

**AIS-Q572**

Advanced System Controller

3.5" Hard Disk Drive Bay

2 Gigabit Ethernet/ 2 COM/

8 USB2.0/ HD Audio Codec

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## Packing List

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

- 4 S221005030 HDD Screws
- 8 S225006010 Wallmount Bracket Screws
- 2 M04Q452020 Wallmount Brackets
- 4 1990666615 Rubber Feet
- 1 AIS-Q572
- 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 65°C (149°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.*

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 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
电源	×	○	○	○	○	○

**O:** 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  
**SJ/T 11363-2006** 标准规定的限量要求以下。

**X:** 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  
**SJ/T 11363-2006** 标准规定的限量要求。

备注：  
 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。  
 二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

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Chapter

1

**General  
Information**

## 1.1 Introduction

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AIS-Q572 adopts the Intel® Core™ i3/i5/i7 LGA 1156 Processors. The chipset is equipped with Intel® Q57. Moreover, the system memory features two DDR3 1066/1333 MHz DIMM up to 4 GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet RJ-45 ports. AIS-Q572 condensed appearance features desktop and wallmount form factors that fits nicely into a space-limited environment.

This AIS-Q572 equipped with one 3.5" Hard Disk Drive with SATA 3.0Gb/s interface and one optional slim DVD-RW. Moreover, the flexible expansion interfaces feature one PCI-Express[x16] and one PCI-Express[x4] slot. In addition, this model supports two COM ports and eight USB2.0 (four ports at I/O interfaces and four ports on the front panel). Furthermore, the Realtek ALC888 supports HD audio codec and the AIS-Q572 can support dual displays with VGA and DVI via Intel® Q57.

With the increasing demands of high performance in audio and video, AAEON released the specific Advanced System Controller to fulfill the needs of the applications, such as Factory Automation, Building Automation, and etc.

## **1.2 Features**

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- Intel® Core™ i3/i5/i7 LGA1156 Processor
- Dual-Channel DDR3 1066/1333 Memory up to 4 GB
- Intel® Integrated Graphics Engine Support Dual View With VGA & DVI
- Gigabit Ethernet x 2
- 3.5" SATA 3.0Gb/s Hard Disk Drive Bay x 1, Slim DVD-RW x 1 (Optional)
- USB2.0 x 8, COM x 2
- Multiple Extended Bus up to Two Slots

### 1.3 Specifications

● CPU		Intel® Core™ i7/i5/i3 LGA 1156, max. TDP 95W
● Chipset		Intel® Q57
● System Memory		Up to 4 GB (DDR3 1066/1333 MHz, DIMM x 2)
● Display Interface	VGA	1
	DVI	1
● Storage Device	HDD	3.5" Hard Disk Drive Bay x 1
● Network	LAN	10/100/1000Base-TX Ethernet x 2
● Front I/O	USB Host	USB2.0 x 4
● Rear I/O	USB Host	USB2.0 x 4
	LAN	RJ-45 x 2
	Serial Port	COM x 2
	Audio	Audio Jack x 3
	KB/MS	1
● Expansion	PCIe	PCI-Express[x16] x 1, PCI-Express[x4] x 1
● Indicator	Front	HDD x 1, PWR x 1
● Power Requirement		AC-in 275W
● Power Consumption		Intel® Core™ i7-860, TDP 95W
● System Cooling		Fan Cooling
● Mounting		Desktop

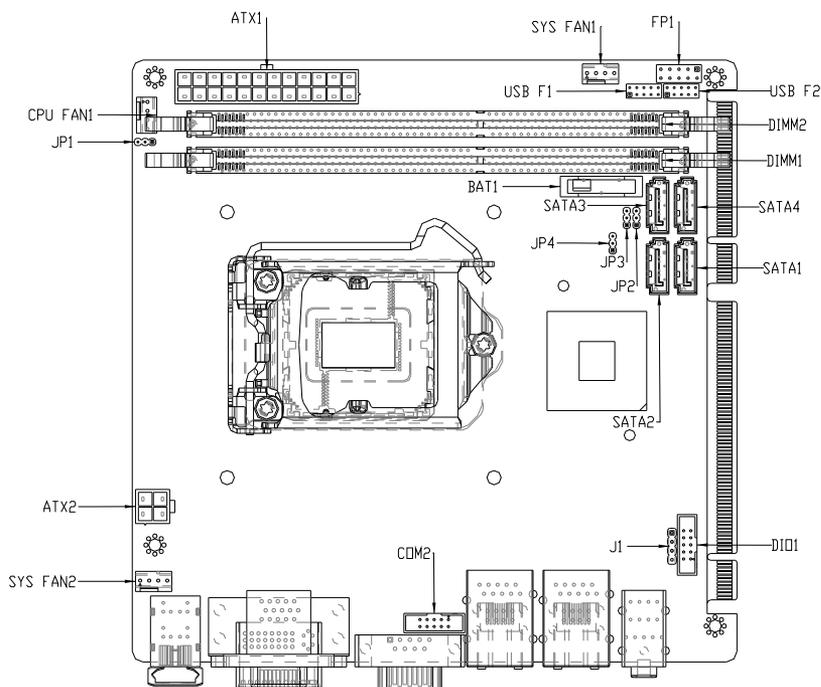
● Operating Temperature	32°F ~113°F (0°C~45°C)
● Storage Temperature	-4°F ~140°F (-20°C~60°C)
● Anti-Vibration	0.5g rms/ 5~500 Hz/ operation
● Anti-Shock	15G with 11 msec. operation
● Certification	EMC CE/FCC
● Dimension (W x H x D)	14.17" x 3.47" x 10.04" (360mm x 88mm x 255mm)
● Gross Weight	15.84 lb (7.2kg)
● OS Support	Windows® XP, Windows® 7, Linux Fedora Core 12

