

IB781

VIA CLE266 Full Size CPU Card

USER'S MANUAL

Version 1.0A

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Table of Contents

Introduction	1
Product Description.....	1
Specifications.....	2
Board Dimensions.....	3
Installations	5
Installing the Memory (DDR DIMM).....	6
Setting the Jumpers.....	7
Connectors on IB781.....	11
BIOS Setup	23
Drivers Installation	45
Appendix	51
A. I/O Port Address Map.....	51
B. Interrupt Request Lines (IRQ).....	52
C. Watchdog Timer Configuration.....	53

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Introduction

Product Description

IB781 is a high-performance flexible embedded board based on the VIA CLE 266 chipset. The chipset is based on an innovative and scaleable architecture with proven reliability. It is a two-chip set consisting of the VT8623 North Bridge Controller and VT8235 South Bridge Controller.

IB781 supports the Socket 370 processors with speeds of up to 1.4GHz and with front side bus of up to 133MHz. Two 184-pin DDR DIMM sockets support can accommodate a total memory size of 2GB.

Combining a fully integrated video processing feature set, Integrated UniChrome™ 2D/3D graphics engine and ultra efficient VIA DDR memory controller, the VIA Unichrome™ CLE266 Chipset is designed to enable high quality digital video streaming and DVD playback in a new generation of small form factor PCs and IA devices. Shared memory capacity is up to 64MB.

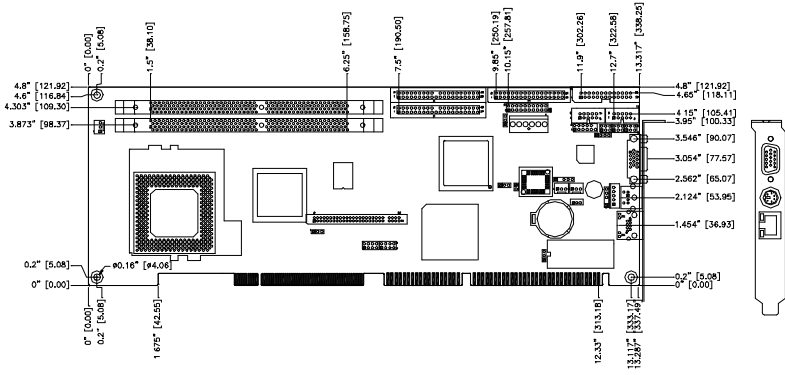
One 10/100Mbps Ethernet onboard is supported by the Realtek 8100C single chip Ethernet controller or it can be replaced with an optional RTL8110s-32 Gigabit LAN.

With dimensions of 338mm x 122mm, IB781 has other features such as Watchdog timer, DiskOnChip socket, four USB 1.1/2.0 ports.

Specifications

Form Factor	PICMG (Full Size CPU Card)
CPU Type	Socket 370 (Intel PIII / Celeron)
CPU Voltage	1.1V~1.85V
System Speed	533MHz~1.4GHz
CPU External Clock	66/100/133Mhz
Green /APM	APM1.2
CPU Socket	Socket 370
Chipset	North Bridge: 548 pin VT8623 (2D/3D)(CLE266) South Bridge: 487 pin VT8235 CD
BIOS	Award BIOS, 2Mbit support ACPI function
Cache	CPU integrated
Memory	two 184-pin DDR DIMM socket supports , Supports DDR200/266 DDR DIMM Max.2GB
VGA	VT8623 Integrated AGP 4X, 2D 128 Bit 3D 128 Bit VGA controller, Analog
MPEG-2 Hardware	Slice Layer, IDCT & Motion Compensation
LCD interface	Support 24-bit TTL LCD, 18BIT LVDS
LAN	RTL 8100C(L)(10/100) or RTL8110s-32 (10/100/1000) Single Chip Ethernet Controller.
Sound	VT8235 Built Sound controller + AC97 Codec ALC655 (Line-out, Line-in, Mic)
LPC I/O	Winbond 83697HF: Parallel x1, COM1, COM2, FDC 2.88MB (3 Mode Support), Hardware monitor (3 thermal inputs, 8 voltage monitor inputs, VID0-4, 1 chassis open detection, 3 Fan Header)
PCI TO ISA Bridge	ITE IT8888
ISA High Drive	Yes
Disk On Chip	Yes
UART/16550A	COM1: RS232 COM2: RS232/422/485
RTC/CMOS	VT8235 built-in
Battery	Lithium battery
Keyboard/Mouse	VT8235 built-in
IDE	VT8235 built-in, IDE1, 2 (Ultra DMA 33/66/100/133)
USB	Supports 1.1/2.0 USB 4 ports
Watchdog Timer	256 levels

Board Dimensions



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Installations

This section provides information on how to use the jumpers and connectors on the IB781 in order to set up a workable system. The topics covered are:

Installing the Memory (DDR DIMM).....	6
Setting the Jumpers	7
Connectors on IB781	11

