Global
A M E R I C A N

integration with integrity

User's Manual

5 1/4" Embedded Controller 3307546

Version 1.0, March 2004

Copyrights

This manual is copyrighted and all rights are reserved. It does not allow any non authorization in copied, photocopied, translated or reproduced to any electronic or machine readable form in whole or in part without prior written consent from the manufacturer.

In general, the manufacturer will not be liable for any direct, indirect, special, incidental or consequential damages arising from the use of inability to use the product or documentation, even if advised of the possibility of such damages. The manufacturer keeps the rights in the subject to change the contents of this manual without prior notices in order to improve the function design, performance, quality and reliability. The author assumes no responsibility for any errors or omissions, which may appear in this manual, nor does it make a commitment to update the information contained herein.

Trademarks

Intel is a registered trademark of Intel Corporation.
Award is a registered trademark of Award Software, Inc.

All other trademarks, products and or product's name mentioned herein are mentioned for identification purposes only, and may be trademarks and/or registered trademarks of their respective companies or owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

FEDERAL COMMUNICATIONS COMMISSION (FCC) FOR CLASS A DEVICES

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE CERTIFICATION

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

WARNINGS

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

CAUTION

Electrostatic discharge (ESD) can damage 3307546 components.
Do the described procedures only at an ESD workstation.
If no such station is available, you can provide some ESD protection
by wearing an antistatic wrist strap and attaching it to a metal part
of the computer chassis.

Safety Information

Before installing and using the 3307546, note the following precautions:

- W   Read all instructions carefully.
- W   Do not place the unit on an unstable surface, cart, or stand.
- W   Follow all warnings and cautions in this manual.
- W   When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- W   Avoid using the system near water, in direct sunlight, or near a hearing device.

Table of Contents

Chapter 1
General Information

1.1 Feature

3307546 is a member of GAI's Pentium-M based Embedded CPU Board computer family. The features of this series are as follows:

W   Support Intel® Pentium-M (LV/ULV) Processor

W   Support DDR200/266MHz SDRAM

W   Internal Graphics Features

W   Support dual 18/24 bit LVDS

W   Support TV-Out function (optional)

1.2 Specifications

System Architecture

W   5.25" drive form factor

CPU Support

W   Intel® Micro-FCPGA Socket 478 Pentium-M processor

W   Intel® Micro-FCBGA 479-pin Pentium-M (LV/ULV) processor (optional)

W   1M L2 cache on-die

Memory

W   Max. 2GB memory, DDR DIMM x 2

W   Support un-buffered ECC DIMM

BIOS

W   Award System BIOS

W   Plug & Play support

W   ACPI 1.0b compliant

W   4M bits flash ROM

Chipset

W   Intel® 855GM(E)

W   Intel® 82801DB x 1 I/O controller Hub (ICH4)

W   Firmware Hub (FWH) 4M bits flash ROM x 1

LAN

W   Intel® 82551QM x 1 + ICH4 integrated LAN

VGA

- W Intel® 855GM(E) chipset integrated with graphics controller
- W Fully PC98 and PC99 compliant
- W On-board LVDS transmitter
- W 2.0mm pin header CRT connector/DF 13-20DP, 20-pin connector x 2 for LVDS panel output
- W Up to 64MB of dynamic video memory allocation
- W Hardware motion compensation assist for software MPEG/DVD decoder

I/O interface

- W LAN: RJ45 (90/180) with LED connector x 2
- W USB: JST 2.0, 6-pin connector x 2, support USB2.0 x 4
- W SMBus 2.0 controller: 2.0mm 2-pin header x 1
- W Audio: ICH4 supports AC'97 compliant, optional EBK AC'97 supports Line in, Mic in, speaker out
- W HDD: Ultra ATA 100/66/33 support 40-pin connector x 1, Compact Flash Socket x 1
- W Serial port: 16C550UARTs x 4, 40-pin header x 1, RS-232/422/485 x 1, RS-232
     (20 x 2 pin, 2.00mm) x 3
- W Parallel port: Bi-directional, EPP/ECP support, 26-pin connector x 1 (Box Header)
- W FDD: Slim type connector
- W External keyboard/Mouse: 6-Pin 2.00 Pin-JST x 1
- W On-board buzzer x 1
- W Digital I/O: 4-bit TTL input, 4-bit TTL output
- W Reset SW/IDE active LED/ATX power button: 2-pin header connector x 3
- W Standard 32-bit PCI slot x 1

System Monitor

- W ITE 8712F-A to support system Voltage, fan speed, temperature monitoring

Real Time Clock

- W On-chip RTC with battery backup, external Li-Ion battery x 1

Watchdog Timer

- W Can generate a system reset, software selectable time-out interval (1~128 seconds, 1~ 127 minutes)

Dimensions

- W 203mm (L) x 146mm (W)

Power Source & Power

- W 20-pin ATX, power input connector

Power Requirements

W   Power consumption (ATX power) running HCT 9.5 in Windows 2000 server.

	+12V	+5V	+3.3V	+5Vsb
Pentium-M 1.6GHz	0.15A	5.14A	0.44A	0.3A
Pentium-M 1.1GHz	0.1A	1.95A	0.26A	0.9A

Environments

W   Operating temperatures: 0°C to 60°C

W   Storage temperatures –20°C to 80°C

W   Relative humidity: 10% to 90% (Non-condensing)

Certification

W   CE

W   FCC

1.3 Checklist

W   3307546 embedded CPU board x 1

W   Printer Cable x 1

W   VGA Cable x 1

W   FFD Cable x 1

W   PS2 Keyboard/Mouse Cable x 1

W   USB Cable x 2

W   IDE Cable x 1 W

   Serial Cable x 1

W   Video/RCA cable x 1(For 3307546A model only)

W   TV-Out Cable x 1 (For 3307546A model only)

W   CPU Fan x 1

W   3307546 Quick Reference Guide x 1

W   3307546 CD Driver x 1

1.4 Board Layout
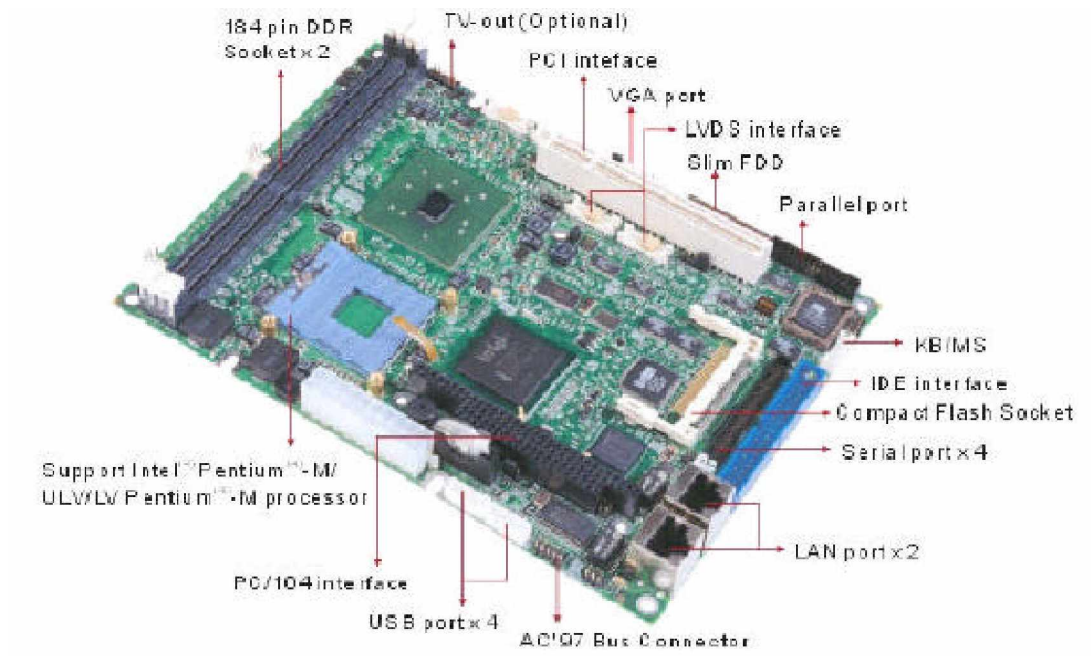
Figure 1.1 : Birdeye's View of the 3307546

1.5 Board Dimensions

140.97 [5550.08]

5.08 [200.00]
0.00 [0.00]

0.00 [0.00]
5.08 [200.00]

5.08 [200.00]

141.55 [5572.64]

4.51 [177.36]

78.74 [3100.00]

78.76 [3100.67]

157.48

157.49 [6200.24]

4.00 [157.48]

157.46 [6200.24]

198.12 [7800.00]
203.20 [8000.00]

146.05 [5750.08]
140.97 [5550.08]

5.08 [200.00]
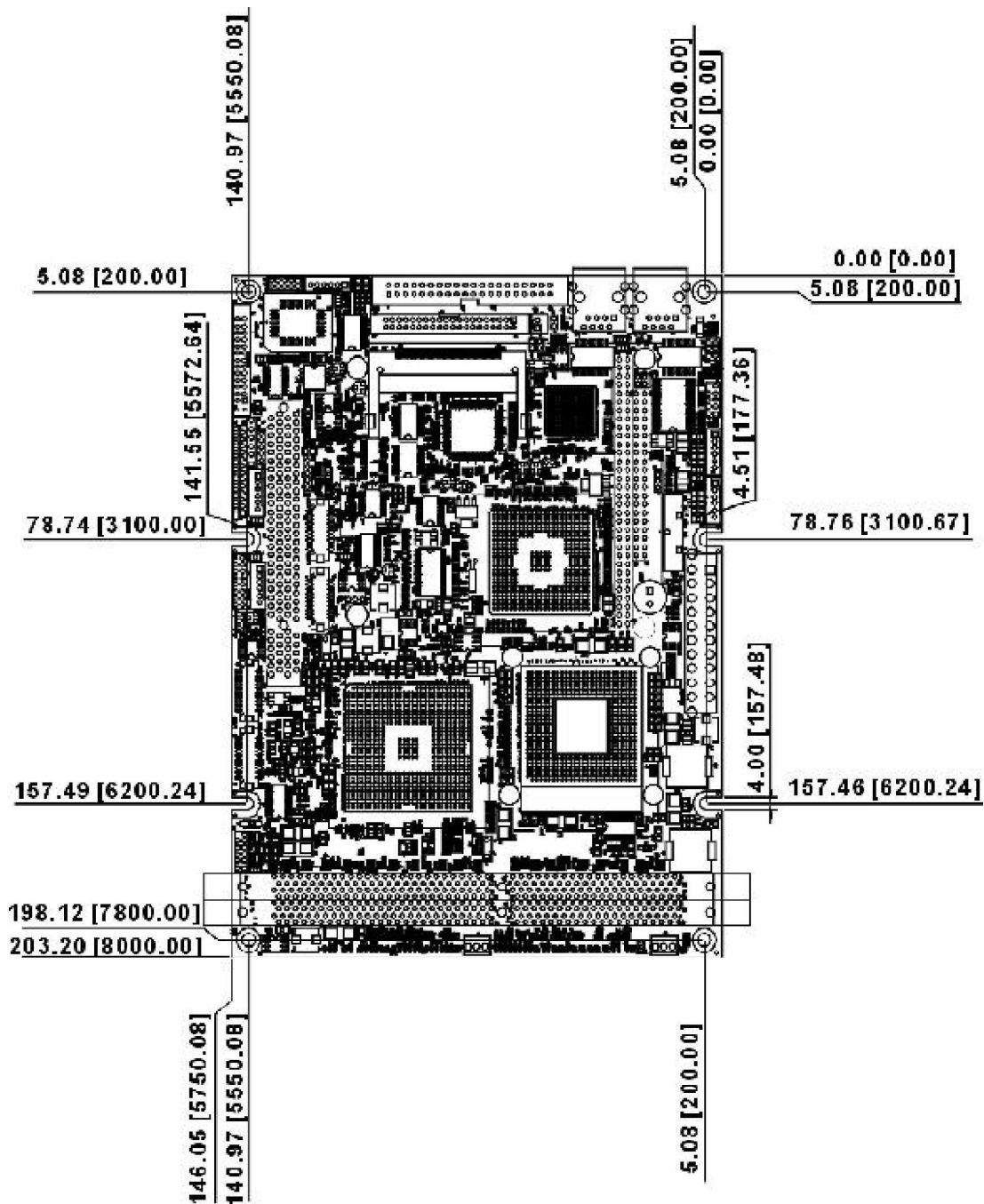
Physical Dimensions: 203mm (L) x 146mm (W)

This concludes Chapter 1. The next chapter covers setting up the 3307546.

