# MI910/MI910F

**Intel ® Core™ 2 Duo/**
**Celeron GME965**
**Mini-ITX Motherboard**

# USER'S MANUAL

**Version 1.0**

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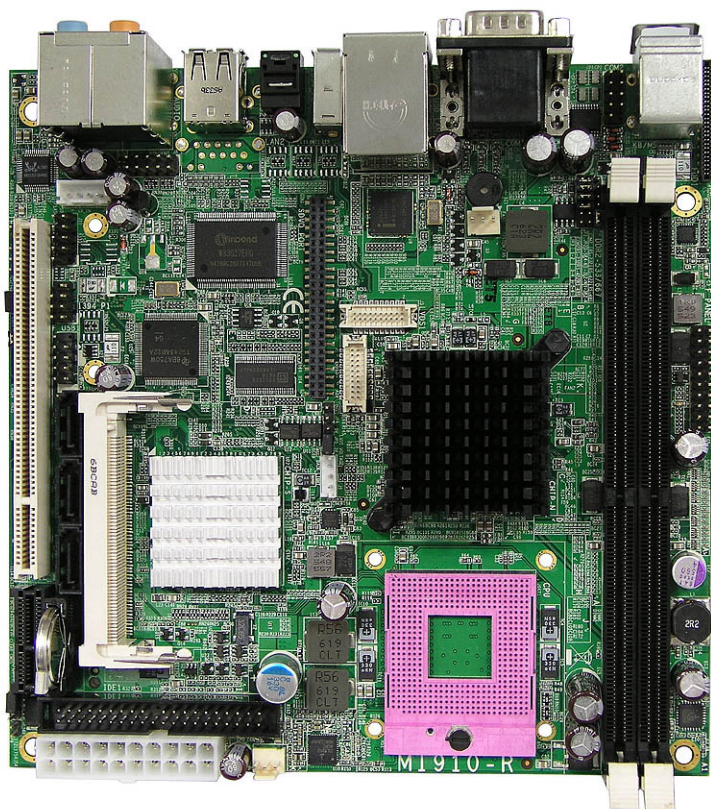Microsoft Windows is a registered trademark of Microsoft Corporation.

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# Table of Contents

*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).*



*THE MI910 MINI ITX MOTHERBOARD*

# Introduction

## Product Description

The MI910 Mini ITX board incorporates the Mobile Intel® GME965 Express Chipset for Embedded Computing, consisting of the Intel® GME965 Graphic Memory Controller Hub (GMCH) and Intel® I/O Controller Hub (ICH8-M), an optimized integrated graphics solution with a 533MHz and 800MHz front-side bus. Dimensions of the board are 170mm x 170mm.

The integrated powerful 3D graphics engine, based on Intel® Graphics Media Accelerator X3100 (Intel® GMA X3100) architecture, operates at core speeds of up to 400 MHz. It features a low-power design, is validated with the Intel® Core 2 Duo  and Intel® Celeron processors on 65nm process. With dual channel DDR2 667MHz two DIMM socket on board, the board supports up to 4GB of DDR2 system memory.

Intel® Graphics supports a unique intelligent memory management scheme called Dynamic Video Memory Technology (DVMT). DVMT handles diverse applications by providing the maximum (384MB) availability of system memory for general computer usage, while supplying additional graphics memory when a 3D-intensive application requests it. The Intel GMA X3100 graphics architecture also takes advantage of the high-performance Intel processor. Intel GMA X3100 graphics supports Dual Independent Display technology.

The main features of the board are:
- Supports Intel® Core$^{TM}$ 2 Duo (Merom 800MHz), Intel® Celeron
- Supports up to 2.4GHz, 533MHz/800MHz FSB
- Two DDR2 SDRAM DIMM, Max. 4GB memory
- Onboard 10/100 BaseT and Marvell PCI-Express Gigabit LAN
- Intel® GME965 Express VGA for CRT / LVDS
- 2x SATA, 6x USB 2.0, 2x COM, Watchdog timer, 1394
- 1x MiniPCI, 1x PCI, 1xPCI-E(x1) slots, optional DVI

Optional daughter cards:
ID390: Chrontel 7308, supports 24 bit single or dual LVDS channel
ID390C: Chrontel 7021, supports CRT
ID391: Chrontel 7307C, single DVI (connector on cable)
ID391D: Chrontel 7307C, dual DVI (connector on cable)
ID392D: Chrontel 7307C, dual DVI (one connector on card and one on cable)
MI910/MI910L only

# Checklist

Your MI910 package should include the items listed below.

- The MI910 Mini-ITX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (IDE, Serial port, Serial ATA)

# MI910 Specifications

| | |
|---|---|
| **CPU Supported** | Intel® Core™ 2 Duo, Intel Celeron mobile processors |
| **CPU Voltage** | 0.700V ~ 1.5V (IMVP-6) |
| **System Speed** | Up to 2.4GHz or above |
| **CPU FSB** | 533MHz/800MHz FSB |
| **Cache** | 1MB/2MB/4MB |
| **Green /APM** | APM1.2 |
| **CPU Socket** | mPGA Socket 478 |
| **Chipset** | Intel GME965 Chipset<br>GMCH: GME965 1299-pin Micro-FCBGA<br>ICH8M: 82801HBM 678-pin mBGA |
| **BIOS** | Award BIOS, support ACPI Function |
| **Memory** | DDR2 667/533 SDRAM DIMM x2 (w/o ECC function), Max. 4GB |
| **VGA** | GMA965 built-in, supports CRT |
| **SDVO (Dual CH)** | Through ID390 card (Chrontel 7308, 24+24 bits single/dual channel LVDS, Chrontel 7021, CRT)<br>Through ID391 card (Chrontel 7307C, DVI single or Dual) |
| **LVDS LCD Panel** | GME965 built-in, supports 24+24 bits (Type 1 only), single or dual channel LVDS |
| **LAN** | 1. ICH8M 10/100/gigabit MAC + PHY (dual footprint option):<br>• Intel 82566DC Nineveh 10/100/1000 (MI910)<br>• Intel 82562V Ekron-N 10/100 (MI910L)<br>2. Marvell 88E8053 PCI-e Gigabit LAN controller x1 (MI910F) |
| **USB** | ICH8M built-in USB 2.0 host controller, support 6 ports |
| **Serial ATA Ports** | ICH8M built-in SATA controller, supports 2 ports |
| **1394** | TI TSB43LV22(dual port) |
| **Parallel IDE** | ICH8M built-in one channel Ultra DMA 33/66/100,CF Type II |
| **Audio** | ICH8M Built-in audio controller + AC97 Codec ALC885 w/ 7.1 channels, SPDIF-OUT |
| **LPC I/O** | W83627EHF: COM1, COM2 (RS232/RS422/RS485), slim FDC 1.44MB, IrDA x1 & hardware monitor (3 thermal, 4 voltage monitor inputs, 2 fan headers) |
| **Digital IO** | 4 in & 4 out |
| **Keyboard/Mouse** | Supports PS/2 Keyboard/Mouse Connector |
| **Expansion Slots** | PCI slot x1, PIC-E (x1) slot x1 and Mini PCI socket x1 |
| **Edge Connector** | PS/2 connector x1 for keyboard/mouse<br>Gbit LAN RJ-45 + dual USB stack connector<br>10/100 LAN RJ45 + dual USB stack connector<br>DB9 x1 for COM 1; DB15 x1 for VGA<br>SPDIF-OUT connector x1; 1394 connector x1<br>RCA Jack 3x2 for Audio (Front-Out, Line-In, Mic, Center/LFE, Surround & Surround Back) |
| **Onboard Header/ Connector** | 40 pins box-header x1 for IDE1; 26 pins header x1 for slim floppy<br>CF Connector x1 @ solder side<br>10 pins pin-headerx1 for Digital I/O; 10 pins pin-header x1 for COM2<br>10 pins pin-header x 1 for USB 5,6; 5 pins pin-header x 1 for IrDA<br>DF13 connector x2 for LVDS;<br>10 pins pin-header x1 for audio Line-Out & Mic<br>4 pins pin-header x1 for CD in; 7 pins pin-header x1 for 1394<br>SATA connector x2 for SATA ports |
| **Watchdog Timer** | Yes (256 segments, 0, 1, 2…255 sec/min) |
| **System Voltage** | +5V, +3.3V, +12V, -12V, 5VSB (2A) |
| **Others** | Modem Wakeup, LAN Wakeup |
| **Board Size** | 170mm x 170mm (Mini ITX) |

