User's Manual

3302100

Version 1.0

Table of Contents

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Introduction

Product Description

The 3302100 ECX (Embedded Compact Extended) board incorporates the Mobile Intel® 945GM Express Chipset for Embedded Computing, consisting of the Intel® 945GM Graphic Memory Controller Hub (GMCH) and Intel® I/O Controller Hub 7-M (ICH7-M), an optimized integrated graphics solution with a 533MHz and 667MHz front-side bus. Dimensions of the board are 105mm x 1**46**mm.

The integrated powerful 3D graphics engine, based on Intel® Graphics Media Accelerator 950 (Intel® GMA 950) architecture, operates at core speeds of up to 400 MHz. It features a low-power design, is validated with the Intel® Core Duo LV on 65nm process. With DDR2 667MHz SO-DIMM socket on board, the board supports up to 2GB 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 (224MB) availability of system memory for general computer usage, while supplying additional graphics memory when a 3D-intensive application requests it. The Intel GMA 950 graphics architecture also takes advantage of the high-performance Intel processor. Intel GMA 950 graphics supports Dual Independent Display technology.

The main features of the board are:

- Supports Intel® Core™ Duo LV processors
- Supports up to 1.66GHz, 533MHz/667MHz FSB
- One DDR2 SDRAM SO-DIMM, Max. 2GB memory
- Onboard Marvell PCI-Express Gigabit LAN
- Intel® 945GM Express VGA for CRT / LVDS
- 1x SATA, 4x USB 2.0, 2x COM, Watchdog timer,
- Region C Type III (LPC, PCI, 1xPCI-E(x1) and SDVO-C) expansion slot.

Checklist

Your 3302100 package should include the items listed below.

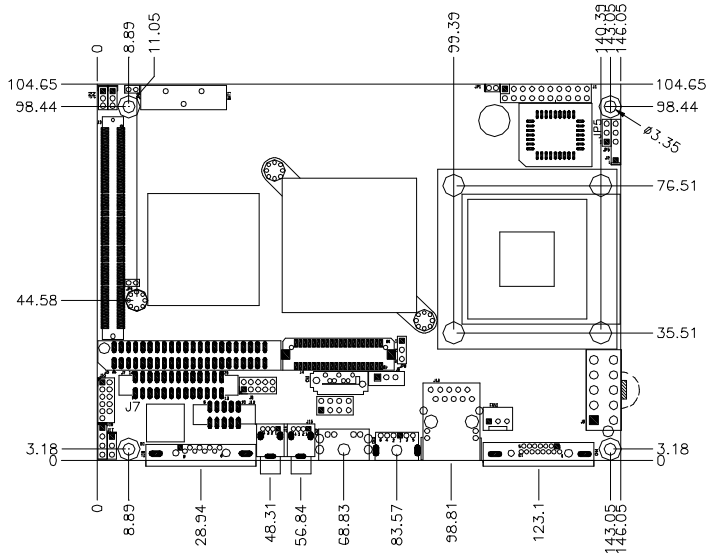
- The 3302100 ECX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (IDE, Serial port, Serial ATA)