Chapter 2
Jumper Setting

This chapter of the User's Manual describes how to set jumpers.

Note: The procedures that follow are generic for all of the 3307546 models

2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- W   A Philips screwdriver
- W   A flat-tipped screwdriver
- W   A set of jewelers Screwdrivers
- W   A grounding strap
- W   An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- W   Always disconnect the unit from the power outlet whenever you are working inside the case.
- W   If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- W   Hold electronic circuit boards (such as the 3307546A board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- W   Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- W   Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations
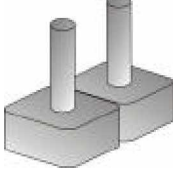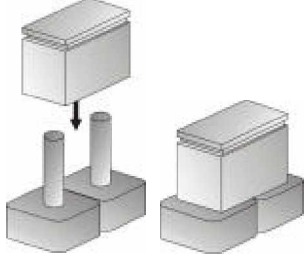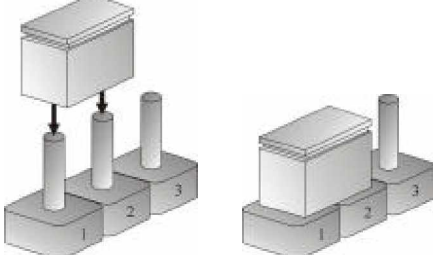
The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.	**Open (Off)**	**Short (On)**
These illustrations show a 3-pin jumper. Pins 1 and 2 are **SHORT**.		

Table 2-1 : Setting Jumpers

2.4 Location of Jumpers

Figure 2-1 : Jumper Location

2.5 Function of Jumpers

User can use jumpers to set configuration options. The table below defines function of each jumper:

Jumper	Function
JP1	Panel 2 Power Select
JP2	Panel 1 Power Select
JP3	CMOS Status Select
J18	PCI 2.1 or PCI 2.2 Select
SW1	Serial Port 2 RS232/422/485 Select

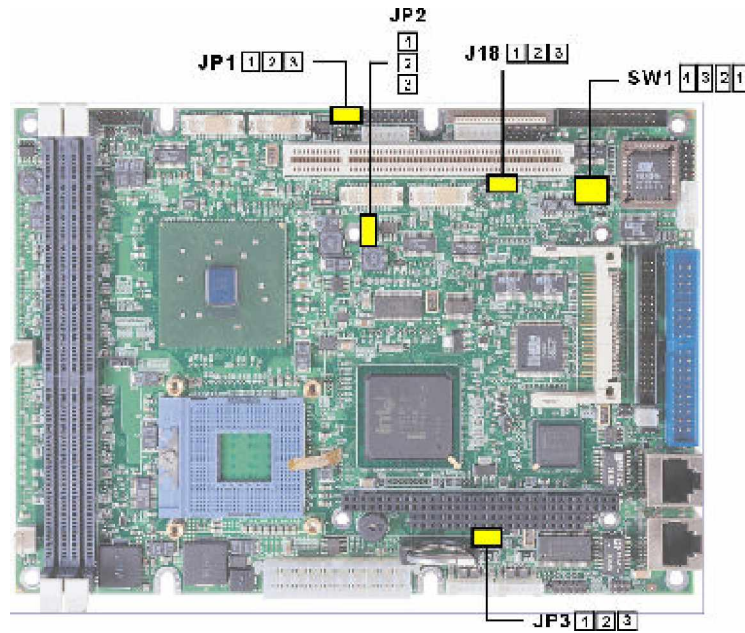### JP1 (Panel 2 Power Select) : PIN HEADER 1 x 3 2.0mm

Pin No.	Status	Function
1-2	Short	+5V Input
2-3*	Short	+3.3V Input

* means default setting

JP2 (Panel 1 Power Select) : PIN HEADER 1 x 3 2.0mm

Pin No.	Status	Function
1-2	Short	+5V Input
2-3*	Short	+3.3V Input

* means default setting

JP3 (CMOS Status Select) : PIN HEADER 1 x 3 2.0mm

Pin No.	Status	Function
1-2*	Short	Normal Operation
2-3	Short	Clear CMOS Data

* means default setting

J18 (PCI 2.1 or PCI 2.2 Select) : PIN HEADER 1 x 3 2.0mm

Pin No.	Status	Function
1-2	Short	A14 -- reserved for EBK PCIR2 expansion
2-3*	Short	A14 -- 3.3 VAUX

* means default setting

SW1 (Serial Port 2 RS232/422/485 Select) : 2 x 4 DIP SWITCH

Mode	S1-1	S1-2	S1-3	S1-4
RS232*	Off	Off	Off	Off
RS422	On	On	On	On
RS485	On	On	Off	On

* means default setting

2.6 Location of Connectors

Figure 2-2 : Connector Location

2.7 Functions of Connectors

Jumper	Function
J1	CPU Fan Connector
J2	CPU Fan Connector
J3	TV-OUT Connector
J4	Heat Sink Holder
J5	LVDS B Channel 2 Connector
J6	LVDS B Channel 1 Connector
J7	Heat Sink Holder
J8	LVDS A Channel 2 Connector
J9	Panel B Back Light Connector
J10	VGA Connector
J11	32-bit PCI Slot
J12	LVDS A Channel 1 Connector
J13	USB1
J14	Panel A Back Light Connector
J15	SM bus External Connector
J16	PC104 Connector
J17	Floppy Connector
J19	IrDA Connector
J20	USB2
J22	Compact Flash Connector
J23	AC'97 Connector
J24	LAN 1 Speed LED Connector
J25	LAN 1 Active & Link LED Connector
J26	Parallel Port Connector
J27	Power LED Connector
J28	LAN 2 Active & Link LED Connector
J29	LAN 2 Speed LED Connector
J30	ATX Power Button Connector
J31	Reset Button Connector
J32	Serial Port Connector
J33	+5V Power Connector for IDE
J34	IDE Active LED Connector
J35	Primary IDE Channel Connector
J36	LAN 2 RJ-45 Connector
J37	LAN 1 RJ-45 Connector
J38	Digital I/O Connector
J39	Keyboard/Mouse Connector
JP4	Battery Low Connector
CON1	ATX DC Power Input Connector

Table 2-3 : Function of Connectors

J1/J2 (CPU Fan Connector) : 1 x 3 2.54mm standard FAN connector

Pin No.	Description	Pin No.	Description
1	Ground	2	+12V
3	FAN speed sense		

J3 (TV-OUT Connector) : Pin Header 2 x 6 2.0mm DIP

Pin No.	Description	Pin No.	Description
1	TV Video	2	TV GND
3	S- Video C	4	TV GND
5	S- Video V	6	TV GND
7	Component Y	8	TV GND
9	Component Pr	10	TV GND
11	Component Pb		

J5 (LVDS B Channel 2 Connector): LCD Panel

CON, LVDS, 20P, DF13-20DP-1.25V, 1.25mm (4NCLM02001)

Pin No.	Description	Pin No.	Description
1	DDCPCLK	2	DDVPDATA
3	VDD	4	RX4+
5	RX7+	6	RX4-
7	RX7-	8	VDD
9	GND	10	RX5+
11	RXCLK+	12	RX5-
13	RXCLK-	14	GND
15	GND	16	BACKLIGHT Power +12V
17	RX6+	18	BACKLIGHT Power +12V
19	RX6-	20	GND

J6 (LVDS) B Channel 1 Connector): LCD Panel
CON, LVDS, 20P, DF13-20DP-1.25V, 1.25mm (4NCLM02001)

Pin No.	Description	Pin No.	Description
1	DDCPCLK	2	DDVPDATA
3	VDD	4	RX0+

Pin No.	Description	Pin No.	Description
5	RX3+	6	RX0-
7	RX3	8	VDD
9	GND	10	RX1+
11	RXCLK+	12	RX1-
13	RXCLK-	14	GND
15	GND	16	BACKLIGHT Power +12V
17	RX2+	18	BACKLIGHT Power +12V
19	RX2-	20	GND

J8 (LVDS) A Channel 2 Connectors): LCD Panel
CON, LVDS, 20P, DF13-20DP-1.25V, 1.25mm (4NCLM02001)

Pin No.	Description	Pin No.	Description
1	DDCPCLK	2	DDVPDATA
3	VDD	4	RX4+
5	RX7+	6	RX4-
7	RX7-	8	VDD
9	GND	10	RX5+
11	RXCLK+	12	RX5-
13	RXCLK-	14	GND
15	GND	16	BACKLIGHT Power +12V
17	RX6+	18	BACKLIGHT Power +12V
19	RX6-	20	GND

J9 (Panel B Backlight Connector): JST 6Pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	PANEL2_BACKLIGHT Power +12V	2	PANEL2_VDD
3	GND	4	GND
5	NC	6	LVDS_Backlight Enabled Control

J10 (VGA Connector) : Pin Header 2 x 8 2.0mm

Pin No.	Description	Pin No.	Description
1	Red	2	Green
3	Blue	4	N/A
5	V Ground	6	V Ground
7	V Ground	8	V Ground
9	+5V	10	Ground

Pin No.	Description	Pin No.	Description
11	Pull-Up	12	DDC Data
13	Horizontal Sync.	14	Vertical Sync.
15	DDC Clock		

J12 (LVDS) A Channel 1Connector): LCD Panel
CON, LVDS, 20P, DF13-20DP-1.25V, 1.25mm (4NCLM02001)

Pin No.	Description	Pin No.	Description
1	DDCPCLK	2	DDVPDATA
3	VDD	4	RX0+
5	RX3+	6	RX0-
7	RX3-	8	VDD
9	GND	10	RX1+
11	RXCLK+	12	RX1-
13	RXCLK-	14	GND
15	GND	16	BACKLIGHT Power +12V
17	RX2+	18	BACKLIGHT Power +12V
19	RX2-	20	GND

J13 (USB1) : JST 6-pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	+5VSB	2	USB0 Minus
3	USB0 Plus	4	USB1 Minus
5	USB1 Plus	6	Ground

J14 (Panel A Backlight Connector) : JST 6-pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	PANEL1_ BACKLIGHT Power +12V	2	PANEL1_VDD
3	GND	4	GND
5	NC	6	LVDS_Backlight Enabled Control

J15 (SMbus External Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	Data	2	Clock

J19 (IrDA Connector) : Pin Header 1x5 2.0mm

Pin No.	Description	Pin No.	Description
1	+5V	2	No Connect
3	Data Receive	4	Ground
5	Data Transmit		

J20 (USB2) : JST 6-pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	+5VSB	2	USB2 Minus
3	USB2 Plus	4	USB3 Minus
5	USB2 Plus	6	Ground

J23 (AC '97 Connector) : Pin Header 2 x 5 2.0mm

Pin No.	Description	Pin No.	Description
1	AC SDOUT	2	VCC5
3	AC RST#	4	GND
5	AC SYNC	6	+12V
7	AC SDIN0	8	AC SDIN1
9	AC BTCLK	10	ICH SPKR

J24 (LAN1 Speed LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	LED Power (+3.3VSB)	2	LAN Speed# (10/100)

J25 (LAN1 Active & Link LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	ACTLED1	2	LILED1

J27 (Power LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	Pull-Up to +5V	2	Ground

