MAT-800

Intel® 855GME Pentium® M
ETX CPU Module

USER'S MANUAL

Version 1.0

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Introduction

Product Description

MAT-800 is ETX CPU module based on the Intel® 82855GME chipset. The Intel® 855GME Chipset graphics memory controller hub (GMCH-M) is a component of Intel® Centrino mobile technology. In addition, the Intel® 855GME chipset provides integrated graphics (250 MHz) capabilities and power saving features.

Below are listed the main features of the MAT-800 ETX CPU module.

● Intel® Pentium® M processor on board, up to 1.6GHz (Micro-FCBGA)
● 400MHz CPU Operating Frequency
● Intel® 82855GME Chipset with integrated VGA supporting VGA CRT and LVDS interface
● One SODIMM socket supports up to 1GB
● Integrated 10/100 Ethernet
● Supports 4 USB 2.0 ports
● PCI to ISA Bridge, ISA High Drive

System memory is provided by a SO-DIMM socket that supports up to 1GB of DDR memory. The on board Award BIOS facilitates easy system configuration and peripheral setup. Other features include two RS232 serial ports, one parallel port, four USB ports support, watchdog timer and PCI to ISA bridge. Board size is 95mm by 114mm.

MAT-800 has four board-to-board high-density interface connectors for I/O signals that plug onto baseboards specific to customer's applications. ETX embedded solutions provide fast time-to-market through the interchangeability and scalability of both the ETX module and the baseboard.

ETX stands for Embedded Technology extended, a technology or form factor that offers flexible time-to-market solution, enabling product development time to shrink from four months to just four weeks. It also features low power consumption and low heat emission, eliminating the need for a CPU fan.

Checklist

Your MAT-800 package should include the items listed below.

- The MAT-800 CPU Module
- This User' s Manual
- 1 CD containing the following:
  - Chipset Drivers
  - Flash Memory Utility

Specifications

|	
CPU Type	Intel Pentium M processor
CPU Voltage	0.700V~1.708V
System Speed	900M~1.6GHz
CPU External Clock	400MHz
Green /APM	APM1.2
Chipset	Intel 82855GME chipset GMCH: 82855GME , 732-pin Micro-FCBGA ICH4: 82801DB 421-pin BGA
BIOS	Award BIOS; Supports ACPI function
Cache	1M Level 2 cache
Memory type	One DDR SODIMM socket, supports DDR200/266/333MHz, max. 1GB, supports ECC function
VGA	Intel 82855GME integrated VGA Supports CRT & LVDS interface (Max. 24bit)
LAN	ICH4 integrated LAN controller (10/100Mb) + Phy 82562ET
IDE	Built-in ICH4, IDE1, 2 (Ultra DMA 33/66/100)
Audio	ICH4 built-in audio controller + AC97 Codec ALC650
LPC I/O	Winbond 83627HF: IrDAx1 Parallel x1, COM1, COM2, FDC 2.88MB (3 Mode Support), Hardware monitoring
RTC/CMOS	ICH4-M built-in
Battery	Built-in lithium battery
PCI to ISA Bridge	Winbond 83628, 83629
USB	4 ports, USB 2.0
Watchdog Timer	256 levels
ETX Interface	4 connectors For PCI-Bus, USB, Sound, VGA: CRT & LVDS, COM ports, Parallel port, FDD, IDEs, keyboard / mouse, LAN, ISA-Bus
Board Size	95mm x 114mm (3.74" x 4.5")