Chapter

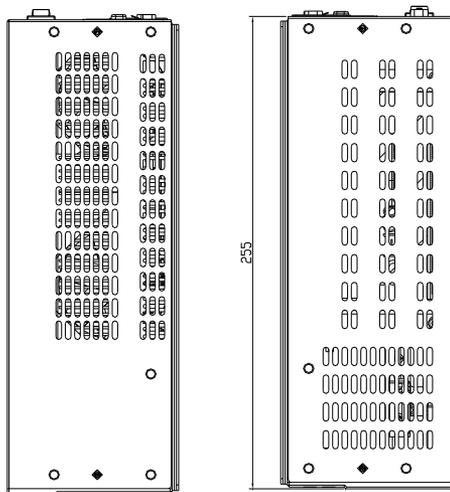
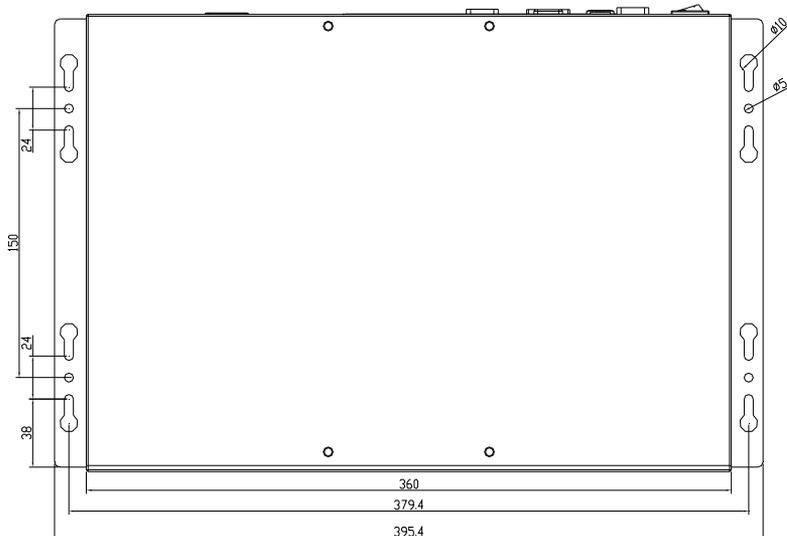
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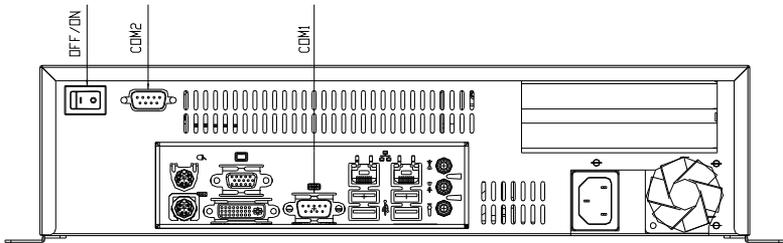
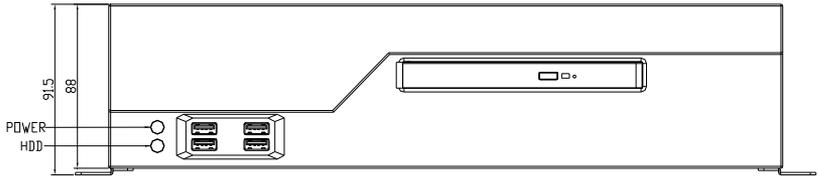
**Hardware  
Installation**

## 2.1 Location of Connectors



## 2.2 Mechanical Drawing





## 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>
JP1	Auto PWRBTN Selection
JP2	CMOS Setting Selection
JP3	TPM Setting Selection
JP4	BIOS load optimized defaults Setting Selection

## 2.4 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 board's connectors:

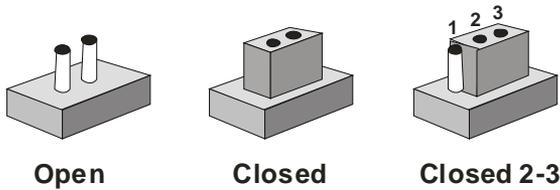
<b>Label</b>	<b>Function</b>
FP1	Front Panel Connector
CN2	DVI-I & CRT Port Connector
COM1	RS-232
COM2	RS-232 /422/485 Pin Header
KBMS1	100/1000Base-TX Ethernet & Dual USB Connector
USB_LAN1	100/1000Base-TX Ethernet & Dual USB Connector
USB_LAN2	100/1000Base-TX Ethernet & Dual USB Connector
AUDIO1	Audio Line-in/Line-out/MIC
DIMM1,DIMM2	DDR3 DIMM Slot
USB_F1,USB_F2	USB Pin Header
CPU_FAN1,SYS_FAN1 SYS_FAN2	4-Pin System Fan Connector
ATX1	24-Pin ATX Power
ATX2	4-Pin ATX Power +12V Connector
SATA1~SATA4	SATA Connector
DIO1	Digital I/O
PICMGA1, PICMGB1	Expansion Interface

## 2.5 Setting Jumpers

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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.