J28 (LAN2 Active & Link LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	ACTLED2	2	LILED2

J29 (LAN2 Speed LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	LED Power (+3.3VSB)	2	LAN2 Speed# (10/100)

J30 (ATX Power Button Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	Power On (From ATX)	2	Ground

J31 (Reset Button Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	Ground	2	H/W Reset

J32 (Serial Port Connector) : Box Header 2 x 20 2.0mm(4NCBM04008)

Pin No.	Description	Pin No.	Description
1	Data Carrier Detect A	2	Data Set to Ready A
3	Receive Data A	4	Request to Send A
5	Transmit Data A	6	Clear to Send A
7	Data Terminal Ready A	8	Ring Indicator A
9	Chassis Ground	10	
11	Data Carrier Detect B (RS422/485TX-)	12	Data Set to Ready B (RS422RTS-)
13	Receive Data B (RS422/485TX+)	14	Request to Send B (RS422RTS+)
15	Transmit Data B (RS422RX+)	16	Clear to Send B (RS422CTS+)
17	Data Terminal Ready B (RS422RX-)	18	Ring Indicator B (RS422CTS-)
19	Chassis Ground	20	
21	Data Carrier Detect C	22	Data Set to Ready C
23	Receive Data C	24	Request to Send C
25	Transmit Data C	26	Clear to Send C
27	Data Terminal Ready C	28	Ring Indicator C
29	Chassis Ground	30	
31	Data Carrier Detect D	32	Data Set to Ready D
33	Receive Data D	34	Request to Send D
35	Transmit Data D	36	Clear to Send D
37	Data Terminal Ready D	38	Ring Indicator D (or +12V, +5V)
39	Chassis Ground	40	

J33 (+5V Power Connector for IDE) : JST 2-pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	+5V	2	Ground

J34 (IDE Active LED Connector) : Pin Header 1 x 2 2.0mm

Pin No.	Description	Pin No.	Description
1	Pull-Up to +5V	2	Active signal

J38 (Digital I/O Connector) : Pin Header 2 x 5 2.0mm

Pin No.	Description	Pin No.	Description
1	Digital input 1	2	Digital output 1
3	Digital input 2	4	Digital output 2
5	Digital input 3	6	Digital output 3
7	Digital input 4	8	Digital output 4
9	VCC5	10	GND

J39 (Keyboard/Mouse Connector) : JST 6-pin Header 2.0mm

Pin No.	Description	Pin No.	Description
1	+5V	2	Keyboard Data
3	Keyboard Clock	4	Mouse Data
5	Mouse Clock	6	Ground

This ends Chapter 2. The next chapter covers 3307546 expending capabilities.

Chapter 3
Capability Expanding

3.1 System Memory

Your system memory is provided by DIMM's (Dual In-Line Memory Modules) on the CPU board. The board contains two memory banks: Bank 0 and 1, corresponds to connector DIMM1, DIMM2.

The table below shows possible DIMM Configurations for the memory banks. Please notice that the 3307546 support Double Data Rate Ram (DDR266). Configurations using different brands of memory modules are not recommended.

DIMM1	DIMM2	Total
128 MB	Empty	128 MB
Empty	128 MB	128 MB
128 MB	128 MB	256 MB
256 MB	Empty	256 MB
Empty	256 MB	256 MB
256 MB	256 MB	512 MB
512 MB	Empty	512 MB
Empty	512 MB	512 MB
512 MB	512 MB	1024 MB
1024 MB	Empty	1024 MB
Empty	1024 MB	1024 MB
1024 MB	1024 MB	2048 MB

Table 3-1: 3307546 DIMM Configurations

3.2 Installing DIMM

To install DIMM
1. Make sure the two handles of the DIMM sockets are in the "open" position, i.e. the handles stay outward.
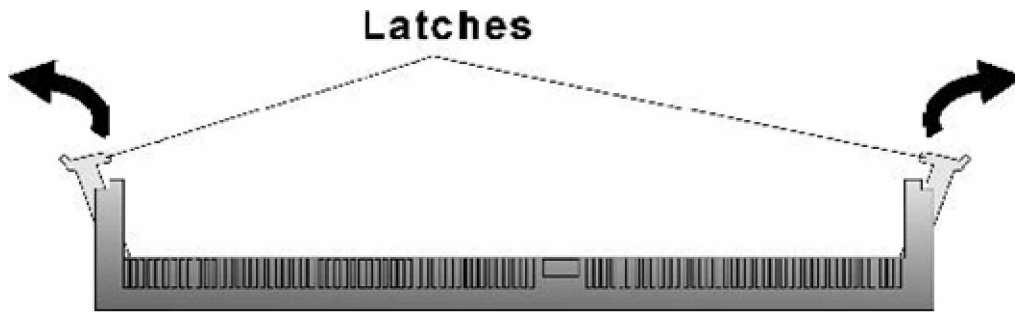
Figure3-1: How to Install DIMM (1)

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.
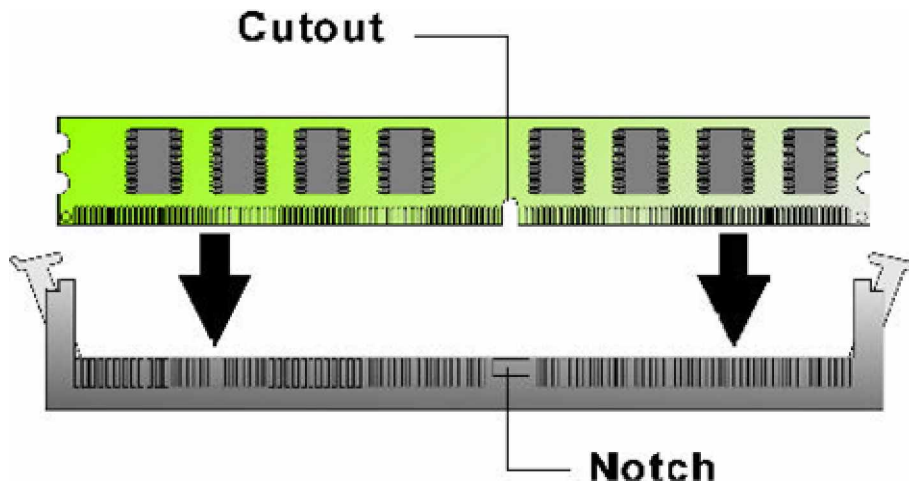
Figure 3-2: How to Install DIMM (2)

3. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.
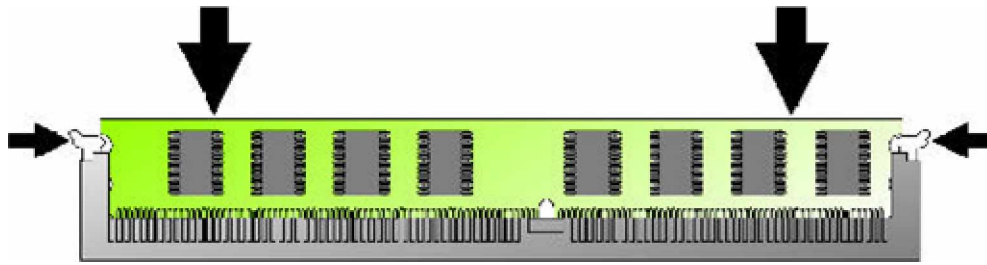
Figure 3-3: How to Install DIMM (3)

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.
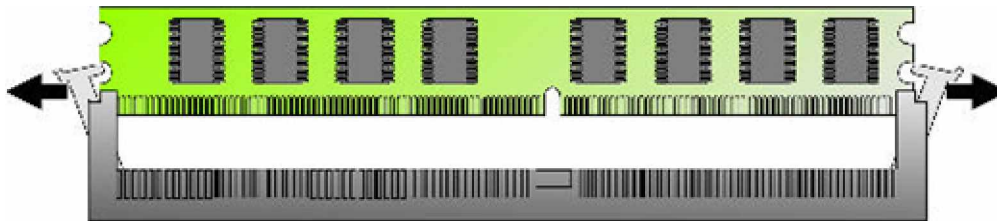
Figure 3-4: How to Install DIMM (4)

3.3 Installing Compact Flash

1. To instal l a Compact Flash m emory card i nto 3307546, align t he notc hes on the c ard wit h t he Compact Flash socket in the 3307546. Then firmly insert the card into the socket until it is completely seat ed.
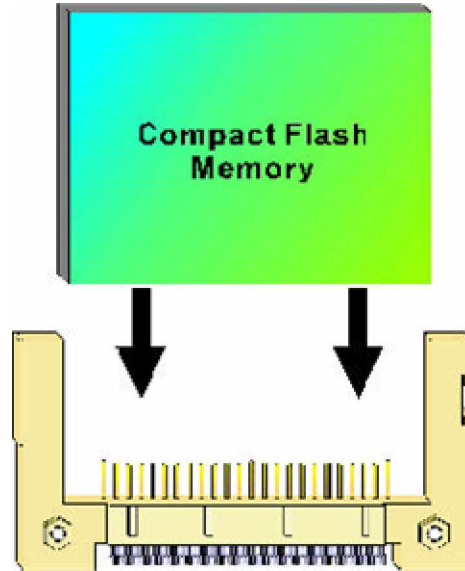
Figure 3-5: How to Install Compact Fla sh Memory (1)

2. To remove t he Compact Flash m emory card from 3307546, pull out t he mem ory card from t he Compact Flash socket.
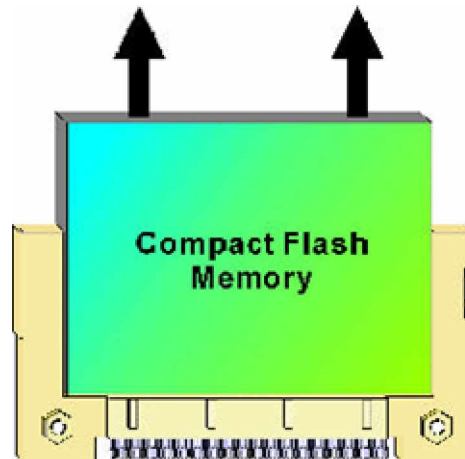
Figure 3-6: How to Install Compact Fla sh Memory (2)

3.4 Installing Intel Pentium-M CPU and Fan Heatsink

3307546 support full range of Intel® Pentium® -M processors. Below is the installation instruction:

Note: Prepare a slot type screwdriver before starting the installation process.