THE 3302100 ECX SINGLE BOARD COMPUTER

3302100 Specifications

Form Factor	ECX
CPU Type	Intel Core Duo LV Mobile Processors
CPU Voltage	0.700V ~ 1.5V
System Speed	Up to LV 1.66GHz or above
CPU Operate Frequency	533MHz/667MHz FSB
Cache	2MB
Green /APM	APM1.2
CPU Socket	BGA CPU on board / mPGA 478MT Socket
Chipset	INTEL 945GM Chipset GMCH: 82945GM 1466-pin FCBGA ICH7M: 82801GBM 652-pin mBGA FWH
BIOS	Award BIOS, support ACPI Function
Memory	DDR2 667/533 SO-DIMM x1 (w/o ECC function), Max. 2GB
VGA/TV	945GM built-in, supports CRT/ S-VIDEO
LVDS LCD PANEL	945GM built-in, supports 18+18 bits, single or dual channel LVDS
LAN	Marvell 88E8053 PCI Express Gigabit LAN controller x1
USB (Universal Serial Bus)	ICH7M built-in USB 2.0 host controller, support 4 ports
Serial ATA Ports	ICH7M built-in SATA controller, supports 1 ports
Parallel IDE	ICH7M built-in one channel Ultra DMA 33/66/100,CF
Audio	ICH7M Built-in Audio controller + AC97 Codec ALC655 w/ 6 channels (Line-out, Line-in, Mic.), SPDIF-OUT
LPC I/O	W83627EHF: COM1, COM2 (RS232), LPT1, Slim FDC 1.44MB, IrDA x1 & Hardware monitor (3 thermal inputs, 4 voltage monitor inputs, 1 fan Header)
Digital IO	4 in & 4 out
Keyboard/Mouse Connector	Supports PS/2 Keyboard/Mouse
Expansion Region	**Region C** Type III also provides one x 1PCI Express, LPC, PCI, SDVO
Edge Connector	PS/2 Connector x1 for keyboard/mouse Gigabit LAN RJ-45 Dual USB stack connector DB9 x1 for COM 1 DB15 x1 for VGA S-Video for TV-Out
On Board Header/Connector	44 pins box-header x1 for IDE1 26 pins box-header x1 for LPT1 10 pins box-header x1 for COM2 26 pins film header x1 for Slim Floppy CF Connector x1 @ solder side 10 pins pin-headerx1 for Digital I/O 8 pins pin-header x 1 for USB 3,4 5 pins pin-header x 1 for IrDA DF13-40 Connector x1 for LVDS 3 pins pin-header x1 for SPDIF-OUT 11 pins pin-header x1 for audio Line-Out & Line-In & Microphone 4 pins pin-header x1 for CD-IN SATA connector x1 for SATA ports
Watchdog Timer	Yes (256 segments, 0, 1, 2…255 sec/min)
System Voltage	+5V, +3.3V, +12V, 5VSB
Other	Modem Wakeup, LAN Wakeup
Board Size	105mm x 146mm

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the 3302100 in order to set up a workable system. The topics covered are:

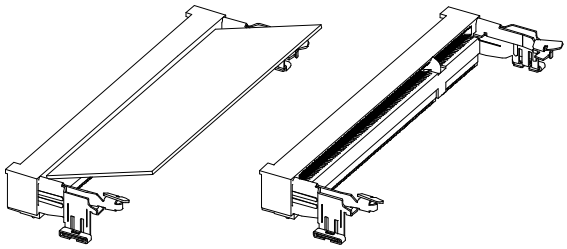
Installing the Memory

The 3302100 board supports one DDR2 SO-DIMM memory socket for a maximum total memory of **2**GB, DDR2 667/533 (w/o ECC function).

Installing and Removing Memory Modules

To install DDR2 modules, locate the memory socket 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.
2. Gently push the DDR2 module in an angle as shown in the picture below until the clips of the sockets lock to hold the DDR2 module in place when the DDR2 module touches the bottom of the socket.
3. To remove the DDR2 module, press the clips with both hands.