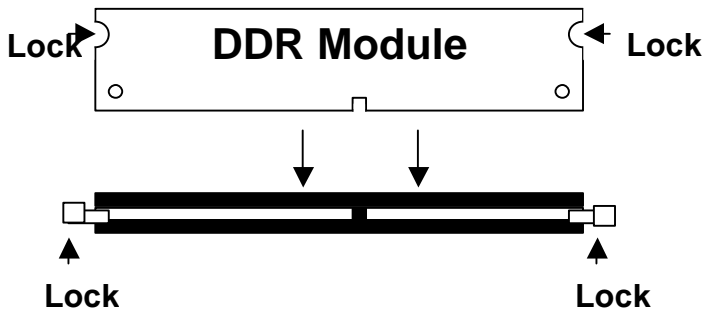
Installing the Memory (DDR DIMM)

The IB781 board supports one 184-pin DDR DIMM socket for a maximum total memory of 1GB in DDR DRAM type. The memory module capacities supported are 64MB, 128MB, 256MB, 512MB and 1GB.

Installing and Removing DIMMs

To install the DDR DIMM, locate the memory slot on the board and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DDR module, press the clips with both hands.



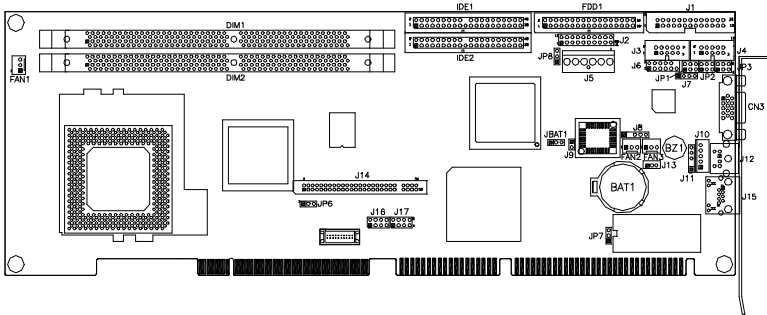
Top View of DIMM Socket

Setting the Jumpers

Jumpers are used on IB781 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 IB781 and their respective functions.

Jumper Locations on IB781	8
JP8: AT / ATX Power Select	9
JBAT1: Clear CMOS Content.....	9
JP1, JP2, JP3: RS232/RS422/RS485 (COM2) Selection	9
JP6: LCD Panel Power Selection	10
JP7: DiskOnChip 2000 Adress.....	10

Jumper Locations on IB781



Jumpers on IB781 Page

JP8: AT / ATX Power Select 9



JBAT1: Clear CMOS Content 9

JP1, JP2, JP3: RS232/RS422/RS485 (COM2) Selection 9

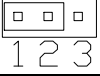
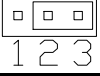
JP6: LCD Panel Power Selection 10

JP7: DiskOnChip 2000 Adress 10

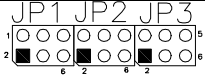
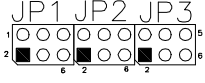
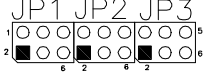
JP8: AT / ATX Power Select

JP8	Setting	Power Supply
 1 2 3	Pin 1-2 Short/Closed	AT
 1 2 3	Pin 2-3 Short/Closed	ATX



JBAT1: Clear CMOS Content

JBAT1	Setting	Function
 1 2 3	Pin 1-2 Short/Closed	Normal Operation
 1 2 3	Pin 2-3 Short/Closed	Clear CMOS Content



JP1, JP2, JP3: RS232/RS422/RS485 (COM2) Selection

JP1, JP2, JP3	Pin Short	Function
	JP1: 1-2 JP2: 3-5, 4-6 JP3: 3-5, 4-6	RS232
	JP1: 3-4 JP2: 1-3, 2-4 JP3: 1-3, 2-4	RS422
	JP1: 5-6 JP2: 1-3, 2-4 JP3: 1-3, 2-4	RS485

JP6: LCD Panel Power Selection

JP6	Setting	Voltage
 1 2 3	Pin 1-2 Short/Closed	3.3V
 1 2 3	Pin 2-3 Short/Closed	5V

JP7: DiskOnChip 2000 Address

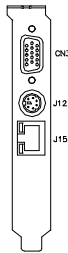
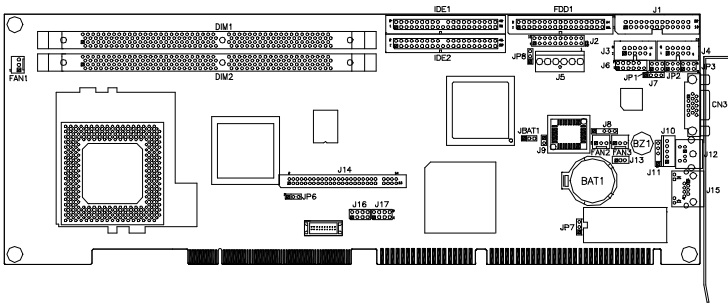
JP7	Setting	Address
 1 2 3	Pin 1-2 Short/Closed	OD000H-OD1FFH
 1 2 3	Pin 2-3 Short/Closed	OD800H-OD9FFH

Connectors on IB781

The connectors on IB781 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB781 and their respective functions.