1. Be sure to have the CPU socket in "open" position by using the screwdriver to open.

The indicator
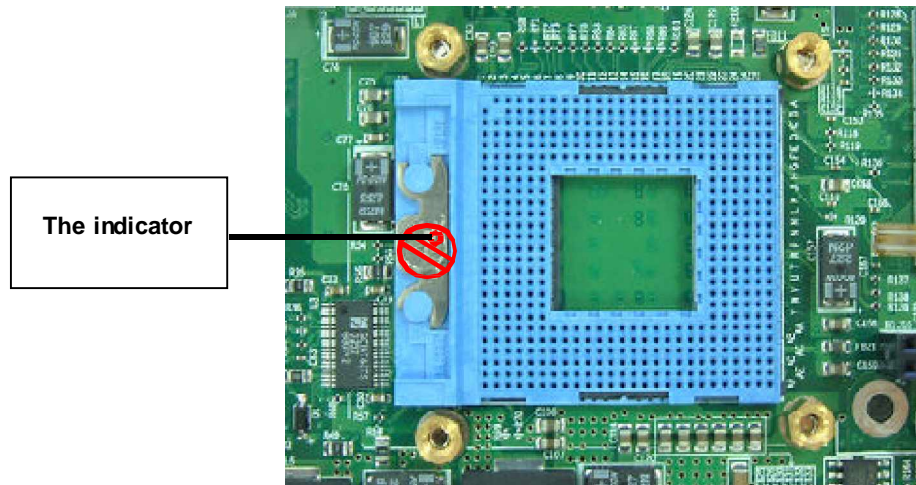
Figure 3-7: How to Install CPU (1)

2. Place the CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings.

Socket's Beveled Corner

CPU's Beveled Corner
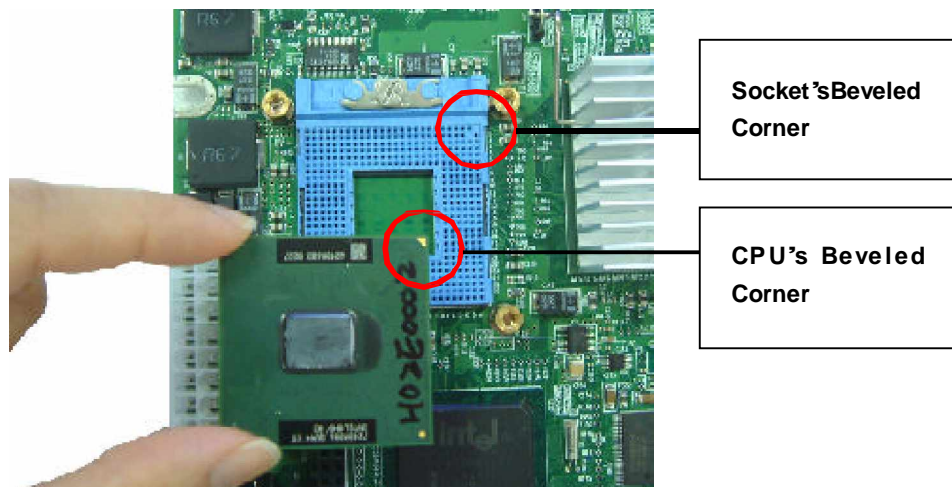
Figure 3-8: How to Install CPU (2)

3. Use the slot type screwdriver to close the CPU socket by turning to the "Close" position.
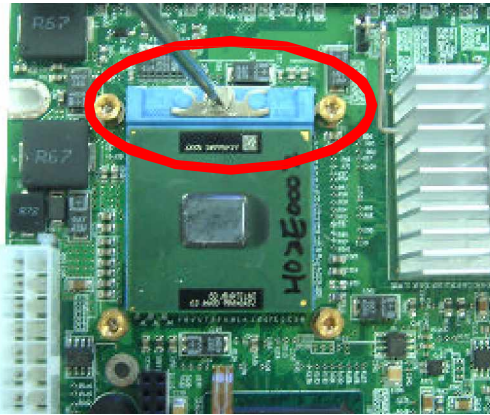
Figure 3-9: How to Install CPU (3)

4. Place the fan heatsink from the package onto the CPU socket. Fasten four screws.
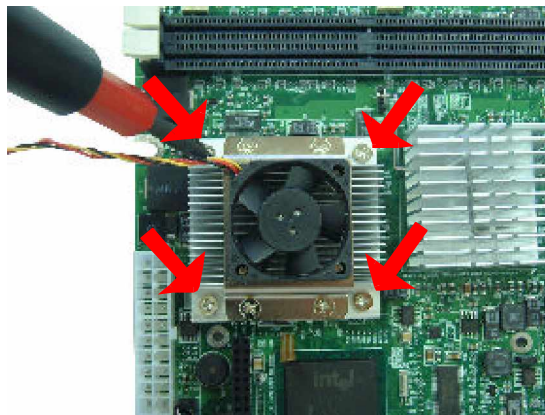
Figure 3-10: How to Install fan heatsink (1)

5 Insert the fan power connector onto J2 on the 3307546 embedded CPU board.
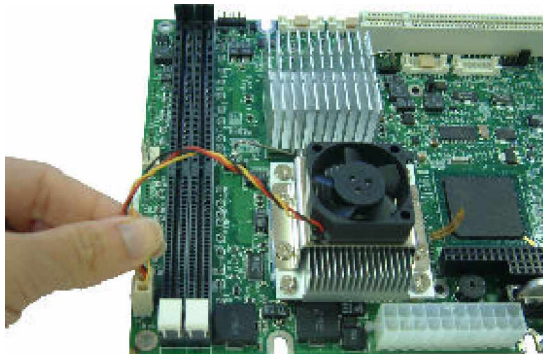
Figure 3-11: How to Install fan heatsink (2)

Chapter 4
Award BIOS Setup

This chapter explains how to use the BIOS Setup program for the 3307546. The current BIOS setup pictures in the chapter is for reference only, which may change by the BIOS modification in the future. User can download any major updated items or reversion from our web site http://www.globalamericaninc.com. tw. If any unclear message occurs, please visit http://www.globalamericaninc.com.

4.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- W   Hard drives, diskette drives, and peripherals
- W   Video display type and display options
- W   Password protection from unauthorized use
- W   Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

4.2 When to Run BIOS

This program should be executed under the following conditions:

- W   When changing the system configuration
- W   When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- W   When resetting the system clock
- W   When setting the CPU clock speed so that it automatically runs either fast or slow
- W   When redefining the communication ports to prevent any conflicts
- W   When making changes to the Power Management configuration
- W   When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

W   If the error occurs before the display device is initialized, a series of beeps will be transmitted.

W   If the error occurs after the display device is initialized, the screen will display the error message. Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

<div align="center">

TO ENTER SETUP BEFORE BOOT P
RESS   <CTRL-ALT-ESC> OR <DEL> KEY

</div>

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup:

4.4 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <**Enter**> to accept or enter the sub-menu.

```
          Phoenix - AwardBIOS CMOS Setup Utility

  ► Standard CMOS Features          Load Fail-Safe Defaults
  ► Advanced BIOS Features          Load Optimized Defaults
  ► Advanced Chipset Features       Set Supervisor Password
  ► Integrated Peripherals          Set User Password
  ► Power Management Setup           Save & Exit Setup
  ► PnP/PCI Configurations           Exit Without Saving
  ► PC Health Status

  Esc : Quit        F9 : Menu in BIOS    ↑ ↓ → ←  : Select Item
  F10 : Save & Exit Setup

                Time, Date, Hard Disk Type...
```

<div align="center">

Figure 4-1: BIOS Setup Utility Main Menu

</div>

Standard CMOS Features
Use this menu for basic system configuration

Advanced BIOS Features
Use this menu to set the Advanced Features available on the system

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports Plug and Play and PCI Configuration

PC Health Status

Displays CPU, System Temperature, Fan Speed, and System Voltages Value

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate

Load Optimized Defaults

Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

Set Supervisor/User Password

Enables you to change, set, or disable the supervisor or user password.

Save & Exit Setup

Saves CMOS value changes to CMOS and exits setup

Exit Without Saving

Ignores all CMOS value changes and exits setup.

4.5 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <**F1**> or <**Esc**>.

4.6 Control Keys

The table below lists the keys that help you navigate the setup program.
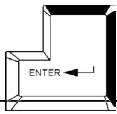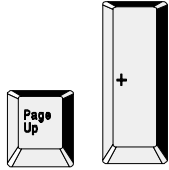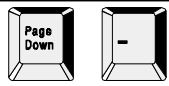
Up arrow	↑	Move to previous item
Down arrow	↓	Move to next item
Left arrow	←	Move to the item to the left
Right arrow	→	Move to the item to the right
Esc key	Esc	*Main Menu:* Quit without saving changes to CMOS *Status/Option Page Setup Menus*: Exit current page and return to Main Menu.
Enter Key	ENTER	Select or Accept an Item
PgUp/plus key	Page Up +	Increase the numeric value or make changes
PgDn/minus key	Page Down −	Decrease the numeric value or make changes
F1 key	F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key	Shift F2	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key	F5	Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key	F6	Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key	F7	Load the Setup default value (only for Option Page Setup Menu)
F9 Key	F9	Menu in BIOS
F10 key	F10	Save all the CMOS changes (only for Main Menu)

Table 4-1: BIOS Control Keys

4.7 Standard CMOS Features

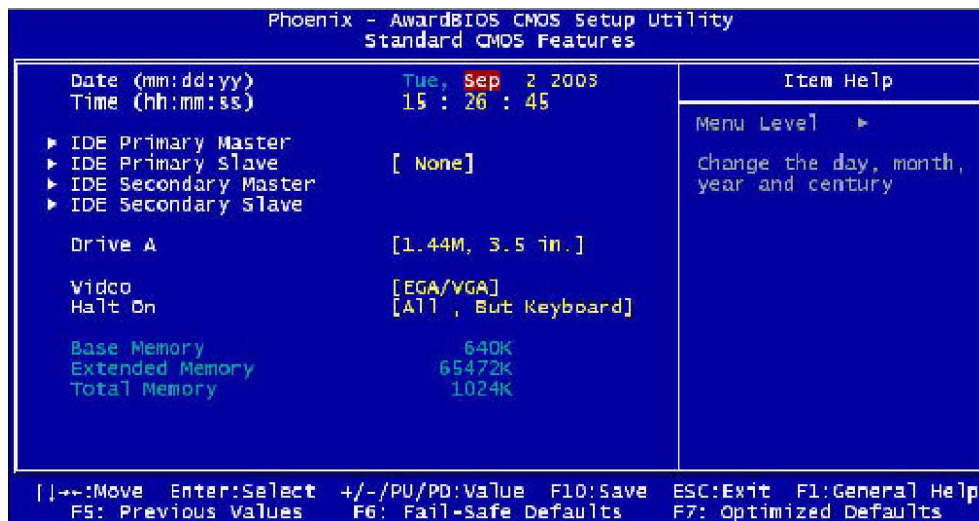Selecting Standard CMOS Features on the main program screen displays the following menu:

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Standard CMOS Features

    Date (mm:dd:yy)         Tue, Sep  2 2003       │    Item Help
    Time (hh:mm:ss)         15 : 26 : 45           │
                                                   │  Menu Level    ►
  ► IDE Primary Master                             │
  ► IDE Primary Slave       [ None]                │  Change the day, month,
  ► IDE Secondary Master                           │  year and century
  ► IDE Secondary Slave                            │

    Drive A                 [1.44M, 3.5 in.]

    Video                   [EGA/VGA]
    Halt On                 [All , But Keyboard]

    Base Memory                  640K
    Extended Memory            65472K
    Total Memory                1024K


