Table of Contents

1.1 A Thank-you Note Before You Get Start

First of all, we would like to express our gratitude for purchasing AOpen products. Once again, this motherboard is designed uniquely to meet all your personal needs with our great industry-designing ability and our everlasting perseverance to the quality of all our products.

This manual will introduce you how this motherboard is installed. Please keep it well for your future reference. If you lost your printed manual, you may also go to our website at http://www.aopen.com to download the updated file.

Now, we would like to invite you to personally experience this user-friendly manual and all of the powerful functions this AOpen product offers.

The logos of Adobe and Acrobat are the registered trademarks of Adobe Systems Incorporated.

The logos of AMD, Athlon, and Duron are the registered trademarks of Advanced Micro Devices, Inc.

The logos of Intel, Intel Celeron, Pentium II, III, Pentium 4 and Pentium Mare the registered trademarks of Intel Corporation.

The logos of nVidia are the registered trademarks of nVidia Corporation.

The logos of Microsoft, Windows are the registered trademarks of Microsoft Corporation in America and other countries.

All the titles of the products and the trademarks mentioned in this manual are for the purpose of illustrative conveniences and are possessed by their respective firms.

We regret not informing about any changes in usage standards and other related information. AOpen reserves the right of altering or modifying the content of this manual. In case of any mistakes or incorrect descriptions, which include those on the products, AOpen makes no guarantee or commitments.

This document is based on the copyright laws in order to protect our company and reserve all rights.

Under no circumstances are any types of duplicating and loading this brochure in any databases and media permitted except the permission signed on formal document by AOpen Company.

1.2 Features of This Manual

To help you grab the useful information of this motherboard and aware of certain conditions that you might need to know, you will see the icons below frequently:

Note

This contains knowledge you should know in process of assembling, or some helpful tips.

Warning / Caution
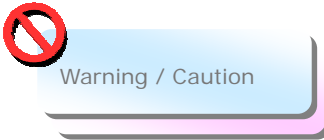
Please be careful when you see this mark. It highlights mistakes that occur often during assembling, or something you need to pay attention to.

Tip

This tip tells you some useful information that will make your installation smoothly.

1.3 Safety Information

Please wear a wrist strap and attach it to a metal part of the system unit before handling a component. Alternatively, you can also touch an object that is of ground connection or with metal surface.

Always unplug the power before you make any jumper setting.

Before you install or remove any components on the motherboard, please make sure to disconnect the power first in case of damaging motherboard or other components.

Chapter 2 Introduction to This Motherboard

2.1 How does your motherboard look like?
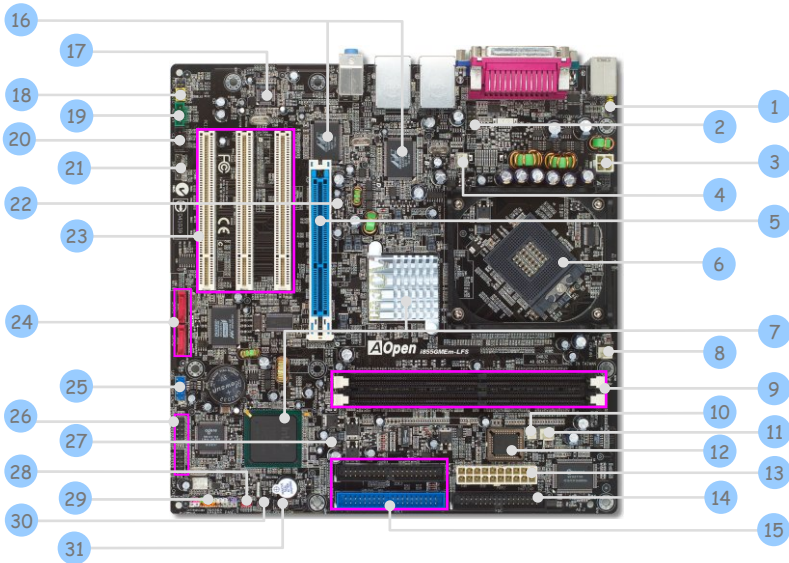
1. JP28 PS2 KB/Mouse Wakeup Jumper	17. Onboard AC'97 CODEC
2. COM2 Connector	18. Front Audio Connector
3. 4-pin 12V ATX Power Connector	19. AUX_IN Connector
4. SYSFAN1	20. CD_IN Connector
5. AGP 4X Expansion Slot	21. S/PDIF Connector
6. 479-pin CPU socket supporting Intel Pentium M CPU	22. STBY LED
7. Intel 855GME/ICH4-M Chipsets	23. 32-bit PCI Expansion Slots X 3
8. CPUFAN Connector	24. Serial ATA Ports X 2
9. 184-pins DIMMs x 2	25. USB 2.0 Connector
10. Power Temperature Connector	26. IEEE 1394 Connector X 2
11. PWRFAN Connector	27. BOOT LED
12. DieHard BIOS Lite	28. JP14 CMOS Data Clear Jumper
13. ATX Power Connector	29. Front Panel Connector
14. FDD Connector	30. Case Open Connector
15. IDE Connectors x 2	31. IRDA Connector
16. Dual Marvell Gigabit LAN	

2.2 Specification

Here is the main function of your motherboard.

Models	i855GMEm-LFS
CPU	Intel Pentium M (Dothan and Banias) CPU Socket 479 400MHz
Chipset	Intel 855GME/ICH4-M
Main Memory	200/266/333MHz DDR DIMM x 2 DIMM Type : 256/512MB & 1GB Max Memory : 2GB
Graphics	Integrated VGA Engine in chipset 4X AGP slot
IDE	Integrated ATA100 Controller Promise Serial ATA Controller (Raid 0 ,1 supported) Max Disk: 144,000,000GB [by 48 bits LBA Spec.]
LAN	Dual Marvell Gigabit PCI LAN Chip
Sound	Realtek AC'97 CODEC onboard, support 5.1 Channel
USB	Integrated in chipset, USB 2.0 x 6
IEEE 1394	Agere 1394 Control Chip
Slots	AGP x 1 PCI x 3
Back Panel I/O	PS/2 Keyboard x 1, PS/2 Mouse x 1 USB Port x 4, LAN Port x 2, VGA Port x 1, COM Port x 1 Printer Port x 1 Speaker_Out x 1, Line_In x 1, MIC_In x 1
On Board Connector	Floppy Driver Connector x 1 IDE Channel: ATA100 x 2 Serial ATA Channel x 2 Front Panel x 1 Front Audio x 1 CPU FAN x 1 System FAN x 1 Power FAN x 1 Power Temperature Connector x 1 Case Open Connector x 1 CD_IN x 1, AUX_IN x 1 IrDA x 1, S/PDIF x 1 COM2 x 1 IEEE 1394 x 2 USB Connector x 1
BIOS	Award PnP 4Mb Flash ROM BIOS
Board Size	244 mm x 244 mm

2.3 Block Diagram

Socket 479 Intel Pentium M CPU

PCI Bus

32-bit PCI Slot x3

400MHz System Bus

ATA 33/66/100

IDE Drives x 4

VGA Onboard

Intel 855GME Chipset

AGP bus

RealTek AC97 CODEC

AGP 4X

AGP 4X Slot

DIMM Sockets x2

DDR 333/266/200 RAM Up to 2GB

ICH4-M

Marvell Dual Gigabit LAN Chip

4Mbits Flash EEPROM

Agere IEEE 1394 Controller

USB Ports x6

LAN connect Component

IEEE 1394 x2

Promise Serial ATA Controller

Parallel Port

Floppy Disk Drive

Winbond Super I/O

150MB/s

Serial Ports x2

Serial ATA Ports x2 (RAID 0, 1 supported)

Chapter 3 Hardware Installation

3.1 Quick Installation Procedure

1. Installing CPU

2. Installing CPU Fan & System Fan

3. Installing Memory Module

4. Installing HD, CD-ROM and SATA Disk, etc

5. Connecting Front Panel Cable

6. Connecting ATX Power Cable

7. Installing AGP & PCI Cards

8. Installing Other Devices (USB, Front Audio, etc)

9. Connecting Back Panel Ports (Keyboard, Mouse, etc)

10. Loading Default BIOS, Setting CPU Frequency

11. Installing Operating System (such as, Windows XP)

12. Installing Drivers & Utilities

3.2 Installation You Have to Know

Installing CPU

This socket supports uFCPGA & uFCBGA package CPU, which is the latest CPU package developed by Intel. Other forms of CPU package are impossible to be fitted in.

1. Unscrew the socket screw counter-clockwise.

2. Locate Pin 1 in the socket and look for a golden arrow on the CPU upper interface. Match Pin 1 and golden arrow. Then insert the CPU into the socket.

3. Lock the CPU socket screw clockwise to fasten CPU.

Socket Pin 1

Socket screw
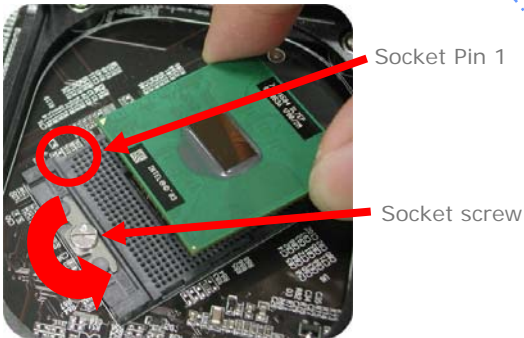
Golden arrow
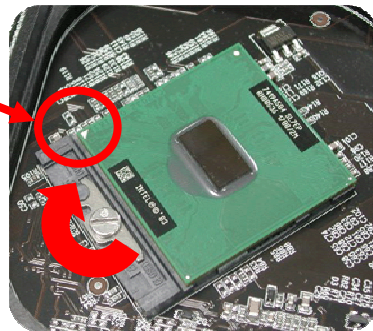
Installing CPU Cooler

This motherboard comes with a special CPU cooler desiged by AOpen, please follow the following steps to install CPU cooler.

1. Please apply thermal paste on the bottom of CPU cooler.

Thermal paste
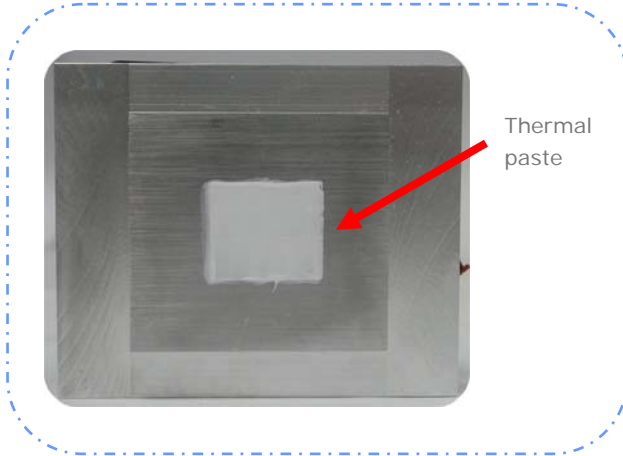
2. Gently put CPU cooler onto the CPU retention module.
3. Connect cooler's fan power cable onto CPUFAN connector.

CPUFAN Connector
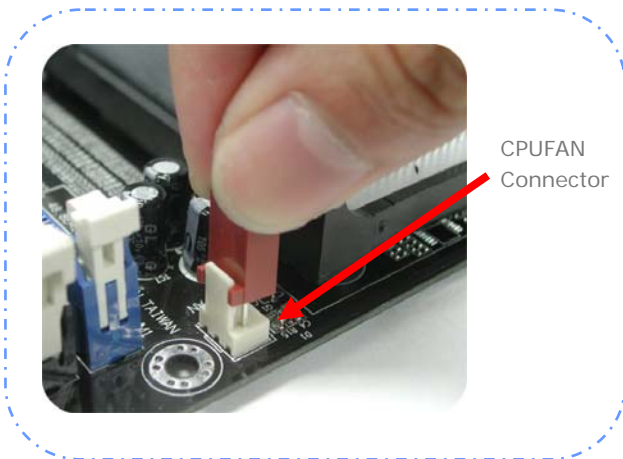
4. Install two cooler fixing sticks into CPU retention module.

Fixing stick

Note: Make sure that the sticks have hooked CPU retention module firmly.

5. Push the iron plate of cooler fixing stick up a bit.
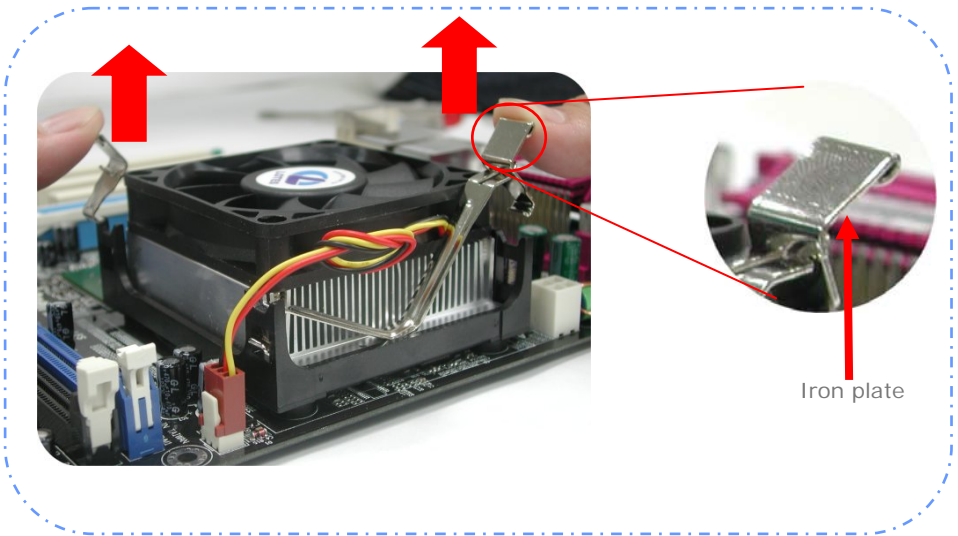
Iron plate

6. Then press iron plate downward till you hear a "clip" sound.
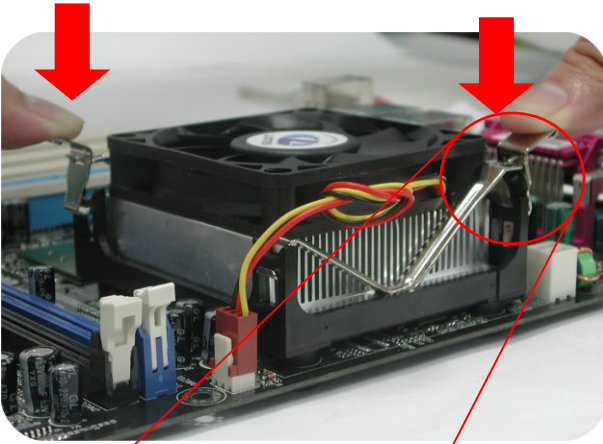
Note: Make sure that the iron plate have hooked CPU retention module firmly.

