

**AEC-6635**

Fanless Embedded Controller

Intel® Core™ i7/i5 Processor

2 Gigabit Ethernet, 6 USB, 4 COM

1 VGA, 1 DVI-D

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## Packing List

Before you begin operating the product, please make sure that the following materials are enclosed:

- 1 AEC-6635 Embedded Controller
- 2 Wallmount Brackets
- 1 Screw Package
- 1 RAM Thermal Pad (60mm x 25mm x 3mm)
- 1 DVD-ROM for manual (in PDF format) and drivers

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

## Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.

- d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 70°C (158°F). IT MAY DAMAGE THE EQUIPMENT.

## FCC

### **Warning!**



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

### **Caution:**

*There is a danger of explosion if the 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 and your local government's recycling or disposal directives.*

# ENERGY STAR



This Product has been certified by ENERGY STAR®

The Regulation of ENERGY STAR®: ENERGY STAR® Requirements for Computer Version 5.2.

The Test Standard of ENERGY STAR®: IEC/EN 62301, ENERGY STAR® Program Requirements for Computer Version

## ENERGY STAR® Compliance: Power Management features (Basic)

### **Using power-saving states**

The system provides the two power-saving states: Sleep and Hibernation.

When Sleep is initiated, the power lights blink and the screen clears. Your working task is saved to memory. Exiting Sleep is faster than exiting Hibernation. If the system is in the Sleep state for an extra period or if the battery reaches a critical battery level while in the Sleep state, the system initiates Hibernation.

When Hibernation is initiated, your work is saved to a hibernation file on the hard drive and the system turns off.

### **Initiating and exiting Sleep**

The system set the Sleep mode after 30 minutes of inactivity when running on external power. You can change to none Sleep mode if the system needs to be active at all time. The default power management settings have been selected for compliance with ENERGY STAR<sup>®</sup>, and are recommended by the ENERGY STAR<sup>®</sup> program for optimal energy savings.

### **Using power plans**

You can choose your own power plan which is a collection of system settings that manages how the system uses power. Power plans can help you conserve power or maximize performance.

Below Table for China RoHS Requirements  
 产品中有毒有害物质或元素名称及含量  
 AAEON Boxer/ Industrial System

| 部件名称  | 有毒有害物质或元素 |           |           |                 |               |                 |
|---|-----------|-----------|-----------|-----------------|---------------|-----------------|
|   | 铅<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 印刷电路板<br>及其电子组件   | ×         | ○         | ○         | ○               | ○             | ○               |
| 外部信号<br>连接器及线材  | ×         | ○         | ○         | ○               | ○             | ○               |
| 外壳  | ×         | ○         | ○         | ○               | ○             | ○               |
| 中央处理器<br>与内存  | ×         | ○         | ○         | ○               | ○             | ○               |
| 硬盘  | ×         | ○         | ○         | ○               | ○             | ○               |
| 电源  | ×         | ○         | ○         | ○               | ○             | ○               |
|   |           |           |           |                 |               |                 |
|   |           |           |           |                 |               |                 |
|   |           |           |           |                 |               |                 |
|   |           |           |           |                 |               |                 |
| <p><b>O:</b> 表示该有毒有害物质在该部件所有均质材料中的含量均在<br/> <b>SJ/T 11363-2006</b> 标准规定的限量要求以下。</p> <p><b>X:</b> 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出<br/> <b>SJ/T 11363-2006</b> 标准规定的限量要求。</p> <p>备注：<br/>                     一、此产品所标示之环保使用期限，系指在一般正常使用状况下。<br/>                     二、上述部件物质中央处理器、内存、硬盘、电源为选购品。</p> |           |           |           |                 |               |                 |

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Chapter

1

**General  
Information**

## 1.1 Introduction

---

The newest Boxer series AEC-6635 has been introduced by AAeon and it utilizes Intel® Core™ i7 620M 2.66 GHz/ Core™ i5 520M 2.4 GHz processor. This condensed Embedded Controller is a fanless controller with the latest Intel® processor and chipset. The cutting-edge technology has been equipped to the AEC-6635 to satisfy the versatile demands of Factory Automation, Vehicle, and Digital Signage.

The AEC-6635 offers low power consumption system that while operating in ambient with airflow temperatures ranging from -20° to 50°C. The AEC-6635 is a standalone high performance controller designed for long-life operation and with high reliability. It can replace traditional methods and become the mainstream controller for the multimedia entertainment market. If you are looking for a multifunctional embedded controller, the AEC-6635 is definitely your best choice to fit into your vital applications.

## **1.2 Features**

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- Intel® Core™ i7 620M/ Core™ i5 520M Processor
- Intel® QM57 Chipset
- Supports DVI-D x 1, VGA x 1, DIO x 1, DisplayPort x 1
- Up To COM x 4
- Up To USB x 6
- Fanless Operation
- Gigabit Ethernet x 2
- 2.5" SATA Hard Disk Drive Bay
- ATX/ACPI Power Mode

### 1.3 Specifications

|                          |                    |  |
|--------------------------|--------------------|--|
| <b>CPU</b>               |                    | Intel® Core™ i7 620M 2.66 GHz/<br>Intel® Core™ i5 520M 2.4 GHz |
| <b>Chipset</b>           |                    | Intel® QM57  |
| <b>System Memory</b>     |                    | 204-pin DDR3 SODIMM x 1, Max. 4 GB                             |
| <b>Display Interface</b> | <b>VGA</b>         | D-Sub 15 x 1, shared system memory up to 512 MB                |
|                          | <b>DVI</b>         | DVI-D x 1  |
|                          | <b>Others</b>      | DisplayPort x 1  |
| <b>Storage Device</b>    | <b>SSD</b>         | CompactFlash™ Slot x 1   |
|                          | <b>HDD</b>         | 2.5" SATA Hard Disk Drive Bay x 1                              |
| <b>Network</b>           | <b>LAN</b>         | Gigabit Ethernet, RJ-45 x 2                                    |
| <b>Front I/O</b>         | <b>USB Host</b>    | USB2.0 x 2   |
|                          | <b>Audio</b>       | Line-in x 1, Line-out x 1                                      |
|                          | <b>Others</b>      | Power Switch x 1, Reset Button x 1                             |
| <b>Rear I/O</b>          | <b>USB Host</b>    | USB2.0 x 4   |
|                          | <b>LAN</b>         | RJ-45 x 2  |
|                          | <b>Serial Port</b> | RS-232/422/485 x 1 (COM2),<br>RS-232 x 3                       |
|                          | <b>DIO</b>         | 1  |
|                          | <b>Others</b>      | DVI-D x 1, VGA x 1   |
| <b>Expansion</b>         | <b>Mini Card</b>   | 1  |
| <b>Indicator</b>         | <b>Front</b>       | Power LED x 1, Hard Disk Drive LED x 1                         |
| <b>Power Requirement</b> |                    | DC-in 9~30V  |

