

IB799

VIA CN400
5.25-inch SBC

USER'S MANUAL

Version 1.0

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Introduction

Product Specifications

IB799

CPU Supported

VIA Eden-V4 or VIA C7 processors

CPU Voltage

1.004V~1.148V

Chipset

VIA CN700 Chipset

North Bridge: VIA CN700

South Bridge: VIA VT8237R+

Processor Operating Frequency

400MHz / 533MHz / 800MHz

L2 Cache

128KB (CPU integrated)

Power Management

APM 1.2

BIOS

Award BIOS, ACPI supported

System Memory

Two DDR-II slots

Supports DDR2 400/533/667 SDRAM

Max. 2GB (dual channel)

VGA

VIA CN700 built-in 128-bit Unichrome Pro

3D/2D controller

Supports 16/32/64MB frame buffer size

Supports MPEG-2 video playback

LVDS

VIA VT1631L dual channel LVDS transmitter

Supports 18/24-bit dual LVDS

LAN

LAN1: VIA 8237R+ built-in 10/100 LAN

LAN2: Realtek RTL8110S-32 Gigabit LAN

(IB799F only)

Audio

VIA VT8237R+ built-in audio controller with

AC97 codec

ALC655 5.1 channel (Line-out, Line-in, Mic)

LPC I/O

Winbond 83627EHF supports Parallel x 1, IrDA, I/O

COM1

COM2 (RS232), FDC (slim type), hardware

monitoring

Secondary I/O

Fintek F81216D supports COM3, COM4

(RS232)

Keyboard Controller

Built in Winbond 83627EHF

IDE Interface

Supports two channels, Ultra DMA 33/66/100

FEATURES

- Supports VIA CN700, 400/533/800MHz FSB

- Supports VIA Eden-V4, 400MHz~1.2GHz

- Supports VGA, LVDS, MPEG-2 playback

- Built-in 10/100 LAN, optional Gigabit LAN

- Two DDR-II sockets support up to 2GB

- Six USB, Two Serial ATA, four COM ports

- One PCI, PCI-104, optional CF socket

- Digital I/O, Watchdog timer

FDD Interface

Supports one 3.5" disk drive

Serial ATA

VIA VT8237R+ built-in SATA controller

Supports 2 ports (RAID 0, 1)

Parallel Port

One parallel port supports SPP/EPP/ECP

Serial Ports

Four RS-232 ports

Watchdog Timer

Generates system reset; 256 levels

Hardware Monitoring

Built in Winbond W83627EHF; monitors

system/ CPU temperature and voltage status

USB

USB 2.0 compliant

Supports 6 USB ports (2 via pin header)

Keyboard and Mouse Connector

PS/2 type keyboard and mouse connectors

Expansion Slots

1 PCI, support 2 bus master

PCI-104

Compact Flash Type II (solder side)

Onboard Connector/Headers

Serial ATA x2, 40-pin IDE1, 44-pin IDE2, FDD,

LPT, VGA/CRT, LVDS x2, LAN1, LAN2,

COM1~4, Audio, KB/mouse, USB1~6, Digital

COM1~4, I/O

Power Connector

4-pin AT power connector

Form Factor

5.25-inch SBC

Dimensions

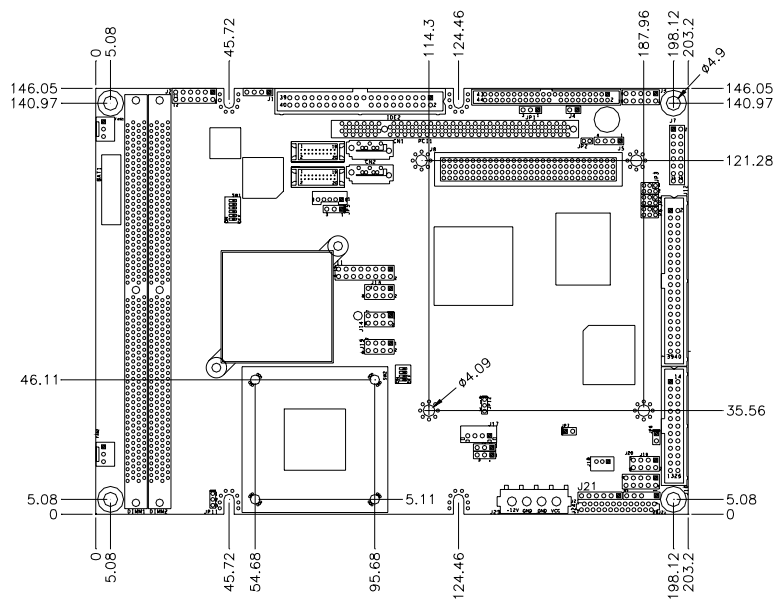
203mm x 146mm

Checklist

Your IB799 package should include the items listed below.