Installing CPU and System Fans

Plug the CPU fan cable to the 3-pin CPUFAN connector. If you have chassis fan, you can also plug it in SYSFAN1 connector.

GND
+12V
Sensor

SYSFAN1 Connector

GND
+12V
Sensor

CPUFAN Connector
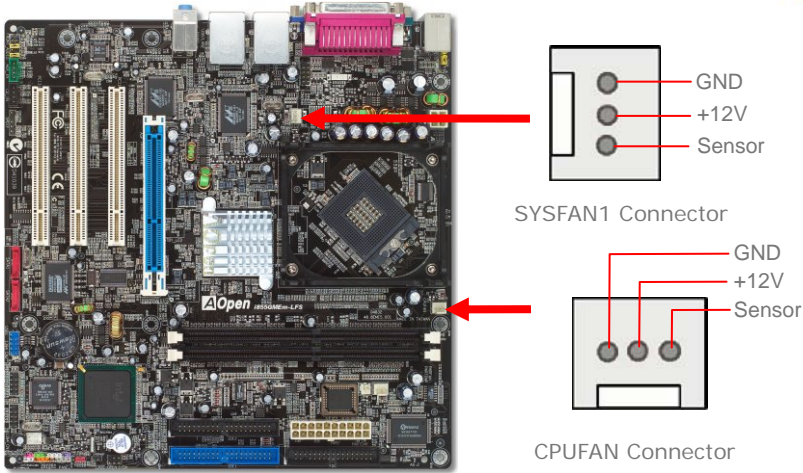
Note: Some CPU fans do not have sensor pin so that they cannot support fan monitoring.

Installing Memory Modules

DIMM slots are designed in black which are very easy to recognize. Insert the module straight down to the DIMM slot with both hands and press down firmly until the DIMM module is securely in place.

Tab

Pin 1

Key
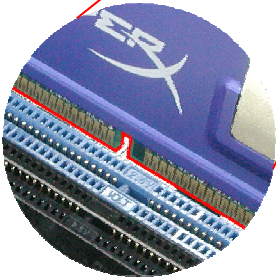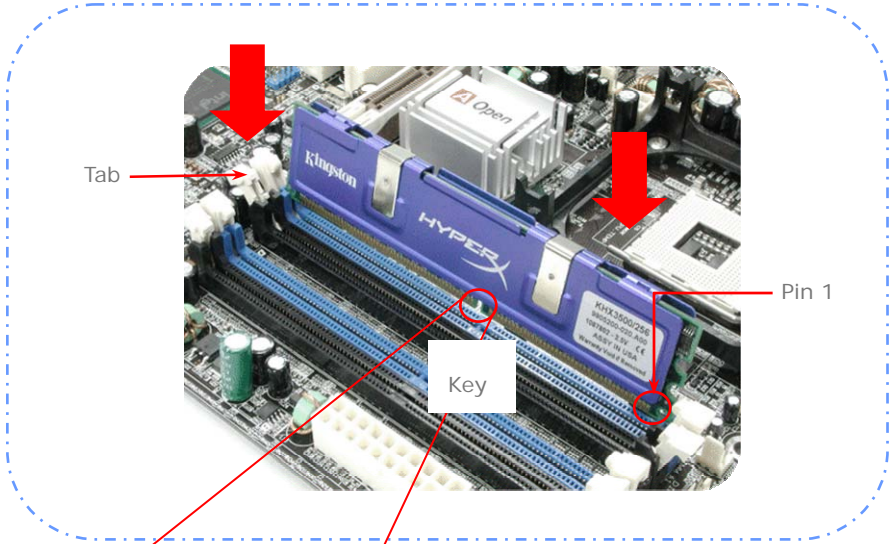
Note: The tabs of the DIMM slot will clip to hold the DIMM in place when the DIMM touches the slot's bottom.

Connecting IDE and Floppy Cables

Connect the 34-pin floppy cable and 40-pin, 80-wire IDE cable to floppy connector and IDE connector. Be careful of the pin1 orientation. Wrong orientation may cause system damage.
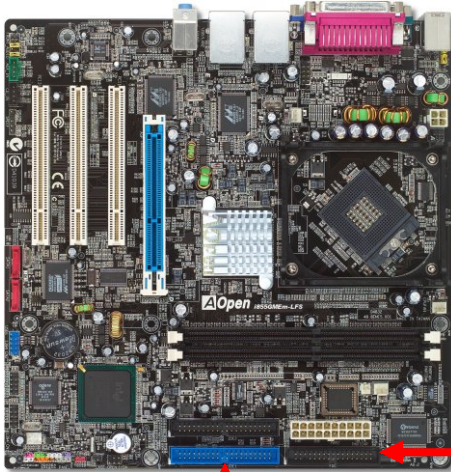
FDD Connector

Pin 1

Secondary Slave (4th)

Secondary Master (3rd)

Pin 1

Primary Slave (2nd)

Primary Master (1st)

ATA 33/66/100 IDE Connector

Connecting Front Panel Cable

Attach the power LED, speaker and reset switch connectors to the corresponding pins. If you enable "Suspend Mode" item in BIOS Setup, the ACPI & Power LED will keep flashing while the system is in suspend mode.

Locate the power switch cable from your housing, which is a 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked SPWR.

Front Panel Connector
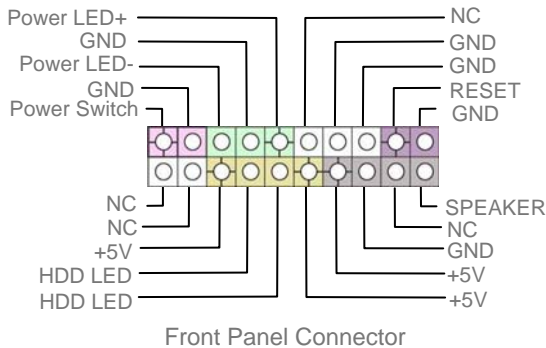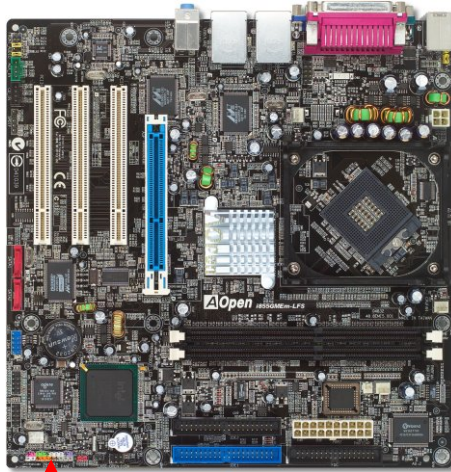
Connecting ATX Power Cables

This motherboard comes with a 20-pin and 4-pin ATX power connector as shown below. Make sure you plug them in the right direction. We strongly recommend you to insert the 4-pin connector before connecting the 20-pin connector.
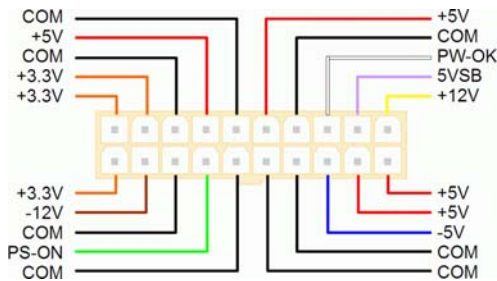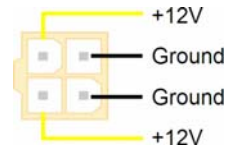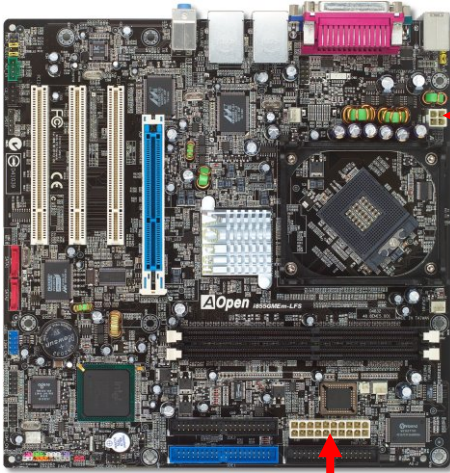
3.3 Other Installation for Your Reference

Setting CPU Voltage and Frequency

Setting CPU Core Voltage

This motherboard supports Voltage ID (VID) function to detect CPU voltage automatically during power-on.

Setting CPU Frequency

This motherboard is CPU jumper-less design, you can set CPU frequency through 1MHz stepping CPU Overclocking in the BIOS. CPU Core Frequency = CPU FSB clock x CPU Ratio. However, all CPU now selling in the market belong to "Fixed Multiplier". That means users can not adjust the CPU Ratio but only change CPU FSB clock to achieve overclocking.

(Users do the overclocking at their own risk!!)

BIOS Setup > Frequency / Voltage Control > CPU Bus Frequency

CPU Ratio	4x, 7x... 17x, 18x, 20x
CPU FSB (Adjustment manually)	FSB = 100MHz - 400MHz by 1MHz Stepping CPU Overclocking

Processor Number	Architecture	Clock Speed	Front Side Bus	Cache	Ratio
Pentium M 755	90nm	2000MHz	400MHz	2MB L2	20x
Pentium M 745	90nm	1800MHz	400MHz	2MB L2	18x
Pentium M 735	90nm	1700MHz	400MHz	2MB L2	17x
Pentium M 725	90nm	1600MHz	400MHz	2MB L2	16x
Pentium M 715	90nm	1500MHz	400MHz	2MB L2	15x
Pentium M 705	130nm	1500MHz	400MHz	1MB L2	15x
Pentium M 738	90nm	1400MHz	400MHz	2MB L2	14x
Pentium M 718	130nm	1300MHz	400MHz	1MB L2	13x
Pentium M 733	90nm	1100MHz	400MHz	2MB L2	11x
Pentium M 723	90nm	1000MHz	400MHz	2MB L2	10x
Pentium M 713	130nm	1100MHz	400MHz	1MB L2	11x
Celeron M 340	130nm	1500MHz	400MHz	512KB L2	15x
Celeron M 330	130nm	1400MHz	400MHz	512KB L2	14x
Celeron M 320	130nm	1300MHz	400MHz	512KB L2	13x
Celeron M 310	130nm	1200MHz	400MHz	512KB L2	12x
Celeron M 353	90nm	900MHz	400MHz	512KB L2	9x
Celeron M 333	130nm	900MHz	400MHz	512KB L2	9x

Note: With CPU speed changing rapidly, there might be faster CPU on the market by the time you received this installation guide. This table is kindly for your references only.

*Warning: Intel 855GME chipset support maximum 400MHz (100MHz*4) system bus; higher clock setting may cause serious system damage.*

Connecting Serial ATA

To connect a serial ATA disk, you have to have a 7-pin serial ATA cable. Connect two ends of the serial ATA cable to the serial ATA header on the motherboard and the disk. Like every other traditional disk, you also have to connect a power cable. Please be noted that it is a jumper free implement; you don't need to set jumpers to define a master or slave disk. When serial ATA hard disks are installed on serial ATA ports, the one connected on Port0 (SATA1) will be set as the first boot device automatically. *Please note that it doesn't support Hot-Plug in function.*

SATA1

SATA2
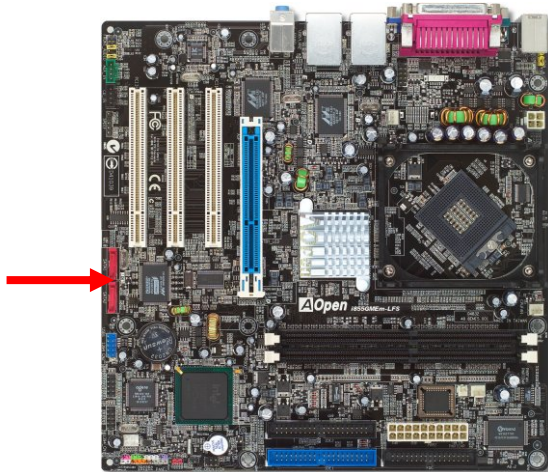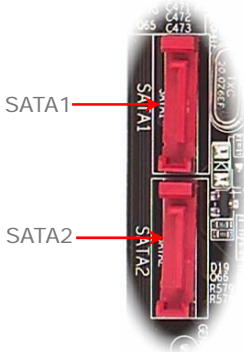
Connecting AGP 4X Expansion Slot

This motherboard provides an AGP 4X slot. The AGP 4X is a bus interface targeted for high-performance 3D graphic, and the data transfer rate could achieve 66MHz x 4bytes x 4 = 1056MB/s.
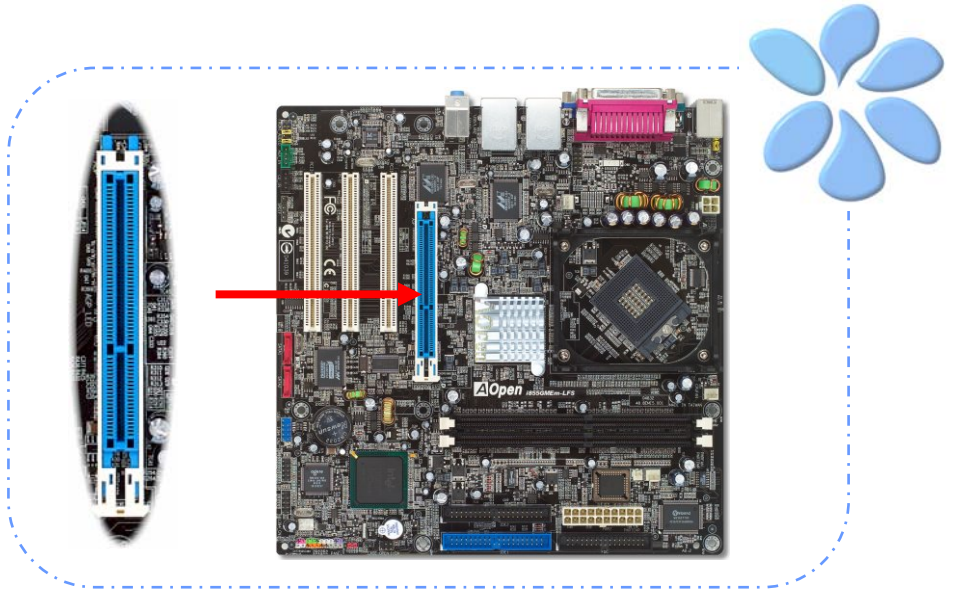
Connecting IrDA

The IrDA connector can be configured to support wireless infrared module, with this module and application software such as Laplink or Windows Direct Cable Connection, user can transfer files to or from laptops, notebooks, PDA devices and printers. This connector supports both HPSIR (115.2Kbps, 2 meters) and ASK-IR (56Kbps).