*Note: MI910L uses GL960 chipset. It supports FSB 533MHz, DDR2 533MHz only.*

# Board Dimensions
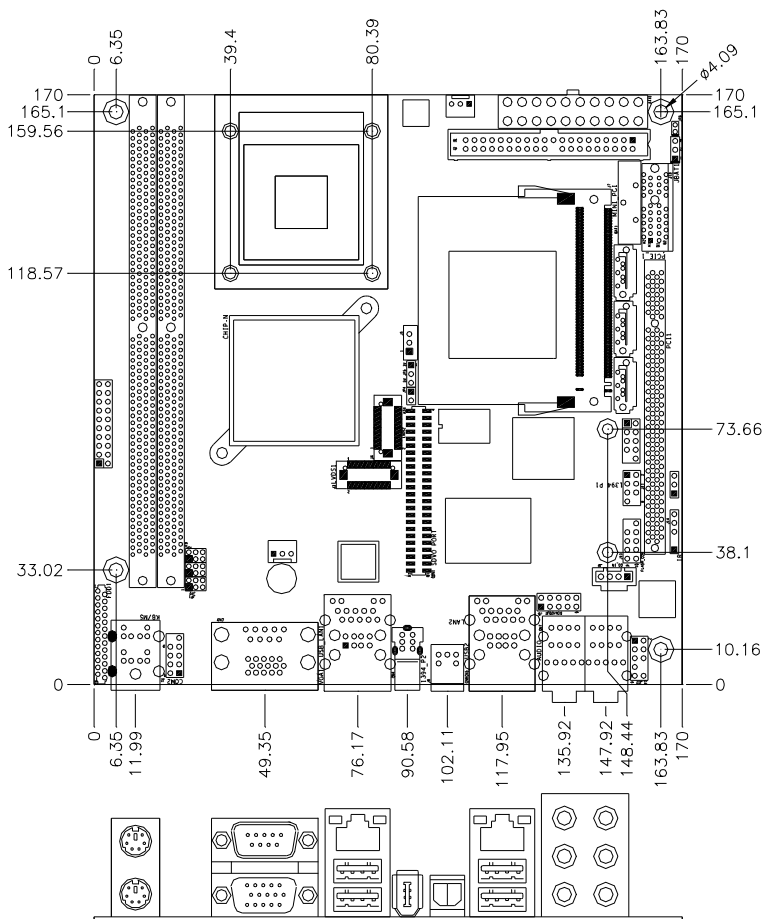
# Installations

This section provides information on how to use the jumpers and connectors on the MI910 in order to set up a workable system. The topics covered are:

# Installing the CPU

The MI910 board supports a Socket 478MN (MEROM) processor socket for Intel® Core™ 2 Duo, Intel® Celeron 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.
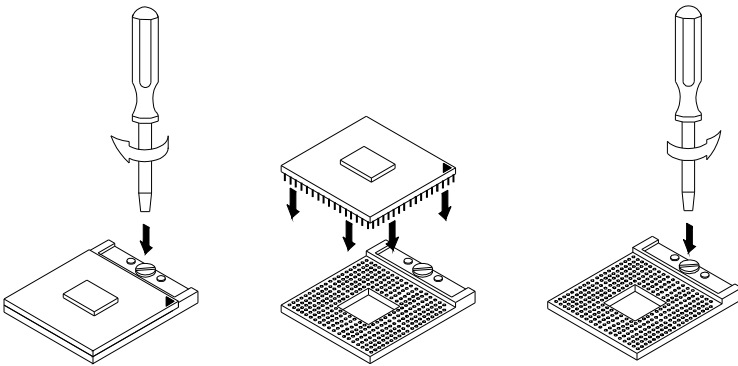


*NOTE*: *Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

# Installing the Memory

The Mi910 board supports two DDR2 memory socket for a maximum total memory of 4GB in DDR2 memory type.

**Installing and Removing Memory Modules**

To install the DDR2 modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR2 module so that the key of the DDR2 module aligned with that on the memory slot.

2. Gently push the DDR2 module in an upright position until the clips of the slot close to hold the DDR2 module in place when the DDR2 module touches the bottom of the slot.

3. To remove the DDR2 module, press the clips with both hands.
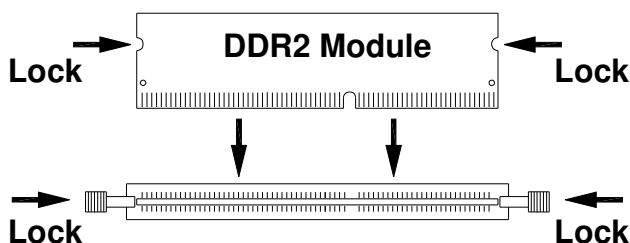
# Setting the Jumpers

Jumpers are used on MI910 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 MI910 and their respective functions.

*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 MI910
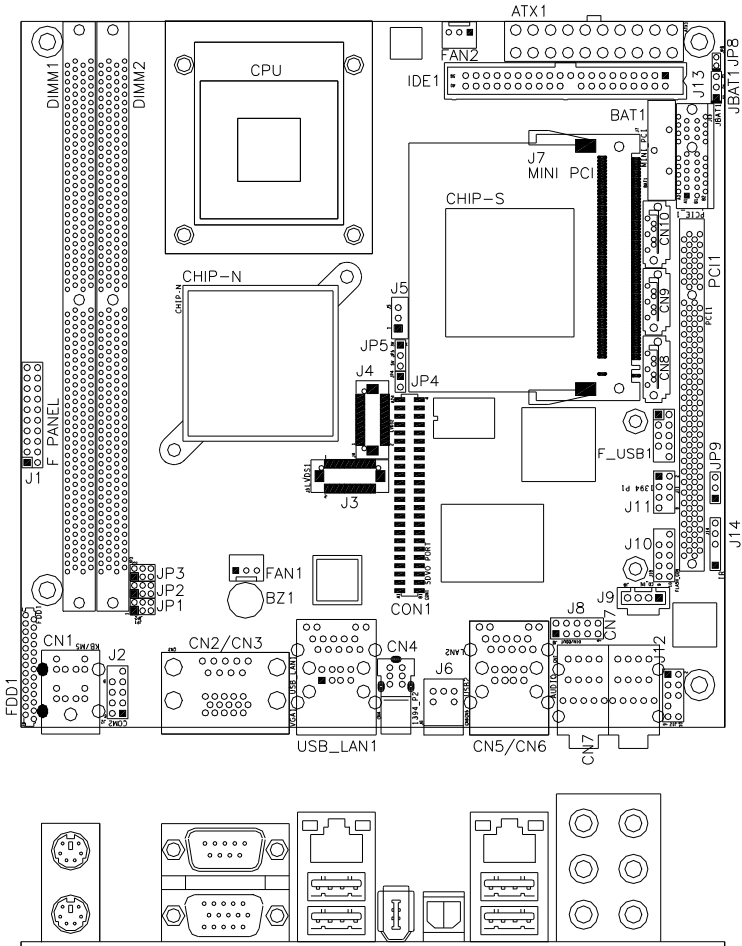
**JP5: LCD Panel Power Selection**

| JP5 | LCD Panel Power |
|-----|-----------------|
| 1 2 3 | 3.3V |
| 1 2 3 | 5V |

**JP9: PCI/PCIE Riser Card Selection**

| JP9 | Riser Card |
|-----|------------|
| 1 2 3 | IP390 Riser Card Install |
| 1 2 3 | IP151, IP240 Riser Card Install |

**JBAT1: Clear CMOS Setting**

| JBAT1 | Setting |
|-------|---------|
| 1 2 3 | Normal |
| 1 2 3 | Clear CMOS |

**JP8: CompactFlash Slave/Master Selection**

| JP8 | CF Setting |
|-----|------------|
| Short | Master |
| Open | Slave |

# Connectors on MI910

## Connector Locations on MI910

CF1    J15

MI910 Solder Side

## CN1: PS/2 Keyboard and PS/2 Mouse Connectors
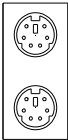
PS/2 Mouse

PS/2 Keyboard

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

## CN2, CN3: COM1 and VGA Connector
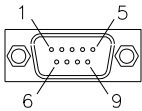
| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| DCD | 1 | 6 | DSR |
| RXD | 2 | 7 | RTS |
| TXD | 3 | 8 | CTS |
| DTR | 4 | 9 | RI |
| GND | 5 | 10 | Not Used |

| 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 | N.C. |
| HSYNC | 13 | 14 | VSYNC |
| NC | 15 | | |
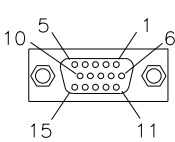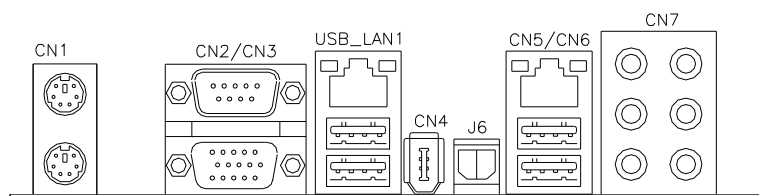
**USB_LAN1: 10/100 RJ-45(MI910), 10/100/1000 RJ45(MI910G) and USB1/2 Ports**

**CN4: 1394 Connector**

**J6: SPDIF Out Connector**

**CN5, CN6: GbE RJ-45(MI910F) and USB3/4 Ports**

**CN7: Audio Connector**
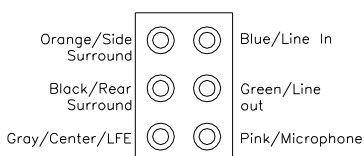
**FAN1: System Fan Power Connector**
FAN1 is a 3-pin header for system fans. The fan must be a 12V (500mA).