- The IB799 Embedded Board
- This User's Manual
- 1 Driver CD
- Cable kit including:
 - IDE7 40-pin to 44-pin IDE cable
 - IDE11 UDMA66 40-pin IDE cable
 - VGA11 VGA CRT cable (27cm)
 - Audio-6A audio cable (Line in, Line out, Microphone)
 - USB2K-4 USB 2.0 cable (30cm)
 - PK1-40 4-DSUB9 COM port cable
 - FF2 Flexible flat FDD cable

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the IB799 in order to set up a workable system. The topics covered are:

Installing the Memory (DIMM).....	5
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Installing the Memory (DIMM)

The IB799 Embedded Board supports two DDR memory sockets for a maximum total memory of 2GB in DDR memory type. The memory module capacities supported are 64MB, 128MB, 256MB, 512MB and 1GB. The following table lists the supported DDR DIMM configurations.

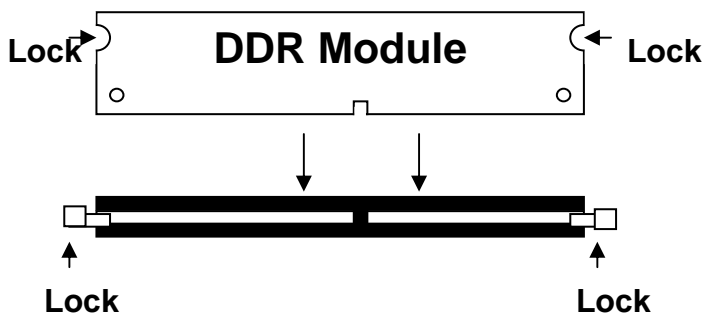
Supported DDRM DIMM Configurations.

Density	64 Mbit		128Mbit		256Mbit		512Mbit	
	X8	X16	X8	X16	X8	X16	X8	X16
Device Width	X8	X16	X8	X16	X8	X16	X8	X16
Single/Double	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS
184-pin DDR	64/128MB	32MB/NA	128/256MB	64MB/NA	256/512MB	128MB/NA	512/1024M	256MB/NA

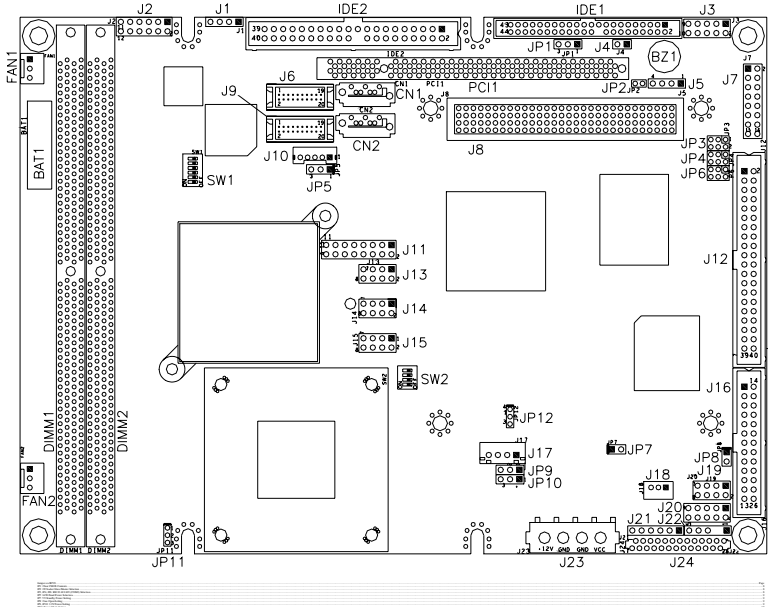
Installing and Removing Memory Modules

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

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





Jumper Locations on IB799





JP1: Clear CMOS Contents

Use JP1 to clear the CMOS contents. *Note that the power connector should be disconnected from the board before clearing CMOS.*

JP13	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

JP2: CF Socket Slave/Master Selection

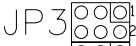
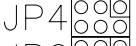
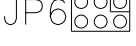
JP2	Setting	CF Socket
	Open	Slave (default)
	Close	Master

JP3, JP4, JP6: RS232/422/485 (COM2) Selection



COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.



