IMBI-Q45

Intel® Core™ 2 Duo/Quad LGA775 Processor

Dual-channel LVDS

Two 240-pin DDR3 800/1066 SDRAM

3 SATA 3.0Gb/s / Multiple PCIe

PCI interface with Golden Finger

6 USB 2.0/ 2 RS-232/ 2 RJ-45

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Packing List

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

- 1   IMBI-Q45 Mini-ITX Main Board

- 2   SATA Signal Cable

- 1   COM Port Cable with DB-9

- 1   USB Cable

- 1   I/O Shield

- 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.

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Chapter

1

General Information

1.1 Introduction

The IMBI-Q45 supports Intel® Core™ 2 Duo/Quad LGA775 processors. Moreover it supports DDR3 800/1066 memory up to 4GB. This model accommodates two Intel® Gigabit Ethernet controllers that those are controlled by Intel® Q45 and ICH10DO. This configuration provides outstanding computing ability, fast network connections and multi-task data transmission.

The graphic controller 4500 is integrated on Intel® Q45 that support dual displays with VGA & DVI to meet the demand of the media and high definition. In addition, IMBI-Q45 deploys 6 USB 2.0, 2 COM, Keyboard & Mouse, and multiple extended bus with golden finger for a flexible expansion selection. The storage of IMBI-Q45 supports three SATA 3.0Gb/s ports to support RAID function.

The IMBI-Q45 provides an ideal combination of high performance, widely expandable interfaces and compact size that is easy to apply for multiple applications. The IMBI-Q45 will be an ideal product for your requirement.

1.2 Features

- Intel® Core™ 2 Duo/Quad LGA775 Processor

- Dual-Channel DDR3 800/1066 Memory (Up to 4GB), 2GB Double Side DIMM x 2

- Intel® Gigabit Ethernet x 2

- SATA 3.0Gb/s x 3, RAID 0,1,5,10

- USB 2.0 x 6, COM x 2

- Multiple Extended Bus With Golden Finger

1.3 Specifications

System

- Form Factor　　　　Mini-ITX
- Processor　　　　　Intel® Core™ 2 Duo/Quad LGA775 CPU, FSB 800/1066/ 1333 MHz (Q9000, E8000, E7000, E5000, E6000, E4000, E2000, Conroe L series), TDP 95W Max.
- System Memory　　Dual-Channel DDR3 800/1066 SDRAM x 2, up to 4GB (2 GB Double side DIMM x 2)
- Chipset　　　　　　Intel® Q45 + ICH10DO
- Ethernet　　　　　　Intel® 10/100/ 1000Base-TX, RJ-45 x 2; LAN1: Intel® 82567LM, LAN2: Intel®82574L
- Audio　　　　　　　HD Audio Codec with Realtek ALC888
- BIOS　　　　　　　Award BIOS 16Mb SPI ROM
- I/O Chip　　　　　　ITE IT8718F I/O controller
- Storage　　　　　　Onboard SATA 3.0Gb/s connector x 3, support RAID 0,1,5,10 (4th SATA in Golden Finger)
- DIO　　　　　　　　Onboard Programmable 8-bit

		Digital I/O interface (4 input/4 output)
●	Watchdog Timer	1~255 steps, can be set with software on Super I/O
●	H/W Status Monitor	Monitoring system temperature, voltage, and cooling fan status
●	Expansion Interface	Multiple PCIe and PCI interface with Golden Finger
●	Power Requirement	Standard ATX with 24-pin connector x 1
●	Board Size (L x W)	6.7" x 6.7" (170 x 170 mm)
●	Gross Weight	0.66 lb (0.3 Kg)
●	Operating Temperature	32°F ~140°F (0°C ~60°C)
●	Storage Temperature	-4°F ~158°F (-20°C ~70°C)
●	Operating Humidity	10~80%, non-condensing
●	MTBF (Hours)	55,000

Display

●	Chipset	Intel® Q45
●	Graphic Engine	Intel® Graphics Media Accelerator 4500
●	Resolution	2048x1536 for CRT; 1920x1080 for DVI
●	Output Interface	VGA x 1, DVI-D x 1

I/O

● Serial Port   RS-232 x 2 (one with header, one with port)

● KB & Mouse   Keyboard x 1 & Mouse x 1

● Universal Serial Bus   USB 2.0 x 6 (two with header, four with port)

● Audio   Audio Jack x 3 with BTX Type (Mic-in, Line-in, Line-out)

● Ethernet   RJ-45 x 2

● Display   VGA x 1, DVI-D x 1

Chapter

2

Quick Installation Guide

Notice:
The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.

