AEC-6822

Fanless Embedded Controller

Intel® Atom™ N270 1.6 GHz CPU

With Dual GbE Ethernet, 4 COMs, Audio, CompactFlash™

AEC-6822 Manual 2nd Ed.

November 2009

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Packing List

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

- ● 1 AEC-6822 Embedded Controller
- ● 1 Phoenix Power Connector
- ● 2 Wallmount Brackets
- ● 1 Screw Package
- ● 1 Heat Spreading
- ● 1 CD-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 eq uipment doe s not work well, o r you ca nnot 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 60°C (140°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.

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Appendix B I/O Information

Chapter

1

General Information

1.1 Introduction

The AEC-6822 is an Embedded Control PC with Intel Atom processor. The Anti-vibration and high temperature tolerances are the main design features of the AEC-6822. This allows the AEC-6822 to be installed in a rugged transportation environment despite high ambient vibration and temperature.

In addition to the Atom CPU, the AEC-6822 have DVI + VGA output for video output an d DC power supply is commonly used in most vehicles and factory equipments, the AEC-6822 can powered by a DC 9~30V input with low power consumption and high performance.   You can also choose an additional external AC power adapter for power redundancy purposes.

Transportation has become part of most people's life and forms a necessary part of their lifestyle.   From cars to trains to ships, we rely on those tools a lot.   The AEC-6822 is designed to improve transportation control and enhance the quality of our lives.

1.2 Features

- Fanless Design with Intel® Atom™ (N270) 1.6 GHz processor
- Mini PCI slots inside for expansion
- DC 9~30V input with Phoenix connector and optional external AC power adapter
- Front and rear accessible USB ports.
- CompactFlash™ Disk
- Dual GbE LAN/ 4 COM/ Audio
- Operating Temperature: -15°C ~55°C (-5°F~131°F)
- Anti-vibration up to 5 g rms / Anti-shock up to 100g (CFD)
- CE / FCC class A / UL certificated

1.3 Specifications

System

- CPU: Intel® Atom (N270) 1.6 GHz
- Chipset   Intel® 945GSE + ICH7M
- Memory: 200-pin DDRII SODIMM x 1,

  Max. 2 GB (DDRII 400/533)
- Expansion: Mini PCI x 1
- VGA: VGA (DB-15) x 1
- Display Interface: DVI-D x 1
- Ethernet: Intel® 82574L,

  10/100/1000Base-TX, RJ-45 x 2
- SSD: Type II CompactFlash™ slot x 1
- Serial Port: RS-232 x 3, RS-232/422/485 x 1
- Audio: Mic-in / Line-in / Line-out
- USB: USB2.0 x 4
- Watchdog Timer: Generates a time-out system

  reset
- Power Supply: DC Input: 9V~30V

  AC Input: External Power Adapter

  (Optional)
- System Control: Power on / off switch x 1;

  Reset button x 1
- Indicators: Power LED x 1

  Activity LED x 1

Mechanical and Environmental

- Construction: Aluminum Alloy chassis
- Color: Dark Blue
- Mounting: Wallmount (Default), DIN-Rail
- Dimension: 8.35" (W) x 2.53" (H) x 4.21" (D)
                       212.15mm x 64.2mm x 107mm
- Net Weight: 4.75lb (2.16kg)
- Gross Weight: 8.36lb (3.8kg)
- Operation
  Temperature: 5°F~131°F (-15°C~55°C)(CFD)

- Operation Humidity:5~95%@40°C, non-condensing
- Vibration: 5 G rms / 5~500 Hz
                        random operation (CFD);
- Shock: 100 G peak acceleration
                       (11 msec. duration)--CFD;
- EMC: CE/FCC class A