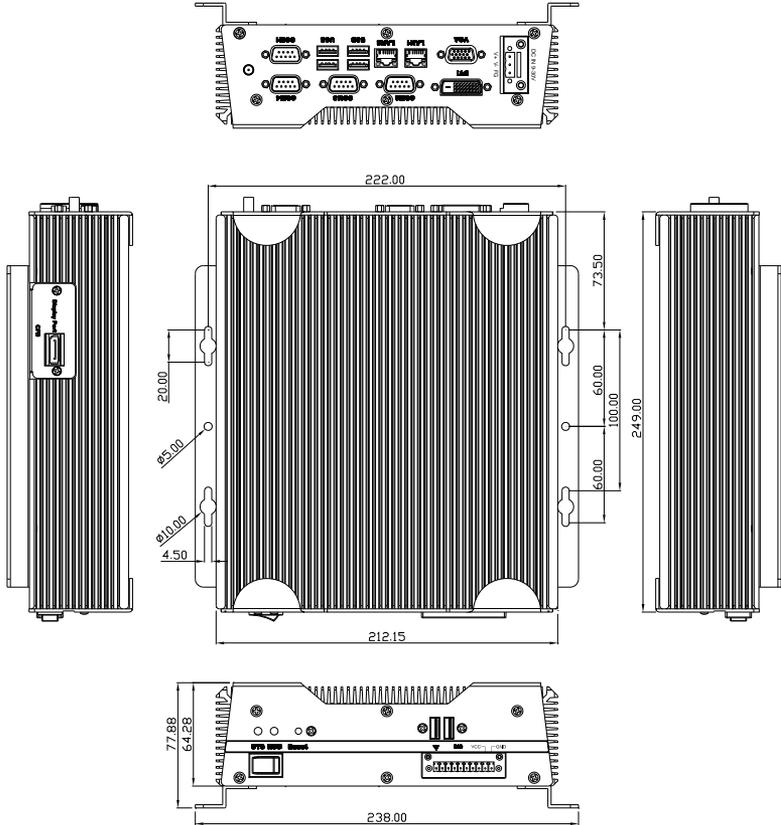
|                                 |  |
|---------------------------------|--|
| <b>Power Consumption</b>        | Intel® Core™ i7 620M, 4.06A @ 9V   |
| <b>System Cooling</b>           | Passive Cooling  |
| <b>Mounting</b>                 | Wallmount  |
| <b>Operating Temperature</b>    | -4°F ~122°F (-20°C~50°C)   |
| <b>Storage Temperature</b>      | -4°F ~158°F (-20°C~70°C)   |
| <b>Anti-Vibration</b>           | 5 g rms/5~500 Hz/ random operation (CFD);<br>1 g rms/5~500 Hz/ random operation (HDD)            |
| <b>Anti-Shock</b>               | 50 G peak acceleration (11 msec, duration)-CFD<br>20 G peak acceleration (11 msec, duration)-HDD |
| <b>Certification</b> <b>EMC</b> | CE/FCC Class A   |
| <b>Dimension</b>                | 8.35" (W) x 2.52" (H) x 9.8" (D)<br>(212mm x 64mm x 249mm)                                       |
| <b>Gross Weight</b>             | 13.42 lb (6.1 kg)  |
| <b>Net Weight</b>               | 8.36 lb (3.8 kg)   |
| <b>Note</b>                     | Windows® XP Embedded, Windows® XP, Windows® 7 support  |

Chapter

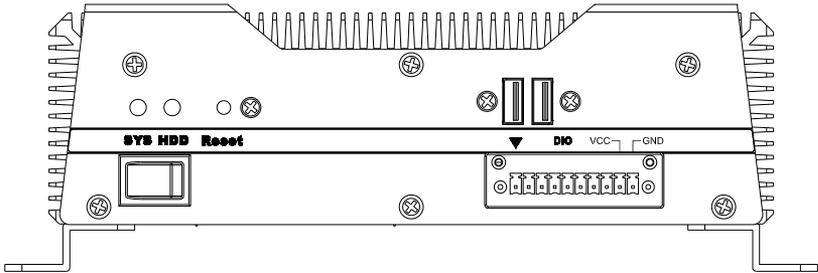
2

# Hardware Installation

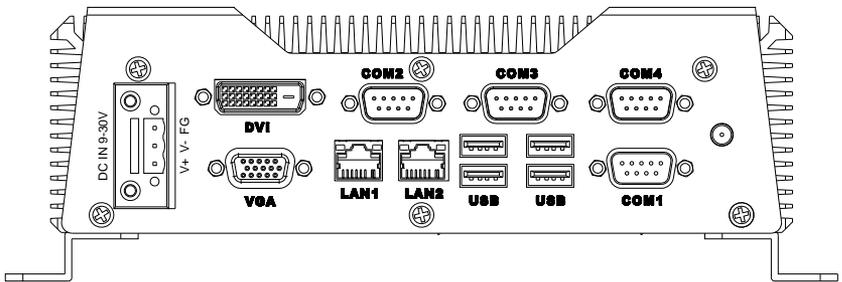
## 2.1 Dimension & Connectors of AEC-6635