OZONE SAFE

RECYCLABLE

Part No. 2007Q45010   Printed in Taiwan   July 2009

2.1 Safety Precautions

Warning!

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

Caution!

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

Note

AAEON recommend use 4 stand off in the case or bracket to fix the LGA775

CPU cooler in order to avoid PCB crooked

2.2 Location of Connectors and Jumpers
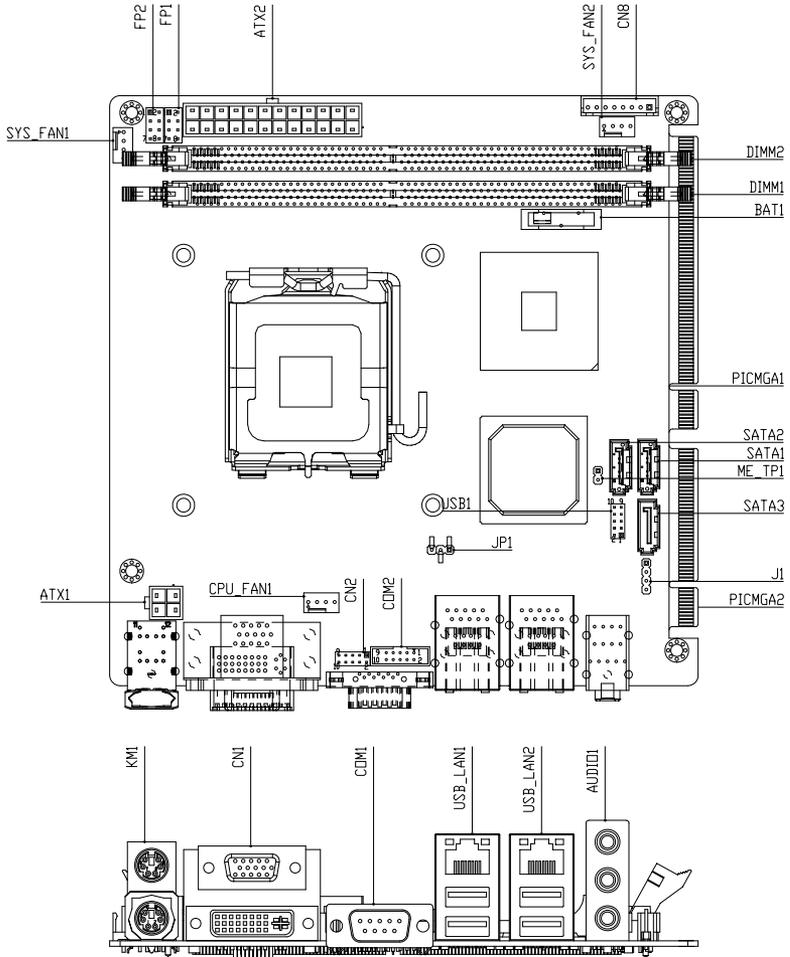
2.3 Mechanical Drawing
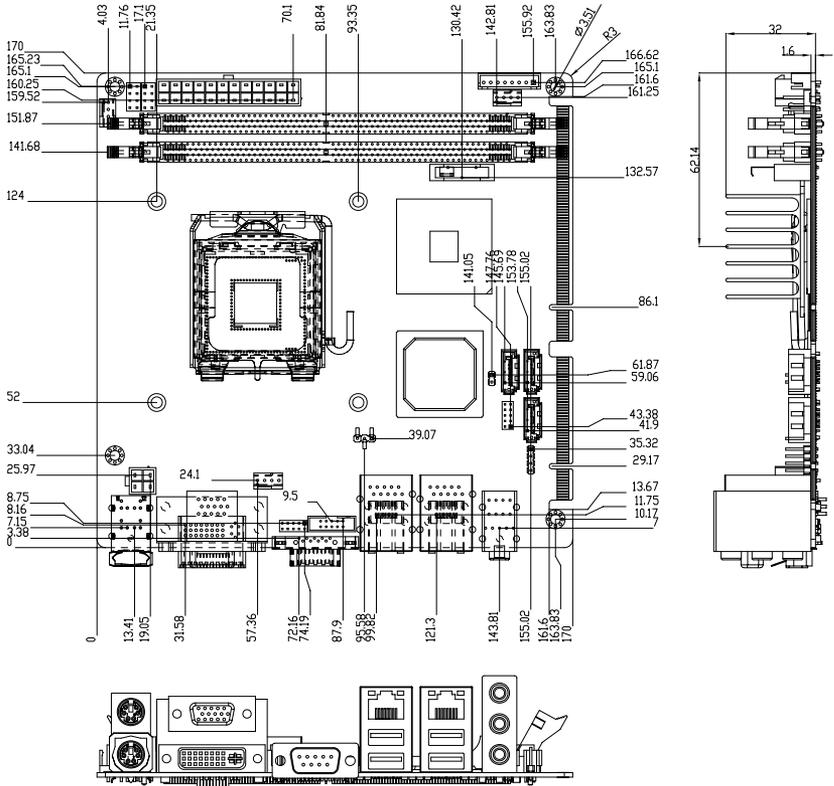
2.4 List of Jumpers

