDS1_DATA2#	14	LVDS1_DATA2
15	LVDS1_DATA3#	16	LVDS1_DATA3
17	LVDS_DDC_DATA	18	LVDS_DDC_CLK
19	LVDS2_DATA0#	20	LVDS2_DATA0
21	LVDS2_DATA1#	22	LVDS2_DATA1
23	LVDS2_DATA2#	24	LVDS2_DATA2

**Mini-ITX****EMB-CV2**

25	LVDS2_DATA3#	26	LVDS2_DATA3
27	LVDSVCC	28	GND
29	LVDS2_CLK#	30	LVDS2_CLK

**2.15 SATA Power Connector (SATA\_PWR1)**

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	GND	4	+12V

**2.16 USB 4 / 5 / 6 / 7 Pin Header (USB45\_1) (USB67\_1)**

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD-	4	GND
5	USBD+	6	USBD+
7	GND	8	USBD-
9	GND	10	+5V

**2.17 Digital I/O (CN2)**

This connector offers 4-pair of digital I/O functions and address is 0xA00H. The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	Digital- IN	2	Digital- IN
3	Digital- IN	4	Digital- IN
5	Digital- OUT	6	Digital- OUT
7	Digital- OUT	8	Digital- OUT
9	+5V	10	GND

**2.18 PS/2 Keyboard Mouse Pin Header (KBMS1)**

Pin	Signal	Pin	Signal
1	Keyboard DATA	2	Keyboard CLOCK



**Mini-ITX****EMB - CV 2**

3	GND	4	+5V
5	Mouse DATA	6	Mouse CLOCK
7	NC	8	NC

**2.19 CPU Fan & System Fan Connector (CPU\_FAN1) (SYS\_FAN1)**

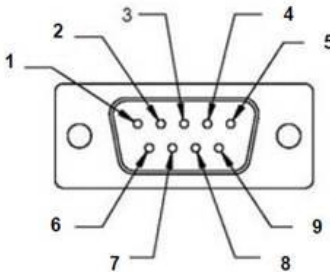
Pin	Signal	Pin	Signal
1	GND	2	+12V
3	FAN sense	4	FAN Control

**2.20 ATX AUX in +12V Connector (ATX1)**

Pin	Signal	Pin	Signal
1	GND	2	GND
3	+12V	4	+12V

**2.21 ATX Power Board Control Pin Header (CN11)**

Pin	Signal	Pin	Signal
1	PWRBTN#	2	PWROK
3	PSON#		

**2.22 COM Port Connector (COM2)**

## RS-232

Pin	Signal	Signal Type	Signal Level
1	DCD1	Input	
2	RXD1	Input	
3	TXD1	Output	±9V
4	DTR1	Output	±9V
5	GND	GND	
6	DSR1	Input	
7	RTS1	Output	±9V
8	CTS1	Input	
9	RI1 / +5V / +12V	Input / PWR	By Jumper Selection

**Note: The max. rating of pin9 is 1A @ 5V & 12V**

## RS-422

Pin	Signal	Signal Type	Signal Level
1	RS422_TX-	DIFF	
2	RS422_RX+	DIFF	
3	RS422_TX+	DIFF	
4	RS422_RX-	DIFF	
5	GND	GND	
6	NC		
7	NC		
8	NC		
9	NC/ +5V/ +12V	PWR	By Jump Selection

**Note: The max. rating of pin9 is 1A @ 5V & 12V**

## RS-485

Pin	Signal	Signal Type	Signal Level
1	RS485_D-	DIFF	
2	NC		

**Mini-ITX****EMB-CV2**

3	RS485_D+	DIFF	
4	NC		
5	GND	GND	
6	NC		
7	NC		
8	NC		
9	NC / +5V / +12V	PWR	<b>By Jump Selection</b>

**Note: The max. rating of pin9 is 1A @ 5V & 12V**

Chapter

3

**AMI  
BIOS Setup**

### 3.1 System Test and Initialization

---

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

#### **System configuration verification**

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The EMB-CV2 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it runs down.

## 3.2 AMI BIOS Setup

---

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

### Entering Setup

Power on the computer and press <Del> or <F2> immediately. This will allow you to enter Setup.

### Main

Set the date, use tab to switch between date elements.

### Advanced

Advanced BIOS Features Setup including TPM, ACPI, etc.

### Chipset

Host bridge parameters.

### Boot

Enabled / disabled quiet boot option.

### Security

Set setup administrator password.

### Save & Exit

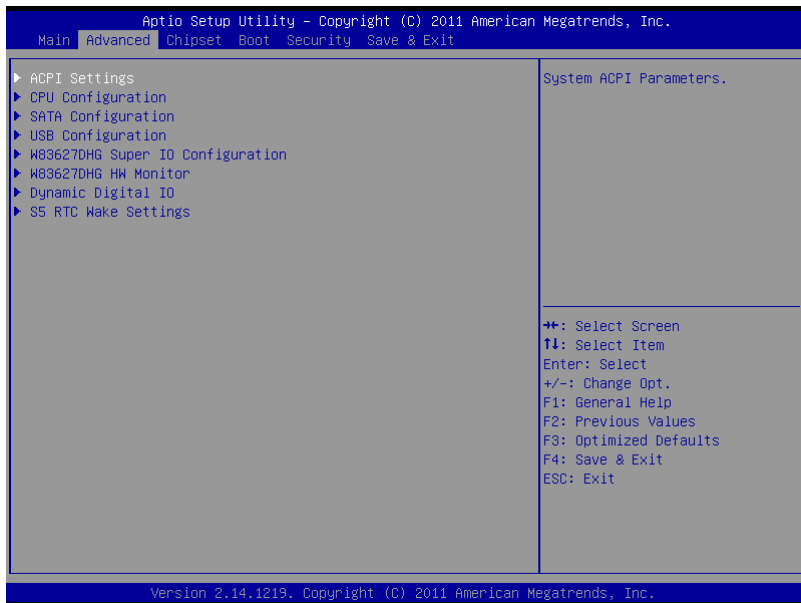
Exit system setup after saving the changes.

## Setup Menu

### Setup submenu: Main

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Main   Advanced   Chipset   Boot   Security   Save & Exit	
BIOS Information EMB-CV2 R1.0(ECV2AM10) (02/12/2014)	Set the Date. Use Tab to switch between Date elements.
BIOS Vendor Core Version Compliance	American Megatrends 4.6.5.1 UEFI 2.1; PI 0.9
System Date System Time	[Wed 02/19/2014] [17:44:07]
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
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

## Setup submenu: Advanced





## ACPI Settings



### Options summary:

Suspend mode	Suspend Disable	Default
	S3 only (Suspend to RAM)	
Select the ACPI state used for System Suspend		

## CPU Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

CPU Configuration		Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Processor Type	Intel(R) Atom(TM) CPU Supported	
EMT64	Supported	
Processor Speed	1865 MHz	
System Bus Speed	533 MHz	
Ratio Status	14	
Actual Ratio	14	
System Bus Speed	533 MHz	
Processor Stepping	30661 (B3 Stepping)	
Microcode Revision	269	
L1 Cache RAM	2x56 k	
L2 Cache RAM	2x512 k	
Processor Core	Dual	
Hyper-Threading	Supported	
Hyper-Threading	[Enabled]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary :

Hyper-threading	Disable	Default
	Enabled	
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 on thread per enabled core is enabled.		

## SATA Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

SATA Configuration		Select IDE / AHCI / RAID Mode
SATA Port0	Not Present	
SATA Port1	Not Present	
SATA Port2	Not Present	
SATA Port3	Not Present	
SATA Port4	Not Present	
SATA Port5	Not Present	
SATA Mode	[IDE Mode]	
Serial-ATA Controller 0	[Enhanced]	
Serial-ATA Controller 1	[Enhanced]	

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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary :

Hyper-threading	Disable	Default
	IDE Mode	
	AHCI Mode	
	RAID Mode	
Determines how SATA controller(s) operate.		
Serial-ATA Controller 0	Disable	Default
	Enhanced	
	Compatible	
Enable / Disable Serial ATA Controller 0		
Serial-ATA Controller 1	Disable	Default
	Enhanced	
	Compatible	
Enable / Disable Serial ATA Controller 1		

## USB Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

<p>USB Configuration</p> <p>USB Devices: 1 Drive, 1 Keyboard, 1 Mouse</p> <p>Legacy USB Support [Enabled]</p>	<p>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.</p> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</p>
---	---

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary:

Legacy USB Support	Enabled	Default
	Disabled	
	Auto	
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB device available only for EFI applications.		

