TECHNICAL MANUAL
Of

Intel 945GSE Express Chipset

&

Intel FW82801GBM ICH Chipset

Based

Mini-ITX M/B For ATOM Processor

*NO.G03-NF94-F*

Rev 2.0

Release date: Feb., 2009

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

TABLE OF CONTENT

⚠ Safety Environmental Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- 0 to 60 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

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Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	February, 2009

Item Checklist

- ☑ Motherboard
- ☑ Cable(s)
- ☑ CD for motherboard utilities
- ☑ Motherboard User's Manual
- ☑ Back panel

Chapter 1

Introduction of the Motherboard

1-1   Feature of motherboard

* Intel 945GSE+ICH7M chipset.

*Onboard ATOM CPU, with low power consumption never denies high performance.

* Support FSB 533MHz.

* Support DDRII 400/533 up to 2GB.

* Onboard REALTEK RTL 8111C Gigabit Ethernet LAN.

* Integrated ALC662 6-channel HD audio CODEC

* Support USB2.0 data transport demands.

* Support RS232/422/485 and watchdog.

1-2   Specification

Spec	Description
Design	∗ Mini ITX form factor 6 layers PCB size: 17.0x17.0cm
Chipset	∗ Intel 945GSE+ICH7M Chipset
Embedded CPU	∗ ATOM CPU
Memory Socket	∗ 200-pin DDRII SO-DIMM socket x1 ∗ Support DDRII 400/533MHz system Modules DDRII memory ∗ Expandable to 2GB.
Expansion Slots	∗ 32-bit PCI slot x 1pcs
Integrate IDE	∗ One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 133/100/66 functions that deliver the data transfer rate up to 100 MB/s.
LAN	∗ Integrated Realtek RTL8111C PCI-E Gigabit LAN. ∗ Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000Mb Ethernet data transfer rate
Audio	∗ ALC662 6 channel Audio Codec integrated ∗ Audio driver and utility included
BIOS	∗ Award 8MB Flash ROM
Multi I/O	∗ PS/2 keyboard ∗ Hard disk drive connector x1 ∗ SATAII x2 ∗ USB2.0 port x 4 and headers x2 ∗ RJ45 LAN connector x1 ∗ Audio connector x1 (Line-in, Line-out, MIC,SPDIF 0UT) ∗ COM connector x 2 ∗ COM Header x2 ∗ LVDS Connector x1

	∗ VGA Connector x1
	∗ HDTV OUT Connector x1
	∗ DVI Connector x1
	∗ Parallel Connector x1

1-3 Layout Diagram & Jumper Setting

Keyboard/ USB Power (JP1)

ATX Power Connector

PS2 KB/USB Port

ATXPWR

JP1

CPU FAN

CPU FAN

JP4

LVDS1

INVERTER

JP3

VGA and DVI-D and Parallel Connector

ATOM N270

DDRII SO-DIMM Socket x1

SO-DIMM

HDTV OUT Connector

Intel 945GSE Chipset

TV-OUT1

SFAN2   SFAN1

SYS FAN1

Fintek

SYS FAN2

TX-RXCOM4

Intel ICH7M Chipset

COM Connector

Battery

JCOM2P1 JCOM1P1

IDE1

IDE Connector

RealtekRTL8111C Gigabit Lan

JCOMP4 JCOM4   JCOMP3

SATA2

USB Connector

RTL8111C

JBAT

BIOS

SATAII Connector (1,2)

ALC 662

COM Connector

ALC662

COM4   COM3

USB2

USB1

Speaker

JP2

Speaker connector
Power LED

Audio Connector

CD Audio-In Header

CDIN

PCI1

SATA1

AUDIO

GPIO

SPEAK
PWRLED

JW FP1

Front Panel Audio

PCI Slot

USB Connector

GPIO Connector

Front Panel Connector

Jumper

Jumper	Name	Description	Page
JP1	KB/USB Power On Function Setting	3-pin Block	P.7
JBAT	CMOS RAM Clear Function Setting	3-pin Block	P.7
JP2	USB Power On Function Setting	3-pin Block	P.8
JP3	Inverter backlight select	3-pin Block	P.8
JP4	LVDS5V/3.3V Select	3-pin Block	P.8
JCOM1P1	Power RS232 Function Select	6pin Block	P.9
JCOM2P1	Power RS232 Function Select	6pin Block	P.9
JCOMP3	Power RS232 Function Select	6pin Block	P.10
JCOMP4	Power RS232 Function Select	6pin Block	P.10
JCOM4	COM4 RS232/422/485 Function Select	6pin Block	P.11