Connector Locations on IB781	12
FAN1, FAN2: CPU and System Fan Power Connectors	13
FAN3: ATX Power Connector	13
IDE1, IDE2: EIDE Connectors	13
FDD1: Floppy Drive Connector	14
J1: Parallel Port Connector	15
J2: System Function Connector	15
J3, J4: COM1 and COM2 Serial Ports Connector	17
J5: AT P8 Power Supply Connector	17
CN3: VGA CRT Connector	18
J6: External Audio Connector	18
J7: CD-In Audio Connector	18
J8: IrDA Connector	18
J10: External PS/2 Keyboard Connector	19
J11: External PS/2 Mouse Connector	19
J12: PS/2 Keyboard and Mouse Connector	19
J13: Wake On LAN Connector	19
J14: LVDS Connector (18-bit)	20
J15: Gigabit LAN RJ45 Connector	20
J16, J17: USB Connectors	20
J18: TTL Connector	21
FPD RGB Mapping Table	22

Connector Locations on IB781



Connectors on IB781.....	Page
FAN1, FAN2: CPU and System Fan Power Connectors	13
FAN3: ATX Power Connector.....	13
IDE1, IDE2: EIDE Connectors	13
FDD1: Floppy Drive Connector.....	14
J1: Parallel Port Connector	15
J2: System Function Connector	15
J3, J4: COM1 and COM2 Serial Ports Connector	17
J5: AT P8 Power Supply Connector	17
CN3: VGA CRT Connector.....	18
J6: External Audio Connector.....	18
J7: CD-In Audio Connector	18
J8: IrDA Connector	18
J10: External PS/2 Keyboard Connector	19
J11: External PS/2 Mouse Connector	19
J12: PS/2 Keyboard and Mouse Connector.....	19
J13: Wake On LAN Connector	19
J14: LVDS Connector (18-bit).....	20
J15: Gigabit LAN RJ45 Connector	20
J16, J17: USB Connectors	20
J18: TTL Connector	21

FAN1, FAN2: CPU and System Fan Power Connectors



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

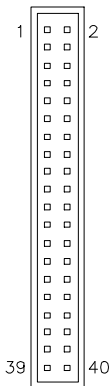
FAN3: ATX Power Connector



Pin #	Signal Name
1	Ground
2	PS_On
3	5VSB

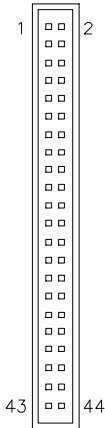
IDE1, IDE2: EIDE Connectors

IDE1: Primary IDE Connector



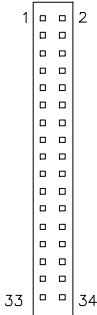
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	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

IDE2: Secondary IDE Connector



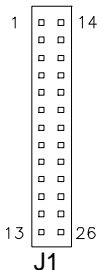
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
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
Vcc	41	42	Vcc
Ground	43	44	N.C.

FDD1: Floppy Drive Connector



Signal Name	Pin #	Pin #	Signal Name
5V/Ground	1	2	RM/LC
5V/Ground	3	4	No connect
5V/Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

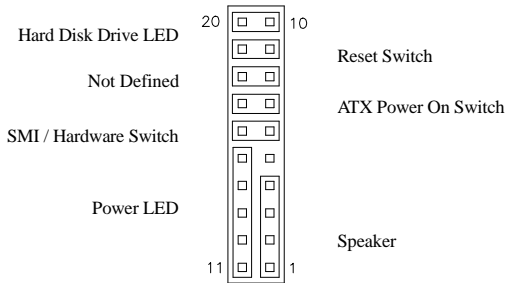
J1: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

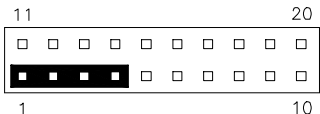
J2: System Function Connector

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



Speaker: Pins 1 - 4

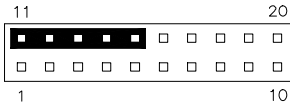
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



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

Power LED: Pins 11 - 15

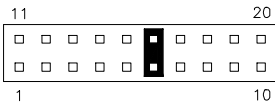
The power LED indicates the status of the main power switch.



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

SMI/Hardware Switch: Pins 6 and 16

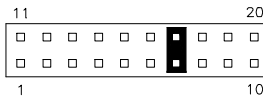
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.



Pin #	Signal Name
6	SMI
16	Ground

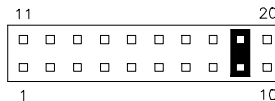
ATX Power ON Switch: Pins 7 and 17

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.