The following table describes the jumper settings for COM2 selection.

COM2 Function	RS-232 (Default)	RS-422	RS-485
Jumper Setting (pin closed)  JP3  JP4  JP6	JP6: 3-5 & 4-6	JP6: 1-3 & 2-4	JP6: 1-3 & 2-4
	JP4: 3-5 & 4-6	JP4: 1-3 & 2-4	JP4: 1-3 & 2-4
	JP3: 1-2	JP3: 3-4	JP3: 5-6



JP5: LCD Panel Power Selection

JP5	Setting	Power
	Pin 1-2 Short/Closed	3.3V (default)
	Pin 2-3 Short/Closed	5V



JP7: 5V Standby Power Setting

JP7	Setting	Power Setting
	Open	AT Mode (default)
	Close	ATX Mode



JP8: Case Open Setting

JP8	Setting	Case
	Open	Case Open
	Close	Case Closed

JP9, JP10: 3.3V Power Setting

JP9, JP10	Setting	3.3V Power Setting
	Pin 1-2 Short/Closed	From DC to DC circuit (default for AT Mode)
	Pin 2-3 Short/Closed	ATX power connector

JP12: Power Mode Setting

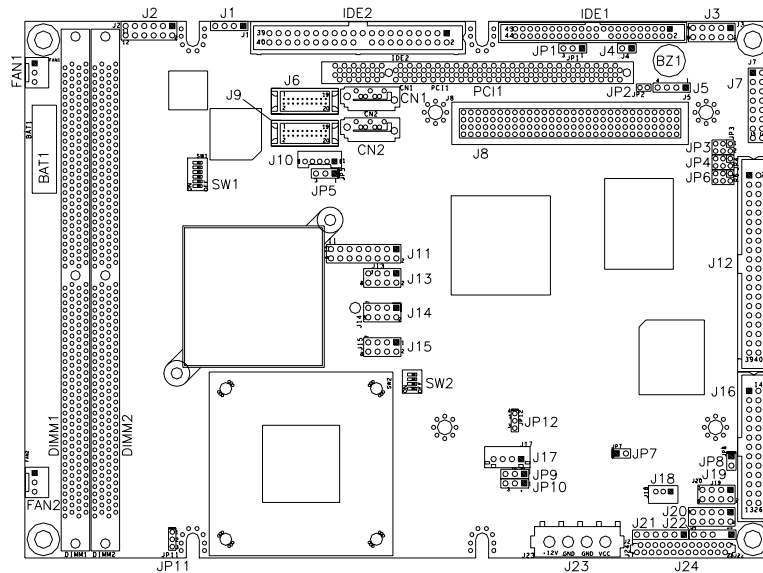
JP12	Setting	Power Mode
 1 2 3	Pin 1-2 Short/Closed	ATX Mode
 1 2 3	Pin 2-3 Short/Closed	AT Mode

Connectors on IB799

The connectors on IB799 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB799 and their respective functions.


Connector	Function
Keyboard	Keyboard
Floppy Disk Drive	Floppy Disk Drive
Hard Disk Drive	Hard Disk Drive
Printer	Printer

Connector Locations on IB799



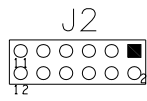
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PCI1: PCI Slot	20
DIMM1, DIMM2: DDR2 DIMM Sockets	20

J1: CD-In Connector



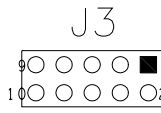
Pin #	Signal Name
1	CD-In L CH
2	GND
3	GND
4	CD-In R CH

J2: Audio Pin Header



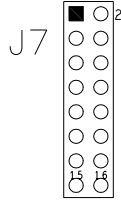
Signal Name	Pin #	Pin #	Signal Name
Line out R	1	2	Line Out L
GND	3	4	GND
Line In R	5	6	Line In L
GND	7	8	GND
Mic BIAS	9	10	Mic
GND	11		

J3: 10/100 LAN Pin Header



Signal Name	Pin	Pin	Signal Name
Vcc	1	6	Link LED
RX+	2	7	RX-
ACT LED	3	8	Ground
VCC	4	9	Ground
TX+	5	10	TX-

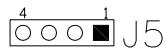
J7: Gigabit LAN Connector (used with ID240)