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

**FAN2: CPU Fan Power Connector**
FAN2 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 |

**IDE1: IDE Connector**
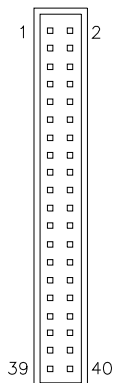
| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| Reset IDE | 1 | 2 | Ground |
| Host data 7 | 3 | 4 | Host data 8 |
| Host data 6 | 5 | 6 | Host data 9 |
| Host data 5 | 7 | 8 | Host data 10 |
| Host data 4 | 9 | 10 | Host data 11 |
| Host data 3 | 11 | 12 | Host data 12 |
| Host data 2 | 13 | 14 | Host data 13 |
| Host data 1 | 15 | 16 | Host data 14 |
| Host data 0 | 17 | 18 | Host data 15 |
| Ground | 19 | 20 | Protect pin |
| DRQ0 | 21 | 22 | Ground |
| Host IOW | 23 | 24 | Ground |
| Host IOR | 25 | 26 | Ground |
| IOCHRDY | 27 | 28 | Host ALE |
| DACK0 | 29 | 30 | Ground |
| IRQ14 | 31 | 32 | No connect |
| Address 1 | 33 | 34 | No connect |
| Address 0 | 35 | 36 | Address 2 |
| Chip select 0 | 37 | 38 | Chip select 1 |
| Activity | 39 | 40 | Ground |

**FDD1: Floppy Drive Connector**
FDD1is a slim 26-pin connector and will support up to 2.88MB FDD.
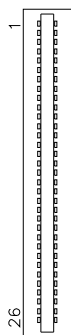
| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| VCC | 1 | 2 | INDEX |
| VCC | 3 | 4 | DRV_SEL |
| VCC | 5 | 6 | DSK_CH |
| NC | 7 | 8 | NC |
| NC | 9 | 10 | MOTOR |
| DINST | 11 | 12 | DIR |
| NC | 13 | 14 | STEP |
| GND | 15 | 16 | WDATA |
| GND | 17 | 18 | WGATE |
| GND | 19 | 20 | TRACK |
| NC | 21 | 22 | WPROT |
| GND | 23 | 24 | RDATA |
| GND | 25 | 26 | SIDE |

## 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. J1 is a 20-pin header that provides interfaces for the following functions.

Hard Disk Drive LED

Not Defined

Not Defined

Speaker

Reset Switch

ATX Power On Switch

Power LED

### Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.
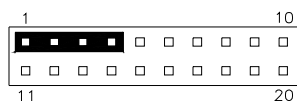
| Pin # | Signal Name |
|---|---|
| 1 | Speaker out |
| 2 | No connect |
| 3 | Ground |
| 4 | +5V |

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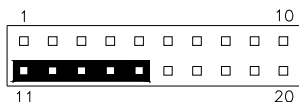
| Pin # | Signal Name |
|-------|-------------|
| 11 | Power LED |
| 12 | No connect |
| 13 | Ground |
| 14 | No connect |
| 15 | Ground |

**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.
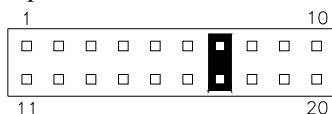
**Reset Switch: Pins 9 and 19**

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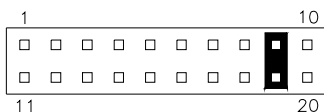
**Hard Disk Drive LED Connector: Pins 10 and 20**

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.
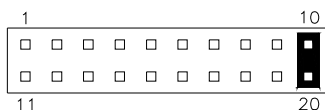
| Pin # | Signal Name |
|-------|-------------|
| 10 | HDD Active |
| 20 | 5V |

### F_USB1: USB0/USB1 Connector
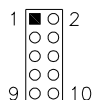
| Signal Name | Pin | Pin | Signal Name |
|:-----------:|:---:|:---:|:-----------:|
| Vcc | 1 | 2 | Vcc |
| D0- | 3 | 4 | D1- |
| D0+ | 5 | 6 | D1+ |
| Ground | 7 | 8 | Ground |
| NC | 9 | 10 | Ground |

### JP1, JP2, JP3: 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.
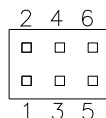
| COM2 Function | RS-232 | RS-422 | RS-485 |
|:-------------:|:------:|:------:|:------:|
| Jumper Setting (pin closed) | JP3: 1-2 | JP3: 3-4 | JP3: 5-6 |
| | JP2: 3-5 & 4-6 | JP2: 1-3 & 2-4 | JP2: 1-3 & 2-4 |
| | JP1: 3-5 & 4-6 | JP1: 1-3 & 2-4 | JP1: 1-3 & 2-4 |

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 |

## J2: COM2 Serial Port

COM2
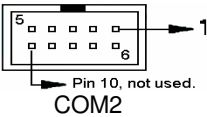
Pin 10, not used.

| 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 |

## J3, J4: LVDS Connectors (1st channel, 2nd channel)

The LVDS connectors on board consist of the first channel (J3) and second channel (J4) and supports 18-bit or 36-bit.
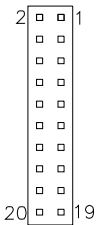
| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| TX0- | 2 | 1 | TX0+ |
| Ground | 4 | 3 | Ground |
| TX1- | 6 | 5 | TX1+ |
| 5V/3.3V | 8 | 7 | Ground |
| NA | 10 | 9 | NA |
| TX2- | 12 | 11 | TX2+ |
| Ground | 14 | 13 | Ground |
| TXC- | 16 | 15 | TXC+ |
| 5V/3.3V | 18 | 17 | ENABKL |
| +12V | 20 | 19 | +12V |

## J5: LCD Backlight Connector

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

## J7: Mini PCI Connector

## CN8, CN9: SATA Connectors

**J8: Digital I/O**
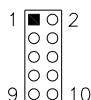
| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| GND | 1 | 2 | VCC |
| OUT3 | 3 | 4 | OUT1 |
| OUT2 | 5 | 6 | OUT0 |
| IN3 | 7 | 8 | IN1 |
| IN2 | 9 | 10 | IN0 |

**J9: CD-In Pin Header**
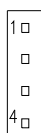
| Pin # | Signal Name |
|---|---|
| 1 | CD Audio R |
| 2 | Ground |
| 3 | Ground |
| 4 | CD Audio L |

**J10: SPI Flash Connector (factory use only)**

**J11: 1394 Connector**

| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| TPA+ | 1 | 2 | TPB+ |
| TPA- | 3 | 4 | TPB- |
| +12V | 5 | 6 | NC |
| GND | 7 | 8 | NC |

**J12: Front Audio Connector**
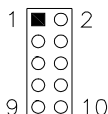
| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| MIC2_L | 1 | 2 | Ground |
| MIC2_R | 3 | 4 | Presence# |
| Line2_L | 5 | 6 | MIC2_ID |
| Sense | 7 | 8 | NC |
| Line2_R | 9 | 10 | Line2_ID |

**J13: PCI-E(x1) Slot**

## J14: IrDA Connector
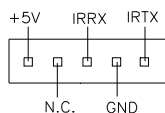
| Pin # | Signal Name |
|-------|-------------|
| 1 | +5V |
| 2 | No connect |
| 3 | Ir RX |
| 4 | Ground |
| 5 | Ir TX |