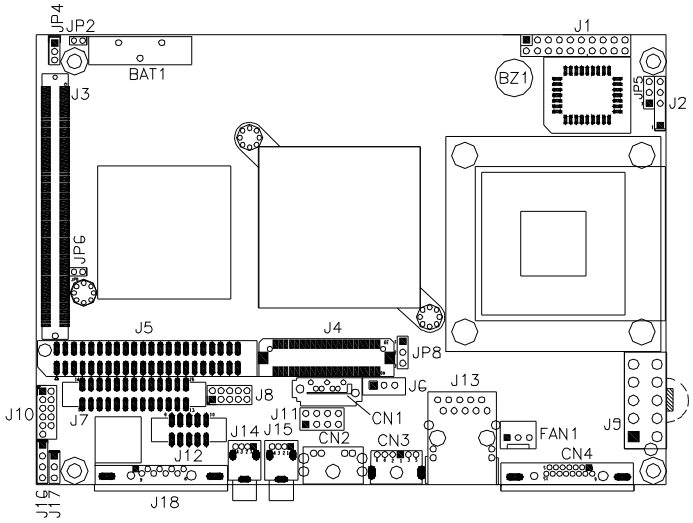


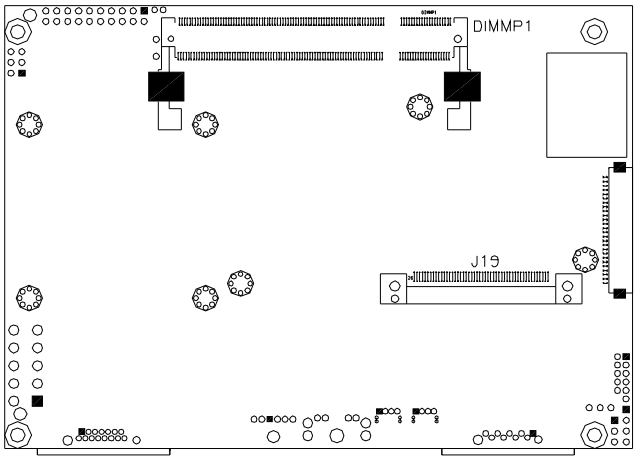
Setting the Jumpers

Jumpers are used on 3302100 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 3302100 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 3302100





JP5: CPU FSB Selection (reserved)

JP5	CPU FSB
	533MHz
	667MHz

JP8: LCD Panel Power Selection

JP8	LCD Panel Power
	3.3V
	5V

JP4: Clear CMOS Setting

JP4	Setting
	Normal
	Clear CMOS

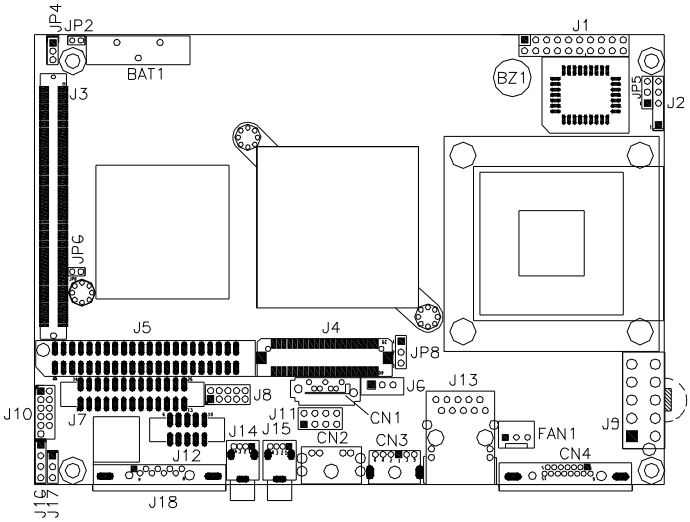
JP6: CompactFlash Slave/Master Selection

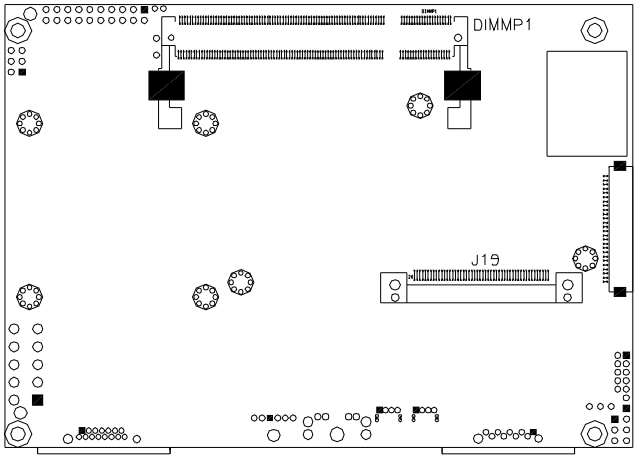
JP6	CF Setting
	Master
	Slave

Connectors on 3302100

The connectors on 3302100 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on 3302100 and their respective functions.