Front Side
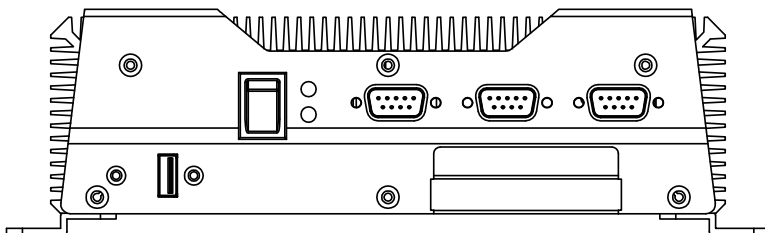
Rear Side
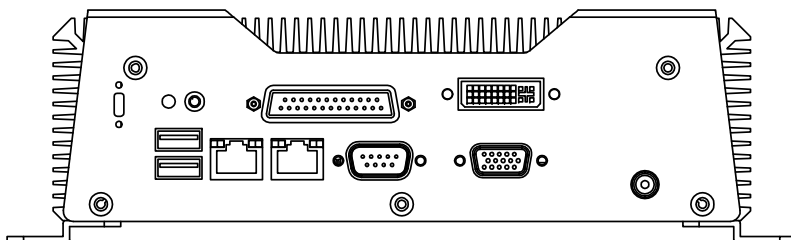
Chapter

2

Hardware Installation

2.1 Dimension
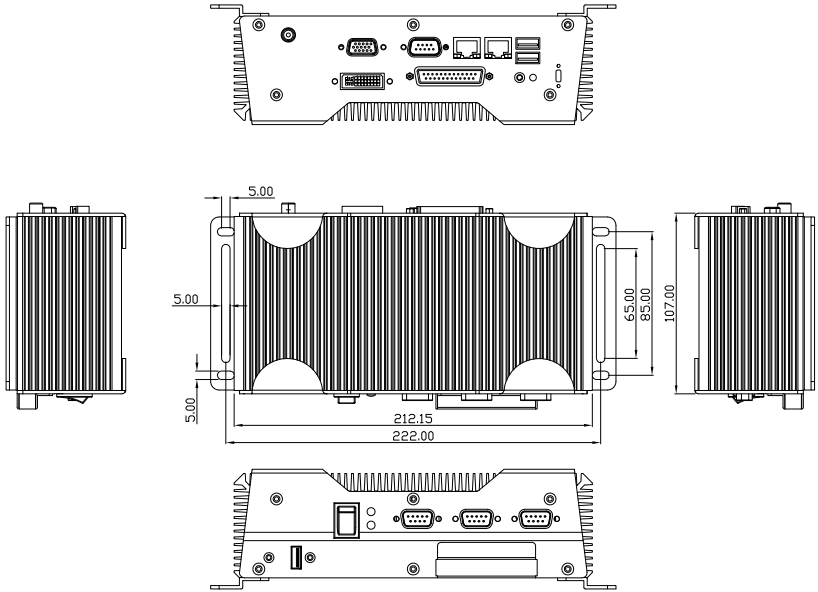
Units: mm

2.2 SDRAM Installation

Step 1: Loose the screw on the front panel of AEC-6822

Step 2: Loose the screw on the rear panel of AEC-6822

Step 3: Unfasten the four screws on the bottom case of AEC-6822

Step 4: Insert the SDRAM to the memory slot
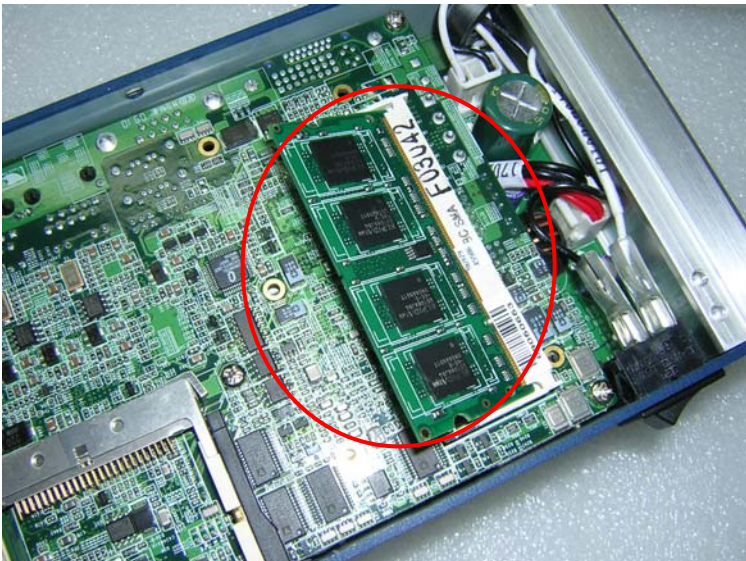
Step 5: Press the SDRAM and make sure that it has been