## 2.6 Auto PWRBTN Selection (JP1)

---

JP1	Function
1-2	Use Auto PWRBTN
2-3	Don't Use Auto PWRBTN (Default)

---

## 2.7 CMOS Setting (JP2)

---

JP2	Function
1-2	Normal (Default)
2-3	Clear CMOS

---

## 2.8 TPM Setting (JP3)

---

JP3	Function
1-2	Save ME RTC Register (Default)
2-3	Clear ME RTC Register

---

## 2.9 BIOS Load Optimized Defaults Selection (JP4)

---

JP4	Function
1-2	Enable (Default)
2-3	Disable

---

## 2.10 Front Panel Connector (FP1)

---

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	HDD LED(-)	4	HDD LED(+)
5	External Speaker (-)	6	External Speaker (+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

---

### 2.11 Pin Header (USB\_F1, USB\_F2)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD1-	4	GND
5	USBD1+	6	USBD2+
7	GND	8	USBD2-
9	GND	10	+5V

### 2.12 RS-232 Serial Port Connector (COM1)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

### 2.13 RS-232/422/485 Pin Header (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	10	N.C

### 2.14 Digital I/O Pin Header (DIO1)

Pin	Signal	Pin	Signal
1	IN0 (U5 Pin20)	2	IN1 (U5 Pin21)
3	IN2 (U5 Pin22)	4	IN3 (U5 Pin23)
5	OUT0 (U5 Pin24)	6	OUT1 (U5 Pin25)
7	OUT2 (U5 Pin26)	8	OUT3 (U5 Pin27)

---

9	+5V	10	GND
---	-----	----	-----

---

### 2.15 SATA Connector (SATA 1~4)

---

Pin	Signal	Pin	Signal
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

---

### 2.16 FAN Connector (CPU\_FAN, SYS\_FAN1~2)

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

---

### 2.17 24-Pin ATX Power Connector (ATX1)

---

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	PWROK
9	+5VSB	10	+12V
11	+12V	12	+3.3V
13	+3.3V	14	-12V
15	GND	16	PS_ON
17	GND	18	GND
19	GND	20	NC
21	+5V	22	+5V
23	+5V	24	GND

---

## 2.18 4-Pin ATX Power Connector (ATX2)

---

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

---

## 2.19 Riser Card

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Label	Function
X19PCIE1	PCIE X 16 Connector
CN1	Mini Card Connector
CN2	PCIE x 4 Connector

---

## 2.20 Installing the Hard Disk Drive

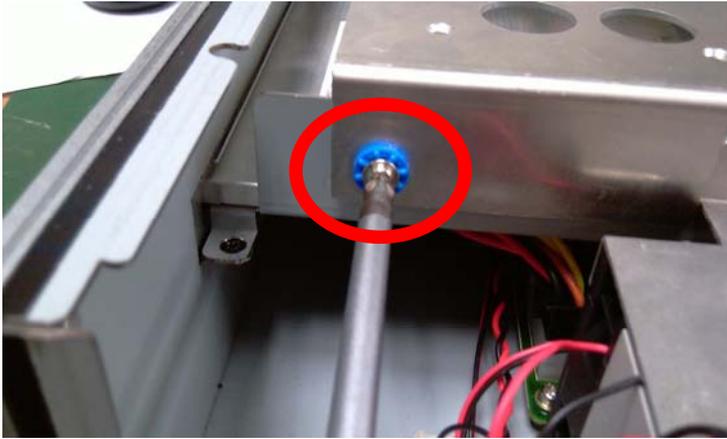
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Step 1: Unfasten the four screws on the left and right side of the AIS-Q572