Dimensions
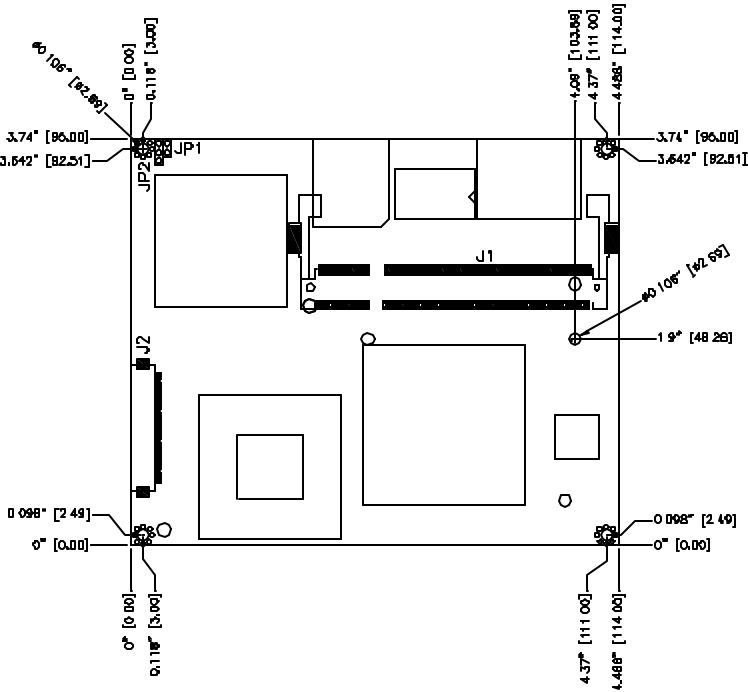
Connector Locations on MAT-800

X2   X4

X1   X3

(top view)

JP1
JP2
J1
J2
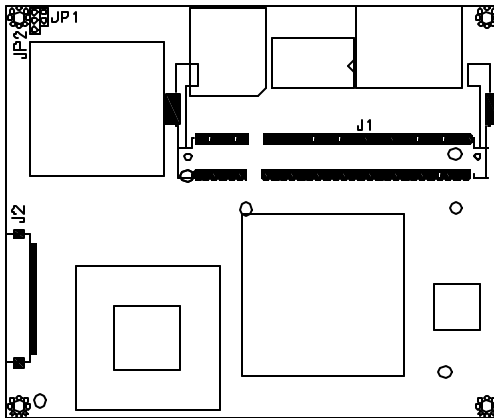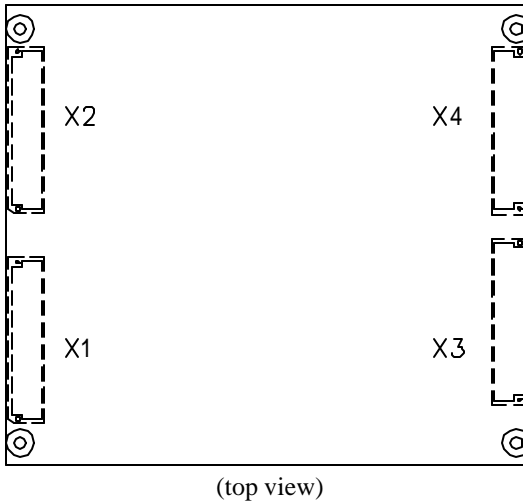
Connector Pin Assignments

1. X1 (PCI-Bus, USB, Sound)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	51	VCC	52	VCC
3	PCICLK3	4	PCICLK4	53	PAR	54	SERRJ
5	GND	6	GND	55	GPERRJ	56	N C
7	PCICLK1	8	PCICLK2	57	PMEJ	58	USB20
9	REQJ3	10	GNTJ3	59	LOCKJ	60	DEVSELJ
11	GNTJ2	12	3V	61	TRDYJ	62	USB30
13	REQJ2	14	GNTJ1	63	IRDYJ	64	STOPJ
15	REQJ 1	16	3V	65	FRAMEJ	66	USB21
17	GNTJ0	18	N.C.	67	GND	68	GND
19	VCC	20	VCC	69	AD16	70	CBEJ2
21	SERIRQ	22	REQJ0	71	AD17	72	USB31
23	AD0	24	3V	73	AD19	74	AD18
25	AD1	26	AD2	75	AD20	76	USB00
27	AD4	28	AD3	77	AD22	78	AD21
29	AD6	30	AD5	79	AD23	80	USB10
31	CBFJ0	32	AD7	81	AD24	82	CBEJ3
33	AD8	34	AD9	83	VCC	84	VCC
35	GND	36	GND	85	AD25	86	AD26
37	AD10	38	AUXAL	87	AD28	88	USB01
39	AD11	40	MIC	89	AD27	90	AD29
41	AD12	42	AUXAR	91	AD30	92	USB11
43	AD13	44	ASVCC	93	PCIRSTJ	94	AD31
45	AD14	46	SNDL	95	IRQY	96	IRQZ
47	AD15	48	ASGND	97	IRQW	98	IRQX
49	CBEJ1	50	SNDR	99	GND	100	GND

