ET810

Intel® 915GM Pentium® M COM Express CPU Module

USER'S MANUAL

Version 1.0

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The ET810 915GM COM Express CPU Module

Introduction

Product Description

The ET810 is a 90mm by 125mm module that uses the Intel 915GM Express chipset and supports Intel Pentium(r) M / Celeron M processors with speeds up to 2.0GHz. The module can accommodate up to 1GB of DDR2 DRAM and advanced graphics capabilities based on the Intel(r) Graphics Media Accelerator 900 supporting CRT display and dual channel LVDS interface.

Below are listed the main features of the ET810 COM Express CPU module.

FEATURES

- Supports Intel[®] Pentium[®] M / Celeron[®] M;
- Up to 2.0GHz CPU speed, 400MHz/533MHz FSB
- Supports up to six x1 PCI-E, one x16 PCI-E, four PCI
- DDR2 SO-DIMM x1, Max. 1GB memory
- ICH6M Integrated 10/100 BaseT Ethernet
- Intel[®] 915GM Integrated VGA; Supports CRT / LVDS
- CPU temperature detection

Checklist

Your ET810 package should include the items listed below.

- The ET810 CPU Module
- This User's Manual
- 1 CD containing the following:
 - Chipset Drivers
 - Flash Memory Utility

Specifications

CPU Type

Socket 479 for Intel® Pentium® M / Celeron® M processor; or CPU on board; up to 2.0GHz CPU speed

CPU External Clock

400MHz / 533MHz

Chipset

Intel® 915GM chipset ICH6M Controller Hub

BIOS

Award BIOS; 4Mbit

Memory type

One DDR2 SODIMM socket, Max. 1GB capacity

VGA

Intel® 915GM integrated VGA

Supports CRT & LVDS interface (18-bit single or dual channel LVDS)

DVMT 3.0 support; Max. memory allocation based on total system memory

LAN

ICH6M integrated LAN controller (10/100Mb)

IDF

Built-in ICH6M, IDE1, 2 (Ultra DMA 33/66/100)

Audio

ICH4 built-in audio controller + AC97 Codec ALC650

Multi I/O

ICH6M; 1x IDE (UDMA33/66/100), 2x SATA

USE

Up to 8 USB ports (USB 2.0, to be supported by the baseboard)

Other Features

IrDA, Boot on LAN

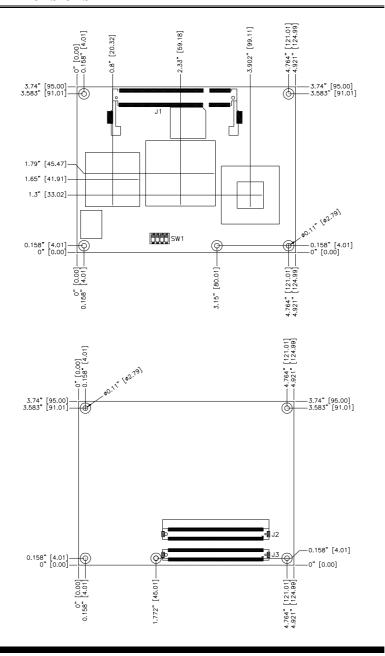
COM Express Interface to Baseboard

Supports USB (8 ports), 4x PCI, 6x PCI Express (x1), 1x PCI Express (x16), 2X SATA, LVDS, VGA, TV-out, LAN, AC97, LPC, GPIO

Dimensions

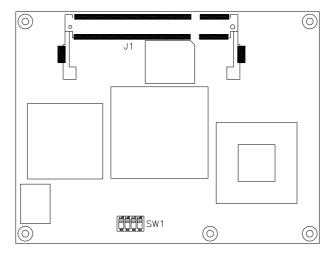
95mm x 114mm (3.74" x 4.5")

Dimensions

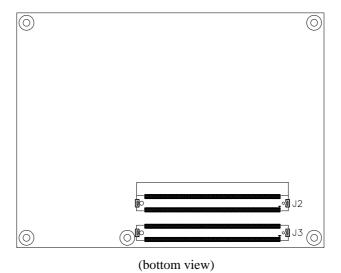


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Connector Locations on ET810