## J15: Compact Flash Connector

## PCI1: PCI Slot (supports 2 Master)

## CON1: SDVO Port Connector

| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| +12V | A1 | B1 | +12V |
| +12V | A2 | B2 | +12V |
| +5V | A3 | B3 | +5V |
| 3.3V | A4 | B4 | 3.3V |
| RESET | A5 | B5 | GND |
| GND | A6 | B6 | GND |
| SDVOC_CLK+ | A7 | B7 | SDVOC_CLK- |
| SDVOC_Blue+ | A8 | B8 | SDVOC_Blue- |
| GND | A9 | B9 | GND |
| SDVOC_Green+ | A10 | B10 | SDVOC_Green- |
| SDVOC_Red+ | A11 | B11 | SDVOC_Red- |
| GND | A12 | B12 | GND |
| SDVO TVClkIn+ | A13 | B13 | SDVO TVClkIn- |
| SDVOB Int+ | A14 | B14 | SDVOB Int- |
| GND | A15 | B15 | GND |
| SDVO CtrlData | A16 | B16 | SDVO CtrlClk |
| SDVOB Clk+ | A17 | B17 | SDVOB Clk- |
| GND | A18 | B18 | GND |
| SDVOB Blue+ | A19 | B19 | SDVOB Blue- |
| SDVOB Green+ | A20 | B20 | SDVOB Green- |
| GND | A21 | B21 | GND |
| SDVOB Red+ | A22 | B22 | SDVOB Red- |
| SDVO Stall+ | A23 | B23 | SDVO Stall- |
| GND | A24 | B24 | GND |

## Headers and Connectors on MI910 Daughter Cards

### ID390 – JP4 LCD Panel Power Selection

| JP4 | Voltage |
|---|---|
| 1 2 3 | 3.3V |
| 1 2 3 | 5V |

### ID390 – J1 LCD Backlight Setting

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

### ID390 – J3 and J2 1st/2nd LVDS Channel Connectors
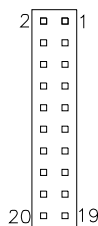
| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| TX0- | 2 | 1 | TX0+ |
| Ground | 4 | 3 | Ground |
| TX1- | 6 | 5 | TX1+ |
| 5V/3.3V | 8 | 7 | Ground |
| TX3- | 10 | 9 | TX3+ |
| TX2- | 12 | 11 | TX2+ |
| Ground | 14 | 13 | Ground |
| TXC- | 16 | 15 | TXC+ |
| 5V/3.3V | 18 | 17 | ENABKL |
| +12V | 20 | 19 | +12V |
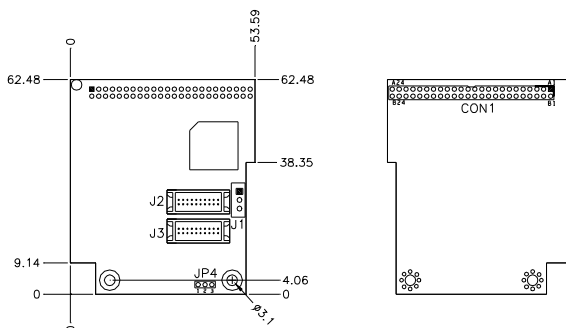
**ID390C – J4 VGA Connector**
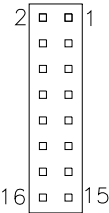
| Signal Name | Pin # | Pin # | Signal Name |
|:---:|:---:|:---:|:---:|
| +5V | 2 | 1 | RED |
| Ground | 4 | 3 | GREEN |
| N.C. | 6 | 5 | BLUE |
| SDA | 8 | 7 | N.C. |
| HSYNC | 10 | 9 | Ground |
| VSYNC | 12 | 11 | Ground |
| SCL | 14 | 13 | Ground |
| N.C. | 16 | 15 | Ground |

**ID391 – J2 DVI Connector**

| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| TDC1- | 2 | 1 | TDC1+ |
| Ground | 4 | 3 | Ground |
| TLC- | 6 | 5 | TLC+ |
| +5V | 8 | 7 | Ground |
| NC | 10 | 9 | HPDET |
| TDC2- | 12 | 11 | TDC2+ |
| Ground | 14 | 13 | Ground |
| TDC0- | 16 | 15 | TDC0+ |
| NC | 18 | 17 | NC |
| DDC_SC | 20 | 19 | DDC_SD |
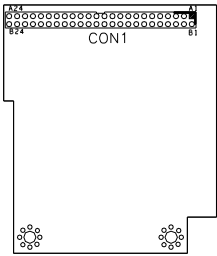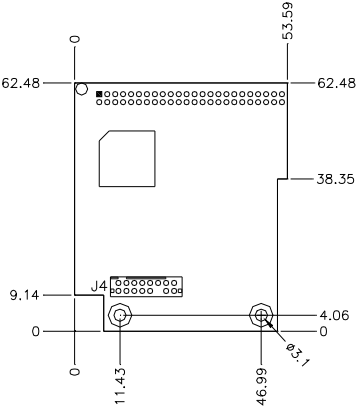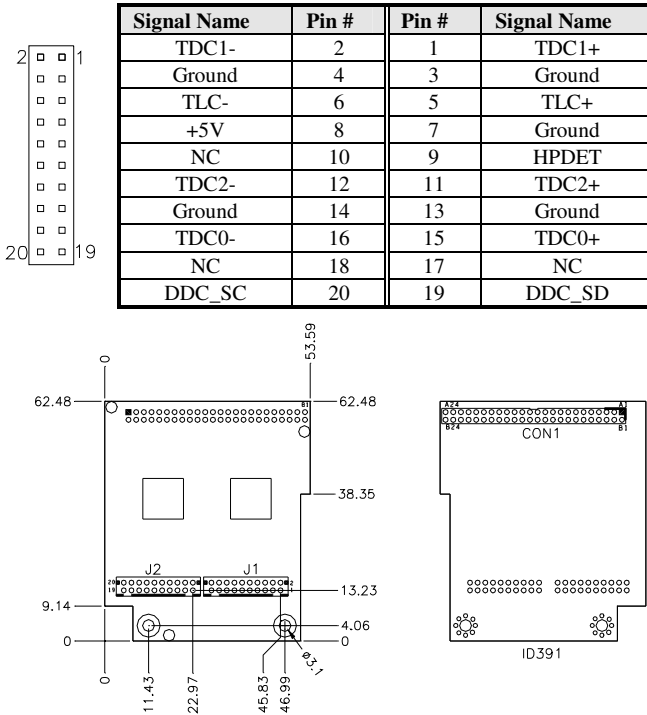
**ID391D – J1, J2 1st/2nd DVI Connectors**

| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| TDC1- | 2 | 1 | TDC1+ |
| Ground | 4 | 3 | Ground |
| TLC- | 6 | 5 | TLC+ |
| +5V | 8 | 7 | Ground |
| NC | 10 | 9 | HPDET |
| TDC2- | 12 | 11 | TDC2+ |
| Ground | 14 | 13 | Ground |
| TDC0- | 16 | 15 | TDC0+ |
| NC | 18 | 17 | NC |
| DDC_SC | 20 | 19 | DDC_SD |
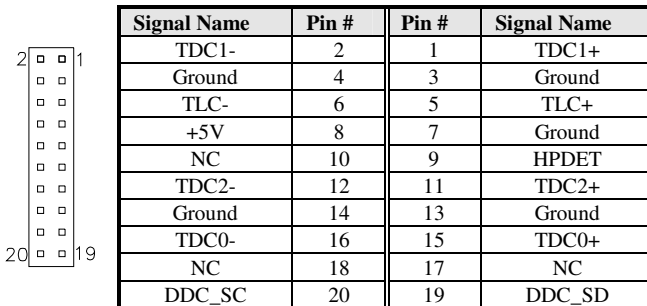
**Remarks**: When using dual DVI, the first DVI video output is through J1. After setting the drivers in Windows, then the second DVI output (via J2) will function. ID391D and ID391 are different since the latter (ID391) has video output via J2. The pin assignments of J1 and J2 are the same.

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# BIOS Setup

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

## BIOS Introduction

The Award 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 adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

## BIOS Setup

The Award 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 Award 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.