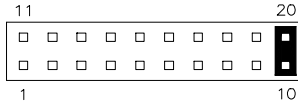
Reset Switch: Pins 9 and 19

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

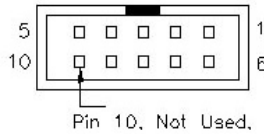
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD Active
20	5V

J3, J4: COM1 and COM2 Serial Ports Connector

J3 and J4 both 10-pin headers, are the onboard serial port connectors.

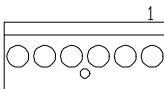


J3
Fixed as
RS-232

J4
Configurable
as RS-232/
RS-422/485
with jumpers
JP2/JP3/JP4

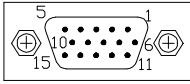
Pin #	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

J5: AT P8 Power Supply Connector



Pin #	Signal Name
1	NC
2	Vcc
3	+12V
4	-12V
5	Ground
6	Ground

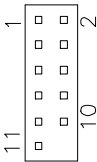
CN3: VGA CRT Connector



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		

J6: External Audio Connector

J6 is used to connect to an optional audio daughter cable card.



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	1	2	LINEOUT_L
Ground	3	4	Ground
LINEIN_R	5	6	LINEIN_L
Ground	7	8	Ground
Mic-In	9	10	VREFOUT
Ground	11		

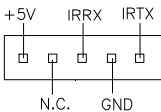
J7: CD-In Audio Connector



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

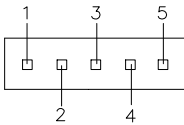
J8: IrDA Connector

J8 is used for an optional IrDA connector.



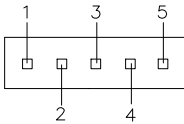
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J10: External PS/2 Keyboard Connector



Pin #	J10
1	Keyboard Clock
2	Keyboard Data
3	NC
4	Ground
5	Vcc

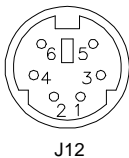
J11: External PS/2 Mouse Connector



Pin #	J11
1	Mouse data
2	N.C.
3	Ground
4	Vcc
5	Mouse clock

J12: PS/2 Keyboard and Mouse Connector

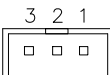
J12 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



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

J13: Wake On LAN Connector

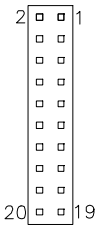
J10 is a 3-pin header for the Wake On LAN function on the motherboard. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 1A.



Pin #	Signal Name
1	+5VSB
2	Ground
3	LAN Wakeup

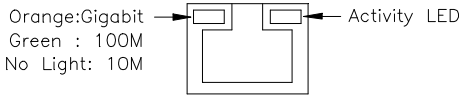
J14: LVDS Connector (18-bit)

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



J15: Gigabit LAN RJ45 Connector

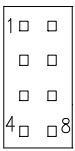
J15 is the Gigabit LAN RJ45 connector.



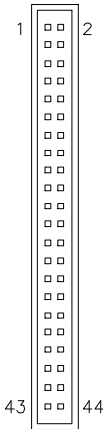
J16, J17: USB Connectors

These two USB headers support a total of four USB ports (1.1/2.0).

Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	Ground



J18: TTL Connector



Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
Ground	3	4	Ground
VDD	5	6	VDD
ENPVEE	7	8	ENPVEE
FPD0	9	10	FPD1
FPD2	11	12	FPD3
FPD4	13	14	FPD5
FPD6	15	16	FPD7
FPD8	17	18	FPD9
FPD10	19	20	FPD11
FPD12	21	22	FPD13
FPD14	23	24	FPD15
FPD16	25	26	FPD17
FPD18	27	28	FPD19
FPD20	29	30	FPD21
FPD22	31	32	FPD23
Ground	33	34	Ground
FP_CLK	35	36	FP_VS
FP_DE	37	38	FP_HS
Ground	39	40	FP_BKLP
Ground	41	42	NC
ENPVDD	43	44	VDD

FPD RGB Mapping Table

	18Bit	24Bit
Pin	RGB	RGB
FPD0		B0
FPD1		B1
FPD2	B2	B2
FPD3	B3	B3
FPD4	B4	B4
FPD5	B5	B5
FPD6	B6	B6
FPD7	B7	B7
FPD8		G0
FPD9		G1
FPD10	G2	G2
FPD11	G3	G3
FPD12	G4	G4
FPD13	G5	G5
FPD14	G6	G6
FPD15	G7	G7
FPD16		R0
FPD17		R1
FPD18	R2	R2
FPD19	R3	R3
FPD20	R4	R4
FPD21	R5	R5
FPD22	R6	R6
FPD23	R7	R7

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	24
BIOS Setup	24
Standard CMOS Setup.....	26
Advanced BIOS Features.....	29
Advanced Chipset Features.....	32
Integrated Peripherals.....	35
Power Management Setup	38
PNP/PCI Configurations.....	41
PC Health Status	42
Frequency/Voltage Control.....	43
Load Fail-Safe Defaults.....	44
Load Setup Defaults	44
Set Supervisor/User Password	44
Save & Exit Setup	44
Exit Without Saving.....	44