(top view)

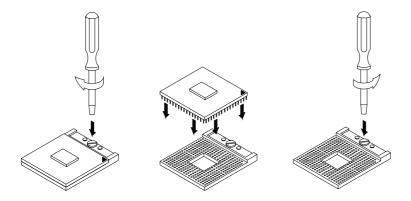


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Installing the Processor

The ET810 is available with a processor socket on board or with an Intel® processor on board. In the case that your ET810 comes a Socket 479 processor socket for Intel® Pentium® M or Celeron® M processors, follow the instructions below regarding the processor installation.

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 processor 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.

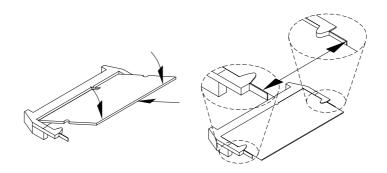
Installing the Memory

The ET810 COM Express CPU module accommodates 200-pin DDR2-400 and DDR2-533 SODIMM memory modules with capacities up to 1GB. Non-ECC is supported.

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 align with those on the memory slot. Insert the module into the socket at a slight angle (approximately 30 degrees). Note that the socket and module are both keyed, which means that the module can be installed only in one direction.
- 2. To seat the memory module into the socket, apply firm and even pressure to each end of the module until you feel it slip down into the socket.
- 3. With the module properly seated in the socket, rotate the module downward. Continue pressing downward until the clips at each end lock into position.
- 4. To remove the DDR2 module, press the clips with both hands.



Jumpers and Connectors on ET810

SW1 (1): VGA Signal Select

Use pin 1 of the SW1 switch to select the onboard 915GM integrated VGA or the backplane's PCI-Express x16 external graphics card.

SW1	Setting	Function
on xx xx xx	Pin 1: ON	Built-in VGA
off xx xx xx	Pin 1: OFF	External VGA

SW1 (2,3): CPU Front Side Bus Frequency Setting

SW1	Setting	Function
xx on off xx	Pin 2: ON Pin 3: OFF	400 MHz
xx off on xx	Pin 2: OFF Pin 3: ON	533 MHz

J2, J3: COM Express Type 2 Connectors

The Type 2 connectors come in two 220-pin 0.5mm pitch receptacles. They include PCI, IDE, GBE and up to 22 general-purpose PCIE lanes (PCIE 0-5 and PCIE 16-31). For most Type 2 implementations, it is expected that PCIE lanes 16-31 are used for graphics. Hence they are designated PEG lanes 0-15 in the following table. Modules implementing Pin out Type 2, such as the ET810, uses the pin-out shown.