Connectors on the front panel

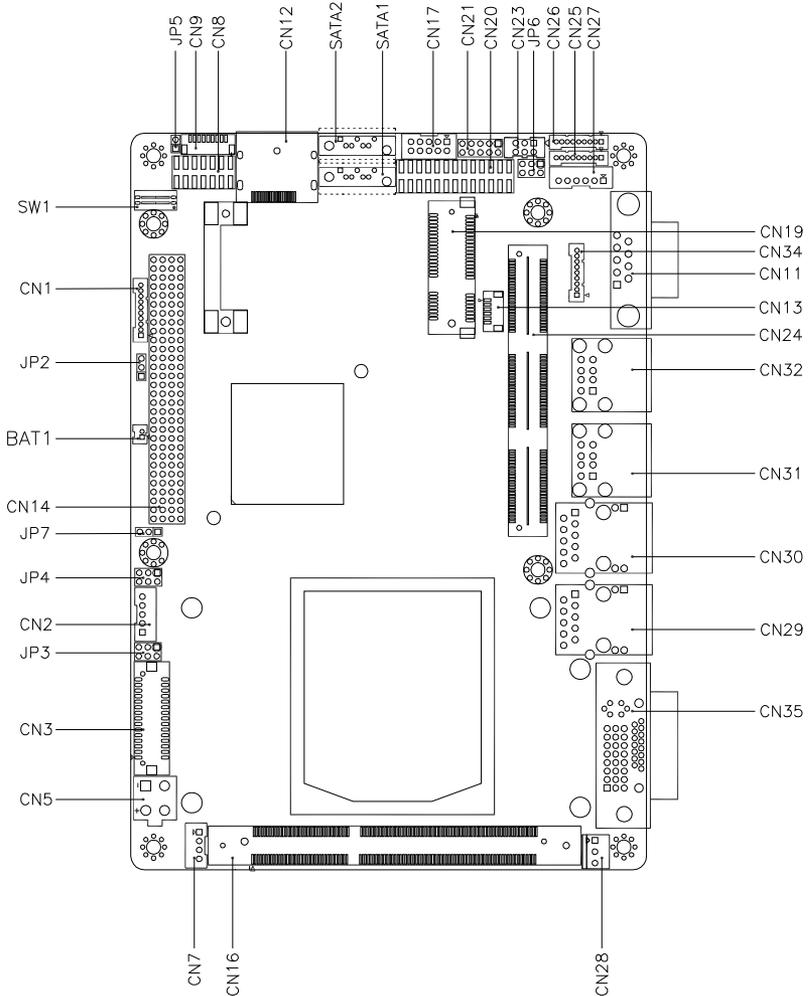


Connectors on the rear panel

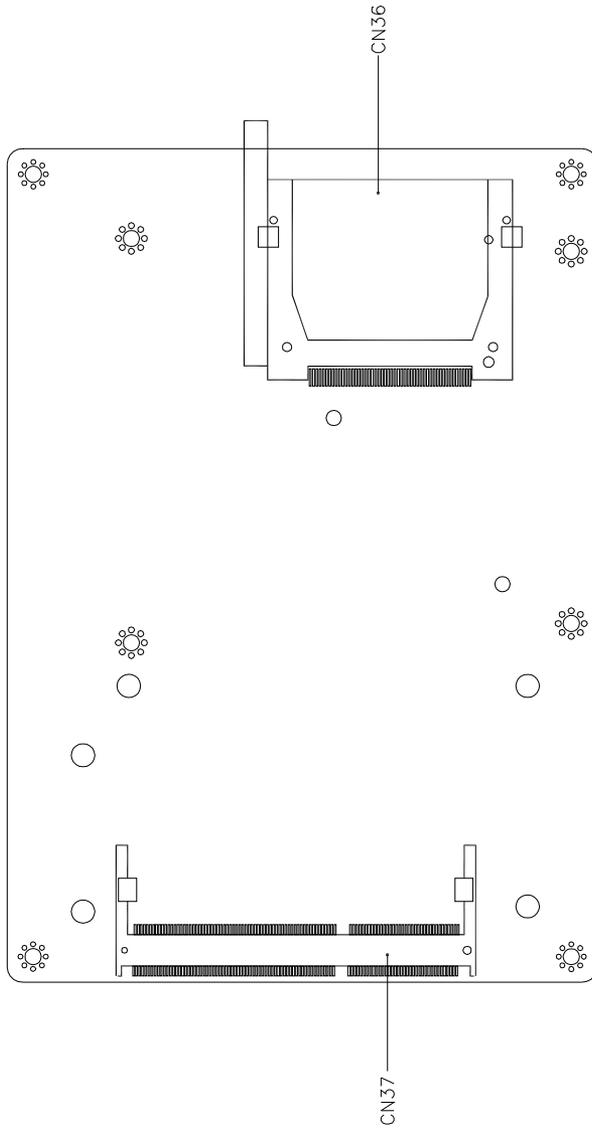


## 2.2 Connectors and Jumpers of The Main Board

### Component Side



Solder Side



## 2.3 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>                          |
|--------------|--|
| JP2          | PCI-104 I/O Voltage Selection            |
| JP3-1        | LCD Inverter/Backlight Voltage Selection |
| JP3-2        | LVDS LCD Voltage Selection               |
| JP4-1        | Clear CMOS                               |
| JP4-2        | Clear ME ROM                             |
| JP5          | Touch Screen 4/5/8-wire Mode Selection   |
| JP6          | COM2 RI/+5V/+12V Selection               |
| SW1          | AT/ATX Power Mode Selection              |