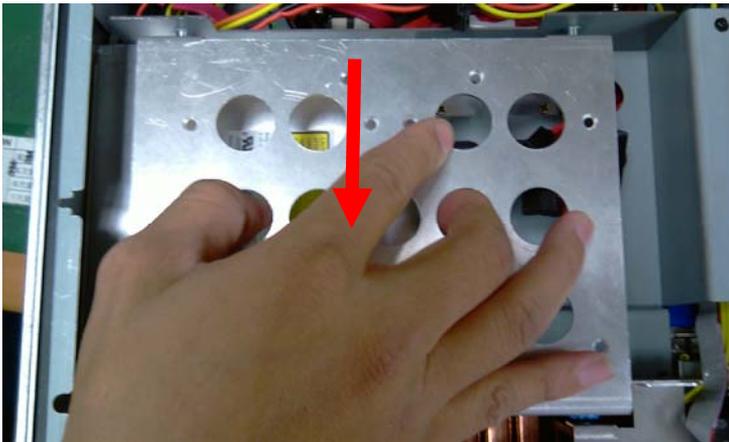


Step 2: Unfasten the two screws on the two sides of the HDD bracket

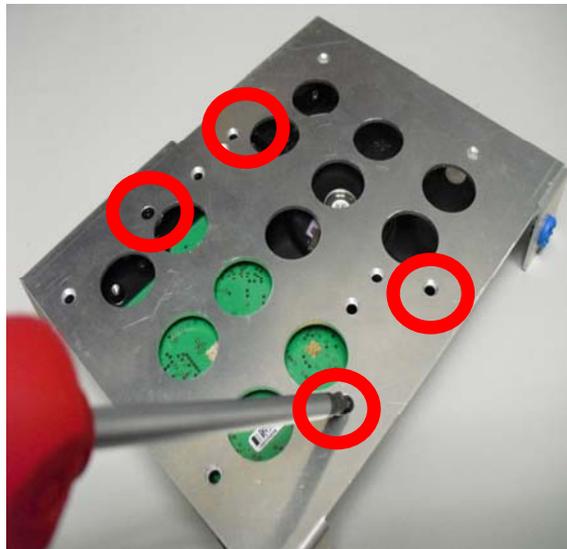




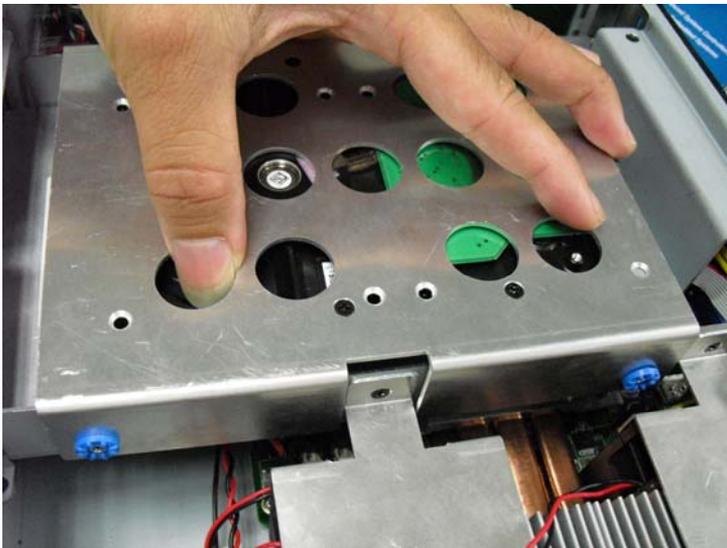
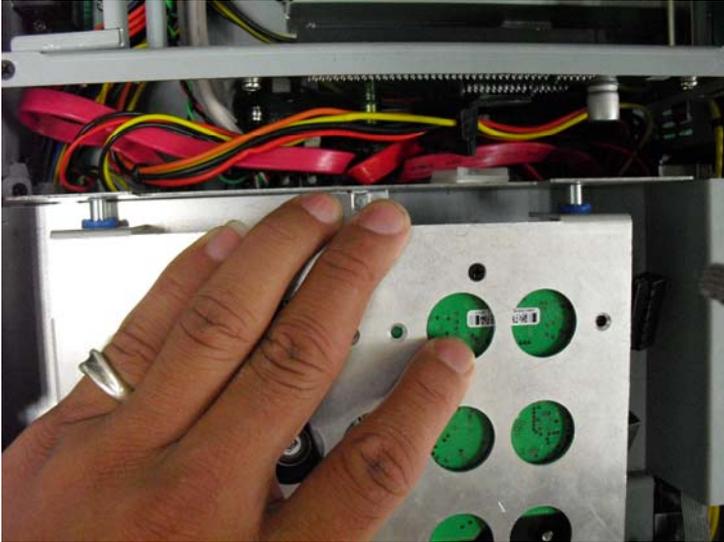
Step 3: Pull out the HDD case



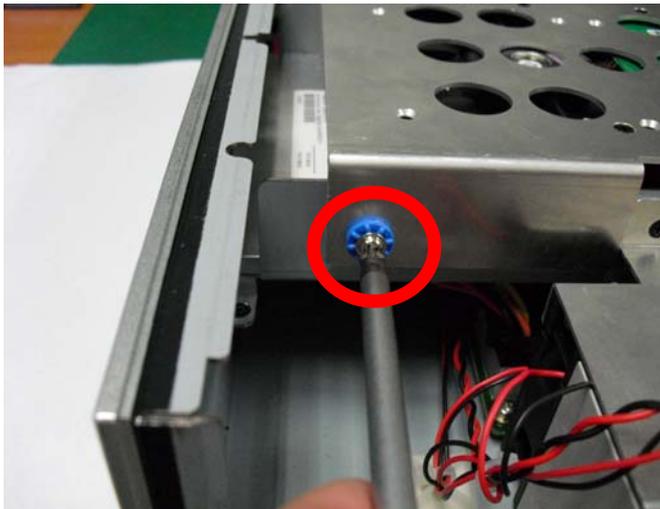
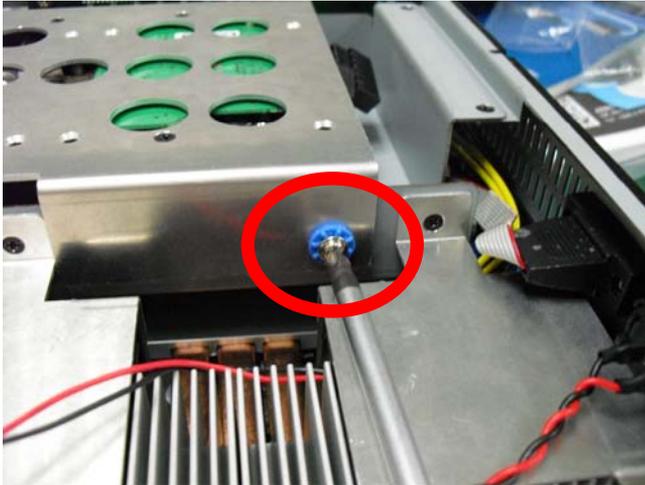
Step 4: Put the HDD to the HDD case and close the upper bracket of the HDD case. And then fasten the four screws on the HDD bracket



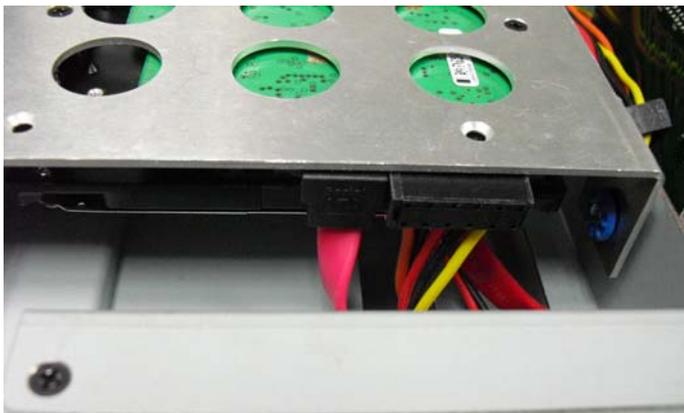
Step 5: Make sure the dampers are inserted to the right place



Step 6: Fasten the two screws on the HDD bracket



Step 7: Plug the SATA cable and power cable



Step 8: Finish the installation. Close and screw the case of the AIS-Q572, and fasten the four screws on the left and right side of the AIS-Q572