Signal Name	Pin	Pin	Signal Name
MDI0+	1	9	MDI0-
2.5V	2	10	GND
MDI1+	3	11	MDI1-
MDI2+	4	12	MDI2-
2.5V	5	13	2.5V
MDI3+	6	14	MDI3-
LINK_UP	7	15	ACT_LED
Link1000_LED	8	16	Link100_LED

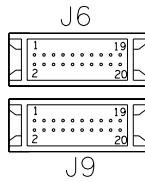
J4: SMI Button 2-pin Header

J5: PC Speaker Pin Header



Pin #	Signal Name
1	PC SPK-
2	NC
3	GND
4	PC SPK+

J6, J9: 1st and 2nd Channel LVDS Connector (DF13-20)



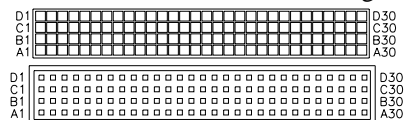
Signal Name	Pin	Pin	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

**J8: PCI-104 Connector
Bus Signal Assignments**

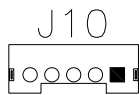
J6				
Pin	A	B	C	D
1	GND/5.0V KEY ²	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	GND/3.3V KEY ²

* The shaded area denotes power or ground signals.

* The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connected for GND for shielding.

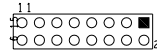


J10: LCD Inverter Output



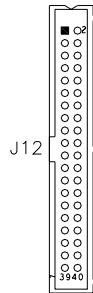
Pin #	Signal Name
1	+12V
2	Ground
3	BLT_ON
4	NC
5	Vcc

J11: VGA CRT Connector



Signal Name	Pin	Pin	Signal Name
R	1	9	+5V
G	2	10	GND
B	3	11	NC
NC	4	12	DDCDAT
GND	5	13	HSYNC
GND	6	14	VSYNC
GND	7	15	DDCCLK
GND	8	16	Protect pin

J12: COM1/2/3/4 Ports

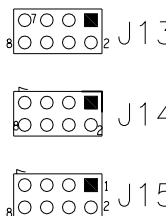


Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	DSR, Data set ready
3	RXD, Receive data
4	RTS, Request to send
5	TXD, Transmit data
6	CTS, Clear to send
7	DTR, Data terminal ready
8	RI, Ring indicator
9	Ground
10	No Connect.

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

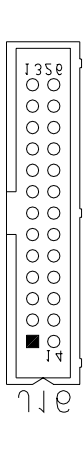
Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	DSR	RTS-	NC
3	RX	TX+	DATA+
4	RTS	RTS+	NC
5	TX	RX+	NC
6	CTS	CTS+	NC
7	DTR	RX-	NC
8	RI	CTS-	NC
9	GND	GND	GND
10	NC	NC	NC

J13, J14, J15: USB0/1/2/3/4/5 Pin Header



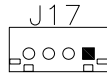
Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
USB-	2	6	USB+
USB+	3	7	USB-
Ground	4	8	Vcc
Ground	4	8	Vcc

J16: 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

J17: ATX Mode Power Connector



Pin #	Signal Name
1	PS On
2	5VSB
3	+3.3V
4	+3.3V

J18: Wake On LAN Connector

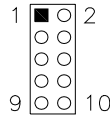
J18 is a 3-pin header for the Wake On LAN function. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 200mA.



Pin #	Signal Name
1	+5VSB
2	Ground
3	-PME

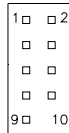
J19: System Function Connector

J19 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status.



Signal Name	Pin #	Pin #	Signal Name
HD_LED+	1	2	PWR/ SLP_LED+
HD_LED-	3	4	PWR/ SLP_LED-
RST_SW-	5	6	PWR_SW+
RST_SW+	7	8	PWR_SW-
Reserved	9	10	NC

J20: Digital I/O Connector (4 in, 4 out)



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	Vcc
Out3	3	4	Out1
Out2	5	6	Out0
In3	7	8	In1
In2	9	10	In0

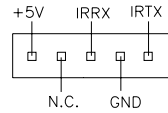
J21: Keyboard/Mouse Pin Header



Pin #	Signal Name
1	KB Data
2	KB Clock
3	MS Data
4	MS Clock
5	GND
6	Vcc

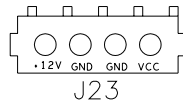
J22: IrDA Connector

J22 is used for an optional IrDA connector for infrared wireless communication.