## 2.4 List of Connectors

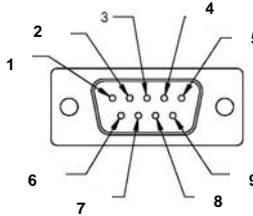
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The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

| <b>Label</b> | <b>Function</b>                  |
|--------------|----------------------------------|
| CN1          | Front Panel Connector            |
| CN2          | LCD Inverter/Backlight Connector |
| CN3          | Dual Channel LVDS LCD Connector  |
| CN5          | +12V DC Power Input Connector    |
| CN7          | +5V/+12V Power Output Connector  |
| CN8          | Audio Connector                  |

|                |  |
|----------------|--|
| CN9            | Touch Panel Connector                  |
| CN11           | RS-232 Serial Port 1 Connector         |
| CN12           | Display Port Connector                 |
| CN13           | UIM Connector                          |
| CN14           | PCI-104 Connector                      |
| CN16,CN37      | DDR3 SODIMM Slot                       |
| CN17,CN31,CN32 | USB Connector                          |
| CN19           | PCI Express Mini Card Connector        |
| CN20           | LPT Port Connector                     |
| CN21           | Digital I/O Connector                  |
| CN23           | PS2 Keyboard/Mouse Connector           |
| CN24           | PCIe/104 Connector                     |
| CN25           | RS-232 Serial Port 4 Connector         |
| CN26           | RS-232 Serial Port 3 Connector         |
| CN27           | External SMBUS and PS_ON# Connector    |
| CN28           | Fan Connector                          |
| CN29, CN30     | 10/100/1000Base-TX Ethernet Connector  |
| CN34           | RS-232/422/485 Serial Port 2 Connector |
| CN35           | DVI-I Connector                        |
| CN36           | CompactFlash™ Slot                     |

## 2.5 RS-232/422/485 Serial Port Connector (COM2)



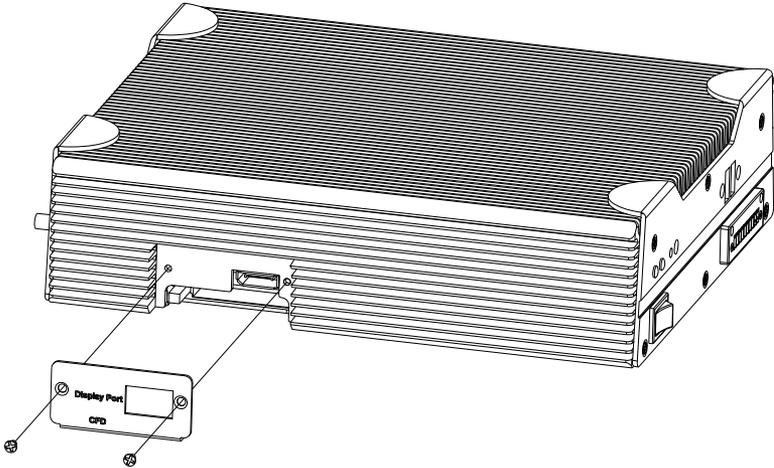
| Pin | Signal                 | Pin | Signal        |
|-----|------------------------|-----|---------------|
| 1   | DCD (422TXD-/485DATA-) | 2   | RXD (422RXD+) |
| 3   | TXD (422TXD+/485DATA+) | 4   | DTR (422RXD-) |
| 5   | GND                    | 6   | DSR           |
| 7   | RTS                    | 8   | CTS           |
| 9   | RI/+5V/+12V            |     |               |

### COM2 RI/+5V/+12V Selection (JP6)

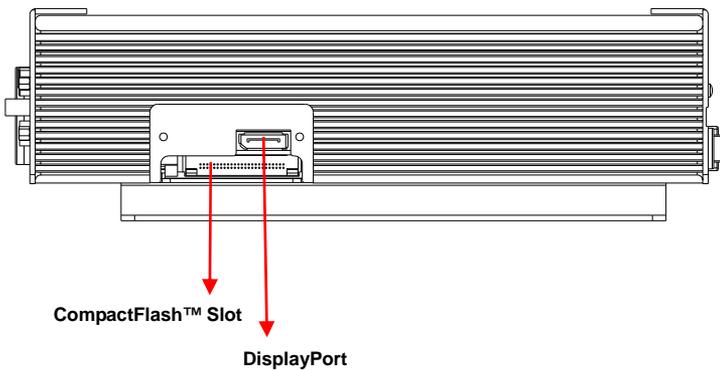
| Pin | Signal       |
|-----|--------------|
| 1-2 | +12V         |
| 3-4 | RI (Default) |
| 5-6 | +5V          |