Install an infrared module onto the IrDA connector and enable the infrared function from BIOS Setup, UART Mode, you can use this function. Please make sure you connect correct orientation when plugging IrDA module.
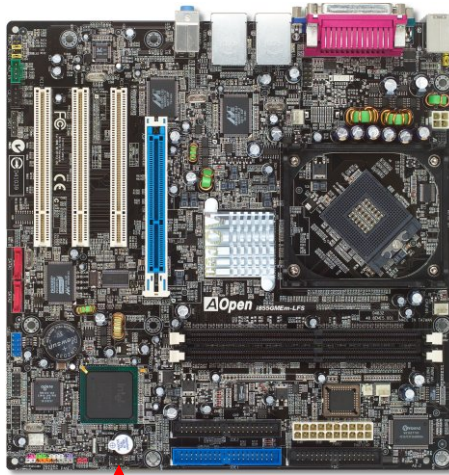
IrDA Connector

Dual Gigabit LAN Supported

On the strength of dual Gigabit LAN controller on board, this motherboard provides 10/100/1000Mbps Ethernet for office and home use. The Ethernet RJ45 connector is located on the top of USB connectors. The right hand side LED indicates link mode; it lights in yellow when linking to network. The left hand side LED indicates the transfer mode and will light in green when data is transferring at 100Mbps (never lights while at 10Mbps), but will light in orange when transferring in Gigabit's mode. To enable or disable this function, you may simply adjust it through BIOS. To enable LAN wakeup function, you have to set the "Wake on PCI Card" enable in the BIOS "Power Management Setup" section.

Speed LED (Left)
Green 100Mbps
Orange Gigabit mode

ACT LED (Right)
Yellow
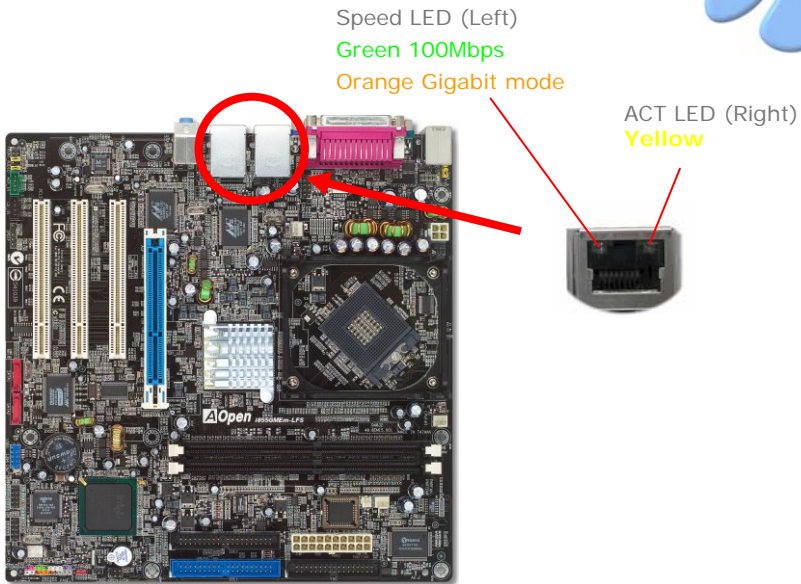
Connecting USB2.0

This motherboard provides six USB 2.0 ports to connect USB devices such as mouse, keyboard, modem, printer, etc. There are four ports on the back panel. You can use proper cables to connect Front USB connector to USB modules or chassis front panel.

Pin 1
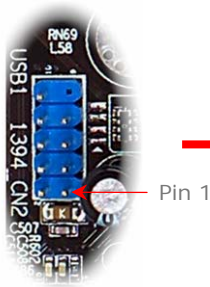
	10	9	
NC	●	○	KEY
GND	●	●	GND
SBD7+	●	●	SBD6+
SBD7-	●	●	SBD6-
+5V	●	●	+5V
	2	1	

USB Connector
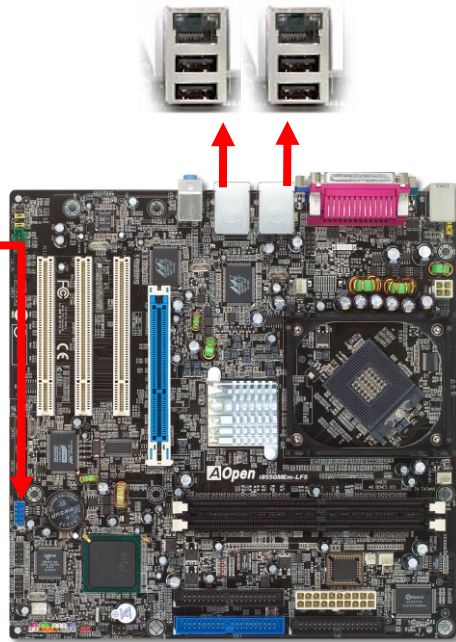
Connecting 1394

With IEEE1394 Chip on board (AGERE 1394), having its data transfer rate up to 400Mb/s, this interface can connect to devices that require high data transferring performance such as digital camera, scanner or others IEEE 1394 devices. Please use appropriate cables to connect IEEE1394 devices.
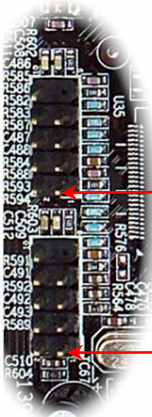
Pin1

Pin1
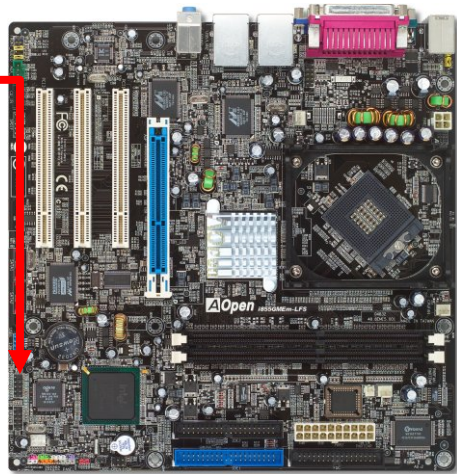
```
             10  9
SHIED GND    ●  ○
+12V (Fused) ●  ●  +12V (Fused)
TPB-         ●  ●  TPB+
GND          ●  ●  GND
TPA-         ●  ●  TPA+
              2  1
```
IEEE 1394 Connector

Warning: *Please note that Hot-Plug is not allowed on IEEE 1394 headers; doing so will burn the controller IC and damage the motherboard.*

Super 5.1 Channel Audio Effect

This motherboard comes with a Realtek AC'97 CODEC (ALC655), which supports high quality of 5.1 Channel audio effects, bringing you a brand new audio experience. On the strength of the innovative design of ALC655, you're able to use standard line-jacks for surround audio output without connecting any external module. To apply this function, you have to install the audio driver in the Bonus Pack CD as well as an audio application supporting 5.1 Channel. Picture below represents the standard location of all speakers in 5.1 Channel sound tracks. Please connect the plug of your front speakers to the green "Speaker out" port, rear speakers' plug to the blue "Line in" port and both of the center and subwoofer speakers to the red "MIC in" port.
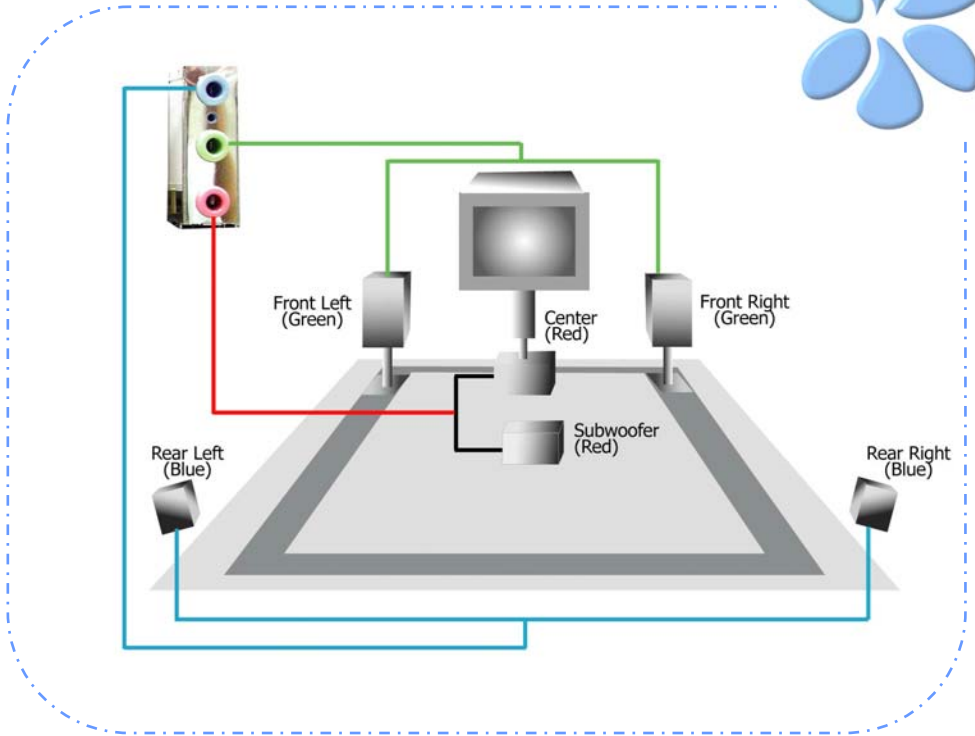
Connecting Front Audio

If the housing is designed with an audio port on the front panel, you'll be able to connect onboard audio to front panel through this connector. By the way, please remove the jumper cap from the Front Audio Connector before you connect the cable. Do not remove this yellow jumper cap if your housing doesn't have an audio port on the front panel.

Pin1

	1	
AUD_MIC	⬤ ⬤	AUD_GND
AUD MIC BIAS	⬤ ⬤	AUD_VCC
AUD_FPOUT_R	⬤ ⬤	AUD_RET_R
NC	⬤ ○	KEY
AUD_FPOUT_L	⬤ ⬤	AUD_RET_L

Front Audio Connector
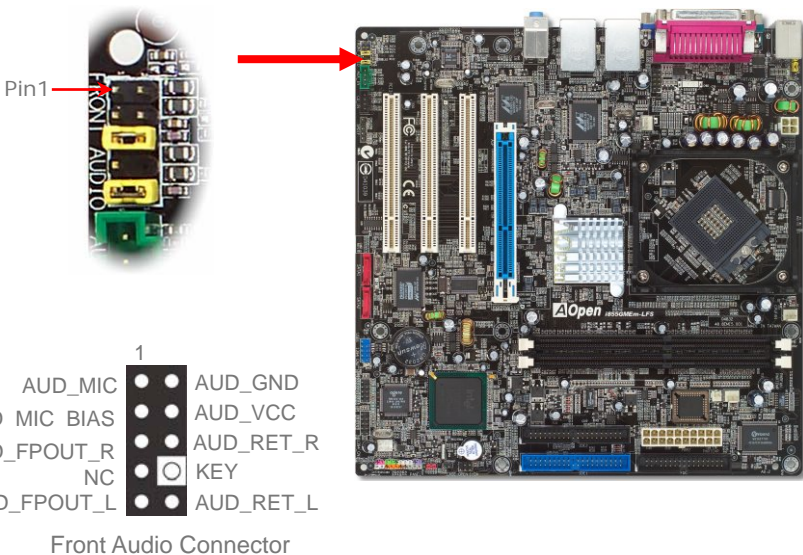
Connecting CD_IN

This connector is designed to connect CD Audio cable from CDROM or DVD drive to onboard sound.

R
GND
GND
L
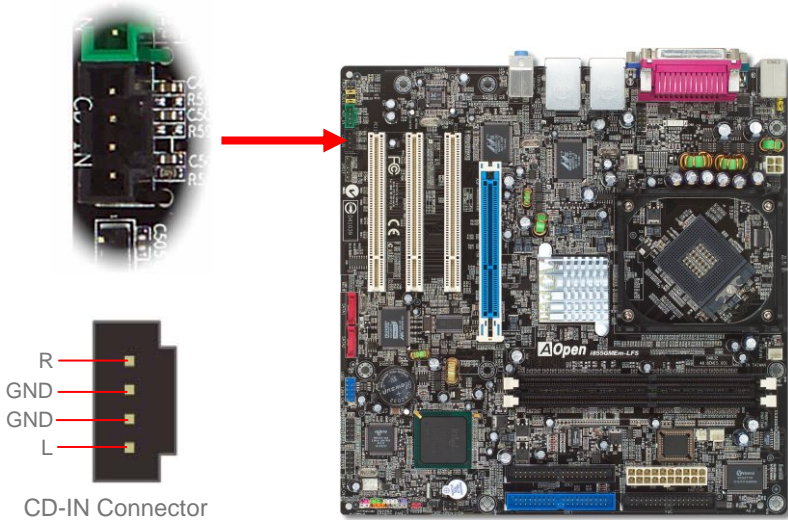
CD-IN Connector

Connecting AUX_IN

This connector is used to connect MPEG Audio cable from MPEG card to onboard sound.

R
GND
GND
L
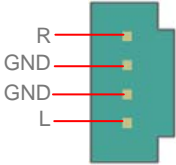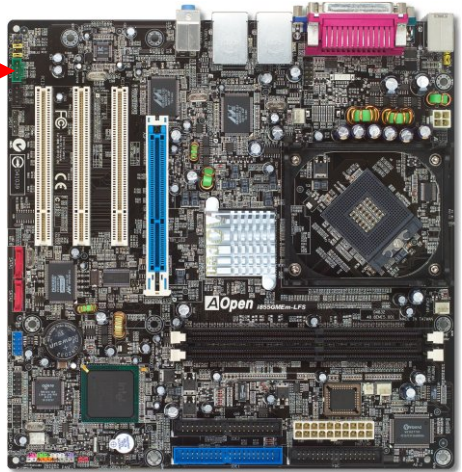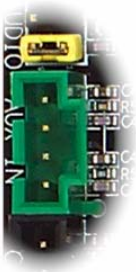
AUX-IN Connector

Connecting COM2

This motherboard provides two serial ports. One of them is on back panel connector, and the other is on the upper of CPU socket. With proper cable, you can connect it to the back panel of chassis.