Phoenix - AwardBIOS CMOS Setup Utility

| | |
|---|---|
| Standard CMOS Features | Frequency/Voltage Control |
| Advanced BIOS Features | Load Fail-Safe Defaults |
| Advanced Chipset Features | Load Optimized Defaults |
| Integrated Peripherals | Set Supervisor Password |
| Power Management Setup | Set User Password |
| PnP/PCI Configurations | Save & Exit Setup |
| PC Health Status | Exit Without Saving |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | |
| Time, Date, Hard Disk Type… | |

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

*Note*: *If the system cannot boot after making and saving system changes with Setup, the Award 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 Award 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.*

## Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

| Date (mm:dd:yy) | Wed, Apr 28, 2007 | Item Help |
|---|---|---|
| Time (hh:mm:ss) | 00 : 00 : 00 | Menu Level  > |
| | | |
| IDE Channel 0 Master | None | Change the day, month, |
| IDE Channel 0 Slave | None | Year and century |
| IDE Channel 1 Master | None | |
| IDE Channel 1 Slave | None | |
| | | |
| Drive A | None | |
| Drive B | None | |
| | | |
| Video | EGA/VGA | |
| Halt On | All Errors | |
| | | |
| Base Memory | 640K | |
| Extended Memory | 129024K | |
| Total Memory | 130048K | |

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

### Date
The date format is:

| | |
|---|---|
| **Day :** | **Sun to Sat** |
| **Month :** | **1 to 12** |
| **Date :** | **1 to 31** |
| **Year :** | **1999 to 2099** |

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

**Time**
The time format is:     **Hour    : 00 to 23**
                        **Minute : 00 to 59**
                        **Second :  00 to 59**
To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

**IDE Channel Master/Slave**
The onboard PCI IDE connector provides Primary and Secondary channels for connecting up to two IDE hard disks or other IDE devices.

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

   **CYLS :**                Number of cylinders
   **HEAD :**                Number of read/write heads
   **PRECOMP :**           Write precompensation
   **LANDING ZONE :**    Landing zone
   **SECTOR :**             Number of sectors

   The Access Mode selections are as follows:
                              CHS    (HD < 528MB)
                              LBA    (HD > 528MB and supports
                                      Logical Block Addressing)
                              Large  (for MS-DOS only)
                              Auto

**Remarks**:  The main board supports two serial ATA ports and are represented in this setting as IDE Channel 0.

**Drive A / Drive B**
These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:
               360KB    1.2MB    720KB   1.44MB   2.88MB
               5.25 in.   5.25 in.    3.5 in.     3.5 in.     3.5 in.

**Video**

This field selects the type of video display card installed in your system.
You can choose the following video display cards:

| | |
|---|---|
| EGA/VGA | For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default) |
| CGA 40 | Power up in 40 column mode. |
| CGA 80 | Power up in 80 column mode. |
| MONO | For Hercules or MDA adapters. |

**Halt On**

This field determines whether or not the system will halt if an error is detected during power up.

| | |
|---|---|
| No errors | The system boot will not be halted for any error that may be detected. |
| All errors | Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted. |
| All, But Keyboard | The system boot will not be halted for a keyboard error; it will stop for all other errors |
| All, But Diskette | The system boot will not be halted for a disk error; it will stop for all other errors. |
| All, But Disk/Key | The system boot will not be halted for a keyboard or disk error; it will stop for all others. |

## Advanced BIOS Features

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

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

| | | |
|---|---|---|
| CPU Feature | Press Enter | ITEM HELP |
| Hard Disk Boot Priority | Press Enter | |
| Virus Warning | Disabled | Menu Level > |
| USB Hard Disk Boot First | Disabled | |
| CPU L3 Cache | Enabled | |
| Quick Power On Self Test | Enabled | |
| First Boot Device | Hard Disk | |
| Second Boot Device | CDROM | |
| Third Boot Device | LS120 | |
| Boot Other Device | Enabled | |
| Swap Floppy Drive | Disabled | |
| Boot Up Floppy Seek | Disabled | |
| Boot Up NumLock Status | On | |
| Gate A20 Option | Fast | |
| Typematic Rate Setting | Disabled | |
| Typematic Rate (Chars/Sec) | 6 | |
| Typematic Delay (Msec) | 250 | |
| Security Option | Setup | |
| APIC Mode | Enabled | |
| MPS Version Control for OS | 1.4 | |
| OS Select For DRAM>64MB | Non-OS2 | |
| Report No FDD For WIN 95 | Yes | |
| Small Logo (EPA) Show | Enabled | |

### CPU Feature

Press Enter to configure the settings relevant to CPU Feature.

### Hard Disk Boot Priority

With the field, there is the option to choose, aside from the hard disks connected, "Bootable add-in Cards" which refers to other external devices.

### Virus Warning

If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk, which is typical of the virus.

### CPU L1 and L2 Cache

Cache memory is additional memory that is faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These allow you to enable (speed up memory access) or disable the cache function.

### Quick Power On Self Test

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

### First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS120*, *Hard Disk*, *CDROM, ZIP100*, *USB-Floppy, USB-ZIP*, *USB-CDROM, LAN* and *Disable*.

### Boot Other Device

These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

### Swap Floppy Drive

This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

### Boot Up Floppy Seek

This feature controls whether the BIOS checks for a floppy drive while booting up. If it cannot detect one (either due to improper configuration or its absence), it will flash an error message.

### Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system.

### Gate A20 Option

This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB.

### Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

### Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

### Typematic Delay (Msec)
When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to *250msec.*

### Security Option
This field allows you to limit access to the System and Setup. The default value is *Setup*. When you select *System,* the system prompts for the User Password every time you boot up. When you select *Setup,* the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

### APIC Mode
APIC stands for Advanced Programmable Interrupt Controller. The default setting is *Enabled*.

### MPS Version Control for OS
This option is specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is *1.4*.

### OS Select for DRAM > 64MB
This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is *Non-OS/2*.

### Report No FDD For WIN 95
If you are using Windows 95/98 without a floppy disk drive, select Enabled to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there's no floppy drive in the system. If you set this feature to Disabled, the BIOS will not report the missing floppy drive to Win95/98.