  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save   ESC:Exit  F1:General Help
       F5: Previous Values      F6: Fail-Safe Defaults  F7: Optimized Defaults
```

Figure 4-2: BIOS – Standard CMOS Features

The Standard CMOS S etup utility is used to c onfigure the following features:

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data informati on. This field is for informat ion only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp or Pg Dn key to increment the setting, or type the desired value into the field.

IDE Devices:

Your computer has two IDE channels (P rimary and S econdary) and each channel c an be installed with one or two devi ces (Master and S lave). Use t hese i tems to configure each devic e on t he IDE channel. Press <**Enter**> to display the IDE submenu:
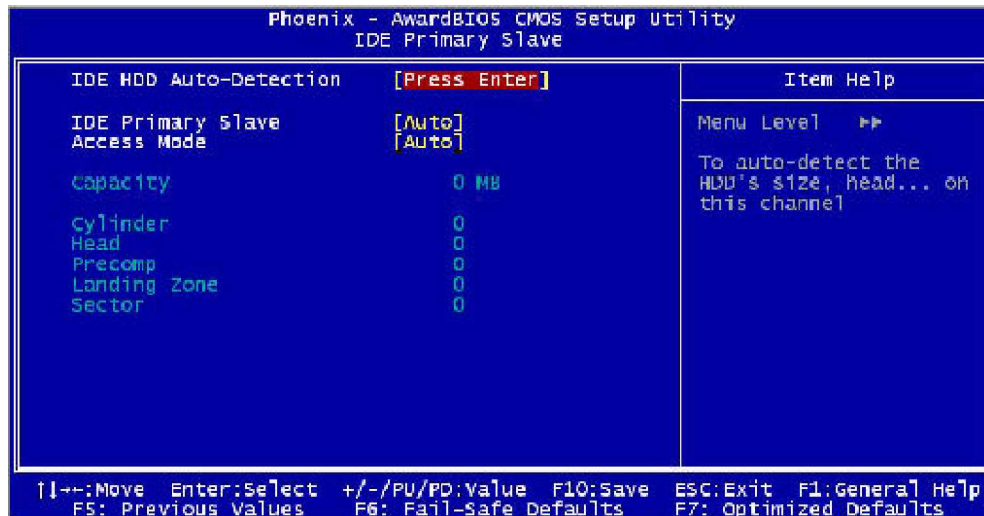
Figure 4-3: BIOS – IDE Primary Master

IDD HDD Auto Detection

Press <**Enter**> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.
If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.
If the auto-detected parameters displayed do not match the one that should be used for your hard drive, do not accept them. Press <N> key to reject the values and enter the correct one manually in the Stan- dard CMOS Setup screen.

Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

IDE Primary/Secondary Master/Slave

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below:

W	Capacity	Approximate hard disk drive capacity
W	Cylinder	Number of cylinders
W	Head	Number of heads
W	Precomp	Write pre-compensation cylinder
W	Landing Zone	Landing zone
W	Sector	Number of sector

Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Access Mode

This item defines some special ways that can be used to access IDE hard disks such as LBA (Logical Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <**Esc**> to close the IDE device submenu and return to the Standard CMOS Features page.

Drive A

Select this field to the type of floppy disk drive installed in your system. The choices are:

W   None   No floppy drive installed

W   360K, 5.25 in   5-1/4 inch PC type standard drive; 360 kilobyte capacity

W   1. 2M, 5.25 in   5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity

W   720K, 3.5 in   3-1/2 inch double-sided drive; 720 kilobyte capacity

W   1.44M, 3.5 in   3-1/2 inch double-sided drive; 1. 44 megabyte capacity

W   2. 88M, 3.5 in   3-1/2 inch double-sided drive; 2.88 megabyte capacity

Note: The None option could be used for diskless workstations.

Video

Set this field to the type of graphics card installed in your system. If you are using a BGA or higher resolution card, choose the EGA/VGA option. The options are:

W   EGA/VGA   Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA or PGA monitor adapters

W   CGA40   Color Graphics Adapter, power up in 40 column mode

W   CGA80   Color Graphics Adapter, power up in 80 column mode

W   MONO   Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error. This setting determines which type of error will cause the system to halt during boot. The options are:

W   All Error: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.

W   No Errors: The system boot will not stop for any error that may be detected.

W   All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.

W   All, But Diskette: The system boot will not stop for a disk error, but it will stop for all others.

W   All, But Disk/Key: The system boot will not stop for a keyboard or disk error, but it will stop for all others.

Base/Extended/Total Memory

This category is display-only. The contents are determined by the POST (Power-On Self-Test) of the BIOS. You cannot make changes to these fields.

Base Memory: Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory: The POST of the BIOS will determine the amount of extended memory installed in the system.

Total Memory: This option shows system memory capacity.

After you have made your selections in the Standard CMOS Setup screen, press <**ESC**> to go back to the main screen.

4.8 Advanced BIOS Features

Selecting Advanced BIOS Feature on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items to improve your system performance or set up system features according to your preference, without caus-ing fatal errors to your system.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced BIOS Features

   Virus Warning              [Disabled]           Item Help
   CPU L1 & L2 Cache          [Enabled]
   Quick Power On Self Test   [Enabled]     Menu Level    ▶
   First Boot Device          [Floppy]
   Second Boot Device         [HDD-0]       Allows you to choose
   Boot Up Floppy Seek        [Enabled]     the VIRUS warning
   Boot Up NumLock Status     [On]          feature for IDE Hard
   Typematic Rate Setting     [Disabled]    Disk boot sector
 x Typematic Rate (Chars/Sec) 6             protection. If this
 x Typematic Delay (Msec)     250           function is enabled
   Security Option            [Setup]       and someone attempt to
   MPS Version Control For OS [1.4]         write data into this
   OS Select For DRAM > 64MB  [Non-OS2]     area , BIOS will show
                                            a warning message on
                                            screen and alarm beep

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values     F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Figure 4-4: BIOS – Advanced BIOS Features

The following explains the options for each feature:

Virus Warning

Allow you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

W   Enabled: Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:

> **!WARNING!**
> **Disk boot sector is to be modified**
> **Type "Y" to accept write or "N" to abort write**
> **Award Software, Inc.**

W   Disabled: No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

Note: *This function is available only for DOS and other operating systems that do not trap INT13. For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.*

             Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). This BIOS feature is used to enable or disable the processor's Level 1 and Level 2 cache. Naturally, the default and recommended setting is Enabled.

Quick Power-On Self-Test

Select Enabled to reduce the amount of time required to run the Power-On Self-Test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected. The available choices are: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, and Disabled.

Boot Up Floppy Seek

Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boot. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay. When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Key stroke repeats at a rate determined by the keyboard controller in your system.

Typematic Rate (Chars/Sec): When the typematic rate setting is Enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec): This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

System: The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

Setup: The system will boot, but access to Setup will be denied if the correct password is not entered at setup.

MPS Version Control for OS

This feature is only applicable to multiprocessor motherboards as it specifies the version of the Multi-Processor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors. MPS version 1.4 is required for a motherboard to support a bridgeless secondary PCI bus.

OS Select for DRAM>64MB

Set to OS2 if the system memory size is greater than 64 MB and the operating system is OS/2.

After you have made your selections in the Advanced BIOS Features setup, press <**ESC**> to go back to the main screen.

4.9 Advanced Chipset Features

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you understand the chipset features.

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manage bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system has mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Selecting Advanced Chipset Features on the main program screen displays this menu:

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced Chipset Features
  ┌─────────────────────────────────────┬──────────────────────┐
  │ System BIOS Cacheable    [Enabled]  │      Item Help       │
  │ Video  BIOS Cacheable    [Disabled] │                      │
  │ Memory Hole At 15M-16M   [Disabled] │ Menu Level    ▶      │
  │ Delayed Transaction      [Enabled]  │                      │
  │ AGP Aperture Size (MB)   [64]       │                      │
  │                                     │                      │
  │ ** On Chip VGA Setting **           │                      │
  │ On-Chip VGA              [Enabled]  │                      │
  │ On-Chip Frame Buffer Size [32MB]    │                      │
  │ Boot Display            [Auto]      │                      │
  │ Panel Type             [1024x768  18bit S] │               │
  │ TV Standard             [NTSC]      │                      │
  │ Video Connector         [Automatic] │                      │
  │                                     │                      │
  ├─────────────────────────────────────┴──────────────────────┤
  │ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
  │     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults │
  └─────────────────────────────────────────────────────────────┘
```

Figure 4-5: BIOS – Advanced Chipset Features

System BIOS cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The available choices are Enabled, Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The choices: Enabled, Disabled.

Memory Hole At 15M – 16M

In order to improve performance, certain space in memory is reserved for ISA cards; This memory must be mapped into the memory.
The choices: Enabled, Disabled.

Delayed Transaction

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

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. The available choices are: 4M, 8M, 16M, 32M, 64M, 128 M and 256M.

On-Chip VGA

By default, the On-Chip VGA or chipset-integrated VGA is Enabled.

On-Chip Frame Buffer Size

The On-Chip Frame Buffer Size can be set as 1MB or 8MB. This memory is shared with the system memory.

Boot Display

Boot Display determines the display output device where the system boots. The options are Auto, CRT and LVDS.

Panel Type

This field allows user to decide the LVDS panel resolution. The available choices are: 800 x 600, 1024 x 768, 1280 x 1024, 1400 x 1050, and 1600 x 1200

TV Standard

This item allows you to designate the type of colored TV standard to be used when a TV receiver is connecting to the TV out port. If a TV receiver is not connected to the XL2, this setting should be disabled. NTSC is for U.S. colored TVs; PAL is for European and other non-U.S. TVs.

Video Connector

The video connector field selects the video connector as Automatic, Composite, Component, or Both.

After you have made your selections in the Advanced Chipset Features setup, press **<ESC>** to go back to the main screen.

4.10 Integrated Peripherals
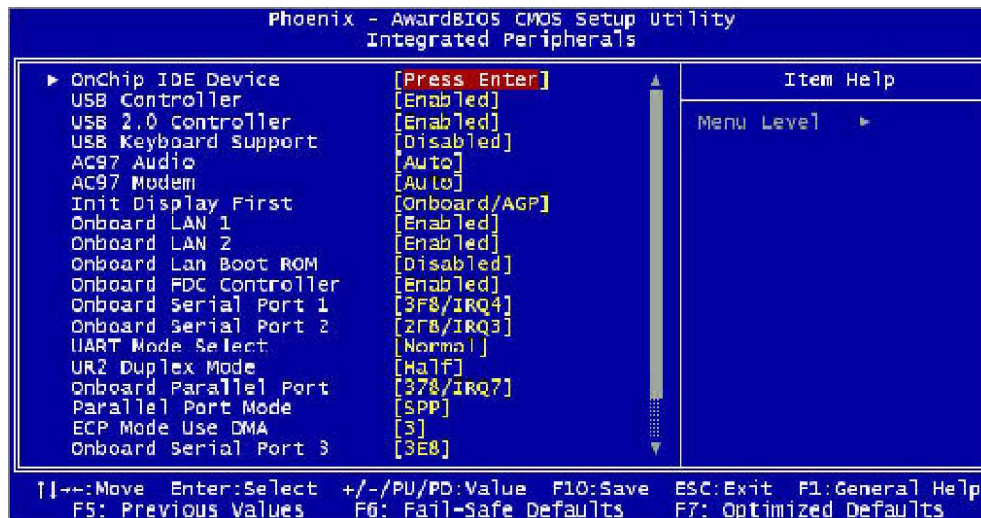
Figure 4-6: BIOS – Integrated Peripherals

OnChip IDE Device

Select this item to setup the IDE device features. When you select this item, the following menu shows:
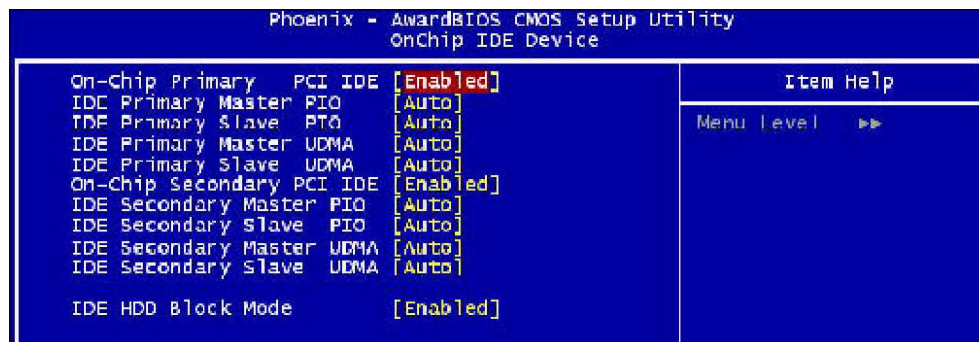
Figure 4-7: BIOS – OnChip IDE Device

On-Chip Primary/Secondary PCI IDE

The system chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIC (Programmable Input/Output) fields let you set a PIC mode (0-1) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The choices are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA, select Auto to enable BIOS support. The choices are Auto, and Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optional number of block read/write per sector the drive can support. The available choices are Enabled, Disabled.

Press <**ESC**> to go back to Integrated Peripherals BIOS page, when you finish setup the above items.

USB Controller

Select Enabled if your system contains a Universal Serial Bus controller and you have USB peripherals.

USB 2.0 Controller

Select Enable if your system contain a Universal Serial Bus 2.0 controller and you have USB 2.0 peripherals.

USB Keyboard Support

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

AC97 Audio

Selecting Auto will enable the AC'97 audio if it is detected onboard.