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

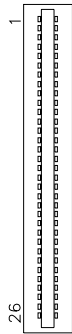
J23: AT Power Supply Connector



Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	+Vcc

J24: Floppy Drive Connector

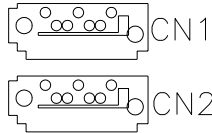
J24 is a slim 26-pin connector and will support up to 2.88MB FDD.



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

J25: Compact Flash Socket

CN1, CN2: Serial ATA Connectors



PCI1: PCI Slot

DIMM1, DIMM2: DDR2 DIMM Sockets

BIOS Setup

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

BIOS Setup	1
Main	1
Advanced	1
BIOS Features	1
Boot	1
Security	1
Miscellaneous	1
Exit	1

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Pentium 4 processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the 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 - Award Workstation BIOS CMOS Setup Utility

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

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

Note: *If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

Warning: *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Setup

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

Phoenix - Award WorkstationBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Feb 18 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	None	
IDE Secondary Slave		
Drive A	1.44M, 3.5 in.	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

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

Date

The date format is:

- Day :** Sun to Sat
- Month :** 1 to 12
- Date :** 1 to 31
- Year :** 1994 to 2079

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

Time

The time format is: **Hour** : **00 to 23**
 Minute : **00 to 59**
 Second : **00 to 59**

To set the time, highlight the "Time" field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

IDE Primary HDDs / IDE Secondary HDDs

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

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

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

The Access Mode selections are as follows:

 Auto
 Normal (HD < 528MB)
 Large (for MS-DOS only)
 LBA (HD > 528MB and supports
 Logical Block Addressing)

Drive A

These fields identify the types of floppy disk drive 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 - Award Workstation BIOS CMOS Setup Utility
Advanced BIOS Features

		ITEM HELP
Virus Warning	Disabled	Menu Level
CPU L1 & L2 Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
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	
HDD S.M.A.R.T. Capability	Disabled	

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 L1/L2 Cache

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

Quick Power On Self Test

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

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS/ZIP*, *HDD-0*, *SCSI*, *CDROM*, *HDD-1*, *HDD-2*, *HDD-3*, *LAN* 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.

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 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*.

HDD S.M.A.R.T. Capability

This field enables or disables the SMART feature of the hard disk.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - Award WorkstationBIOS CMOS Setup Utility
Advanced Chipset Features

		ITEM HELP
Memory Frequency For	Auto	Menu Level
AGP Aperture Size	64MB	
UMA Frame Buffer Size	64MB	
Video Display Devices	Auto	
Tv Standard	NTSC	
Memory Hole	Disabled	
Current FSB Frequency		
Current DRAM Frequency		
System BIOS Cacheable	Enabled	
Memory Timing Parameter	Auto	
AUTO CAS Latency		
AUTO TRCD		
AUTO TRP		
AUTO TRAS		
MANUAL CAS Latency	1 Clock	
MANUAL TRCD	1 Clock	
MANUAL TRP	1 Clock	
MANUAL TRAS	1 Clock	
Onboard SATA chip mode	SATA mode	

Memory Frequency For

This field sets the frequency of the DRAM memory installed. The default setting is *Auto*.

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 *64MB*.

UMA Frame Buffer Size

By default, the UMA Frame Buffer Size is *64MB*. This memory is shared with the system memory.

Video Display Devices

This field determines the display output device where the system boots. The options are Auto, CRT and TV.

TV Standard

This field sets the TV Standard as NTSC, PAL, SECAM or can be set off. The default setting is *Off*.

Memory Hole

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*.

Current FSB Frequency

This field indicates the current FSB frequency.

Current DRAM Frequency

This field indicates the current DRAM frequency.

System BIOS Cacheable

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

Memory Timing Parameter

This field sets the CAS Latency, TRCD, TRP and TRAS. The default setting is *Auto*.

Onboard SATA chip mode

This field determines the behavior of Serial ATA. The default setting is SATA mode. Choosing RAID mode enables Serial ATA drives to work as RAID 0,1.

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals.

Phoenix - Award Workstation BIOS CMOS Setup Utility
Integrated Peripherals

		ITEM HELP
South OnChip IDE Device	Press Enter	
South OnChip PCI Device	Press Enter	Menu Level
Init Display First	PCI Slot	
USB 2.0 Controller	Disabled	
OnChip USB Controller	Enabled	
OnChip USB KBC Controller	Disabled	
IDE HDD Block Mode	Enabled	
POWER ON Function	BUTTON ONLY	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
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	On	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
PWRON After PWR-Fail	Off	
Onboard Serial Port 3	3E8H	
Serial Port 3 Use IRQ	IRQ11	
Onboard Serial Port 4	2E8H	
Serial Port 4 Use IRQ	IRQ10	

South OnChip IDE Device

This field allows the activating of the IDE channels supported by the on board chipset. Each channel can be activated separately.