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

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

Jumpers

Label	Function
JP1	Clear CMOS

2.5 List of Connectors

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

Connectors

Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
CN1	DVI-I & VGA Port Connector
COM1	RS-232 Serial Port Connector
COM2	RS-232 Serial Port Connector
KM1	PS2 Keyboard/Mouse Connector
USB_LAN1	100/1000 Base Ethernet & Dual USB Connector
USB_LAN2	100/1000 Base Ethernet & Dual USB Connector
AUDIO1	Audio Lin-in/Lin-out/MIC
DIMM1,DIMM2	DDR3 DIMM Slot
USB1	USB Connector
CPU_FAN1,	4 Pin CPU Fan Connector
SYS_FAN1, SYS_FAN2	4 Pin System Fan Connector
ATX1	4 pin ATX Power +12V Connector
ATX2	24 pin ATX Power
SATA1~SATA3	SATA Connector
J1	CD-IN
CN2	Digital I/O
PICMGA1,PICMGD1	Expansion Interface

CN8   Expansion Power Connector

2.6 Setting Jumpers

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

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

Open   **Closed**   **Closed 2-3**
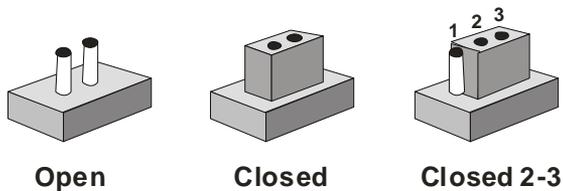
A pair of needle-nose pliers may be helpful when working with jumpers.

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

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

2.7 Clear CMOS (JP1)

Normal	Open
Clear CMOS	1-2
Normal	2-3 (Default)

2.8 ME_TP1

Enable iAMT set up	Open (Default)
Disable iAMT set up	1-2

2.9 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	Power On Button (+)	2	Reset Switch (+)
3	Power On Button (-)	4	Reset Switch (-)
5	IDE LED (+)	6	Power LED (+)
7	IDE LED (-)	8	Power LED (-)

2.10 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Key Board Lock (+)
3	NC	4	GND
5	Internal Buzzer (-) (Default)	6	I2C Bus SMB Clock
7	External Speaker (-) (Default)	8	I2C Bus SMB Data

*Internal Buzzer Enable: Close Pin 5,7

2.11 USB Connector (USB1)

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 CD-IN (J1)

Pin	Signal
1	CD-R
2	CD-GND
3	CD-GND
4	CD-L

2.13 RS232 Serial Port Connector (COM2)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

2.14 Digital I/O (CN2)

Pin	Signal	Pin	Signal
1	IN0(Bit 7)	2	IN1(Bit 6)
3	IN2(Bit 5)	4	IN3(Bit 4)
5	OUT0(Bit 3)	6	OUT1(Bit 2)

7	OUT2(Bit 1)	8	OUT3(Bit 0)
9	+5V	10	GND

2.15 Power Connector (CN8)

Pin	Signal
1	GND
2	3.3V
3	3.3V
4	3.3V
5	5V
6	12V
7	12V
8	GND

Below Table for China RoHS Requirements
产品中有毒有害物质或元素名称及含量
AAEON Main Board/ Daughter Board/ Backplane

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	×	○	○	○	○	○

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：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。

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 IMBI-Q45 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.