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports VIA C3 processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

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

Press to Enter Setup

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

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

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	â ã ß : 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 board 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, Jul 12 2004	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level
IDE Primary Master		Change the day, month, Year and century
IDE Primary Slave		
IDE Secondary Master		
IDE Secondary Slave		
Drive A	1.44M,3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All, But Keyboard	
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)

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

Virus Warning	Disabled	ITEM HELP Menu Level
CPU Internal Cache	Enabled	
External Cache	Enabled	Allows you choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
CPU L2 Cache ECC Checking	Enabled	
Processor Number Feature	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	
Typeomatic Rate Setting	Disabled	
Typeomatic Rate (chars/Sec)	6	
Typeomatic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM>64MB	Non-OS2	
Video BIOS Shadow	Enabled	
Small Logo (EPA) Show	Enabled	

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

CPU Internal Cache / External 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*.

CPU L2 Cache ECC Checking

This field enables or disables the ECC (Error Correction Checking) checking of the CPU level-2 cache. The default setting is *Enabled*.

Processor Number Feature

When enabled, this feature allows external systems to detect the processor number/type of the CPU.

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 an operating system 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

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks.

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.

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*.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

Small Logo (EPA) Show

This field enables the showing of the EPA logo located at the upper right of the screen during boot up.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Clock / Drive Control	Press Enter	ITEM HELP
AGP & P2P Bridge Control	Press Enter	Menu Level
CPU & PCI Bus Control	Press Enter	
Power-Supply Type	ATX	
VGA Share Memory Size	32M	
Select Display Device	CRT+LCD	
Panel Type	1024x 768. 1Ch.18bit	

Phoenix - AwardBIOS CMOS Setup Utility
DRAM Clock/Driver Control

Current FSB Frequency	100MHz	ITEM HELP
Current DRAM Frequency	133MHz	Menu Level
DRAM Clock	By SPD	
DRAM Timing	By SPD	
DRAM CAS Latency	2.5	
Bank Interleave	Disabled	
Precharge to Active(Trp)	3T	
Active to Precharge(Tras)	6T	
Active to CMD(Trcd)	3T	
DRAM Command Rate	2T Command	

Phoenix - AwardBIOS CMOS Setup Utility
AGP & P2P Bridge Control

AGP Aperture Size	64M	ITEM HELP
AGP Driving Control	Auto	Menu Level
AGP Driving Value	DA	
AGP Fast Write	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	

Phoenix - AwardBIOS CMOS Setup Utility
CPU & PCI Bus Control

CPU to PCI Write Buffer	Enabled	ITEM HELP
PCI Master 0 WS Write	Disabeld	Menu Level
PCI Delay Transaction	Disabled	

DRAM Clock / Drive Control

This field provides settings related to DRAM. The fields and their respective default settings include DRAM Clock (By SPD), DRAM Timing (By SPD), DRAM CAS Latency (2.5), Bank Interleave (Disabled), Precharge to Active (3T), Active to Precharge (6T), Active to CMD (3T) and DRAM Command Rate.

Current FSB Frequency

The default setting of the FSB Frequency is 100MHz.

Current DRAM Frequency

The default setting of the DRAM Frequency is 133MHz.

DRAM Clock

The default setting of the DRAM clock is SPD.

DRAM Timing

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

DRAM CAS Latency

This is the period between when the chipset requests data from memory and when the memory is ready to send the data across the bus.

Bank Interleave

This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.

Precharge to Active (Trp)

The amount of time from a bank precharge request to when it can be activated.

Active to Precharge (Tras)

The Active to Precharge timing controls the length of the delay between the activation and precharge commands – the length of time after activation can the access cycle be started again.

Active to CMD (Trcd)

This is the time between a row access request and a column access request.

DRAM Command Rate

This is the time to wait after a chip select before activate and read can be started.

AGP & P2P Bridge Control

The fields related to AGP & P2P Bridge Control and their respective default settings include AGP Aperture Size (64M), AGP Mode (2X), AGP Driving Control (Auto), AGP Driving Value (DA), AGP Fast Write (Disabled), AGP Master 1 WS Write (Disabled) and AGP Master 1 WS Read (Disabled).

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.

AGP Driving Control

This is the period between when the chipset requests data from memory and when the memory is ready to send the data across the bus.

AGP Driving Value

This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.

AGP Fast Write

This accelerates memory write transactions from the chipset to the AGP device.

AGP Master 1 WS Write

When enabled, this changes the default from a 2ws to a 1ws which will increase AGP Writing.

AGP Master 1 WS Read

By default, the AGP bus mastering device waits for at least 2 wait states before it starts a write transaction. When enable, this option sets the delay to 1 wait state.