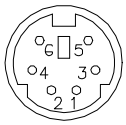
Connector Locations on 3302100





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

CN1 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



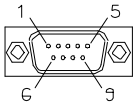
Pin #	Signal Name
1	Mouse data
2	Keyboard data
3	Ground
4	Vcc
5	Mouse Clock
6	Keyboard Clock

CN1: Serial ATA Connectors

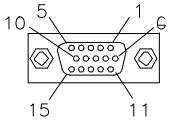
CN2: TV-Out (S-VIDEO) Connector

CN5: 1394 Connector

J18, CN4: 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		

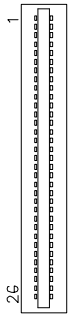
FAN1: System Fan Power Connector

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

FDD1: Floppy Drive Connector

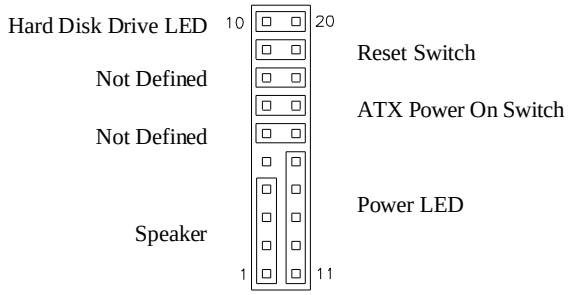
FDD1is a slim 26-pin connector and will support up to 2.88MB FDD.



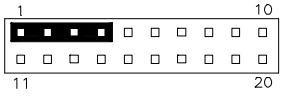
Signal Name	Pin #	Pin #	Signal Name
VCC	1	2	INDEX
VCC	3	4	DRV_SEL
VCC	5	6	DSK_CH
NC	7	8	NC
NC	9	10	MOTOR
DINST	11	12	DIR
NC	13	14	STEP
GND	15	16	WDATA
GND	17	18	WGATE
GND	19	20	TRACK
NC	21	22	WPROT
GND	23	24	RDATA
GND	25	26	SIDE

J1: System Function Connector

J1 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J3 is a 20-pin header that provides interfaces for the following functions.

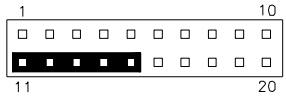


Speaker: Pins 1 - 4
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



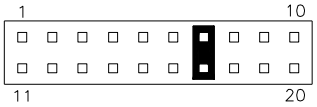
Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 15

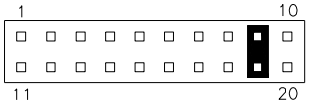


Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	No connect
15	Ground

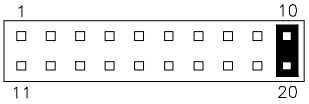
ATX Power ON Switch: Pins 7 and 17
This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



Reset Switch: Pins 9 and 19
The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

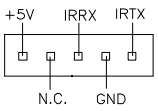


Hard Disk Drive LED Connector: Pins 10 and 20
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD Active
20	5V

J2: IrDA Connector



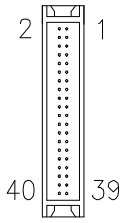
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J3: Region C Type III Connector

While the baseboard meets the minimal embedded application needs, the rich I/O interconnects available through the Region C expansion area facilitate extending the SBC's functionality to meet the demands of a variety of market segments.

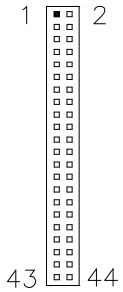
J4: LVDS Connectors (1st channel, 2nd channel)

The LVDS connectors on board consist of the first channel and second channel and supports 18-bit or 36-bit.



Signal Name	Pin #	Pin #	Signal Name
1TX0-	2	1	1TX0+
1TX1-	4	3	1TX1+
Ground	6	5	Ground
1TX2-	8	7	1TX2+
NA	10	9	NA
Ground	12	11	Ground
1TXC-	14	13	1TXC+
Ground	16	15	Ground
2TX0-	18	17	2TX0+
2TX1-	20	19	2TX1+
Ground	22	21	Ground
2TX2-	24	23	2TX2+
NA	26	25	NA
Ground	28	27	Ground
2TXC-	30	29	2TXC+
Ground	32	31	Ground
+V(LCD	34	33	+V(LCD)
+V(LCD	36	35	+V(LCD
Ground	38	37	ENABKL
Ground	40	39	Ground

J5: 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
+5V	41	42	+5V
Ground	43	44	NC