	Row A		Row B	Row C		Row B Row C Row D		Row D
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)	
A2	NC	B2	GBE0 ACT#	C2	IDÈ D7	D2	IDÈ D5	
A3	NC	В3	LPC_FRAME#	C3	IDE_D6	D3	IDE_D10	
A4	GBE0_LINK100#	B4	LPC_AD0	C4	IDE_D3	D4	IDE_D11	
A5	NC	B5	LPC_AD1	C5	IDE_D15	D5	IDE_D12	
A6	NC	B6	LPC_AD2	C6	IDE_D8	D6	IDE_D4	
A7	NC	B7	LPC_AD3	C7	IDE_D9	D7	IDE_D0	
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	IDE_D2	D8	IDE_REQ	
A9	GBE0_MDI1-	B9	LPC_DRQ1#	C9	IDE_D13	D9	IDE_IOW#	
A10	GBE0_MDI1+	B10	LPC_CLK	C10	IDE_D1	D10	IDE_ACK#	
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)	
A12	GBE0_MDI0-	B12	PWRBTN#	C12	IDE_D14	D12	IDE_IRQ	
A13	GBE0_MDI0+	B13	SMB_CK	C13	IDE_IORDY	D13	IDE_A0	
A14	NC	B14	SMB_DAT	C14	IDE_IOR#	D14	IDE_A1	
A15	SUS_S3#	B15	SMB_ALERT#	C15	PCI_PME#	D15	IDE_A2	
A16	SATA0_TX+	B16	SATA1_TX+	C16	PCI_GNT2#	D16	IDE_CS1#	
A17	SATA0_TX-	B17	SATA1_TX-	C17	PCI_REQ2#	D17	IDE_CS3#	
A18	SUS_S4#	B18	SUS-STAT#	C18	PCI_GNT1#	D18	IDE_RESET#	
A19	SATA0_RX+	B19	SATA1_RX+	C19	Pcl_REQ1#	D19	PCI_GNT3#	
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCI_GNT0#	D20	PCI_REQ3#	
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)	
A22	NC	B22	NC	C22	PCI_REQ0#	D22	PCI_AD1	
A23	NC	B23	NC	C23	PCI_RESET#	D23	PCI_AD3	
A24	SUS_S5#	B24	NC	C24	PCI_AD0	D24	PCI_AD5	
A25	NC	B25	NC	C25	PCI_AD2	D25	PCI_AD7	
A26	NC	B26	NC	C26	PCI_AD4	D26	PCI_C/BE0#	
A27	BATLOW#	B27	NC AC ODING	C27	PCI_AD6	D27	PCI_AD9	
A28	ATA_ACT#	B28	AC_SDIN2	C28	PCI_AD8	D28	PCI_AD11	
A29	AC_SYNC	B29	AC_SDIN1	C29	PCI_AD10	D29	PCI_AD13	
A30 A31	SC_RST# GND (FIXED)	B30 B31	AC_SDIN0 GND (FIXED)	C30	PCI_AD12 GND (FIXED)	D30	PCI_AD15 GND (FIXED)	
A32	AC BITCLK	B32	SPKR	C32	PCI AD13	D31	PCI PAR	
A33	AC_BITCLK AC SDOUT	B33	I2C CK	C32	PCI C/BE1#	D32	PCI_FAR PCI_SERR#	
A34	NC	B34	I2C_CK	C34	PCI_C/BE1#	D33	PCI_SERR#	
A35	THRMTRIP#	B35	THRM#	C35	PCI_FERR#	D34	PCI_STOF#	
A36	USB6-	B36	USB7-	C36	PCI_DEVSEL#	D36	PCI_TRD1#	
A37	USB6+	B37	USB7+	C37	PCI_DLV3LL#	D37	PCI_I RAINL#	
A38	USB 6 7 OC#	B38	USB 4 5 OC#	C38	PCI C/BE2#	D38	PCI AD18	
A39	USB4-	B39	USB5-	C39	PCI AD17	D39	PCI AD20	
A40	USB4+	B40	USB5+	C40	PCI AD19	D40	PCI AD22	
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)	
A42	USB2-	B42	USB3-	C42	PCI AD21	D42	PCI AD24	
A43	USB2+	B43	USB3+	C43	PCI AD23	D43	PCI AD26	
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	PCI_C/BE3#	D44	PCI_AD28	
A45	USB0-	B45	USB1-	C45	PCI_AD25	D45	PCI_AD30	
A46	USB0+	B46	USB1+	C46	PCI_AD27	D46	PCI_IRQC#	
A47	VCC_RTC	B47	EXCD1_PERTST#	C47	PCI_AD29	D47	PCI_IRQD#	
A48	EXCD0_PERST#	B48	EXCD1_CPPE#	C48	PCI_AD31	D48	NC	
A49	EXCD0CPPE#	B49	SYS_RESET#	C49	PCI_IRQA#	D49	NC	
A50	LPC_SERIRQ	B50	CB_RESET#	C50	PCI_IRQB3	D50	PCI_CLK	