2. X2 (ISA-Bus)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	51	VCC	52	VCC
3	SD14	4	SD15	53	SA6	54	IRQ5
5	SD13	6	MASTERJ	55	SA7	56	IR06
7	SD12	8	DREQ7	57	SA8	58	IRQ7
9	SD11	10	DACKJ7	59	SA9	60	SYSCLK
11	SD10	12	DREQ6	61	SA10	62	REFSHJ
13	SD9	14	DACKJ6	63	SA11	64	DREQ1
15	SD8	16	DREQ5	65	SA12	66	DACKJ 1
17	MEMWJ	18	DACKJ5	67	GND	68	GND
19	MEMRJ	20	DREQ0	69	SA13	70	DREQ3
21	LA17	22	DACKJ0	71	SA14	72	DACKJ3
23	LA18	24	IRQ14	73	SA15	74	IORJ
25	LA19	26	IR015	75	SA16	76	IOWJ
27	LA20	28	IRQ12	77	SA18	78	SA17
29	LA21	30	IRQ11	79	SA19	80	SMEMRJ
31	LA22	32	IRQ10	81	IOCHRDY	82	AEN
33	LA23	34	I016J	83	VCC	84	VCC
35	GND	36	GND	85	SD0	86	SMEMWJ
37	SBHEJ	38	M16J	87	SD2	88	SD1
39	SA0	40	OSC	89	SD3	90	NOWSJ
41	SA1	42	BALE	91	DREQ2	92	SD4
43	SA2	44	TC	93	SD5	94	IRQ9
45	SA3	46	DACKJ2	95	SD6	96	SD7
47	SA4	48	IR03	97	IOCHKJ	98	RSTDRV
49	SA5	50	IRQ4	99	GND	100	GND

3. X3 (VGA, LCD, Video, COM, COM2, LPT/Floppy, IrDA, Mouse, Keyboard, LCD)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	51	NC	52	NC
3	R	4	B	53	VCC	54	GND
5	HSY	6	G	55	/STB	5 6	/AFD
7	VSY	8	DDCK	57	ic.	58	PD7
9	NC	10	DDDA	59	IRRX	60	/ERR
11	LCD DO16	12	LCD DO18	61	IRTX	62	PD7
13	LCD DO17	14	LCD DO19	63	RXD2	64	/INIT
15	GND	16	GND	65	GND	66	GND
17	LCD DO13	18	LCD DO15	67	RTS2J	68	PD5
19	LCD DO12	20	LCD DO14	69	DTR2J	70	/SLIN
21	GND	22	GND	71	DCD2J	72	PD4
23	LCD DO8	24	LCD DO11	73	DSR2J	74	PD3
25	LCD DO9	26	LCD DO10	75	CTS2J	76	PD2
27	GND	28	GND	77	TXD2J	78	PD1
29	LCD DO4	30	LCD DO7	79	RI2J	80	PD0
31	LCD DO5	32	LCD DO6	81	VCC	82	VCC
33	GND	34	GND	83	RXD1	84	/ACK
35	LCD DO1	36	LCD DO3	85	RTS1J	86	/BUSY
37	LCD DO0	38	LCD DO2	87	DTR1J	88	PE
39	VCC	40	VCC	89	DCD1J	90	/SLCT
41	NC	42	LTGIO0	91	DSR1J	92	MSCLK
43	NC	44	BLON#	93	CTS1J	94	MSDAT
45	BIASON	46	DIGON	95	TXD1	96	KBCLK
47	COMP	48	Y	97	RI1J	98	KBDAT
49	NC	50	C	99	GND	100	GND