### Small Logo (EPA) Show
The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is *Enabled*.

## Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced Chipset Features
┌──────────────────────────────────────────────────────┬───────────────┐
│  System BIOS Cacheable          Enabled               │   ITEM HELP   │
│  Memory Hole at 15M-16M         Disabled              │               │
│  PCI Express Root Port Func     Press Enter           │               │
│                                                        │               │
│                                                        │               │
│                                                        │               │
│  ** VGA Setting **                                     │               │
│  PEG/On Chip VGA Control        Auto                   │               │
│  PEG Force X1                   Disabled               │               │
│  On-Chip Frame Buffer Size      8MB                    │               │
│  DVMT Mode                      DVMT                   │               │
│  DVMT/FIXED memory Size         128MB                  │               │
│  SDVO Device Setting            None                   │               │
│  SDVO LVDS Protocol             1CH SPWG, 18bit        │               │
│  SDVO Panel Number              1024x768               │               │
│  Boot Display                   CRT+LVDS               │               │
│  Panel Scaling                  Auto                   │               │
│  Panel Number                   1024x768 18 bit SC     │               │
└──────────────────────────────────────────────────────┴───────────────┘
```

### System BIOS Cacheable

The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

### Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. The choices are *Enabled* and *Disabled*.

*Note: SDVO Device Setting, SDVO LVDS Protocol and SDVO Panel Number Selection fields are available when ID390, ID390C, ID391, ID391D or ID392 daughter cards are installed.*

## On-Chip VGA Setting

The fields under the On-Chip VGA Setting and their default settings are:

PEG/On Chip VGA Control: Auto
On-Chip Frame Buffer Size: 8MB
DVMT Mode: DVTM
DVMT/Fixed Memory Size: 128MB
SDVO Device Setting: (LVDS, DVI, Dual DVI, CRT); Dual LVDS [onboard + ID390]
*Remarks: Set to LVDS for ID390, Set to CRT for ID390C, Set to DVI for ID391/ID392/ID391D/ID392D.*
SDVO LVDS Protocol: 1Ch SPWG, 18bit
SDVO Panel Number: 1024x768
Boot Display: CRT+LVDS
Panel Scaling: Auto
Panel Number: 1024x768 18 bit SC

*Note: SDVO Device Setting, SDVO LVDS Protocol, SDVO Panel Number – for external device from connector CON1*

## Panel Scaling

The default setting is *Auto*. The options available include *On* and *Off*.

## Panel Number

These fields allow you to select the LCD Panel type. The values for these ports are:

| | | |
|---|---|---|
| 640x480 | 18bit | SC |
| 800x480 | 18bit | SC |
| 800x600 | 18bit | SC |
| 1024x768 | 18bit | SC |
| 1280x1024 | 18bit | DC |
| 1280x768 | 18bit | SC |
| 1400x1050 | 18bit | DC |
| 1600x1200 | 18bit | DC |

## Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

| | | |
|---|---|---|
| OnChip IDE Device | Press Enter | ITEM HELP |
| Onboard Device | Press Enter | Menu Level  > |
| SuperIO Device | Press Enter | |
| USB Device Setting | Press Enter | |

Phoenix - AwardBIOS CMOS Setup Utility
**OnChip IDE Device**

| | | |
|---|---|---|
| IDE HDD Block Mode | Enabled | ITEM HELP |
| On-chip Primary PCI IDE | Enabled | |
| IDE Primary Master PIO | Auto | Menu Level  > |
| IDE Primary Slave   PIO | Auto | |
| IDE Primary Master UDMA | Auto | |
| IDE Primary Slave   UDMA | Auto | |
| On-Chip Secondary PCI IDE | Enabled | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Slave   PIO | Auto | |
| IDE Secondary Master UDMA | Auto | |
| IDE Secondary Slave   UDMA | Auto | |
| SATA Mode | IDE | |
| LEGACY Mode Support | Disable | |

Phoenix - AwardBIOS CMOS Setup Utility
**Onboard Device**

| | | |
|---|---|---|
| Marvell Gigabit Lan Control | Enable | ITEM HELP |

Phoenix - AwardBIOS CMOS Setup Utility
**SuperIO Device**

| POWER ON Function | BUTTON ONLY | ITEM HELP |
|---|---|---|
| KB Power ON Password | Enter | |
| Hot Key power ON | Ctrl-F1 | |
| Onboard Serial Port 1 | 3F8/IRQ4 | Menu Level  > |
| Onboard Serial Port 2 | 2F8/IRQ3 | |
| UART Mode Select | Normal | |
| RxD, TxD Active | Hi, Lo | |
| IR Transmission Delay | Disabled | |
| UR2 Duplex Mode | Half | |
| Use IR Pins | IR-Rx2Tx2 | |
| PWRON After PWR-Fail | Off | |

### IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

### On-chip Primary PCI IDE Enabled

This field, by default, is enabled

### On-chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

### IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

### IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

### On-Chip Serial ATA Setting
The fields under the SATA setting includes On-Chip Serial ATA (Auto), PATA IDE Mode (Secondary) and SATA Port (PO, P2 is Primary).

### AC97 Audio Select
This field, by default, is set to *Auto*.

### Power ON Function
This field is related to how the system is powered on – such as with the use of conventional power button, keyboard or hot keys. The default is *BUTTON ONLY*.

### KB Power ON Password
This field allows users to set the password when keyboard power on is the mode of the Power ON function.

### Hot Key Power ON
This field sets certain keys, also known as hot keys, on the keyboard that can be used as a 'switch' to power on the system.

## Onboard Serial Port

These fields allow you to select the onboard serial ports and their addresses. The default values for these ports are:

Serial Port 1        3F8/IRQ4
Serial Port 2        2F8/IRQ3

## UART Mode Select

This field determines the UART 2 mode in your computer. The default value is *Normal*. Other options include *IrDA* and *ASKIR*.

## PWRON After PWR-Fail

This field sets the system power status whether *on or off* when power returns to the system from a power failure situation.

Phoenix - AwardBIOS CMOS Setup Utility
**USB Device Setting**

| USB 1.0 Controller | Enabled | ITEM HELP |
|---|---|---|
| USB 2.0 Controller | Enabled | |
| USB Keyboard Function | Disable | |
| USB Mouse Function | Disable | Menu Level  > |
| USB Storage Function | Enabled | |
| | | |
| *** USB Mass Storage Device Boot Setting *** | | |

## USB 1.0 Controller

The options for this field are *Enabled* and *Disabled*. By default, this field is set to *Enabled*.

## USB 2.0 Controller

The options for this field are *Enabled* and *Disabled*. By default, this field is set to *Enabled*. In order to use USB 2.0, necessary OS drivers must be installed first. *Please update your system to Windows 2000 SP4 or Windows XP SP2.*

## USB Keyboard/Mouse/Storage Function

The options for this field are *Enabled* and *Disabled*. By default, this field is set to *Disabled*.

## Power Management Setup

| | | |
|---|---|---|
| ACPI Function | Enabled | ITEM HELP |
| ACPI Suspend | S3(POS) | |
| RUN VGABIOS if S3 Resume | Auto | Menu Level > |
| Power Management | User Define | |
| Video Off Method | DPMS | |
| Video Off In Suspend | Yes | |
| Suspend Type | Stop Grant | |
| Modem Use IRQ | 3 | |
| Suspend Mode | Disabled | |
| HDD Power Down | Disabled | |
| Soft-Off by PWR-BTTN | Instant-Off | |
| Wake-Up by PCI Card | Disabled | |
| Power On by Ring | Disabled | |