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 IMBI-Q45 comes with a CD-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 RAID Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the IMBI-Q45 CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install INF Driver

1. Click on the ***Step 1-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 ***Step 2-VGA*** 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 3 – Install LAN Driver

1. Click on the ***Step 3-LAN*** 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 4 – Install AUDIO Driver

1. Click on the ***Step 4-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 RAID Driver

1. Click on the *Step 5-RAID* 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

Install Driver in Windows Vista / XP / 2000

New Windows Vista / XP / 2000 Installation

The following details the installation of the drivers while installing

Windows XP/ 2000.

1. When you start installing Windows XP and older operating systems, you may encounter a message stating, "Setup could not determine the type of one or more mass storage devices installed in your system". If this is the case, then you are already in the right place and are ready to supply the driver. If this is not the case, then press F6 when prompted at the beginning of Windows setup.

2. Press the "S" key to select "Specify Additional Device".

3. You should be prompted to insert a floppy disk containing the Intel® RAID driver into the A: drive.

Note: For Windows Vista you can use Floppy, CD/DVD or USB.

Important

Please follow the instruction below to make an "Intel® RAID Driver" for yourself.

1. Insert the AAEON CD into the CD-ROM drive
2. Click the "Browse CD" on the Setup screen
3. Copy all the contents in \\Step5 - RAID\F6 Install Floppy\32bit or 64bit to a formatted floppy diskette
4. The driver diskette for Intel® ICH10DO RAID Controller is done

----

For Windows Vista:

4. During the Operating system installation, after selecting the location to install Vista click on "Load Driver" button to install a third party SCSI or RAID driver.

5. When prompted, insert the floppy disk or media (Floppy, CD/DVD or USB) you created in step 3 and press Enter.

6. You should be shown a list of available SCSI Adapters. This list should include "Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller" when the system is in RAID mode and "Intel(R) ICH10D/DO SATA AHCI Controller" when the system is in AHCI mode.

7. Select the appropriate Intel RAID controller and press ENTER.

8. The next screen should confirm that you have selected the Intel® RAID controller. Press ENTER again to continue.

9. You have successfully installed the Intel® Matrix Storage Manager driver, and Windows setup should continue.

10. Leave the disk in the floppy drive until the system reboots itself. Windows setup will need to copy the files from the floppy again after the RAID volume is formatted, and Windows setup starts copying files.

Appendix

A

Programming the Watchdog Timer

A.1 Programming

IMBI-Q45 utilizes ITE 8718 chipset as its watchdog timer controller. (K version)

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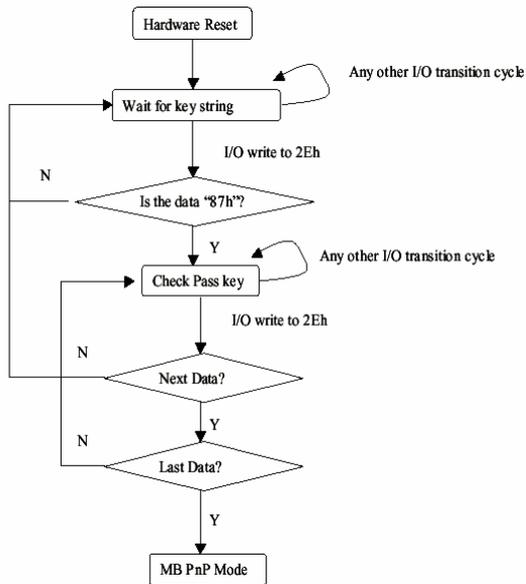
There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(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	N/A	Configuration Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value (LSB) Register
07H	74H	R/W	00H	WatchDog 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.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (Mouse) interrupt
5	WDT is reset upon a KBC (Keyboard) interrupt
4	Reserved
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT status
	1: WDT value reaches 0
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5	WDT Time-out value Extra select
	1: 4s.
	0: Determine by WDT Time-out value select (bit7 of this register)
4	WDT output through PWROK1/PWROK2 (pulse) enable
3	Select the interrupt level[note] for WDT

WatchDog Timer Time-out Value (LSB) Register (Index=73h,

Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

WatchDog Timer Time-out Value (MSB) Register (Index=74h,

Default=00h)