Pin 1
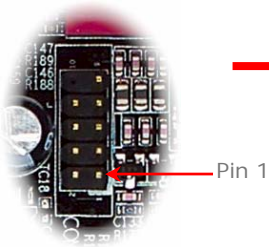
	○ ●	RI#
CTS#	● ●	RTS#
DSR#	● ●	GND
DTR#	● ●	SOUT
Sin	● ●	DCD#

2   1
COM Connector
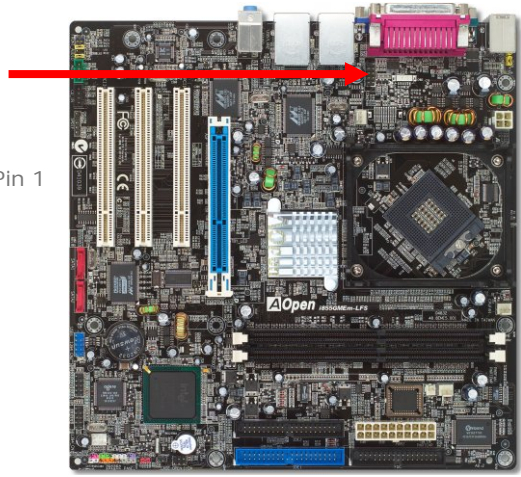
Connecting Case Open

The "CASE OPEN" header provides chassis intrusion-monitoring function. To make this function work, you have to enable it in the system BIOS, connect this header to a sensor somewhere on the chassis. So, whenever the sensor is triggered by lights or by the opening of the chassis, the system will beep to inform you. Please be informed that this useful function only applies to advanced chassis; you may purchase an extra sensor, attach it on your chassis and make a good use of this function.

Pin 1

1

Sensor ● ● GND

Chassis Intrusion Connector
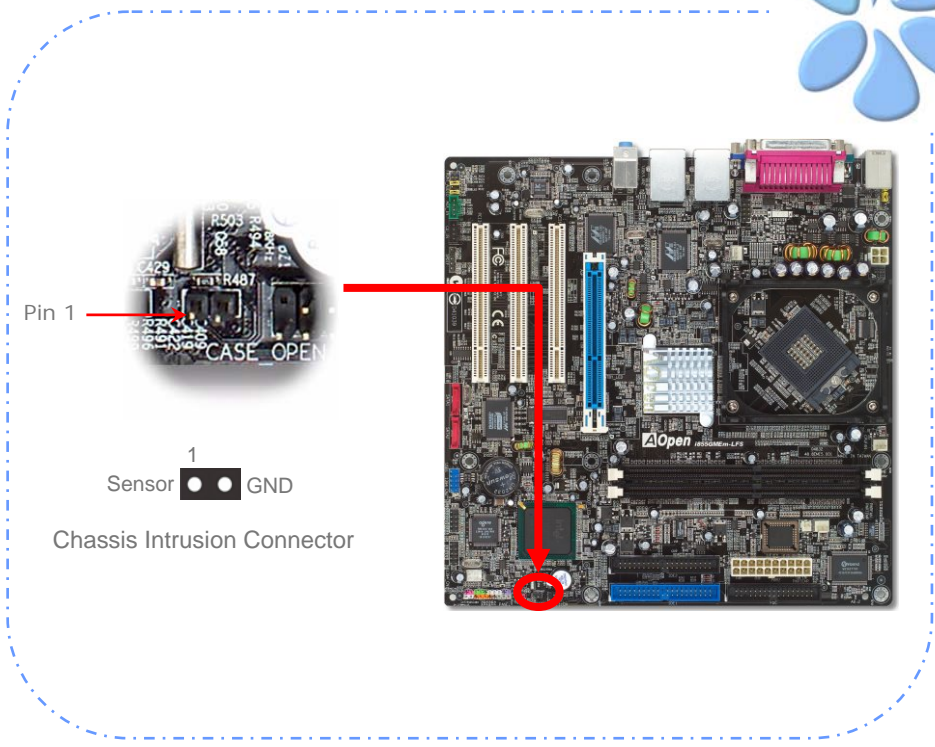
Connecting S/PDIF (Sony/Philips Digital Interface)

S/PDIF (Sony/Philips Digital Interface) is a newest audio transfer file format, which provides impressive audio quality through optical fiber and allows you to enjoy digital audio instead of analog audio. Through a specific audio cable, you can connect the S/PDIF connector to other end of the S/PDIF audio module, which bears S/PDIF digital output. Normally there are two S/PDIF outputs as shown, one for RCA connector, the most common one used for consumer audio products, and the other for optical connector with better audio quality. Same as outputs, you can also connect RCA or optical audio products to input connectors on the module and have the voice or music come out from your computer. However, you must have a S/PDIF supported speaker/amplifier/decoder with S/PDIF digital input/output to connect to the S/PDIF digital input/output to make the most out of this function.

Pin 1
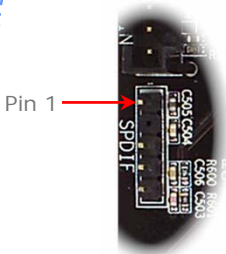
1
- +5V
- KEY
- SPDIF OUT
- GND
- SPDIF IN
5
S/PDIF Connector

(RCA)
S/PDIF OUT
S/PDIF IN

S/PDIF OUT
S/PDIF IN
(Optical)
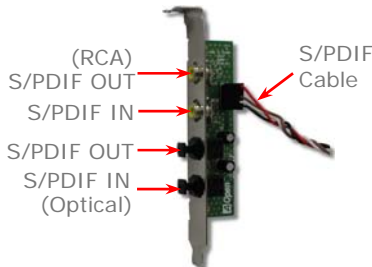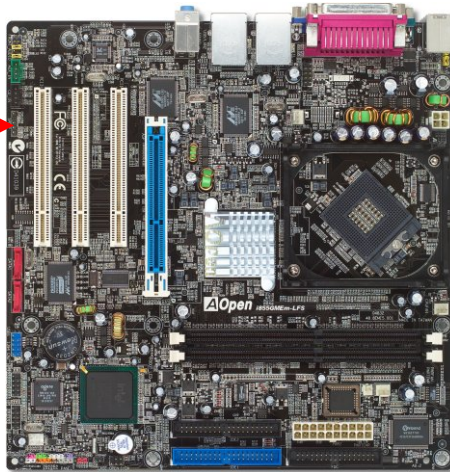
S/PDIF
Cable

S/PDIF Module
(User Upgrade Optional)

Colored Coded Back Panel

The onboard I/O devices have PS/2 Keyboard, PS/2 Mouse, RJ-45 LAN Connector, COM1, VGA port, Printer, USB, and AC'97 sound. The view angle of drawing shown here is from the back panel of the housing.
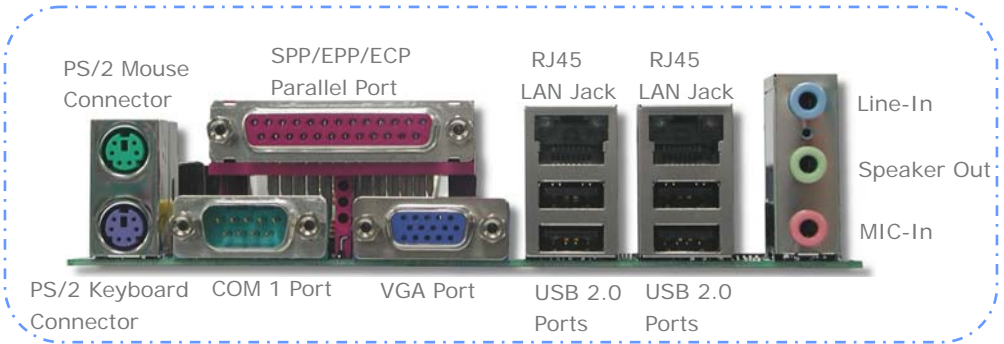
PS/2 Keyboard:	For standard keyboard, which use a PS/2 plug.
PS/2 Mouse:	For PC-Mouse, which use a PS/2 plug.
USB Port:	Available for connecting USB devices.
Parallel Port:	To connect with SPP/ECP/EPP printer.
COM1 Port:	To connect with pointing devices, modem or others serial devices.
RJ-45 LAN Port:	To connect Ethernet for home or office use.
VGA Connector:	To connect with PC monitor.
Speaker Out:	To External Speaker, Earphone or Amplifier.
Line-In:	Comes from the signal sources, such as CD/Tape player.
MIC-In:	For Microphone

LED Indication

LED indication including Standby LED and BOOT LED are AOpen's considerate designs that aim at providing you friendly system information.

STBY LED will light up when power is provided to the motherboard, giving you a convenient indication check the system power status in circumstances such as power on/off, stand-by mode and RAM power status during Suspend to RAM mode.

BOOT LED will keep blinking when you power the system on and when your system is under POST (Power-On Self Test). After POST diagnoses everything all right and finishes the booting, the LED will stay on otherwise it will remain flashing to warn you that mistakes have occurred during POST.

STBY LED

BOOT LED
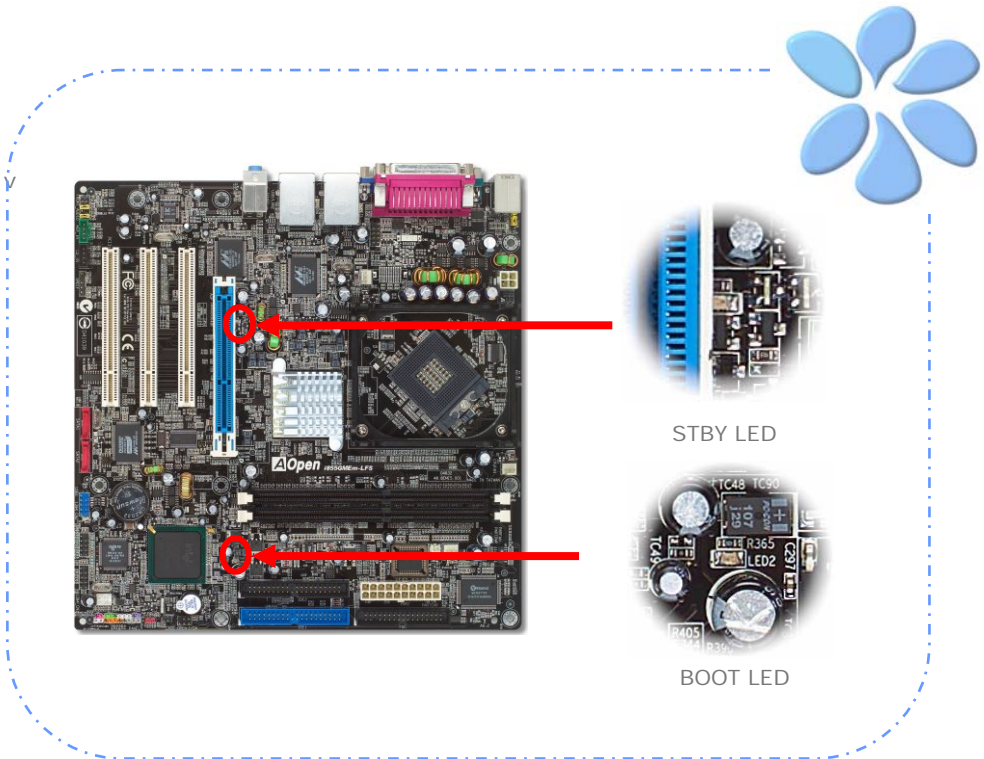
3.4 Jumper Settings

JP28 Keyboard / Mouse Wakeup Jumper

This motherboard provides PS2 keyboard / mouse wake-up function.

JP28 PS2 KB/Mouse Wakeup Jumper

Disable (Default)   Enable

Normal (Default)   Clear CMOS
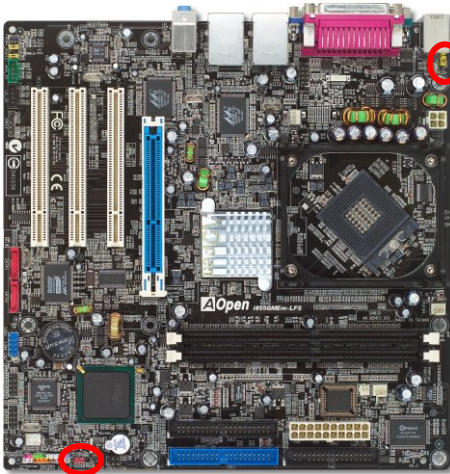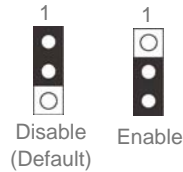
JP14 Clear CMOS Jumper

JP14 Clear CMOS Data

You can clear CMOS to restore system default setting. To clear the CMOS, follow the procedure below.

1. Turn off the system and unplug the AC power.

2. Remove ATX power cable from connector PWR2.

3. Locate JP14 and short pins 2-3 for a few seconds.

4. Return JP14 to its normal setting by shorting pin 1 & pin 2.

5. Connect ATX power cable back to connector PWR2.

Chapter 4 Special Features and Utilities

4.1 RAID (Redundant Array of Independent Disks)

With the latest Promise PDC20579 implemented, i855GMEm-LFS provides RAID 0 and RAID 1 function for the Serial ATA hard disks. You may use FastBuild Utility provided by Promise to setup your disk array. For more RAID introduction, please visit our website:

http://english.aopen.com.tw/tech/techinside/RAID.htm

RAID BIOS Setting Utility

In order to make sure your system can recognize and operate Serial ATA RAID device smoothly, we have to enter FastBuild utility to do some configuration.

Entering to FastBuild Utility: After finishing the BIOS setup and reboot, you will see [Press <CRTL - F> to enter FastBuild (TM) utility] about half way through the boot up. If you don't want to enter Fastbuild utility, just press <ESC> to continue booting.

```
FastTrak 579 (tm) BIOS Version 2.00.0.17
(c) 2003-2005 Promise Technology, Inc. All rights reserved.


No Array is defined...................

Press <Ctrl-F> to enter FastBuild (tm) Utility or
Press <ESC> to continue booting...
```

The main menu of FastBuild Utility: After pressing <CRTL-F>, you will be presented with a screen as shown below. It's the main menu of FastBiuld utility, you can use this utility to create or delete your disk arrays.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
═══════════════════════════[ Main Menu ]═══════════════════════════

            Auto Setup...................[ 1 ]

            View Drive Assignments........[ 2 ]

            Define Array.................[ 3 ]

            Delete Array.................[ 4 ]

            Rebuild Array...............[ 5 ]




═══════════════════════════[ Keys Available ]═══════════════════════
 Press 1..5 to Select Option                              [ESC] Exit
```

Auto Setup: Press 1 to enter Auto Setup. You can choose "**Performance**" (RAID 0) or "**Security**" (RAID 1) mode by pressing <Space>, and BIOS will automatically optimize your RAID array depending on your personal demand for data storage.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
═══════════════════════[ Auto Setup Options Menu ]═══════════════
    Optimize Array for:              Performance

       FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
       ═══════════════════════[ Auto Setup Options Menu ]═══════════════
          Optimize Array for:              Security
  Mode
  Spar  ════════════════════[ Array Setup Configuration ]══════════════
  Drive
  Arra    Mode ........................................ Mirror

          Spare Drive ................................. 0

          Drive(s) Used in Array ...................... 2

          Array Disk Capacity (size in MB).............  120000

  [-,-,Spa
       ═══════════════════════[ Keys Available ]═══════════════════════
        [-,-,Space] Change Option  [ESC] Exit  [CTRL-Y] Save
```

View Drive Assignments: Press 2 to enter View Drive Assignments and BIOS will show you the hard drive information by physical array.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
═══════════════════[ View Drives Assignments ]═══════════════════

       Channel:ID          Drive Model      Capacity (MB)   Assignment  Mode
              1:SATA ST3120023AS                 120034         Free      U6
              2:SATA ST3120026AS                 120034         Free      U6






═════════════════════════[ Keys Available ]═════════════════════════

  [ESC]  Exit                   Mode (D = DMA, U = UDMA)
```

Define Array: Press 3 to enter Define Array and BIOS will allow you to setup a RAID array by choosing Array No, RAID Mode, and Total Drv.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
═══════════════════════[ Define Array Menu ]═══════════════════════

    Array No      RAID Mode     Total Drv    Capacity(MB)    Status

   Array 1         ----          ----          -----          ----
   Array 2         ----          ----          -----          ----
   Array 3         ----          ----          -----          ----
   Array 4         ----          ----          -----          ----





    Halt On Error  :   Disable

══════════════════════════[ Keys Available ]══════════════════════════

  [↑] Up   [↓] Down   [ESC] Exit   [Enter] Select   [Space] Change HOE Option
```

> *Note:* If you are not familiar with FastBuild utility, it's strongly recommended to build disk array by selecting **Auto Setup**.

