AQ7-LN

Onboard Intel® Atom™ N450 Processor

With LCD, Ethernet, PCI-E, LPC, SMBus, Audio, PATA, SATA 2

AQ7-LN Manual Rev. A 1st Ed.
February 2011

Copyright Notice

Acknowledgments

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

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

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

Packing List

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

- 1 AQ7-LN CPU Module
- 1 CD-ROM for manual (in PDF format) and drivers
- 4 M2.5 Screws

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

Contents

Appendix B I/O Information

Chapter

1

General Information

1.1 Introduction

AQ7-LN is able to equip with Intel® Atom™ N450 processor and has one DDR2 667 to support system memory up to 1 GB. AQ7-LN adopts Intel® ICH8M chipset that implements serial technologies with high performance. In addition, AQ7-LN accommodates user-friendly expansion interfaces, ex: four PCI-Express[x1], one LPC, and one SMBus interface.

For the display specifications, AQ7-LN integrates Intel® Atom™ N450 and integrates hardware MPEG2 decoder, and shared system memory is up to 384MB/DVMT 4.0. The display of AQ7-LN supports up to 18-bit single channel LVDS LCD.

The AQ7-LN equips rich I/O interfaces, such as eight USB2.0 and ample storages of PATA SSD and two SATA 2 for flexible storage. If you are looking for an economic, time-saving and high performance solution, AQ7-LN definitely is your first choice.

1.2 Features

- Onboard Intel® Atom™ N450 Processor
- Onboard DDR2 667 Memory, Max. 1 GB
- Gigabit Ethernet
- CRT Connector, 18-bit Single Channel LVDS LCD
- High Definition Audio Interface
- Optional PATA SSD (Up to 4 GB) x 1, SATA 2 x 2
- USB2.0 x 8
- PCI-Express[x1] x 4
- +5V Only Operation

1.3 Specifications

System

●	Processor	Onboard Intel® Atom™ N450 Processor
●	Memory	Onboard DDR2 667 x 1, Max. 1 GB
●	Chipset	Intel® ICH8M
●	Ethernet	Intel® 82567V, Gigabit Ethernet
●	BIOS	AMI BIOS SPI type
●	Wake On LAN	Optional
●	Watchdog Timer	Generates a Time-out System Reset
●	H/W Status Monitoring	Supports Power Supply Voltages, Fan Speed and Temperatures Monitoring
●	Expansion Interface	PCI-Express[x1] x 4 LPC Bus x 1 SMBus x 1
●	Battery	Lithium battery
●	Power Supply Voltage	+5V DC
●	Board Size	2.75”(L) x 2.75”(W) (70mm x 70mm) without SSD, TF-AQ7-LN-A10 3.35”(L) x 2.75”(W) (85mm x 70mm) with SSD, TF-AQ7-LN-B10
●	Gross Weight	0.44 lb (0.2 kg)
●	Operating Temperature	32˚F~140˚F (0˚C~60˚C)
●	Storage Temperature	-40˚F~176˚F (-40˚C~80˚C)

Display: Supports CRT/LVD simultaneous/ dual view displays

● Chipset	Intel® Atom™N450 integrated Integrates hardware MPEG2 decoder
● Memory	Shared system memory up to 384 MB/ DVMT 4.0
● Resolution	Up to 1400x1050 (SXGA) @ 60 Hz fpr CRT; Up to 1366x768 or 1280x800 (WXGA) @ 60 Hz for LCD
● LCD Interface	18-bit single channel LVDS
● CRT	One CRT connector on the module

I/O

● Storage	PATA SSD onboard, Max. 4 GB (optional), SATA 2 x 2
● USB	USB2.0 x 8
● Audio	High definition audio interface