Bit	Description
7-0	WDT Time-out value 15-8

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,12h
        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 - 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
    [00000274 - 00000277] ISAPNP Read Data Port
    [00000279 - 00000279] ISAPNP Read Data Port
    [00000290 - 00000297] Motherboard resources
    [000002F8 - 000002FF] Communications Port (COM2)
    [000003B0 - 000003BB] Intel(R) Q45/Q43 Express Chipset
    [000003C0 - 000003DF] Intel(R) Q45/Q43 Express Chipset
    [000003F8 - 000003FF] Communications Port (COM1)
    [00000400 - 000004BF] Motherboard resources
    [000004D0 - 000004D1] Motherboard resources
    [00000500 - 0000051F] Intel(R) ICH10 Family SMBus Controller - 3A60
    [00000800 - 0000087F] Motherboard resources
    [00000880 - 0000088F] Motherboard resources
    [00000A79 - 00000A79] ISAPNP Read Data Port
    [00000D00 - 0000FFFF] PCI bus
    [0000D000 - 0000DFFF] Intel(R) ICH10 Family PCI Express Root Port 5 - 3A78
    [0000DF00 - 0000DF1F] Intel(R) Gigabit CT Desktop Adapter
    [0000EB00 - 0000EB0F] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000EC00 - 0000EC0F] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000ED00 - 0000ED03] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000EE00 - 0000EE07] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000EF00 - 0000EF03] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000F000 - 0000F007] Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    [0000F200 - 0000F20F] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F300 - 0000F30F] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F400 - 0000F403] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F500 - 0000F507] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F600 - 0000F603] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F700 - 0000F707] Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    [0000F800 - 0000F81F] Intel(R) ICH10 Family USB Universal Host Controller - 3A66
    [0000F900 - 0000F91F] Intel(R) ICH10 Family USB Universal Host Controller - 3A65
    [0000FA00 - 0000FA1F] Intel(R) ICH10 Family USB Universal Host Controller - 3A64
    [0000FB00 - 0000FB1F] Intel(R) ICH10 Family USB Universal Host Controller - 3A69
    [0000FC00 - 0000FC1F] Intel(R) ICH10 Family USB Universal Host Controller - 3A68
    [0000FD00 - 0000FD1F] Intel(R) ICH10 Family USB Universal Host Controller - 3A67
    [0000FE00 - 0000FE1F] Intel(R) 82567LM-3 Gigabit Network Connection
    [0000FF00 - 0000FF07] Intel(R) Q45/Q43 Express Chipset
```

B.2 Memory Address Map