Delete Array: Press 4 to enter Delete Array and BIOS will allow you to delete an existing RAID array.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
===============[ Delete Array Menu ]===============

     Array No      RAID Mode      Total Drv   Capacity(MB)    Status

     Array 1         ----           ----         -----         ----
     Array 2         ----           ----         -----         ----
     Array 3         ----           ----         -----         ----
     Array 4         ----           ----         -----         ----




===============[ Keys Available ]===============
  [|] Up    [|] Down    [ESC] Exit    [Del] Delete
```

Rebuild Array: Press 5 to enter Rebuild Array and BIOS will allow you to rebuild a crashed RAID array.

```
FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.
===============[ Rebuild Array Menu ]===============

     Array No      RAID Mode      Total Drv   Capacity(MB)    Status

     Array 1         ----           ----         -----         ----
     Array 2         ----           ----         -----         ----
     Array 3         ----           ----         -----         ----
     Array 4         ----           ----         -----         ----




===============[ Keys Available ]===============
  [|] Up    [|] Down    [ESC] Exit    [Enter] Select
```

4.2 Other Useful Features

With excellent design ability of R&D team, AOpen boasts for its various powerful and handy features that come with our product like follows.   You are welcomed to visit our technical website to learn more about those features. *http://english.aopen.com.tw/tech/techinside*

Chapter 5 Setting BIOS

5.1 Introduction

System parameters can be modified by going into BIOS Setup menu; this menu allows you to configure the system parameters and save the configuration into the 128 bytes CMOS area (normally in the RTC chip or in the main chipset).

The Phoenix-Award BIOS™ that installed in the Flash ROM of the motherboard is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as hard disk drives, serial and parallel ports.

AOpen's R&D engineering team had optimized most BIOS settings of this motherboard. However, some default settings of BIOS cannot fine-tune those sections that controlled by chipset. Therefore, this chapter is intended to guide you and help you to configure some other settings.

To enter BIOS setup menu, press <Del> when POST (Power-On Self Test) screen is shown on your monitor.

> **Note:** Because BIOS code is the most often changed part on motherboard, the BIOS information contained in this manual may be different from the BIOS version that comes with your motherboard.

5.2 How To Use Phoenix-Award™ BIOS Setup Program

Generally, you can use arrow keys to highlight items that you want to choose, press <Enter> key to select, and use <Page Up> and <Page Down> keys to change setting values. You can press <Esc> key to quit Phoenix-Award™ BIOS setup program. The following table provides details about how to use keyboard in the Phoenix-Award™BIOS setup program.

Key	Description
Page Up or +	Change setting to next value or increase the value.
Page Down or -	Change setting to previous value or decrease value.
Enter	Select the item.
Esc	In main menu: Quit without saving any changes. In sub menu: Exit current menu to main menu.
Up Arrow	Highlight previous item.
Down Arrow	Highlight next item.
Left Arrow	Move the light bar to left side of menu.
Right Arrow	Move the light bar to right side of menu.
F6	Load Setup Default setting value from CMOS.
F7	Load turbo setting value from CMOS.
F10	Save changed settings and exit setup program.

5.3 How To Enter BIOS Setup

After finishing the jumper settings and connecting cables, you can power on and enter the BIOS Setup. Press <Del> during POST (Power-On Self Test) and choose "Load Setup Defaults" for recommended optimal performance.

Warning: Please avoid of using "Load Turbo Defaults", unless you are certain your system components (CPU, SDRAM, HDD, etc.) are good enough for turbo setting.

Standard CMOS Features

The "Standard CMOS Setup" sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and <PgUp> or <PgDn> to select the value for each item.

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

     Date (mm:dd:yy)        Fri, Sep 10 2004          Item Help
     Time (hh:mm:ss)        14 : 13 :  4
                                                  Menu Level    ▶
   ▶ IDE Primary Master     QUANTUM FIREBALL SE2
   ▶ IDE Primary Slave      None                   These items select the
   ▶ IDE Secondary Master   None                   floppy drive type.
   ▶ IDE Secondary Slave    None                   The available settings
                                                   and types supported
     Drive A                1.44M, 3.5 in.         by the motherboard are
                                                   listed to the left.
     Video                  EGA/VGA
     Halt On                All Errors

     Base Memory                   640K
     Extended Memory            261120K
     Total Memory               262144K



↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

Standard CMOS Features > Date
To set the date, highlight the Date parameter. Press <PgUp> or <PgDn> to set the current date.   The date format is month, date, and year.

Standard CMOS features > Time
To set the time, highlight the Time parameter. Press <PgUp> or <PgDn> to set the current time in hour, minute, and second format.   The time is based on the 24 hour military clock.

Standard CMOS features > Primary Master

Standard CMOS features > Primary Slave

Standard CMOS features > Secondary Master

Standard CMOS features > Secondary Slave
This item lets you select the IDE hard disk parameters that your system supports. These parameters are Size, Number of Cylinder, Number of Head, Start Cylinder for Pre-compensation, Cylinder number of Head Landing Zone and Number of Sector per Track. The default setting is `Auto,` which enables BIOS to automatically detect the parameters of installed HDD (Hard Disk Drive) at POST (Power-On Self Test). If you prefer to enter HDD parameters manually, select Manual.

```
             Phoenix - AwardBIOS CMOS Setup Utility
                       IDE Channel 0 Master

   IDE HDD Auto-Detection      Press Enter              Item Help

   IDE Channel 0 Master        Auto          Menu Level    ▶▶
   Access Mode                 Auto
                                             To auto-detect the
   Capacity                    2112          HDD's size, head... on
                                             this channel
   Cylinder                    4092
   Head                          16
   Precomp                        0
   Landing Zone                4091
   Sector                        63




  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

IDE HDD Auto-Detection: Press "Enter" to auto-detect parameters of HDD
IDE Channel 0 Master (Slave): Define the parameters of IDE devices in
Channel 0 (Master or Slave). Available options:
● **None:** if there is no device, please select "None" for speeding boot up.
● **Auto:** enable BIOS to auto-detect parameters of IDE device. (Default)
● **Manual:** allow users to define parameter of IDE device.
Access Mode: Set the using mode of HDD. Available options: **CHS / LBA /
Large / Auto** (default). User can select the mode according to the label on
HDD.
Cylinder: Enter cylinder number
Head: Enter head number
Precomp: Write precompensation
Landing Zone: Location of head
Sector: Sector Number

Standard CMOS features > Drive A
This item allows user select the floppy drive type. Available items: **None / 360KB
5.25" / 1.2MB 5.25" / 720KB 3.5" / 1.44MB 3.5" / 2.88MB 3.5"**

Standard CMOS features > Vedio
This item specifies the type of video card in use. The default setting is **VGA/EGA**.
Since current PCs use VGA only, this function is almost useless and may be
disregarded in the future.

Standard CMOS features > HaltOn
This parameter enables you to control the system stops in case of Power-On Self
Test (POST) error. Available items: **No errors / All errors / All, But Keyboard
/ All, But Diskette / All, But Disk/Key**

Advanced BIOS Features

This screen appears when you select the option "Advanced BIOS Features" from the main menu.

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

  ▶ CPU Feature                    Press Enter          Item Help
  ▶ Removable Device Priority      Press Enter
  ▶ Hard Disk Boot Priority        Press Enter      Menu Level   ▶
  ▶ CD-ROM Boot Priority           Press Enter
    First Bo t Device              CDROM            Press Enter to set CPU
    Second Boot Device             Removable        Feature.
    Third Boot Device              Hard Disk
    Boot Other Device              Enabled
    Boot Up NumLock Status         Off
    Security Option                Setup
    HDD S.M.A.R.T. Capability      Disabled
    Show Logo On Screen            Vivid BIOS
    Bypass Vivid BIOS              Disabled




  ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

Advanced BIOS Features > CPU feature

Delay Prior to Thermal: Select delay time periods prior to enabling the Thermal Monitor. Available options: **4 Min / 8 Min / 16 Min / 32 Min**

Thermal Management: Set the function of CPU internal Thermal Management. When CPU supports Thermal Monitor 1 (TM1) and Thermal Monitor 2 (TM2), user could select TM1 or TM2. But if CPU doesn't Support TM2, it will be fixed On TM1.

Execute-Disable Capability: Enable CPU from being executed by unknown software. If CPU doesn't support this function, this item will disappear. The default is **"Enabled"**.

```
             Phoenix - AwardBIOS CMOS Setup Utility
                           CPU Feature

    Delay Prior to Thermal      16 Min               Item Help
    Thermal Management          Thermal Monitor 1
    Execute-Disable Capability  Enabled          Menu Level   ▶▶

                                                 When disabled, forces
                                                 the Execute-Disable
                                                 Bit Capability
                                                 extended feature bit
                                                 to always return 0.






  ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

Advanced BIOS Features > Removable Device Priority

Advanced BIOS Features > Hard Disk Boot Priority

Advanced BIOS Features > CD-ROM Boot Priority
This parameter allows you to specify the system boot up search sequence.

Advanced BIOS Features > First Boot Device

Advanced BIOS Features > Second Boot Device

Advanced BIOS Features > Third Boot Device
This parameter allows you to specify the system boot up search sequence.
Available options:
- **Removable:** Floppy, USB, ZIP...etc
- **Hard Disk:** Hard Disk Drives
- **CD-ROM:** CD-ROM, DVD-ROM...etc
- **LAN:** LAN Card with boot ROM
- **Disabled:**

Advanced BIOS Features > Boot Other Device
This parameter allows you to enable other system boot up devices that is not described above.

Advanced BIOS Features > Boot Up NumLock Status
Set this parameter to **"On"** to enable the numeric function of the numeric keypad. Set this parameter to **"Off"** to disabling the numeric function allows you to use the numeric keypad for cursor control.

Advanced BIOS Features > Security Option
The "**System"** option limits access to both the System boot and BIOS setup. A prompt asking you to enter your password appears on the screen every time you boot the system.
The "**Setup"** option limits access only to BIOS setup.
To disable the security option, select Password Setting from the main menu, don't type anything and just press <Enter>

Advanced BIOS Features > HDD S.M.A.R.T Capability
This item allows user to enable S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for HDD. This function could predict the possibility of HDD failure. The default is **"Disabled"**.

Advanced BIOS Features > Show Logo On Screen
This item allows user to select to show or hide **"Full Screen logos"** or **"Vivid BIOS logos"**.

Advanced BIOS Features > Bypass Vivid BIOS
This item allow user to bypass Vivid BIOS or not when booting up.

Advanced Chipset Features

The "Advanced Chipset Features" includes settings for the chipset dependent features. These features are related to system performance.

```
        Phoenix - AwardBIOS CMOS Setup Utility
               Advanced Chipset Features
┌─────────────────────────────────────────┬──────────────────┐
│  DRAM Timing Selectable   Manual         │     Item Help    │
│  CAS Latency Time         2.5            ├──────────────────┤
│  Active to Precharge Delay 7             │ Menu Level   ▶   │
│  DRAM RAS# to CAS# Delay  3              │                  │
│  DRAM RAS# Precharge      3              │ Set this item to │
│  MGM Core Frequency       Auto          │ enable can improve│
│  System BIOS Cacheable    Disabled      │ some performance. │
│  Video  BIOS Cacheable    Disabled      │                  │
│  AGP Aperture Size (MB)   64            │                  │
│  Intruder Detection       Disabled      │                  │
│                                          │                  │
│  ** On-Chip VGA Setting **               │                  │
│  On-Chip VGA              Enabled       │                  │
│  On-Chip Frame Buffer Size 32MB         │                  │
│                                          │                  │
│                                          │                  │
│                                          │                  │
├──────────────────────────────────────────┴──────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU                             │
│       F2:Item Help F5:Previous Va                           │
└──────────────────────────────────────────────────────────────┘
```

Warning: *Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system performance. However, it may cause your system to be unstable if the setting is not correct for your system configuration.*

Advanced Chipset features > DRAM Timing Selectable
Available options:
- **By SPD:** System will define timing according to default of Dram. (Default)
- **Manual:** Allow user to define timing himself.

Advanced Chipset features > CAS Latency Time
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Available options: **2**, **2.5**

Advanced Chipset features > Active to Precharge Delay
Select the operating system that is active to precharge delay. Available options: **5**, **6**, **7**

Advanced Chipset features > DRAM RAS# to CAS# Delay
This field lets user to insert a timing delay between the CAS and RAS strobe signals, used when RAM is written to, read from, or refreshed. Fast gives fater performance; and Slow give more stable performance. This field applies only when synchronous DRAM is installed in the system. Available options: **2**, **3**

Advanced Chipset features > DRAM RAS# Precharge
If an insufficient number of cycles are allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast give faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system. Available options: **2**, **3**

Advanced Chipset features > MGM Core Frequency
This item allows user to determine the frequency of **CPU FSB / Memory / GFX Core Clock (Low) / GFX Core Clock (High)**. Available options:
- **400/266/133/200 MHZ**
- **400/200/100/200 MHZ**
- **400/200/100/133 MHZ**
- **400/266/133/267 MHZ**
- **400/333/166/250 MHZ**
- **Auto**

Advanced Chipset features > System BIOS cacheable
Allow the system BIOS to be cached to allow faster system performance.
Available options: **Disabled**, **Enabled**

Advanced Chipset features > Video BIOS cacheable
Allow the video BIOS to be cached to allow faster video performance.
Available options: **Disabled**, **Enabled**

Advanced Chipset features > AGP Aperture Size (MB)
This item allows you to determine the effective size of the AGP Graphic Aperture.
Available options: **4**, **8**, **16**, **32**, **64**, **128**, **256**

Advanced Chipset features > Intruder Detection
This item allow user to detect the housing is opened or not. It works only when the housing is designed with CASE OPEN cable and connected to motherboard.
Available options: **Disabled**, **Enabled**

Advanced Chipset features > Delayed PWROK Signal
This item is used to add the compatibility between motherboard and power supply for avoiding booting up failed. Available options: **400ms** (default) **/ 300ms / 200ms /100ms / Disabled**

Advanced Chipset features > On-Chip VGA
This item allows user to control the on-chip VGA.
Available options: **Disable**, **Enable**

Advanced Chipset features > Frame Buffer Size
This item allows user to control the on-chip frame buffer size.
Available options: **1M**, **4M**, **8M**, **16M**, **32M**

Integrated Peripherals

This submenu appears if you select the option "Integrated Peripherals" from the main menu. This option allows you to configure the I/O features.