## W83627DHG Super IO Configuration



## Serial Port 1 Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Serial Port 1 Configuration  Serial Port [Enabled] Device Settings IO=3F8h; IRQ=4;  Change Settings [Auto]	Enable or Disable Serial Port (COM)            ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
---	---

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

## Options summary:

Serial Port	Disabled	Default
	Enabled	
Allows BIOS to En/Disable correspond serial port.		
Change Settings	Auto	Default
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,6,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,10,11,12;	
	IO=3E8h; IRQ=3,4,5,6,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	
Allows BIOS to Select Serial Port resource.		

## Serial Port 2 Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
Change Settings	[Auto]	
Device Mode	[RS232]	

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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

## Options summary:

Serial Port	Disabled	Default
	Enabled	
Allows BIOS to En/Disable correspond serial port.		
Change Settings	Auto	Default
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,6,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,10,11,12;	
	IO=3E8h; IRQ=3,4,5,6,7,10,11,12;	
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;		
Allows BIOS to Select Serial Port resource.		
Device Mode	RS232	Default
	RS422	
	RS485	
Select working model.		

## W83627DHG H/W Monitor

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Pc Health Status	Enable or Disable Smart Fan
Smart Fan Function	[Enabled]
▶ Smart Fan Mode Configuration	
CPU temperature	: +63 ℃
System temperature	: +52 ℃
CPU Fan Speed	: N/A
System Fan Speed	: N/A
VCORE	: +1.208 V
+12V	: +12.144 V
+5V	: +5.120 V
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

## Options summary:

Smart Fan Function	Disabled	Default
	Enabled	
Enable or Disable Smart Fan.		



## Smart Fan Mode Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Smart Fan Mode Configuration		CPU Smart Fan Mode Select
CPU Smart Fan Mode	[Manual Mode]	
CPUFAN PWM/DC Voltage Output	128	
SYS Smart Fan Mode		
SYSFAN PWM/DC Voltage Output	128	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary:

CPU Smart Fan Mode	Manual Mode	Default
	Thermal Cruise Mode	
CPU Smart Fan Mode Select		
CPUFAN PWM/DC Voltage Output	0~255	Default : 255
Input expect PWM Output Value(Range: 0 – 255)		
SYS Smart Fan Mode	Manual Mode	Default
	Thermal Cruise Mode	
SYS Smart Fan Mode Select		
SYSFAN PWM/DC Voltage Output	0~255	Default : 255
Input expect PWM Output Value(Range: 0 – 255)		

## Dynamic Digital IO

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

DIO0 Direction	[Input]	Set Digital IO as Input or Output
DIO1 Direction	[Input]	
DIO2 Direction	[Input]	
DIO3 Direction	[Input]	
DIO4 Direction	[Output]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Output Level	[Hi]	
DIO5 Direction	[Output]	
Output Level	[Hi]	
DIO6 Direction	[Output]	
Output Level	[Hi]	
DIO7 Direction	[Output]	
Output Level	[Hi]	

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary:

DIO0 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO1 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO2 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO3 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO4 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		

DIO5 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO6 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
DIO7 Direction	Input	Default
	Output	
Set Digital IO as Input or Output		
Output Level	HI	Default
	LOW	
Set Digital IO Output as Hi or Low		

## S5 RTC Wake Settings

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

Wake system with Fixed Time	[Disabled]	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
Wake system with Dynamic Time	[Disabled]	

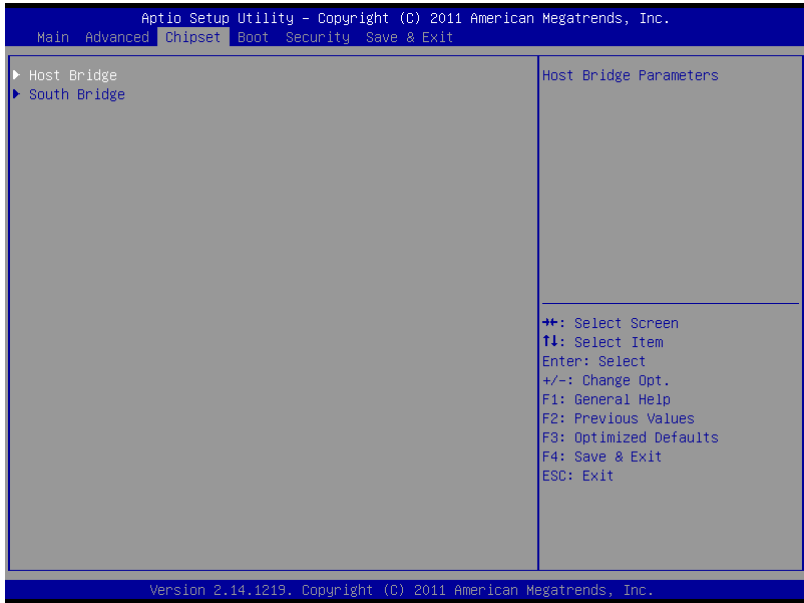
++: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

### Options summary:

Wake system with Fixed Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified		
Wake system with Dynamic Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified		

## Setup submenu: Chipset



## Setup submenu: Host Bridge

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Chipset

<p>▶ Intel IGD Configuration</p> <p>***** Memory Information *****</p> <table><tr><td>Memory Frequency</td><td>1067 MHz(DDR3)</td></tr><tr><td>Total Memory</td><td>2048 MB</td></tr><tr><td>DIMM#0</td><td>Not Present</td></tr><tr><td>DIMM#1</td><td>2048 MB</td></tr></table>	Memory Frequency	1067 MHz(DDR3)	Total Memory	2048 MB	DIMM#0	Not Present	DIMM#1	2048 MB	<p>Config Intel IGD Settings.</p> <hr/> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</p>
Memory Frequency	1067 MHz(DDR3)								
Total Memory	2048 MB								
DIMM#0	Not Present								
DIMM#1	2048 MB								

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

## Intel IGD Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
Intel IGD Configuration		Select the Video Device which will be activated during POST. This has no effect if external graphics present.
IGFX - Boot Type	[VBIOS Default]	
Fixed Graphics Memory Size	[256MB]	
LVDS Enable	[Disabled]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

### Options summary:

IGFX - Boot Type	VBIOS Default	Default
	CRT	
	DVI	
	LVDS	
Select the video device which will be activated during POST. This has no effect if external graphics present.		
Fixed Graphics Memory size	128MB	Default
	256MB	
Configure fixed graphics memory size.		
LVDS Enable	Disabled	Default
	Enabled	
Select LVDS Disable or Enable.		

## Setup submenu: South Bridge

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
SB Chipset Configuration		Select Power Supply Mode.
Power Mode	[ATX Type]	
Restore AC Power Loss	[Power Off]	
Audio Configuration		
Azalia HD Audio	[Enabled]	
Resume on PCIE Wake	[Enabled]	
Resume on Ring	[Enabled]	
PCI Express Ports Configuration		
PCI Express Port 5	[Enabled]	
PCI Express Port 6	[Enabled]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

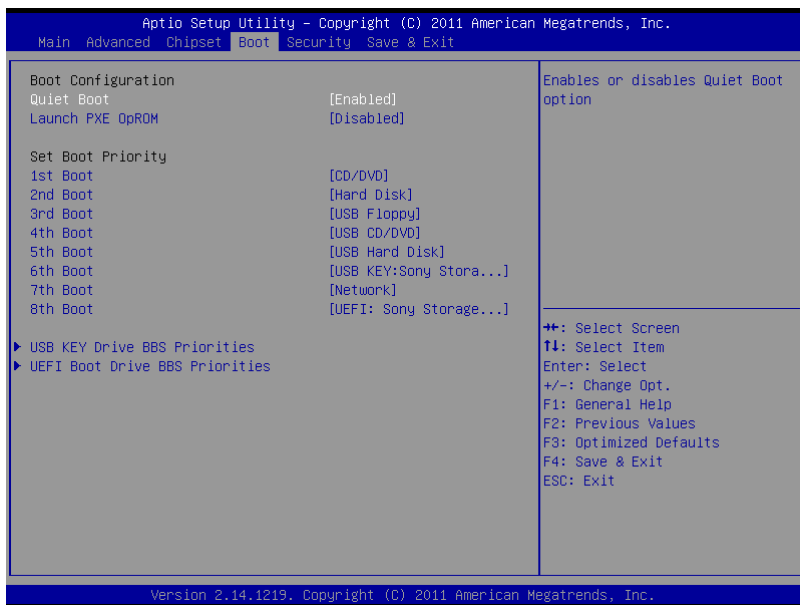
## Options summary:

Power Mode	ATX Type	Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Power Off	Default
	Power On	
	Last State	
Specify what state to go to when power is re-applied after a power failure (G3 State).		
Azalia HD Audio	Disabled	Default
	Enabled	
Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled Enabled = Azalia will be unconditionally Enabled		
Resume on PCIE Wake	Disabled	Default
	Enabled	
For En/Disable PCIE In wake up function.		