CPU & PCI Bus Control

The fields related to CPU & PCI Bus Control and their respective default settings include CPU to PCI Write Buffer (Enabled), PCI Master 0 WS Write (Enabled) and PCI Delay Transaction (Disabled).

CPU to PCI Write Buffer

This controls the CPU write buffer to the PCI bus.

PCI Master 0 WS Write

This determines whether the chipset inserts a delay before any writes from the PCI bus.

PCI Delay Transaction

This is used to meet the latency of PCI cycles to and from the ISA bus.

Power-Supply Type

The field selects the power supply type to AT or ATX that is used by the system. The default setting is *ATX*.

VGA Share Memory Size

The field sets memory size that can be shared as VGA memory. The default setting is *32M*.

Select Display Device

The field selects the display device or devices that the system users. The default setting is CRT+LCD.

Panel Type

This field sets the panel type that is supported by the system. Below are the selections for the different panel types:

Panel Type
640x480, 1Ch, 18Bit
800x600, 1Ch, 18Bit
1024x768, 1Ch, 18Bit
1024x768, 1Ch, 24Bit

Integrated Peripherals

This section configures IDE and PCI devices and other peripherals.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

VIA OnChip IDE Device	Press Enter	ITEM HELP
VIA OnChip PCI Device	Press Enter	Menu Level
SuperIO Device	Press Enter	
Init Display First	PCI Slot	

Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip IDE Device

OnChip IDE Channel 0	Enabled	ITEM HELP
OnChip IDE Channel 1	Enabled	Menu Level
IDE Prefetch Mode	Enabled	
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
IDE HDD Block Mode	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip PCI Device

VIA-3058 AC97 Audio	Auto	ITEM HELP
OnChip USB Controller	Enabled	Menu Level
OnChip EHCI Controller	Enabled	
USB Keyboard Support	Disabled	

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device

Onboard FDD Controller	Enabled	ITEM HELP
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	
Onboard Parallel Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	

VIA OnChip IDE Device OnChip IDE Channel 0 / 1

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

IDE Prefetch Mode

These field enables/disables the prefetch buffers in the PCI IDE controller. The prefetch buffers are used as a temporary storage place as data is transferred from one location to another.

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.

VIA OnChip PCI Device VIA-3058 AC97 Audio

By default, the audio controller is enabled.

OnChip USB Controller

By default, the USB controller is enabled for all devices. However, the USB devices, keyboard and USB mouse support options must be enabled separately for them to function.

OnChip EHCI Controller

By default, the EHCI (Enhanced Host Controller Interface) Controller is enabled.

Keyboard Support

By default, the EHCI (Enhanced Host Controller Interface) Controller is enabled.

SuperIO Device**Onboard FDD Controller**

Select *Enabled* if your system has a floppy disk controller installed on the board 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.

UART 2 Mode

UART Mode Select enables you to select the infrared communication protocol.

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

Init Display First

This field allows the system to initialize first the VGA card on chip or the display on the PCI Slot. By default, the *PCI Slot* VGA is initialized first.

Power Management Setup

The Power Management Setup allows 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
HDD Power Down	Disabled	
Suspend Mode	Disabled	
Video Off Option	Suspend -> Off	
Video Off Method	V/H Sync + Blank	
Modem Use IRQ	3	
Soft-Off by PWRBTN	Instant-Off	
Ac Loss Auto Restart	Off	
IRQ/Event Activity	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
IRQ/Event Activity Detect

VGA	OFF	ITEM HELP
LPT & COM	LPT/COM	Menu Level
HDD & FDD	ON	
PCI Master	OFF	
PowerOn by PCI Card	Disabled	
Modem Ring Resume	Disabled	
RTC Alarm Resume	Disabled	
IRQs Activity Monitoring	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
IRQs Activity Monitoring

Primary INTR	ON	ITEM HELP
IRQ3 (COM2)	Enabled	Menu Level
IRQ4 (COM1)	Enabled	
IRQ5 (LPT 2)	Enabled	
IRQ6 (Floppy Disk)	Enabled	
IRQ7 (LPT 1)	Enabled	
IRQ8 (RTC Alarm)	Disabled	
IRQ9 (IRQ2 Redir)	Disabled	
IRQ10 (Reserved)	Disabled	
IRQ11 (Reserved)	Disabled	
IRQ12 (PS/2 Mouse)	Enabled	
IRQ13 (Coprocessor)	Enabled	
IRQ14 (Hard Disk)	Enabled	
IRQ15 (Reserved)	Disabled	

ACPI Function

By default, the ACPI function is enabled.

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 (Default)	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

Under this option, you can also configure other features such as HDD Power Down, Doze Mode and Suspend Mode.

HDD Power Down

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active. Control of this mode is independent of the Power Management mode selected previously.

Suspend Mode

This option decides when to shutdown video for power saving. You can select it as always on or turn off video when system enters suspend mode.