```
                   Phoenix - AwardBIOS CMOS Setup Utility
                          Integrated Peripherals
 ┌──────────────────────────────────────────────┬──────────────────────┐
 │ ▶ OnChip IDE Device        Press Enter        │      Item Help        │
 │ ▶ Onboard Device           Press Enter        ├──────────────────────┤
 │ ▶ SuperIO Device           Press Enter        │ Menu Level    ▶       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 └──────────────────────────────────────────────┴──────────────────────┘
 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```
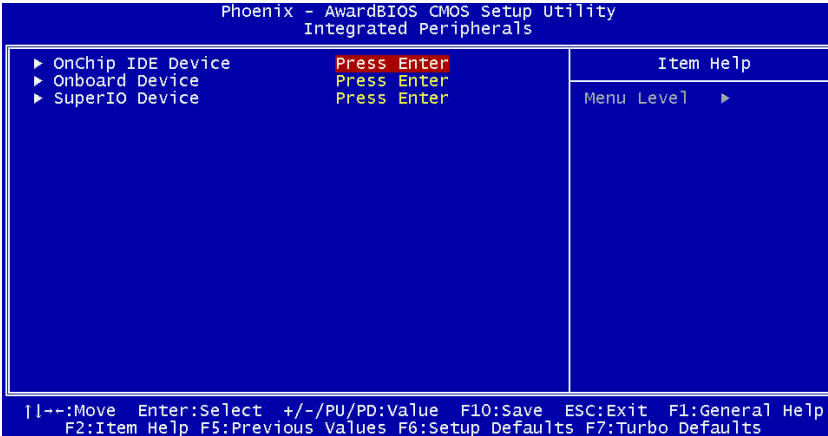
Integrated peripherals > OnChip IDE Device
This parameter allows you to "**Enable**" or "**Disable**" the IDE device connected to the primary or secondary IDE connector.

```
                   Phoenix - AwardBIOS CMOS Setup Utility
                          OnChip IDE Device
 ┌──────────────────────────────────────────────┬──────────────────────┐
 │ On-Chip Primary   PCI IDE   Enabled           │      Item Help        │
 │ On-Chip Secondary PCI IDE   Enabled           ├──────────────────────┤
 │                                                │ Menu Level    ▶▶      │
 │                                                │                       │
 │                                                │ This parameter lets   │
 │                                                │ you enable or disable │
 │                                                │ the IDE device        │
 │                                                │ connected to the IDE  │
 │                                                │ connector.            │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 └──────────────────────────────────────────────┴──────────────────────┘
 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```
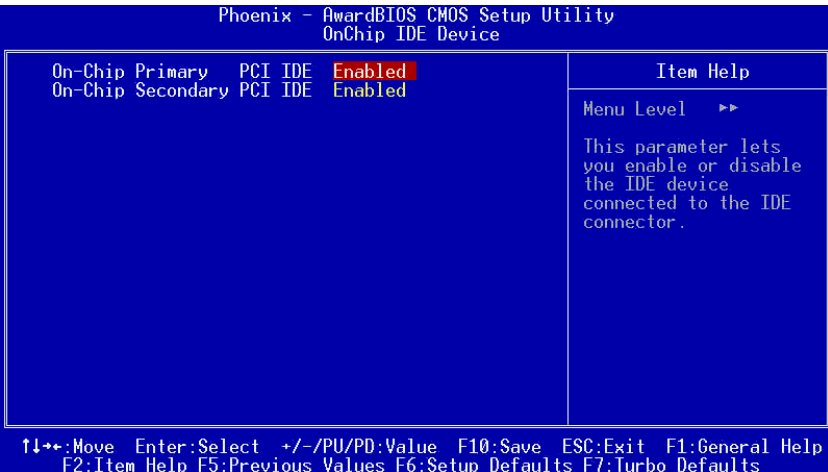
Integrated peripherals > Onboard Device
This item allows you to set onboard devices.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              Onboard Device

    USB Controller            Enabled            ┌──────────────────────┐
    USB 2.0 Controller        Enabled            │      Item Help        │
    USB Keyboard Support      Auto               ├──────────────────────┤
    AC97 Audio                Auto               │  Menu Level    ▶▶     │
    Init Display First        Onboard/AGP        │                       │
    Onboard LAN1 Control      Enabled            │  This item lets you   │
    Onboard LAN2 Control      Enabled            │  enable or disable the│
    Onboard 1394 control      Enabled            │  USB controller.      │
    Onboard SATA control      Enabled            │                       │
                                                 │                       │



├───────────────────────────────────────────────────────────────────────┤
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

USB Controller: This item lets you enable or disable the USB controller.
USB 2.0 Controller: This item lets you enable or disable the USB 2.0 controller.
USB Keyboard Support: This item lets you enable or disable the USB keyboard driver within the onboard BIOS. The keyboard driver simulates legacy keyboard command and let you use USB keyboard during POST or after boot if you don't have USB driver in the operating system.
AC97 Audio: This item is used to enable or disable the onboard audio.
Init Display First: If you installed a PCI VGA card, this item lets you decide which one is the initial display card.
Onboard LAN1 Control: This item lets you enable or disable onboard LAN.
Onboard LAN2 Control: This item lets you enable or disable onboard LAN.
Onboard 1394 Control: This item lets you enable or disable onboard 1394.
Onboard SATA Control: This item lets you enable or disable onboard SATA.

Integrated peripherals > SuperIO Device
This item allows you to set SuperIO device.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              SuperIO Device

      POWER ON Function       BUTTON ONLY        ┌──────────────────────┐
    x KB Power ON Password    Enter              │      Item Help        │
    x Hot Key Power ON        Ctrl-F1            ├──────────────────────┤
      Onboard FDC Controller  Enabled            │  Menu Level    ▶▶     │
      Onboard Serial Port 1   Auto               │                       │
      Onboard Serial Port 2   Auto               │  This item is used to │
      UART Mode Select        Normal             │  select Wake on       │
    x RxD , TxD Active        Hi,Lo              │  Keyboard/Mouse mode.  │
    x IR Transmission Delay   Enabled            │                       │
      Onboard Parallel Port   378/IRQ7           │  Any Key: This        │
      Parallel Port Mode      SPP                │  function allows you  │
    x EPP Mode Select         EPP1.9             │  wake up the system by│
    x ECP Mode Use DMA        3                  │  clicking any key.    │
      AC PWR Auto Recovery    Off                │                       │
                                                 │  Button Only: Disable │
                                                 │  Wake on KB/MS function│
                                                 │  . You can boot up your│
                                                 │  system by power      │
                                                 │  button only.         │

├───────────────────────────────────────────────────────────────────────┤
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

50

Power ON Function: This item is used to select Wake on Keyboard/Mouse mode.

● **Any Key:** This function allows you wake up the system by clicking any key.

● **Button Only:** Disable Wake on KB/MS function. You can boot up your system by power button only.

● **Keyboard 98:** If selecting this option, you can boot up the system by power button and the "Wake" key on Keyboard 98.

● **Password:** Disable the function of power button and let the system can only be powered on through the preset keys (like a password).

● **Hot Key:** If selecting this option, you also need to specify the hot key from "Hot Key Power On" item.

● **Mouse Left:** This function allows you wake up the system by clicking left mouse button twice successively.

● **Mouse Right:** This function allows you wake up the system by clicking right mouse button twice successively.

> *Note:*
> ◆ *Whenever you change this item, it will only take effect after you restart the system and successfully boot the Windows or DOS.*
> ◆ *Wake on Mouse function applies to PS/2 mouse only.*
> ◆ *If you set a password but forget it, please clear CMOS.*
> ◆ *If you want to use Wake on Mouse function in DOS, it is necessary to install the DOS driver of the mouse.*

KB Power ON Password: You can specify 1-5 keys as a password.

Hot Key Power On: If you select "Hot Key" option in "Power On Function" Item, you need to specify a hot key here.

Onboard FDC Controller: Setting this parameter to **"Enabled"** allowing you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to Disabled if you want to use a separate controller card.

Onboard Serial Port 1: This item allows you to assign address and interrupt for the board serial port.   The default is **"Auto"**.

Onboard Serial Port 2: This item allows you to assign address and interrupt for the board serial port. The default is **"Auto"**.

UART Mode Select: This item is configurable only if the "Onboard Serial Port 2" is enabled. This allows you to specify the mode of serial port2. Available options:

● **Normal**: Sets serial port 2 to operate in normal mode. This is the default setting.

● **IrDA (SIR):** This setting allows infrared serial communication at a maximum baud rate of 115.2K baud.

- **ASKIR:** This setting allows infrared serial communication at a maximum baud rate of 57.6K baud.

RXD, TXD Active: This item is used to select RxD (Receive Data) and TxD (Transmit Data) mode for UART, for instance, IR device, modem, etc. Normally, we suggest you keep the default setting. Please see the documentation that comes with your device. Available options: **Hi, Hi / Hi, Lo**

IR Transmission Delay: If **"Enabled"** is selected, there will be a 4 character delay when SIR is changed from TX mode to RX mode.

Onboard Parallel Port: This item controls the onboard parallel port address and interrupt. Available options: **3BC/IRQ7**, **3BC/IRQ7**, **3BC/IRQ7**, **Disabled**

Parallel Port Mode: This item lets you set the parallel port mode. The mode options are SPP (Standard and Bidirection Parallel Port), EPP (Enhanced Parallel Port) and ECP (Extended Parallel Port). Available options:

- **SPP (Standard and Bidirection Paralell Port): SPP** is the IBM AT and PS/2 compatible mode.
- **EPP (Enhanced Parallel Port): EPP** enhances the parallel port throughput by directly writing/reading data to/from parallel port without latch.
- **ECP (Extend Parallel Port): ECP** supports DMA and RLE (Run Length Encoded) compression and decompression.
- **ECP + EPP**

EPP Mode Select: This item lets you select EPP mode protocol.
Available options: **EPP 1.7**, **EPP 1.9**

ECP Mode Use DMA: This item lets you set the DMA channel of ECP mode. Available options: **3**, **1**

AC Power Auto Recovery: A traditional ATX system should remain at power off stage when AC power resumes from power failure. This design is inconvenient for a network server or workstation, without an UPS, that needs to keep power-on. This item is used to solve this problem. Selecting On enabling system to automatically power-on after AC power resumes; in the other hand, the system will remain power-off if you select Off. If Former-Sts (former status) option is selected, the system will power-on or power-off based on the original state. Available options: **Former-Sts**, **On**, **Off**

Power Management Setup

The Power Management Setup screen enables you to control the motherboard green features. See the following screen.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                     Power Management Setup

    ACPI Suspend Type          S1                    Item Help
  x Run VGABIOS if S3 Resume   Auto
    Soft-Off by PWR-BTTN       Instant-Off      Menu Level    ▶
    Wake On PCI card           Disabled
    Wake On Modem              Disabled
  x USB KB Wake-Up From S3     Disabled
    Wake On RTC Timer          Disabled
  x  Date(of Month) Alarm       0
  x  Time(hh:mm:ss) Alarm       0 :  0 :  0




  ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

Power Management > ACPI Suspend Type
This function allows you to select suspend types. S1 is Power On Suspend and S3 is Suspend to RAM. Available Options: **S1**, **S3**, **S1 & S3**

Power Management > Soft-off by PWR-BTTN
This is a specification of ACPI and supported by hardware. When Delay 4 sec. is selected, the soft power switch on the front panel can be used to control power On, Suspend and Off. If the switch is pressed for less than 4 seconds during power On, the system will go into Suspend mode. If the switch is pressed for longer than 4 seconds, the system will be turned Off. The default setting is Instant-Off. If Instant-Off is selected the soft power switch is only used to control On and Off, so there is no need to press it for 4 seconds, and there is no Suspend.
Available Options: **Delay 4 sec.**, **Instant-Off**

Power Management > Wake On PCI card
This is a function of PCI specification 2.2. PCI bus supports standby current to PCI card and PCI card can wakeup system if it detects certain activity.
Available options: **Disabled**, **Enabled**

Power Management > Wake On Modem
This option lets you specify enable or disable Wake On Modem function.
Available options: **Disabled**, **Enabled**

Power Management > Wake On RTC Timer
The Wake Up Timer is more like an alarm, which wakes up and powers on your system at a pre-defined time for a specific application. It can be set to wake up everyday or on specific date within a month. The date/time is accurate to within a second. This option lets you enable or disable the RTC Wake Up function.
Available options: **By Date**, **By Week**, **Disabled**

Power Management > Date (of Month) Alarm
This item is displayed when you enable the Wake On RTC Timer option. Here you can specify what date you want to wake up the system. For Example, setting to 15 will wake up the system on the 15th day of every month.
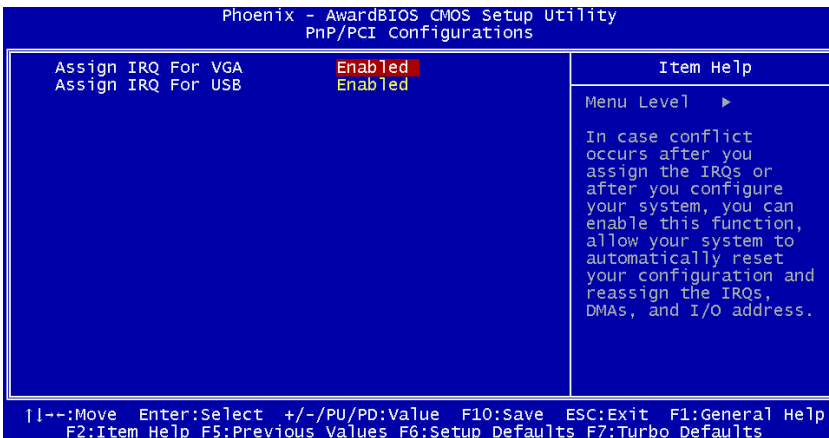
> **Tip:** *Setting this item to 0 will wake up the system on the specified time (which can be set in the Wake On RTC Timer) every day.*

Power Management > Time (hh:mm:ss) Alarm
This item is displayed when you enable the Wake On RTC Timer option. Here you can specify what time you want to wake up the system.

PNP/PCI Configurations

The PNP / PCI Configuration Setup allows you to configure the ISA and PCI devices installed in your system. The following screen appears if you select the option "PNP/PCI Configuration Setup" from the main menu.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              PnP/PCI Configurations
  ┌──────────────────────────────────────────┬─────────────────────────────┐
  │  Assign IRQ For VGA        Enabled        │          Item Help          │
  │  Assign IRQ For USB        Enabled        ├─────────────────────────────┤
  │                                           │ Menu Level    ▶             │
  │                                           │                             │
  │                                           │ In case conflict            │
  │                                           │ occurs after you            │
  │                                           │ assign the IRQs or          │
  │                                           │ after you configure         │
  │                                           │ your system, you can        │
  │                                           │ enable this function,       │
  │                                           │ allow your system to        │
  │                                           │ automatically reset         │
  │                                           │ your configuration and      │
  │                                           │ reassign the IRQs,          │
  │                                           │ DMAs, and I/O address.      │
  │                                           │                             │
  └──────────────────────────────────────────┴─────────────────────────────┘
  │↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
  │     F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults      │
```