	Row A		Row B		Row C		Row D
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A51	GND (FIXED)	B51	GND (FIXED)	C51	GND (FIXED)	D51	GND (FIXED)
A52	NC	B52	NC	C52	PEG_RX0+	D52	PEG_TX0+
A53	NC	B53	NC	C53	PEG_RX0-	D53	PEG_TX0-
A54	GPI0	B54	GPO1	C54	NC	D54	PEG_LANE_RV#
A55	NC	B55	NC	C55	PEG_RX1+	D55	PEG_TX1+
A56	NC	B56	NC	C56	PEG_RX1-	D56	PEG_TX1-
A57	GND	B57	GPO2	C57	NC	D57	NC
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PEG_RX2+	D58	PEG_TX2+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PEG_RX2-	D59	PEG_TX2-
A60	GND (FIXED)	B60	GND (FIXED)	C60	GND (FIXED)	D60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PEG_RX3+	D61	PEG_TX3+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PEG_RX3-	D62	PEG_TX3-
A63	GPI1	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PEG_RX4+	D65	PEG_TX4+
A66	GND	B66	WAKE0#	C66	PEG_RX4-	D66	PEG_TX4-
A67	GPI2	B67	WAKE1#	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PEG_RX5+	D68	PEG_TX5+
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PEG_RX5-	D69	PEG_TX5-
A70	GND (FIXED)	B70	GND (FIXED)	C70	GND (FIXED)	D70	GND (FIXED)
A71	LVDS_A0+	B71	LVDS_B0+	C71	PEG_RX6+	D71	PEG_TX9+
A72	LVDS_A0-	B72	LVDS_B0-	C72	PEG_RX6-	D72	PEG_TX9-
A73	LVDS_A1+	B73	LVDS_B1+	C73	SDVO_DATA	D73	SDVO_CLK
A74	LVDS_A1-	B74	LVDS_B1-	C74	PEG_RX7+	D74	PEG_TX7+
A75	LVDS_A2+	B75	LVDS_B2+	C75	PEG_RX7-	D75	PEG_TX7-
A76 A77	LVDS_A2- LVDS VDD EN	B76 B77	LVDS_B2- NC	C76 C77	GND RSVD	D76 D77	GND IDE CBLID#
A77	NC	B78	NC NC	C78	PEG RX8+	D77	PEG TX8+
A78	NC NC	B79	LVDS_BKLT_EN	C79	PEG_RX8+	D78	PEG_TX8+
A80	GND (FIXED)	B80	GND (FIXED)	C80	GND (FIXED)	D80	GND (FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+	C81	PEG_RX9+	D81	PEG_TX9+
A82	LVDS_A_CK-	B82	LVDS B CK-	C82	PEG_RX9-	D82	PEG_TX9+
A83	LVDS I2C CK	B83	LVDS BKLT Ctrl	C83	RSVD	D83	RSVD
A84	LVDS I2C DAT	B84	VCC 5V SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC 5V SBY	C85	PEG RX10+	D85	PEG TX10+
A86	KBD RSD#	B86	VCC_5V_SBY	C86	PEG RX10-	D86	PEG TX10-
A87	KBD A20GATE	B87	VCC 5V SBY	C87	GND	D87	GND
A88	PCIE0 CK REF+	B88	RSVD	C88	PEG RX11+	D88	PEG_TX11+
A89	PCIE0 CK REF-	B89	VGA RED	C89	PEG RX11-	D89	PEG TX11-
A90	GND (FIXED)	B90	GND (FIXED)	C90	GND (FIXED)	D90	GND (FIXED)
A91	RSVD	B91	VGA_GRN	C91	PEG_RX12+	D91	PEG_TX12+
A92	RSVD	B92	VGA_BLU	C92	PEG_RX12-	D92	PEG_TX12-
A93	GPO0	B93	VGA_HSYNC	C93	GND	D93	GND
A94	RSVD	B94	VGA_VSYNC	C94	PEG_RX13+	D94	PEG_TX13+
A95	RSVD	B95	VGA_I2C_CK	C95	PEG_RX13-	D95	PEG_TX13-
A96	GND	B96	VGA_I2C_DATA	C96	GND	D96	GND
A97	VCC_12V	B97	TV_DAC_A	C97	RSVD	D97	PEG_ENABLE#
A98	VCC_12V	B98	TV_DAC_B	C98	PEG_RX14+	D98	PEG_TX14+
A99	VCC_12V	B99	TV_DAC_C	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	VCC_12V	B101	VCC_12V	C101	PEG_RX15+	D101	PEG_TX15+
A103	VCC_12V	B103	VCC_12V	C103	PEG_RX15-	D103	PEG_TX15-
A103	VCC_12V	B103	VCC_12V	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