South OnChip PCI Device

This field allows the activating of the PCI devices supported by the chipset.

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.

USB 2.0 Controller

The options for this field are *Enabled* and *Disabled*. By default, this field is set to *Disabled*. In order to use USB 2.0, necessary OS drivers must be installed first.

OnChip USB KBC Controller

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

Power On Function

This field sets how the system can be powered on from a system off state. The default setting is *Button Only*.

Onboard FDC Controller

Select *Enabled* if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it.

Onboard Serial/Parallel Port

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

Serial Port 1	3F8H/IRQ4
Serial Port 2	2F8H/IRQ3
Serial Port 3	3E8H/IRQ11
Serial Port 4	2E8H/IRQ10
Parallel Port	378H/IRQ7

UART Mode Select

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

Parallel Port Mode

This field allows you to determine parallel port mode function.

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

PWRON After PWR-Fail

This field sets the system power status whether on or off when power returns from a power failure situation. The default setting is *Off*.

Power Management Setup

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

Phoenix - Award Workstation BIOS CMOS Setup Utility
Power Management Setup

ACPI Function	Enabled	ITEM HELP
ACPI Suspend Type	S1 (POS)	Menu Level
Power Management Option	User Define	
HDD Power Down	Disabled	
Video Off Option	Suspend -> Off	
Video Off Method	V/H SYNC+Blank	
Modem Use IRQ	3	
Soft-Off by PWR-BTTN	Instant-Off	
RTC Alarm Resume	Disabled	
Date (of Month) Alarm	0	
Time (hh:mm:ss) Alarm	0 : 0 : 0	

ACPI Function

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

ACPI Suspend Type

This field sets the ACPI Suspend Type. The default setting is *S1*.

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.

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.

Video Off Option

This field sets the video off option. By default, video goes into suspend state and then Off.

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.

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.

RTC Alarm Resume

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

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 - Award Workstation BIOS CMOS Setup Utility
PnP/PCI Configurations

Reset Configuration Data	Disabled	ITEM HELP
Resources Controlled By IRQ Resources	Auto (ESCD) Press Enter	Menu Level
PCI/VGA Palette Snoop	Disabled	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
Assign IRQ for VGA	Enabled	
Assign IRQ for USB	Enabled	
PCI Latency Time(CLK)	64	

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

This field enables the assigning of an IRQ for VGA.

Assign IRQ for USB

This field enables the assigning of an IRQ for USB.

PCI Latency Timer

This field sets the PCI latency clock. By default, the setting is *64*.

PC Health Status

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

Phoenix - Award Workstation BIOS CMOS Setup Utility
PC Health Status

		ITEM HELP
CPU Warning Temperature	75°C/167°F	
Current System Temp.	39°C/102°F	
Current CPU Temp.	32°C/89°F	
Current Chassis Temp.	32°C/89°F	
CPU FAN Speed	0 RPM	
System FAN Speed	4166 RPM	
Chassis FAN Speed	0 RPM	
Vcore (V)	1.63V	
VCC3(V)	3.37V	
+5(V)	5.05V	
+12(V)	12.09V	
-12(V)	(-)-12.03V	
VBAT(V)	3.21V	
5VSB(V)	5.05V	
Shutdown Temperature	Disabled	
CPU Fan Failure Warning	Disabled	
Sys. Fan Failure Warning	Disabled	
Aux. Fan Failure Warning	Disabled	

CPU Warning Temperature

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

Temperatures/Fan Speeds/Voltages

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

Shutdown Temperature

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

Fan Failure Warning

This field allows the user to set the Fan warning so that when the CPU(Fan3)/Sys.(Fan1)/Aux.(Fan2) is stop running, the system sounds a warning, this function can help user to prevent damage the system that is caused by Fan stop running.