## 2.6 CompactFlash™ Card Installation

Step 1: Unfasten the two screws of the CompactFlash™ Bracket

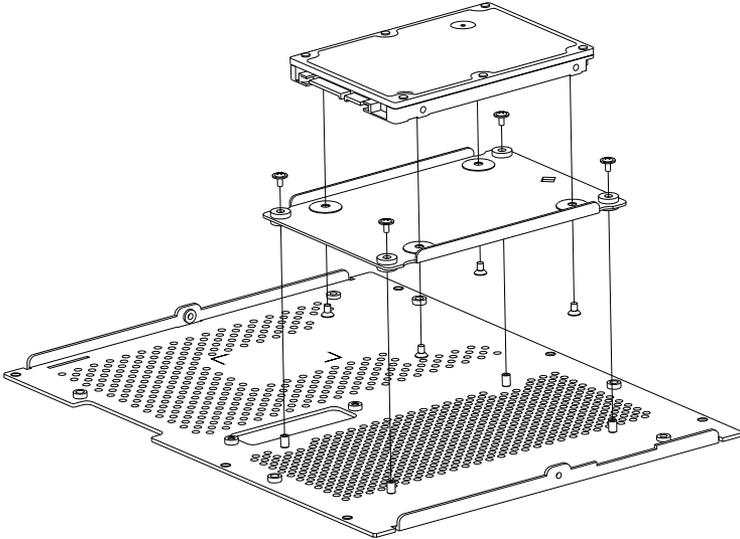


Step 2: Insert the CompactFlash™ and finish the installation

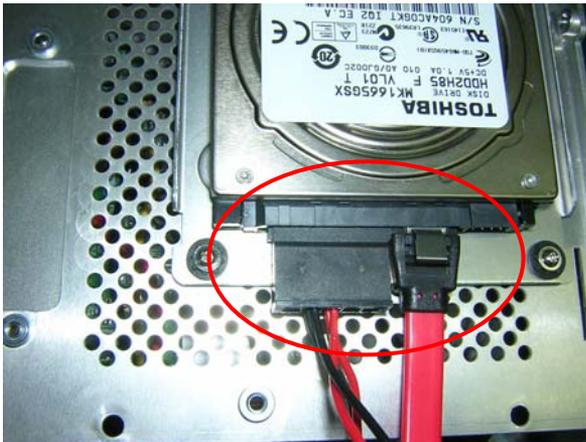


## 2.7 Hard Disk Drive (HDD) Installation

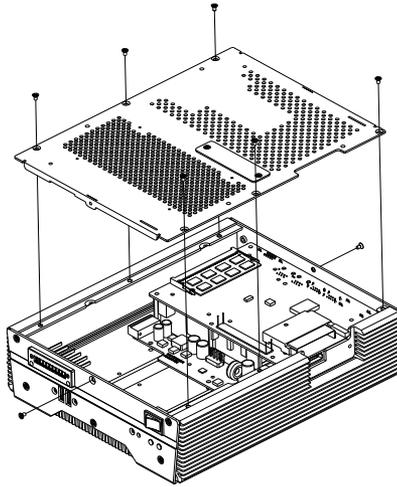
Step 1: Get the HDD and HDD Bracket ready. Fasten the four screws to fix the HDD and HDD bracket



Step 2: Connect the SATA cable to the HDD

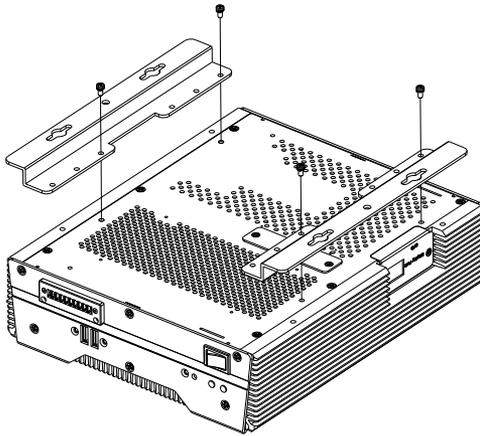


Step 3: Close the bottom cover of the AEC-6635 and fasten the screws

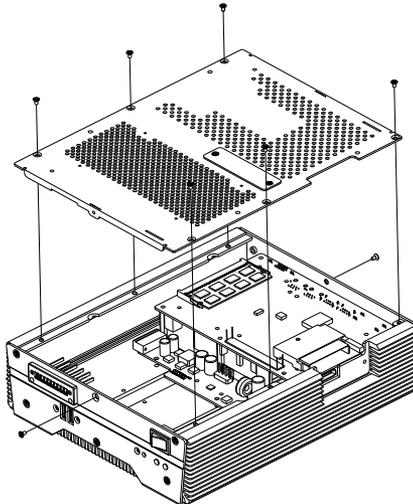


## 2.8 Memory Card Installation

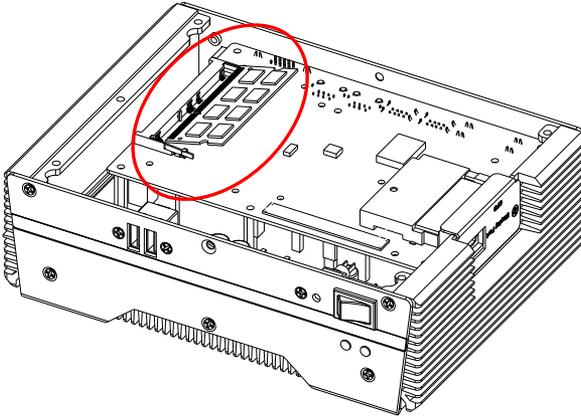
Step 1: Unfasten the four screws to release the brackets from the AEC-6635



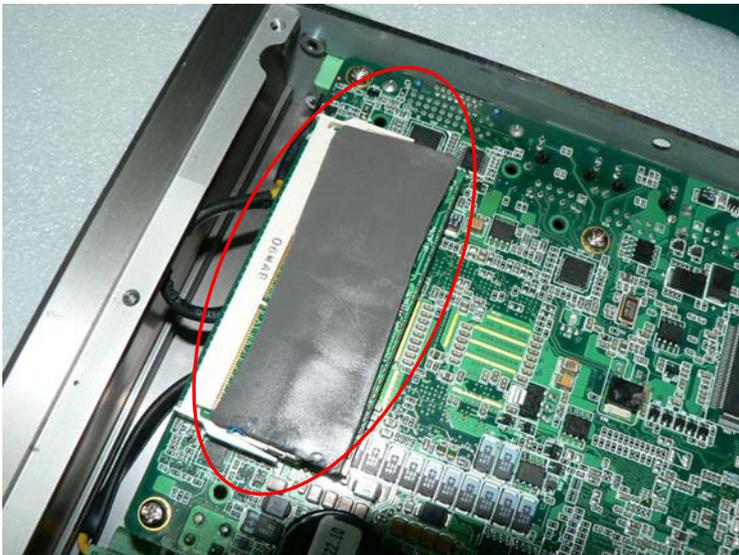
Step 2: Unfasten the six screws to release the bottom cover of the AEC-6635



Step 3: Insert the RAM at 30-degree angle to the memory slot and press

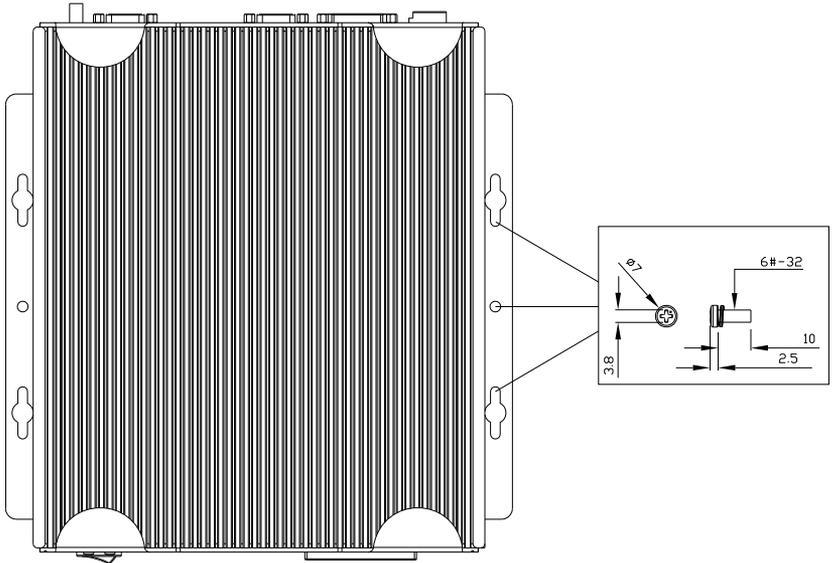


Step 4: Adhere the heat spreading pad onto the RAM



## 2.9 Wallmount Kit Installation

Get the brackets ready and fasten appropriate four screws on each bracket. After fastening the two brackets on the bottom lid of AEC-6635, the wallmount kit installation has been finished.