4. X4 (IDE 1, IDE 2, Ethernet, Misc)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	51	SIDE IOWJ	52	PIDE_IORJ
3	5V SB	4	PWGIN	53	SIDE DRQ	54	PIDE IOWJ
5	PS ON	6	SPEAKER	55	SIDE D15	56	PIDE DRQ
7	PWRBTNJ	8	BATT	57	SIDE DO	58	PIDE D15
9	KBINH	10	LILED	59	SIDE D14	60	PIDE DO
11	NC	12	ACTLED	61	SIDE D1	62	PIDE D14
13	NC	14	SPEEDLED	63	SIDE D13	64	PIDE D1
15	NC	16	NC	65	GND	66	GND
17	VCC	18	VCC	67	SIDE D2	68	PIDE D13
19	OVCRJ	20	GPCSJ	69	SIDE D12	70	PIDE D2
21	EXTSMI	22	NC	71	SIDE D3	72	PIDE D12
23	SMBCLK	24	SMBDATA	73	SIDE-D 1	74	PIDE D3
25	SIDE_CS3J	26	N.C.	75	SIDE D4	76	PIDE D11
27	SIDE CS1J	28	DASP S	77	SIDE D10	78	PIDE D4
29	SIDE A2	30	PIDE_CS3J	79	SIDE D5	80	PIDE D10
31	SIDE AO	32	PIDE CS1J	81	VCC	82	VCC
33	GND	34	GND	83	SIDE-D9	84	PIDE D5
35	NC	36	PIDE_A2	85	SIDE D6	86	PIDE D9
37	SIDE AI	38	PIDE_A0	87	SIDE-D8	88	PIDE D6
39	SIDE INTRO	40	PIDE A1	89	N.C.	90	N.C.
41	N.C.	42	N.C.	91	RXD-	92	PIDE D8
43	SIDE_AKJ	44	PIDE INTRO	93	RXD+	94	SIDE D7
45	SIDE_RDY	46	PIDE_AKJ	95	TXD-	96	PIDE D7
47	SIDE_IORJ	48	PIDE RDY	97	TXD+	98	HDRSTJ
49	VCC	50	VCC	99	GND	100	GND

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BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the CPU card. 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 Pentium 4 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, 2004	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level >
IDE Primary Master	None	Change the day, month,
IDE Primary Slave	None	Year and century
IDE Secondary Master	None	
IDE Secondary 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 :	1994 to 2079

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 Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

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
  LANDZ :   Landing zone
  SECTOR :   Number of sectors

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

Remarks: The main board supports two serial ATA ports and are represented in this setting as IDE Channel 2 / 3 Master.

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
Virus Warning	Disabled	Menu Level >
CPU L1 and L2 Cache	Enabled	
CPU L3 Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
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	Yes	
Small Logo (EPA) Show	Enabled	

CPU Feature

Press Enter to configure the settings relevant to CPU Feature.

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 / CPU L3 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*, *HDD-0*, *SCSI,   CDROM,   HDD-1*,   *HDD-2*,   *HDD-3*,   *ZIP100*,   *USB-FDD, USB-CDROM*, *USB-HDD* and *Disable*.