AC97 Modem

Selecting Auto will enable the AC'97 modem, if it is detected onboard.

Onboard LAN (1, 2)

Enables and disables the onboard LAn modules.

Onboard LAN boot ROM

Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, LAN3 and Disabled.

Onboard FDC Controller

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

Onboard Serial Ports (1, 2, 3, 4)

This feature allows you to manually select the I/O address and IRQ for the first and second serial ports. It is recommended that you leave it as Auto so that the BIOS can select the best settings for it. But if you need a particular I/O port or IRQ that's been taken up by this serial port, you can manually select an alternative I/O port or IRQ for it. You can also disable this serial port if you do not need to use it. Doing so frees up the I/O port and IRQ used by this serial port. Those resources can then be reallocated for other devices to use.

UART Mode Select

Select an operating mode for the serial port.
The choices are: Normal, IrDA, ASKIR, SCR.

UR2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

Onboard Parallel Port

This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 378h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMA3 or DMA1.

After you have made your selections in the Integrated Peripherals setup, press the <**ESC**> key to go back to the main program screen.

4.11 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

Selecting Power Management Setup on the main program screen displays this menu:
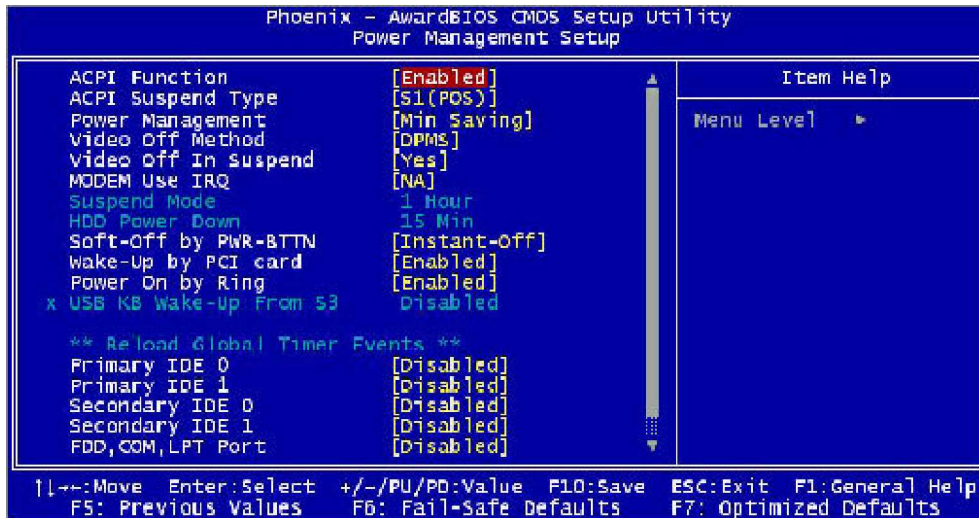
Figure 4-8: BIOS – Power Management Setup

ACPI Function

The ACPI st andard (Advanced Configuration and Interface power) allows t he operating system directly to check the functions of energy saving and the PnP (P lug and Play) functionality. The A CPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

ACPI Suspend Type

This option specifies what technology must be used for the state of hibernation. The choices are as bel ow:

- W   S1(POS)   Power on Suspend
- W   S3(STR)   Suspend to RAM
- W   S1 & S3

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the foll owing modes: HDD Power Down, Doze Mode and Suspend Mode

- W   Min. Saving: Minimum power management
- W   Max Saving: Maximum power management
- W   User Define: Allows you to set each mode individually

Video Off Method

This determines the manner in which the monitor is blanked. There are three choices:
1.   V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.

2. Blank Screen: This option only writes blanks to the video buffer.
3. DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

Video Off In Suspend

This determines the manner in which the monitor is blanked. The choices: Yes, No.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use. The choices are 3, 4, 5, 7, 9, 10, 11, and NA

Suspend Mode

After the selected period of system inactivity, all devices except the CPU shut off. The choices are 1~2 min, 2~3 min,… . Up to 1 hour.

HDD Power Down

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active.

Soft-Off by PWR-BTTN

This function can turn the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity. The choices are Delay 4 seconds, and Instant-Off.

Wake up by PCI Card

When the system enters a Soft-off mode (Standby power exist but system is not working), it will wake up system when specific signals occurred. The BIOS monitors the system for "activity" to determine when to enable power management.

If you enable this feature, the computer specifies that any signal noticed on the PCI (Peripheral Component Interconnect) bus channel must make go out from the hibernation state. The choices: Enabled, Disabled.

Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices: Enabled, Disabled.

Reload Global Timer Events

Primary/Secondary IDE 0/1

FDD, COM, LPT Port

PCI PIRQ [A-D]#

The events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awak en the s ystem from such a mode. In effect, the syst em remai ns alert for anyt hing, which occurs to a device, which is configured as Enabled, even when the system is in a power down mode. The choices are Enabled, and Disabled.

After you have made your selec tions in the Power Management setup, press the <**ESC**> key to go back to the main program screen.

4.12 PnP/PCI Configurations

Thi s sec tion desc ribes configuri ng the PCI bus syst em. P eripheral Component Interface, is a sys tem which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicat-ing with its own spec ial components. This sec tion c overs some very t echnic al items and it is strongly recommended that only experienced users should make any changes to the default settings.

Selecting PnP/PCI Configurations on the main program sc reen displays this menu:
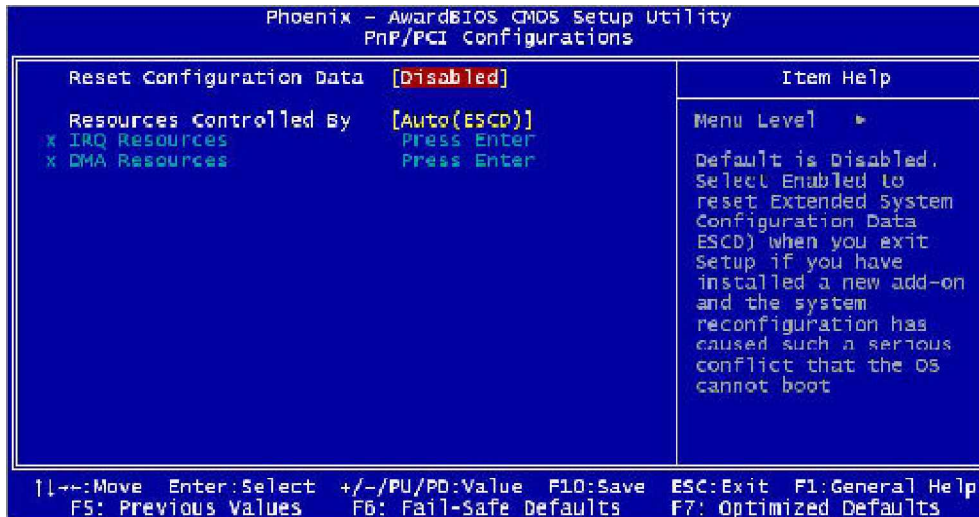
Figure 4-9: BIOS – PnP/PCI Configurations

Reset Configuration Data

Normally, you leave this field Disabled, Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The choices are Enabled and Disabled.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as going into each of the submenus that follows this field. The choices are Auto (ESCD), Manual.

IRQ Resources

When User select Manual for Resource Controlled, this setting allow the user to specify what IRQ will be assigned to PCI devices in the chosen slot. Options available: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15.

DMA Resource

When resources are controlled manually, assign each system DMA channel as one of the following types:

W **Legacy ISA:**   Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

W **PCI/ISA PnP:**   Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

4.13 PC Health Status

When main boards support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds. These are the read only items.

Selecting PC Health Status on the main program screen displays this menu:

Figure 4-10: BIOS – PC Health Status

After you have read the PC Health Status, press the <**ESC**> key to go back to the main program screen.

4.14 Load Fail-Safe Defaults
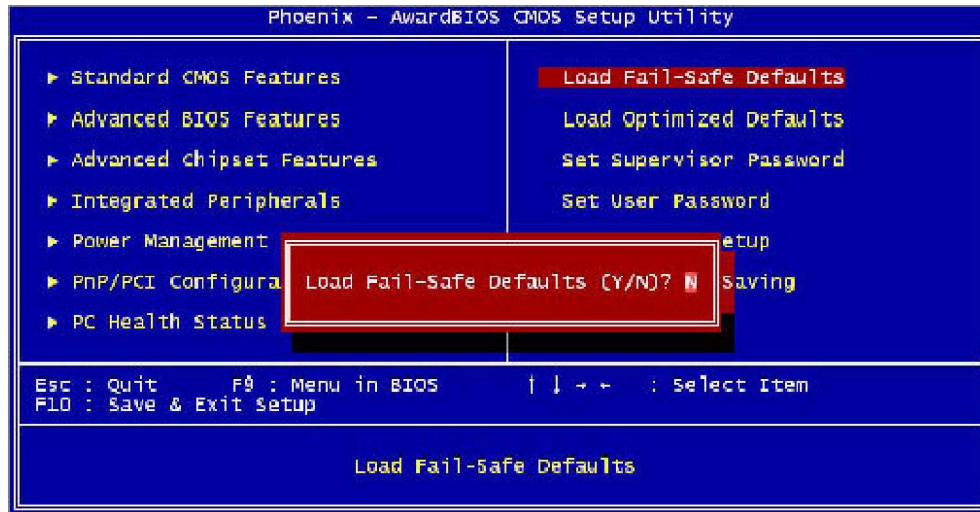
Figure 4-11: BIOS – Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility. Press the <**Y**> key and then <**Enter**> to install the defaults. Press the <**N**> key and then <**Enter**> to not install the defaults.

Use this option if you have changed your system and it does not operate correctly or does not power up.

4.15 Load Optimized Defaults
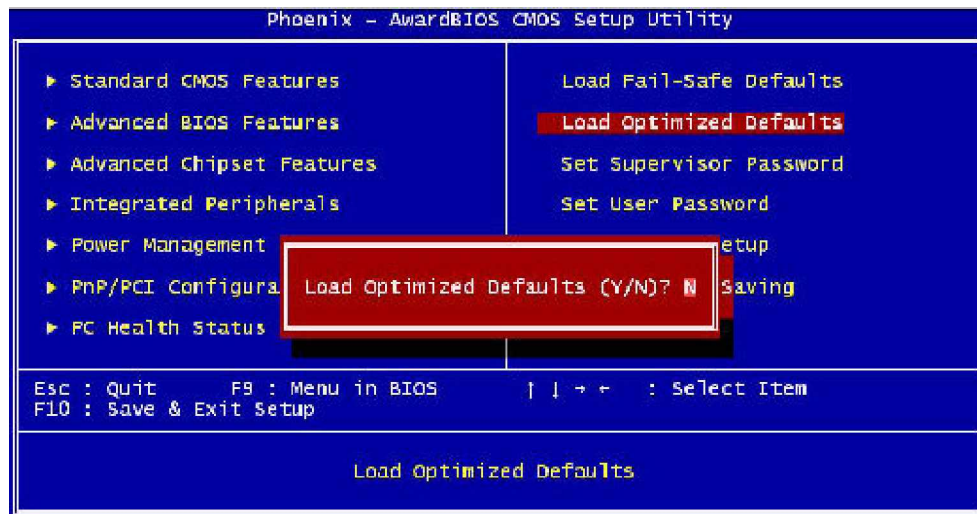
Figure 4-12: BIOS – Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole setup utility. Press the <**Y**> key and then <**Enter**> to install the defaults. Press the <**N**> key and then <**Enter**> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <**F7**> key.

4.16 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <**Enter**> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <**Enter**> again.

To disable the password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.

Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.

4.17 Save & Exit Setup

Selecting this option and pressing <**Enter**> will save the new setting information in the CMOS memory and continue with the booting process.

4.18 Exit Without Saving

Selecting this option and pressing <**Enter**> will exit the Setup utility without recording any new values or changing old ones.