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 AEC-6635 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

## 3.2 AMI BIOS Setup

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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

Enable/disable boot option for legacy network devices.

### Chipset

host bridge parameters.

### Boot

Enables/disables quiet boot option.

### Security

Set setup administrator password.

### Save&Exit

Exit system setup after saving the changes.

Chapter

4

**Driver  
Installation**

The AEC-6635 comes with a DVD-ROM that contains all drivers your need.

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

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install ME Driver

Step 5 – Install AHCI Driver

Please read following instructions for detailed installations.

## 4.1 Installation

---

Insert the AEC-6635 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

### Step 1 – Install Chipset Driver

1. Click on the **Step1- CHIPSET** folder and then double click on the ***infinst\_autol(9.1.1.1020).exe***
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

### Step 2 – Install VGA Driver

1. Click on the **Step2- VGA** folder and select the OS your system is
2. Double click on **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

### Step 3 – Install LAN Driver

1. Click on the **Step3- LAN** folder and double click on ***Autorun.exe*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

### Step 4 – Install ME Driver

1. Click on the **Step4- ME** folder and double click on ***Setup.exe*** file
2. Follow the instructions that the window shows

- The system will help you to install the driver automatically

## Step 5 – Install AHCI Driver

### OS installation to setup AHCI Mode

Step 1: Copy the files below from “*Driver CD -> Step5-AHCI -> F6 Floppy - x86*” to Disk

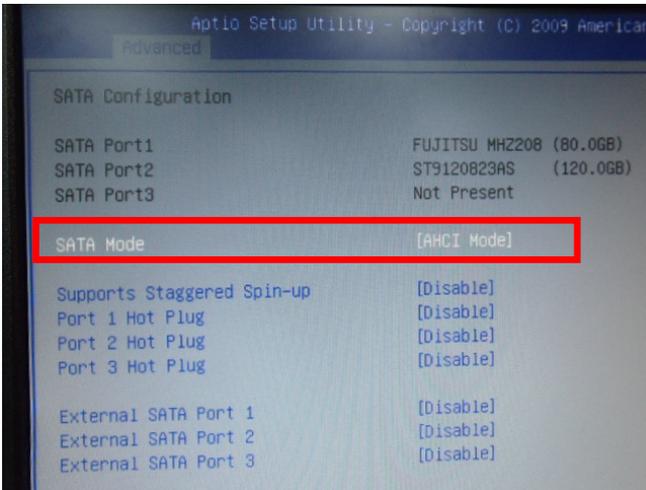


Step 2: Connect the USB Floppy (disk with AHCI files) to the board



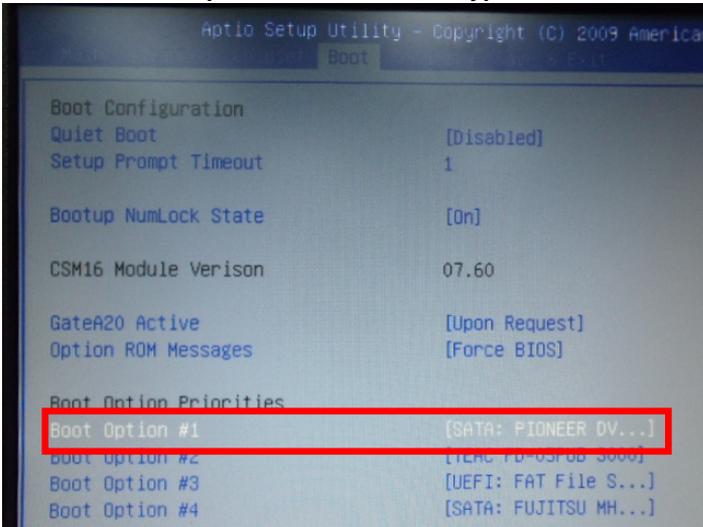
Step 3: The setting procedures “In BIOS Setup Menu”

**A: Advanced -> SATA Configuration -> SATA Configuration -> SATA Mode -> AHCI Mode**



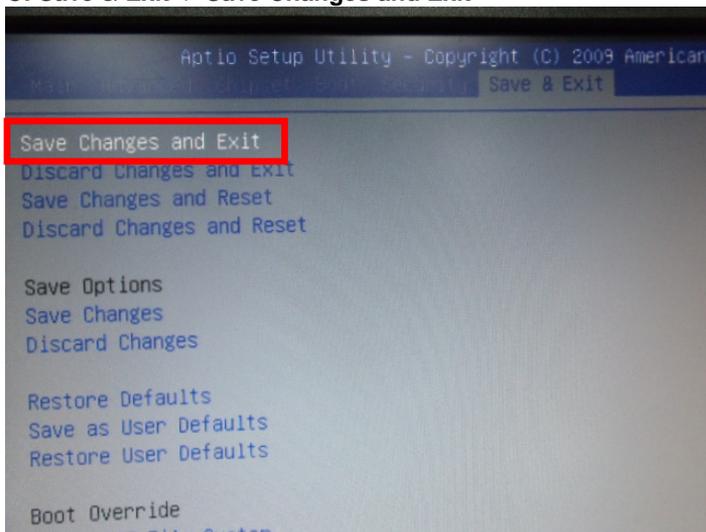
Step 4: The setting procedures “In BIOS Setup Menu”