Boot Other Device

These fields allow the system to search for anOS 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
┌────────────────────────────────────────────┬──────────────────────┐
│ DRAM Timing Selectable      By SPD          │      ITEM HELP       │
│ CAS Latency Time            2.5             │ Menu Level  >        │
│ Active to Precharge Delay   7               │                      │
│ DRAM RAS# to CAS# Delay     3               │                      │
│ DRAM RAS# Precharge         3               │                      │
│ DRAM Data Integrity Mode    Non-ECC         │                      │
│ MGM Core Frequency          Auto Max 266MHz │                      │
│ System BIOS Cacheable       Enabled         │                      │
│ Video BIOS Cacheable        Enabled         │                      │
│ Memory Hole at 15M-16M      Disabled        │                      │
│ Delayed Transaction         Enabled         │                      │
│ Delay Prior to Thermal      16 Min          │                      │
│ AGP Aperture Size (MB)      64              │                      │
│                                             │                      │
│ ** On-Chip VGA Setting **                   │                      │
│ On-Chip VGA                 Enabled         │                      │
│ On-Chip Frame Buffer Size   32MB            │                      │
│ Boot Display                CRT+LFP         │                      │
│ Panel Scaling               Auto            │                      │
│ Panel Number                1024x768  18bit  SC │                  │
└────────────────────────────────────────────┴──────────────────────┘
```

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.

Active to Precharge Delay

The default setting for the Active to Precharge Delay is *7*.

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 *3*.

DRAM Data Integrity Mode
Select ECC if your memory module supports it. The memory controller will detect and correct single-bit soft memory errors. The memory controller will also be able to detect double-bit errors though it will not be able to correct them. This provides increased data integrity and system stability.

MGM Core Frequency
This field sets the frequency of the DRAM memory installed. The default setting is *Auto Max 266MHz*.

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*.

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

Delay Prior to Thermal
This field activates the CPU thermal function after the systems boots for the set number of minutes. The options are *16Min* and *64Min*.

AGP Aperture Size

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is *64M*.

On-Chip VGA

The default setting is *Enabled*.

On-Chip Frame Buffer Size