This concludes Chapter 4. The next chapter covers drivers installing.
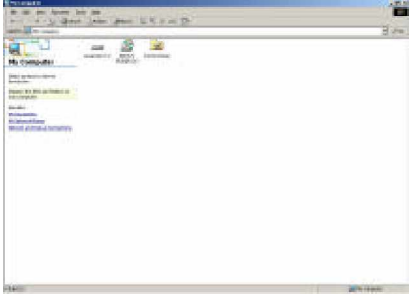
Chapter 5
Driver Installation

3307546 Series come with a bundled drivers CD that enables you to install Intel chipset, Intel Ata, VGA, LAN and Audio drivers. These drivers may be updated or re-versioned without any further notice. Please visit http://www.globalamericaninc.com frequently for new information.

Note: The installation instructions in this manual are based on Windows 2000 operation system.

5.1 Installation CD

Please follow the below instructions to find Intel chipset, Intel Ata, VGA, LAN and Audio drivers in the driver CD to implement installation.

Step 5.1.1 Place the Driver CD into your CD-ROM drive. Open My computer on your desktop.	
Step 5.1.2 My computer menu appears. Double click your CD-ROM drive to open.	

5.2 Installing Drivers for 3307546
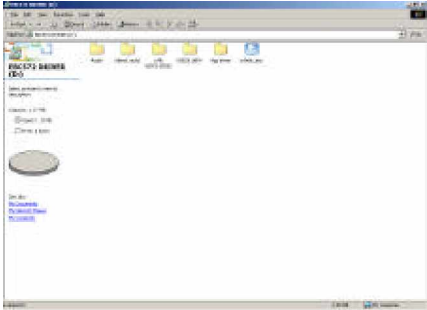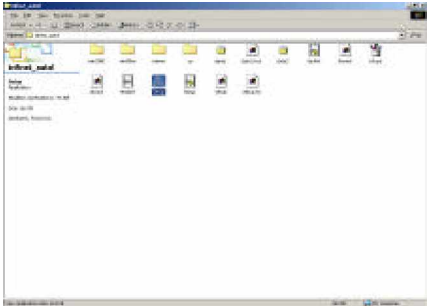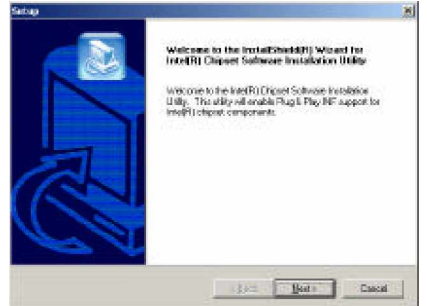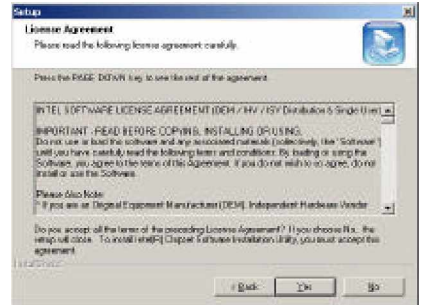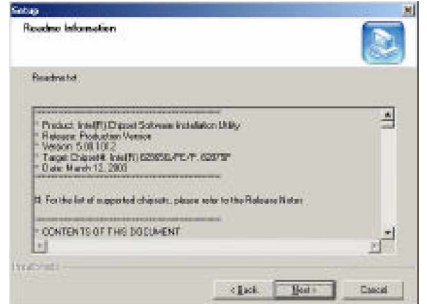
The following sections cover the drivers installation for the 3307546. Refer the following for the section numbers for each driver:
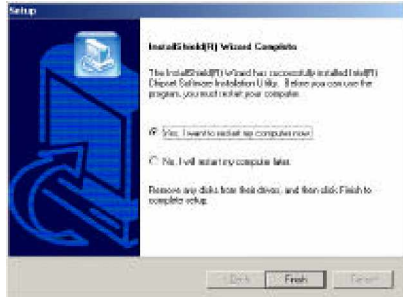
W   **Intel Chipset**   ---   **5.3**
W   **Audio**   ---   **5.4**
W   **VGA**   ---   **5.5**
W   **USB**   ---   **5.6**
W   **LAN**   ---   **5.7**

Note: You should install the Intel chipset patch before installing other drivers. You may be prompted for your Windows Installation CD during setup.

5.3 Installing Intel Chipset

The chipset patch updates the chipset and enables user to adjust the advanced chipset components.
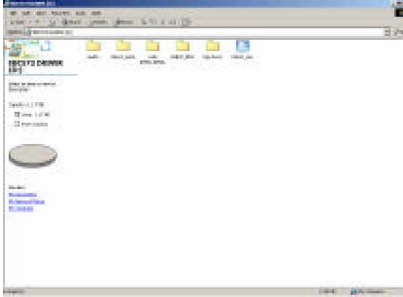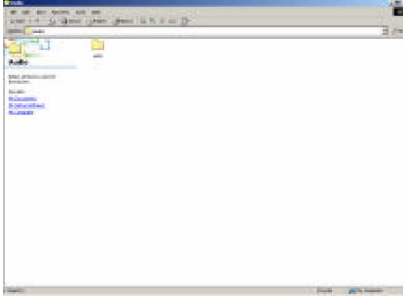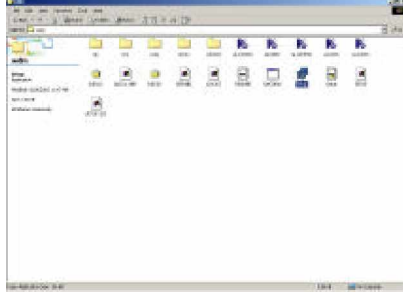
Step 5.3.1 Point to the **infinst_autol** folder. Double click to open it.	
Step 5.3.2 Double click to open the **Setup** icon. It will start running the installation program.	
Step 5.3.3 The Welcome Screen appears, click **Next** button.	
Step 5.3.4 Read the License Agreement. If you accept it, click **Yes** to continue.	
Step 5.3.5 Read the ReadMe Information and click **Next** to continue.	
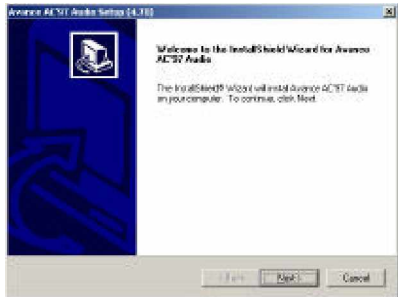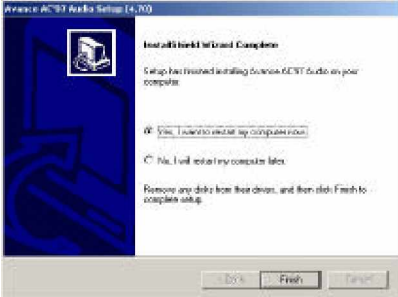
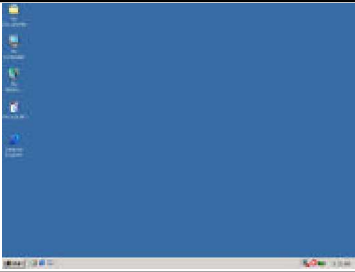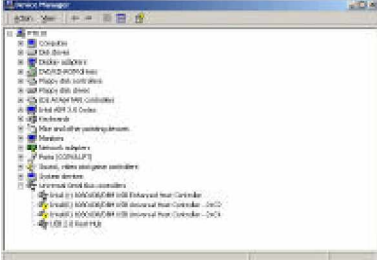|	
5.3.6 The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.	

5.4 Installing Audio Driver

After installing Intel Chipset driver, repeat steps 5.1.1 and 5.1.2 to open Audio folder.
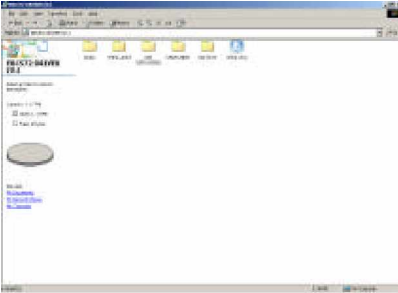
Note: Install this audio driver only when you connect an audio card into 3307546.
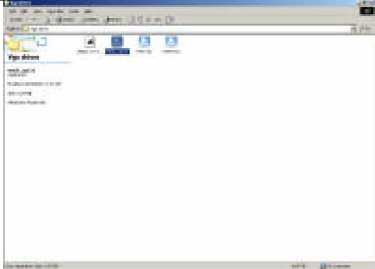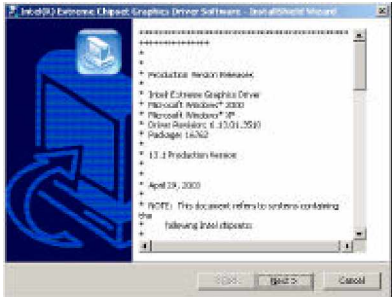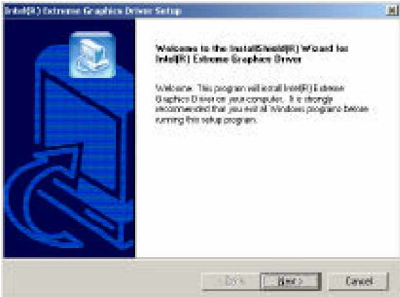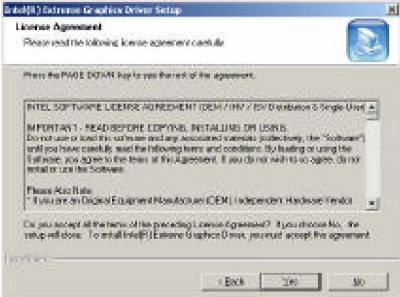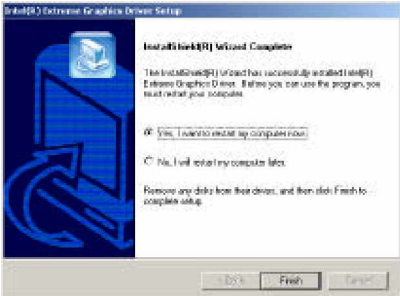
5.4.1 Double click to open the **Audio** folder.	
5.4.2 When the **wdm** folder appears, double click to open it.	
5.4.3 Double click on the **Setup** icon to start the installation process.	

5.4.4 The welcome screen appears, click **Next** button to continue.	
5.4.5 Click **Yes** to continue the installation process. The setup program copies files into your computer.	
5.4.6 The program updates your computer driver files, and you are prompted to restart your computer, Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.	

5.5 Installing the On-board VGA Driver

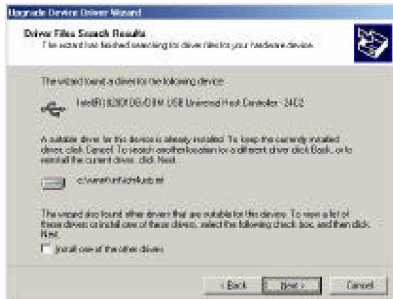After installing audio driver, repeat steps 5.1.1 and 5.1.2 to open VGA folder.
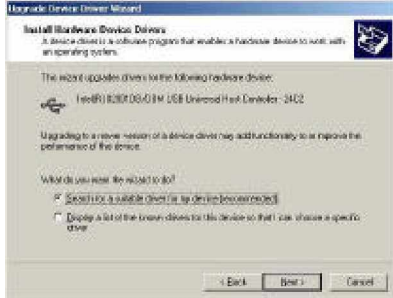
5.5.1 Double click to open the **VGA** folder.	