Resume on Ring	Disabled	Default
	Enabled	
For En/Disable Ring In wake up function. Attention please, when this function is enabled, some devices which connect to Serial Port may cause the system auto wake up from sleep mode.		
PCI Express port 5	Disabled	Default
	Enabled	
For En/Disable Onboard RTL8111E 1 function.		
PCI Express port 6	Disabled	Default
	Enabled	
For En/Disable Onboard RTL8111E 2 function.		

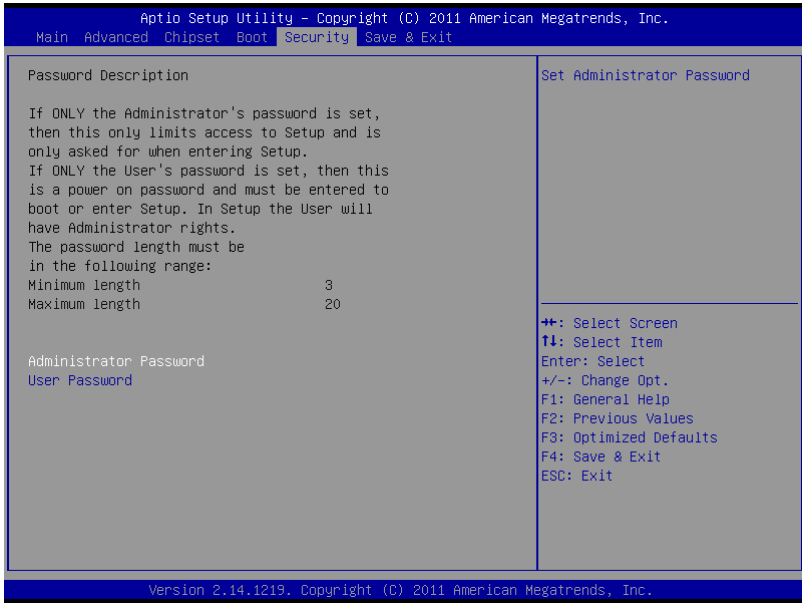
## Setup submenu: Boot



## Options summary:

Quiet Boot	Disabled	Default
	Enabled	
Enables or disables Quiet Boot option		
Launch PXE OpROM	Disabled	Default
	Enabled	
En/Disable PXE boot for RTL8111E LAN		

## Security



### Change User/Supervisor Password

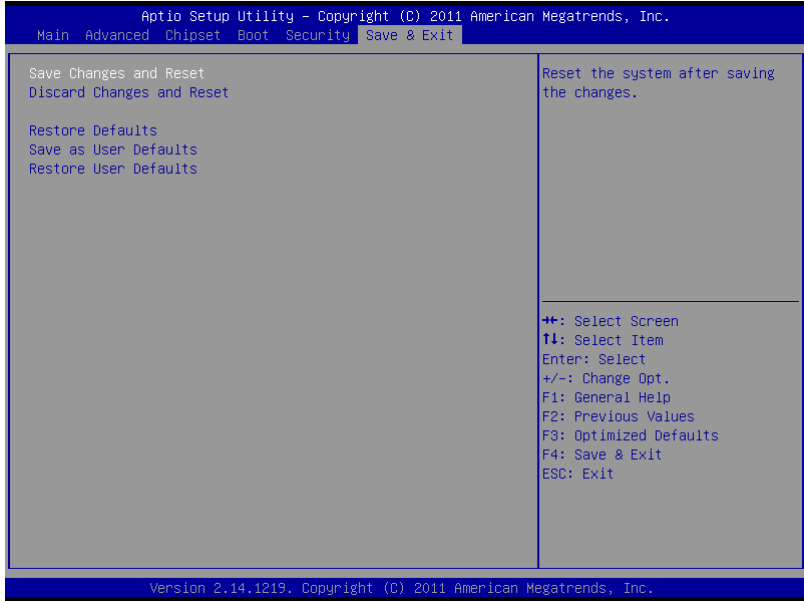
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

### Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

## Setup submenu: Exit



Chapter

4

**Driver  
Installation**

The EMB-CV2 comes with an Autorun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-title will automatically start and show the installation guide. If not, please follow the sequence below to install the drivers.

***Follow the sequence below to install the drivers:***

- Step 1 – Install Chipset Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Device
- Step 4 – Install Audio Driver
- Step 5 – Install AHCI Driver
- Step 6 – Install Serial Port Driver (Optional)

Please read instructions below for further detailed installations.

## 4.1 Installation:

---

Insert the EMB-CV2 CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 6 in order.

### Step 1 – Install Chipset Driver

1. Click on the **Step 1 - INF** folder and double click on the ***infinst\_autol.exe***
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

### Step 2 – Install VGA Driver

#### For Windows® 7

1. Click on the **Step 2 - VGA** folder and select the folder of ***Win7***
2. Double click on the ***Setup.exe*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

#### For Windows® XP

1. Install Framework 3.5
  - Double click on the ***dotnetfx35.exe***
  - Follow the instructions that the window shows
  - The system will help you install the driver automatically
2. Install IEMGD
  - Double click on the ***IEMGDInstall.exe***

- Select the configuration
- Follow the instructions that the window shows
- The system will help you install the driver automatically







If you want to update driver, please uninstall driver first.

### Uninstall IEMGD

1. Double click on the *IEMGDInstall.exe*
2. Follow the instructions that the window shows
3. The system will help you uninstall the driver automatically



### Step 3 –Install LAN Driver

1. Click on the **Step 3 - LAN** folder and double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

### Step 4 –Install Audio Driver

1. Click on the **Step 4 - AUDIO** folder and double click on the **SETUP.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

### Step 5 –Install AHCI Driver (please refer to Appendix D AHCI Setting as well)

1. Click on the **Step 5 - AHCI** folder and select the folder of **AP**
2. Double click on the **iata\_cd.exe**
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

### Step 6 – Install Serial Port Driver (Optional)

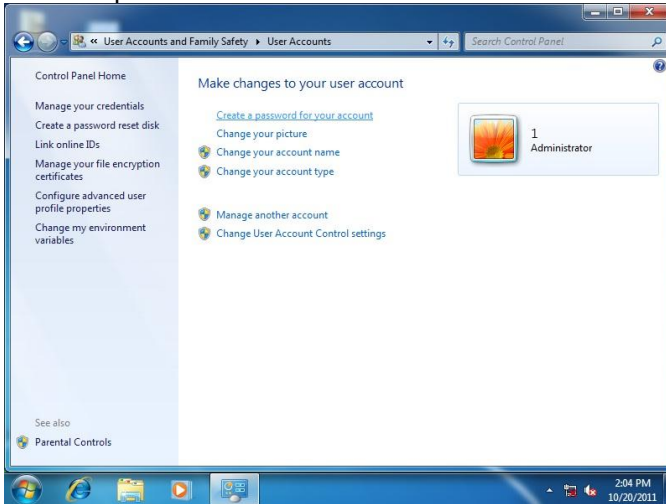
#### For Windows® XP 32-bit

1. Click on the **Step 6 - Serial Port Driver (Optional)** folder and double click on the **patch.bat**
2. Follow the instructions that the window shows

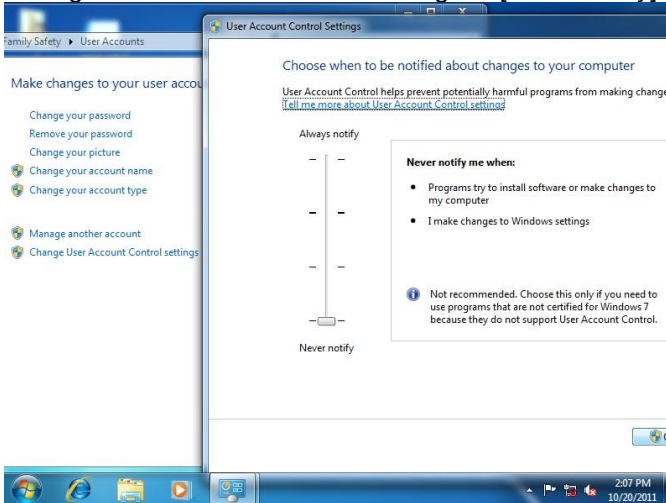
3. The system will help you install the driver automatically

## For Windows® 7 32-bit/ 64-bit

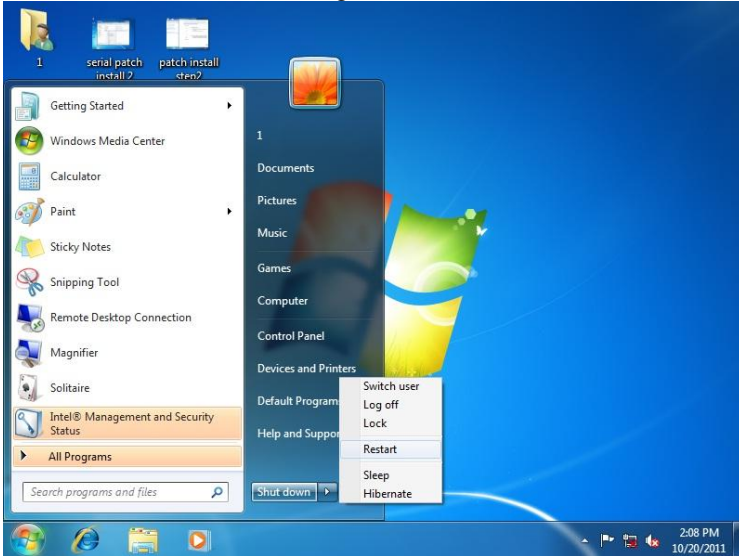
Create a password for Administrator account.