The default setting is *32MB*. The options available include *1MB*, *4MB*, *8MB* and *16MB*.

Boot Display

The default setting is *CRT+LFP*. The options available include *CRT* and *LFP*.

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
800x600	18bit SC
1024x768	18bit SC
1280x1024	24bit SC
1400x1050	18bit SC
1024x768	24bit SC
1600x1200	24bit SC

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

		ITEM HELP
OnChip IDE Device	Press Enter	Menu Level >
Onboard Device	Press Enter	
SuperIO Device	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device

		ITEM HELP
On-Chip Primary PCI IDE	Enabled	Menu Level >
IDE Primary Master PIO	Auto	
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	
IDE HDD Block Mode	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device

		ITEM HELP
USB Controller	Enabled	Menu Level >
USB 2.0 Controller	Disabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
AC97 Audio	Auto	
Integrated LAN	Enabled	
Init Display First	PCI Slot	

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device

		ITEM HELP
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	Enabled	
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	

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. The options are *Auto* and *Disabled*.

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.

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 SP1.***

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

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

AC97 Audio
The default setting of the AC97 Audio is ***Auto***.

Integrated LAN
The default setting of the LAN controller is ***Enabled***.

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	3F8/IRQ4
Serial Port 2	2F8/IRQ3
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

Power Management Setup

The Power Management Setupallows you to save energy of your system effectively.

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	Enabled	ITEM HELP
Power Management	User Define	Menu Level >
Video Off Method	V/H SYNC+Blank	
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	
CPU THRM-Throttling	50%	
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	Enabled	
Primary IDE 1	Enabled	
Secondary IDE 0	Enabled	
Secondary IDE 1	Enabled	
FDD, COM, LPT Port	Enabled	
PCI PIRQ[A-D] #	Enabled	

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

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.

CPU THRM-Throttling

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

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
PNP OS Install	No	
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
DMA Resources	Press Enter	capable operating
		system Select No if
PCI/VGA Palette Snoop	Disabled	you need the BIOS to
		configure non-boot