**B: Boot -> Boot Option #1 -> DVD-ROM Type**

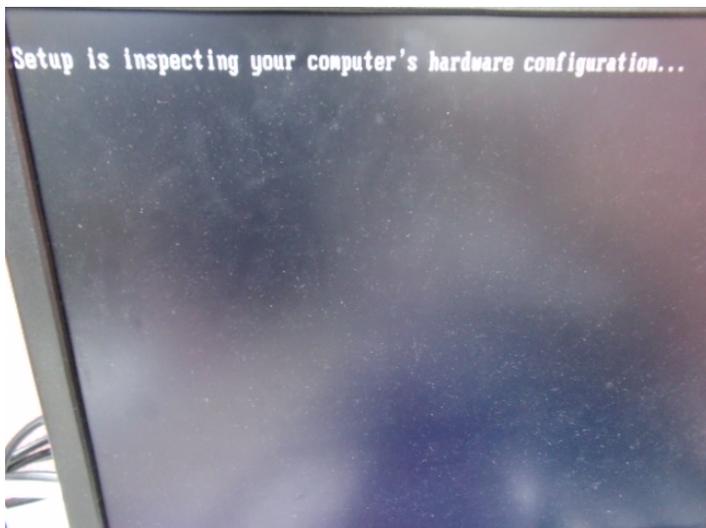


Step 5: The setting procedures "In BIOS Setup Menu"

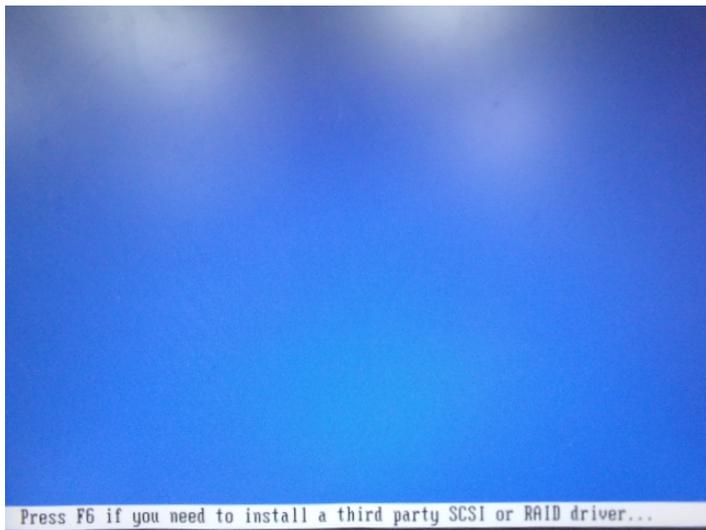
**C: Save & Exit -> Save Changes and Exit**



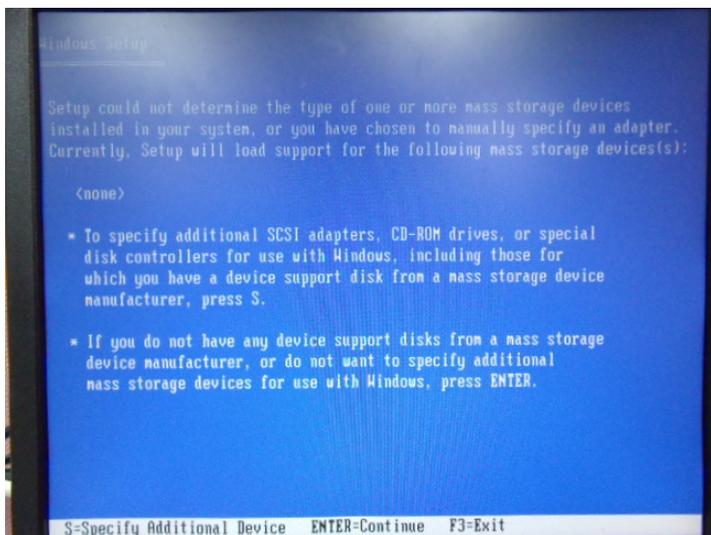
Step 6: Setup OS



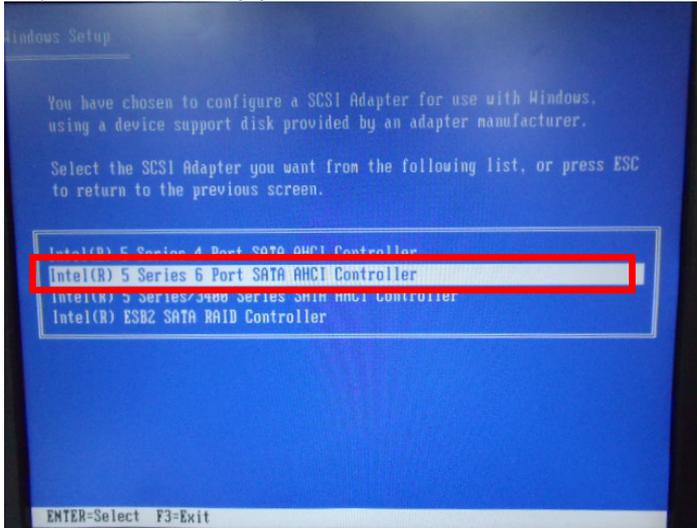
## Step 7: Press "F6"



## Step 8: Choose "S"



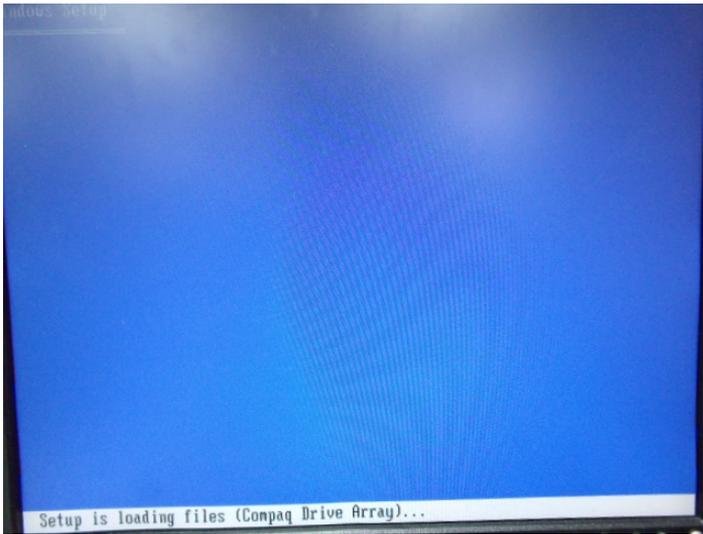
Step 9: Choose “Intel(R) 5 Series 6 Port SATA AHCI Controller”