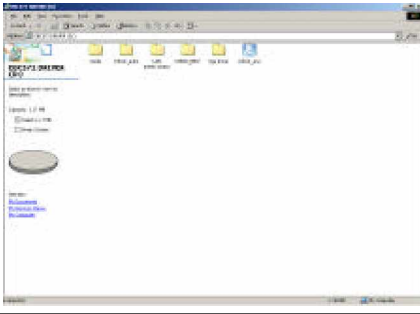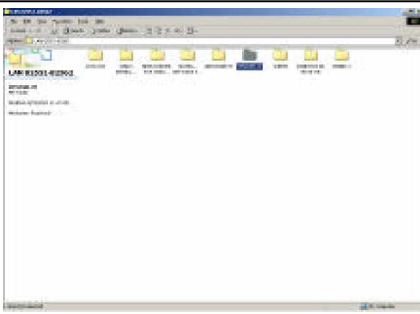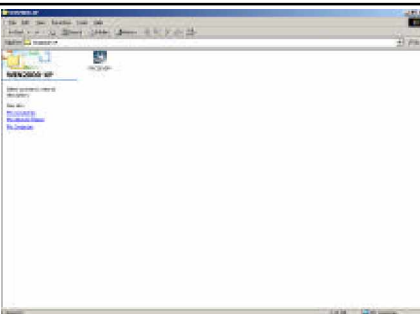|	
5.5.2 Double click to open **win2k_xp131** icon. *Note: Click on the correct icon according to your computer operation system.*	
5.5.3 The InstallShield Wizard starts, click **Next** button to continue.	
5.5.4 The Welcome Screen appears. Click **Next** button to continue.	
5.5.5 Read the License Agreement. If you agree it, click **Yes** to continue.	
5.5.6 The complete installation screen appears. Select **Yes, I want to restart my computer now**, and click **Finish** button to reboot your computer.	

5.6 Installing the On-board USB Driver
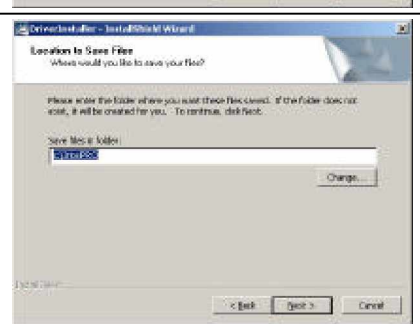
After installing VGA driver, repeat steps 5.1.1 and 5.1.2 to open USB folder.

5.6.1 Right click the **My Computer**" Icon on the desktop.	
5.6.2 Open the **Hardware** page, then click **Device Manager** button.	
5.6.3 Double click on the items with exclamation mark.	
5.6.4 Open the **Driver** page, then click **Update Driver** button.	
5.6.5 The Upgrade Device Driver Wizard starts. Click **Next** to continue.	

5.6.6 Check the radio button next to **Search for a suitable driver for my device (recommended)**, and then click **Next** to continue.	
5.6.7 Click **CD-ROM drives** for system to search for driver. Click **Next** to continue.	
5.6.8 Insert the GAI driver CD into the computer CD-ROM driver. After point to the correct folder, click **OK** to continue.	
5.6.9 The Wizard found a suitable driver. Click **Next** button. The setup program will start coping files into your computer.	
5.6.10 You have completed the upgrade the device driver wizard. Click **Finish** button to return to your system.	

5.7 Installing the On-Board LAN Driver

After installing USB driver, repeat steps 5.1.1 and 5.1.2 to open LAN folder.

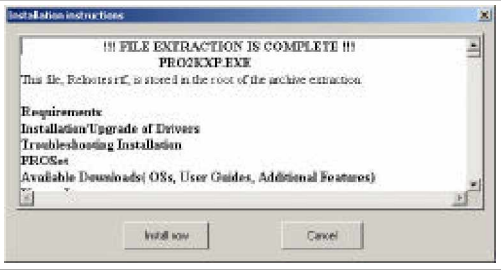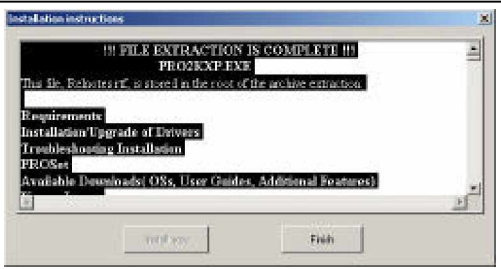|	
5.7.1 Double click to open the **LAN** folder.	
5.7.2 Point to the right folder according to your computer operation system. Double click to open the folder.	
5.7.3 Double click to open the **PRO2KXPM** icon.	
5.7.4 The InstallShield Wizard starts. Read the License Agreement. If you agree it, click **Next** to continue.	
5.7.5 Point to the location where you like to save the drive files. Click **Next** to continue.	

5.7.6 The Installation Instruction window prompts up, click **Install Now** button.	
5.7.7 After setup program finish coping files into your computer, click **Finish** button to complete the installation process.	

This concludes Chapter 5. The folloings are the Appendix A and B.

**Appendix A
Watchdog Timer**

The 3307546 features a watchdog timer that reset the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Watchdog Timer Working Procedure

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

You must enter timer values into the WDT Configuration Register (Write the control value to the Configuration Port), and clear (read the Configuration Port).

WDT Configuration port	I/O port 2E0h	Read/Writable, default at 2E0h
Watchdog Timer	Disabled	Disable WDT functions (Default setting)
	Enabled	EnableWDT functions control by **WDT time out active for** and **WDT Time Out Active Time**
WDT Time out active for	Reset Output	Reset system when WDT time out
	NMI Output	Generate NMI when WDT time out
	WDT Notice Output	1. Located at J8 pin No. 6 2. Normal work output low level 3. Output high level when WDT time-out, read or write WDT configuration port return to normal work (output low level)
WDT Time Out Active Time	1 sec/min 2 sec/min 4 sec/min 8 sec/min 16 sec/min 32 sec/min 64 sec/min 128 sec/min	WDT time out occurs after the selected time level

Table A-1: Watchdog Timer Character and Function

A.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the EDT working mode. Write the value to the WDT Configuration Port. The following table describes the Control Register bit definition.
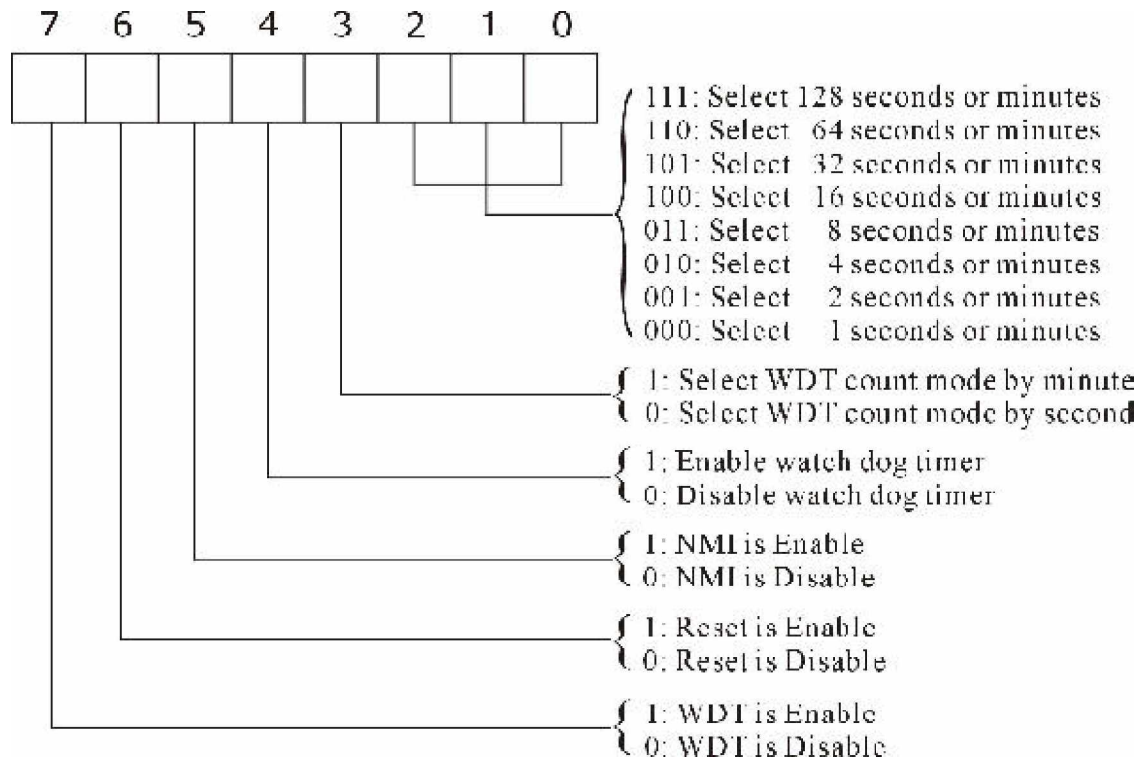

Table A-2: Control Register Bit Definition

A.3 Watchdog Timer Programming Procedure

Power on or reset the system

The initial value of WDT Control Register (D4~D0) is zero, when power is on or reset the system. The following shows the initial value of WDT (00000000b):

Bit	Value	Mean
7	0	Disable WDT
6	0	Reset output is disable
5	0	NMI output is disable
4	0	WDT Notice output is disable
3	0	Select WDT count mode by second
2, 1, 0	0 0 0	Select time-out occurs after 1 second/minute

Table A-3: WDT Control Register Initial Value

Clear the WDT

The WDT counter internal cannot be longer than the preset time, otherwise, the WDT generates a NMI (Non Maskable Interrupt) or sends a reset signal to the system.

Note: Before running WDT, clear the WDT to make sure the initial value is zero before enabling the WDT.

WDT Control Register (Write to WDT configuration port)

Note: This register writes to the WDT configuration port.

You can set the WDT Control Register to control the WDT working mode.

Follow below instructions to set the initial value of the WDT working mode.
  1. Select the WDT time out occurs time
     Time-out intervals decide by values of bit 2, bit 1, bit 0 in I/O port 2E0h
     minute or second decide by values of bit 3 in I/O port 2E0h
  2. Enable or Disable WDT Notice Output decide by bit 4 value in I/O port 2E0h
  3. Enable or Disable NMI Output decide by bit 5 value in I/O port 2E0h
  4. Enable or Disable Reset Output decide by bit 6 value in I/O port 2E0h
  5. Enable or Disable the WDT decide by bit 7 value in I/O port 2E0h

After finishing the above settings, you must output the Control Register's value to the WDT Configuration Port. Then WDT will start according to the above settings.

Note: Build a mechanism in the program to continue to read the WDT Configuration Port for clearing
*   WDT before time out.*

Appendix B
GPI/O Programming

This appendix provides definitions for the four GPI/O pins in the 3307546. GPI/O (General Purpose Input/Output) pins are provided for custom system design. The pin programming as input mode (GPI) or output mode (GPO) is depending on the configuration. The pin definitions are shown in the following table:

Pin No.	GPI/O mode	Default Corresponding Pin	Default PowerOn	Pin No.	GPI/O mode	Default Corresponding Pin	Default PowerOn
1	Digital Output 1	1	Read High	2	Digital Input 1	1	High
3	Digital Output 2	1	Read High	4	Digital Input 2	1	High
5	Digital Output 3	1	Read High	6	Digital Input 3	1	High
7	Digital Output 4	1	Read High	8	Digital Input 4	1	High
9	VCC5		-	10	GND		-

Table B-1 : J38 - GPI/O Connector Pin Definition

W   All digital output have pull-up to +3.3V

W   BIOS controls the GPI/O Default Function

W   Bit1~3: Reading the bit returns the digital input corresponding pin. Write is ignored.

   0 - Corresponding pin level low

   1 - Corresponding pin level high

W   Bit4~7: The bit corresponds to pin of digital output. Reading the bit returns it's value that written

   before.

   0 - Corresponding pin driven to low

   1 - Corresponding pin released to high (default)

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

Address:	Global American, Inc.
	17 Hampshire Drive
	Hudson, NH 03051
Telephone:	Toll Free (U.S. Only) 800-833-8999
	(603)886-3900
FAX:	(603)886-4545
Website:	http://www.globalamericaninc.com
E-Mail:	salesinfo@globalamericaninc.com