PNP/PCI Configurations > Assign IRQ For VGA
In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.
Available options: **Disabled**, **Enabled**

PNP/PCI Configurations > Assign IRQ For USB
In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.
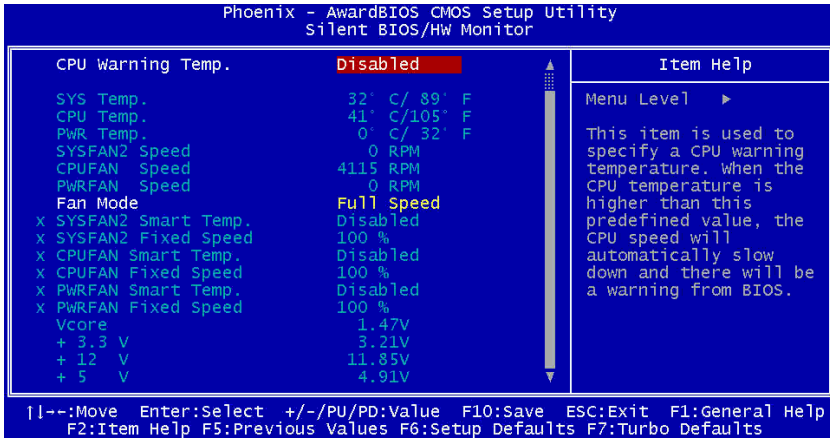Available options: **Disabled**, **Enabled**

Silent BIOS/HW Monitor

This submenu displays Silent BIOS / HW monitor status and provides some basic control function.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Silent BIOS/HW Monitor

   CPU Warning Temp.          Disabled      ▲        Item Help

   SYS Temp.                  32' C/ 89' F          Menu Level  ▶
   CPU Temp.                  41' C/105° F
   PWR Temp.                   0' C/ 32' F          This item is used to
   SYSFAN2 Speed                 0 RPM              specify a CPU warning
   CPUFAN  Speed              4115 RPM              temperature. When the
   PWRFAN  Speed                 0 RPM              CPU temperature is
   Fan Mode                  Full Speed             higher than this
 x SYSFAN2 Smart Temp.        Disabled              predefined value, the
 x SYSFAN2 Fixed Speed        100 %                 CPU speed will
 x CPUFAN Smart Temp.         Disabled              automatically slow
 x CPUFAN Fixed Speed         100 %                 down and there will be
 x PWRFAN Smart Temp.         Disabled              a warning from BIOS.
 x PWRFAN Fixed Speed         100 %
   Vcore                      1.47V
   + 3.3 V                    3.21V
   + 12  V                   11.85V
   + 5   V                    4.91V          ▼

 ↑↓--:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults
```

Silent BIOS/HW Monitor > CPU Warning Temperature
This item is used to specify a CPU warning temperature. When the CPU's temperature is higher than this predefined value, the CPU's speed will automatically slow down and there will be a warning from BIOS.
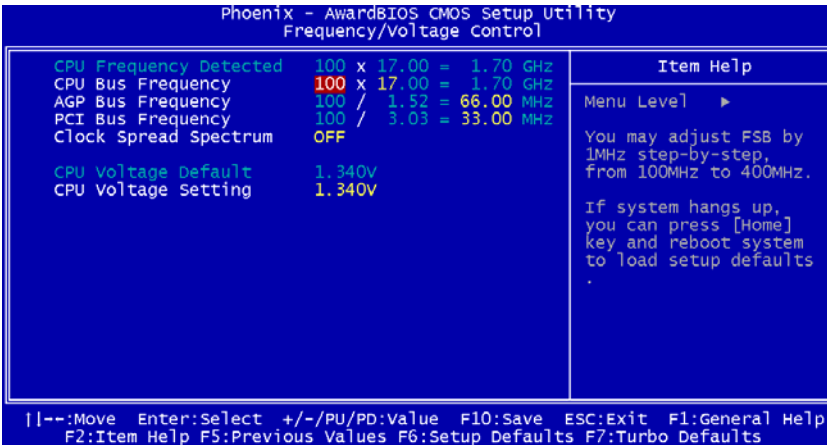
Silent BIOS/HW Monitor > Fan Mode
This item allows user to select the mode of Fan Speed. Available options:
● **Full Speed:** All fans will operate in full speed.
   1. If CPUFAN doesn't be connected or operate, there would be Warning Beep.
   2. When SystemFAN or PowerFAN is connected to motherboard, if SystemFAN or PowerFAN doesn't work, there would be Warning Beep.
● **Smart Control:** User could set critical temperature for each fan. If the temperature is under critical temperature, fan wouldn't operate; on the contrary fan would operate.
   1. If Power Temperature connector isn't be connected, Smart Control mode for PowerFAN will be disabled.
● **Fixed Speed:** User could define the voltage of each fan to make fan operate in a fixed speed.
   1. If CPUFAN doesn't be connected or operate, there would be Warning Beep.
   2. When SystemFAN or PowerFAN is connected to motherboard, if SystemFAN or PowerFAN doesn't work, there would be Warning Beep.

Frequency/Voltage Control

This submenu allows you to configure the CPU and memory clock.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Frequency/Voltage Control
┌─────────────────────────────────────────────┬─────────────────────┐
│ CPU Frequency Detected  100 x 17.00 =  1.70 GHz │      Item Help      │
│ CPU Bus Frequency       100 x 17.00 =  1.70 GHz │                     │
│ AGP Bus Frequency       100 /  1.52 = 66.00 MHz │ Menu Level    ▶     │
│ PCI Bus Frequency       100 /  3.03 = 33.00 MHz │                     │
│ Clock Spread Spectrum   OFF                     │ You may adjust FSB by│
│                                                 │ 1MHz step-by-step,  │
│ CPU Voltage Default     1.340V                  │ from 100MHz to 400MHz.│
│ CPU Voltage Setting     1.340V                  │                     │
│                                                 │ If system hangs up, │
│                                                 │ you can press [Home]│
│                                                 │ key and reboot system│
│                                                 │ to load setup defaults│
│                                                 │ .                   │
│                                                 │                     │
│                                                 │                     │
│                                                 │                     │
│                                                 │                     │
├─────────────────────────────────────────────┴─────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults │
└─────────────────────────────────────────────────────────────────────┘
```

Frequency/Voltage Control > CPU Bus Frequency
This item allows user to overclock the bus frequency of CPU. The range is from 100 to 400.

> *Tip: When you fail to overclock, you could:*
>
> 1. *Clear CMOS (JP14) to restore the default setting.*
> 2. *After turning power on, press "Home" immediately until the screen appears.*

Frequency/Voltage Control > AGP Bus Frequency

Frequency/Voltage Control > PCI Bus Frequency
These two items allow user to adjust AGP / PCI Bus Frequency. The ratio of AGP and PCI Bus frequency is fixed at 2:1. Available options: **66.00/33.00**, **75.43/33.72**, **88.00/44.00**

Frequency/Voltage Control > Clock Spread Spectrum
This item is used to set the value of clock Spread Spectrum. BIOS will determine the adjustable value according to the CPU installed, not all items will be showed. This function only works when CPU Bus frequency is at 100MHz.
Available options: **0.3% Center** / **0-0.5% down / 0.55% Center / 0-0.75% down / Spread Off**

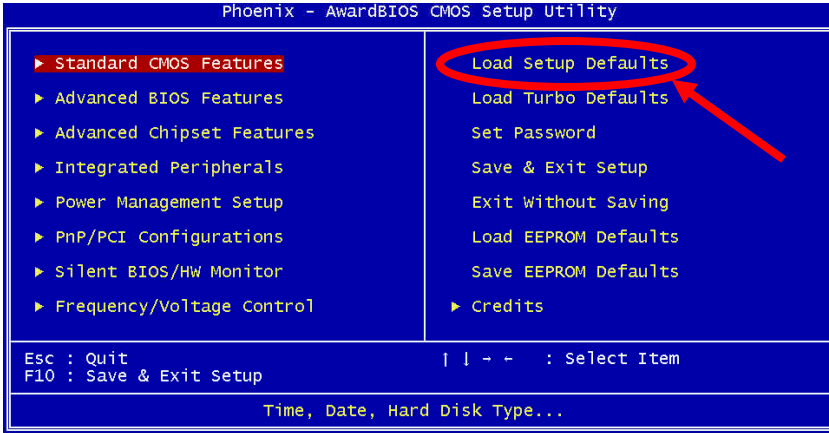**Frequency/Voltage Control > CPU Voltage Default**
This item shows the default voltage of the CPU installed.

Frequency/Voltage Control > CPU Voltage Setting
This item allows user to adjust CPU Vcore voltage, BIOS will determine the adjustable value according to the CPU installed.