Connectors

| Connector	Name	Description	Page
USB	USB Port Connector	4-pin Connector	P.11
UL2	RJ45 LAN Connector	RJ-45 Connector	P.11
VGA	Video Graphic Attach Connector	D-sub15-pin Female	P.11
AUDIO1	Line-Out /MIC/Line-In Audio Connector	3 Phone Jack	P.11
COM1,2	Serial Port COM1 Connector	9-pin Connector	P.11
DVI-D Connector	DVI port connector	24-pin Connector	P.11
Parallel Connector	Parallel port connector	24-pin Connector	P.11

Headers

Header	Name	Description	Page
CPUFAN,SYSFAN1/2	FAN Speed Headers	3-pin Block	P.17
AUDIO1	Front panel audio Headers	9-pin block	P.12
HDTV Out1	HDTV Out Header	9-pin block	
CDIN	CD Audio-In Header	4-pin Block	P.12
PWR LED	Power LED	4-pin Block	P.17
LVDS	LVDS Connector	32-pin Block	P.14
Inverter	LVDS Inverter Connector	7-pin Block	P.15
COM3,4	Serial Port COM3/4 Connector	9-pin Connector	P.17
JW_FP (PWR LED/ HD LED/ /Power Button /Reset)	Front Panel Header (PWR LED/ HD LED/ /Power Button /Reset)	9-pin Block	P.16
ATXPWR	ATX Power Connector	24-pin Block	P.10
SATA1~2	Serial ATAII IDE Connector	7-pin Connector	P.11
GPIO	GPIO header	10-pin Connector	P.18

Chapter 2

## 2-1 Jumper Setting

(1) JP1: KB/USB Power On Function Setting

JP1   **1 3**
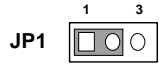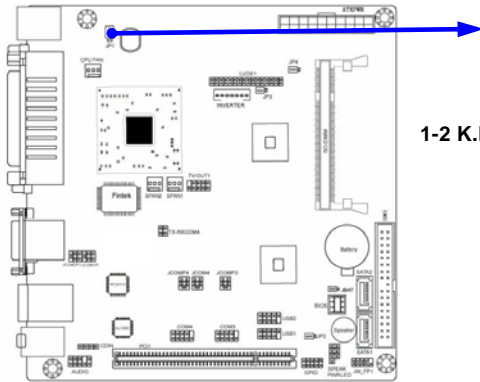
1-2 K.B&USB POWER-ON Disabled

JP1   **1 3**
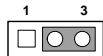
2-3 K.B& USB POWER-ON Enabled

(2) Clear CMOS (3-pin): JBAT

JBAT   **1 3**

1-2 closed   Normal

JBAT   **1 3**
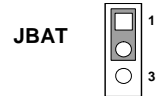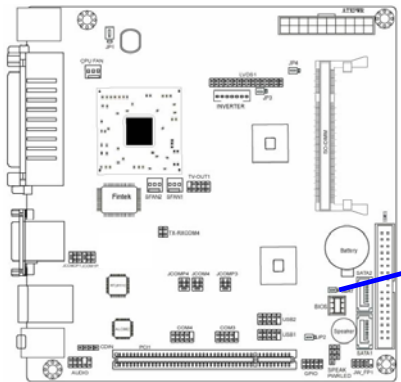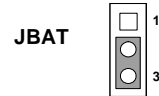
2-3 closed   Clear CMOS

CMOS RAM Clear Setting

(3) JP3: Inverter backlights select (3-pin)

JP3   1-2 closed   Off

JP3   2-3 closed   On
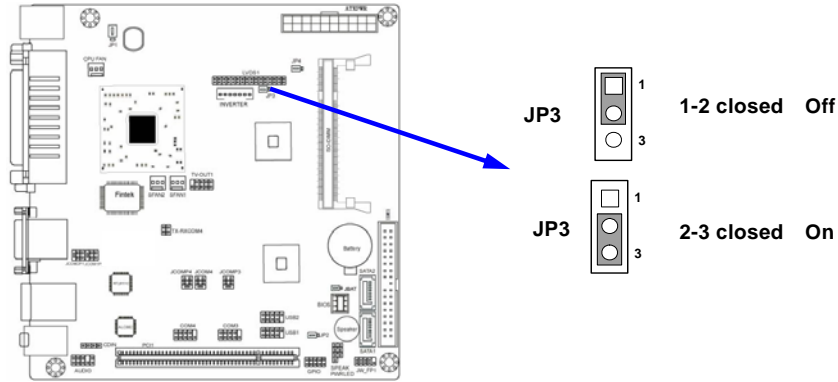
(4) JP4: LVDS 5V/3.3V Function setting (3-pin)