inserted properly

Step 6: Adhere the heat-spreading sheet to the SDRAM

Step 7: Close the bottom case of AEC-6822 and fasten the four screws on the bottom case

2.3 Wallmount Installation

Fasten the brackets by screws.

Bracket

2.4 DIN Rail Installation

Step 1: Fix the DIN Rail kit with the screws on the chassis as the illustration　shown.

Step 2:　Press the DIN Rail on the DIN Rail kit to fix it.
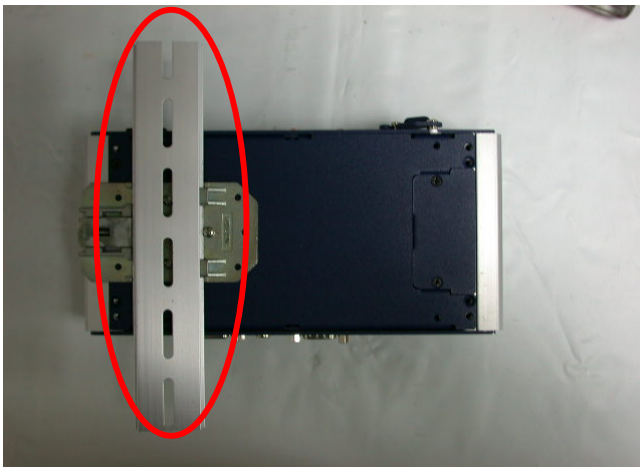
2.5 COM Port 1, 3, 4 Connectors

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA
9	RIA	10	N/C

2.6 COM Port 2 Connector

RS-232 Mode

Pin	Signal	Pin	Signal
1	DCDB	2	RXB
3	TXB	4	DTRB
5	Ground	6	DSRB
7	RTSB	8	CTSB
9	RIB / +5 Volt. / +12 Volt.	10	N/C

RS-422 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	RXD+
3	TXD+	4	RXD-
5	Ground	6	N/C
7	N/C	8	N/C
9	N/C / +5 Volt. / +12 Volt.	10	N/C

RS-485 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	TXD+	4	N/C
5	Ground	6	N/C

7	N/C	8	N/C
9	N/C / +5 Volt. / +12 Volt.	10	N/C

Chapter

3

Award 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. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

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-6822 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 Award BIOS Setup

Awards 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> immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

Driver
Installation

.

The AEC-6822 comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically via an external USB optical drive.

Insert the driver CD, the driver CD-title will auto 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 INF Driver

    Step 2 – Install VGA Driver

    Step 3 – Install LAN Driver

    Step 4 – Install Audio Driver

USB 2.0 Drivers are available for download using Windows® Update for both Windows® XP and Windows® 2000. For additional information regarding USB 2.0 support in Windows® XP and Windows® 2000, please visit www.microsoft.com/hwdev/usb/.

Please read instructions below for further detailed installations.