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	12
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Advanced Chipset Features	20
Integrated Peripherals	23
Power Management Setup	
PNP/PCI Configurations	
PC Health Status	31
Frequency/Voltage Control	32
Load Fail-Safe Defaults	33
Load Optimized Defaults	33
Set Supervisor/User Password	
Save & Exit Setup	
Exit Without Saving	

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 key immediately allows you to enter the Setup utility. If you are a little bit late pressing the 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 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	$\uparrow \downarrow \rightarrow \leftarrow$: 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, 2004	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	1.44M, 3.5 in.	
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 key-

board 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 >
CPU L1 and L2 Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	Hard Disk	
Third Boot Device	CDROM	
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	No	
Small Logo (EPA) Show	Enabled	
3 () , , , ,		

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 much 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 items allow you to enable (speed up memory access) or disable the cache function. By default, these items are enabled.

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

DDAM Timin a Calastable	D.: 000	ITEM HELD
DRAM Timing Selectable	By SPD	ITEM HELP
CAS Latency Time	4	Menu Level >
DRAM RAS# to CAS# Delay	4	
DRAM RAS# Precharge	4	
Precharge delay (tRAS)	12	
System Memory Frequency	533MHZ	
SLP_S4# Assertion Width	4 to 5 Sec	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
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	
Panel Scaling	Auto	
Panel Number	1024x768 18 bit SC	
TV Standard	Off	
Video Connector	Automatic	
TV Format	Auto	

DRAM Timing Selectable

This option refers to the method by which the DRAM timing is selected. The default is *By SPD*.

CAS Latency Time

You can configure CAS latency time in HCLKs as 2 or 2.5 or 3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

DRAM RAS# to CAS# Delay

This option allows you to insert a delay between the RAS (Row Address Strobe) and CAS (Column Address Strobe) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Reducing the delay improves the performance of the SDRAM.

DRAM RAS# Precharge

This option sets the number of cycles required for the RAS to accumulate its charge before the SDRAM refreshes. The default setting for the Active to Precharge Delay is 4.

Precharge Delay (tRAS)

The default setting for the Precharge Delay is 12.

System Memory Frequency

The default setting is 533MHz.

SLP S4# Assertion Width

The default setting is 1 to 2 Sec.

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.

Video BIOS Cacheable

The Setting *Enabled* allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video 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*.

VGA Setting

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

PEG/On Chip VGA Control: Auto

PEG Force X1: Disabled Panel Scaling: Auto

Panel Number: 1024x768 18 bit SC

TV Standard: Off

Video Connector: Automatic

TV Format: Auto

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 default 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

	g.a.a.a	•
OnChip IDE Device	Press Enter	ITEM HELP
Onboard Device	Press Enter	Menu Level >
SuperIO Device	Press Enter	
2 nd SuperIO Device	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility OnChip IDE Device

	Ollollip IDE Device	
IDE HDD Block Mode	Enabled	ITEM HELP
IDE DMA transfer access	Enabled	
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	
*** On-Chip Serial ATA Setting ***		
SATA Mode	IDE	
On-Chip Serial ATA	Auto	
PATA IDE Mode	Secondary	
SATA port	P0, P2 is Primary	
	-	

Phoenix - AwardBIOS CMOS Setup Utility

USB Controller Enabled ITEM HELP USB 2.0 Controller Enabled Menu Level > USB Keyboard Support Disabled Azalia/AC97 Audio Select Auto

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 FDC Controller	Enabled	
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	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
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.

IDE DMA Transfer Access

This field, by default, is enabled

On-chip Primary PCI IDE Enabled

This field, by default, is enabled

OnChip 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.