Frequency/Voltage Control

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

Phoenix - Award WorkstationBIOS CMOS Setup Utility
Frequency/Voltage Control

Spread Spectrum	Disable	ITEM HELP
		Menu Level

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 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/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 98, Windows NT 4.0 and Windows 2000. 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:

ATI Chipset Software Installation Utility.....	41
Realtek AC97 Codec Audio Driver Installation	45
Realtek RTL8100 LAN Drivers Installation.....	47

IMPORTANT NOTE:

Please also install Serial ATA and RAID drivers with the included floppy disks.

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

ATI Chipset Software Installation Utility

The ATI Software Installation Utility, to be installed first before the software drivers, will enable Plug & Play INF support for ATI components. Follow the instructions below to complete the installation under Windows 2000/XP.

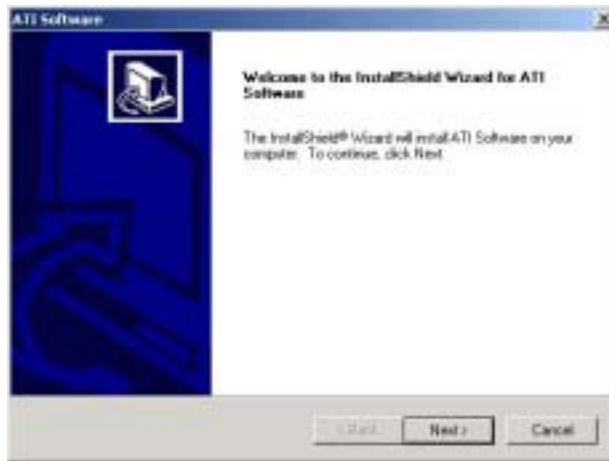
1. Insert the CD that comes with the motherboard and the screen below would appear. Click ATI RS300M Chipset Drivers.



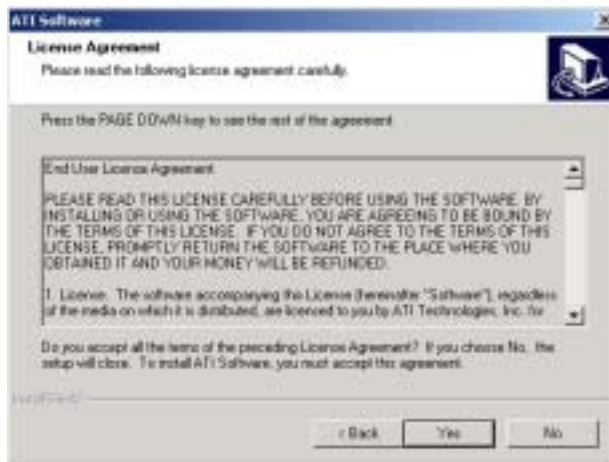
2. Click ATI Mobility Radeon 9100 IGP Drivers.



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



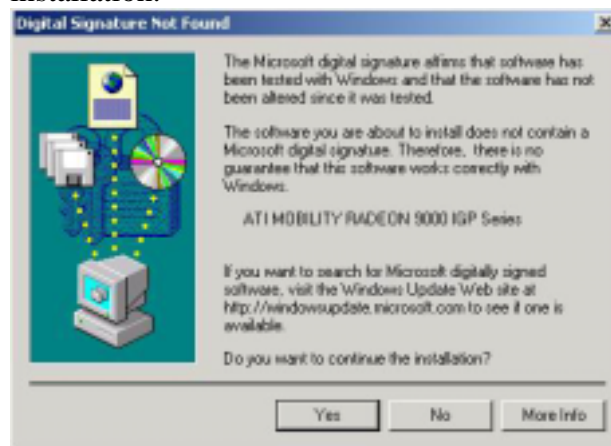
4. Click Yes to accept the software license agreement and proceed with the installation process.



5. On Select Components screen, click Express to continue the installation.



6. When this screen appears, click Yes to continue the installation.



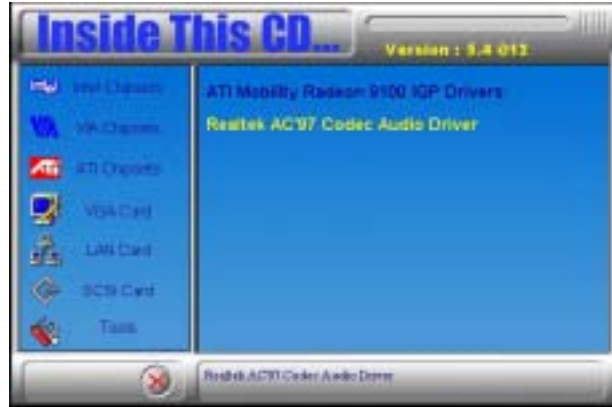
7. The Setup process is now complete. Click Finish to restart the computer and for changes to take effect. When the computer has restarted, the system will be able to find some devices. Restart your computer when prompted.