## 2.21 Optional Accessories Installation

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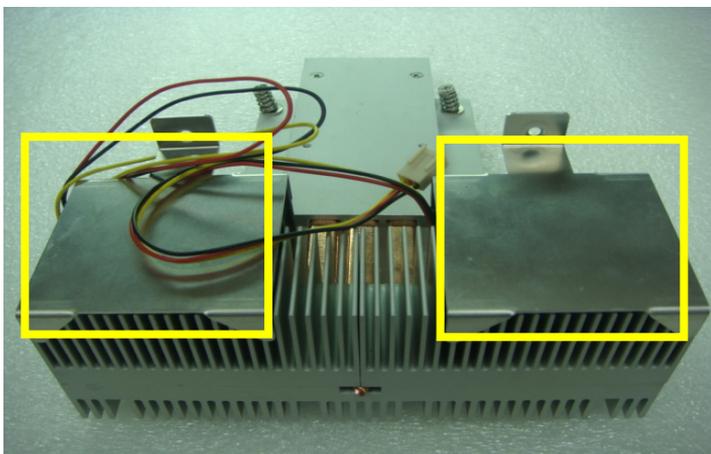
### CPU Installation

Step 1: Install CPU into socket by lifting the CPU plate

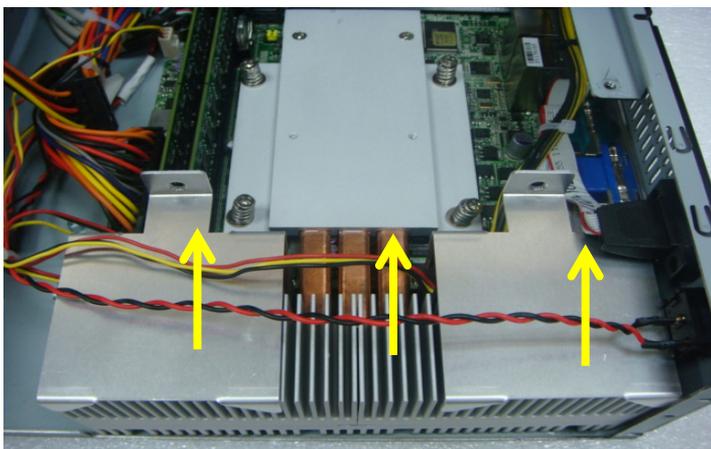


## HEAT SINK Installation

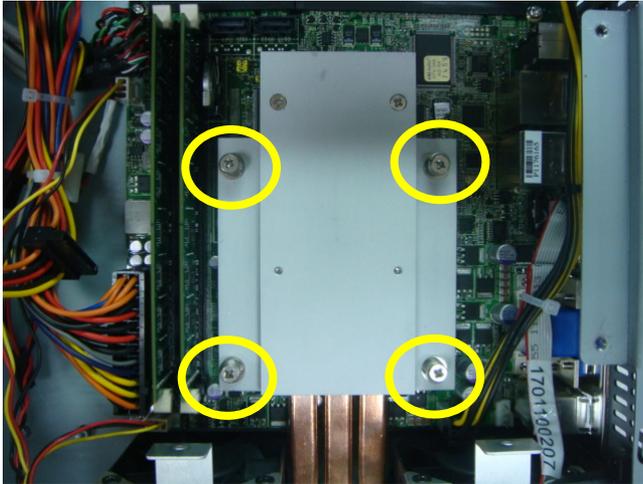
Step 1: Install fan onto heat sink



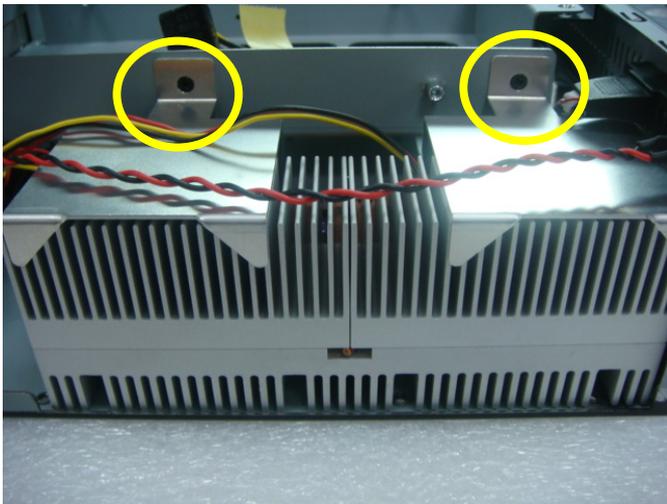
Step 2: Install heat sink onto CPU



Step 3: Insert screws to secure the heat sink

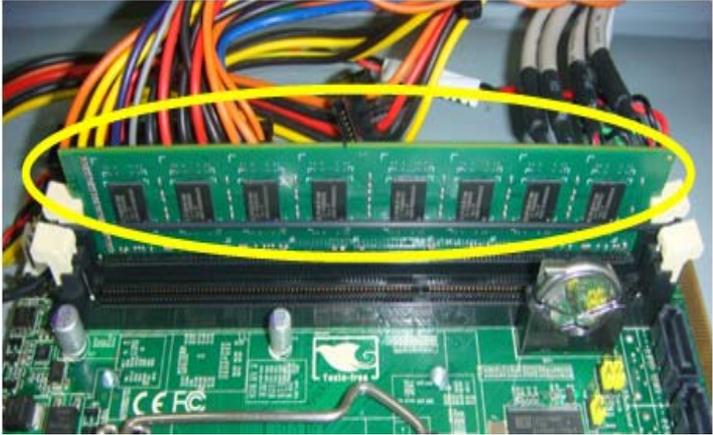


Step 4: Secure bracket and fan with the screws