On-Chip Serial ATA Setting

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

USB 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 Support

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

Azalia/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 FDC Controller

Select *Enabled* if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port

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

Serial Port 1 3F8H/IRQ4
Serial Port 2 2F8H/IRQ3
Serial Port 3 2F0h/IRQ11
Serial Port 4 2E0H/IRQ10
Parallel Port 378H/IRQ7

UART Mode Select

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

Parallel Port Mode

This field allows you to determine parallel port mode function.

SPP Standard Printer Port
EPP Enhanced Parallel Port
ECP Extended Capabilities Port

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.

Power Management Setup

Phoenix - AwardBIOS CMOS Setup Utility Power Management Setup

ACPI Function	Enabled	ITEM HELP
ACPI Suspend	S1(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 *S1(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
Max. Power Saving
Maximum power management
Maximum power management.

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 PWR-BTN

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

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

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

	1 0 110aiii1 Otatao	
+12V	12.24V	ITEM HELP
VTT	1.70V	
+5V	5.27V	Menu Level >
3.3V	3.36V	
VBAT (V)	3.21 V	
5VSB(V)	5.67 V	
CPU Warning Temperature	Disabled	
Current System Temp	45°C/113°F	
Shutdown Temperature	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.

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.

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.

Frequency/Voltage Control

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

Phoenix - AwardBIOS CMOS Setup Utility Frequency/Voltage Control

Disabled	ITEM HELP
Disabled	Menu Level >

Auto Detect PCI CIk

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.

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Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98SE, Windows ME, 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 Intallation Utility	36
VGA Drivers Installation	38
AC97 Codec Audio Driver Installation	40
Intel PRO LAN Drivers Installation	42

IMPORTANT NOTE:

After installing your Windows operating system (Windows 98SE/ME/2000/XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

Intel 915GM Chipset Drivers Installation

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 98SE/ME/2000/XP.

- 1. Insert the CD that comes with the board. Click $Intel\ Chipsets$ and then $Intel(R)\ I915GM\ Chipset\ Drivers$.
- 2. Click Intel(R) Chipset Software Installation Utility.





3. When the Welcome (to the Intel(R) Chipset Software Installation Utility) screen appears, click *Next* to continue.



- 4. Click *Yes* to accept the software license agreement and proceed with the installation process.
- 5. After the installation/setup is complete, click *Finish* to restart the computer and for changes to take effect.

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 $Intel(R)\ I915GM\ Chipset\ Drivers$.
- 2. Click Intel(R) 1915GM Chipset Family Graphics Driver.





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



4. When the setup is complete, restart the computer as prompted and for changes to take effect.



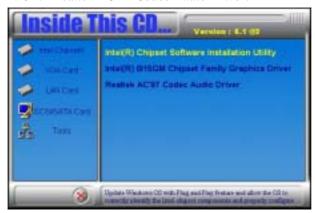
AC97 Codec Audio Driver Installation

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) I915GM Chipset Drivers*.



2. Click Realtek AC'97 Codec Audio Driver.



3. When the screen below appears, click Yes to continue with the installation.



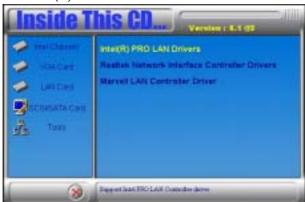
4. Click *Finish* to restart the computer and for changes to take effect. .



Intel PRO 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 $LAN\ Card$ and then $Intel(R)\ PRO\ LAN\ Drivers$.



2. Click Install Base Software to continue.



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

Marvell 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 *LAN Card* and then *Marvell LAN Controller Driver*.

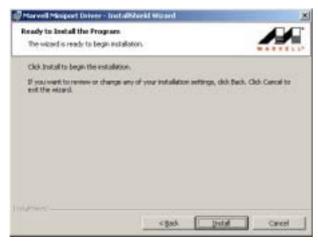


2. When the Welcome screeen appears, click Next to continue.



3. Click Next to agree with the license agreement.

- 4. When the Readme Information appears, click Next to continue
- 5. When the Ready to Install the Program appears, click Install to continue.



6. After the installation is complete, click Finish.