| Resume by Alarm | Disabled | |
| Date (of Month)   Alarm | 0 | |
| Time (hh:mm:ss) Alarm | 0 : 0 : 0 | |
| | | |
| ** Reload Global Timer Events ** | | |
| Primary IDE 0 | Disabled | |
| Primary IDE 1 | Disabled | |
| Secondary IDE 0 | Disabled | |
| Secondary IDE 1 | Disabled | |
| FDD, COM, LPT Port | Disabled | |
| PCI PIRQ[A-D] # | Disabled | |

### ACPI Function
Enable this function to support ACPI (Advance Configuration and Power Interface).

### ACPI Suspend
The default setting of the ACPI Suspend mode is *S3(POS)*.

### RUN VGABIOS if S3 Resume
The default setting of this field is *Auto*.

### Power Management
This field allows you to select the type of power saving management modes. There are four selections for Power Management.

| | |
|---|---|
| Min. Power Saving | Minimum power management |
| Max. Power Saving | Maximum power management. |
| User Define | Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min. |

**Video Off Method**

This field defines the Video Off features. There are three options.

V/H SYNC + Blank      Default setting, blank the screen and turn off vertical and horizontal scanning.

DPMS      Allows BIOS to control the video display.

Blank Screen      Writes blanks to the video buffer.

**Video Off In Suspend**

When enabled, the video is off in suspend mode. The default setting is *Yes*.

**Suspend Type**

The default setting for the Suspend Type field is *Stop Grant*.

**Modem Use IRQ**

This field sets the IRQ used by the Modem. By default, the setting is *3*.

**Suspend Mode**

When enabled, and after the set time of system inactivity, all devices except the CPU will be shut off.

**HDD Power Down**

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

**Soft-Off by PWRBTN**

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

**Wake up by PCI Card**

By default, this field is disabled.

**Power On by Ring**

This field enables or disables the power on of the system through the modem connected to the serial port or LAN.

**Resume by Alarm**
This field enables or disables the resumption of the system operation. When enabled, the user is allowed to set the *Date* and *Time*.

**Reload Global Timer Events**
The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

## PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

| | | ITEM HELP |
|---|---|---|
| Init Display First | PCI Slot | |
| Reset Configuration Data | Disabled | Menu Level |
| | | |
| Resources Controlled By | Auto (ESCD) | Select Yes if you are |
| IRQ Resources | Press Enter | using a Plug and Play capable operating |
| | | system Select No if |
| PCI/VGA Palette Snoop | Disabled | you need the BIOS to |
| INT Pin 1 Assignment | Auto | configure non-boot |
| INT Pin 2 Assignment | Auto | devices |
| INT Pin 3 Assignment | Auto | |
| INT Pin 4 Assignment | Auto | |
| INT Pin 5 Assignment | Auto | |
| INT Pin 6 Assignment | Auto | |
| INT Pin 7 Assignment | Auto | |
| INT Pin 8 Assignment | Auto | |
| | | |
| **PCI Express relative items** | | |
| Maximum Payload Size | 4096 | |

### Init Display First
The default setting is *PCI Card*.

### Reset Configuration Data
This field allows you to determine whether to reset the configuration data or not. The default value is *Disabled.*

### Resources Controlled by
This PnP BIOS can configure all of the boot and compatible devices with the use of a PnP operating system such as Windows 95.

### PCI/VGA Palette Snoop
Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

### Maximum Payload Size
The default setting of the PCI Express Maximum Payload Size is 4096.

## PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

| | | ITEM HELP |
|---|---|---|
| Shutdown Temperature | Disabled | |
| CPU Warning Temperature | Disabled | Menu Level > |
| Current System Temp | 45°C/113°F | |
| Current CPU Temp | 45°C/113°F | |
| FAN1 Speed | 5400 RPM | |
| FAN2 Speed | 5400 RPM | |
| Vcore(V) | 1.02 V | |
| 12 V | 1.32 V | |
| 1.8V | 1.8V | |
| +5V | 5.25 V | |
| -12V | -12.59 | |
| 3.3V | 3.37V | |
| VBAT (V) | 3.21 V | |
| 5VSB(V) | 5.67 V | |
| 1$^{st}$ Smart Fan Temperature | Disabled | |
| 2$^{st}$ Smart Fan Temperature | Disabled | |

### CPU Warning Temperature

This field allows the user to set the temperature so that when the temperature is reached, the system sounds a warning. This function can help prevent damage to the system that is caused by overheating.

### 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.

### Shutdown Temperature

This field allows the user to set the temperature by which the system automatically shuts down once the threshold temperature is reached. This function can help prevent damage to the system that is caused by overheating.

### 1st 2st Smart Fan Temperature

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.

## Frequency/Voltage Control

This section shows the user how to configure the processor frequency.

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

| Auto Detect PCI Clk | Disabled | ITEM HELP |
|---|---|---|
| Spread Spectrum Modulated | Disabled | Menu Level  > |

### Auto Detect PCI Clk

This field enables or disables the auto detection of the PCI clock.

### Spread Spectrum Modulated

This field sets the value of the spread spectrum. The default setting is *Disabled*. This field is for CE testing use only.

## Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

## Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

## Set Supervisor Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

## Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type "Y", you will quit the setup utility and save all changes into the CMOS memory. If you type "N", you will return to Setup utility.

## Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.

# 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:

**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 under Windows 2000/XP.

1. Insert the CD that comes with the board. Click *Intel Chipsets* and then *Intel(R)GM 965Chipset Drivers*.

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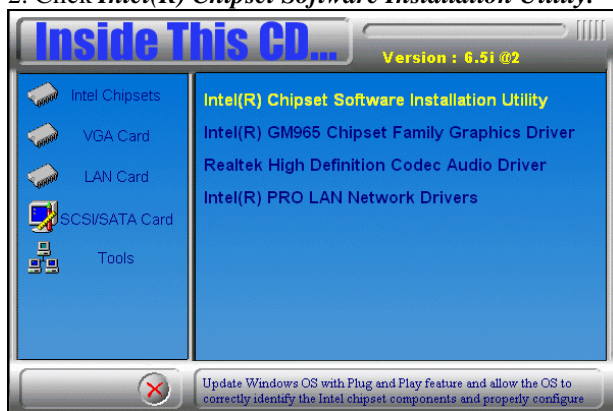


3. When the Welcome screen appears, click *Next* to continue.
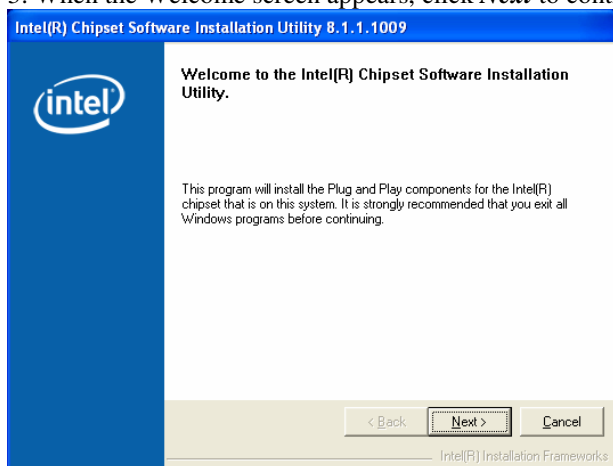
4. Click **Yes** to accept the software license agreement and proceed with the installation process.
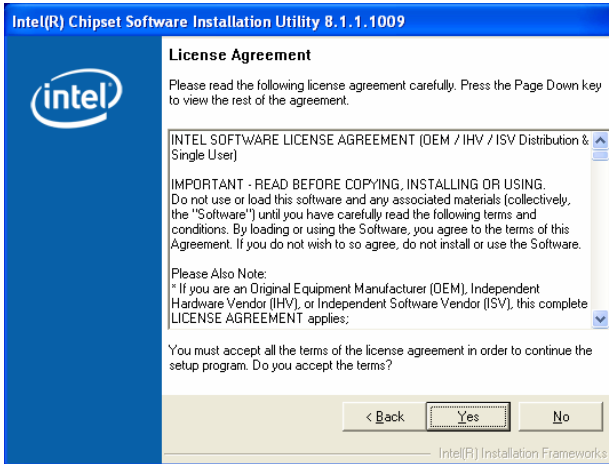


5. On Readme Information screen, click **Next** to continue the installation.
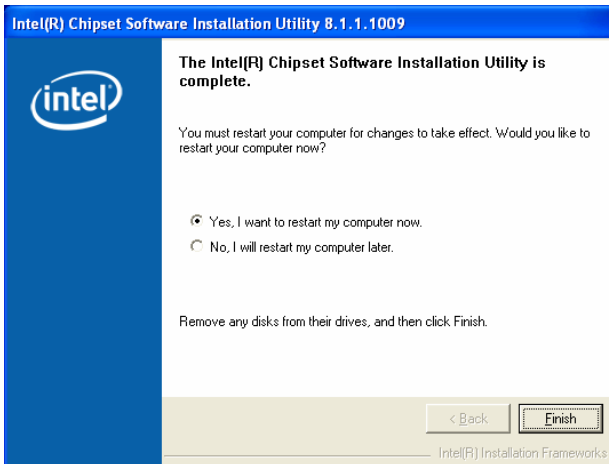


6. The Setup process is now complete. Click **Finish** to restart the computer and for changes to take effect. When the computer has restarted, the system will be able to find some devices. Restart your computer when prompted.

# VGA Drivers Installation

To install the VGA drivers, follow the steps below to proceed with the installation.

1. Insert the CD that comes with the motherboard. Click **Intel Chipsets** and then **Intel(R) GME965Chipset Drivers**.

2. Click **Intel(R) GME965Chipset Family Graphics Driver.**
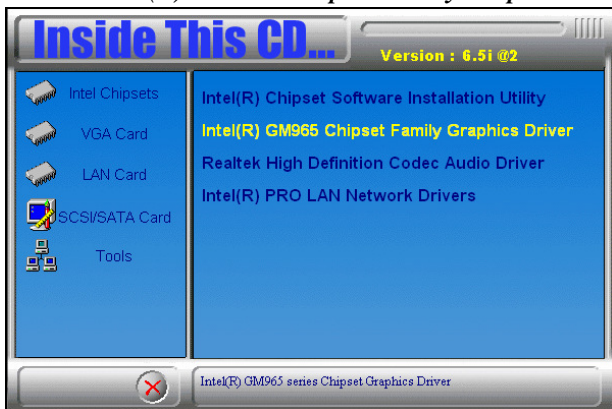


3. When the Welcome screen appears, click **Next** to continue.
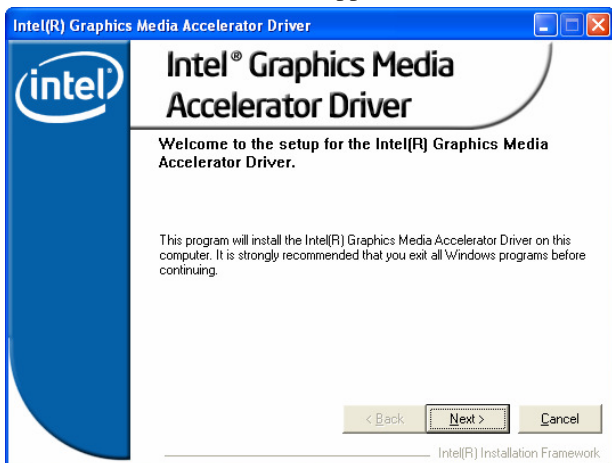
4. Click **Yes** to to agree with the license agreement and continue the installation.



5. Restart the computer as promted and for changes to take effect.
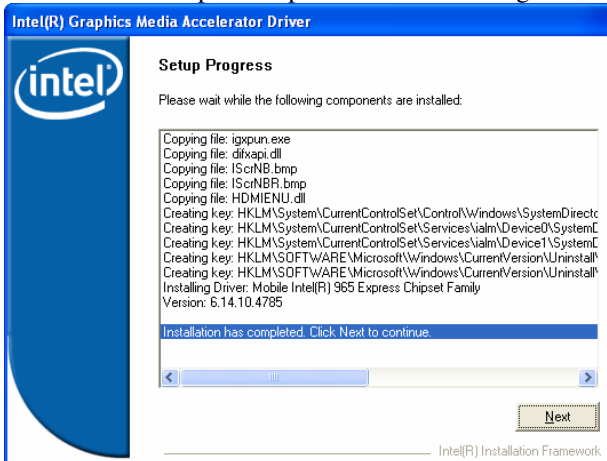


*IMPORTANT NOTE:*