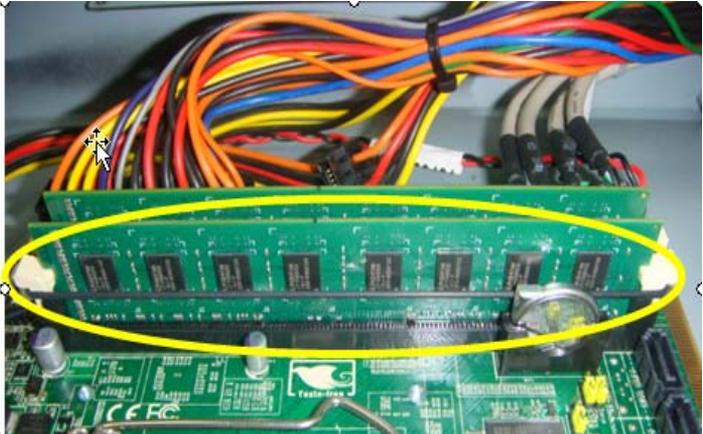


## RAM Installation

Step 1: Insert RAM onto slot



Step 2: Put a rubber band around RAM to secure it in the slot

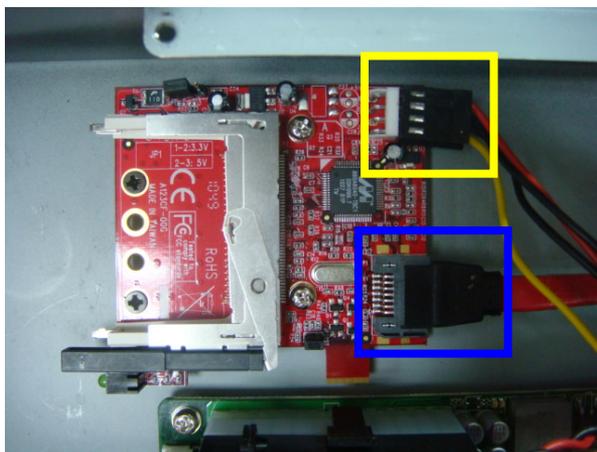


## CompactFlash™ Card Installation

Step 1: Secure CompactFlash™ card by using screws

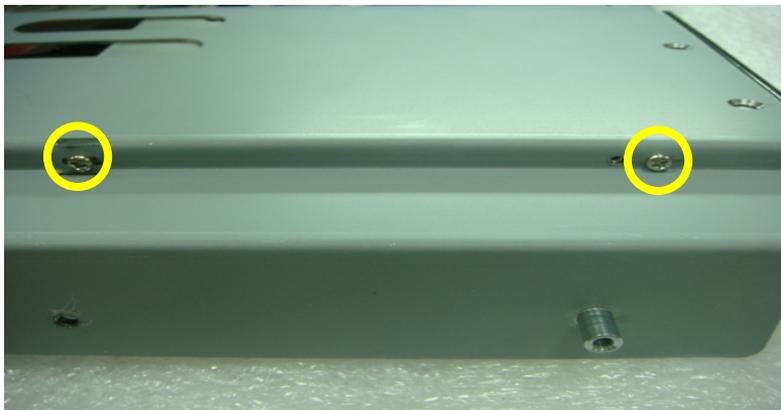


Step 2: Connect the SATA Cable and the Power cable

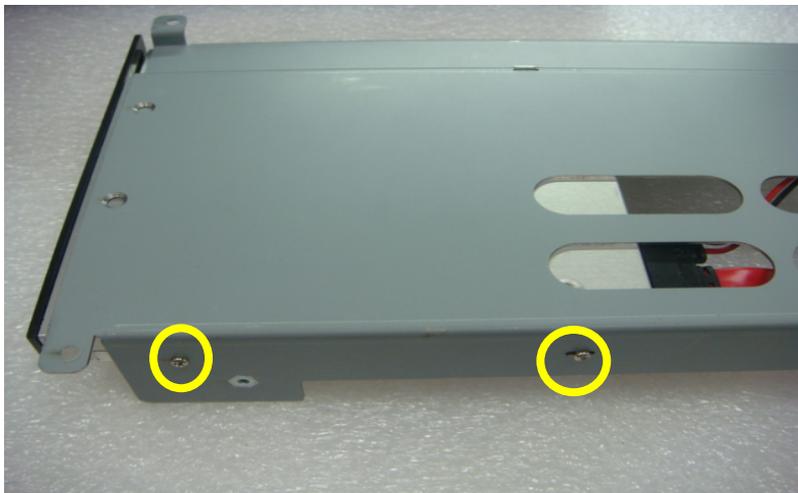


## DVD-ROM Installation

Step 1: Secure DVD ROM onto metal plate



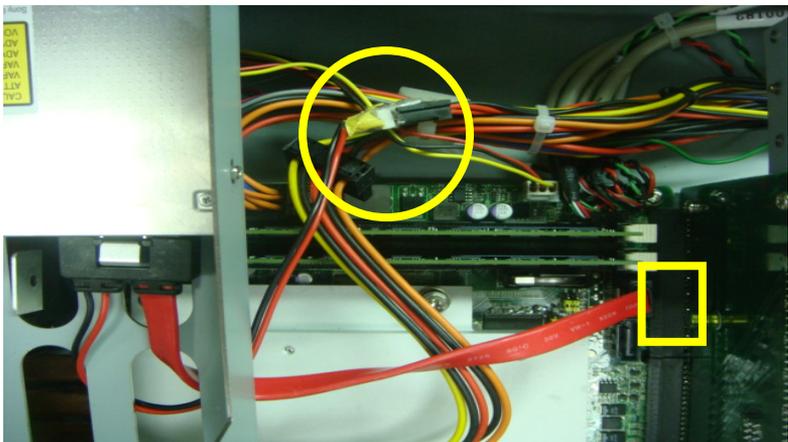
Step 2: Secure both sides by installing screws



