



integration with integrity

3307860 User's Manual

Full Size PICMG 1.0

Version 1.0

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How to Use This Manual

The manual describes how to configure your 3307860 system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this series model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and Compact Flash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides various useful tips to quickly get 3307860 running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document.

Chapter 1

System Overview

1.1 Introduction

3307860 is a cost-effective PICMG 1.0 single board computer (SBC). Based on the Intel® 865G chipset and LGA 775 socket, the 3307860 SBC supports latest Intel® Pentium® 4, Pentium® D and Celeron® D processor. It offers entry-level opportunity to the remarkable LGA 775 processors and the ability to transition applications from the socket 478 processors while remaining within any existing budget constraints. With LGA 775 package CPU support feature, 3307860 SBC is the ideal cost-effective solution for applications in medical equipment, industrial automation, process control, semiconductor equipment and network security markets.

There is no escaping the fact these days that users have to keep an eye on their competition and the other on their budget and that's the very reason they can rely on 3307860 and it is just one example of several levels of products GAI can supply to help our customers enhance their solutions portfolio, whether they are entry-level, value or performance.

The Intel® 865G chipset has already gained a solid reputation among users as the most competitively priced of Intel® latest chipsets in a variety of computing platforms. GAI implemented the Intel® 865G chipset for this very reason. It is a market approved legacy Intel® chipset and supports the necessary functions for industrial applications at an enviable cost/performance ratio. The 3307860 single board computer also features Gigabit Ethernet ports and dual SATA connectors plus dual IDE channels; one FDD channel; six USB 2.0 ports; dual serial ports, a parallel port; GPIO and Watchdog timer.

1.2 Check List

The 3307860 package should cover the following basic items:

- ✓ One 3307860 single board computer
- ✓ One dual Serial ports cable kit
- ✓ One Parallel port cable kit (2.0mm pitch)
- ✓ One FDC cable (2.0mm pitch)
- ✓ One IDE cable
- ✓ One Y-cable cable for PS/2 keyboard and mouse
- ✓ One 4-pin ATX power control cable for backplane connection
- ✓ One 7-pin SATA signal cable
- ✓ One Installation Resources CD-Title

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

- **Main processor**
 - Intel® Pentium® 4/Pentium® D/Celeron D Processor in LGA 775 package
 - FSB: 800/533MHz
- **BIOS**

Phoenix (Award) system BIOS with 4Mb Flash ROM with easy upgrade function ACPI, DMI, Green function and Plug and Play Compatible
- **Main Memory**
 - Support dual-channel & signal channel DDR memory interface
 - Non-ECC, non-buffered DIMMS only
 - Two DIMM sockets support 400/333/266 DDR-SDRAM up to 2GB System Memory
- **L2 Cache Memory**

Built-in processor
- **Chipset**

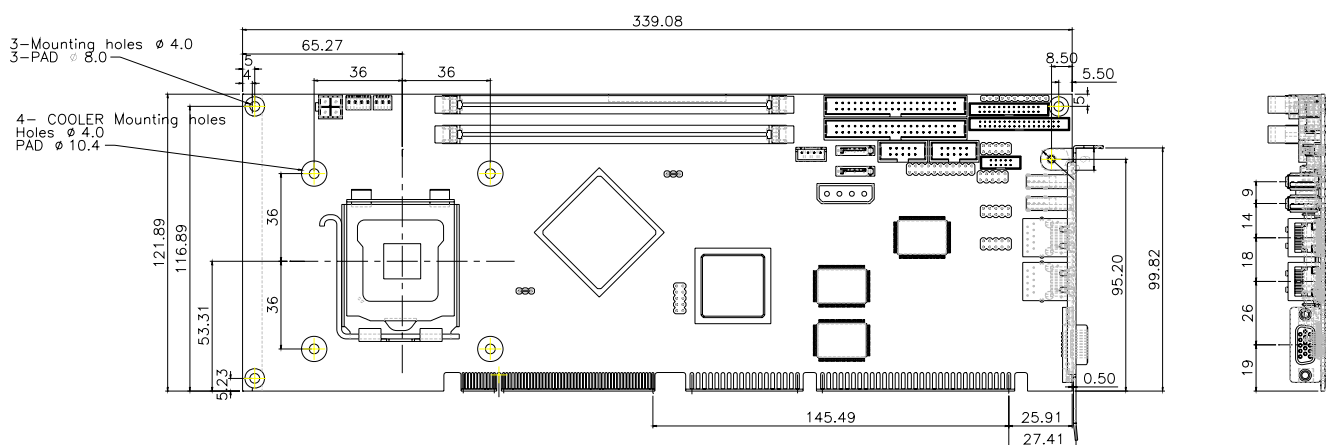
Intel 865G GMCH/MCH and ICH5 chipset
- **Bus Interface**
 - Follow PICMG 1.0 Rev 2.0 standard (32-bit PCI and 16-bit ISA)
 - Fully complies with PCI Local Bus specification V2.2 (support 4 master PCI slots)
- **PCI IDE Interface**

Support two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA/33/66/100 mode transfer and Bus Master feature

- **Floppy Drive Interface**
Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD
- **Serial Ports**
Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs
- **Parallel Port**
Support one parallel port with SPP, EPP and ECP modes
- **USB Interface**
Support six USB (Universal Serial Bus) ports for high-speed I/O peripheral devices
- **PS/2 Mouse and Keyboard Interface**
Support one 6-pin Mini-DIN connector for PS/2 keyboard/mouse connection through Y-Cable separation and one 5-pin shrouded connector for PS/2 keyboard connection through backplane connection
- **ATX Power Control Interface**
One 4-pin header to support ATX power control
- **Auxiliary I/O Interfaces**
System reset switch, external speaker, Keyboard lock and HDD active LED, etc
- **Real Time Clock/Calendar (RTC)**
Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
 - Support WDT function through software programming for enable/disable and interval setting
 - Generate system reset
- **On-board VGA**
 - GMCH integrated graphics, 266MHz core frequency; share system memory up to 64MB for system with greater than or equal to 192MB of system memory
- **On-board Ethernet LAN**
Realtek RTL8110SC Gigabit Ethernet controller to support RJ-45 connector
- **ISA Driving Capability**
Support 16-bit ISA-bus
- **High Driving GPIO**
Support 8 programmable high driving GPIO
- **Cooling Fans**
Support three 3-pin headers for CPU, System and Power fans
- **System Monitoring Feature**
Monitor CPU temperature, system temperature and major power sources, etc
- **Bracket**
Support one Ethernet port with 2 indicators, dual USB ports, one Mini-DIN port for PS/2 keyboard/mouse, and one CRT port

- **Outline Dimension (L X W):**
338.5mm (13.33") X 122mm (4.8")
- **Power Requirements:**
 - +12V (CPU) @5.6A
 - +12V (System) @7.2A
 - +5V @6.3A
- **Configuration:**
 - Test configuration:
 - CPU: Intel Pentium 4 3.4G (SL8PS) FSB:800/1M cache
 - Memory: DDR SDRAM 512MBx2
 - Primary Master IDE HDD: Seagate ST340014A
 - OS: Microsoft Windows XP SP2
 - Test Programs: Run Burning Test V4.0
 - Connected Fans: Only CPU fan connected
 - Run Time: 10 minutes
- **Operating Temperature:**
0°C ~ 55°C (32°F ~ 131°F)
- **Storage Temperature:**
-20°C ~ 80°C
- **Relative Humidity:**
0% ~ 95%, non-condensing

1.3.1 Mechanical Drawing

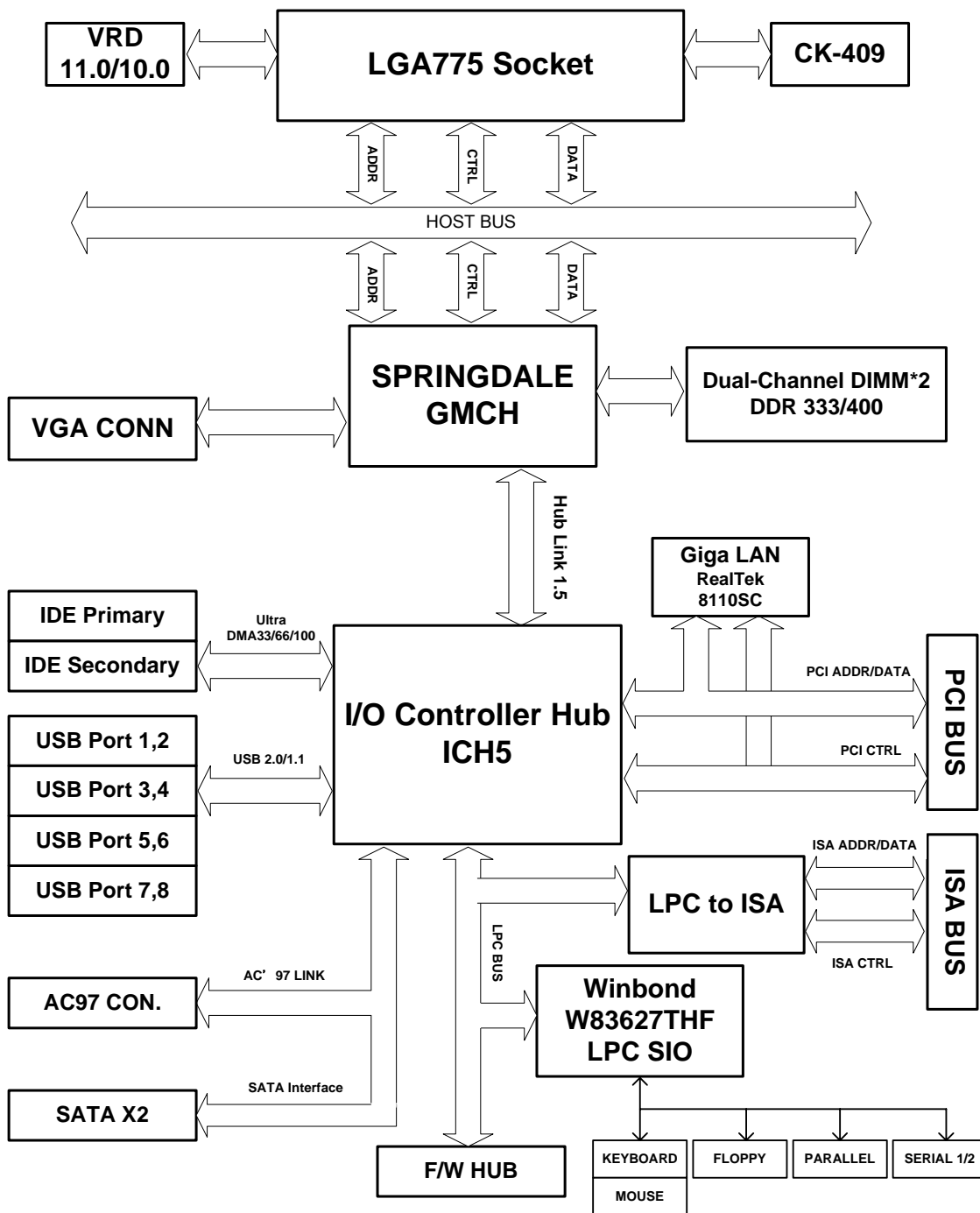


1.4 System Architecture

The system architecture of 3307860 includes two main Intel® chips - Intel 865G chipset supports Pentium 4 and Celeron D processor, DDR-SDRAM, 2D/3D graphic display, and 82801EA ICH5 that supports PCI bus interface, APM, ACPI compliant power management, USB port, SMBus communication, and Ultra DMA/33/66/100 IDE Master. Super I/O chip W83627HF is responsible for PS/2 Keyboard/Mouse, UARTs, FDC, Hardware Monitor, Parallel, Watch Dog Timer and Infrared interface.

The PCI-to-ISA Bridge supports a standard 16-bit ISA bus interface that is applied for all slower I/O operations.

There is one on-board Gigabit Ethernet via RJ-45 Port to support full functionality of 3307860 AIO SBC (All-In-One Single Board Computer).



3307860 System Block Diagram

Chapter 2 Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connector. All of the configuration jumpers on 3307860 series are in the proper position. The default settings shipped from factory are marked with a star (★).

2.1 Jumper Setting

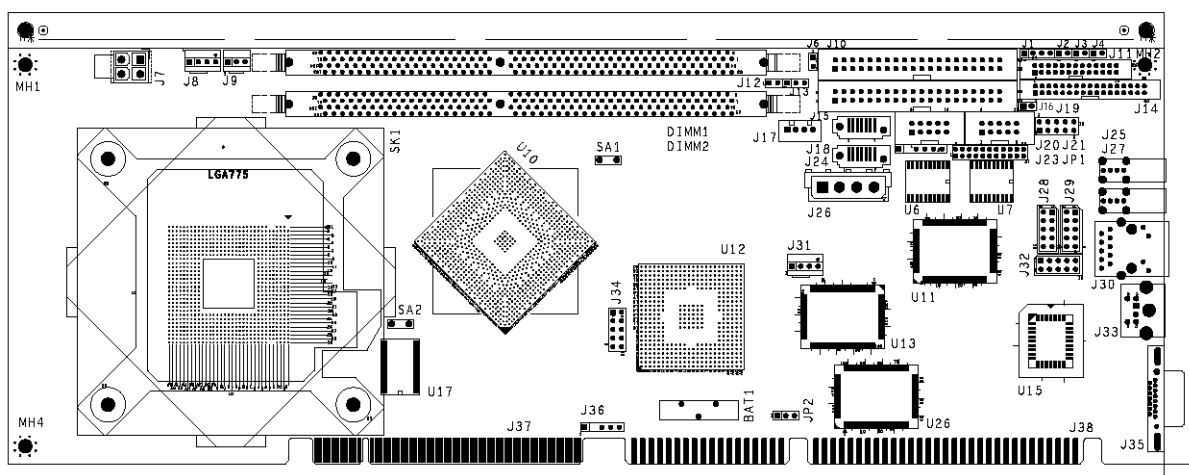


Figure 2-1 3307860 Jumper Location

JP1: COM2(J21) Interface Selection

JP1	Function
5-6,9-11,10-12,15-17,16-18 Short	RS-232 ★
3-4,7-9,8-10,13-15,14-16,21-22 Short	RS-422
1-2,7-9,8-10,19-20 Short	RS-485

JP2: CMOS Clear

JP2	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS Contents

2.2 Connector Allocation

I/O peripheral devices are connected to the interface connectors on this Single Board Computer.

Connector Function List

Connector	Description	Remark
J1	External Speaker Connector	
J2	Power LED	
J3	Hard Disk Drive LED Connector	
J4	LAN Active/Link LED	
J6	Reset Button Connector	
J7	12V POWER CON.	
J8	CPU FAN (3-pin Smart FAN)	
J9	3-pin Fan Connector	
J10	Secondary IDE Connector	
J11	Parallel Port Connector	
J15	Primary IDE Connector	
J12	External Wake On Ring Connector	
J13	External Wake On LAN Connector	
J14	FDC Interface Connector	
J16	ATX Power Button	
J17	ATX Power Control Connector	
J18	Primary SATA Connector	
J24	Secondary SATA Connector	
J19	General Purpose I/O Connector	
J20	COM2 Serial Port 2 Connector	
J21	COM1 Serial Port 1 Connector	
J23	IrDA Connector	
J24	Secondary SATA Connector	
J25	Primary USB Connector	
J26	Standalone Power Connector	
J27	Secondary USB Connector	
J29/J28/J32	External USB Connector	
J30	Primary Ethernet RJ-45 Connector	
J31	System FAN (3-pin Smart FAN)	
J33	PS/2 Keyboard/Mouse Connector	
J34	AC97 Connector	
J35	On-board VGA CRT Connector	
J36	SMBus Connector	

Pin Assignments of Connectors**J1: External Speaker Connector**

PIN No.	Signal Description
1	Speaker Signal Output (Open-drain w/ internal series 33 Ohm)
2	N/C
3	Ground
4	+5V

Note:

The pull-high voltage of external speaker is limited at 5V maximum.

J2: Power LED

PIN No.	Signal Description
1	5V Standby (470 Ohm pull-up for power LED+)
2	Ground (For Power LED-)

J3: Hard Disk Drive LED Connector

PIN No.	Signal Description
1	+5V (470 ohm pull-up for HDD LED+)
2	HDD Active # (HDD LED-)

J4: LAN Active/Link LED

PIN No.	Signal Description
1	LAN1 Active (LED+)
2	LAN1 Link (LED-)

J6: Reset Button Connector

PIN No.	Signal Description
1	Reset Signal Input (Active low)
2	Ground

J7: 12V POWER CON.

PIN No.	Signal Description
1	Ground
2	Ground
3	+12V
4	+12V

J8: CPU FAN (4-pin Smart FAN)

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal
4	Fan Control Signal

Note:

The fan must be a 12V fan. And there is not any over current protection.

J9: 3-pin Fan Connector

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal

Note:

The fan must be a 12V fan. And there is not any over current protection.

J15/J10: Primary/Secondary IDE Connector (IDE1/IDE2)

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C

21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull-down
29	DMA ACK#	30	Ground
31	INT REQ	32	N/C
33	SA1	34	CBLID#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

J11: Parallel Port Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J12: External Wake On Ring Connector

PIN No.	Signal Description
1	Ring Signal Input (Active low)
2	Ground

J13: External Wake On LAN Connector

PIN No.	Signal Description
1	5VSB
2	Ground
3	External WOL Signal Input (Active low)

J14: FDC Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	2	Density Select 0
3	Ground	4	N/C
5	Ground	6	Density Select 1
7	Ground	8	Index#
9	Ground	10	Motor ENA#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor ENB#
17	Ground	18	Direction#
19	Ground	20	Step#
21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	Ground	30	Read Data#
31	Ground	32	Head Select#
33	Ground	34	Disk Change#

J16: ATX Power Button

PIN No.	Signal Description
1	Pull-high 1K Ohm to +5VSB
2	Power Button Signal Input (Active high)

J17: ATX Power Control Connector

PIN No.	Signal Description
1	ATX Power Good Signal (PW-OK)
2	ATX 5V Stand-by (5VSB)
3	ATX Power On Control (PS-ON)
4	Ground

J18/J24: Primary/Secondary SATA Connector

PIN No.	Signal Description
1	Ground
2	SATATX+ (SATATXP)
3	SATATX- (SATATXN)
4	Ground
5	SATARX- (SATARXN)
6	SATARX+ (SATARXP)
7	Ground

J19: General Purpose I/O Connector

PIN No.	Signal Description
1	General Purpose I/O Port 0 (GPIO0)
2	General Purpose I/O Port 1 (GPIO1)
3	General Purpose I/O Port 2 (GPIO2)
4	General Purpose I/O Port 3 (GPIO3)
5	Ground
6	General Purpose I/O Port 4 (GPIO4)
7	General Purpose I/O Port 5 (GPIO5)
8	General Purpose I/O Port 6 (GPIO6)
9	General Purpose I/O Port 7 (GPIO7)
10	+5V

Note:

All General Purpose I/O ports can only apply to standard TTL $\pm 5\%$ signal level (0V/5V), and each source sink capacity up to 12mA.

J20: COM2 Serial Port 2 Connector

PIN No.	Signal Description
	RS-232
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)
10	N/C

J21: COM1 Serial Port 1 Connector

PIN No.	Signal Description		
	RS-232	RS-422	RS-485
1	DCD (Data Carrier Detect)	TX-	DATA-
2	RXD (Receive Data)	TX+	DATA+
3	TXD (Transmit Data)	RX+	N/C
4	DTR (Data Terminal Ready)	RX-	N/C
5	GND (Ground)	GND	GND
6	DSR (Data Set Ready)	N/C	N/C
7	RTS (Request to Send)	N/C	N/C
8	CTS (Clear to Send)	N/C	N/C
9	RI (Ring Indicator)	N/C	N/C
10	N/C	N/C	N/C

Note:

J21 (COM1) could be configurable as RS-232/422/485 with jumper JP1

J46: General Purpose I/O Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	Ground	10	+5V

Note:

All General Purpose I/O ports can only apply to standard TTL $\pm 5\%$ signal level (0V/5V), and each Fan.

J23: IrDA Connector

PIN No.	Signal Description
1	+5V
2	N/C
3	IRRX
4	Ground
5	IRTX
6	N/C

J25/J27: Primary/Secondary USB Connector

PIN No.	Signal Description
1	5V Dual
2	USB0-
3	USB0+
4	Ground

J26: Standalone Power Connector

PIN No.	Signal Description
1	+12V
2	Ground
3	Ground
4	+5V

J29/28/32: External USB Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	Frame Ground
3	USB2-	4	Ground
5	USB2+	6	USB3+
7	Ground	8	USB3-
9	Frame Ground	10	5V Dual
1	5V Dual	2	Frame Ground

Note:

5V Dual is always available. It's supplied by either 5V VCC power source in normal operation mode or 5V standby power source in standby mode

J30 : Primary Ethernet RJ-45 Connector

PIN No.	Signal Description
1	MDI0+ (MDI0P)
2	MDI0- (MDI0N)
3	MDI1+ (MDI1P)
4	MDI2+ (MDI2P)
5	MDI2- (MDI2N)
6	MDI1- (MDI1N)
7	MDI3+ (MDI3P)
8	MDI3- (MDI3N)

J31 : System FAN (4-pin Smart FAN)

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal
4	Fan Control Signal

Note:

The fan must be a 12V fan. And there is not any over current protection.

J33: PS/2 Keyboard/Mouse Connector

PIN No.	Signal Description
1	Keyboard Data
2	Mouse Data
3	Ground
4	5V Dual
5	Keyboard Clock
6	Mouse Clock

J34: AC97 Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	CLK_AC97	2	GND
3	12V VCC	4	ACZ_BIT_CLK
5	ACZ_SDOUT	6	ACZ_SDIN
7	ACZ_SYNC	8	ACZ_RST#
9	3V VCC	10	PC_SPK

J35: On-board VGA CRT Connector

PIN No.	Signal Description
1	Red
2	Green
3	Blue
4	Monitor ID0 (MONID0) (5V I/F)
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V

10	Ground
11	Monitor ID1 (MONID1) (5V I/F)
12	VGA DDC Data (5V I/F)
13	Horizontal Sync. (HSYNC) (5V I/F)
14	Vertical Sync. (VSYNC) (5V I/F)
15	VGA DDC Clock (5V I/F)

J36: SMBus Connector

PIN No.	Signal Description
1	SMBus Clock
2	N/C
3	Ground
4	SMBus Data
5	+3V

Chapter 3

System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle WDT operation in software programming.

3.1 LGA 775 Intel® Pentium 4/Celeron Processor

Installing LGA775 CPU

- 1) Lift the handling lever of CPU socket outwards and upwards to the other end. Following step A position to step B position.

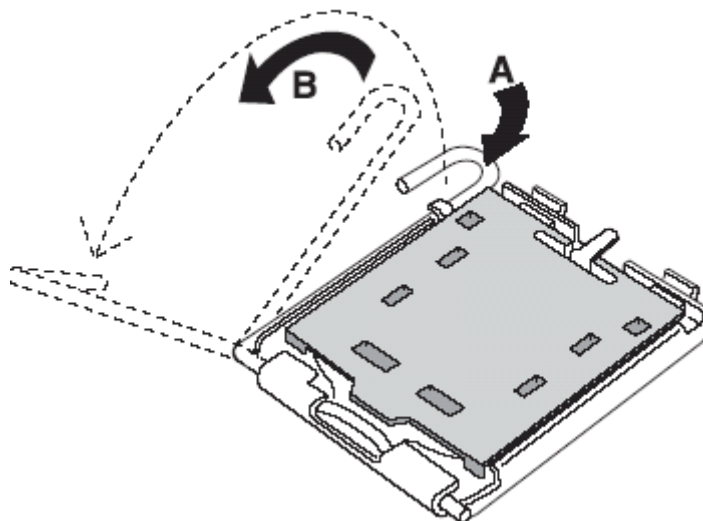


Figure 3-1

- 2) Align the processor pins with pinholes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.

Triangle mark is meaning first pin position; kindly assemble and take aim at notch of top and bottom between CPU and socket.



Figure 3-2

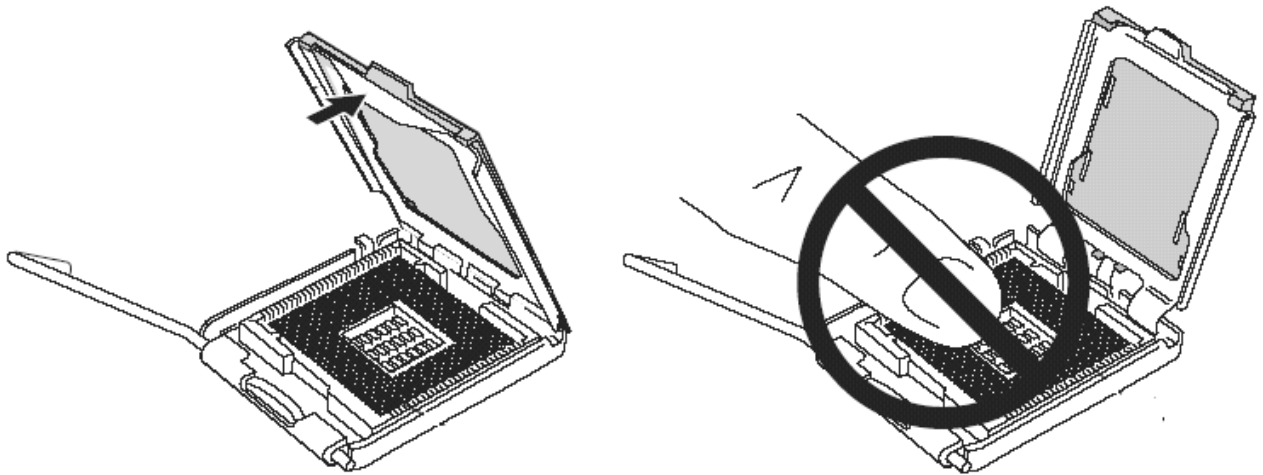


Figure 3-3

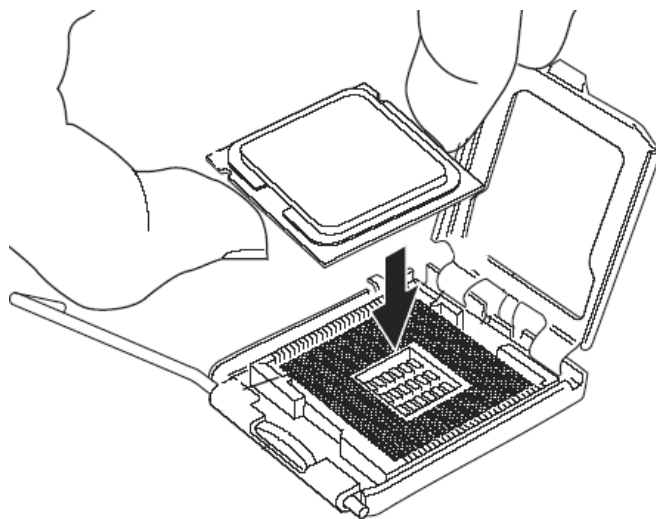


Figure 3-4

Precaution! (See fig.3-3) Don't touch directly by your hand or impacts internal align balls of CPU socket to avoid motherboard destruction, it is a precise actuator.

- 3) Push down the lever to lock processor chip into the socket once CPU fits.
- 4) Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the LGA 775.

Removing CPU

- 1) Unlock the cooling fan first.
- 2) Lift the lever of CPU socket outwards and upwards to the other end.
- 3) Carefully lifts up the existing CPU to remove it from the socket.
- 4) Follow the steps of installing a CPU to change to another one or place handling bar to close the opened socket.

Configuring System Bus

3307860 will automatically detect the CPU used. CPU speed of Intel P4 can be detected automatically.

3.2 Main Memory

3307860 provides two DDR-SDRAM DIMM sockets to support 333/400 DDR-SDRAM as main memory, Non-ECC, non-buffered DIMMS only. The maximum memory size can be up to 2GB. Auto detecting memory clock in according to BIOS CMOS settings.

For system compatibility and stability, do not use memory module without brand. Memory configuration can be either one double-sided DIMM in either one DIMM socket or two single-sided DIMM in both sockets.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

Dual Channel DDR DIMMs

Dual Channel DDR memory technology doubles the bandwidth of memory bus. Adequate or higher bandwidth of memory than processor would increase system performance. To enable Dual Channel DDR memory technology, install two identical memory modules in both memory sockets is required. Following tables show bandwidth information of different processor and memory configurations.

CPU FSB	Bandwidth
800MHz	6.4GB/s
533MHz	4.2GB/s

Memory Frequency	Dual Channel DDR Bandwidth	Single Channel DDR Bandwidth
400MHz	6.4GB/s	3.2GB/s
333MHz	5.4GB/s	2.7GB/s

Note:

To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.

Memory frequency / CPU FSB synchronization

3307860 supports different memory frequencies depending on the CPU front side bus and the type of DDR DIMM.

CPU FSB	Memory Frequency
800MHz	400/333* MHz
533MHz	333 MHz

* When using 800MHz FSB CPU, DDR DIMMs may run at 320MHz (not 333MHz) due to chipset limitation.

3.3 Installing the Single Board Computer

To install your 3307860 into standard chassis or proprietary environment, please perform the following:

- Step 1 : Check all jumpers setting on proper position
- Step 2 : Install and configure CPU and memory module on right position
- Step 3 : Place 3307860 into the dedicated position in the system
- Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that SBC is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of PICMG 1.0 PCI plus ISA-bus slot.

Note:

Please refer to section 3.3.1 to 3.3.4 to install INF/VGA/LAN drivers.

3.3.1 Chipset Component Driver

The chipset used on 3307860 is relatively new which operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-2000/XP, please install its INF before any of other Drivers are installed.

3.3.2 Intel Integrated Graphics GMCH Chip

Using Intel 865GMCH High performance graphic integrated chipset is aimed to gain an outstanding graphic performance. It is accompanied by shared 8 to 64MB system DDR-SDRAM with Intel DVMT. This combination makes 3307860 an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI or ISA VGA card can take over the system display.

Drivers Support

Please find 865GMCH driver in the 3307860 CD-title. Drivers support Windows-2000, Windows XP, OS2, and Linux.

3.3.3 Gigabit Ethernet Controller

Drivers Support

Please find RTL 8110SC LAN driver in /Ethernet directory of 3307860 CD-title. The drivers support Windows-2000, Windows-XP, and Linux.

LED Indicator (for LAN status)

3307860 provides two LED indicators to report RTL 8110SC Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

8110SC	Color	Name of LED	Operation of Ethernet Port		
			ON	OFF	
Status LED	Green	LAN Linked & Active LED	Linked	Active (Blinking)	
Speed LED	Orange	LAN speed LED	Giga Mbps	100 Mbps	10 Mbps
	Green		Orange	Green	Off

3.3.4 On-board AC-97 Audio Device

The on-board AC-97 audio device provides a more than standard sound display. It is capable for many general purposes. This onboard Audio function is supported by Winbond W83627THG embedded AC'97 Codec Controller.

Driver Support

Please find Sound driver in \Audio\Ac97 of 3307860 driver CD-title. The drivers support Windows 2000 and Windows XP.

To disable this onboard Audio function, please configure the "Integrated Peripheral" Setup Menu in BIOS, and entry "onboard device" item list to Change the "AC'97 Audio" setting to "Disable" will turn off this PCI Audio device.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

JP2	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS contents

To correctly operate CMOS Clear function, users must turn off the system, move JP2 jumper to short pin 2 and 3. To clear CMOS contents, please turn the power back on and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP1 back to 1-2 position (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load BIOS default setting.

3.5 WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

3307860 allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset or to non-maskable interrupt (NMI), when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process. A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset or NMI signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627THF data sheet.

There are two PNP I/O port addresses that can be used to configure WDT,
1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)
2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);
// Assign Pin 89 to be a WDTO
outp(0x002E, 0x2B);
outp(0x002F, inp(0x002F) & 0xEF);
// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);
// Active Logic Device 8
```

```
outp(0x002E, 0x30);
outp(0x002F, 0x01);
// Select Count Mode
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | (Count-mode Register & 0x08));
// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register);
// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);
// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

- Value of **Count-mode Register**:
- 1) 0x00 -- Count down in seconds (Bit3=0)
 - 2) 0x08 -- Count down in minutes (Bit3=1)
- Value of **Time-out Value Register**:
- 1) 0x00 -- Time-out Disable
 - 2) 0x01~0xFF -- Value for counting down

3.6 SMBus

The System Management Bus is a two-wire interface through which simple power-related chips can communicate with rest of the system. It uses I2C as its backbone.

A system using SMBus passes messages to and from devices instead of tripping individual control lines. With the SMBus, a device can provide manufacturer information, tell the system what its model/part number is, save its state for a suspend event, report different types of errors, accept control parameters, and return its status.

The SMBus may share the same host device and physical bus as ACCESS bus components provided that an appropriate electrical bridge is provided between the internal SMB devices and external ACCESS bus devices.

3.7 On-Board USB 2.0 Controller

Drivers Support

Please find Intel ICH5 USB driver in /USB20 directory of 3307860 CD-title. The drivers support Windows-98/98SE/2000 and Windows-XP.

3.8 GPIO

The 3307860 provides 8 programmable input or output ports that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

3.8.1 Pin assignment

J19: General Purpose I/O Connector

PIN No.	Signal Description
1	General Purpose I/O Port 0 (GPIO0)
2	General Purpose I/O Port 1 (GPIO1)
3	General Purpose I/O Port 2 (GPIO2)
4	General Purpose I/O Port 3 (GPIO3)
5	Ground
6	General Purpose I/O Port 4 (GPIO4)
7	General Purpose I/O Port 5 (GPIO5)
8	General Purpose I/O Port 6 (GPIO6)
9	General Purpose I/O Port 7 (GPIO7)
10	+5V

All General Purpose I/O ports can only apply to standard TTL $\pm 5\%$ signal level (0V/5V), and each source sink capacity up to 12mA.

3.8.2 - 3307860 GPIO Programming Guide

There are 8 GPIO pins on 3307860 series. These GPIO pins are from SUPER I/O (W83627THF) GPIO pins, and can be programmed as Input or Output direction.

J19 pin header is for 8 GPIO pins and its pin assignment as following :

J19_Pin1=GPIO1:from SUPER I/O_GPIO10 with Ext. 2.7K PH
 J19_Pin3=GPIO2:from SUPER I/O_GPIO11 with Ext. 2.7K PH
 J19_Pin5=GPIO3:from SUPER I/O_GPIO12 with Ext. 2.7K PH
 J19_Pin7=GPIO4:from SUPER I/O_GPIO13 with Ext. 2.7K PH
 J19_Pin2=GPIO5:from SUPER I/O_GPIO14 with Ext. 2.7K PH
 J19_Pin4=GPIO6:from SUPER I/O_GPIO15 with Ext. 2.7K PH
 J19_Pin6=GPIO7:from SUPER I/O_GPIO16 with Ext. 2.7K PH
 J19_Pin8=GPIO8:from SUPER I/O_GPIO17 with Ext. 2.7K PH
 <<<<< **Be careful Pin9=GND , Pin10=VCC** >>>>>

There are several Configuration Registers (CR) of W83627THF needed to be programmed to control the GPIO direction, and status(GPI)/value(GPO). CR00h ~ CR2F are common (global) registers to all Logical Devices (LD) in W83627THF. CR07h contains the Logical Device Number that can be changed to access the LD as needed. LD7 contains the GPIO10~17 registers.

Programming Guide:

Step1: CR29_Bit [7.6]. P [0,1]; to select multiplexed pins as GPIO10~17 pins
 Step2: LD7_CR07h.P [07h]; Point to LD7
 Step3: LD7_CR30h_Bit0.P1; Enable LD7
 Step4: Select GPIO direction, Get Status or output value.
 LD7_CRF0h; GPIO17 ~ 10 direction, 1 = input, 0 = output pin
 LD7_CRF2h.P[00h]; Let CRF1 (GPIO data port) non-invert to prevent from confusion
 LD7_CRF1h; GPIO17~10 data port, for input pin, get status from the related bit, for output pin, write value to the related bit.

For example,

LD7_CRF0h_Bit4.P0; Let GPIO14 as output pin
 LD7_CRF2h_Bit4.P0; Let CRF1_Bit4 non-inverted
 LD7_CRF1h_Bit4.P0; Output "0" to GPIO14 pin (J19_Pin 2)
 LD7_CRF0h_Bit0.P1; Let GPIO10 as input pin
 LD7_CRF2h_Bit0.P0; Let CRF1_Bit0 non-inverted
 Read LD7_CRF1h_Bit0; Read the status from GPIO10 pin (J19_Pin1)

How to access W83627THF CR?

In 3307860 , the EFER = 002Eh, and EFDR = 002Fh.

EFER and EFDR are 2 IO ports needed to access W83627THF CR.

EFER is the Index Port, EFDR is the Data Port.

CR index number needs to be written into EFER first,

Then the data will be read/written from/to EFDR.

To R/W W83627THF CR, it is needed to Enter/Enable Configuration Mode first.

When completing the programming, it is suggested to Exit/Disable Configuration Mode.

Enter Configuration Mode: Write 87h to IO port EFER twice.

Exit Configuration Mode: Write AAh to IO port EFER.

3.8.3 Example

Define GPIO4 as output pin, and output "0" to this pin.

```

mov     dx,2eh    ; Enter Configuration Mode
mov     al,87h
out     dx,al
jmp     $+2
out     dx,al

mov     dx,2eh
mov     al,2Ah    ; Read CR2A
out     dx,al
mov     dx,2fh
in      al,dx
or      al,0FCh  ; CR2A_Bit[7..2].P[1,1,1,1,1,1]
mov     ah,al

mov     dx,2eh
mov     al,2Ah
out     dx,al
mov     dx,2fh
mov     al,ah
out     dx,al

```



```
mov    dx,2eh
mov    al,07h    ; Point to LDN7
out    dx,al
mov    dx,2fh
mov    al,07h
out    dx,al

mov    dx,2eh    ; Read CR30
mov    al,30h
out    dx,al
mov    dx,2fh
in     al,dx
or     al,01h
mov    ah,al

mov    dx,2eh    ; CR30_Bit0.P1
mov    al,30h
out    dx,al
mov    dx,2fh
mov    al,ah
out    dx,al

mov    dx,2eh
mov    al,0f0h    ; Read  LD7_CRF0
out    dx,al
mov    dx,2fh
in     al,dx
and    al,0efh
mov    ah,al

mov    dx,2eh
mov    al,0f0h    ; LD7_CRF0_Bit4.P0
out    dx,al
mov    dx,2fh
mov    al,ah
out    dx,al

mov    dx,2eh
mov    al,0f2h    ; Read  LD7_CRF2
out    dx,al
mov    dx,2fh
in     al,dx
and    al,0efh
mov    ah,al
```

```
mov     dx,2eh
mov     al,0f2h    ; LD7_CRF2_Bit4.P0
out     dx,al
mov     dx,2fh
mov     al,ah
out     dx,al
mov     dx,2eh
mov     al,0f1h    ; Read  LD7_CRF1
out     dx,al
mov     dx,2fh
in      al,dx
and     al,0efh
mov     ah,al

mov     dx,2eh
mov     al,0f1h    ; LD7_CRF1_Bit4.P0
out     dx,al
mov     dx,2fh
mov     al,ah
out     dx,al

mov     dx,2eh    ; Exit Configuration Mode
mov     al,0AAh
out     dx,al
```

Chapter 4

BIOS Setup Information

3307860 is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, 3307860 communicates with peripheral devices and check its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit if you want to run SETUP" appears, press key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter 3307860 AWARD BIOS CMOS Setup Utility, a Main Menu is presented. The Main Menu allows user to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
<p>ESC : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item F10 : Save & Exit Setup</p>	
<p>Time, Date, Hard Disk Type ...</p>	

Note:

It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Fri, May 18 2007	Item Help
Time (hh:mm:ss)	10 : 20 : 30	
▶ IDE Channel 0 Master	[None]	Menu Level ▶
▶ IDE Channel 0 Slave	[None]	Change the day, month, year and century
▶ IDE Channel 1 Master	[None]	
▶ IDE Channel 1 Slave	[None]	
Drive A	[1.4M, 3.5 in.]	
Drive B	[None]	
Floppy 3 Mode Support	[Disabled]	
Video	[EVG/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	252928K	
Total Memory	253952K	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Note:

Setting On-Chip Serial ATA at **Enhanced Mode** could start up SATA device function; you could enter “Integrated Peripheral” section, and then look for “On-Chip IDE device”, and press enter, finally find out “On Chip Serial ATA” item to change default.

Extension Memory and Total Memory are base on what kind of memory devices which user employs.

■ Menu Selections

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Channel 0 Master	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave		
IDE Channel 1 Master		
IDE Channel 1 Slave		
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Press <Enter> to enter the next page for detail hard drive settings
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adaptors control the IDE devices, such as hard disk drive or CD-ROM drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 0/1 Master (&Slave)

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Channel 0 Master	Auto	Menu Level ▶ To atuo-detect the HDD's size, head ... on this channel
Access Mode	Auto	
<i>Capacity</i>	0 MB	
<i>Cylinder</i>	0	
<i>Head</i>	0	
<i>Precomp</i>	0	
<i>Landing Zone</i>	0	
<i>Sector</i>	0	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Note:

The oblique words (item) are meaning which are base on what kind of storage device does user employ.

■ **Menu Selections**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS, LBA Large, Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min=0, Max=65535	Set the number of cylinders for hard disk

Head	Min=0, Max=255	Set the number of read/write heads
Precomp	Min=0, Max=65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min=0, Max=65535	****
Sector	Min=0, Max=255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows user to configure your system for basic operation. The system's default speed, boot-up sequence, keyboard operation, shadowing and security may be modified accordingly.

Phoenix- AwardBIOS CMOS Setup Utility Advanced BIOS Features

		Item Help
▶ CPU Feature	[Press Enter]	
▶ Hard Disk Boot Priority	[Press Enter]	
Virus Warning	[Disabled]	Menu Level ▶
CPU L1 & L2 Cache	[Enabled]	Select Hard Disk Boot Device Priority
Hyper-Threading Technology	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[Floppy]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot up Floppy Seek	[Disabled]	
Boot up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
X APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Report No FDD For WIN 95	[No]	
Small Logo(EPA) Show	[Disabled]	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Phoenix- AwardBIOS CMOS Setup Utility
CPU Feature

Delay Prior to Thermal	[16 Min]	Item Help
Thermal Management	Thermal Monitor 1	
Limit CPUID MaxVal	[Disabled]	Menu Level ▶
C1E Function	[Auto]	
Execute Disabled Bit	[Enabled]	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Delay Prior to Thermal

The choice: 4, 8, 16, 32 Min.

Limit CPUID MaxVal

The choice: Enabled, Disabled.

C1E Function

The choice: Auto, Disabled.

Execute Disabled Bit

The choice: Enabled, Disabled.

When disabled, forces the XD feature flag to always return.

Hard Disk Boot Priority

Select Hard Disk Boot Device Priority. Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

Bootable Add-in Cards	Select SCSI Boot
Ch x M (S).	Select IDE Channel 0,1 Master or Salve Boot
Ch x M.	Select IDE Channel 2 or 3 Master Boot

CPU L1 Cache/L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Hyper-Threading Technology

“Enabled” for Windows XP and Linux 2.4.X (OS optimized for Hyper-Threading Technology and “Disabled” for other OS (OS not optimized for Hyper-Threading Technology).

The choice: Enabled, Disabled.

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: Floppy, LS120, Hard Disk, CDROM, ZIP 100, USB-FDD, USB-ZIP, USB-CDROM, LAN and Disabled.

Boot Other Device

Select your Boot Device Priority.

The choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical driver B to logical drive A and Vice-Versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal – a pin in the keyboard controller controls Gate A20. Default is Fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keyboard repeat at a rate determined by the keyboard controller, when enabled, the typematic delay can be selected.

The choice: Enabled, Disabled. (Default Disabled)

Security Option

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 the prompt.

Note:

To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

APIC Mode

The choice: Enabled, Disabled.

MPS Version Control For OS

The choice: 1.1, 1.4

OS Select For DRAM > 64MB

Select OS/2 only if you are running SO/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD for WIN 95

The choice: No, Yes.

Small Logo (EPA) Show

The choice: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows user to configure the system based on the specific features of the Intel 865 GMCH/MCH and ICH5 chipset for 3307860. This chipset manages bus speeds and access to system memory resources, such as DRAM (DDR SDRAM) and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time user might consider making any changes would be if you discovered that data was being lost while during system operation.

Phoenix- AwardBIOS CMOS Setup Utility Advanced Chipset Features

DRAM Timing Selectable [By SPD] X CAS Latency Time [2.5] X Active to Precharge Delay [7] X DRAM RAS# to CAS# Delay [3] X DRAM RAS# Precharge [3] Memory Frequency For [Auto] System BIOS Cacheable [Enabled] Video BIOS Cacheable [Enabled] Memory Hole At 15M-16M [Disabled] Delay Prior to Thermal [16 Min] AGP Aperture Size (MB) [128] Init Display First [PCI Slot] ** On-Chip VGA Setting ** On-Chip VGA [Enabled] On-Chip Frame Buffer Size [8MB] Boot Display [Auto] FWH Write Protection [Enabled]	Item Help Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

DRAM Timing Selectable

This option provides DIMM plug-and-play support by serial presence detect (SPD) mechanism via the system management bus (SMBUS) interface.

The choice: Manual, By SPD.

CAS Latency Time

This option controls the number of SCLKs between the time a read command is sampled by the SDRAMs and the time the GMCH samples correspondent data from the SDRAMs.

The choice: 2, 2.5, 3.

Active to Precharge Delay

This is to DDR standard accordingly.

The choice: 5, 6, 7, 8.

DRAM RAS# to CAS# Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to Auto.

The choice: 2, 3, 4.

DRAM RAS# Precharge

This option controls the number of SCLKs for RAS# precharge. If the system equipped with quality memory module, change to "3 SCLKs" to obtain better memory performance. It is set to auto normally.

The choice: 2, 3, 4.

Memory Frequency For

Users are recommended to use Auto for memory frequency selection.

The choice: DDR266, DDR333, DDR400, Auto.

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 choice: Enabled, Disabled.

Video BIOS Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

Memory Hole At 15-16M

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Enabled, Disabled.

Delay Prior to Thermal

The choice: 4 Min, 8 Min, 16 Min, 32 Min.

AGP Aperture Size (MB)

The choice: 4, 8, 16, 32, 64, 128, 256.

Init Display First

This item allows you to select the first display port to be initialized.

The choice: PCI Slot & Onboard/AGP.

On-Chip VGA

The choice: Enabled, Disabled.

On-Chip Frame Buffer Size

Users can set the display memory size that shared from main memory.

The choice: 1MB, 8MB, 16MB.

Boot Display

The choice: Auto, CRT, TV, CRT+TV.

FWH Write Protection

The item allow advanced user to sustain BIOS default detting.

The choice: Enabled, Disabled.

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility Integrated Peripherals

<ul style="list-style-type: none"> ▶ OnChip IDE Device [Press Enter] ▶ Onboard Device [Press Enter] ▶ Super IO Device [Press Enter] 	Item Help
	Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Phoenix- AwardBIOS CMOS Setup Utility OnChip IDE Device

IDE HDD Block Mode [Enabled] IDE DMA transfer access [Enabled] On-Chip Primary PCI IDE [Enabled] IDE Primary Master PIO [Auto] IDE Primary Slave PIO [Auto] IDE Primary Master UDMA [Auto] IDE Primary Slave UDMA [Auto] On-Chip Secondary PCI IDE [Enabled] IDE Secondary Master PIO [Auto] IDE Secondary Slave PIO [Auto] IDE Secondary Master UDMA [Auto] IDE Secondary Slave UDMA [Auto] *** On-Chip Serial ATA Setting *** On-Chip Serial ATA [Disabled] X Serial ATA Port0 Mode [Primary Master] Serial ATA Port1 Mode [Primary Slave]	Item Help
	Menu Level ▶
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Note:

If user changes “On Chip Serial ATA default to become Enhance Mode”, you will perceive that shadow item could be selectable.

IDE HDD Block Mode

If IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

IDE DMA transfer access

The choice: Enabled, Disabled.

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields allow set a PIO mode (0-4) 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 choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if IDE hard drive supports and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

On-Chip Serial ATA

Disabled	Disabled SATA Controller
Auto	Auto arrange by BIOS
Combined Mode	PATA and SATA are combined. Max. of 2 IDE drives in each Channel
Enhanced Mode	Enable both SATA and PATA. Max. of 6 IDE drives are Supported
SATA Only	SATA is operating in legacy mode

Phoenix- AwardBIOS CMOS Setup Utility
Onboard Device

USB Controller	[Enabled]	Item Help
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Enabled]	Menu Level ▶
USB Mouse Support	[Disabled]	
AC97 Audio	[Disabled]	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled.

USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled.

USB Keyboard Support

This item allows enabling USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choice: Enabled, Disabled.

USB Mouse Support

This item allows enabling USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled.

AC97 Audio

This item allows control to Auto/Disable Audio function.

The choice: Auto, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">POWER ON Function</td> <td style="width: 25%;">[Any Key]</td> <td style="width: 40%;"></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X KB Power ON Password</td> <td>Enter</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X Hot Key Power ON</td> <td>Ctrl-F1</td> <td></td> </tr> <tr> <td>Onboard FDC Controller</td> <td>[Enabled]</td> <td></td> </tr> <tr> <td>Onboard Serial Port 1</td> <td>[3F8/IRQ4]</td> <td></td> </tr> <tr> <td>Onboard Serial Port 2</td> <td>[2F8/IRO3]</td> <td></td> </tr> <tr> <td>UART Mode Select</td> <td>[Normal]</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X Rx/D, Tx/D Active</td> <td>Hi, Lo</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X IR Transmission Delay</td> <td>Enabled</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X UR2 Duplex Mode</td> <td>Half</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X Use IR Pins</td> <td>IR-Rx2Tx2</td> <td></td> </tr> <tr> <td>Onboard Parallel Port</td> <td>[378/IRQ7]</td> <td></td> </tr> <tr> <td>Parallel Port Mode</td> <td>[SPP]</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X EPP Mode Select</td> <td>EPP1.7</td> <td></td> </tr> <tr style="background-color: #f2f2f2;"> <td>X ECP Mode Use DMA</td> <td>3</td> <td></td> </tr> <tr> <td>Watch Dog Timer Select</td> <td>[Disabled]</td> <td></td> </tr> </table>	POWER ON Function	[Any Key]		X KB Power ON Password	Enter		X Hot Key Power ON	Ctrl-F1		Onboard FDC Controller	[Enabled]		Onboard Serial Port 1	[3F8/IRQ4]		Onboard Serial Port 2	[2F8/IRO3]		UART Mode Select	[Normal]		X Rx/D, Tx/D Active	Hi, Lo		X IR Transmission Delay	Enabled		X UR2 Duplex Mode	Half		X Use IR Pins	IR-Rx2Tx2		Onboard Parallel Port	[378/IRQ7]		Parallel Port Mode	[SPP]		X EPP Mode Select	EPP1.7		X ECP Mode Use DMA	3		Watch Dog Timer Select	[Disabled]		<p style="text-align: center;">Item Help</p> <hr/> <p>Menu Level ►</p>
POWER ON Function	[Any Key]																																																
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Power On Function

This item allows selecting different power on scheme using ATX power supply.

Password	Power on using customized password string
Hot Key	Power on using special customized key
Mouse Left	Power on using mouse left click
Mouse Right	Power on using mouse right click
Any Key	Power on using any keyboard key
Button Only	Power on by power Button
Keyboard 98	Power on by keyboard 98 [Only power ON/OFF key]

KB Power On Password

In the event of "Power On Function" being configured as "Password", this item will be enabled for tuning. Press "Enter" key to enter a customized password, and confirm again when being asked. In the case that the confirmed password does not match the configured one, the message of "Password Disabled - Press any key to continue..." will be prompted.

Hot Key Power On

In the event of “Power On Function” being configured as “Hot Key”, this item will be enabled for tuning.

The choice: Ctrl-F1 to Ctrl-F12.

Onboard FDC Controller

This item allows enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows users to select Infrared transmission mode.

Normal	Disable Infrared function
IrDA	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission

As Infrared transmission function shares onboard serial port 2, COM2 needs to be enabled.

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available :

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode.

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

Onboard Parallel Port

This item allows you to configuring I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7.

Parallel Port Mode

There are four different modes for the onboard parallel port :

SPP	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP + EPP	Switch to ECP + EPP mode

EPP Mode Select

Select different version of EPP mode.

The choice: EPP1.7, EPP1.9.

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choice: 3, 1.

Watch Dog Timer Select

The choice: Disabled, 10, 20, 30, 40 Sec, 1 Min/2/4 Min.

4.8 Power Management Setup

The Power Management Setup allows configuration of the system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

	Item Help
ACPI Function	[Enabled]
ACPI Suspend Type	[S1(POS)]
X Run VGABIOS if S3 Resume	No
Power Management	[User Define]
Video Off Method	[DPMS]
Video Off In Suspend	[Yes]
Suspend Type	[Stop Grant]
Suspend Mode	[Disabled]
HDD Power Down	[Disabled]
Soft-Off by PWR-BTTN	[Instant-Off]
PWRON After PWR-Fail	[On]
CPU THRM-Throttling	[50.0%]
Power On by Ring/LAN	[Disabled]
Wake-Up by Onboard LAN	[Disabled]
X USB KB Wake-Up From S3	Disabled
Resume by Alarm	[Disabled]
X Date(of Month) Alarm	0
X Time(hh:mm:ss) Alarm	0 : 0 :0
** Reload Global Timer Events **	
Primary IDE 0	[Disabled]
Primary IDE 1	[Disabled]
Secondary IDE 0	[Disabled]
Secondary IDE 1	[Disabled]
FDD,COM,LPT Port	[Disabled]
PCI PIRQ[A-D]#	[Disabled]
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1(POS), S3(STR).

Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows selecting the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Suspend Type

Two options are available : Stop Grant and PwrOn Suspend.

The choice: Stop Grant, PwrOn Suspend.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour.

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.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores Power back
Off	System stays at Power-Off

CPU THRM-Throttling

When the CPU temperature reaches the preset standard. The CPU usage will be reduced to a selected level to avoid overheating.

The choice: 75.5%, 50.0%, 25.0%.

Power On by Ring/LAN

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem or Wake-On LAN.

The choice: Enabled, Disabled.

Wake-Up By Onboard LAN

This option can be enabled to support Wake Up by on-board LAN.

The choice: Disabled, Enabled.

USB KB Wake-Up From S3

The choice: Enabled, Disabled.

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

Time(hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility PnP/PCI Configurations

PnP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ▶ Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
X IRQ Resources	Press Enter	
X DMA Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For VGA	[Enabled]	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

PNP OS Installed

Select Yes if using a plug and play capable operating system , select No if BIOS is controlling non-boot devices.

The choice: No, Yes.

Reset Configuration Data

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.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If set to Auto, IRQ DMA and memory base address fields can not be selected, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

The choice: Press Enter.

IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI/ISA PnP, Legacy ISA.

DMA Resources

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DMA channel.

Enter for more options DMA-0/DMA-1/DMA-3/DMA-5/DMA-6/DMA-7.

The choice: PCI/ISA PnP, Legacy ISA.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the plug and play standard whether designed for PCI or ISA bus architecture.

The choice: Enabled, Disabled.

Assign IRQ For VGA

To enable VGA IRQ assignation by selecting enabled.

The choice: Enabled, Disabled.

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temperature	31°C / 87°F	Menu Level ▶
Current CPU Temperature	47°C / 116°F	
Current System FAN Speed	0 RPM	
Current CPU FAN Speed	0 RPM	
Current Power FAN Speed	3835 RPM	
Vcore	1.24 V	
2.6 V	2.57 V	
3.3 V	3.36 V	
12 V	12.09 V	
VCC	5.04 V	
UBAT(V)	3.28 V	
5VSB(V)	5.04 V	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

CPU Warning Temperature

This item allows user to set a temperature above which the system will start the beeping warning. Default setting is Disabled. This function will only with “ACPI” power management and “S3 (STR)” suspend type.

The choices : Disabled, 50°C / 122°F, 53°C / 127°F, 56°C / 133°F, 60°C / 140°F, 63°C / 145°F, 66°C / 151°F, 70°C / 158°F.

4.11 Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility
Frequency / Voltage Control

Spread Spectrum	[Disabled]	Item Help
		Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Spread Spectrum

This item allows user to enable/disable the spread spectrum modulate.

The choice: Disabled, -0.35%, -0.50%, -0.75%.

4.12 Default Menu

Selecting “Defaults” from the main menu shows two options which are described below,

Load Fail-Safe Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N)?

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of them. The differences between are:

Set Supervisor Password : can enter and change the options of the setup menus.

Set User Password : just can only enter but do not have the right to change the options of the setup menus. When selecting this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will reboot and Setup can be entered freely.

PASSWORD DISABLED

When a password has been enabled, user will be prompted to enter it every time user tries to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of the computer.

User may determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.14 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing "Y" stores the selections made in the menus in CMOS - a special section of memory that stays on after system off. During subsequent booting of computer, the BIOS configures the system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? **N**

This allows user to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5

Troubleshooting

This chapter provides a few useful tips to quickly get 3307860 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

Backplane

3307860 is a full-sized Signal Board Computer, and therefore is only able to run on PICMG PCI/ISA backplane. To know whether your backplane is PICMG PCI/ISA backplane, please contact with vendor or manufacturer.

P4 Power connector

3307860 requires power drawing from at least one or two power connectors (J17 and J7). The CPU supplementary Power Connector (J7) has to be connected to a system all the time. P4 power connector is only for stand along usage.

Serial ATA Hard Disk Setting

There are total two connectors, J18 and J24. The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation. All you need to do is to plug in two cables and enable SATA in System BIOS. (The Serial ATA hard disk of installation, please see figure 5-2 as below)

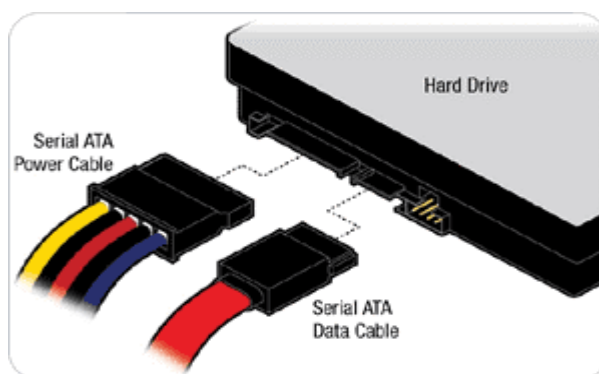
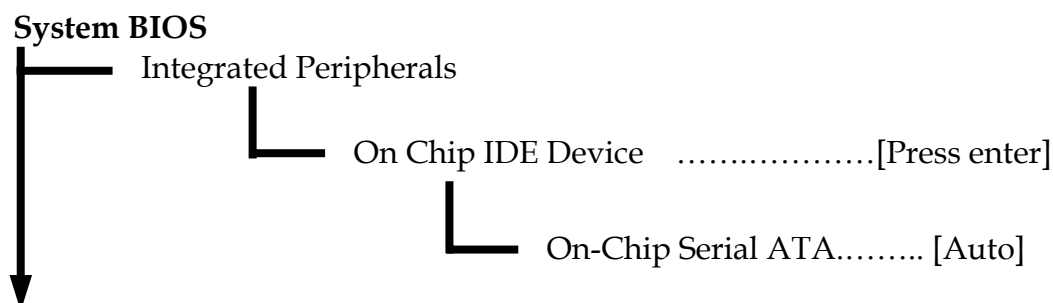


Figure 5-2

After done with the installation of SATA hardware, please enter system BIOS to enable Serial ATA function. Otherwise, Serial hardware won't be recognized. To enable SATA function, please see as following:



5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on AT or ATX power. CPU, CPU Fan, 184-pin DDR SDRAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device cables, ATX accessories or 12V 4-pin power cable are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with 3307860, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "Load Optimal Defaults", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that GAI has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the floppy drive, COM1/COM2 ports, Parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

- Disable COM1 serial port to release IRQ #4
- Disable COM2 serial port to release IRQ #3
- Disable Parallel port to release IRQ #7
- Disable PS/2 mouse to release IRQ #12,
- Etc...

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Timer
IRQ #1	Keyboard
IRQ #2	Unassigned
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Unassigned
IRQ #6	Floppy Disk Controller
IRQ #7	Parallel port
IRQ #8	Real-time Clock
IRQ #9	Microsoft ACPI-Compliant System
IRQ #10	Unassigned
IRQ #11	Unassigned
IRQ #12	PS/2 mouse
IRQ #13	Data Processor
IRQ #14	Primary IDE Controller
IRQ #15	Secondary IDE Controller

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3 FAQ

Unboot problem

Symptom: After changing power mode from ATX to AT, my system is just not working.

Solution: Due to ICH5 design, when you change your power mode from ATX to AT or from AT to ATX, you have to clean your CMOS in order to make your system boot up properly. To clean CMOS, please short 2-3 pins on JP2 for a moment, and then change it back to its default setting.

Symptom:SBC keeps beeping, and no screen has shown.

Solution: In fact, each beep sound represents different definition of error message. Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Symptom:There is neither no beeps nor screen output.

Installation Problem

Question: How do I connect my keyboard and mouse, as there is only one connector?

Answer: Users may always adopt PS/2 keyboard and mouse over the PS/2 interface (through Y-cable), J33 on 3307860.

However, it is also fine to adopt a standard keyboard over the standard keyboard connector on backplane, if provided. In this way, users need to adopt a 5-pin keyboard connection cable to line-up, external keyboard interface, J33 on 3307860 with the 10-pin keyboard connector on backplane.

Question:After done with installation of SATA hard disk device, why does system BIOS show nothing on screen?

Answer:As matter of fact, you need to access system BIOS to enable SATA device. (Please refer to SATA hard disk device installation guide)

Question:I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is enabled?

Answer: You need to use the 80-pin ATA-66 IDE flat cable to have this function. During the Post stage, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, After successfully installing Microsoft series OS, you also need to install ATA-66/100 driver to active ATA-66/100 function.

Information & Support

Question:I have one IDE hard disk and one SATA hard disk. How can I assign SATA hard disk as First boot device?

Answer: After entering system BIOS, access Advanced BIOS Feature. And then press enter on Hard disk boot Priority. You will see the mode of your SATA hard disk. Select it as first boot device.

Besides, please also notice. Every time, when your hard disk devices have been changed, system bios will ask you to re-setup Hard disk boot priority.

Question: Intel 865 series Chipset supports Dual Channel Mode, but how can I enable this function?

Answer: Indeed, you don't have to change any setting. You can simply plug in two DDR RAM Module, and then system will automatically enable Dual Channel Mode.

Question: What kind of CPU supports Hyper-Threading?

Answer: All FSB 800 MHz series CPU support Hyper-Threading mode. As for FSB 533 MHz, CPU must be over 3.06 GHz.

Question: Why cannot I install USB 2.0 driver?

Answer: If you are using Windows 2000, you need to update your Service-Pack version to Service-Pack 4. If you are using Windows XP, you need to update Service-Pack to Service Pack 1 at least.

Question: After installing ISA card, why isn't it working?

Answer: As a matter of fact, some ISA cards need to occupy shadow memory, which might cause ISA card malfunction. In order to determine it is a lack of shadow memory problem, please disable USB controller and on board LAN. After disabling these two devices, ISA card works. The lack of shadow memory could be a case.

Question: I forget my password of system BIOS, what am I supposed to do?

Answer: You can simply short 2-3 pins on JP2 to clean your password.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

Memory Area	Size	Device Description
0000 - 003F	1K	Interrupt Area
0040 - 004F	0.3K	BIOS Data Area
0050 - 006F	0.5K	System Data
0070 - 03DE	13K	DOS
03DF - 0BB6	31K	Program Area
0BB7 - 9F7F	583K	[Available]
= Conventional memory ends at 640K =		
9F80 - 9FFF	2K	Extended BIOS Area
A000 - AFFF	64K	VGA Graphics
B000 - B7FF	32K	Unused
B800 - BFFF	32K	VGA Text
C000 - CA1F	40K	Video ROM
CA20 - CB00	3.5K	Unused
CB01 - CBFE	4K	High RAM
CBFF - D549	37K	Unused
D54A - D7FE	10K	High RAM
D7FF - D7FF	0.1K	Unused
D800 - E7FF	64K	Page Frame
E800 - E800	0.1K	Unused
E801 - EAFF	11K	High RAM
EB00 - EFFF	20K	Unused
F000 - FFFF	64K	System ROM
HMA	64K	First 64K Extended

Interrupt Request Lines (IRQ)

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

IRQ#	Current Use	Default Use
IRQ 0	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM 2
IRQ 4	System ROM	COM 1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	VIDE-CDD	Usable IRQ

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>

Support: Technical Support at Global American