*When you have restarted the computer, your computer screen will be blank. At this point, press CTRL-ALT-F1 simultaneously, if you are using CRT monitor. If you are using LVDS LCD panel, press CTRL-ALT-F3. If you are using DVI monitor, press CTRL-ALT-F4.*

# AC97 Codec Audio Driver Installation

Follow the steps below to install the Realtek AC97 Codec Audio Drivers.

1. Insert the CD that comes with the motherboard. Click *Intel Chipsets* and then *Intel(R) GME965Chipset Drivers*.

2. Click *Realtek AC'97 Codec Audio Driver.*



3. Click *Finish* to restart the computer and for changes to take effect. .
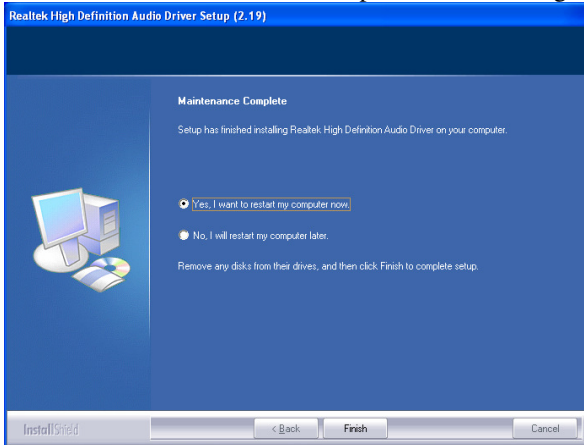
# LAN Drivers Installation

Follow the steps below to complete the installation of the Intel PRO LAN drivers.

1. Insert the CD that comes with the motherboard. Click **Intel Chipsets** and then **Intel(R) GME965Chipset Drivers**, then **Intel(R) PRO LAN Network Drivers**.



2. Click **Install Base Software** to continue.
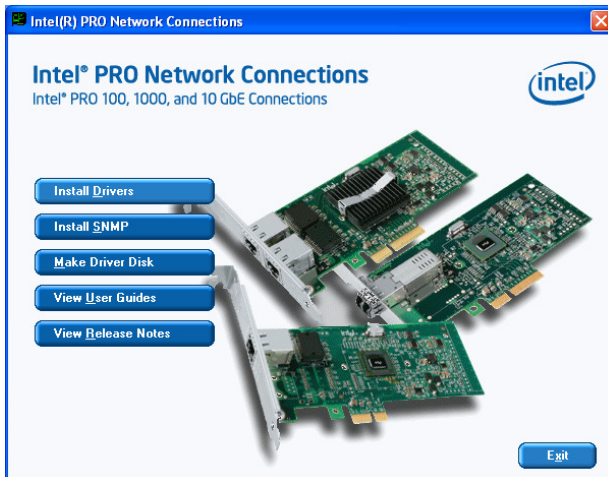


3. When prompted, please to restart the computer for new settings to take effect.

Follow the steps below to install the **Marvell Gigabit LAN** drivers.

1. Insert the CD that comes with the motherboard. Click *LAN Card* and then *Marvell LAN Controller Driver*.
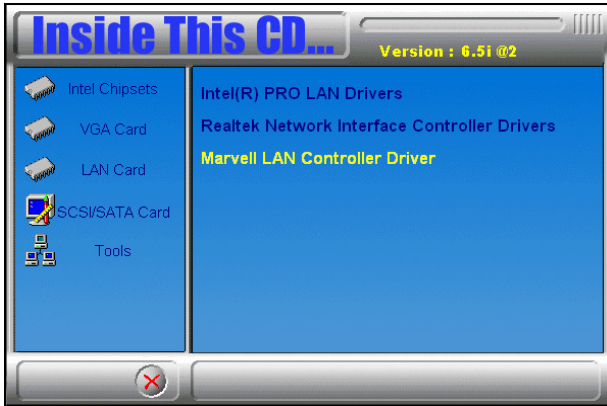


2. Click Next when the InstallShield Wizard welcome screen appears.



3. Click Next to agree with the license agreement.

4. Click Next when the Readme Information screen appears to proceed with the drives installation process.

5. When the Installation is complete, click Finish for the changes to take effect.

# 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 |
| 278 - 27F | Parallel Port #2(LPT2) |
| 2F8h - 2FFh | Serial Port #2(COM2) |
| 2B0 - 2DF | Graphics adapter Controller |
| 378h - 3FFh | Parallel Port #1(LPT1) |
| 360 - 36F | Network Ports |
| 3B0 - 3BF | Monochrome & Printer adapter |
| 3C0 - 3CF | EGA adapter |
| 3D0 - 3DF | CGA adapter |
| 3F0h - 3F7h | Floppy Disk Controller |
| 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  | Floppy Disk Controller |
| IRQ7  | Parallel Port #1 |
| IRQ8  | Real Time Clock |
| IRQ9  | Reserved |
| IRQ10 | Reserved |
| IRQ11 | Reserved |
| 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 <stdio.h>
#include <stdlib.h>
#include "W627EHF.H"
//=============================================================================
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//=============================================================================
int main (int argc, char *argv[])
{
        unsigned char bBuf;
        unsigned char bTime;
        char **endptr;

        copyright();

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

        if (Init_W627EHF() == 0)
        {
                printf(" Winbond 83627HF is not detected, program abort.\n");
                return 1;
        }
        bTime = strtol (argv[1], endptr, 10);
        printf("System will reset after %d seconds\n", bTime);

        EnableWDT(bTime);

        return 0;
}
//=============================================================================
```

```
void copyright(void)
{
        printf("\n======= Winbond 83627EHF Watch Timer Tester (AUTO DETECT) ========\n"\
                        "       Usage : W627E_WD reset_time\n"\
                        "       Ex : W627E_WD 3  => reset system after 3 second\n"\
                        "            W627E_WD 0  => disable watch dog timer\n");
}
//==========================================================================
void EnableWDT(int interval)
{
        unsigned char bBuf;

        bBuf = Get_W627EHF_Reg( 0x2D);
        bBuf &= (!0x01);
        Set_W627EHF_Reg( 0x2D, bBuf);                   //Enable WDTO

        Set_W627EHF_LD( 0x08);                          //switch to logic device 8
        Set_W627EHF_Reg( 0x30, 0x01);                   //enable timer

        bBuf = Get_W627EHF_Reg( 0xF5);
        bBuf &= (!0x08);
        Set_W627EHF_Reg( 0xF5, bBuf);                   //count mode is second

        Set_W627EHF_Reg( 0xF6, interval);               //set timer
}
//==========================================================================
void DisableWDT(void)
{
        Set_W627EHF_LD(0x08);                           //switch to logic device 8
        Set_W627EHF_Reg(0xF6, 0x00);                    //clear watchdog timer
        Set_W627EHF_Reg(0x30, 0x00);                    //watchdog disabled
}
//==========================================================================
```

```
//=============================================================================
//
// 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 "W627EHF.H"
#include <dos.h>
//=============================================================================
unsigned int W627EHF_BASE;
void Unlock_W627EHF (void);
void Lock_W627EHF (void);
//=============================================================================
unsigned int Init_W627EHF(void)
{
        unsigned int result;
        unsigned char ucDid;

        W627EHF_BASE = 0x2E;
        result = W627EHF_BASE;

        ucDid = Get_W627EHF_Reg(0x20);
        if (ucDid == 0x88)
        {       goto Init_Finish;       }

        W627EHF_BASE = 0x4E;
        result = W627EHF_BASE;
        ucDid = Get_W627EHF_Reg(0x20);
        if (ucDid == 0x88)
        {       goto Init_Finish;       }

        W627EHF_BASE = 0x00;
        result = W627EHF_BASE;

Init_Finish:
        return (result);
}
//=============================================================================
void Unlock_W627EHF (void)
{
        outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
        outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
}
//=============================================================================
void Lock_W627EHF (void)
{
        outportb(W627EHF_INDEX_PORT, W627EHF_LOCK);
}
//=============================================================================
void Set_W627EHF_LD( unsigned char LD)
{
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, W627EHF_REG_LD);
        outportb(W627EHF_DATA_PORT, LD);
        Lock_W627EHF();
}
```

```
//============================================================================
void Set_W627EHF_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        outportb(W627EHF_DATA_PORT, DATA);
        Lock_W627EHF();
}
//============================================================================
unsigned char Get_W627EHF_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        Result = inportb(W627EHF_DATA_PORT);
        Lock_W627EHF();
        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 __W627EHF_H
#define __W627EHF_H              1
//============================================================================
#define W627EHF_INDEX_PORT      (W627EHF_BASE)
#define W627EHF_DATA_PORT       (W627EHF_BASE+1)
//============================================================================
#define W627EHF_REG_LD          0x07
//============================================================================
#define W627EHF_UNLOCK                  0x87
#define W627EHF_LOCK            0xAA
//============================================================================
unsigned int Init_W627EHF(void);
void Set_W627EHF_LD( unsigned char);
void Set_W627EHF_Reg( unsigned char, unsigned char);
unsigned char Get_W627EHF_Reg( unsigned char);
//============================================================================
#endif  //__W627EHF_H
```