		devices

PNP OS Install
Enable the PNP OS Install option if it is supported by the operating system installed. The default value is *No*.

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 automatically with the use of a use 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.

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

CPU Warning Temperature	80 /176	ITEM HELP
System Temp.	45 /114	Menu Level >
CPU Temp	53 /125	
Vcore(V)	1.07 V	
VGMCH(V)	1.34 V	
+3.3V	3.32 V	
+5V	4.94 V	
+12V	11.85 V	
VBAT	3.48 V	
5VSB(V)	4.89 V	
Shutdown 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.

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	Disabled	Menu Level >

Auto Detect PCI Clk

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

Spread Spectrum

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 Setup 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/User 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:

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 Chipset Software Intallation 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 98SE/ME/2000/XP.

1. Insert the CD that comes with the board. Click *Intel Chipsets* and then *Intel(R) 855GME Chipset Drivers*.

2. Click *Intel(R) Chipset Software Installation Utility.*
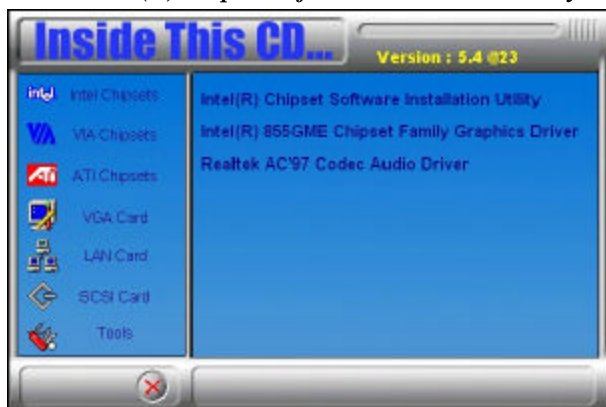
3. When the Welcome screen appears, click *Next* to continue.
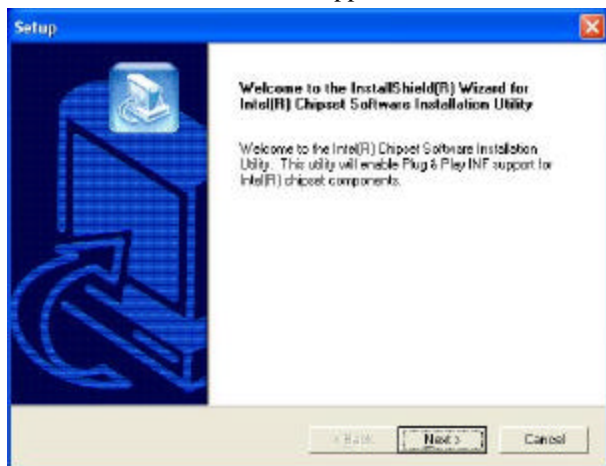
4. Click *Yes* to accept the software license agreement and proceed with the installation process.
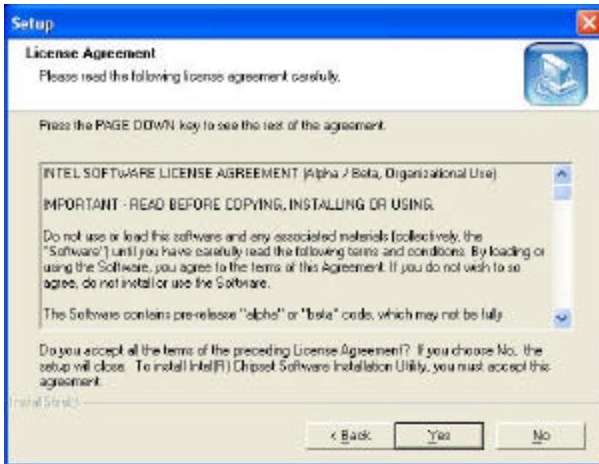
5. On Readme Information screen, click *Next* to continue the installation.
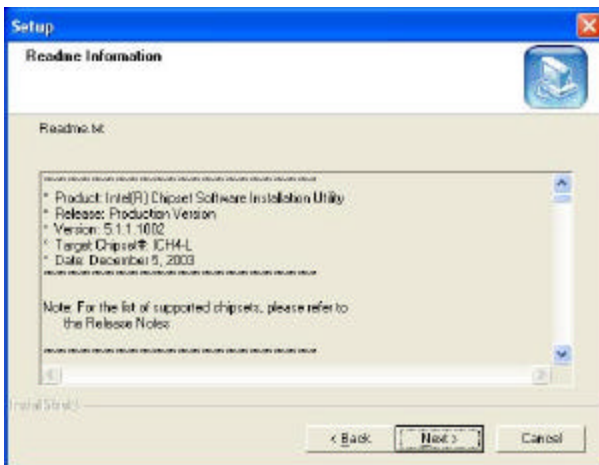
6. The Setup process is now complete. Click *Finish* to restart the computer and for changes to take effect. When the computer has restarted, the system will be able to find some devices. Restart your computer when prompted.
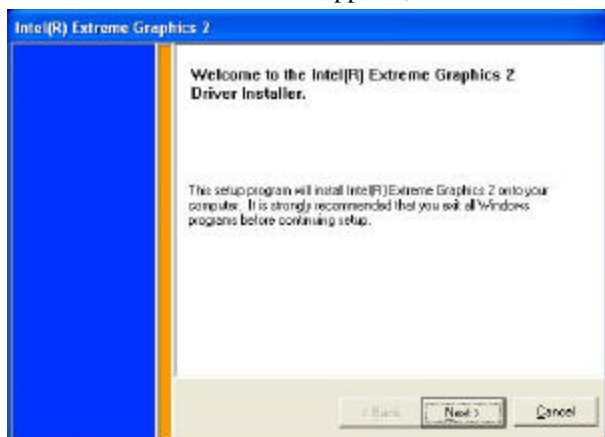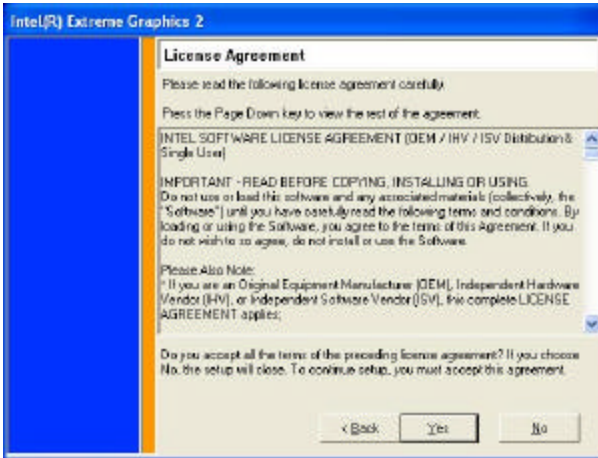
VGA Drivers Installation

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) 855GME Chipset Drivers*.

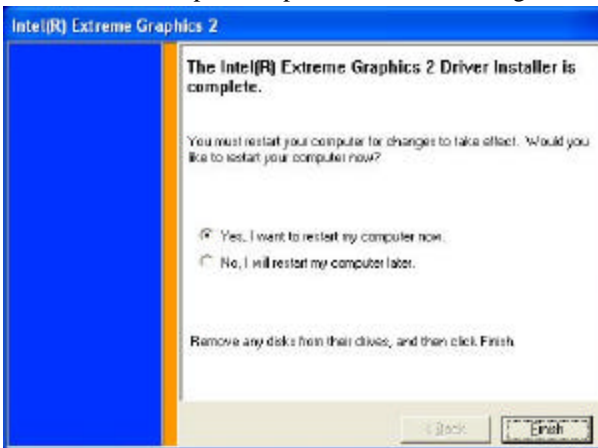2. Click *Intel(R) 855GME Chipset Family Graphics Driver.*
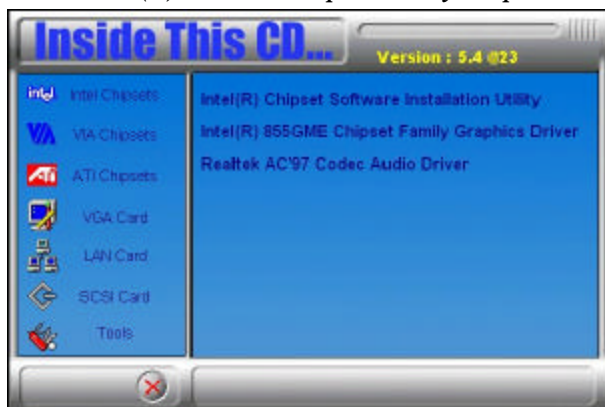
3. When the Welcome screen appears, click *Next* to continue.

4. Click *Yes* to to agree with the license agreement and continue the installation.

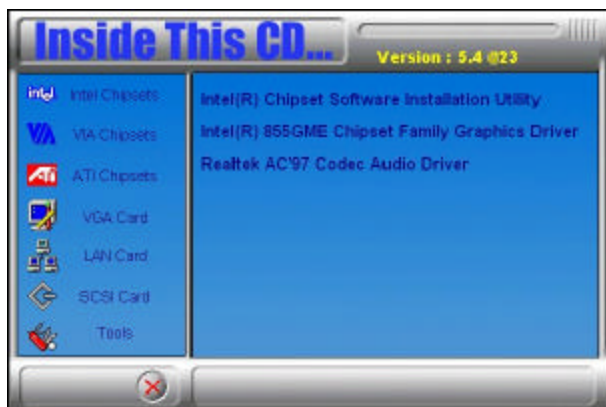5. Restart the computer as promted and for changes to take effect.

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) 855GME Chipset Drivers*.
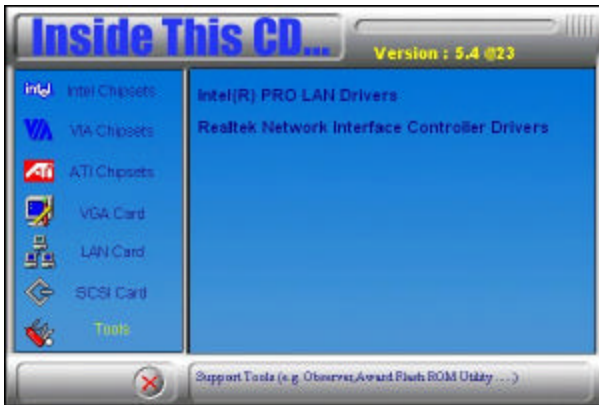
2. Click *Realtek AC'97 Codec Audio Driver.*

3. 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.

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