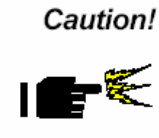
Chapter

2

Quick Installation Guide

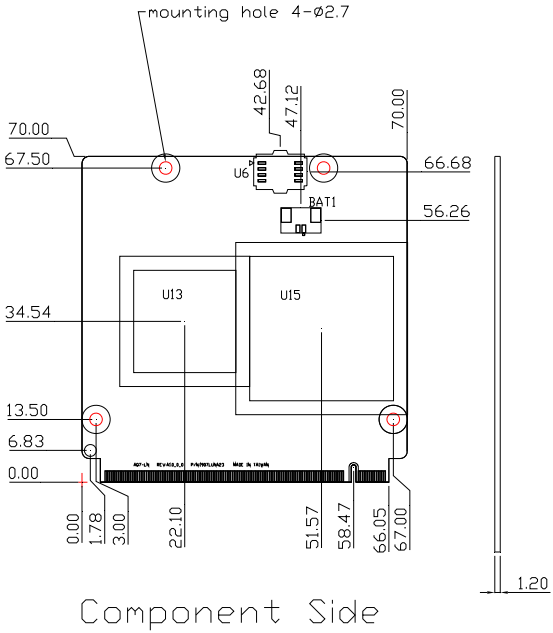
2.1 Safety Precautions

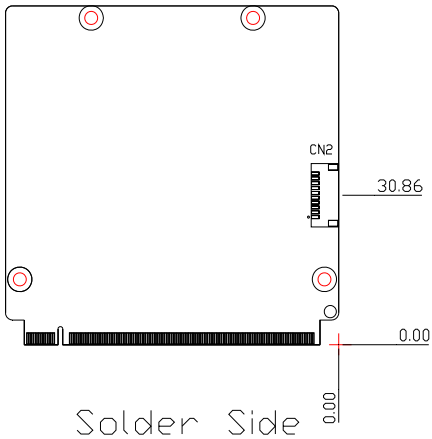
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.



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

2.2 Location and Mechanical Drawing of Connectors and Jumpers





2.3 List of Jumpers and Connectors

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

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

Label	Function
CN2	VGA Cable Connector
BAT1	RTC Battery Connector

2.4 VGA Connector (CN2)

Pin	Signal
1	CRT_RED
2	CRT_GREEN
3	CRT_BLUE
4	GND
5	CRT_DDC_CLK
6	CRT_DDC_DATA
7	CRT_HSYNC
8	CRT_VSYNC
9	SMI#
10	SCI

2.5 RTC Battery Connector (BAT1)

Pin	Signal
1	+3V_BAT
2	GND

2.6 MXM Connector Pinout

Pin	Signal	Pin	Signal
1	GND	2	GND
3	GBE_MDI3-	4	GBE_MDI2-
5	GBE_MDI3+	6	GBE_MDI2+
7	GBE_LINK100#	8	GBE_LINK1000#
9	GBE_MDI1-	10	GBE_MDI0-
11	GBE_MDI1+	12	GBE_MDI0+
13	NC	14	GBE_ACT#

15	LAN_1.8V	16	SLP_S5#
17	WAKE#	18	SLP_S3#
19	SUS_STAT#	20	PWRBTN#
21	SLP_BTN#	22	LID_BTN#
23	GND	24	GND
	KEY		KEY
25	GND	26	PWGIN
27	BATLOW#	28	RSTBTN#
29	SATA_TXP0	30	SATA_TXP1
31	SATA_TXN0	32	SATA_TXN1
33	ICH_SATA_LED#	34	GND
35	SATA_RXP0	36	SATA_RXP1
37	SATA_RXN0	38	SATA_RXN1
39	GND	40	GND
41	BIOS_DISABLE#	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	NC
51	NC	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	GND
59	HDA_SYNC	60	SMBCLK
61	HDA_RST#	62	SMBDATA
63	HDA_BIT_CLK	64	SMBALERT#
65	HDA_SDIN0	66	NC
67	HDA_SDOUT	68	NC

69	NC	70	WDTRIG#
71	CPU_THERMTRIP#	72	WDT_OUT
73	GND	74	GND
75	USBP7N	76	USBP6N
77	USBP7P	78	USBP6P
79	OC#6_7	80	OC#4_5
81	USBP5N	82	USBP4N
83	USBP5P	84	USBP4P
85	OC#2_3	86	OC#0_1
87	USBP3N	88	USBP2N
89	USBP3P	90	USBP2P
91	NC	92	NC
93	USBP1N	94	USBP0N
95	USBP1P	96	USBP0P
97	GND	98	GND
99	LA_DATA0	100	NC
101	LA_DATA#0	102	NC
103	LA_DATA1	104	NC
105	LA_DATA#1	106	NC
107	LA_DATA2	108	NC
109	LA_DATA#2	110	NC
111	L_VDDEN	112	L_BKLTEN
113	NC	114	NC
115	NC	116	NC
117	GND	118	GND
119	LA_CLK	120	NC
121	LA_CLK#	122	NC
123	L_BKLTCTL	124	NC

125	L_DDC_DATA	126	LCTLB_DATA
127	L_DDC_CLK	128	LCTLA_CLK
129	NC	130	NC
131	NC	132	NC
133	NC	134	NC
135	GND	136	GND
137	NC	138	NC
139	NC	140	NC
141	GND	142	GND
143	NC	144	NC
145	NC	146	NC
147	GND	148	GND
149	NC	150	NC
151	NC	152	NC
153	NC	154	NC
155	CLK_PCIE_100M	156	PCIE_WAKE#
157	CLK_PCIE_100M#	158	PCIE_RST#
159	GND	160	GND
161	ICH_PCIE_TXP3	162	ICH_PCIE_RXP3
163	ICH_PCIE_TXN3	164	ICH_PCIE_RXN3
165	GND	166	GND
167	ICH_PCIE_TXP2	168	ICH_PCIE_RXP2
169	ICH_PCIE_TXN2	170	ICH_PCIE_RXN2
171	PCIE1_RST#	172	PCIE2_RST#
173	ICH_PCIE_TXP1	174	ICH_PCIE_RXP1
175	ICH_PCIE_TXN1	176	ICH_PCIE_RXN1
177	PCIE1_CPPE#	178	PCIE2_CPPE#
179	ICH_PCIE_TXP0	180	ICH_PCIE_RXP0

181	ICH_PCIE_TXN0	182	ICH_PCIE_RXN0
183	GND	184	GND
185	LPC_AD0	186	LPC_AD1
187	LPC_AD2	188	LPC_AD3
189	LPC_CLK	190	LPC_FRAME#
191	SERIRQ	192	LPC_LDRQ#0
193	RTCBAT	194	ICH_SPKR
195	FAN_TAC	196	FAN_CTL
197	GND	198	GND
199	NC	200	NC
201	NC	202	NC
203	NC	204	NC
205	+5VSB_EXT	206	+5VSB_EXT
207	NC	208	NC
209	NC	210	NC
211	+5V_EXT	212	+5V_EXT
213	+5V_EXT	214	+5V_EXT
215	+5V_EXT	216	+5V_EXT
217	+5V_EXT	218	+5V_EXT
219	+5V_EXT	220	+5V_EXT
221	+5V_EXT	222	+5V_EXT
223	+5V_EXT	224	+5V_EXT
225	+5V_EXT	226	+5V_EXT
227	+5V_EXT	228	+5V_EXT
229	+5V_EXT	230	+5V_EXT

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

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 AQ7-LN 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/disable quiet boot option.

Security
Set setup administrator password.

Save&Exit
Exit system setup after saving the changes.

Chapter

4

Driver Installation

The AQ7-LN comes with a CD-ROM that contains all drivers and utilities that meet your needs.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install Audio Driver (for ECB-930G only)

Step 4 – Install LAN Driver

Step 5 – Install Touch Panel Driver (for ECB-930G only)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the AQ7-LN CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Chipset Driver

1. Click on the ***STEP1-CHIPSET*** folder and select the folder of OS your system is
2. Double click on the ***infinst_autol.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the ***STEP2-VGA*** folder and select the folder of OS 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 Audio Driver (for ECB-930G only)

1. Click on the ***STEP3–AUDIO*** folder and select the folder of OS 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 4 – Install LAN Driver

1. Click on the ***STEP4–LAN*** folder and select the folder of OS 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 5 – Install Touch Panel Driver (For ECB-930G only)

1. Click on the ***STEP5–TOUCH PANEL*** folder and select the folder of OS 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

Appendix

A

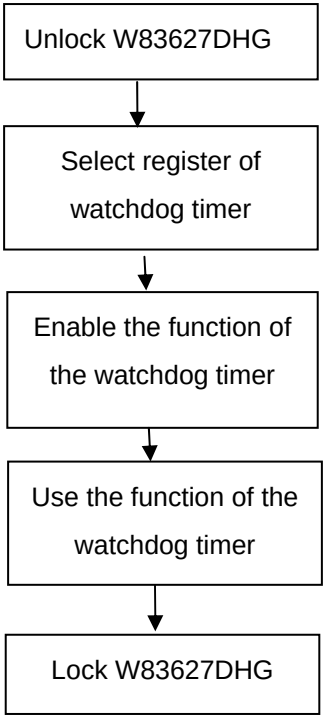
Programming the Watchdog Timer

A.1 Programming

AQ7-LN utilizes W83627DHG-P chipset as its watchdog timer controller.

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



There are three steps to complete the configuration setup:

(1) Enter the W83627DHG config Mode

(2) Modify the data of configuration registers

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

(1) Enter the W83627DHG config Mode

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

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

(2) Modify the Data of the Registers

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

(3) Exit the W83627DHG config Mode

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

	Address Port	Data Port
0aah:	2Eh	2Fh

WatchDog Timer Register I (Index=F5h, Default=00h)

CRF5 (PLED and KBC P20 Control Mode Register)

Bit 7-5 : select PLED mode

= 000 Power LED pin is driven high.

= 001 Power LED pin outputs 0.5Hz pulse with 50% duty cycle.

= 010 Power LED pin is driven low.

= 011 Power LED pin outputs 2Hz pulse with 50% duty cycle.

= 100 Power LED pin outputs 1Hz pulse with 50% duty cycle.

= 101 Power LED pin outputs 4Hz pulse with 50% duty cycle.

= 110 Power LED pin outputs 0.25Hz pulse with 50% duty cycle.

=111 Power LED pin outputs 0.25Hz pulse with 50% duty cycle..

Bit 4 : WDTO# count mode is 1000 times faster.

= 0 Disable.

= 1 Enable.

Bit 3 : select WDTO# count mode.

= 0 second

= 1 minute

Bit 2 : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

= 0 Disable

= 1 Enable

Bit 1 : Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60)

= 0 Disable

= 1 Enable

Bit 0 : Reserved.

WatchDog Timer Register II (Index=F6h, Default=00h)

Bit 7-0 = 0 x 00 Time-out Disable

= 0 x 01 Time-out occurs after 1 second/minute

= 0 x 02 Time-out occurs after 2 second/minutes

= 0 x 03 Time-out occurs after 3 second/minutes

……..

= 0 x FF Time-out occurs after 255 second/minutes

WatchDog Timer Register III (Index=F7h, Default=00h)

Bit 7 : Mouse interrupt reset Enable or Disable

= 1 Watchdog Timer is reset upon a Mouse interrupt

= 0 Watchdog Timer is not affected by Mouse interrupt

Bit 6 : Keyboard interrupt reset Enable or Disable

= 1 Watchdog Timer is reset upon a Keyboard interrupt

= 0 Watchdog Timer is not affected by Keyboard interrupt

Bit 5 : Force Watchdog Timer Time-out. Write Only

= 1 Force Watchdog Timer time-out event: this bit is self-clearing

Bit 4 : Watchdog Timer Status. R/W

= 1 Watchdog Timer time-out occurred

= 0 Watchdog Timer counting

Bit 3-0 : These bits select IRQ resource for Watchdog. Setting of 2 selects SMI.

A.2 W83627DHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

```
;////////////////////////////////////////////////////////////////////////////////////////////////
Mov dx,2eh          ;Enter W83627DHG config mode
Mov al,87h          (out 87h to 2eh twice)
Out dx,al
Out dx,al
;////////////////////////////////////////////////////////////////////////////////////////////////
Mov al,07h
Out dx,al
Inc dx
Mov al,08h          ;Select Logical Device 8 (GPIO Port
2)
Out dx,al
;////////////////////////////////////////////////////////////////////////////////////////////////
Dec dx
Mov al,30h          ;CR30 (GP20~GP27)
Out dx,al
Inc dx
Mov al,01h          ;Activate GPIO2
Out dx,al
```

```
;////////////////////////////////////////////////////////////////////////////////////////////////
Dec dx
Mov al,0f5h             ;CRF5 (PLED mode register)
Out dx,al
Inc dx
In al,dx
And al,not 08h          ;Set second as counting unit
Out dx,al
;////////////////////////////////////////////////////////////////////////////////////////////////
Dec dx
Mov al,0f6h             ; CRF6
Out dx,al
Inc dx
Mov al,10               ;Set timeout interval as 10 sec.
Out dx,al
;////////////////////////////////////////////////////////////////////////////////////////////////
Dec dx                  ;Exit W83627DHG config mode
Mov al,0aah                     (out 0aah to 2eh once)
Out dx,al
;////////////////////////////////////////////////////////////////////////////////////////////////
```

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
- [00000170 - 00000177] Secondary IDE Channel
- [000001F0 - 000001F7] 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 3150
- [000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3150
- [000003F6 - 000003F6] Primary IDE Channel
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000480 - 000004BF] Motherboard resources
- [000004D0 - 000004D1] Motherboard resources
- [00000800 - 0000087F] Motherboard resources
- [00000A79 - 00000A79] ISAPNP Read Data Port
- [00000D00 - 0000FFFF] PCI bus
- [0000E000 - 0000E01F] Intel(R) 82574L Gigabit Network Connection
- [0000E000 - 0000EFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
- [0000F000 - 0000F01F] Intel(R) ICH8 Family SMBus Controller - 283E
- [0000F020 - 0000F03F] Intel(R) ICH8 Family USB Universal Host Controller - 2832
- [0000F040 - 0000F05F] Intel(R) ICH8 Family USB Universal Host Controller - 2831
- [0000F060 - 0000F07F] Intel(R) ICH8 Family USB Universal Host Controller - 2830
- [0000F080 - 0000F09F] Intel(R) ICH8 Family USB Universal Host Controller - 2835
- [0000F0A0 - 0000F0BF] Intel(R) ICH8 Family USB Universal Host Controller - 2834
- [0000F0C0 - 0000F0DF] Intel(R) 82567V-3 Gigabit Network Connection
- [0000F0E0 - 0000F0EF] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F0F0 - 0000F0FF] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F100 - 0000F103] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F110 - 0000F117] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F120 - 0000F123] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F130 - 0000F137] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
- [0000F140 - 0000F14F] Intel(R) ICH8M Ultra ATA Storage Controllers - 2850
- [0000F190 - 0000F197] Intel(R) Graphics Media Accelerator 3150

B.2 1st MB Memory Address Map

```
Memory
    [000A0000 - 000BFFFF] Intel(R) Graphics Media Accelerator 3150
    [000A0000 - 000BFFFF] PCI bus
    [3F700000 - FFFFFFFF] PCI bus
    [E0000000 - EFFFFFFF] Intel(R) Graphics Media Accelerator 3150
    [F0000000 - F3FFFFFF] System board
    [FE800000 - FE8FFFFF] Intel(R) Graphics Media Accelerator 3150
    [FE900000 - FE91FFFF] Intel(R) 82574L Gigabit Network Connection
    [FE900000 - FE9FFFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
    [FE920000 - FE923FFF] Intel(R) 82574L Gigabit Network Connection
    [FEA00000 - FEA7FFFF] Intel(R) Graphics Media Accelerator 3150
    [FEA80000 - FEAFFFFF] Intel(R) Graphics Media Accelerator 3150
    [FEB00000 - FEB1FFFF] Intel(R) 82567V-3 Gigabit Network Connection
    [FEB20000 - FEB23FFF] Microsoft UAA Bus Driver for High Definition Audio
    [FEB24000 - FEB240FF] Intel(R) ICH8 Family SMBus Controller - 283E
    [FEB25000 - FEB253FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
    [FEB26000 - FEB263FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
    [FEB27000 - FEB27FFF] Intel(R) 82567V-3 Gigabit Network Connection
    [FEC00000 - FEC00FFF] Motherboard resources
    [FED14000 - FED19FFF] System board
    [FED1C000 - FED1FFFF] Motherboard resources
    [FED20000 - FED8FFFF] Motherboard resources
    [FEE00000 - FEE00FFF] Motherboard resources
    [FFE00000 - FFFFFFFF] Motherboard resources
```

B.3 IRQ Mapping Chart

- Interrupt request (IRQ)
  - (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
  - (ISA) 15 Secondary IDE Channel
  - (PCI) 7 Intel(R) ICH8 Family SMBus Controller - 283E
  - (PCI) 16 Intel(R) 82574L Gigabit Network Connection
  - (PCI) 16 Intel(R) Graphics Media Accelerator 3150
  - (PCI) 16 Intel(R) ICH8 Family USB Universal Host Controller - 2834
  - (PCI) 18 Intel(R) ICH8 Family USB Universal Host Controller - 2832
  - (PCI) 18 Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
  - (PCI) 18 Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
  - (PCI) 19 Intel(R) ICH8 Family USB Universal Host Controller - 2831
  - (PCI) 21 Intel(R) ICH8 Family USB Universal Host Controller - 2835
  - (PCI) 21 Microsoft UAA Bus Driver for High Definition Audio
  - (PCI) 22 Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
  - (PCI) 23 Intel(R) 82567V-3 Gigabit Network Connection
  - (PCI) 23 Intel(R) ICH8 Family USB Universal Host Controller - 2830
  - (PCI) 23 Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836

B.4 DMA Channel Assignments

- Direct memory access (DMA)
  - 4 Direct memory access controller