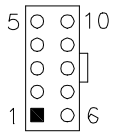
J6: LCD Backlight Connector

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

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: ATX Power Supply Connector



Pin #	Signal Name
1	PS-ON
2	Ground
3	Ground
4	+12V
5	+3.3V
6	Ground
7	+3.3V
8	+5V
9	+5V
10	5VSB

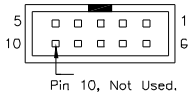
J10: Front Audio Connector

Signal Name	Pin	Pin	Signal Name
Rear Audio R	1	5	Rear Audio L
Front Audio R	2	6	Front Audio L
Mic In	3	7	VREF Out
Ground	4	8	

J11: USB3/4 Port Pin Header

Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
D-	2	6	D+
D+	3	7	D-
Ground	4	8	Vcc

J12: COM2 Serial Port



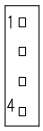
COM2

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

J13: Gigabit LAN RJ-45

J14, J15: USB1/2 Ports

J16: CD-In Pin Header



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

J17: SPDIF Out Connector (optional)

Pin #	Signal Name
1	out
2	+5V
3	Ground

J19: Compact Flash Connector

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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.

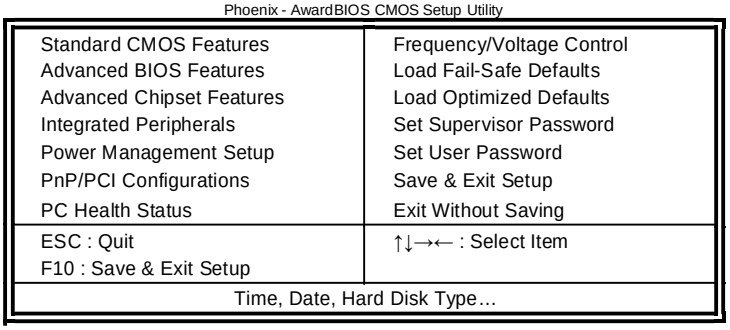
BIOS Setup

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.



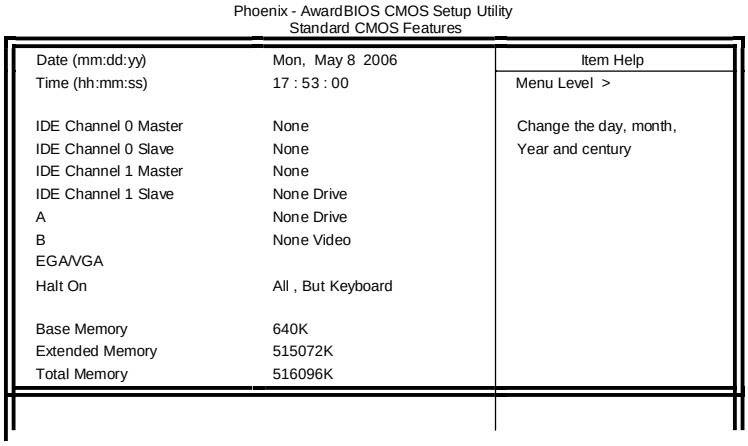
The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

***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)	Mon, May 8 2006	Item Help
Time (hh:mm:ss)	17 : 53 : 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 , But Keyboard	
Base Memory	640K	
Extended Memory	515072K	
Total Memory	516096K	

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.

Capacity :	Capacity/size of the hard disk drive
Cylinder :	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	

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 >
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	Yes	
Small Logo (EPA) Show	Disabled	

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 ***Disabled***.

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	Auto	Menu Level >
DRAM RAS# to CAS# Delay	Auto DRAM	
RAS# Precharge	Auto	
Precharge delay (tRAS)	Auto	
System Memory Frequency	Auto	
SLP_S4# Assertion Width	1 to 2 Sec	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Enabled	
Memory Hole at 15M-16M	Disabled	
PCI Express Root Port Func	Press Enter	
** On-Chip VGA Setting **		
PEG/On Chip VGA Control	Auto	
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	
Panel Scaling	Auto	
Panel Number TV	1024x768 18 bit SC	
Standard Video	Off	
Connector TV	Automatic	
Format	Auto	
Onboard PCI-E LAN	Enabled	
LAN PXE Option ROM	All Disable	

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 3 or 4 or 5 or 6. 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 ***Auto***.