```
IMBI-2F9BCA8C48
├── Direct memory access (DMA)
├── Input/output (IO)
├── Interrupt request (IRQ)
└── Memory
    ├── [00000000 - 0009FFFF] System board
    ├── [000A0000 - 000BFFFF] Intel(R) Q45/Q43 Express Chipset
    ├── [000A0000 - 000BFFFF] PCI bus
    ├── [000C0000 - 000DFFFF] PCI bus
    ├── [000E0000 - 000EFFFF] System board
    ├── [000F0000 - 000FFFFF] System board
    ├── [00100000 - 3DC8FFFF] System board
    ├── [3DC90000 - 3DCFFFFF] System board
    ├── [3DD00000 - 3DDFFFFF] System board
    ├── [3DE00000 - FEBFFFFF] PCI bus
    ├── [D0000000 - DFFFFFFF] Intel(R) Q45/Q43 Express Chipset
    ├── [E0000000 - EFFFFFFF] Motherboard resources
    ├── [F9800000 - FD7FFFFF] Intel(R) ICH10 Family PCI Express Root Port 1 - 3A70
    ├── [FD800000 - FDBFFFFF] Intel(R) Q45/Q43 Express Chipset
    ├── [FDE00000 - FDEFFFFF] Intel(R) ICH10 Family PCI Express Root Port 5 - 3A78
    ├── [FDEC0000 - FDEDFFFF] Intel(R) Gigabit CT Desktop Adapter
    ├── [FDEFC000 - FDEFFFFF] Intel(R) Gigabit CT Desktop Adapter
    ├── [FDFC0000 - FDFDFFFF] Intel(R) 82567LM-3 Gigabit Network Connection
    ├── [FDFF4000 - FDFF7FFF] Microsoft UAA Bus Driver for High Definition Audio
    ├── [FDFFC000 - FDFFC0FF] Intel(R) ICH10 Family SMBus Controller - 3A60
    ├── [FDFFD000 - FDFFD3FF] Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6A
    ├── [FDFFE000 - FDFFE3FF] Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6C
    ├── [FDFFF000 - FDFFFFFF] Intel(R) 82567LM-3 Gigabit Network Connection
    ├── [FEB00000 - FEBFFFFF] Intel(R) Q45/Q43 Express Chipset
    ├── [FEC00000 - FEC00FFF] System board
    ├── [FED00000 - FED000FF] System board
    ├── [FED00000 - FED003FF] High precision event timer
    ├── [FED13000 - FED1FFFF] System board
    ├── [FED20000 - FED9FFFF] 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

```
IMBI-2F9BCA8C48
├ Direct memory access (DMA)
├ Input/output (IO)
└ Interrupt request (IRQ)
    (ISA)  0   High precision event 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   High precision event timer
    (ISA)  9   Microsoft ACPI-Compliant System
    (ISA) 12   PS/2 Compatible Mouse
    (ISA) 13   Numeric data processor
    (PCI) 11   Intel(R) ICH10 Family SMBus Controller - 3A60
    (PCI) 16   Intel(R) Gigabit CT Desktop Adapter
    (PCI) 16   Intel(R) ICH10 Family PCI Express Root Port 1 - 3A70
    (PCI) 16   Intel(R) ICH10 Family PCI Express Root Port 5 - 3A78
    (PCI) 16   Intel(R) ICH10 Family USB Universal Host Controller - 3A67
    (PCI) 16   Intel(R) Q45/Q43 Express Chipset
    (PCI) 18   Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6C
    (PCI) 18   Intel(R) ICH10 Family USB Universal Host Controller - 3A66
    (PCI) 19   Intel(R) ICH10 Family 2 port Serial ATA Storage Controller 2 - 3A06
    (PCI) 19   Intel(R) ICH10 Family 4 port Serial ATA Storage Controller 1 - 3A00
    (PCI) 19   Intel(R) ICH10 Family USB Universal Host Controller - 3A69
    (PCI) 19   Intel(R) ICH10 Family USB Universal Host Controller - 3A65
    (PCI) 20   Intel(R) 82567LM-3 Gigabit Network Connection
    (PCI) 21   Intel(R) ICH10 Family USB Universal Host Controller - 3A68
    (PCI) 22   Microsoft UAA Bus Driver for High Definition Audio
    (PCI) 23   Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6A
    (PCI) 23   Intel(R) ICH10 Family USB Universal Host Controller - 3A64
```

B.4 DMA Channel Assignments

```
IMBI-2F9BCA8C48
└ Direct memory access (DMA)
    4   Direct memory access controller
```

Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	**Model no**		
SATA0	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA1	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA2	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
FP1	Front Panel Connector	JIH VEI Electronics	21B22564-XXS10B-01G-6/3-VXX		N/A
FP2	Front Panel Connector	JIH VEI Electronics	21B22564-XXS10B-01G-6/3-VXX		N/A
ATX1	2P*2 Power Connector	Catch Electronics	1121-700-04S		N/A
ATX2	12P*2 Power Connector	Catch Electronics	1121-700-24S		N/A
KM1	KeyBoard /Mouse Connector	FOXCONN	MH11061-P36-4F		N/A
USB_LAN1	LAN1+2*USB Connector	FOXCONN	JFM38U1B-21U5-4F		N/A
USB_LAN2	LAN1+2*USB Connector	FOXCONN	JFM38U1B-21U5-4F		N/A
AUDIO1	AUDIO Connector	SPEED TECH	P23-L10-0007		N/A
USB1	USB PIN HEADER.5*2P	JIH VEI Electronics	21B22050-XXS10B-01G-4/2.8	USB Cable	1709100201

COM1	D-SUB Connector	Catch Electronics	3117-000-09P		
COM2	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
VGA1	CRT Display Connector	Catch Electronics	3125-000-15SB		N/A
CN1	CRT+DVI CONNECTOR	TechBast	D205D2B 01022PN		N/A
CN2	Digital I/O Pin Header	JIH VEI Electronics	21B22050 -XXS10B-01G-4/2.8		N/A
CN8	POWER CONNECT	JIH VEI Electronics	24W1170-08S10-01 T		N/A
CPU_FAN1	FAN Connector	Catch Electronics	1190-700-03S		N/A
SYS_FAN1	FAN Connector	Catch Electronics	1190-700-03S		N/A
SYS_FAN2	FAN Connector	Catch Electronics	1190-700-03S		N/A
J1	IrDA Connector	JIH VEI Electronics	21B12050 -XXS10B-01G-4/2.8		N/A