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 CPU card and the screen below would appear. Click Intel Chipsets. Click Realtek AC97 Codec Audio Drivers to start the drivers installation.



2. Click Yes to continue the installation.



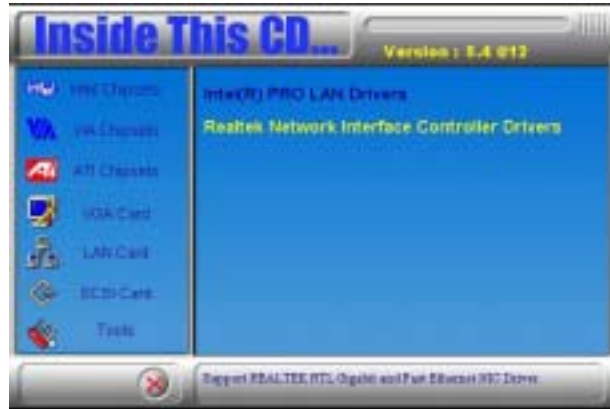
3. Click Finish to restart the computer and for changes to take effect.



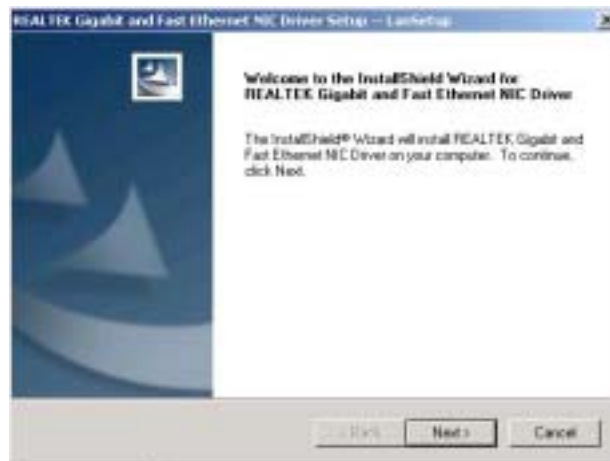
Realtek RTL8100 LAN Drivers Installation

Follow the steps below to start installing the Realtek LAN drivers.

1. Insert the CD that comes with the CPU. In the initial screen, click on LAN Card on the left side. Then, select Realtek Network Interface Controller Drivers.



2. When the Welcome screen appears, click Next to start the drivers installation.



3. Click Finish to complete the setup and for changes to take effect.



Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	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); //switch to logic device 8
    Set_W697HF_Reg(0x30, 0x00); //watchdog disabled
    Set_W697HF_Reg(0xF4, 0x00); //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)
{
    outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
    outportb(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
//=====
//
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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.
//
//=====
#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

```

D. Digital I/O Sample Code

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 <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "W697HF.H"
//-----
void ClrKbBuf(void);
int main (int argc, char *argv[]);
void SetDioInupt(unsigned char);
unsigned char GetDioOutput(void);
//-----
int main (int argc, char *argv[])
{
    if (Init_W697HF() == 0)
    {
        printf("Can not detect Winbond 83697HF, program abort.\n");
        return(1);
    }

    printf("Current DIO input is 0x%X\n", GetDioOutput());

    printf("Set DIO output to high\n");
    SetDioInupt(0x0F);

    printf("Set DIO output to low\n");
    SetDioInupt(0x00);

    return 0;
}
//-----
void SetDioInupt(unsigned char data)
{
    Set_W697HF_LD( 0x07);
    Set_W697HF_Reg(0xF1, ((data & 0x0F) << 4));
}
//-----
unsigned char GetDioOutput(void)
{
    unsigned char result;

    Set_W697HF_LD( 0x07);
    result = Get_W697HF_Reg(0xF1, (data & 0x0F));
    return (result);
}
//-----
void ClrKbBuf(void)
{
    while(kbhit())
    {
        getch();
    }
}
//-----

Filename : W697hf.cpp
//=====
//
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```

```

// 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;

    W697HF_BASE = 0x2E;
    result = W697HF_BASE;
    if (Get_W697HF_Reg(0x20) == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x4E;
    result = W697HF_BASE;
    if (Get_W697HF_Reg(0x20) == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x00;
    result = W697HF_BASE;

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