Load Setup Defaults

The "Load Setup Defaults" option loads optimized settings for optimum system performance.   Optimal settings are relatively safer than the Turbo settings.   All the product verification, compatibility/reliability test report and manufacture quality control are based on "Load Setup Defaults". We recommend using these settings for normal operation. "Load Setup Defaults" is not the slowest setting for this motherboard.   If you need to verify an unstable problem, you may manually set the parameter in the "Advanced BIOS Features" and "Advanced Chipset Features" to get slowest and safer setting.

```
              Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          Load Setup Defaults
  ▶ Advanced BIOS Features          Load Turbo Defaults
  ▶ Advanced Chipset Features       Set Password
  ▶ Integrated Peripherals          Save & Exit Setup
  ▶ Power Management Setup           Exit Without Saving
  ▶ PnP/PCI Configurations          Load EEPROM Defaults
  ▶ Silent BIOS/HW Monitor          Save EEPROM Defaults
  ▶ Frequency/Voltage Control     ▶ Credits

  Esc : Quit                      ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

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

Load Turbo Defaults

The "Load Turbo Defaults" option gives better performance than "Load Setup Defaults". It is provided for the convenience of power user who wants to push the motherboard to get better performance. Turbo setting does not go though all the detail reliability and compatibility test, it is tested only with limited configuration and loading (for example, a system that contains only a VGA card and one DIMM/RIMM). Use Turbo setting only when you fully understand the items in Chipset Setup menu.

Set Password

Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.

To set a password:

1. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. When you type the characters, they appear as asterisks on the password screen box.
2. After typing the password, press.
3. At the next prompt, re-type your password and press again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press "**Enter**" when being prompted to enter the password. The screen displays a message confirming that the password has been disabled.

Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.

Exit without Saving

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.

Load EEPROM Defaults

Except "Load Setup Default" and "Load Turbo Default", you may also use "Save EEPROM Default" to save your own settings into EEPROM, and reload by using this item.

Save EEPROM Defaults

You may use this item to save your own settings into EEPROM. Then, if the data in CMOS is lost or you forget the previous settings, you may use "Load EEPROM Default" to reload.

Credits

List of all excellent AOpen's R&D join the research and development of this motherboard.

5.4 BIOS Upgrade under Windows environment

With outstanding R&D ability of AOpen, we now bring you a whole new BIOS Flash wizard ---- EzWinFlash. With an eye to convenience for users, EzWinFlash combines the BIOS binary code and flash module together, so the only thing you have to do is just clicking on the utility you downloaded from web and let it help you complete the flash process automatically. EzWinFlash detects your motherboard and checks the BIOS version cleverly to prevent your system from any possible failure. Moreover, EzWinFlash has been taken into consideration to go with any windows platform you might be using, no matter if you're using Windows 95/98, 98SE/ME, NT4.0/2000, or Windows XP.

In the meanwhile, in order to provide a much more user-friendly operating environment, AOpen EzWinFlash is natively designed to have multi-language function to provide easier way for user in changing BIOS setting.
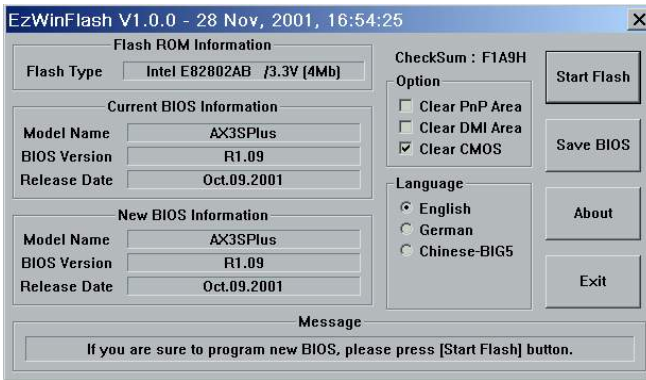
> ⊘ **Caution:** *You are taking a risk of BIOS flash failure when you update your system. If your motherboard is working stable, and there are no major bugs to be fixed by a latter BIOS revision, we recommend that you* **DO NOT** *upgrade your BIOS. If you intent on upgrade* **PLEASE MAKE SURE** *you get the right BIOS revision for your motherboard model so as to avoid any possible failure.*

Note: The model name on this BIOS picture is for reference only. It may not be the same model with your motherboard.

You may accomplish BIOS upgrade procedure with EzWinFlash according to following steps, and it's STRONGLY RECOMMENDED to close all applications before you start the upgrades.

Download the latest version of BIOS package zip file from AOpen official web site. (Ex: http://english.aopen.com.tw/)

Unzip the downloaded BIOS package (ex: WSGMAXII102.ZIP) with WinZip (http://www.winzip.com) in Windows environment.

Save the unzipped files into a folder, for example, WSGMAXII102.EXE & WSGMAXII102.BIN.

Double click WSGMAXII102.EXE; EzWinFlash will detect the model name and BIOS version of your motherboard. If you collect wrong BIOS, you will not be allowed to proceed with the flash steps.

You may select a preferred language in main menu, then click [Start Flash] to begin the BIOS upgrade procedure.

EzWinFlash will complete all the process automatically, and a dialogue box will pop up to ask you to restart Windows. Click [YES] to reboot Windows.

Press <Del> at POST to enter BIOS setup screen; choose "Load Setup Defaults", then "Save & Exit Setup". Done!

It is strongly recommended NOT to turn off the power or run any applications during FLASH PROCESS.

> *Warning:* *The new BIOS upgrade will permanently replace your original BIOS setting when flashing. You may need to reconfigure the BIOS setting before your system goes back to work as normal.*

5.5 Vivid BIOS technology

Have you been fed up with the conservative and immutable POST screen? Let's rule out the tradition idea that POST screen are stiff and frigid, and let AOpen show you the newly developed VividBIOS to experience the lively vivid colorful POST screen!

Unlike earlier graphic POST screen which could occupy the whole screen and mask text information during POST, AOpen VividBIOS deals with graphics and texts separately, and makes them running simultaneously during POST. With this innovative design, VividBIOS now brings you a beautiful and sleek 256 colors screen without missing any important information shown on POST screen.

In addition, the limited space of BIOS ROM is another big issue. When all of the traditional BIOS can only show space-consuming and uncompressed Bitmap, AOpen has considerately tuned the BIOS to next generation, to recognize the smaller-sized GIF format and even dynamic-showing GIF animation.

Vivid BIOS shares the same fundamental technology with Open JukeBox CD Player, you may use the same EzSkin utility to change your VividBIOS screen or to download your favorite Open JukeBox skin. If you see this little logo shown beside your model name on the motherboard download page, *http://english.aopen.com.tw/tech/ezskin/vivid.htm*, it is assured that your motherboard supports this innovative feature!

Chapter 6 Installing Drivers

EzInstall

You may think that installing drivers and utilities would be a repeated task of going through those installation wizards and steps-by-steps. Now, you will be surprised with how "Ez" EzInstall could do. Without wizards or steps, all you have to do is to do one click and then it's done. Click and done. Yes. EzInstall makes installation easy and even foolproof!

After putting in the CD, you will be prompted with AOpen welcome page and our branches information.

First, click on the install driver ICON at left side for necessary drivers.

Second, click on the install utility ICON at left side for preferred utilities.

Practically, it's done. But you may also browse CD contents, Readme to get more information or just exit the CD installation.

Click to install online manual

Install driver

Install utility

Browse CD Contents

Readme

Exit CD

AOpen
Welcome
Install User manual
Thank you for choosing AOpen i855GMEm-LFS
Contact us

AOpen Inc.
http://www.aopen.com.tw
TEL: +886-2-3789-5888
FAX: +886-2-3789-5899

AOpen Computer GmbH.
http://www.aopencom.de
TEL: +49-2131-1243-710
FAX: +49-2131-1243-999

AOpen America Inc.
http://english.aopen.com.tw
TEL: +1-408-232-1200
FAX: +1-408-232-1280

AOpen Japan Inc.
http://www.aopen.co.jp
TEL: +81-048-290-1800
FAX: +81-048-290-1820

AOpen Computer B.V.
http://www.aopen.nl
TEL: +31-73-645-9516
FAX: +31-73-645-9604

AOpen International Co., Ltd.
http://www.aopen.com.cn
TEL: +86-21-6225-8622
FAX: +86-21-6225-7926

AOpen branches information

Ez Install

6.1 Installing Drivers

As you may see from the Installing driver page, EzInstall had picked up necessary for your motherboard. All you have to do is just click on the "**GO**", and no more steps afterward, of all listed drivers, grey checks indicate necessary drivers; you cannot click them off. Red checks can be disabled if you don't want to install them now.

Press the icon will prompt the "**Install Driver**" page. You may also press "**Back**" to return to the Main page.

Once clicking "GO", EzInstall will run the installing procedure automatically, and prompt a reboot dialog (Some drivers or utilities may skip the reboot part).

6.2 Installing Utilities

Installing Utilities is virtually the same as installing drivers. AOpen provides you many friendly and powerful utilities to manage your system. You may find lots of fabulous utilities listed there, and all you have to do is to click on the "**GO**", then it will install the utilities to your system right away without complicated steps.

Press the icon will prompt the **"Install Utilities"** page for your selection. You may also press **"Back"** to get back to the Main page.
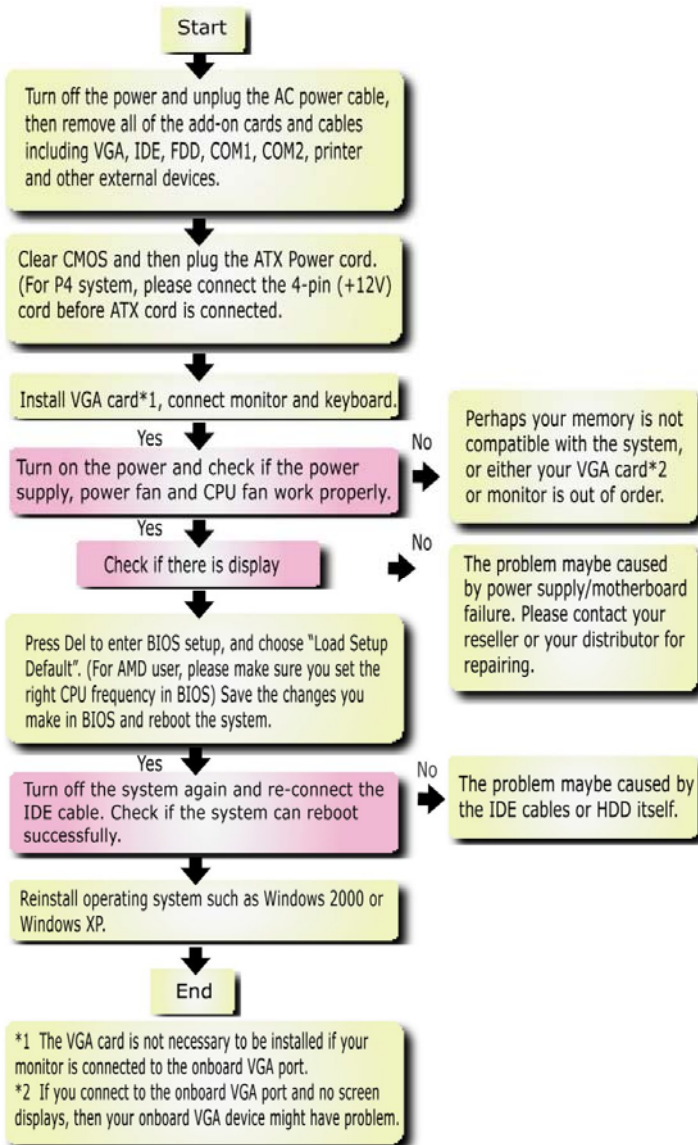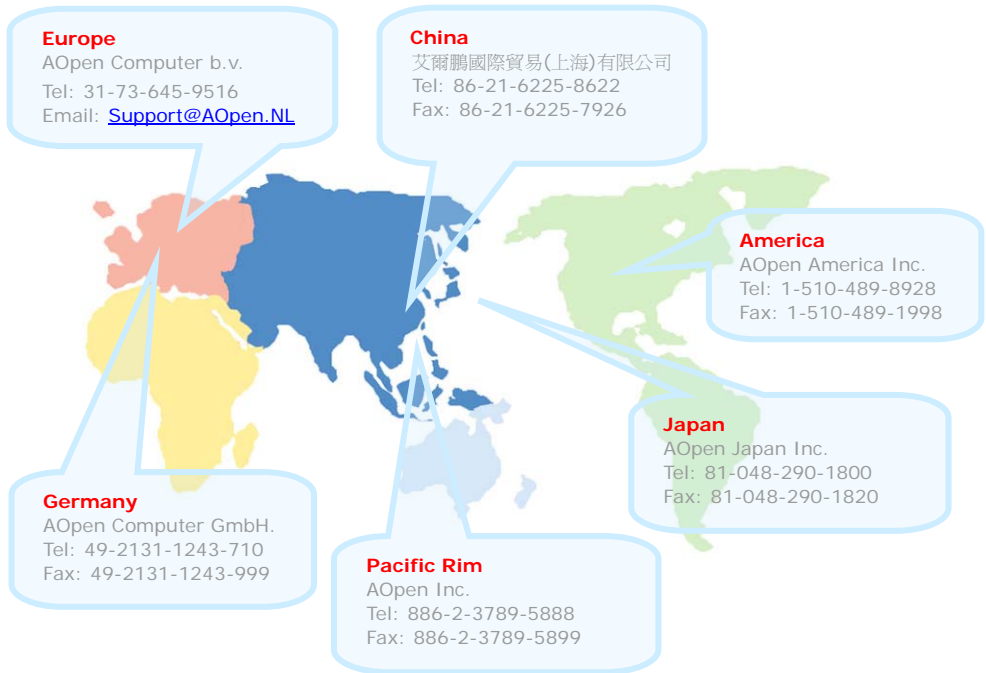
TroubleShooting

Start

Turn off the power and unplug the AC power cable, then remove all of the add-on cards and cables including VGA, IDE, FDD, COM1, COM2, printer and other external devices.

Clear CMOS and then plug the ATX Power cord. (For P4 system, please connect the 4-pin (+12V) cord before ATX cord is connected.

Install VGA card*1, connect monitor and keyboard.

Yes / No → Perhaps your memory is not compatible with the system, or either your VGA card*2 or monitor is out of order.

Turn on the power and check if the power supply, power fan and CPU fan work properly.

Yes / No → The problem maybe caused by power supply/motherboard failure. Please contact your reseller or your distributor for repairing.

Check if there is display

Press Del to enter BIOS setup, and choose "Load Setup Default". (For AMD user, please make sure you set the right CPU frequency in BIOS) Save the changes you make in BIOS and reboot the system.

Yes / No → The problem maybe caused by the IDE cables or HDD itself.

Turn off the system again and re-connect the IDE cable. Check if the system can reboot successfully.

Reinstall operating system such as Windows 2000 or Windows XP.

End

*1 The VGA card is not necessary to be installed if your monitor is connected to the onboard VGA port.
*2 If you connect to the onboard VGA port and no screen displays, then your onboard VGA device might have problem.

Chapter 8 Technical Support

Dear Customer,

Thanks for choosing AOpen products. We invite you to register at *http://www.aopen.com* to become a Gold Member of Club AOpen so as to ensure quality service in the future. In order to maintain the best service to every customer of us, we recommend you to follow the procedures below and seek help from our branches according to the region you buy the product. With your help, we can then continue to provide efficient and the best quality service to every customer.

Thanks very much for your understanding!

AOpen Technical Supporting Team

Europe
AOpen Computer b.v.
Tel: 31-73-645-9516
Email: Support@AOpen.NL

China
艾爾鵬國際貿易(上海)有限公司
Tel: 86-21-6225-8622
Fax: 86-21-6225-7926

America
AOpen America Inc.
Tel: 1-510-489-8928
Fax: 1-510-489-1998

Japan
AOpen Japan Inc.
Tel: 81-048-290-1800
Fax: 81-048-290-1820

Germany
AOpen Computer GmbH.
Tel: 49-2131-1243-710
Fax: 49-2131-1243-999

Pacific Rim
AOpen Inc.
Tel: 886-2-3789-5888
Fax: 886-2-3789-5899

Europe Email:	*Support@AOpen.NL*
Pacific Rim:	*http://www.aopen.com.tw/tech/default.htm*
China:	*http://www.aopen.com.cn/tech/default.htm*
Germany:	*http://www.aopencom.de/tech/default.htm*
America:	*http://usa.aopen.com/tech/default.htm*
Japan:	*http://aopen.jp/tech/index.html*

Model Name and BIOS Version

Model name and BIOS version can be found on upper left corner of first boot screen (POST screen). For example:

Phoenix AwardBIOS v6.00PG, An Energy Star Ally

Copyright (C) 2004, Phoenix Technologies, LTD.

i855GMEm-LFS R1.02 Sept. 01. 2004 AOpen Inc.

i855GMEm-LFS is model name of motherboard; R1.02 is BIOS version

Register Your Motherboard

Thanks for choosing AOpen product, please register this motherboard at http://club.aopen.com.tw/productreg/ to become a Gold member of Club AOpen, and to ensure high service quality and priority from AOpen. You will also have a chance to play slot machine game to win prize from AOpen. Please prepare the following information before you start: Model Name, Part Number (P/N), Serial Number (S/N) and Purchase Date. The Part Number and Serial number are printed on bar code label. You can find this bar code label on the outside packing or on component side of PCB. For example:

918811020191949378KN73

Part No.   Serial No.

P/N: 91.88110.201 is part number, S/N: 91949378KN73 is serial number.

Phoenix-Award BIOS ERROR Message	
Beep Sound	Message
1 short(Beep)	System booting is normally.
1 long - 1 short(Beep)	DRAM ERROR
1 long - 2 short(Beep)	Display card or monitor connected error
1 long - 3 short(Beep)	Keyboard Error
Long(Beep) continuous	DRAM hasn't inset correctly.

Online Manual: To download manual, please log on and then select your preferred language. Under "Type" directory, choose "Manuals" to go to our manual database. You can also find the manual and EIG in AOpen Bonus Pack.
http://download.aopen.com.tw/downloads

Test Report: We recommend you to choose board/card/device from the compatibility test reports for assembling your PC. It may prevent incompatibility problems.
http://english.aopen.com.tw/tech/report/default.htm

FAQ: Here we list problems that users often encounter and FAQ (Frequently Asked Questions). You may select your preferred language after log on, and may be able to find a solution to your problem.
http://club.aopen.com.tw/faq/

Download Software: After log on and having language selected, you may get the latest updated BIOS/utility and drivers you need under "Type" directory. In most case, newer versions of drivers and BIOS have solved earlier bugs or compatibility problems.
http://download.aopen.com.tw/downloads

eForum: AOpen eForum is provided to discuss our products with other users, in which your problem probably had been discussed before or will be answered. After log on, you may select your preferred language under "Multi-language".
http://club.aopen.com.tw/forum

Contact Us: Please prepare detail system configuration and error symptom before contacting us. The part number, serial number and BIOS version are also very helpful.

Contact Distributors/Resellers: We sell our products through resellers and integrators. They should know your system configuration very well and should be able to solve your problem efficiently and provide important reference for you.