Step 10: It will show the model number you select and then press “ENTER”



Step 11: Setup is loading files



Appendix

**A**

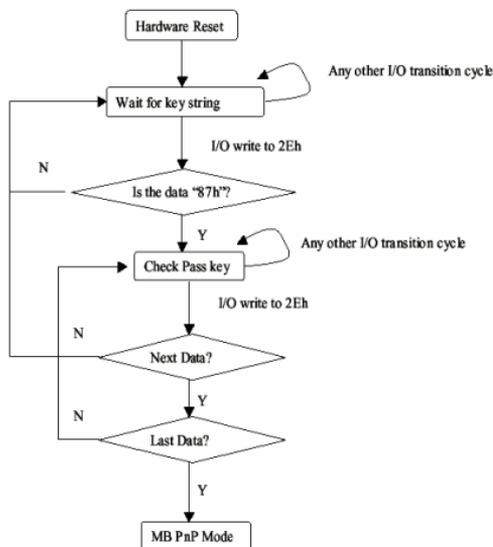
# Programming the Watchdog Timer

## A.1 Programming

AEC-6635 utilizes ITE 8781 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

After the hardware reset or power-on reset, the ITE 8781 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

### (1) Enter the MB PnP Mode

To enter the MB PnP Mode, four 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 four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

|                     | Address Port | Data Port |
|---------------------|--------------|-----------|
| 87h, 01h, 55h, 55h: | 2Eh          | 2Fh       |

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

All configuration registers can be accessed after entering the MB PnP 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 MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

## WatchDog Timer Configuration Registers

| LDN | Index | R/W | Reset | Configuration Register or Action |
|-----|-------|-----|-------|----------------------------------|
| All | 02h   | W   | NA    | Configure Control                |

|     |     |     |           |   |
|-----|-----|-----|-----------|---|
| 07h | 71h | R/W | 00h       | Watch Dog Timer Control Register              |
| 07h | 72h | R/W | 001s0000b | Watch Dog Timer Configuration Register        |
| 07h | 73h | R/W | 38h       | Watch Dog Timer Time-out Value (LSB) Register |
| 07h | 74h | R/W | 00h       | Watch Dog Timer Time-out Value (MSB) Register |

### Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

| Bit | Description   |
|-----|---|
| 7-2 | <b>Reserved</b>   |
| 1   | Returns to the "Wait for Key" state. This bit is used when the configuration sequence is completed. |
| 0   | Resets all logical devices and restores configuration registers to their power-on states.           |

### Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

| Bit | Description  |
|-----|--|
| 7   | <b>WDT Timeout Enable(WTE)</b><br>1: Disable.<br>0: Enable.                  |
| 6   | <b>WDT Reset upon Mouse Interrupt(WRKMI)</b><br>0: Disable.<br>1: Enable.    |
| 5   | <b>WDT Reset upon Keyboard Interrupt(WRKBI)</b><br>0: Disable.<br>1: Enable. |
| 4   | <b>Reserved</b>  |
| 3-2 | <b>Reserved</b>  |
| 1   | <b>Force Time-out(FTO)</b><br>This bit is self-clearing.                     |
| 0   | <b>WDT Status(WS)</b><br>1: WDT value reaches 0.<br>0: WDT value is not 0.   |

### Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h, 82h, 92h Default=001s0000b)

| Bit | Description  |
|-----|--|
| 7   | <b>WDT Time-out Value Select 1 (WTVS)</b><br>1: Second<br>0: Minute  |
| 6   | <b>WDT Output through KRST (Pulse) Enable(WOKE)</b><br>1: Enable<br>0: Disable   |
| 5   | <b>WDT Time-out value Extra select(WTVES)</b><br>1: 64ms x WDT Timer-out value (default = 4s)<br>0: Determined by WDT Time-out value select 1 (bit 7 of this register) |
| 4   | <b>WDT Output through PWROK (Pulse) Enable(WOPE)</b><br>1: Enable<br>0: Disable<br>During LRESET#, this bit is selected by JP7 power-on strapping option               |
| 3-0 | <b>Select interrupt level<sup>Note1</sup> for WDT(SIL)</b>   |

### Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register (Index=73h,83h,93h, Default=38h)

| Bit | Description                        |
|-----|------------------------------------|
| 7-0 | <b>WDT Time-out Value 7-0(WTV)</b> |

### Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register (Index=74h,84h,94h Default=00h)

| Bit | Description                         |
|-----|-------------------------------------|
| 7-0 | <b>WDT Time-out Value 15-8(WTV)</b> |

## A.2 ITE8781 Watchdog Timer Initial Program

---

```
.MODEL SMALL
.CODE
Main:
CALL Enter_Configuration_mode
CALL Check_Chip
mov cl, 7
call Set_Logic_Device
;time setting
mov cl, 10 ; 10 Sec
dec al
Watch_Dog_Setting:
;Timer setting
mov al, cl
mov cl, 73h
call Superio_Set_Reg
;Clear by keyboard or mouse interrupt
mov al, 0f0h
mov cl, 71h
call Superio_Set_Reg
;unit is second.
mov al, 0C0H
mov cl, 72h
```

```
call Superio_Set_Reg  
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h
```

CALL Write\_Configuration\_Data

RET

Exit\_Configuration\_Mode ENDP

Check\_Chip PROC NEAR

MOV AL,20h

CALL Read\_Configuration\_Data

CMP AL,87h

JNE Not\_Initial

MOV AL,21h

CALL Read\_Configuration\_Data

CMP AL,81h

JNE Not\_Initial

Need\_Initial:

STC

RET

Not\_Initial:

CLC

RET

Check\_Chip ENDP

Read\_Configuration\_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg\_Port+04h]

```
OUT DX,AL
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
```

```
Set_Logic_Device    proc    near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp
```

```
;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
DW 02Eh,02Fh
```

## END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected