



**2808220**

Intel® Arrandale™ /PCH  
Mini-ITX Motherboard

# **USER'S MANUAL**

Version 1.0

---

## Acknowledgments

AMI is a registered trademark of American Megatrends Inc.

PS/2 is a trademark of International Business Machines Corporation.

Intel and Intel® Arrandale DC Mobile Processor are registered trademarks of Intel Corporation.

Microsoft Windows is a registered trademark of Microsoft Corporation.

Fintek is a registered trademark of Fintek Electronics Corporation.

All other product names or trademarks are properties of their respective owners.

---

# Table of Contents

|                                                  |           |
|--------------------------------------------------|-----------|
| <b>Introduction .....</b>                        | <b>1</b>  |
| Product Description.....                         | 1         |
| Checklist.....                                   | 2         |
| 2808220 Specifications .....                     | 3         |
| Board Dimensions .....                           | 4         |
| <b>Installations .....</b>                       | <b>6</b>  |
| Installing the CPU .....                         | 7         |
| Installing the Memory .....                      | 8         |
| Setting the Jumpers .....                        | 9         |
| Connectors on 2808220.....                       | 13        |
| <b>BIOS Setup.....</b>                           | <b>23</b> |
| <b>Drivers Installation .....</b>                | <b>51</b> |
| Intel Chipset Software Installation Utility..... | 52        |
| VGA Drivers Installation .....                   | 54        |
| Realtek HD Audio Driver Installation.....        | 56        |
| LAN Drivers Installation.....                    | 57        |
| Intel® Management Engine Interface .....         | 60        |
| <b>Appendix .....</b>                            | <b>63</b> |
| A. I/O Port Address Map.....                     | 63        |
| B. Interrupt Request Lines (IRQ).....            | 64        |
| C. Watchdog Timer Configuration.....             | 65        |

---

***IMPORTANT NOTE: When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed (CTRL-ALT-F1).***

# Introduction

## Product Description

---

The 2808220 Mini ITX board incorporates the Intel® Chipset for Embedded Computing, consisting of the Intel® Arrandale DC mobile processor (integrated Graphic and Memory Controller) and Intel® Ibex Peak-M (PCH), an optimized integrated graphics solution with a 800/1066MHz front-side bus. Dimensions of the board are 170mm x 170mm.

The integrated graphics controller contains a refresh of the 5<sup>th</sup> generation graphics core support Intel® Dynamic Video Memory Technology, Smart 2D Display Technology, Clear Video Technology. It features a low-power design, is validated with the Intel® Arrandale DC mobile processors on 45nm process. With dual channel DDR3 800/1066MHz two SoDIMM sockets on board, the board supports up to 8GB of DDR3 system memory.

The main features of the board are:

- Supports Intel® Arrandale DC mobile processor
- Supports up to 3.0GHz, 1066MHz FSB
- Two DDR3 SoDIMM, Max. 8GB memory
- Onboard Gigabit PHY and Intel PCI-Express Gigabit LAN
- Integrated Graphics VGA for CRT /DVI/ LVDS
- 4x SATA, 10x USB 2.0, 4x COM, Watchdog timer
- 1x Mini PCI-E (Mini Card), 1x PCI, 1xPCI-E(x1) slots

## **Checklist**

---

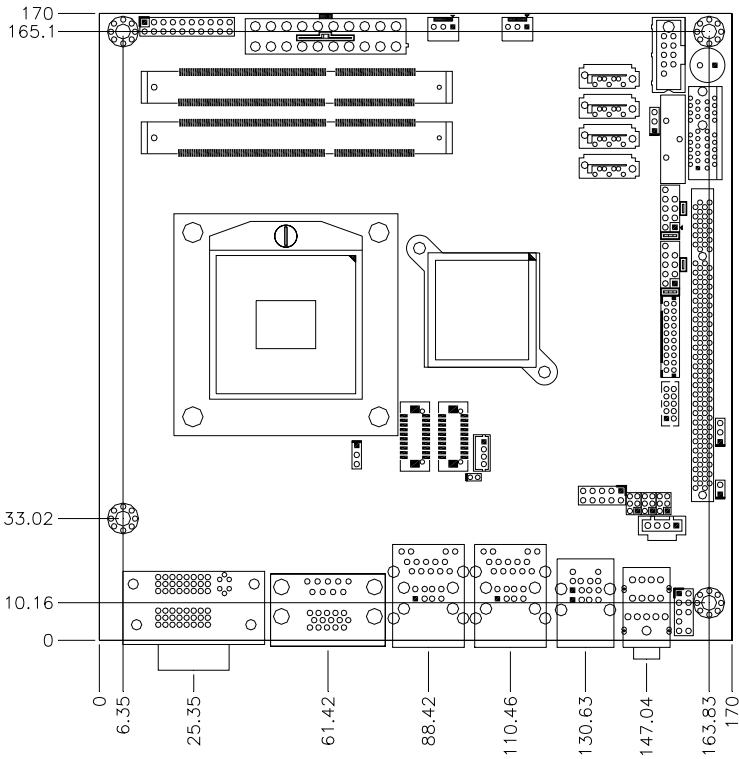
Your 2808220 package should include the items listed below.

- The 2808220 Mini-ITX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (Serial port, Serial ATA)

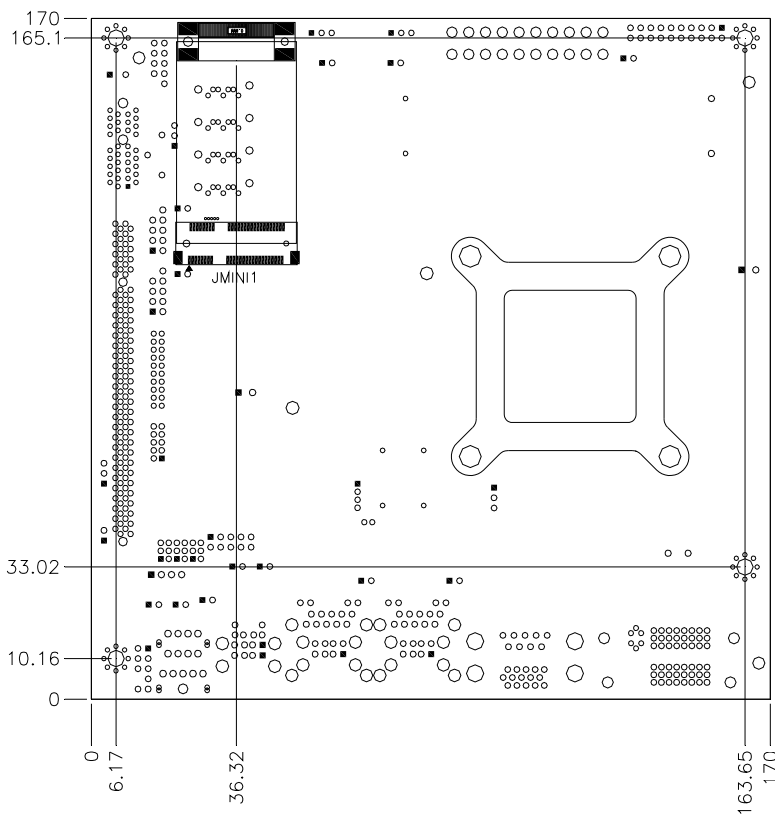
## 2808220 Specifications

|                                 |                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CPU Supported</b>            | Intel® Arrandale DC mobile processor                                                                                                                                                                                                                                                                      |
| <b>CPU Voltage</b>              | 0.700V ~ 1.5V (IMVP-6.5)                                                                                                                                                                                                                                                                                  |
| <b>System Speed</b>             | Up to 3.0GHz or above                                                                                                                                                                                                                                                                                     |
| <b>CPU FSB</b>                  | 1066MHz FSB                                                                                                                                                                                                                                                                                               |
| <b>Cache</b>                    | Up to 4MB shared L3 Cache                                                                                                                                                                                                                                                                                 |
| <b>Green /APM</b>               | APM1.2                                                                                                                                                                                                                                                                                                    |
| <b>CPU Socket</b>               | rPGA Socket 989                                                                                                                                                                                                                                                                                           |
| <b>Chipset</b>                  | Intel Ibex Peak-M (PCH) Chipset<br>PCH: 25mm x 27mm, 1071-pin FCBGA                                                                                                                                                                                                                                       |
| <b>BIOS</b>                     | AMI BIOS, supports ACPI function                                                                                                                                                                                                                                                                          |
| <b>Memory</b>                   | DDR3 800/1066 SoDIMM x2 (w/o ECC function), Max. 8GB                                                                                                                                                                                                                                                      |
| <b>VGA</b>                      | Arrandale DC mobile processor integrated graphics<br>Supports CRT<br>Supports DVI single or Dual                                                                                                                                                                                                          |
| <b>LVDS LCD Panel</b>           | Arrandale DC mobile processor built-in, supports 24-bit, single or dual channel LVDS                                                                                                                                                                                                                      |
| <b>LAN</b>                      | 1. PCH 10/100/gigabit MAC + PHY <ul style="list-style-type: none"> <li>Intel 82577LM 10/100/1000</li> </ul> 2. Intel 82574L PCI-e Gigabit LAN controller x1 (2808220F)                                                                                                                                    |
| <b>USB</b>                      | PCH built-in USB 2.0 host controller, support 10 ports                                                                                                                                                                                                                                                    |
| <b>Serial ATA Ports</b>         | PCH built-in SATA controller, supports 4 ports                                                                                                                                                                                                                                                            |
| <b>IAMT6.0</b>                  | PCH built-in Intel Active Management Technology VER 6.0 with HW KVM (2808220RF only)                                                                                                                                                                                                                      |
| <b>Audio</b>                    | PCH built-in High Definition audio controller:ALC888 w/ 7.1 channels                                                                                                                                                                                                                                      |
| <b>LPC I/O</b>                  | F81865F: COM1, COM2 (RS232/RS422/RS485), COM3 and COM4<br>Hardware monitor (3 thermal, 4 voltage monitor inputs, 2 fan headers)                                                                                                                                                                           |
| <b>Digital IO</b>               | 4 in & 4 out                                                                                                                                                                                                                                                                                              |
| <b>Keyboard/Mouse</b>           | Supports PS/2 keyboard/mouse connector                                                                                                                                                                                                                                                                    |
| <b>Expansion Slots</b>          | PCI slot x1, PIC-E (x1) slot x1 and Mini PCIE socket x1                                                                                                                                                                                                                                                   |
| <b>Edge Connector</b>           | PS/2 connector x1 for keyboard/mouse and dual USB stack connector<br>Gigabit LAN RJ-45 + dual USB stack connector x2<br>DVI-D and DVI-I stack connector x1<br>DB9 x1 for COM 1; DB15 x1 for VGA<br>RCA Jack 3x1 for Audio (Front-Out, Line-In, Mic)                                                       |
| <b>Onboard Header/Connector</b> | 10-pin headerx1 for Digital I/O; 10-pin header x1 for COM2<br>20-pin header x1 for COM3, COM4<br>10-pin header x 2 for USB 7,8; 9,10<br>DF13 connector x2 for LVDS;<br>10-pin header x1 for audio Line-Out & Mic<br>4-pin header x1 for CD in, SPDIF-out connector x1<br>SATA connector x4 for SATA ports |
| <b>Watchdog Timer</b>           | Yes (256 segments, 0, 1, 2...255 sec/min)                                                                                                                                                                                                                                                                 |
| <b>System Voltage</b>           | +5V, +3.3V, +12V, -12V, 5VSB (2A)                                                                                                                                                                                                                                                                         |
| <b>Others</b>                   | Modem Wakeup, LAN Wakeup                                                                                                                                                                                                                                                                                  |
| <b>Board Size</b>               | 170mm x 170mm (Mini ITX)                                                                                                                                                                                                                                                                                  |

# Board Dimensions







# Installations

This section provides information on how to use the jumpers and connectors on the 2808220 in order to set up a workable system. The topics covered are:

Installing the CPU..... 7

Installing the Memory..... 8

Setting the Jumpers..... 9

Connectors on 2808220 ..... 13

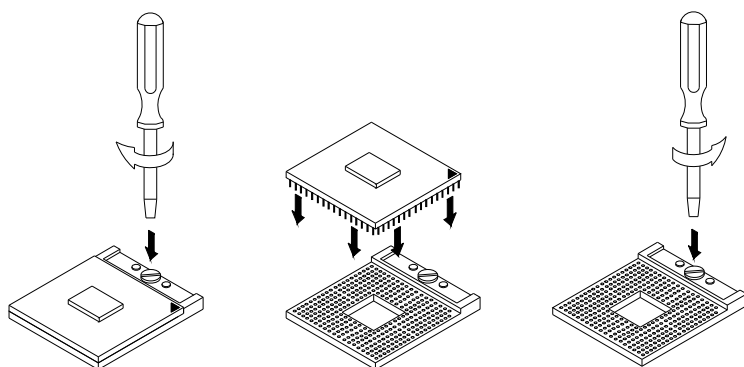
---

## Installing the CPU

---

The 2808220 board supports rPGA989 socket for Intel® Arrandale Dual Core mobile processors.

The processor socket comes with a screw to secure the processor. As shown in the left picture below, loosen the screw first before inserting the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Once the processor has slide into the socket, fasten the screw. Refer to the figures below.



**NOTE:** Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.

## Installing the Memory

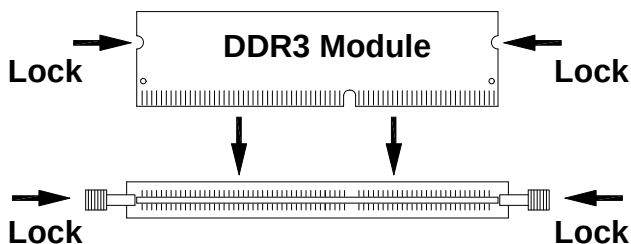
---

The 2808220 board supports two DDR3 memory socket for a maximum total memory of 8GB in DDR3 SO-DIMM memory type.

### Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
3. To remove the DDR3 module, press the clips with both hands.



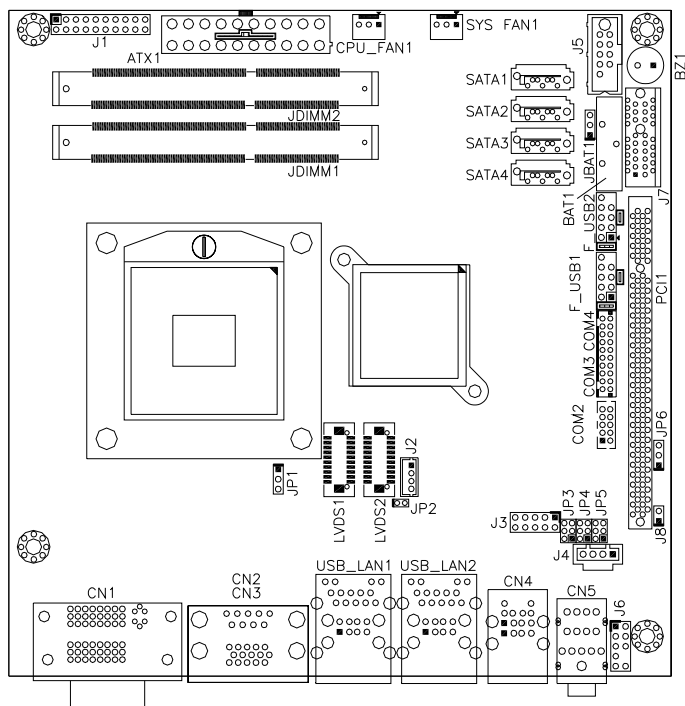
## Setting the Jumpers

Jumpers are used on 2808220 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on 2808220 and their respective functions.

|                                                     |    |
|-----------------------------------------------------|----|
| Jumper Locations on 2808220.....                    | 10 |
| JP1: LCD Panel Power Selection .....                | 11 |
| JP3, JP4, JP5: RS232/422/485 (COM2) Selection ..... | 11 |
| JP6: PCI/PCIE Riser Card Selection .....            | 12 |
| JBAT1: Clear CMOS Setting .....                     | 12 |
| JP8: PS/2 Keyboard/Mouse Power Selection .....      | 12 |

**IMPORTANT NOTE:** *When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed.*

## Jumper Locations on 2808220



|                                                     |      |
|-----------------------------------------------------|------|
| Jumpers on 2808220 .....                            | Page |
| JP1: LCD Panel Power Selection.....                 | 11   |
| JP3, JP4, JP5: RS232/422/485 (COM2) Selection ..... | 11   |
| JP6: PCI/PCIE Riser Card Selection.....             | 12   |
| JBAT1: Clear CMOS Setting.....                      | 12   |
| JP8: PS/2 Keyboard/Mouse Power Selection .....      | 12   |

### JP1: LCD Panel Power Selection

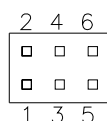
| JP1                                                                                        | LCD Panel Power |
|--------------------------------------------------------------------------------------------|-----------------|
| <br>1 2 3 | 3.3V            |
| <br>1 2 3 | 5V              |

### JP3, JP4, JP5: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM2 selection.



| COM2 Function                  | RS-232            | RS-422            | RS-485            |
|--------------------------------|-------------------|-------------------|-------------------|
| Jumper Setting<br>(pin closed) | JP3:<br>1-2       | JP3:<br>3-4       | JP3:<br>5-6       |
|                                | JP4:<br>3-5 & 4-6 | JP4:<br>1-3 & 2-4 | JP4:<br>1-3 & 2-4 |
|                                | JP5:<br>3-5 & 4-6 | JP5:<br>1-3 & 2-4 | JP5:<br>1-3 & 2-4 |

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

| Pin # | Signal Name |        |        |
|-------|-------------|--------|--------|
|       | RS-232      | R2-422 | RS-485 |
| 1     | DCD         | TX-    | DATA-  |
| 2     | RX          | TX+    | DATA+  |
| 3     | TX          | RX+    | NC     |
| 4     | DTR         | RX-    | NC     |
| 5     | Ground      | Ground | Ground |
| 6     | DSR         | RTS-   | NC     |
| 7     | RTS         | RTS+   | NC     |
| 8     | CTS         | CTS+   | NC     |
| 9     | RI          | CTS-   | NC     |
| 10    | NC          | NC     | NC     |

JP6: PCI/PCIE Riser Card Selection

| JP6                                                                                        | Riser Card                         |
|--------------------------------------------------------------------------------------------|------------------------------------|
| <br>1 2 3 | IP390 Riser Card<br>Install        |
| <br>1 2 3 | IP151, IP240 Riser Card<br>Install |

JBAT1: Clear CMOS Setting

| JBAT1                                                                                        | Setting    |
|----------------------------------------------------------------------------------------------|------------|
| <br>1 2 3  | Normal     |
| <br>1 2 3 | Clear CMOS |

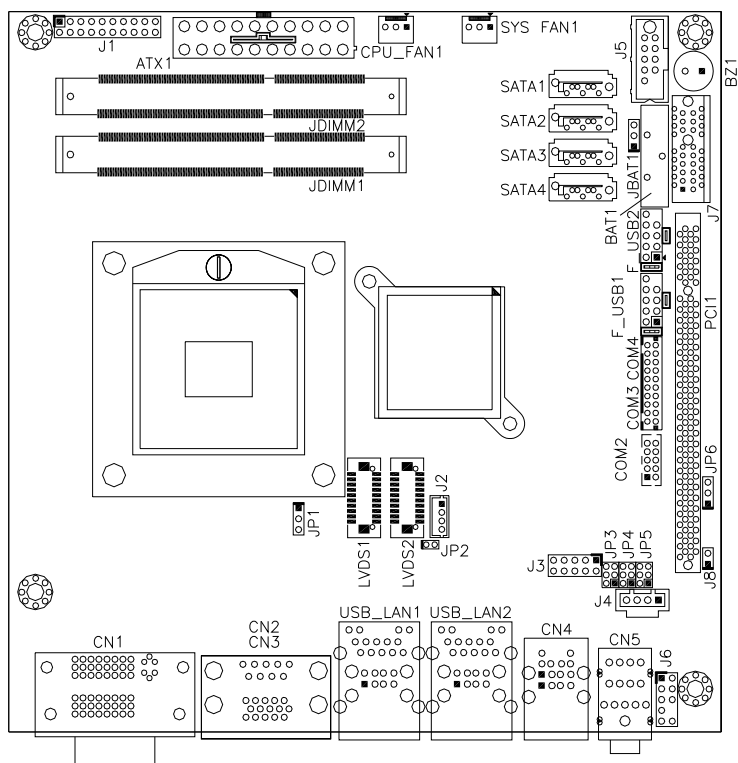
JP8: PS/2 Keyboard/Mouse Power Selection

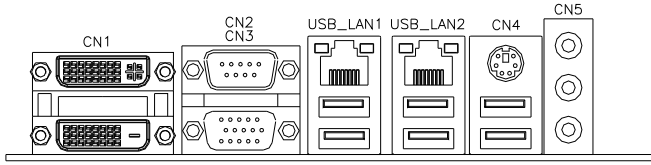
| JP8                                                                                          | KB/MS Power |
|----------------------------------------------------------------------------------------------|-------------|
| <br>1 2 3 | +5V         |
| <br>1 2 3 | 5V_DUAL     |



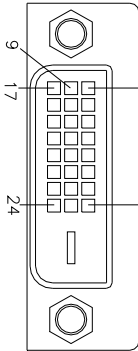
## Connectors on 2808220

|                                                               |    |
|---------------------------------------------------------------|----|
| Connector Locations on 2808220.....                           | 14 |
| CN1: DVI-D and DVI-I Connector.....                           | 15 |
| CN2, CN3: COM1 and VGA Connector.....                         | 16 |
| CN4: PS/2 Keyboard/Mouse Connectors and USB5/6 Ports.....     | 16 |
| USB_LAN1: 10/100/1000 RJ-45 (2808220F) and USB3/4 Ports.....  | 17 |
| USB_LAN2: 10/100/1000 RJ-45 (2808220) and USB1/2 Ports.....   | 17 |
| CN5: Audio Connector.....                                     | 17 |
| COM3_COM4: COM3, COM4 Serial Port.....                        | 17 |
| SYS_FAN1: System Fan Power Connector.....                     | 17 |
| CPU_FAN1: CPU Fan Power Connector.....                        | 17 |
| ATX1: ATX Power Supply Connector.....                         | 18 |
| J1 (F_PANEL): System Function Connector.....                  | 18 |
| F_USB1: USB7/USB8 Connector.....                              | 20 |
| F_USB2: USB9/USB10 Connector.....                             | 20 |
| COM2: COM2 Serial Port.....                                   | 20 |
| LVDS1, LVDS2: LVDS Connectors (1st channel, 2nd channel)..... | 21 |
| J2: LCD Backlight Connector.....                              | 21 |
| J3: Digital I/O.....                                          | 21 |
| J4: CD-In Pin Header.....                                     | 21 |
| J5: SPI Flash Connector (factory use only).....               | 22 |
| J6: Front Audio Connector.....                                | 22 |
| J7: PCI-E(x1) Slot.....                                       | 22 |
| J8: SPDIF Out Connector.....                                  | 22 |
| PCI1: PCI Slot (supports 2 Master).....                       | 22 |
| JMINI: Mini PCIE Connector.....                               | 22 |
| SATA1, SATA2, SATA3, SATA4: SATA Connectors.....              | 22 |

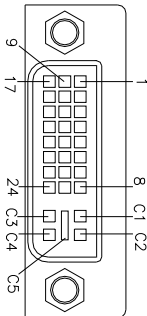




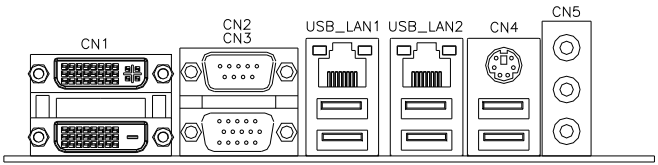
### CN1: DVI-D and DVI-I Connector



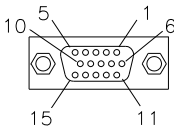
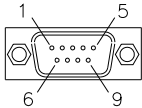
| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| DATA 2-     | 1     | 16    | HOT POWER   |
| DATA 2+     | 2     | 17    | DATA 0-     |
| Shield 2/4  | 3     | 18    | DATA 0+     |
| DATA 4-     | 4     | 19    | SHIELD 0/5  |
| DATA 4+     | 5     | 20    | DATA 5-     |
| DDC CLOCK   | 6     | 21    | DATA 5+     |
| DDC DATA    | 7     | 22    | SHIELD CLK  |
| N.C         | 8     | 23    | CLOCK -     |
| DATA 1-     | 9     | 24    | CLOCK +     |
| DATA 1+     | 10    | C1    | N.C.        |
| SHIELD 1/3  | 11    | C2    | N.C.        |
| DATA 3-     | 12    | C3    | N.C.        |
| DATA 3+     | 13    | C4    | N.C.        |
| DDC POWER   | 14    | C5    | N.C.        |
| A GROUND 1  | 15    | C6    | N.C.        |



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| DATA 2-     | 1     | 16    | HOT POWER   |
| DATA 2+     | 2     | 17    | DATA 0-     |
| Shield 2/4  | 3     | 18    | DATA 0+     |
| DATA 4-     | 4     | 19    | SHIELD 0/5  |
| DATA 4+     | 5     | 20    | DATA 5-     |
| DDC CLOCK   | 6     | 21    | DATA 5+     |
| DDC DATA    | 7     | 22    | SHIELD CLK  |
| N.C         | 8     | 23    | CLOCK -     |
| DATA 1-     | 9     | 24    | CLOCK +     |
| DATA 1+     | 10    | C1    | N.C         |
| SHIELD 1/3  | 11    | C2    | N.C         |
| DATA 3-     | 12    | C3    | N.C         |
| DATA 3+     | 13    | C4    | N.C         |
| DDC POWER   | 14    | C5    | A GROUND2   |
| A GROUND 1  | 15    | C6    | A GROUND3   |



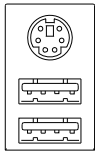
**CN2, CN3: COM1 and VGA Connector**



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| DCD         | 1     | 6     | DSR         |
| RXD         | 2     | 7     | RTS         |
| TXD         | 3     | 8     | CTS         |
| DTR         | 4     | 9     | RI          |
| GND         | 5     | 10    | Not Used    |

| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| Red         | 1     | 2     | Green       |
| Blue        | 3     | 4     | N.C.        |
| GND         | 5     | 6     | GND         |
| GND         | 7     | 8     | GND         |
| N.C.        | 9     | 10    | GND         |
| N.C.        | 11    | 12    | DDC DATA    |
| HSYNC       | 13    | 14    | VSYNC       |
| DDC_CLK     | 15    |       |             |

**CN4: PS/2 Keyboard/Mouse Connectors and USB5/6 Ports**



KB/MS

PS/2 Keyboard & Mouse

USB6

USB Port5 /Port6

USB5

| Signal Name    | Keyboard/Mouse |
|----------------|----------------|
| Keyboard data  | 1              |
| Mouse data     | 2              |
| GND            | 3              |
| 5V             | 4              |
| Keyboard clock | 5              |
| Mouse clock    | 6              |

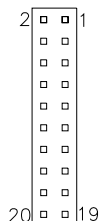
## USB\_LAN1: 10/100/1000 RJ-45 (2808220F) and USB3/4 Ports

## USB\_LAN2: 10/100/1000 RJ-45 (2808220) and USB1/2 Ports

## CN5: Audio Connector

The audio connector, from top to bottom, is composed of Line in, Line out and Microphone jacks.

## COM3\_COM4: COM3, COM4 Serial Port

|  | Signal Name | Pin # | Pin # | Signal Name |
|-----------------------------------------------------------------------------------|-------------|-------|-------|-------------|
|                                                                                   | DSR         | 2     | 1     | DCD         |
|                                                                                   | RTS         | 4     | 3     | RXD         |
|                                                                                   | CTS         | 6     | 5     | TXD         |
|                                                                                   | RI          | 8     | 7     | DTR         |
|                                                                                   | NA          | 10    | 9     | Ground      |
|                                                                                   | DSR         | 12    | 11    | DCD         |
|                                                                                   | RTS         | 14    | 13    | RXD         |
|                                                                                   | CTS         | 16    | 15    | TXD         |
|                                                                                   | RI          | 18    | 17    | DTR         |
|                                                                                   | NA          | 20    | 19    | Ground      |

## SYS\_FAN1: System Fan Power Connector

This is a 3-pin header for system fans. The fan must be a 12V (500mA).



| Pin # | Signal Name        |
|-------|--------------------|
| 1     | Ground             |
| 2     | +12V               |
| 3     | Rotation detection |

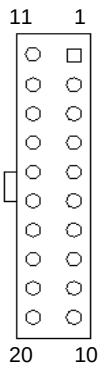
## CPU\_FAN1: CPU Fan Power Connector

This is a 3-pin header for the CPU fan. The fan must be a 12V fan.



| Pin # | Signal Name        |
|-------|--------------------|
| 1     | Ground             |
| 2     | +12V               |
| 3     | Rotation detection |

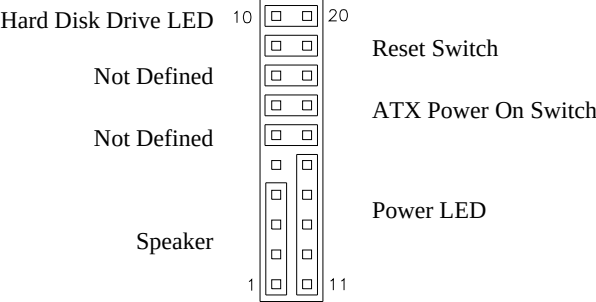
ATX1: ATX Power Supply Connector



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| 3.3V        | 11    | 1     | 3.3V        |
| -12V        | 12    | 2     | 3.3V        |
| Ground      | 13    | 3     | Ground      |
| PS-ON       | 14    | 4     | +5V         |
| Ground      | 15    | 5     | Ground      |
| Ground      | 16    | 6     | +5V         |
| Ground      | 17    | 7     | Ground      |
| -5V         | 18    | 8     | Power good  |
| +5V         | 19    | 9     | 5VSB        |
| +5V         | 20    | 10    | +12V        |

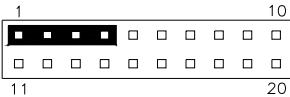
J1 (F\_PANEL): System Function Connector

J1 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J2 is a 20-pin header that provides interfaces for the following functions.

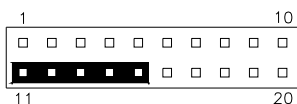


Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



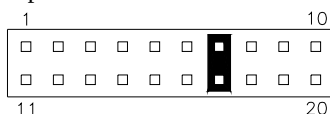
| Pin # | Signal Name |
|-------|-------------|
| 1     | Speaker out |
| 2     | No connect  |
| 3     | Ground      |
| 4     | +5V         |

**Power LED: Pins 11 - 15**

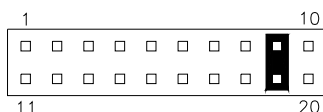
| Pin # | Signal Name |
|-------|-------------|
| 11    | Power LED   |
| 12    | No connect  |
| 13    | Ground      |
| 14    | No connect  |
| 15    | Ground      |

**ATX Power ON Switch: Pins 7 and 17**

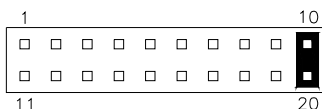
This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

**Reset Switch: Pins 9 and 19**

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

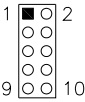
**Hard Disk Drive LED Connector: Pins 10 and 20**

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



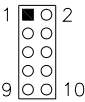
| Pin # | Signal Name |
|-------|-------------|
| 10    | HDD Active  |
| 20    | 5V          |

F\_USB1: USB7/USB8 Connector



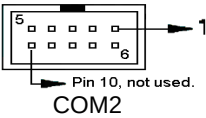
| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| Vcc         | 1   | 2   | Vcc         |
| D0-         | 3   | 4   | D1-         |
| D0+         | 5   | 6   | D1+         |
| Ground      | 7   | 8   | Ground      |
| NC          | 9   | 10  | Ground      |

F\_USB2: USB9/USB10 Connector



| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| Vcc         | 1   | 2   | Vcc         |
| D0-         | 3   | 4   | D1-         |
| D0+         | 5   | 6   | D1+         |
| Ground      | 7   | 8   | Ground      |
| NC          | 9   | 10  | Ground      |

COM2: COM2 Serial Port

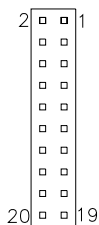


| Signal Name              | Pin # | Pin # | Signal Name          |
|--------------------------|-------|-------|----------------------|
| DCD, Data carrier detect | 1     | 6     | DSR, Data set ready  |
| RXD, Receive data        | 2     | 7     | RTS, Request to send |
| TXD, Transmit data       | 3     | 8     | CTS, Clear to send   |
| DTR, Data terminal ready | 4     | 9     | RI, Ring indicator   |
| GND, ground              | 5     | 10    | Not Used             |



**LVDS1, LVDS2: LVDS Connectors (1st channel, 2nd channel)**

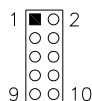
The LVDS connectors on board consist of the first channel (LVDS1) and second channel (LVDS2).



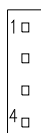
| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| TX0-        | 2     | 1     | TX0+        |
| Ground      | 4     | 3     | Ground      |
| TX1-        | 6     | 5     | TX1+        |
| 5V/3.3V     | 8     | 7     | Ground      |
| TX3-        | 10    | 9     | TX3+        |
| TX2-        | 12    | 11    | TX2+        |
| Ground      | 14    | 13    | Ground      |
| TXC-        | 16    | 15    | TXC+        |
| 5V/3.3V     | 18    | 17    | ENABKL      |
| +12V        | 20    | 19    | +12V        |

**J2: LCD Backlight Connector**

| Pin # | Signal Name        |
|-------|--------------------|
| 1     | +12V               |
| 2     | Backlight Enable   |
| 3     | Brightness Control |
| 4     | Ground             |

**J3: Digital I/O**

| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| GND         | 1   | 2   | VCC         |
| OUT3        | 3   | 4   | OUT1        |
| OUT2        | 5   | 6   | OUT0        |
| IN3         | 7   | 8   | IN1         |
| IN2         | 9   | 10  | IN0         |

**J4: CD-In Pin Header**

| Pin # | Signal Name |
|-------|-------------|
| 1     | CD Audio R  |
| 2     | Ground      |
| 3     | Ground      |
| 4     | CD Audio L  |

**J5: SPI Flash Connector (factory use only)**

**J6: Front Audio Connector**

|                            |                             |             |       |       |             |
|----------------------------|-----------------------------|-------------|-------|-------|-------------|
| 1<br>○<br>○<br>○<br>○<br>9 | 2<br>○<br>○<br>○<br>○<br>10 | Signal Name | Pin # | Pin # | Signal Name |
|                            |                             | MIC2_L      | 1     | 2     | Ground      |
|                            |                             | MIC2_R      | 3     | 4     | Presence#   |
|                            |                             | Line2_L     | 5     | 6     | MIC2_ID     |
|                            |                             | Sense       | 7     | 8     | NC          |
|                            |                             | Line2_R     | 9     | 10    | Line2_ID    |

**J7: PCI-E(x1) Slot**

**J8: SPDIF Out Connector**

**PCI1: PCI Slot (supports 2 Master)**

**JMINI: Mini PCIE Connector**

**SATA1, SATA2, SATA3, SATA4: SATA Connectors**

# BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

|                            |    |
|----------------------------|----|
| BIOS Introduction .....    | 24 |
| BIOS Setup .....           | 24 |
| Main BIOS Setup .....      | 25 |
| Advanced Settings .....    | 26 |
| Chipset Settings .....     | 42 |
| Boot Settings .....        | 47 |
| Security Settings .....    | 48 |
| Save & Exit Settings ..... | 49 |

### BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

### BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

## Main BIOS Setup

This setup allows you to record some basic hardware configurations in your computer system and set the system clock.

| Aptio Setup Utility  |          |                     |      |                                                                                                                                                                    |             |
|----------------------|----------|---------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                 | Advanced | Chipset             | Boot | Security                                                                                                                                                           | Save & Exit |
| BIOS INFORMATION     |          |                     |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| BIOS Vendor          |          | American Megatrends |      |                                                                                                                                                                    |             |
| Core Version         |          | 4.6.3.7             |      |                                                                                                                                                                    |             |
| AMI CodeBase Version |          | 1ABPZ 0.14 x64      |      |                                                                                                                                                                    |             |
| Project Name         |          | 2808220             |      |                                                                                                                                                                    |             |
| BIOS Version         |          | A05b01              |      |                                                                                                                                                                    |             |
| Build Date           |          | 12/29/2009 15:38 27 |      |                                                                                                                                                                    |             |
| Memory Information   |          |                     |      |                                                                                                                                                                    |             |
| Total Memory         |          | 4096 MB (DDR3 1066) |      |                                                                                                                                                                    |             |
| System Language      |          | [English]           |      |                                                                                                                                                                    |             |
| System Date          |          | [Tue 01/06/2009     |      |                                                                                                                                                                    |             |
| System Time          |          | [00:08 21]          |      |                                                                                                                                                                    |             |
| Access Level         |          | Administrator       |      |                                                                                                                                                                    |             |

→ ← Select Screen  
 ↑ ↓ Select Item  
 Enter: Select  
 +- Change Field  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Default  
 F4: Save ESC: Exit

**Note:** If the system cannot boot after making and saving system changes with Setup, the AMI BIOS supports an override to the CMOS settings that resets your system to its default.

**Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

### System Language

Choose the system default language.

### System Date

Set the Date. Use Tab to switch between Data elements.

### System Time

Set the Time. Use Tab to switch between Data elements.

Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

| Aptio Setup Utility |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |          |                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main                | Advanced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Chipset | Boot | Security | Save & Exit                                                                                                                                                        |
|                     | Legacy OpROM Support<br>Launch PXE OpROM<br>Launch Storage OpROM<br><br>▶ PCI Subsystem Settings<br>▶ ACPI Settings<br>▶ Trusted Computing<br>▶ Wake up event setting<br>▶ CPU Configuration<br>▶ SATA Configuration<br>▶ Thermal Configuration<br>▶ Intel IGD SWSCI OpRegion<br>▶ Intel TDT(AT-p) Configurations<br>▶ Intel TXT(LT) Configuration<br>▶ USB Configuration<br>▶ Super IO Configuration<br>▶ H/W Monitor<br>▶ Intelligent Power Sharing<br>▶ AMT Configuration<br>▶ Serial Port Console Redirection<br>▶ MXM 3.0/Hybrid Graphics |         |      |          | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |

Launch PXE OpROM

Enable or Disable Boot Option for Legacy Network Devices.

Launch Storage OpROM

Enable or Disable Boot Option for Legacy Mass Storage Devices with Option ROM.

▶ Wake up event setting

Enable/Disable Wake up event.

▶ Intel TDT(AT-p) Configurations

Disabling TDT Allow user to login to platform. This is strictly for testing only. This does not disable TDT Services in ME.

▶ Intelligent Power Sharing

Intelligent Power Sharing configuration menu.

NOTE: DTS must be enabled for Power Sharing to function.

▶ MXM 3.0/Hybrid Graphics

Enable/Disable the MXM 3.0 support..

## PCI Subsystem Settings

This section allows you to configure the PCI, PCI-X and PCI Express settings.

Aptio Setup Utility

| Main                             | Advanced | Chipset | Boot               | Security | Save & Exit           |
|----------------------------------|----------|---------|--------------------|----------|-----------------------|
| PCI Bus Driver Version           |          |         | V 2.02 01          |          |                       |
| PCI ROM Priority                 |          |         | EFI Compatible ROM |          |                       |
| PCI Common Settings              |          |         |                    |          |                       |
| PCI Latency Timer                |          |         | 32 PCI Bus Clocks  |          |                       |
| VGA Palette Snoop                |          |         | Disabled           |          |                       |
| PERR# Generation                 |          |         | Disabled           |          |                       |
| SERR# Generation                 |          |         | Disabled           |          |                       |
| PCI Express Device Settings      |          |         |                    |          |                       |
| Relaxed Ordering                 |          |         | Disabled           |          | → ← Select Screen     |
| Extended Tag                     |          |         | Disabled           |          | ↑ ↓ Select Item       |
| No Snoop                         |          |         | Enabled            |          | Enter: Select         |
| Maximum Payload                  |          |         | Auto               |          | + - Change Field      |
| Maximum Read Request             |          |         | Auto               |          | F1: General Help      |
| PCI Express Link Settings        |          |         |                    |          | F2: Previous Values   |
| ASPM Support                     |          |         | Disabled           |          | F3: Optimized Default |
| WARN NG: Enabling ASPM may cause |          |         |                    |          | F4: Save ESC: Exit    |
| Some PCI-E devices to fail       |          |         |                    |          |                       |
| Extended Synch                   |          |         | Disabled           |          |                       |

### PCI ROM Priority

In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.

### PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

### VGA Palette Snoop

Enables or Disables VGA Palette Registers Snooping.

### PERR# Generation

Enables or Disables PCI Device to Generate PERR#.

### SERR# Generation

Enables or Disables PCI Device to Generate SERR#.

### Relaxed Ordering

Enables or Disables PCI Express Device Relaxed Ordering.

### **Extended Tag**

If ENABLED allows Device to use 8-bit Tag field as a requester.

### **No Snoop**

Enables or Disables PCI Express Device No Snoop option.

### **Maximum Payload**

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

### **Maximum Read Request**

Launches (Enabled/Disabled) the boot option for legacy network devices.

### **PCI Express Link Settings**

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

### **ASPM Support**

Set the ASPM Level:

Force L0 – Force all links to L0 State

AUTO – BIOS auto configure

DISABLE – Disables ASPM

### **Extended Synch**

If ENABLED allows generation of Extended Synchronization patterns.



## ACPI Settings

### Aptio Setup Utility

| Main                           | Advanced | Chipset | Boot               | Security | Save & Exit                                                                                                                                                       |
|--------------------------------|----------|---------|--------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable ACPI Auto Configuration |          |         | Disabled           |          | → ←Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |
| Enable Hibernation             |          |         | Enabled            |          |                                                                                                                                                                   |
| ACPI Sleep State               |          |         | S3 (Suspend to R ) |          |                                                                                                                                                                   |

### Enabled ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration.

### Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

### ACPI Sleep State

Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed.

## Trusted Computing

### Aptio Setup Utility

| Main                           | Advanced | Chipset | Boot     | Security | Save & Exit                                                                                                                                                       |
|--------------------------------|----------|---------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TPM Configuration              |          |         | Disabled |          | → ←Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |
| TPM SUPPORT                    |          |         |          |          |                                                                                                                                                                   |
| Current TPM Status Information |          |         |          |          |                                                                                                                                                                   |
| NO TPM Hardware                |          |         |          |          |                                                                                                                                                                   |

### TPM Support

Enables or Disables TPM support. O.S. will not show TPM. Reset of platform is required.

Wake up event settings

Aptio Setup Utility

| Main | Advanced       | Chipset | Boot     | Security | Save & Exit           |
|------|----------------|---------|----------|----------|-----------------------|
|      |                |         | Disabled |          |                       |
|      | Wake up hour   |         | 0        |          | → ←Select Screen      |
|      | Wake up minute |         | 0        |          | ↑ ↓ Select Item       |
|      | Wake up second |         | 0        |          | Enter: Select         |
|      |                |         |          |          | + - Change Field      |
|      | Wake on Ring   |         | Enabled  |          | F1: General Help      |
|      | Wake on PME    |         | Enabled  |          | F2: Previous Values   |
|      |                |         |          |          | F3: Optimized Default |
|      |                |         |          |          | F4: Save   ESC: Exit  |

Wake system with Fixed Time

Enables or Disables System wake on alarm event. When enabled, System will wake on the hr: min:: sec specified.

Wake on Ring

The options are Disabled and Enabled.

Wake on PME

The options are Disabled and Enabled.

## CPU Configuration

This section shows the CPU configuration parameters.

| Aptio Setup Utility             |          |         |                          |          |             |
|---------------------------------|----------|---------|--------------------------|----------|-------------|
| Main                            | Advanced | Chipset | Boot                     | Security | Save & Exit |
| CPU Configuration               |          |         |                          |          |             |
| Processor Type                  |          |         | Intel(R) Core(TM) i5 CPU |          |             |
| EMT64                           |          |         | Supported                |          |             |
| Processor Speed                 |          |         | 2394 MHz                 |          |             |
| Processor Stepping              |          |         | 20652                    |          |             |
| Microcode Revision              |          |         | 9                        |          |             |
| Processor Cores                 |          |         | 2                        |          |             |
| Intel HT Technology             |          |         | Supported                |          |             |
| Hyper-threading                 |          |         | Enabled                  |          |             |
| Active Processor Cores          |          |         | All                      |          |             |
| Limit CPUID Maximum             |          |         | Disabled                 |          |             |
| Execute Disable Bit             |          |         | Enabled                  |          |             |
| Hardware Prefetcher             |          |         | Enabled                  |          |             |
| Adjacent Cache Line Prefetch    |          |         | Enabled                  |          |             |
| Intel Virtualization Technology |          |         | Disabled                 |          |             |
| Power Technology                |          |         | Energy Efficient         |          |             |
| TDC Limit                       |          |         | 0                        |          |             |
| TDP Limit                       |          |         | 0                        |          |             |

→ ← Select Screen  
 ↑ ↓ Select Item  
 Enter: Select  
 +- Change Field  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Default  
 F4: Save ESC: Exit

### Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled, only one thread per enabled core is enabled.

### Active Processor Cores

Number of cores to enable in each processor package.

### Limit CPUID Maximum

Disabled for Windows XP.

### Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, Re33dHat Enterprise 3 Update 3.)

### Hardware Prefetcher

To turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

To turn on/off prefetching of adjacent cache lines.

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Power Technology

Enable the power management features.

TDC Limit / TDP Limit

Turbo-XE Mode Processor TDC Limit in 1/8 A granularity. 0 means using the factory-configured value.

SATA Configuration

SATA Devices Configuration.

| Aptio Setup Utility     |          |                          |      |                                                                                                                                                                   |             |
|-------------------------|----------|--------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                    | Advanced | Chipset                  | Boot | Security                                                                                                                                                          | Save & Exit |
| SATA Configuration      |          |                          |      | → ←Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| SATA Port0              |          | Hitachi HDS721 (160.0GB) |      |                                                                                                                                                                   |             |
| SATA Port1              |          | Not Present              |      |                                                                                                                                                                   |             |
| SATA Port2              |          | Not Present              |      |                                                                                                                                                                   |             |
| SATA Port3              |          | Not Present              |      |                                                                                                                                                                   |             |
| SATA Port4              |          | Not Present              |      |                                                                                                                                                                   |             |
| SATA Port5              |          | ATAPI iHDS11 ATAPI       |      |                                                                                                                                                                   |             |
| SATA Mode               |          | DE Mode                  |      |                                                                                                                                                                   |             |
| Serial-ATA Controller 0 |          | Compatibled              |      |                                                                                                                                                                   |             |
| Serial-ATA Controller 1 |          | Enhanced                 |      |                                                                                                                                                                   |             |

SATA Mode

- (1) IDE Mode.
- (2) AHCI Mode.
- (3) RAID Mode.

Serial-ATA Controller

Enable / Disable Serial ATA Controller.

## Thermal Configuration

| Aptio Setup Utility        |          |          |      |          |             |
|----------------------------|----------|----------|------|----------|-------------|
| Main                       | Advanced | Chipset  | Boot | Security | Save & Exit |
| Thermal Configuration      |          |          |      |          |             |
| ME SMBus Thermal Reporting |          |          |      |          |             |
| PPEC                       |          | 0        |      |          |             |
| PTL                        |          | 0        |      |          |             |
| MMGPC                      |          | 0        |      |          |             |
| MPPC                       |          | 0        |      |          |             |
| PTA                        |          | 128      |      |          |             |
| PTA_OFFSET                 |          | 140      |      |          |             |
| MGTA                       |          | 128      |      |          |             |
| MGTA_OFFSET                |          | 140      |      |          |             |
| MCH Temp Read              |          | Enabled  |      |          |             |
| PCH Temp Read              |          | Enabled  |      |          |             |
| CPU Energy Read            |          | Enabled  |      |          |             |
| CPU Temp Read              |          | Enabled  |      |          |             |
| Thermal Data Reporting     |          | Enabled  |      |          |             |
| Alert Enable Lock          |          | Disabled |      |          |             |

→ ← Select Screen  
 ↑ ↓ Select Item  
 Enter: Select  
 +- Change Field  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Default  
 F4: Save ESC: Exit

### ME SMBus Thermal Reporting

Enable/Disable ME SMBus Thermal Reporting Configuration.

### PPEC

Processor Power Error Correction.

### PTL

Processor Temperature Limit.

### MMGPC

Max Memory Power Clamp.

### MPPC

Max Processor Power Clamp.

### MPCP

Max Processor Core Power Clamp.

### PTA

PCH Temperature Adjust.

### **PTA\_OFFSET**

PCH offset for calculating PCH temperature.

### **MGTA**

MCH/GfX Temperature Adjust.

### **MGTA\_OFFSET**

MCH/GfX offset for calculating MCH/GfX Temperature.

### **MCH Temp Read**

MCH Temperature Read Enable.

### **PCH Temp Read**

PCH Temperature Read Enable.

### **CPU Energy Read**

CPU Energy Read Enable.

### **CPU Temp Read**

CPU Temperature Read Enable.

### **Thermal Data Reporting**

Thermal Data Reporting Enable.

### **Alert Enable Lock**

Lock all Alert Enable settings.

## Intel IGD SWSCI OpRegion

| Aptio Setup Utility                    |                            |         |                 |          |                       |
|----------------------------------------|----------------------------|---------|-----------------|----------|-----------------------|
| Main                                   | Advanced                   | Chipset | Boot            | Security | Save & Exit           |
| Intel IGD SWSCI OpRegion Configuration |                            |         |                 |          |                       |
|                                        | DVMT/FIXED Memory          |         | 256MB           |          |                       |
|                                        | IGD – Boot Type            |         | VBIOS Default   |          |                       |
|                                        | Active LFP                 |         | No LVDS         |          | → ← Select Screen     |
|                                        | Panel Color Depth          |         | 18 Bit          |          | ↑ ↓ Select Item       |
|                                        | LFP LCD Panel Type         |         | 1024 x 768 LVDS |          | Enter: Select         |
|                                        | Panel Scaling              |         | Auto            |          | + - Change Field      |
|                                        | Backlight Control          |         | PWM Inverted    |          | F1: General Help      |
|                                        | BIA Control                |         | VBIOS Default   |          | F2: Previous Values   |
|                                        | Spread Spectrum Clock Chip |         | Off             |          | F3: Optimized Default |
|                                        | ALS Support                |         | Disabled        |          | F4: Save   ESC: Exit  |
|                                        | Gfx Low Power Mode         |         | Enabled         |          |                       |

### DVMT/FIXED Memory

Select DVMT/FIXED Mode Memory size used by Internal Graphics Device. Options are 128MB, 256MB and Maximum.

### IGD – Boot Type

Select the Video Device which will be activated during POST. This has no effect if external graphics present. Options are VBIOS Default, CRT, LFP, CRT+LFP, EFP and CRT+EFP.

### Active LFP

Select the Active LFP Configuration.

No LVDS: VBIOS does not enable LVDS.

Int-LVDS: VBIOS enables LVDS driver by Integrated encoder.

SDVO LVDS : VBIOS enables LVDS driver by SDVO encoder.

eDP: LVDS Driven by Int-DisplayPort encoder.

### Panel Scaling

Select the LCD panel scaling option used by the Internal Graphics Device. Options are Auto, Force Scaling, Off and Maintain Aspect Ratio.

### Backlight Control

Back Light Control Setting. Options are PWM Inverted, PWM Nrmal, GMBus Inverted and GMBus Normal.

### BIA Control

Options are VBIOS Default, Disabled and Level 1/2/3/4/5.

**Spread Spectrum Clock Chip**

The default setting is Off. Other options are:

Hardware: Spread is controlled by chip.

Software: Spread is controlled by BIOS.

**ALS Support**

Enabled or Disabled. Valid only for ACPI.

Legacy = ALS Support through the IGD INT10 function.

ACPI = ALS suport through an ACPI ALS driver.

**Gfx Low Power Mode**

Enabled or Disabled. This option is applicable for SFF only.

**Intel TDT(AT-p) Configurations**

| Aptio Setup Utility                             |          |          |      |          |             |
|-------------------------------------------------|----------|----------|------|----------|-------------|
| Main                                            | Advanced | Chipset  | Boot | Security | Save & Exit |
| Intel Theft Deterrence Technology Configuration |          |          |      |          |             |
| TDT                                             |          | Disabled |      |          |             |
| TDT Recovery                                    |          | 3        |      |          |             |

**TDT**

Enable/Disable TDT in BIOS for testing only.

**TDT Recovery**

Set the number of times Recovery attempted will be allowed.



## Intel TXT(LT) Configuration

Aptio Setup Utility

| Aptio Setup Utility                              |          |          |      |                                                                                                                                                                    |             |
|--------------------------------------------------|----------|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                                             | Advanced | Chipset  | Boot | Security                                                                                                                                                           | Save & Exit |
| Intel Trusted Execution Technology Configuration |          |          |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| Intel TXT (LT) Support                           |          | Disabled |      |                                                                                                                                                                    |             |

## Intel TXT (LT) Support

Enable/Disable Intel Trusted Execution Technology Support.

## USB Configuration

Aptio Setup Utility

| Aptio Setup Utility    |          |         |      |                                                                                                                                                                      |             |
|------------------------|----------|---------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                   | Advanced | Chipset | Boot | Security                                                                                                                                                             | Save & Exit |
| USB Configuration      |          |         |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save   ESC: Exit |             |
| USB Devices:<br>2 Hubs |          |         |      |                                                                                                                                                                      |             |
| Legacy USB Support     |          | Enabled |      |                                                                                                                                                                      |             |
| EHCI Hand-off          |          | Enabled |      |                                                                                                                                                                      |             |
| Device Reset Timeout   |          | 20 sec  |      |                                                                                                                                                                      |             |

## Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option will keep USB devices available only for EFI applications.

## EHCI Hand-off

Enabled/Disabled. This is a workaround for Oses without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

## Device Reset Timeout

USB mass storage device Start Unit command timeout.

Options are: 10 sec / 20 sec / 30 sec / 40 sec.

Super IO Configuration

Aptio Setup Utility

| Main                           | Advanced | Chipset       | Boot | Security                                                                                                                                                           | Save & Exit |
|--------------------------------|----------|---------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Super IO Configuration         |          |               |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| Super IO Chip                  |          | Fintek F81865 |      |                                                                                                                                                                    |             |
| -> Serial Port 0 Configuration |          |               |      |                                                                                                                                                                    |             |
| -> Serial Port 1 Configuration |          |               |      |                                                                                                                                                                    |             |
| -> Serial Port 2 Configuration |          |               |      |                                                                                                                                                                    |             |
| -> Serial Port 3 Configuration |          |               |      |                                                                                                                                                                    |             |
| Power Failure                  |          | Always off    |      |                                                                                                                                                                    |             |

Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

Power Failure

- Options are:
- Keep last state
  - Bypass mode
  - Always on
  - Always off (default)

## H/W Monitor

## Aptio Setup Utility

| Aptio Setup Utility    |          |           |      |                                                                                                                                                                    |             |
|------------------------|----------|-----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                   | Advanced | Chipset   | Boot | Security                                                                                                                                                           | Save & Exit |
| PC Health Status       |          |           |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| System Temperature1    |          | +51 C     |      |                                                                                                                                                                    |             |
| System Temperature 2   |          | +35 C     |      |                                                                                                                                                                    |             |
| System FAN1 Speed      |          | N/A       |      |                                                                                                                                                                    |             |
| System FAN2 Speed      |          | 7109 RPM  |      |                                                                                                                                                                    |             |
| VCC3V                  |          | +3.408 V  |      |                                                                                                                                                                    |             |
| Vin0                   |          | +0.928 V  |      |                                                                                                                                                                    |             |
| Vin2                   |          | +5.087 V  |      |                                                                                                                                                                    |             |
| Vin3                   |          | +12.232 V |      |                                                                                                                                                                    |             |
| VSB3V                  |          | +3.424 V  |      |                                                                                                                                                                    |             |
| VBAT                   |          | +3.184 V  |      |                                                                                                                                                                    |             |
| Fan1 Smart Fan Control |          | 50 C      |      |                                                                                                                                                                    |             |
| Fan2 Smart Fan Control |          | Disabled  |      |                                                                                                                                                                    |             |

## Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

## Fan1/Fan2 Smart Fan Control

This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

AMT Configuration

| Aptio Setup Utility |          |         |          |                                                                                                                                                                    |             |
|---------------------|----------|---------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                | Advanced | Chipset | Boot     | Security                                                                                                                                                           | Save & Exit |
| AMT                 |          |         | Enabled  | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| Unconfigure AMT/ME  |          |         | Disabled |                                                                                                                                                                    |             |
| WatchDog Timer      |          |         | Disabled |                                                                                                                                                                    |             |
| OS WatchDog Timer   |          |         | 0        |                                                                                                                                                                    |             |
| BIOS WatchDog Timer |          |         | 0        |                                                                                                                                                                    |             |

AMT

Options are Enabled and Disabled.

Unconfigure AMT/ME

Perform AMT/ME unconfigure without password operation.

WatchDog Timer

Enable/Disable WatchDog Timer.

Serial Port Console Redirection

| Aptio Setup Utility                                                                    |          |         |                  |                                                                                                                                                                    |             |
|----------------------------------------------------------------------------------------|----------|---------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                                                                                   | Advanced | Chipset | Boot             | Security                                                                                                                                                           | Save & Exit |
| COM0 (Disabled)                                                                        |          |         |                  | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| Console Redirection                                                                    |          |         | Port is Disabled |                                                                                                                                                                    |             |
| Serial Port for Out-of-Band Management/<br>Windows Emergency Management Services (EMS) |          |         |                  |                                                                                                                                                                    |             |
| Console Redirection                                                                    |          |         | Enabled          |                                                                                                                                                                    |             |
| Out-of-Band Mgmt Port                                                                  |          |         | COM0 (Disabled)  |                                                                                                                                                                    |             |
| Data Bits                                                                              |          |         | 8                |                                                                                                                                                                    |             |
| Parity                                                                                 |          |         | None             |                                                                                                                                                                    |             |
| Stop Bits                                                                              |          |         | 1                |                                                                                                                                                                    |             |
| Terminal Type                                                                          |          |         | VT-UTF8          |                                                                                                                                                                    |             |
|                                                                                        |          |         |                  |                                                                                                                                                                    |             |

Console Redirection

Console Redirection Enable/Disable.

Terminal Type

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100.

## Intel ME Subsystem

This section allows you to configure the PCI settings.

| Aptio Setup Utility              |          |            |      |                                                                                                                                                                  |             |
|----------------------------------|----------|------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                             | Advanced | Chipset    | Boot | Security                                                                                                                                                         | Save & Exit |
| Intel ME Subsystem Configuration |          |            |      | → ←Select Screen<br>↑↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |
| ME Version                       |          | 6.0.3.1195 |      |                                                                                                                                                                  |             |
| ME Subsystem                     |          | Enabled    |      |                                                                                                                                                                  |             |
| End of Post Message              |          | Enabled    |      |                                                                                                                                                                  |             |
| Execute ME8x                     |          | Enabled    |      |                                                                                                                                                                  |             |

### ME Version

Launches (Enabled/Disabled) the boot option for legacy network devices.

### ME Subsystem

Launches (Enabled/Disabled) the boot option for legacy network devices.

### End of Post Message

Launches (Enabled/Disabled) the boot option for legacy network devices.

### Execute ME8x

Launches (Enabled/Disabled) the boot option for legacy network devices.

Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

| Aptio Setup Utility |          |         |      |          |                                                                                                                                                                      |
|---------------------|----------|---------|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main                | Advanced | Chipset | Boot | Security | Save & Exit                                                                                                                                                          |
| Enable CSID         |          |         |      | Disabled | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save   ESC: Exit |
| ▶ North Bridge      |          |         |      |          |                                                                                                                                                                      |
| ▶ South Bridge      |          |         |      |          |                                                                                                                                                                      |
| ▶ ME Subsystem      |          |         |      |          |                                                                                                                                                                      |

Enable CSID

By default, this item is disabled. Enable Compatible Revision ID.

North Bridge

This item shows the North Bridge Parameters.

South Bridge

This item shows the South Bridge Parameters.

ME Subsystem

This item shows the ME Subsystem Parameters.

## North Bridge

This section allows you to configure the North Bridge Chipset.

| Aptio Setup Utility           |          |         |                     |          |             |
|-------------------------------|----------|---------|---------------------|----------|-------------|
| Main                          | Advanced | Chipset | Boot                | Security | Save & Exit |
| Memory Information            |          |         |                     |          |             |
| CPU Type                      |          |         | Arrandale           |          |             |
| Total Memory                  |          |         | 4096 MB (DDR3 1066) |          |             |
| Memory Slot0                  |          |         | 2048 MB (DDR3 1066) |          |             |
| Memory Slot1                  |          |         | 0                   |          |             |
| Memory Slot2                  |          |         | 2048 MB (DDR3 1066) |          |             |
| Memory Slot3                  |          |         | 140                 |          |             |
| CAS# Latency(tCL)             |          |         | 7                   |          |             |
| RAS# Active Time(tRAS)        |          |         | 20                  |          |             |
| Row Precharge Time(tRP)       |          |         | 7                   |          |             |
| RAS# to CAS# Delay(tRCD)      |          |         | 7                   |          |             |
| Row Refresh Cycle Timea(tRFC) |          |         | 60                  |          |             |
| Write to Read Delay(tWTR)     |          |         | 4                   |          |             |
| Active to Active Delay(tRRD)  |          |         | 4                   |          |             |
| Read CAS# Precharge(tRTP)     |          |         | 5                   |          |             |
| Low MMIO Align                |          |         | 64M                 |          |             |
| Initiate Graphic Adapter      |          |         | PEG/IGD             |          |             |
| Graphics Turbo IMON Current   |          |         | 31                  |          |             |
| VT-d                          |          |         | Disabled            |          |             |
| PCI Express Compliance Mode   |          |         | Disabled            |          |             |
| PCI Express Port              |          |         | Auto                |          |             |
| IGD Memory                    |          |         | 32M                 |          |             |
| PAVP Mode                     |          |         | Disabled            |          |             |
| PEG Force Gen1                |          |         | Disabled            |          |             |

→ ← Select Screen  
 ↑ ↓ Select Item  
 Enter: Select  
 +- Change Field  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Default  
 F4: Save ESC: Exit

## Low MMIO Align

Low MMIO resources align at 64MB/1024MB.

## Initiate Graphic Adapter

Select which graphics controller to use as the primary boot device.

Options are IGD, PCI/IGD, PCI/PEG, PEG/IGD, PEG/PCI and SG.

## Graphics Turbo IMON Current

Graphics turbo IMON current values supported (14-31).

## VT-d

VT-d Enable/Disable.

## PCI Express Compliance Mode

PCI Express Compliance Mode Enable/Disable.

### **PCI Express Port**

Options are Disabled, Enabled and Auto.

### **IGD Memory**

IGD Share Memory Size. Options are Disable, 32M, 64M and 128M.

### **PAVP Mode**

Select PAVP Mode used by Internal Graphics Device. Options are Disabled and Enabled.

### **PEG Force Gen1**

PCI Express Port Force Gen1. Options are Disabled and



## SB Chipset Configuration

This section allows you to configure the South Bridge Chipset.

| Aptio Setup Utility                      |          |         |             |          |                       |
|------------------------------------------|----------|---------|-------------|----------|-----------------------|
| Main                                     | Advanced | Chipset | Boot        | Security | Save & Exit           |
| SB Chipset Configuration                 |          |         |             |          |                       |
| SMBus Controller                         |          |         | Enabled     |          |                       |
| GbE Controller                           |          |         | Enabled     |          |                       |
| Wake on LAN from S5                      |          |         | Enabled     |          |                       |
| Restore AC Power Loss                    |          |         | Power Off   |          |                       |
| SLP_S4 Assertion Stretch Enable          |          |         | Enabled     |          |                       |
| SLP_S4 Assertion Width                   |          |         | 4-5 Seconds |          |                       |
| Audio Configuration                      |          |         |             |          | → ← Select Screen     |
| Azalia HD Audio                          |          |         | Enabled     |          | ↑ ↓ Select Item       |
| Azalia Internal HDMI codec               |          |         | Disabled    |          | Enter: Select         |
| High Precision Event Timer Configuration |          |         |             |          | + - Change Field      |
| High Precision Timer                     |          |         | Enabled     |          | F1: General Help      |
| PCI Express Ports Configuration          |          |         |             |          | F2: Previous Values   |
| USB Configuration                        |          |         |             |          | F3: Optimized Default |
|                                          |          |         |             |          | F4: Save ESC: Exit    |

### SMBus Controller

SMBus Controller help.

### GbE Controller

This is constantly enabled.

### Wake on LAN from S5

Wake on LAN from S5 help.

### Restore AC Power Loss

Options are Power Off, Power On and Last State.

### SLP\_S4 Assertion Stretch Enable

Select a minimum assertion width of the SLP\_S4# signal.

### Audio Configuration

The Audio Configuration settings Enable/Disable the Azalia HD Audio and the Azalia internal HDMI codec.

### High Precision Event Timer Configuration

Enable/or Disable the High Precision Event Timer.

## PCI Express Ports Configuration

Enable or Disable the PCI Express Ports in the Chipset.

| Aptio Setup Utility             |          |         |      |                                                                                                                                                                    |             |
|---------------------------------|----------|---------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                            | Advanced | Chipset | Boot | Security                                                                                                                                                           | Save & Exit |
| PCI Express Ports Configuration |          |         |      |                                                                                                                                                                    |             |
| PCI Express Port 1              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 2              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 3              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 4              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 5              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 6              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 7              |          |         | Auto |                                                                                                                                                                    |             |
| PCI Express Port 8              |          |         | Auto |                                                                                                                                                                    |             |
|                                 |          |         |      | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |

## USB Configuration

Enable/Disable All USB Devices, USB 2.0 (EHCI) Support and RMH Support. The setting of AUTO on RMH Support Enable RMH support on Ibex Peak B0 Stepping.

| Aptio Setup Utility |          |         |         |                                                                                                                                                                    |             |
|---------------------|----------|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                | Advanced | Chipset | Boot    | Security                                                                                                                                                           | Save & Exit |
| USB Configuration   |          |         |         |                                                                                                                                                                    |             |
| All USB Devices     |          |         | Enabled |                                                                                                                                                                    |             |
| EHCI Controller 1   |          |         | Enabled |                                                                                                                                                                    |             |
| EHCI Controller 2   |          |         | Enabled |                                                                                                                                                                    |             |
| RMH Support         |          |         | Auto    |                                                                                                                                                                    |             |
| USB Port 0          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 1          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 2          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 3          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 4          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 5          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 6          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 7          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 8          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 9          |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 10         |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 11         |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 12         |          |         | Enabled |                                                                                                                                                                    |             |
| USB Port 13         |          |         | Enabled |                                                                                                                                                                    |             |
|                     |          |         |         | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |             |

## Boot Settings

This section allows you to configure the boot settings according to your preference.

| Aptio Setup Utility       |          |         |                  |          |                       |
|---------------------------|----------|---------|------------------|----------|-----------------------|
| Main                      | Advanced | Chipset | Boot             | Security | Save & Exit           |
| Boot Configuration        |          |         |                  |          |                       |
| Quiet Boot                |          |         | Disabled         |          |                       |
| Fast Boot                 |          |         | Disabled         |          |                       |
| Setup Prompt Timeout      |          |         | 1                |          |                       |
| Bootup NumLock State      |          |         | On               |          |                       |
| CSM16 Module Version      |          |         | 07 60            |          |                       |
| GateA20 Active            |          |         | Upon Request     |          |                       |
| Option ROM Messages       |          |         | Force BIOS       |          | → ← Select Screen     |
| Interrupt 19 Canture      |          |         | Disabled         |          | ↑ ↓ Select Item       |
| Boot Option Priorities    |          |         |                  |          | Enter: Select         |
| Boot Option #1            |          |         | SATA: ATAPI iH ) |          | + - Change Field      |
| Hard Drive BBS Priorities |          |         |                  |          | F1: General Help      |
|                           |          |         |                  |          | F2: Previous Values   |
|                           |          |         |                  |          | F3: Optimized Default |
|                           |          |         |                  |          | F4: Save ESC: Exit    |

### Quiet Boot

Enables/Disables Quiet Boot option.

### Fast Boot

Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

### Setup Prompt Timeout

Number of seconds to wait for setup activation key.  
65535(0xFFFF) means indefinite waiting.

### Bootup NumLock State

Select the keyboard NumLock state.

### GateA20 Active

UPON REQUEST – GA20 can be disabled using BIOS services.

ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

### Option ROM Messages

Set display mode for Option ROM. Options are Force BIOS and Keep Current.

### Interrupt 19 Canture

Enable: Allows Option ROMs to trap Int 19.

Boot Option Priorities

Sets the system boot order.

Hard Drive BBS Priorities

Set the order of the legacy devices in this group.

Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

| Aptio Setup Utility                                                                                                                                               |          |         |      |                                                                                                                                                                                                                                          |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Main                                                                                                                                                              | Advanced | Chipset | Boot | Security                                                                                                                                                                                                                                 | Save & Exit |
| Password Description                                                                                                                                              |          |         |      | <div>→ ← Select Screen</div> <div>↑ ↓ Select Item</div> <div>Enter: Select</div> <div>+ - Change Field</div> <div>F1: General Help</div> <div>F2: Previous Values</div> <div>F3: Optimized Default</div> <div>F4: Save   ESC: Exit</div> |             |
| If ONLY the Administrator's password is set, then this only limits accesss to Setup and is only asked for when entering Setup.                                    |          |         |      |                                                                                                                                                                                                                                          |             |
| If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights |          |         |      |                                                                                                                                                                                                                                          |             |
| Administrator Password                                                                                                                                            |          |         |      |                                                                                                                                                                                                                                          |             |
| User Password                                                                                                                                                     |          |         |      |                                                                                                                                                                                                                                          |             |

Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

## Save & Exit Settings

| Aptio Setup Utility                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main                                                                                                                                                                                                                                                                                                                                                                                                                               | Advanced                                                                                                                                                           |
| Save Changes and Exit<br>Discard Changes and Exit<br>Save Changes and Reset<br>Discard Changes and Reset<br><br>Save Options<br>Save Changes<br>Discard Changes<br><br>Restore Defaults<br>Save as User Defaults<br>Restore User Defaults<br><br>Boot Override<br>SATA: ATAPI iHDS116 4<br>SATA: Hitachi HDS721616PLA380<br><br>Launch EFI Shell from filesystem device<br><br>Save Options<br>▶ Reset System with ME disable Mode | → ← Select Screen<br>↑ ↓ Select Item<br>Enter: Select<br>+- Change Field<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Default<br>F4: Save ESC: Exit |

### Save Changes and Exit

Exit system setup after saving the changes.

### Discard Changes and Exit

Exit system setup without saving any changes.

### Save Changes and Reset

Reset the system after saving the changes.

### Discard Changes and Reset

Reset system setup without saving any changes.

### Save Changes

Save Changes done so far to any of the setup options.

### Discard Changes

Discard Changes done so far to any of the setup options.

### Restore Defaults

Restore/Load Defaults values for all the setup options.

### **Save as User Defaults**

Save the changes done so far as User Defaults.

### **Restore User Defaults**

Restore the User Defaults to all the setup options.

### **Boot Override**

Pressing ENTER causes the system to enter the OS.

### **Launch EFI Shell from filesystem device**

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

### **Reset System with ME disable Mode**

ME will run into the temporary disable mode.

## Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 2000 and Windows XP. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

|                                                   |    |
|---------------------------------------------------|----|
| Intel Chipset Software Installation Utility ..... | 52 |
| VGA Drivers Installation .....                    | 54 |
| Realtek HD Audio Driver Installation.....         | 56 |
| LAN Drivers Installation .....                    | 57 |
| Intel® Management Engine Interface .....          | 60 |

### **IMPORTANT NOTE:**

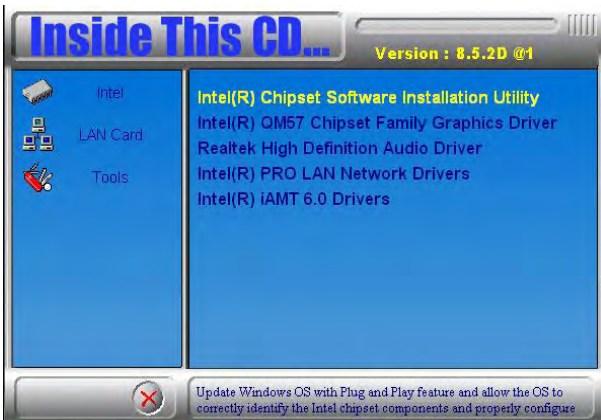
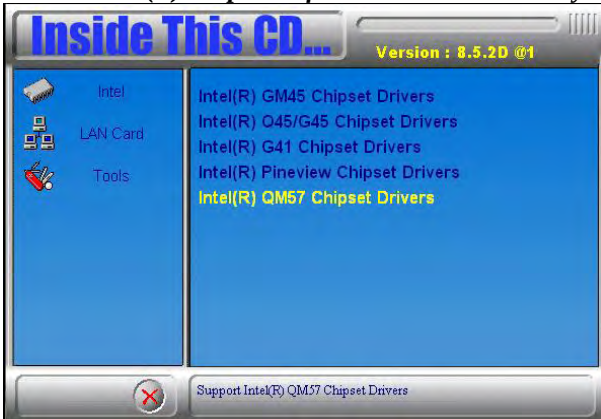
After installing your Windows operating system (Windows 2000/ XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

## Intel Chipset Software Installation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

1. Insert the CD that comes with the board. Click **Intel** and then **Intel(R) QM57 Chipset Drivers**.

2. Click **Intel(R) Chipset Software Installation Utility**.



3. When the Welcome screen to the Intel® Chipset Device Software appears, click **Next** to continue.



4. Click **Yes** to accept the software license agreement and proceed with the installation process.
5. On the Readme File Information screen, click **Next** to continue the installation.
6. The Setup process is now complete. Click **Finish** to restart the computer and for changes to take effect.

## VGA Drivers Installation

**NOTE:** Before installing the *Intel(R) QM57 Chipset Family Graphics Driver*, the Microsoft .NET Framework 3.5 SPI should be first installed.

To install the VGA drivers, follow the steps below.

1. Insert the CD that comes with the board. Click **Intel** and then **Intel(R) QM57 Chipset Drivers**.

2. Click **Intel(R) QM57 Chipset Family Graphics Driver**.



3. When the Welcome screen appears, click **Next** to continue.



4. Click **Yes** to agree with the license agreement and continue the installation.
5. On the Readme File Information screen, click **Next** to continue the installation of the Intel® Graphics Media Accelerator Driver.
6. On Setup Progress screen, click **Next** to continue.
7. Setup complete. Click **Finish** to restart the computer and for changes to take effect.



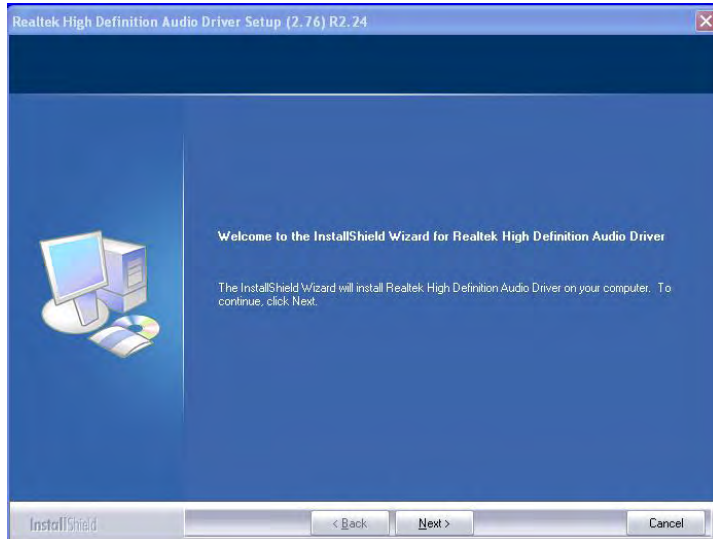
## Realtek HD Audio Driver Installation

Follow the steps below to install the Realtek HD Audio Drivers.

1. Insert the CD that comes with the board. Click **Intel** and then **Intel(R) QM57 Chipset Drivers**.
2. Click **Realtek High Definition Audio Driver**.



3. On the Welcome to the InstallShield Wizard screen, click **Next**.

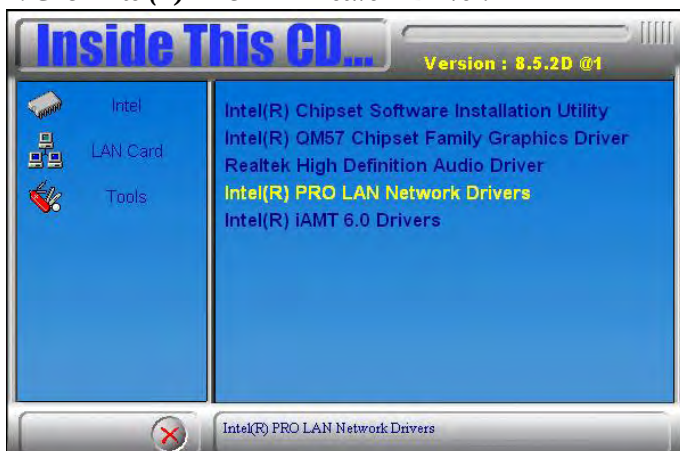


3. InstallShield Wizard is complete. Click **Finish** to restart the computer.

## LAN Drivers Installation

Follow the steps below to install the Intel LAN drivers.

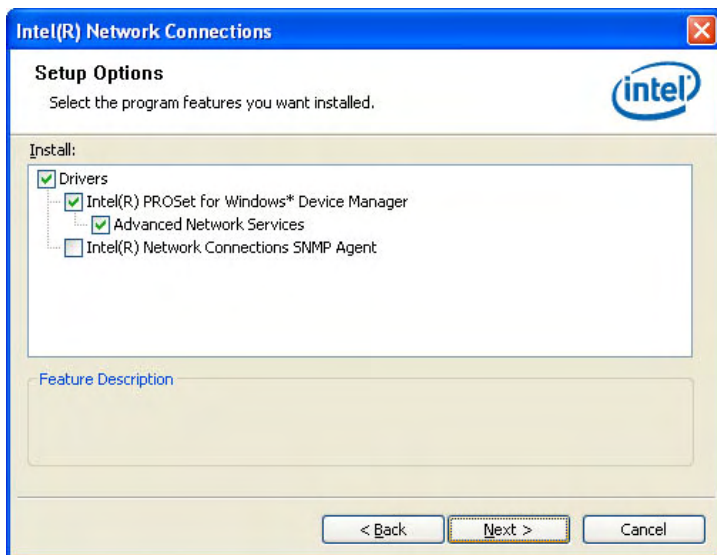
1. Insert the CD that comes with the board. Click **Intel** and then **Intel(R) QM57 Chipset Drivers**.
2. Click **Intel(R) PRO LAN Network Driver**.



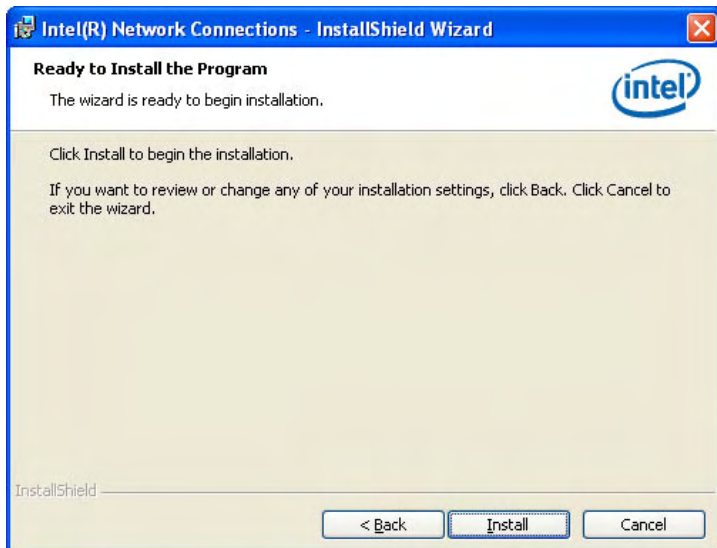
3. When the Welcome screen appears, click **Next**. On the next screen, click **Yes** to agree with the license agreement.



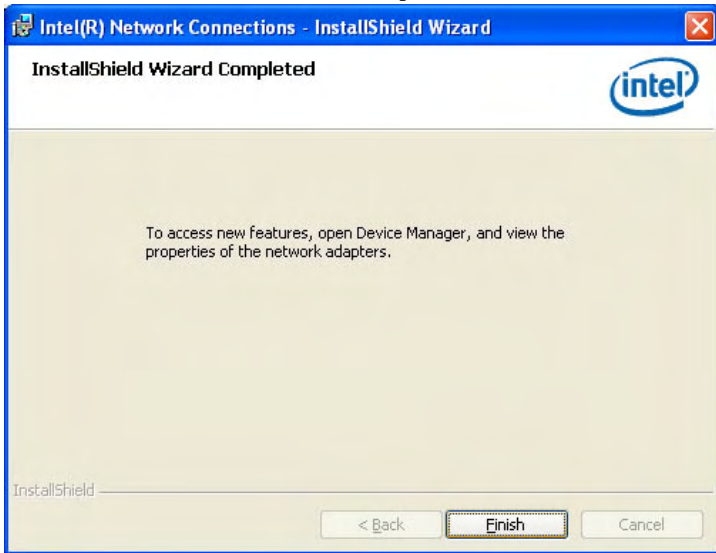
4. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.



5. The wizard is ready to begin installation. Click **Install** to begin the installation.



6. When InstallShield Wizard is complete, click **Finish**.



## Intel® Management Engine Interface

**NOTE:** Before installing the *Intel(R) AMT 6.0 Drivers*, the Microsoft .NET Framework 3.5 SPI should be first installed.



Follow the steps below to install the Intel Management Engine.

1. Insert the drivers disc that comes with the motherboard. Click **Intel** and then **Intel(R) AMT 6.0 Drivers**.

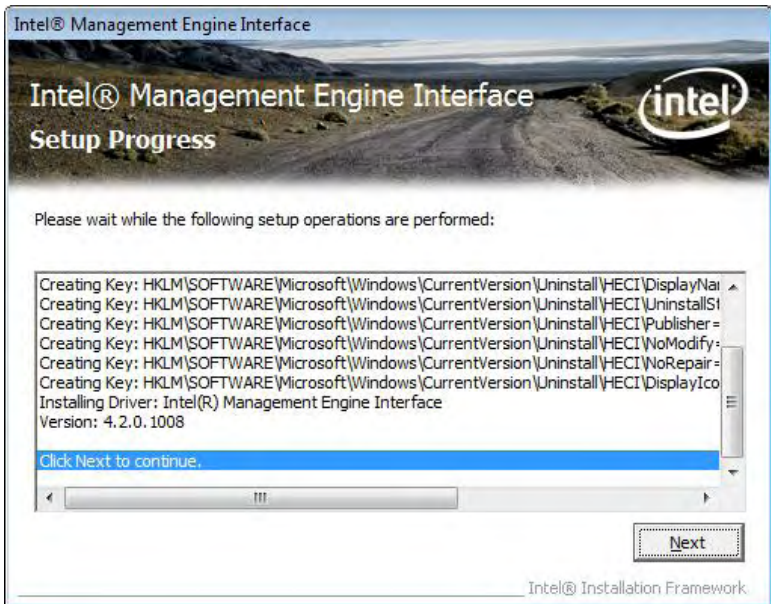




2. When the Welcome screen to the InstallShield Wizard for Intel® Management Engine Components, click **Next**. On the next screen, click **Yes** to agree with the license agreement.



2. When the Setup Progress screen appears, click **Next**. Then, click **Finish** when the setup progress has been successfully installed.





# Appendix

## A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

| Address     | Device Description                 |
|-------------|------------------------------------|
| 000h - 01Fh | DMA Controller #1                  |
| 020h - 03Fh | Interrupt Controller #1            |
| 040h - 05Fh | Timer                              |
| 060h - 06Fh | Keyboard Controller                |
| 070h - 07Fh | Real Time Clock, NMI               |
| 080h - 09Fh | DMA Page Register                  |
| 0A0h - 0BFh | Interrupt Controller #2            |
| 0C0h - 0DFh | DMA Controller #2                  |
| 0F0h        | Clear Math Coprocessor Busy Signal |
| 0F1h        | Reset Math Coprocessor             |
| 1F0h - 1F7h | IDE Interface                      |
| 278h - 27Fh | Parallel Port #2(LPT2)             |
| 2E8h - 2EFh | Serial Port #4(COM4)               |
| 2F8h - 2FFh | Serial Port #2(COM2)               |
| 2B0h- 2DFh  | Graphics adapter Controller        |
| 360h - 36Fh | Network Ports                      |
| 3B0h - 3BFh | Monochrome & Printer adapter       |
| 3C0h - 3CFh | EGA adapter                        |
| 3D0h - 3DFh | CGA adapter                        |
| 3E8h - 3EFh | Serial Port #3(COM3)               |
| 3F8h - 3FFh | Serial Port #1(COM1)               |

## B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

| Level | Function            |
|-------|---------------------|
| IRQ0  | System Timer Output |
| IRQ1  | Keyboard            |
| IRQ2  | Interrupt Cascade   |
| IRQ3  | Serial Port #2      |
| IRQ4  | Serial Port #1      |
| IRQ5  | Reserved            |
| IRQ6  | Reserved            |
| IRQ7  | Reserved            |
| IRQ8  | Real Time Clock     |
| IRQ9  | Reserved            |
| IRQ10 | Serial Port #3      |
| IRQ11 | Serial Port #4      |
| IRQ12 | PS/2 Mouse          |
| IRQ13 | 80287               |
| IRQ14 | Primary IDE         |
| IRQ15 | Secondary IDE       |

## C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

### SAMPLE CODE:

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE
//
//-----
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81865.H"
//-----
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//-----
int main (int argc, char *argv[])
{
    unsigned char bBuf;
    unsigned char bTime;
    char **endptr;

    char SIO;

    printf("Fintek 81865 watch dog program\n");

    SIO = Init_F81865();
    if (SIO == 0)
    {
        printf("Can not detect Fintek 81865, program abort \n");
        return(1);
    }
    if (SIO == 0)

    if (argc != 2)
    {
        printf(" Parameter incorrect!!\n");
        return (1);
    }

    bTime = strtol (argv[1], endptr, 10);
    printf("System will reset after %d seconds\n", bTime);

    if (bTime)
    {
        EnableWDT(bTime);
    }
    else
    {
        DisableWDT();
    }

    return 0;
}
```

## APPENDIX

---

```
//-----
void EnableWDT(int interval)
{
    unsigned char bBuf;

    bBuf = Get_F81865_Reg(0x2B);
    bBuf &= (~0x20);
    Set_F81865_Reg(0x2B, bBuf);                                //Enable WDTO

    Set_F81865_LD(0x07);                                       //switch to logic device 7
    Set_F81865_Reg(0x30, 0x01);                                //enable timer

    bBuf = Get_F81865_Reg(0xF5);
    bBuf &= (~0x0F);
    bBuf |= 0x52;
    Set_F81865_Reg(0xF5, bBuf);                                //count mode is second

    Set_F81865_Reg(0xF6, interval);                             //set timer

    bBuf = Get_F81865_Reg(0xFA);
    bBuf |= 0x01;
    Set_F81865_Reg(0xFA, bBuf);                                //enable WDTO output

    bBuf = Get_F81865_Reg(0xF5);
    bBuf |= 0x20;
    Set_F81865_Reg(0xF5, bBuf);                                //start counting
}
//-----
void DisableWDT(void)
{
    unsigned char bBuf;

    Set_F81865_LD(0x07);                                       //switch to logic device 7

    bBuf = Get_F81865_Reg(0xFA);
    bBuf &= ~0x01;
    Set_F81865_Reg(0xFA, bBuf);                                //disable WDTO output

    bBuf = Get_F81865_Reg(0xF5);
    bBuf &= ~0x20;
    bBuf |= 0x40;
    Set_F81865_Reg(0xF5, bBuf);                                //disable WDT
}
//-----
```

```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE
//
//-----
#include "F81865 H"
#include <dos h>
//-----
unsigned int F81865_BASE;
void Unlock_F81865 (void);
void Lock_F81865 (void);
//-----
unsigned int Init_F81865(void)
{
    unsigned int result;
    unsigned char ucDid;

    F81865_BASE = 0x4E;
    result = F81865_BASE;

    ucDid = Get_F81865_Reg(0x20);
    if (ucDid == 0x07)                                     //Fintek 81865
    {
        goto Init_Finish;
    }

    F81865_BASE = 0x2E;
    result = F81865_BASE;

    ucDid = Get_F81865_Reg(0x20);
    if (ucDid == 0x07)                                     //Fintek 81865
    {
        goto Init_Finish;
    }

    F81865_BASE = 0x00;
    result = F81865_BASE;

Init_Finish:
    return (result);
}
//-----
void Unlock_F81865 (void)
{
    outportb(F81865_INDEX_PORT, F81865_UNLOCK);
    outportb(F81865_INDEX_PORT, F81865_UNLOCK);
}
//-----
void Lock_F81865 (void)
{
    outportb(F81865_INDEX_PORT, F81865_LOCK);
}
//-----
void Set_F81865_LD(unsigned char LD)
{
    Unlock_F81865();
    outportb(F81865_INDEX_PORT, F81865_REG_LD);
    outportb(F81865_DATA_PORT, LD);
    Lock_F81865();
}
//-----
void Set_F81865_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_F81865();
    outportb(F81865_INDEX_PORT, REG);
    outportb(F81865_DATA_PORT, DATA);
    Lock_F81865();
}
//-----
unsigned char Get_F81865_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_F81865();

```

## APPENDIX

---

```
    outportb(F81865_INDEX_PORT, REG);
    Result = inportb(F81865_DATA_PORT);
    Lock_F81865();
    return Result;
}
//-----

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE
//
//-----
#ifndef __F81865_H
#define __F81865_H                1
//-----
#define F81865_INDEX_PORT        (F81865_BASE)
#define F81865_DATA_PORT        (F81865_BASE+1)
//-----
#define F81865_REG_LD            0x07
//-----
#define F81865_UNLOCK            0x87
#define F81865_LOCK              0xAA
//-----
unsigned int Init_F81865(void);
void Set_F81865_LD(unsigned char);
void Set_F81865_Reg(unsigned char, unsigned char);
unsigned char Get_F81865_Reg(unsigned char);
//-----
#endif // __F81865_H
```



Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

### **Global American Inc.**

Address: 17 Hampshire Drive  
Hudson, NH 03051

TEL: Toll Free (U.S. Only) 800-833-8999  
(603)886-3900

FAX: (603)886-4545

Website: <http://www.globalamericaninc.com>

E-Mail: [salesinfo@globalamericaninc.com](mailto:salesinfo@globalamericaninc.com)