Video Off Option

This option decides when to shutdown video for power saving. You can select it as always on or turn off video when system enters suspend mode.

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 the BIOS to control the video display card if it supports the DPMS feature.
Blank Screen	This option only writes blanks to the video buffer.

Modem Use IRQ

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

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. The default value is *Instant Off*.

AC Loss Auto Restart

This field sets the auto restarting function of the system when there is AC power loss.

IRQ/Event Activity Detect

The items under this field 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	Menu Level Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
Reset Configuration Data	Disabled	
Resources Controlled By	Auto(ESCD)	
IRQ Resources	Press Enter	
DMA Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ for VGA	Enabled	

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.

Assign IRQ for VGA/USB

By default, this fields are Enabled.

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
CPU Warning Temperature	Disabled	Menu Level
Current System Temp.		
Current CPU Temp.		
Current CPU FAN Speed		
Current System FAN Speed		
Vcore(V)		
+3.3V		
+5V		
+12V		
VBAT (V)		
5VSB (V)		
Shutdown Temperature	Disabled	
CPU Fan Failure Warning	Disabled	
Sys. Fan Failure Warning	Disabled	

CPU Warning Temperature

This field sets the temperature threshold that when it is reached, the system would give an audible warning.

Temperatures/Fan Speeds/Voltages

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

Shutdown Temperature

This field sets the temperature threshold that, when it is reached, the system shuts down automatically.

CPU and System Fan Failure Warning

These fields enable or disable the warning function that will sound when the relevant fan fails.

Frequency/Voltage Control

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

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Enable	ITEM HELP
Spread Spectrum	Disabled	Menu Level

Auto Detect DIMM/PCI Clk

This field enables or disables the auto detection of the DIMM/PCI clock. The default setting is *Disabled*.

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.

Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98SE, Windows ME, Windows XP and Windows 2000.

The CD disc that comes with the IB781 embedded board allows you to install drivers for the following items:

- § VIA 4 IN 1 Drivers
- § VIA CLE266 Display Controller Chipset Driver
- § Realtek AC'97 Codec Audio Driver
- § VIA USB 2.0 Driver
- § Realtek Network Interface Controller Drivers

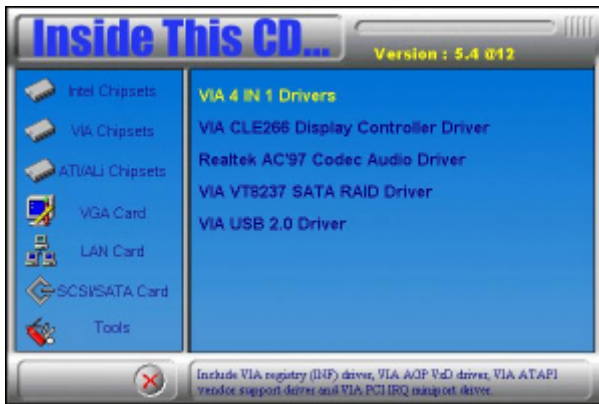
IMPORTANT Note :

Please update your system with Windows 2000 SP4 or Windows XP SP1 and then install the above drivers.

VIA 4in1 Drivers Installation

The VIA 4in1 Driver, to be installed first before the software drivers, will enable Plug & Play INF support for VIA chipset components. Follow the instructions below to complete the installation under Windows 98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click **VIA Chipsets** > **VIA CLE266 Chipset Driver** > **CLE266+VT8237 Chipset Drivers** > **VIA 4 IN 1 Drivers**.



2. When the welcome screen appears, click **Next** to continue.
3. Click **Yes** to agree with the license agreement and README and to continue.
4. Select Normal Installation (in the 4in1 Setup Mode Option screen) and click **Next** to continue.
5. Click on all checkboxes and click **Next** to continue. This will install the following:
 - VIA PCI IDE Bus Driver
 - AGP Driver (AGP3.0 Supported)
 - VIA INF Driver 1.80a
6. Click on “Install VIA PCI IDE Bus Driver” to install it and click **Next** to continue.
7. Click on “Install AGP driver” to install the driver and click **Next** to continue.
8. Click **OK** to restart the computer when prompted.

VIA CLE266 VGA Driver Installation

Follow the steps below to install the VIA CLE266 VGA Drivers.

1. Insert the CD that comes with the motherboard. On the initial screen, do the following. Click **VIA Chipsets** \rightarrow **VIA CLE266 Chipset Driver** \rightarrow **CLE266+VT8237 Chipset Drivers** \rightarrow **VIA CLE266 Display Controller Driver**.
2. When the welcome screen appears, click **Next** to continue.
3. Click **Next** to continue. This step will run the VIA/S3G CLE266 Display Driver Installer.
4. When the screen “Digital Signature Not Found” appears, click **Yes** to continue the installation.
5. Click **Finish** to restart the computer.



Realtek 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 and on the initial screen, click **VIA Chipsets** \rightarrow **VIA CLE266 Chipset Driver** \rightarrow **CLE266+VT8237 Chipset Drivers** \rightarrow **Realtek AC'97 Codec Audio Driver**.