4.1 Installation :

Insert the AEC-6822 CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install INF Driver

1. Click on the *Step 1 - INF Update Utility v8.2.0.1014* 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 2 – Install VGA Driver

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

Step 3 –Install LAN Driver

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

Step 4 –Install Audio Driver

1. Click on the *Step 4 - Realtek ALC655 Audio Driver v3.71* folder and select the OS folder 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 install the driver automatically

Appendix

A

Programming the Watchdog Timer

A.1 Programming

AEC-6822 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 att ached 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 disa bled 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.
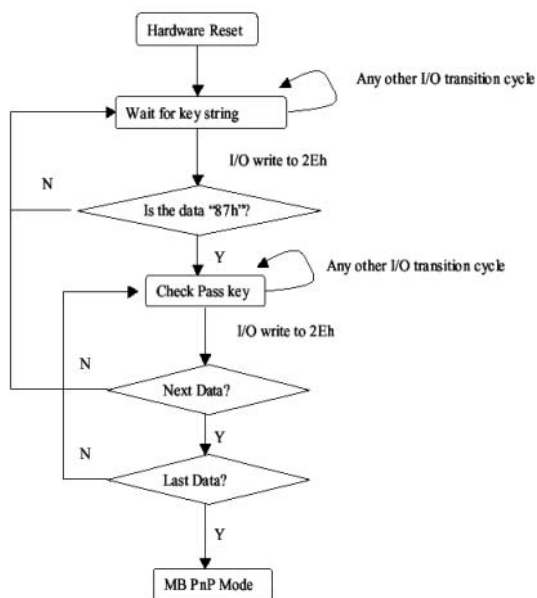
There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(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 opera-tions 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	Reserved
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	**WDT Timeout Enable(WTE)** 1: Disable. 0: Enable.
6	**WDT Reset upon Mouse Interrupt(WRKMI)** 0: Disable. 1: Enable.
5	**WDT Reset upon Keyboard Interrupt(WRKBI)** 0: Disable. 1: Enable.
4	**Reserved**
3-2	**Reserved**
1	**Force Time-out(FTO)** This bit is self-clearing.
0	**WDT Status(WS)** 1: WDT value reaches 0. 0: WDT value is not 0.

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

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

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

Bit	Description
7-0	**WDT Time-out Value 7-0(WTV)**

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

Bit	Description
7-0	**WDT Time-out Value 15-8(WTV)**

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   pro  c   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
    [00000061 - 00000061] System speaker
    [00000062 - 00000063] Motherboard resources
    [00000065 - 0000006F] Motherboard resources
    [00000070 - 00000073] System CMOS/real time clock
    [00000074 - 0000007F] Motherboard resources
    [00000080 - 00000090] Direct memory access controller
    [00000091 - 00000093] Motherboard resources
    [00000094 - 0000009F] Direct memory access controller
    [000000A0 - 000000A1] Programmable interrupt controller
    [000000A2 - 000000BF] Motherboard resources
    [000000C0 - 000000DF] Direct memory access controller
    [000000E0 - 000000EF] Motherboard resources
    [000000F0 - 000000FF] Numeric data processor
    [000001F0 - 000001F7] Primary IDE Channel
    [00000274 - 00000277] ISAPNP Read Data Port
    [00000279 - 00000279] ISAPNP Read Data Port
    [000002E8 - 000002EF] Communications Port (COM4)
    [000002F8 - 000002FF] Communications Port (COM2)
    [000003B0 - 000003BB] Mobile Intel(R) 945 Express Chipset Family
    [000003C0 - 000003DF] Mobile Intel(R) 945 Express Chipset Family
    [000003E8 - 000003EF] Communications Port (COM3)
    [000003F6 - 000003F6] Primary IDE Channel
    [000003F8 - 000003FF] Communications Port (COM1)
    [00000400 - 000004BF] Motherboard resources
    [000004D0 - 000004D1] Motherboard resources
    [00000500 - 0000051F] Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
    [00000880 - 0000088F] Motherboard resources
    [00000A79 - 00000A79] ISAPNP Read Data Port
    [00000D00 - 0000FFFF] PCI bus
    [0000B000 - 0000BFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    [0000BF00 - 0000BF1F] Intel(R) 82574L Gigabit Network Connection
    [0000C000 - 0000CFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    [0000CF00 - 0000CF1F] Intel(R) 82574L Gigabit Network Connection #2
    [0000F000 - 0000F0FF] Realtek AC'97 Audio
    [0000F300 - 0000F30F] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F400 - 0000F403] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F500 - 0000F507] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F600 - 0000F603] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F700 - 0000F707] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F800 - 0000F80F] Intel(R) 82801G (ICH7 Family) Ultra ATA Storage Controllers - 27DF
    [0000FA00 - 0000FA3F] Realtek AC'97 Audio
    [0000FB00 - 0000FB1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
    [0000FC00 - 0000FC1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
    [0000FD00 - 0000FD1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
    [0000FE00 - 0000FE1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
    [0000FF00 - 0000FF07] Mobile Intel(R) 945 Express Chipset Family
```

B.2 1st MB Memory Address Map