Precharge Delay (tRAS)

The default setting for the Precharge Delay is ***Auto***.

System Memory Frequency

The default setting is ***Auto***.

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
On-Chip Frame Buffer Size: 8MB
DVMT Mode: DVTM
DVMT/Fixed Memory Size: 128MB
SDVO Device Setting: None
SDVO LVDS Protocol: 1Ch SPWG, 18bit
SDVO Panel Number: 1024x768
Boot Display: CRT
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

Onboard PCI-E LAN
By default, this setting is enabled.

LAN PXE Option ROM
By default, this setting is disabled. Other selections include ICH6 Integrated LAN and Marvell PCI-E LAN.

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	

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	
*** On-Chip Serial ATA Setting ***		
On-Chip Serial ATA	Auto	
SATA PORT Speed Settings	Disabled	
PATA IDE Mode	Primary	
SATA port	P1, P3 is Secondary	

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device

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	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode EPP	SPP	
Mode Select ECP Mode	EPP1.7	
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.

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

On-Chip Serial ATA Setting
The fields under the SATA setting include On-Chip Serial ATA (Auto), PATA IDE Mode (Primary) and SATA Port (P1, P3 is Secondary).

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	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378/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
ECP+EPP	Combination of ECP and EPP capabilities
Normal	Normal function

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

		ITEM HELP
ACPI Function	Enabled	
ACPI Suspend	S1(POS)	
RUN VGABIOS if S3 Resume	Auto	Menu Level >
Power Management	User Define 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	75.0%	
Wake-Up by PCI Card	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).

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	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.

Wake up by PCI Card

By default, this field is disabled.

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 using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
INT Pin 1 Assignment	Auto	
INT Pin 2 Assignment	Auto	
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 >
System Temp	45°C/113°F	
CPU Temp	45°C/113°F	
CPU Fan Speed(FAN1)	6750 RPM	
Vcore(V)	1.08 V	
+12 V	12.24 V	
1.8 V	1.87 V	
+5 V	5.14 V	
3.3 V	3.26 V	
VBAT (V)	3.23 V	
5VSB (V)	5.56 V	
Smart Fan Temperature	Disabled	
Fan Tolerance Value	5	

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.

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.

Smart Fan Temperature

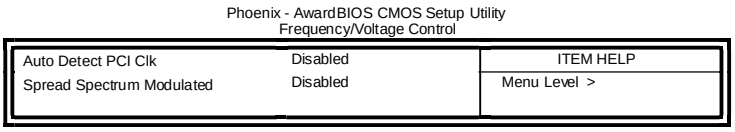
This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

Fan Tolerance Value

The default value is 5.

Frequency/Voltage Control

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



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.

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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

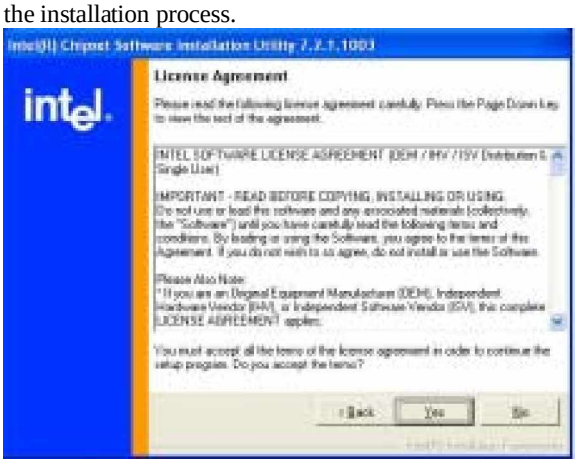
The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation under Windows 2000/XP.

1. Insert the CD that comes with the board. Click ***Intel Chipsets*** and then ***Intel(R) I945GMChipset 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.