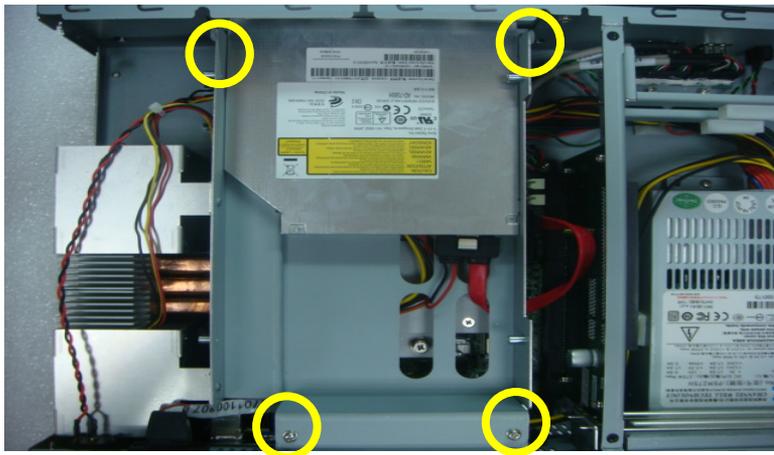
Step 3: Install the SATA Cable



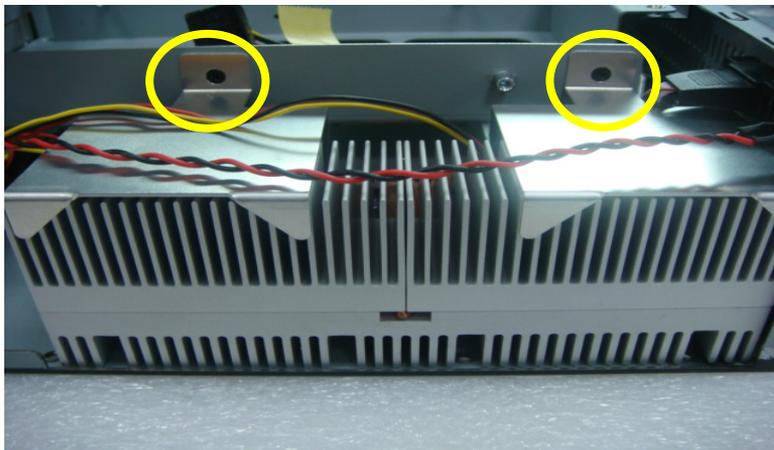
Step 4: Connect the SATA cable onto the main board



Step 5: Install the CD bracket with the screws



Step 6: Secure the bracket and fan with the screws



Step 7: The DVD-ROM is shown as below:



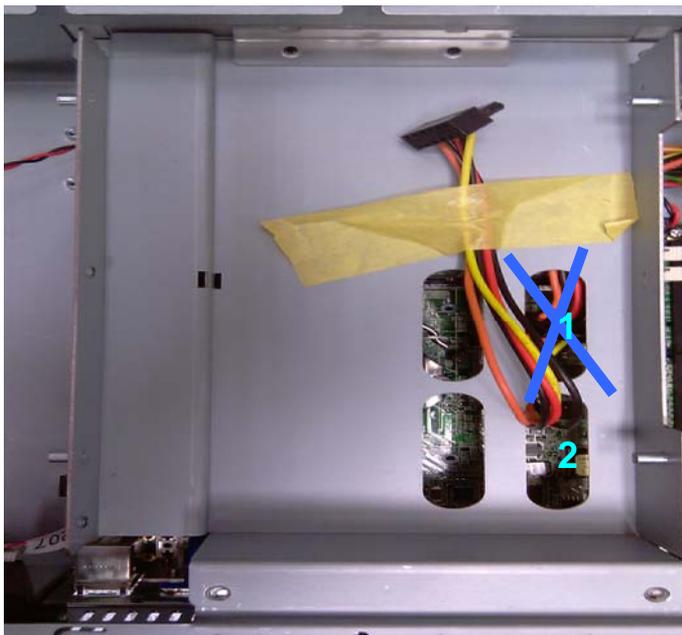
### HDD SATA Cable Installation

Step 1: You have to press the SATA cable against the Riser Card to make sure the SATA cable has been placed properly.

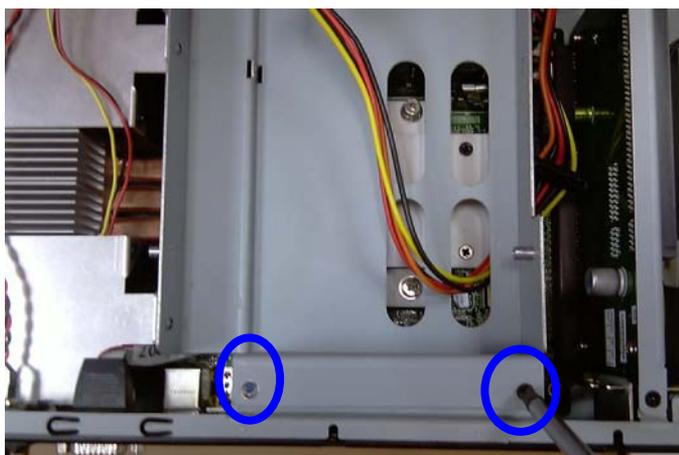


Step 2: The SATA cable will be pulled through bracket hole #2 to avoid damaging the RAM, since the RAM lies directly under bracket hole #1.