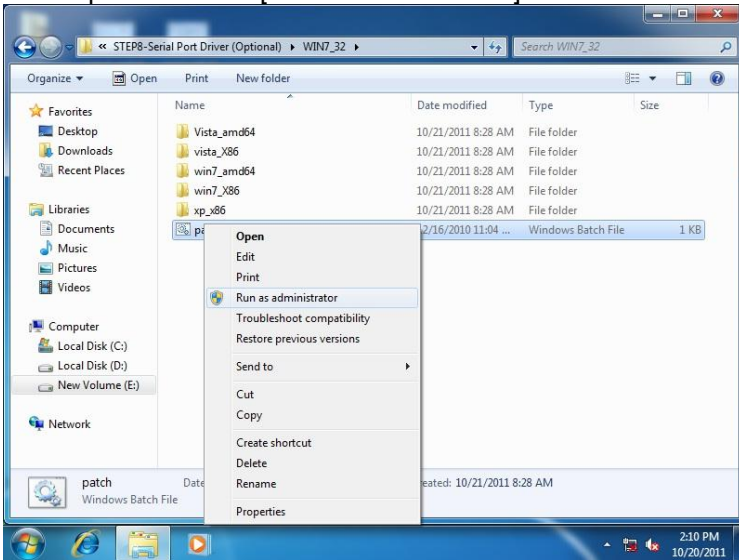
## Change User Account Control Settings to [Never notify]

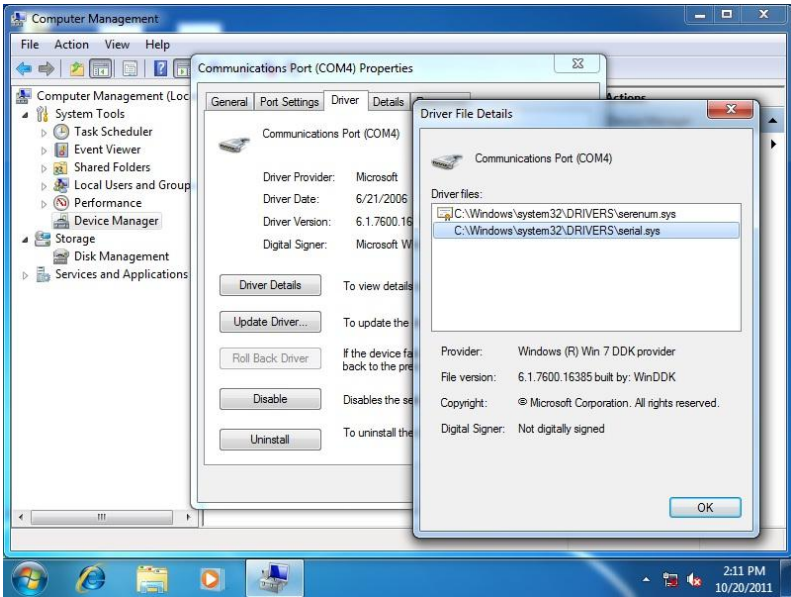


Reboot and Administrator login.



To run patch.bat with [Run as administrator].





Appendix

**A**

# **Programming the Watchdog Timer**

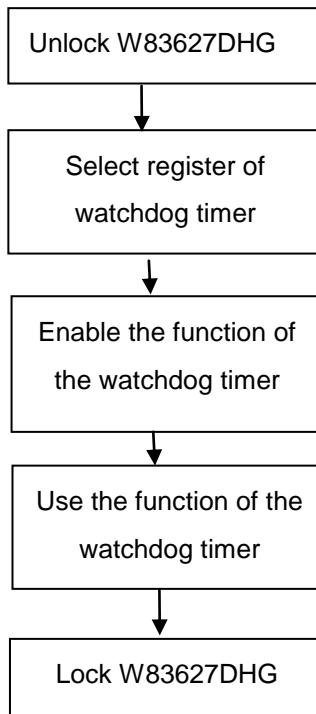
## A.1 Programming

---

EMB-CV2 utilizes W83627DHG chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

### Configuring Sequence Description



There are three steps to complete the configuration setup:

- (1) Enter the W83627DHG config Mode
- (2) Modify the data of configuration registers

- (3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

### (1) Enter the W83627DHG config Mode

To enter the W83627DHG config Mode, two special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h,87h:	2Eh	2Fh

### (2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

### (3) Exit the W83627DHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

### CR 30h. (Default 02h)

BIT	READ/WRITE	DESCRIPTION
7~3	Reserved.	
2	R/W	0: GPIO6 is inactive. 1: GPIO6 is active.



1	R/W	0: GPIO5 is inactive. 1: GPIO5 is active.
0	R/W	0: WDTO# and PLED are inactive. 1: WDTO# and PLED are inactive.

### CR F5h. (WDTO# and KBC P20 Control Mode Register; Default 00h)

BIT	READ/WRITE	DESCRIPTION
7~5	Reserved.	
4	R/W	1000 time faster in WDTO# count mode. 0: Disable. 1: Enable. (If bit-3 is Second Mode, the count mode is 1/1000 Sec.) (If bit-3 is Minute Mode, the count mode is 1/1000 Min.)
3	R/W	Select WDTO# count mode. 0: Second Mode. 1: Minute Mode.
2	R/W	Enable the rising edge of KBC reset (P20) to issue time-out event. 0: Disable. 1: Enable.
1	R/W	Disable/ Enable the WDTO# output low pulse to the KBRST# pin (PIN60) 0: Disable. 1: Enable.
0	Reserved.	

### CR F6h. (WDTO# Counter Register; Default 00h)

BIT	READ/WRITE	DESCRIPTION
7~0	R/W	Watch Dog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value to Watch Dog Counter and start counting down. If bits 7 and 6 of CR F7h are set, any Mouse Interrupt or Keyboard Interrupt event will also cause the reload of previously-loaded non-zero value to Watch Dog Counter and start counting down. Reading this register returns current value in Watch Dog Counter instead of Watch Dog Timer Time-out value. 00h: Time-out Disable

		01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes ..... FFh: Time-out occurs after 255 second/minutes
--	--	--

**CR F7h. (WDTO# Control & Status Register; Default 00h)**

BIT	READ/WRITE	DESCRIPTION
7	R/W	Mouse interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt.
6	R/W	Keyboard interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboard interrupt.
5	Write "1" Only	Trigger WDTO# event. This bit is self-clearing.
4	R/W Write "0" Clear	WDTO# status bit 0: Watchdog timer is running. 1: Watchdog timer issue time-out event.
3~0	R/W	These bits select IRQ resource for WDTO#. (02h for SMI# event.)

## A.2 W83627DHG Watchdog Timer Initial Program

	LDN	Register	Bit	Description
WDT Timer value	0x07	0xF6	Bit [7-0]	00h: Time-out Disable 01h: Time-out occurs after 1 minute only. 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes ..... FFh: Time-out occurs after 255 second/minutes (The deviation is approx 1 second.)
WDT Unit	0x07	0xF5	Bit3	Select WDTO# count mode. 0: Second Mode. 1: Minute Mode.

\*\*\*\*\*

```
#include <stdio.h>
#include <conio.h>
```

```
#define SIOIndex    0x2E //Modify for project support 2E/4E
#define SIOData     0x2F //Modify for project support 2F/4F
#define void AaeonWDTConfig(void);
#define void AaeonWDTEnable(Byte Timer, boolean Unit);
```

```
void Main(){
    // Procedure : AaeonWDTConfig
    // This procedure will enable the WDT counting.
    AaeonWDTConfig (void);

    // Procedure : AaeonWDTEnable
    // (byte)Timer      : Time of WDT timer.(0x00~0xFF)
    // (boolean)Unit    : Select time unit(0: second, 1: minute).
    AaeonWDTEnable(Byte Timer, boolean Unit);
}
```

\*\*\*\*\*

```
// Procedure : AaeonWDTConfig
void AaeonWDTConfig (void){
    Byte val;
    //Super I/O Entry Key
    outputb(SIOIndex,0x87);
    outputb(SIOIndex,0x87);

    //Setting WDT Pin.
    outputb(SIOIndex,0x2D);
    val = inportb((SIOData);
    outputb(SIOIndex,0x2D);
    outputb(SIOData,val | 0x01);**

    // Enable WatchDog function
    outputb(SIOIndex,0x07);
    outputb(SIOData,0x08);
    outputb(SIOIndex,0x30);
    outputb(SIOData, 0x01);
}
```

\*\*\*\*\*

\*\*This is special case for EMB-CV2 platform.

\*\*\*\*\*

// Procedure :

```
void AaeonWDTEnable (Byte Timer, boolean Unit){
```

```
    Byte val;
```

```
    //Super I/O Entry Key
```

```
    outputb(SIOIndex,0x87);
```

```
    outputb(SIOIndex,0x87);
```

```
    // Select Logic Device Number Register
```

```
    outputb(SIOIndex,0x07);
```

```
    outputb(SIOData,0x08);
```

```
    // Setting WDT Operation Mode
```

```
    outputb(SIOIndex,0xF5);
```

```
    val = inportb((SIOData);
```

```
    outputb(SIOIndex,0xF5);
```

```
    outputb(SIOData, val | Unit << 3 );
```

```
    // Setting WDT Counter
```

```
    outputb(SIOIndex,0xF6);
```

```
    outputb(SIOData, Timer);
```

```
}
```

\*\*\*\*\*

































Appendix

**B**

# I/O Information

## B.1 I/O Address Map

---

Input/output (IO)	
	[00000000 - 0000000F] Direct memory access controller
	[00000000 - 000003AF] PCI bus
	[00000010 - 0000001F] Motherboard resources
	[00000020 - 00000021] Programmable interrupt controller
	[00000022 - 0000003F] Motherboard resources
	[00000040 - 00000043] System timer
	[00000044 - 0000005F] Motherboard resources
	[00000060 - 00000060] Standard PS/2 Keyboard
	[00000061 - 00000061] System speaker
	[00000062 - 00000063] Motherboard resources
	[00000064 - 00000064] Standard PS/2 Keyboard
	[00000065 - 0000006F] Motherboard resources
	[00000070 - 00000071] System CMOS/real time clock
	[00000072 - 0000007F] Motherboard resources
	[00000080 - 00000080] Motherboard resources
	[00000081 - 00000083] Direct memory access controller
	[00000084 - 00000086] Motherboard resources
	[00000087 - 00000087] Direct memory access controller
	[00000088 - 00000088] Motherboard resources
	[00000089 - 0000008B] Direct memory access controller
	[0000008C - 0000008E] Motherboard resources
	[0000008F - 0000008F] Direct memory access controller
	[00000090 - 0000009F] Motherboard resources
	[000000A0 - 000000A1] Programmable interrupt controller
	[000000A2 - 000000BF] Motherboard resources
	[000000C0 - 000000DF] Direct memory access controller
	[000000E0 - 000000EF] Motherboard resources
	[000000F0 - 000000FF] Numeric data processor
	[000002F8 - 000002FF] Communications Port (COM2)
	[000003B0 - 000003BB] Intel(R) Graphics Media Accelerator 3600 Series
	[000003B0 - 000003DF] PCI bus
	[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3600 Series
	[000003E0 - 00000CF7] PCI bus
	[000003F8 - 000003FF] Communications Port (COM1)
	[00000400 - 0000047F] System board
	[000004D0 - 000004D1] Motherboard resources
	[00000500 - 0000057F] System board
	[00000A00 - 00000A0F] Motherboard resources
	[00000A10 - 00000A1F] Motherboard resources
	[00000D00 - 0000FFFF] PCI bus
	[00001180 - 0000119F] Intel(R) ICH10 Family SMBus Controller - 3A30
	[00001180 - 0000119F] System board
	[0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller #5
	[0000D000 - 0000DFFF] Intel(R) ICH10 Family PCI Express Root Port 6 - 3A4A
	[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller #6
	[0000E000 - 0000EFFF] Intel(R) ICH10 Family PCI Express Root Port 5 - 3A48
	[0000F000 - 0000F01F] Intel(R) ICH10 Family USB Universal Host Controller - 3A36
	[0000F020 - 0000F03F] Intel(R) ICH10 Family USB Universal Host Controller - 3A35

	[0000F040 - 0000F05F] Intel(R) ICH10 Family USB Universal Host Controller - 3A34
	[0000F060 - 0000F07F] Intel(R) ICH10 Family USB Universal Host Controller - 3A37
	[0000F080 - 0000F08F] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F090 - 0000F09F] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F0A0 - 0000F0A3] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F0B0 - 0000F0B7] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F0C0 - 0000F0C3] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F0D0 - 0000F0D7] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	[0000F0E0 - 0000F0EF] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F0F0 - 0000F0FF] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F100 - 0000F103] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F110 - 0000F117] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F120 - 0000F123] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F130 - 0000F137] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	[0000F140 - 0000F147] Intel(R) Graphics Media Accelerator 3600 Series




















































## B.2 1<sup>st</sup> MB Memory Address Map





































---

Memory	
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[7F800000 - 7FFFFFFF]	PCI bus
[E0000000 - EFFFFFFF]	System board
[F0000000 - FEBFFFFF]	PCI bus
[FE800000 - FE803FFF]	Realtek PCIe GBE Family Controller #5
[FE800000 - FE8FFFFFF]	Intel(R) ICH10 Family PCI Express Root Port 6 - 3A4A
[FE804000 - FE804FFF]	Realtek PCIe GBE Family Controller #5
[FE900000 - FE903FFF]	Realtek PCIe GBE Family Controller #6
[FE900000 - FE9FFFFFF]	Intel(R) ICH10 Family PCI Express Root Port 5 - 3A48
[FE904000 - FE904FFF]	Realtek PCIe GBE Family Controller #6
[FEA00000 - FEAFFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[FEB00000 - FEB03FFF]	High Definition Audio Controller
[FEB04000 - FEB043FF]	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A
[FEB05000 - FEB053FF]	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3C
[FEC00000 - FECFFFFF]	System board
[FED00000 - FED003FF]	High precision event timer
[FED1C000 - FED1FFFF]	System board
[FF000000 - FFFFFFFF]	System board

## B.3 IRQ Mapping Chart


Interrupt request (IRQ)	Device
(ISA) 0x0000000 (00)	System timer
(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
(ISA) 0x00000003 (03)	Communications Port (COM2)
(ISA) 0x00000004 (04)	Communications Port (COM1)
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x0000000C (12)	Microsoft PS/2 Mouse
(ISA) 0x0000000D (13)	Numeric data processor
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System

 (ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
 (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
 (ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
 (ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
 (ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
 (ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
 (ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
 (ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
 (ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
 (ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
 (ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
 (ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
 (ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
 (ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
 (ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
 (ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
 (ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
 (ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System

	(ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
	(PCI) 0x0000000A (10)	Intel(R) ICH10 Family SMBus Controller - 3A30
	(PCI) 0x00000010 (16)	Intel(R) ICH10 Family USB Universal Host Controller - 3A37
	(PCI) 0x00000012 (18)	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3C
	(PCI) 0x00000012 (18)	Intel(R) ICH10 Family USB Universal Host Controller - 3A36
	(PCI) 0x00000013 (19)	Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A26
	(PCI) 0x00000013 (19)	Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A20
	(PCI) 0x00000013 (19)	Intel(R) ICH10 Family USB Universal Host Controller - 3A35
	(PCI) 0x00000016 (22)	High Definition Audio Controller
	(PCI) 0x00000017 (23)	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A
	(PCI) 0x00000017 (23)	Intel(R) ICH10 Family USB Universal Host Controller - 3A34
	(PCI) 0xFFFFFFFF9 (-7)	Realtek PCIe GBE Family Controller #5
	(PCI) 0xFFFFFFFFA (-6)	Realtek PCIe GBE Family Controller #6
	(PCI) 0xFFFFFFFFB (-5)	Intel(R) Graphics Media Accelerator 3600 Series
	(PCI) 0xFFFFFFFFC (-4)	Intel(R) ICH10 Family PCI Express Root Port 6 - 3A4A
	(PCI) 0xFFFFFFFFD (-3)	Intel(R) ICH10 Family PCI Express Root Port 5 - 3A48
	(PCI) 0xFFFFFFFFE (-2)	Intel(R) ICH10 Family PCI Express Root Port 1 - 3A40

## B.4 DMA Channel Assignments

### Direct memory access (DMA)

-  4 Direct memory access controller

Appendix

C

**Mating  
Connector**

## C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model No.		
CON2	+12V AUX power connector	PINREX	POWER CON 4P S/T,ATX,W/PG2 PINREX/740-41-04TWC0.DIP		
CHA_FAN	System FAN connector	PINREX	WAFER HD 4P S/T 2.54MM L-GRAY PINREX/744-81-04TG20 [EL].DIP		
COM3	COM 3 connector	CATCH	(TF)BOX HEADER.5*2P.18 0D.(M).2.0mm.DI P.WO PIN10.CATCH.11 47-000-10SA		
COM4	COM 4 connector	CATCH	(TF)BOX HEADER.5*2P.18 0D.(M).2.0mm.DI P.WO PIN10.CATCH.11 47-000-10SA		
COM5	COM 5 connector	CATCH	(TF)BOX HEADER.5*2P.18 0D.(M).2.0mm.DI P.WO PIN10.CATCH.11 47-000-10SA		
CON1	SIM card socket	HAMBURG	SIM CON 6P 2.54 PITCH SMT HAMBURG/ICA-509.SMD		

CPU_FAN	CPU FAN connector	PINREX	WAFER HD 4P S/T 2.54MM L-GRAY PINREX/744-81-0 4TG20 [EL].DIP		
DIGITALREFERENCE	GPIO/SM BUS/COM2 / COM2 external power select	JVE	HEADER 2X10P,S/T,2.0mm ,STACK JVE/21N22050-2 0S22B01G4/9.2/2 .DIP		
F_PANEL	Front panel pin header	PINREX	HEADER 2X5P 2.54mm S/T.K10 G/F PINREX/210-92-0 5GB02		
KB/MS	PS/2 Keyboard / Mouse connector	Ho-Base	(TF)WAFER BOX.6P.180D(M). 2.0mm.W/LOCK DIP.何 迪.2005-2WS-6		
LCD_POWE	LVDS panel power connector	CATCH	(TF)WAFER BOX.5P.180D.(M) .2.0mm.W/LOCK DIP.CATCH.1192- 700-05S		
LPT	Parallel port connector	PINREX	HEADER 2X13P,S/T,2.54m m,K26 PINREX/210-92-1 3GB11 [EL].DIP		
LVDS	LVDS panel connector	E-call	(TF)Board-Wire Connector.30P.18 0D(M).SMD.Pitch =1.25mm.W/Reinf orcem.E-call.0110 -01-553-300		
PCIEX1_1	PCI-E X1 slot	E-MOVE	SLOT 36P G/F PCIE X1,DARK		

			BLUE E-MOVE/EE0360 -1GGZ-00H [GA].DIP		
SATA_PWR1	Serial ATA power Connector	CATCH	(TF)WAFER.4P.1 80D.(M).2.5mm. W/LOCK POWER DIP.CATCH.1198- 700-04S.		
SATA3G_1	SATA 0 Connector	LOTES	SATA CON 7P S/T G/F,DIP,CHARL LOTES/ABA-SAT- 046-K13.DIP		
SATA3G_2	SATA 1 Connector	LOTES	SATA CON 7P S/T G/F,DIP,CHARL LOTES/ABA-SAT- 046-K13.DIP		
USB56	USB 5 & 6 pin header	JVE	(TF)PIN HEADER.5*2P.18 0D.(M).2.0mm.DI P		
WLAN	Mini PCI-E SLOT	LOTES	MINI PCI-E 52P,0.8MM,9.0H SMT LOTES/AAA-PCI- 047-P01 [HF].SMD		

**Note:** The Cable P/N with “ \* ” sign is for WiTAS series products.



Appendix

D

# AHCI & RAID Settings

## D.1 Setting AHCI

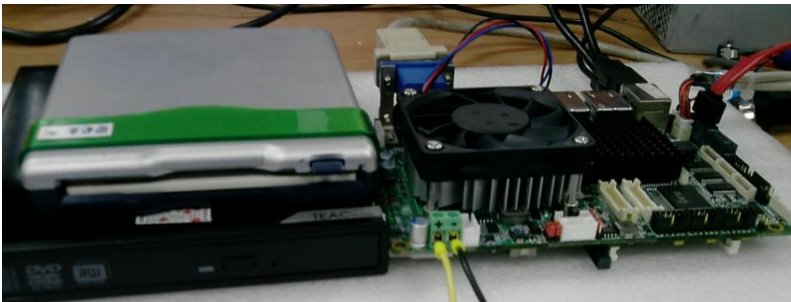
---

OS Installation to Setup AHCI mode

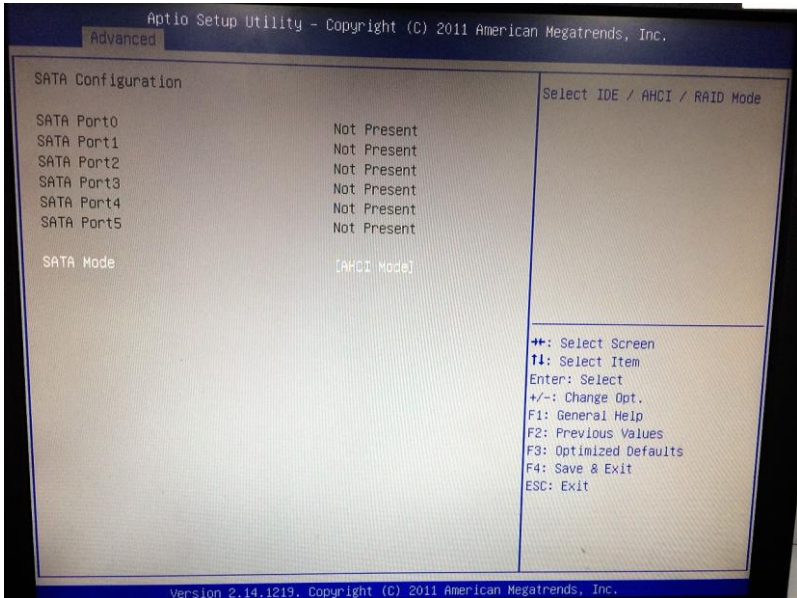
Step 1: Copy the files below from the **Driver CD: Step 5 - AHCI\Floppy\**f6flpy-x86 or **f6flpy-x64** to Disk.



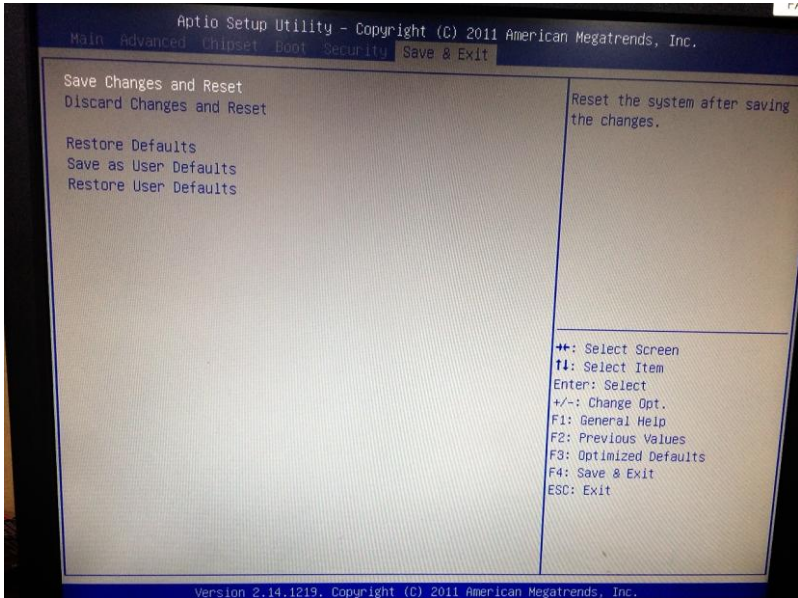
Step 2: Connect the USB Floppy Disk with the AHCI files to the board.



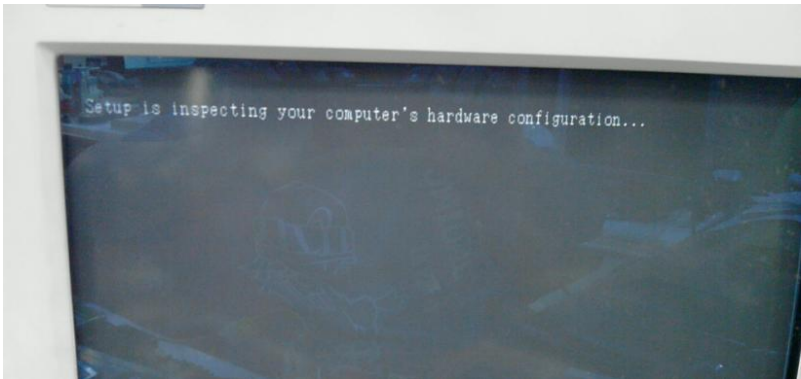
Step 3: To install “In BIOS Setup Menu”, select **Advanced** -> **SATA Configuration** -> **SATA Mode** -> **AHCI Mode**



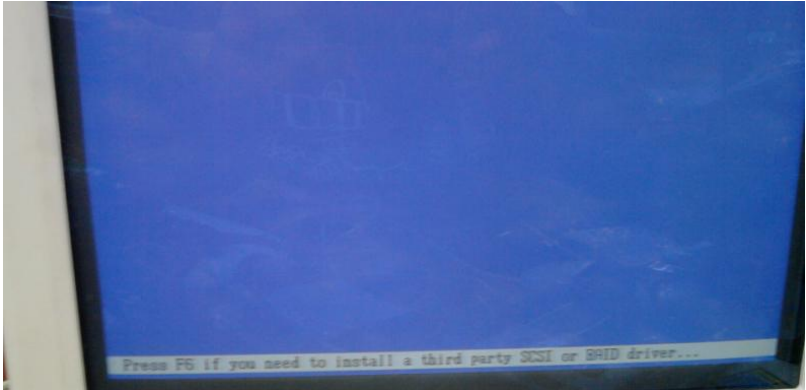
Step 4: To save, select **Save & Exit** -> **Save Changes and Exit**



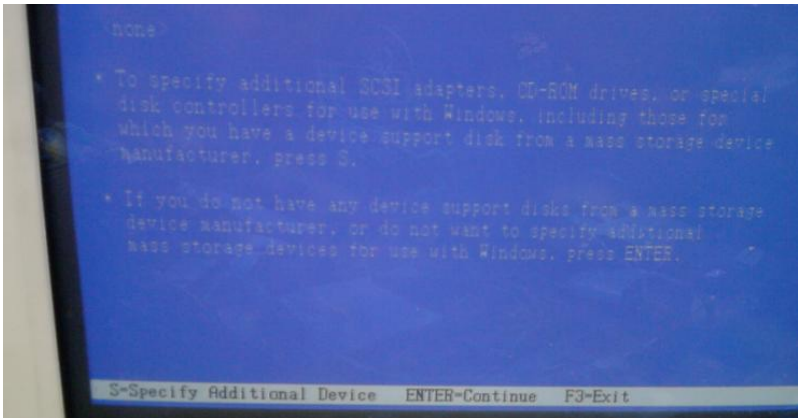
Step 5: Setup OS



## Step 6: Press "F6"



## Step 7: Choose "S"



## Step 8:

Choose “Intel(R) ICH10R SATA AHCI Controller”



Step 9: Select "ENTER" to choose the model number





Step 10: Setup is loading files





## D.2 Setting RAID

---

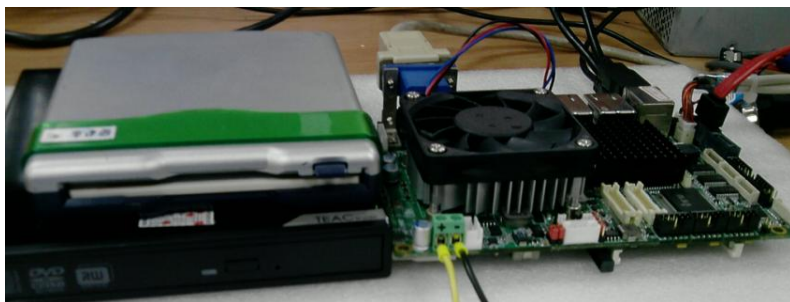
OS Installation to Setup RAID mode

Step 1: Copy the files below from the **Driver CD: Step 5 -**

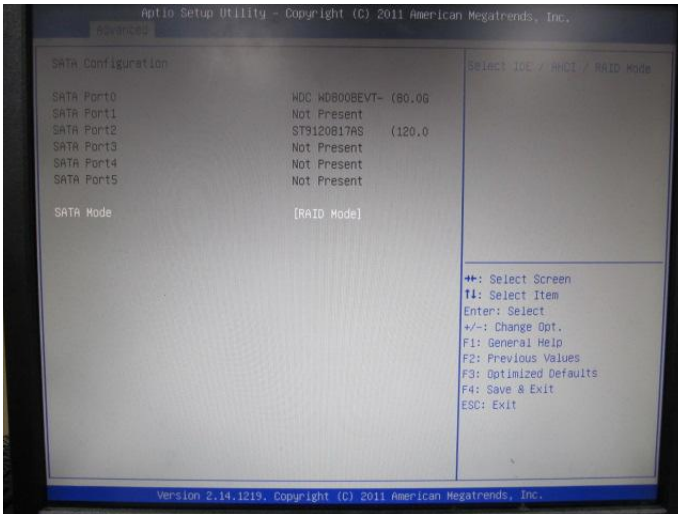
**AHCI\Floppy\**f6flpy-x86 or **f6flpy-x64** to Disk.



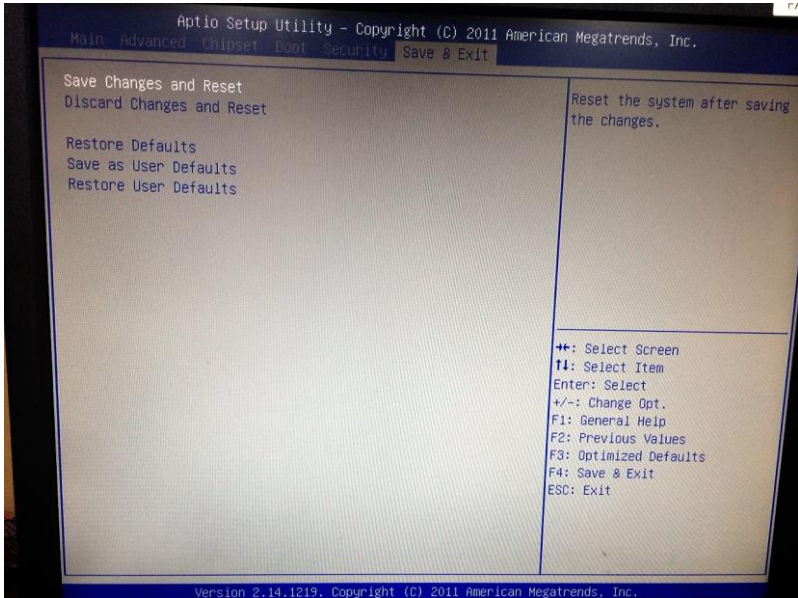
Step 2: Connect the USB Floppy Disk with the RAID files to the board.



Step 3: To install “In BIOS Setup Menu”, select **Advanced** -> **SATA Configuration** -> **SATA Mode** -> **RAID Mode**



Step 4: To save, select **Save & Exit** -> **Save Changes and Exit**



Step 5: Press **Ctrl-I** to enter **MAIN MENU**.

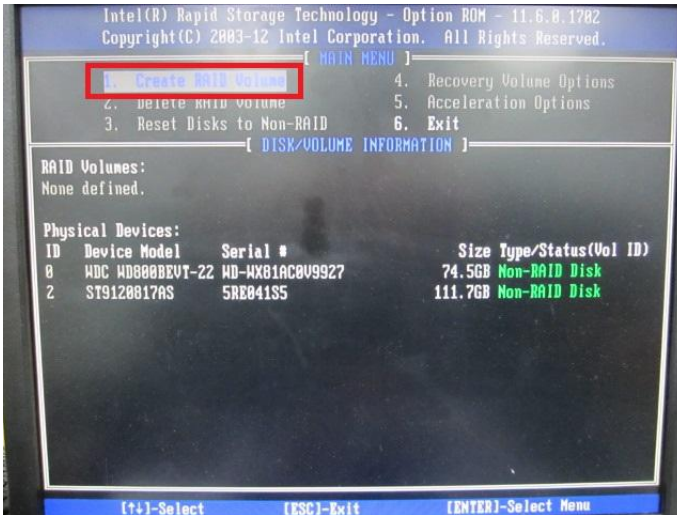
```
Intel(R) Rapid Storage Technology - Option ROM - 11.6.0.1762
Copyright(C) 2003-12 Intel Corporation. All Rights Reserved.

RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 16KB 149.1GB Normal Yes

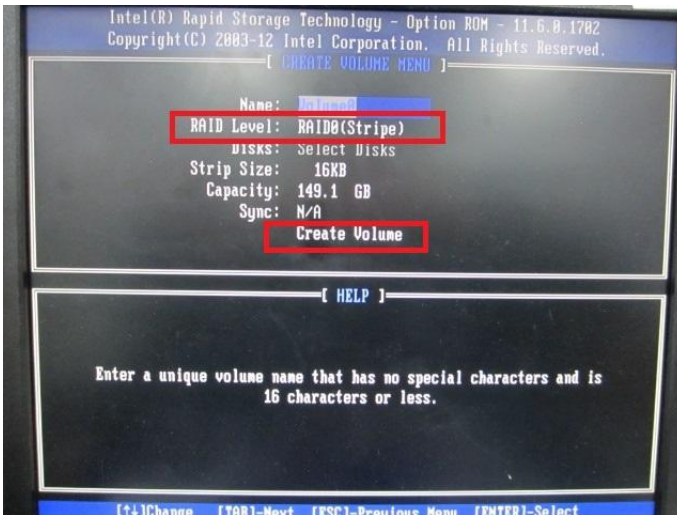
Physical Devices:
ID Device Model Serial # Size Type/Status(Vol ID)
0 WDC WD8000BEVT-22 WD-WX01AC0V9927 74.5GB Member Disk(0)
2 ST9120817AS 5RE041S5 111.7GB Member Disk(0)

Press CTRL-I to enter Configuration Utility...
```

## Step 6: Choose “1.Create RAID Volume”



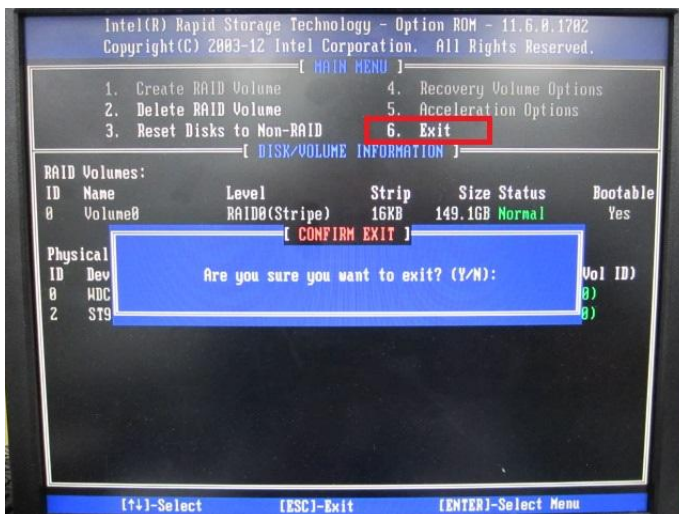
## Step 7: Setting “RAID Level” and “Create Volume”



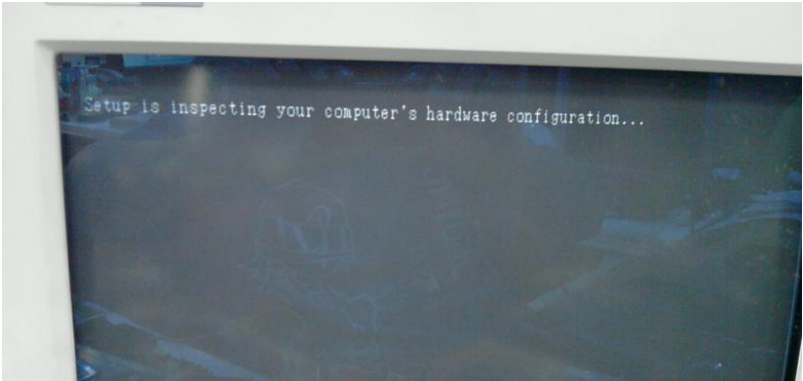
## Step 8: Choose “Y”



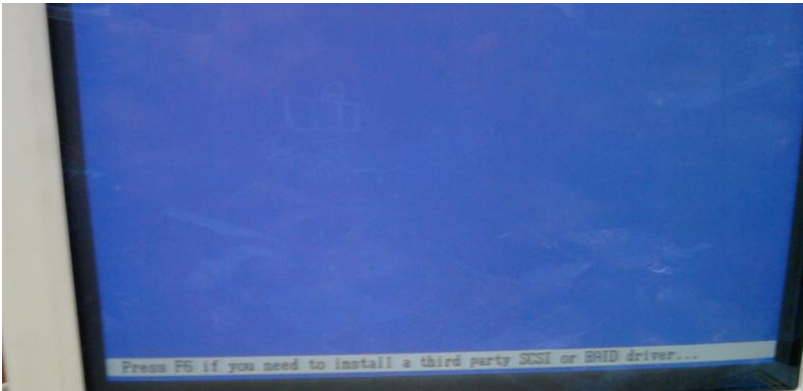
## Step 9: Choose “6. Exit” and Choose “Y”



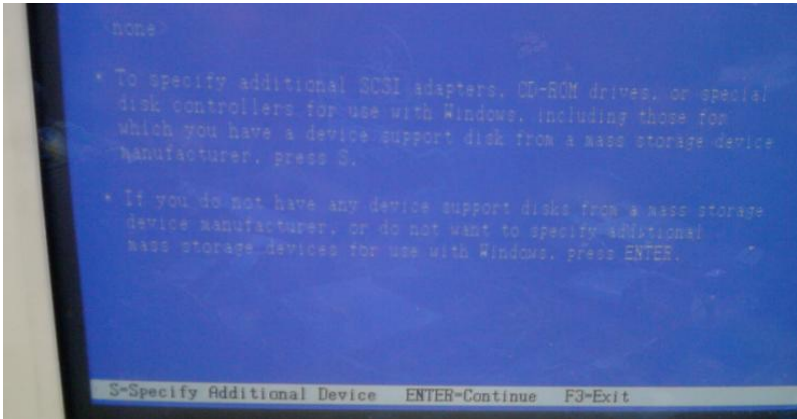
Step 10: Setup OS



Step 11: Press "F6"



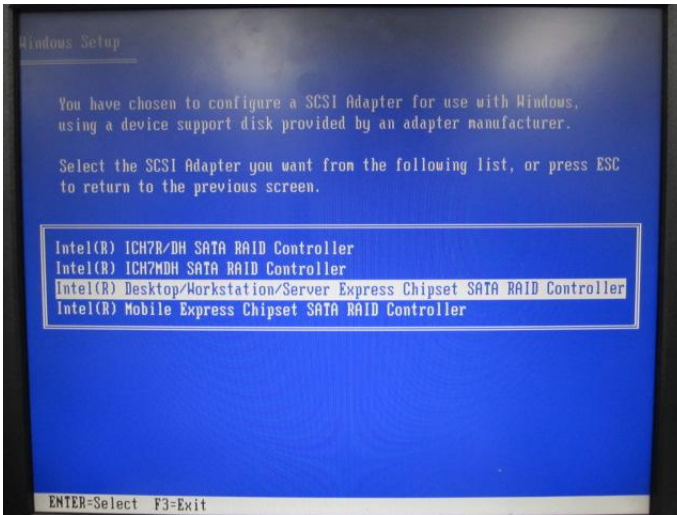
## Step 12: Choose “S”



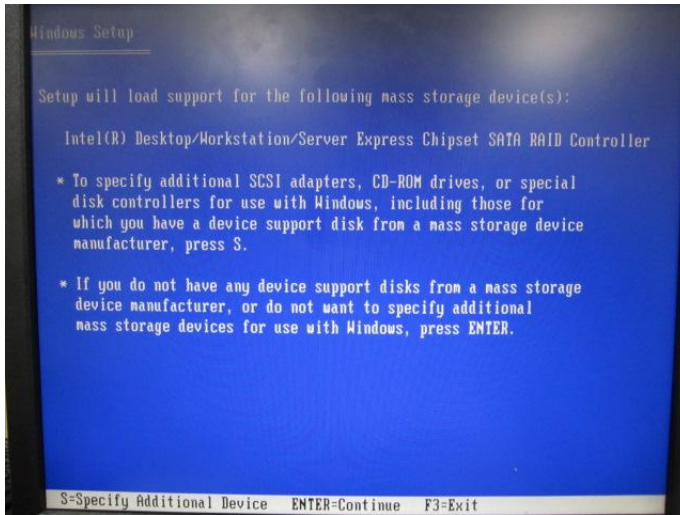


Step 13:

Choose “Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller”



## Step 14: Select "ENTER" to choose the model number



Step 15: Setup is loading files