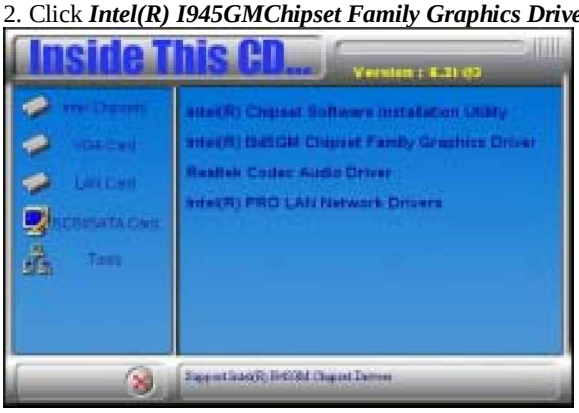
6. The Setup process is now complete. Click ***Finish*** to restart the computer and for changes to take effect. When the computer has restarted, the system will be able to find some devices. Restart your computer when prompted.

VGA Drivers Installation

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

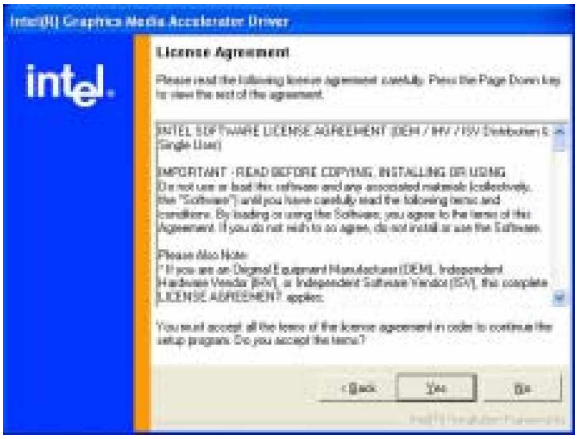
1. Insert the CD that comes with the motherboard. Click ***Intel Chipsets*** and then ***Intel(R) I945GMChipset Drivers***.

2. Click ***Intel(R) I945GMChipset Family Graphics Driver.***

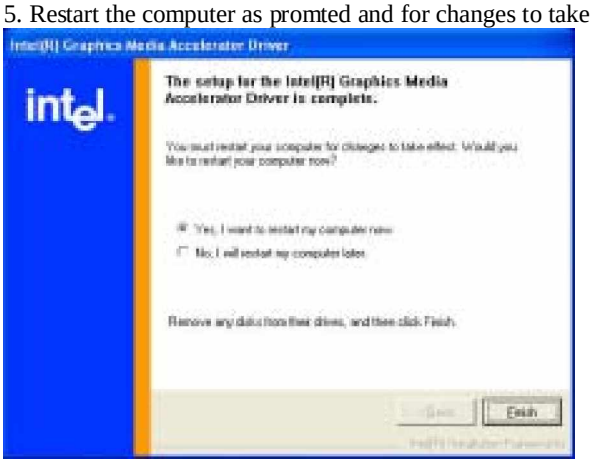


3. When the Welcome screen appears, click ***Next*** to continue.

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) I945GMChipset Drivers***.

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

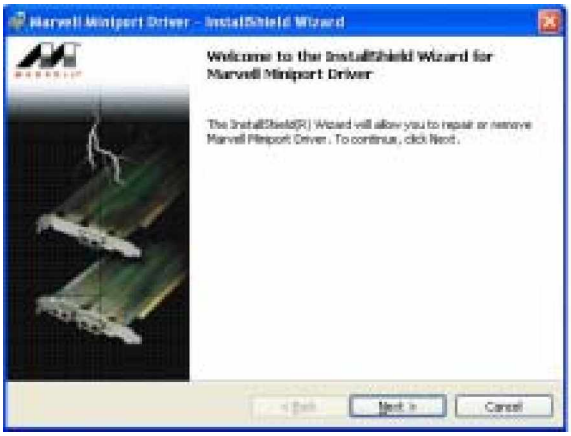
3. Click ***Finish*** to restart the computer and for changes to take effect. .

LAN Drivers Installation

Follow the steps below to 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. Click Next when the Readme Information screen appears to proceed with the drives installation process. When the Installation is complete, click Finish for the changes to take effect.

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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
}
//===========================================================================
```

```
//=============================================================================
//
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// 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;
}
//=============================================================================
```

```
//=============================================================================
//
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// 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
```

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

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