Step 3: After you pull the SATA cable through bracket hole #2, fasten the four screws of the bracket.



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 AIS-Q572 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

---

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 AIS-Q572 comes with a DVD-ROM that contains all drivers your need.

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

- Step 1 – Install INF Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Driver
- Step 4 – Install AUDIO Driver
- Step 5 – Install ME Driver

Please read following instructions for detailed installations.

## 4.1 Installation:

---

Insert the AIS-Q572 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

### Step 1 – Install INF Driver

1. Click on the **Step1 - INF** folder and then double click on the **Setup.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 AUDIO Driver

1. Click on the **Step4 - AUDIO** folder and select the OS your system is
2. Double click on **.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 5 – Install ME Driver**

1. Click on the **Step5 - ME** folder and double click on **Setup.exe** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Appendix

**A**

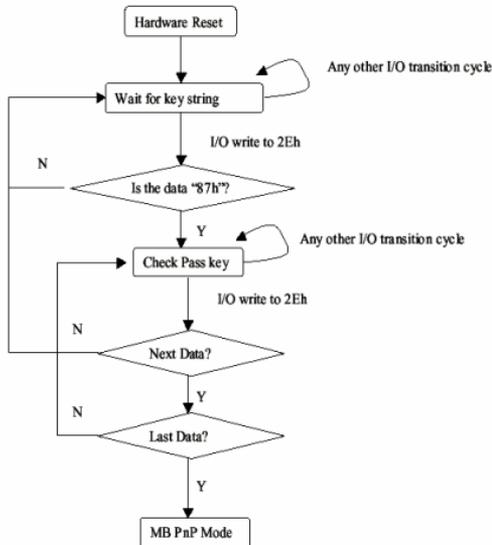
# Programming the Watchdog Timer

## A.1 Programming

AIS-Q572 utilizes ITE 8718 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 8718 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 Control Register (Index=71h Default=00h)

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

### Watch Dog Timer Configuration Register (Index=72h)

Default=001s0000b)

Bit	Description
7	<b>WDT Time-out Value Select 1 (WTVS)</b> 1: Second 0: Minute
6	<b>WDT Output through KRST (Pulse) Enable(WOKE)</b> 1: Enable 0: Disable
5	<b>WDT Time-out value Extra select(WTVES)</b> 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	<b>WDT Output through PWROK (Pulse) Enable(WOPE)</b> 1: Enable 0: Disable 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 Time-Out Value (LSB) Register (Index=73h)

Default=38h)

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

### Watch Dog Timer Time-Out Value (MSB) Register (Index=74h)

Default=00h)

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

## A.2 ITE8718 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

Appendix

**B**

# I/O Information

## B.1 I/O Address Map

Input/output (IO)	
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	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 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural 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
[00001170 - 00001177]	Secondary IDE Channel
[000011F0 - 000011F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel
[000003B0 - 000003BB]	Intel(R) Graphics Media Accelerator HD
[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator HD
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 0000047F]	System board
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000057F]	System board
[00000A00 - 00000A1E]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus
[00001180 - 0000119F]	System board
[0000E000 - 0000E01F]	Intel(R) Gigabit CT Desktop Adapter
[0000E000 - 0000EFFF]	Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
[0000F000 - 0000F01F]	Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
[0000F020 - 0000F03F]	Intel(R) 82578DM Gigabit Network Connection
[0000F040 - 0000F04F]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F080 - 0000F083]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F060 - 0000F063]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F070 - 0000F077]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F080 - 0000F083]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F090 - 0000F097]	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
[0000F0A0 - 0000F0AF]	Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B20
[0000F0B0 - 0000F0BF]	Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B20
[0000F100 - 0000F107]	Intel(R) Graphics Media Accelerator HD

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

Address Range	Device
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator HD
[000A0000 - 000BFFFF]	PCI bus
[3C000000 - FFFFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Intel(R) Graphics Media Accelerator HD
[E0000000 - EFFFFFFF]	System board
[FE000000 - FE3FFFFF]	Intel(R) Graphics Media Accelerator HD
[FE400000 - FE4FFFFF]	Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
[FE440000 - FE45FFFF]	Intel(R) Gigabit CT Desktop Adapter
[FE460000 - FE463FFF]	Intel(R) Gigabit CT Desktop Adapter
[FE500000 - FE51FFFF]	Intel(R) 82578DM Gigabit Network Connection
[FE520000 - FE523FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FE524000 - FE5240FF]	Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
[FE525000 - FE5253FF]	Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
[FE526000 - FE526FFF]	Intel(R) 82578DM Gigabit Network Connection
[FE527000 - FE52700F]	Intel(R) Management Engine Interface
[FEC00000 - FECFFFFF]	System board
[FED00000 - FED003FF]	High precision event timer
[FED08000 - FED08FFF]	System board
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	System board
[FED20000 - FED3FFFF]	System board
[FED90000 - FED93FFF]	System board
[FEE00000 - FEE0FFFF]	System board
[FF000000 - FFFFFFFF]	System board

## B.3 IRQ Mapping Chart

IRQ	Device
(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 12	Microsoft PS/2 Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(PCI) 5	Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
(PCI) 16	Intel(R) Graphics Media Accelerator HD
(PCI) 16	Intel(R) Management Engine Interface
(PCI) 17	Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
(PCI) 19	Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B26
(PCI) 19	Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 8 - 3B50
(PCI) 19	Intel(R) Gigabit CT Desktop Adapter
(PCI) 20	Intel(R) 82578DM Gigabit Network Connection
(PCI) 22	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 23	Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34

## B.4 DMA Channel Assignments

DMA Channel	Device
4	Direct memory access controller