```
Memory
    [00000000 - 0009FFFF]  System board
    [000A0000 - 000BFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [000A0000 - 000BFFFF]  PCI bus
    [000C0000 - 000DFFFF]  PCI bus
    [000E0000 - 000EFFFF]  System board
    [000F0000 - 000FFFFF]  System board
    [00100000 - 3F6DFFFF]  System board
    [3F6E0000 - 3F6FFFFF]  System board
    [3F700000 - FEBFFFFF]  PCI bus
    [D0000000 - DFFFFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [E0000000 - EFFFFFFF]  Motherboard resources
    [FD800000 - FD8FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    [FD900000 - FD9FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    [FD9C0000 - FD9DFFFF]  Intel(R) 82574L Gigabit Network Connection
    [FD9FC000 - FD9FFFFF]  Intel(R) 82574L Gigabit Network Connection
    [FDA00000 - FDAFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    [FDD00000 - FDDFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    [FDDC0000 - FDDDFFFF]  Intel(R) 82574L Gigabit Network Connection #2
    [FDDFC000 - FDDFFFFF]  Intel(R) 82574L Gigabit Network Connection #2
    [FDF00000 - FDF7FFFF]  Mobile Intel(R) 945 Express Chipset Family
    [FDF80000 - FDFBFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [FDFFC000 - FDFFC3FF]  Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [FDFFD000 - FDFFD0FF]  Realtek AC'97 Audio
    [FDFFE000 - FDFFE1FF]  Realtek AC'97 Audio
    [FDFFF000 - FDFFF3FF]  Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
    [FEB80000 - FEBFFFFF]  Mobile Intel(R) 945 Express Chipset Family
    [FEC00000 - FEC00FFF]  System board
    [FED13000 - FED1DFFF]  System board
    [FED20000 - FED8FFFF]  System board
    [FEE00000 - FEE00FFF]  System board
    [FFB00000 - FFB7FFFF]  System board
    [FFB80000 - FFBFFFFF]  Intel(R) 82802 Firmware Hub Device
    [FFF00000 - FFFFFFFF]  System board
```

B.3 IRQ Mapping Chart

```
Interrupt request (IRQ)
    (ISA) 0   System timer
    (ISA) 3   Communications Port (COM2)
    (ISA) 4   Communications Port (COM1)
    (ISA) 8   System CMOS/real time clock
    (ISA) 9   Microsoft ACPI-Compliant System
    (ISA) 10  Communications Port (COM4)
    (ISA) 11  Communications Port (COM3)
    (ISA) 13  Numeric data processor
    (ISA) 14  Primary IDE Channel
    (PCI) 15  Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
    (PCI) 16  Intel(R) 82574L Gigabit Network Connection #2
    (PCI) 16  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    (PCI) 16  Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
    (PCI) 16  Mobile Intel(R) 945 Express Chipset Family
    (PCI) 17  Intel(R) 82574L Gigabit Network Connection
    (PCI) 17  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    (PCI) 17  Realtek AC'97 Audio
    (PCI) 18  Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
    (PCI) 19  Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
    (PCI) 19  Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    (PCI) 23  Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
    (PCI) 23  Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
```

B.4 DMA Channel Assignments

```
AAEON-3C2C950DC
    Direct memory access (DMA)
        4   Direct memory access controller
    Input/output (IO)
    Interrupt request (IRQ)
    Memory
```