2. Click **Yes** to continue.



3. Click **Finish** to restart the computer.

VIA USB 2.0 Drivers Installation

Follow the steps below to install the VIA USB 2.0 Drivers.

Note : Please update your system to Windows 2000 SP4 or Windows XP SP1, and then install the USB 2.0 drivers.

1. Insert the CD that comes with the motherboard and on the initial screen, click **VIA Chipsets** \rightarrow **VIA CLE266 Chipset Driver** \rightarrow **CLE266+VT8237 Chipset Drivers** \rightarrow **VIA USB 2.0 Driver**.

2. In the welcome screen, click **Next** to continue.



3. Check on the 'Install USB 2.0 Driver' checkbox and click **Next** to continue.

4. Restart the computer when prompted.

Realtek Network Interface Controller Drivers Installation

Follow the steps below to install the Realtek Network Interface Controller Drivers.

1. Insert the CD that comes with the motherboard and on the initial screen click **LAN Card** > **Realtek Network Interface Controller Drivers**
2. When the welcome screen appears, click **Next** to continue.
3. On the next screen, click **Finish** to restart the computer.

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	Serial Port 3
IRQ11	Serial Port 4
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort 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.

```

Filename : Main.cpp
//=====================================================
//
// 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 "W697HF.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_W697HF() == 0)
    {
        printf(" Winbond 83697HF 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 697HF Watch Timer Tester (AUTO DETECT) =====\n");
    printf("      Usage : W697WD reset_time\n");
    printf("      Ex : W697WD 3 => reset system after 3 second\n");
    printf("      W697WD 0 => disable watch dog timer\n");
}
//=====================================================
void EnableWDT(int interval)

```

```

{
    unsigned char bBuf;

    bBuf = Get_W697HF_Reg(0x29);
    bBuf &= (~0x60);
    bBuf |= 0x20;
    Set_W697HF_Reg(0x29, bBuf);
    //enable WDTO

    Set_W697HF_LD(0x08);
    //switch to logic device 8

    bBuf = Get_W697HF_Reg(0xF3);
    bBuf &= (~0x04);
    Set_W697HF_Reg( 0xF3, bBuf);
    //count mode is second

    Set_W697HF_Reg( 0xF4, interval);
    //set timer
    Set_W697HF_Reg( 0x30, 0x01);
    //enable timer
}
//=====
void DisableWDT(void)
{
    Set_W697HF_LD(0x08);
    Set_W697HF_Reg(0x30, 0x00);
    Set_W697HF_Reg(0xF4, 0x00);
    //switch to logic device 8
    //watchdog disabled
    //clear watchdog timer
}
//=====

Filename : W697hf.cpp
//=====
//
// 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 "W697HF.H"
#include <dos.h>
//=====
unsigned int W697HF_BASE;
void Unlock_W697HF (void);
void Lock_W697HF (void);
//=====
unsigned int Init_W697HF(void)
{
    unsigned int result;
    unsigned char ucDid;

    W697HF_BASE = 0x2E;
    result = W697HF_BASE;

    ucDid = Get_W697HF_Reg(0x20);
    if ( ucDid == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x4E;
    result = W697HF_BASE;

    ucDid = Get_W697HF_Reg(0x20);
    if ( ucDid == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x00;
    result = W697HF_BASE;

Init_Finish:
    return (result);
}
//=====
void Unlock_W697HF (void)
{
    outputb(W697HF_INDEX_PORT, W697HF_UNLOCK);
    outputb(W697HF_INDEX_PORT, W697HF_UNLOCK);
}
//=====

```

```

void Lock_W697HF (void)
{
    outportb(W697HF_INDEX_PORT, W697HF_LOCK);
}
=====
void Set_W697HF_LD( unsigned char LD)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, W697HF_REG_LD);
    outportb(W697HF_DATA_PORT, LD);
    Lock_W697HF();
}
=====
void Set_W697HF_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    outportb(W697HF_DATA_PORT, DATA);
    Lock_W697HF();
}
=====
unsigned char Get_W697HF_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    Result = inportb(W697HF_DATA_PORT);
    Lock_W697HF();
    return Result;
}
=====

Filename : W697hf.h
=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
=====
#ifndef __W697HF_H
#define __W697HF_H                1
=====
#define W697HF_INDEX_PORT        (W697HF_BASE)
#define W697HF_DATA_PORT        (W697HF_BASE+1)
=====
#define W697HF_REG_LD            0x07
=====
#define W697HF_UNLOCK            0x87
#define W697HF_LOCK              0xAA
=====
unsigned int Init_W697HF(void);
void Set_W697HF_LD( unsigned char);
void Set_W697HF_Reg( unsigned char, unsigned char);
unsigned char Get_W697HF_Reg( unsigned char);
=====
#endif // __W697HF_H

```

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