JP4

1-2 closed: LVDS VCC 5V

JP4

2-3 closed : LVDS VCC 3.3V
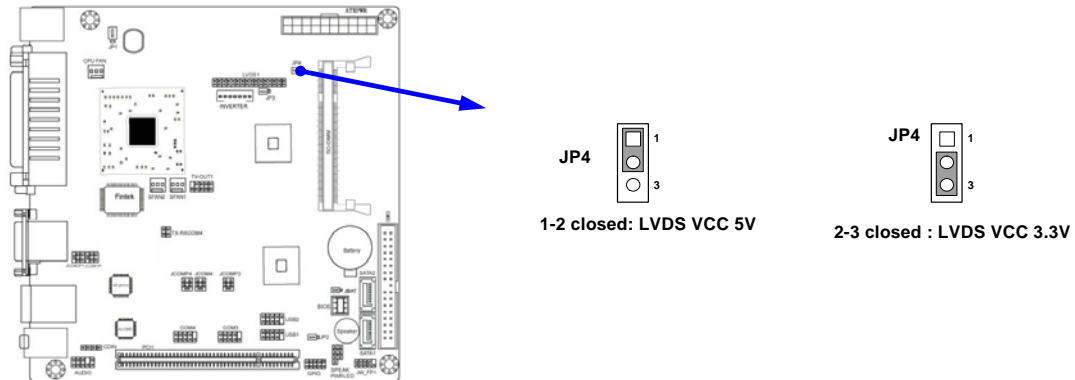
(5) JCOM1P1: COM1 Pin 9 function select

JCOM1P1

1-2 closed: RS232   **3-4 closed : +12V**   **5-6 closed : +5V**
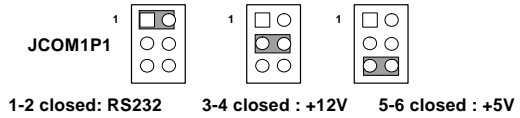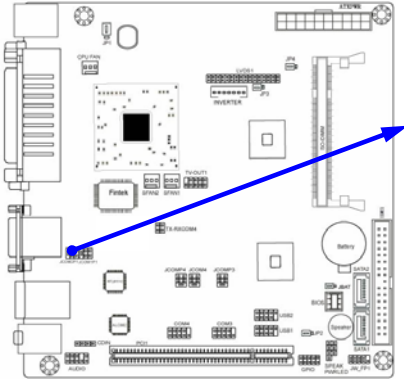
(6) JCOM2P1: COM2 Pin9 function select

JCOM2P1

1-2 closed: RS232   **3-4 closed : +12V**   **5-6 closed : +5V**
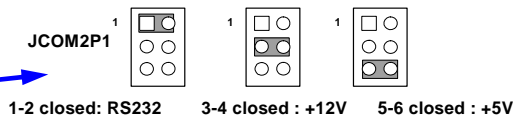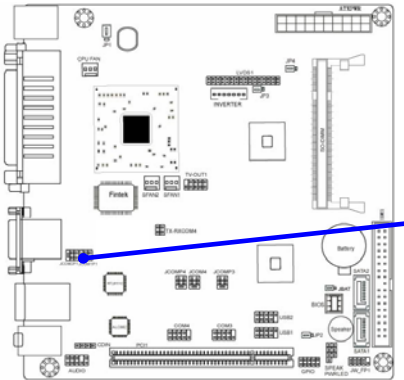
(7) JCOM4: Power RS232/422/485 Function Select

JCOM4

1-2 closed: RS232   3-4 closed : RS485   5-6 closed : RS422
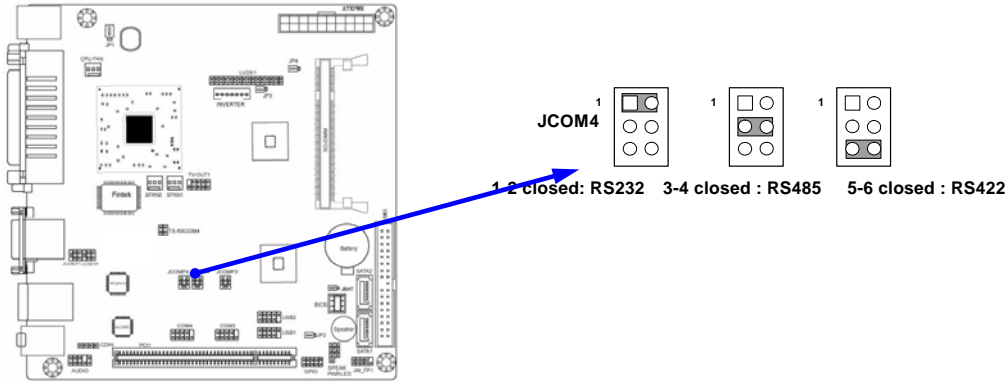
(8) JCOMP4: COM4 Pin9 function select

JCOMP4

1-2 closed: RS232   3-4 closed : +12V   5-6 closed : +5V
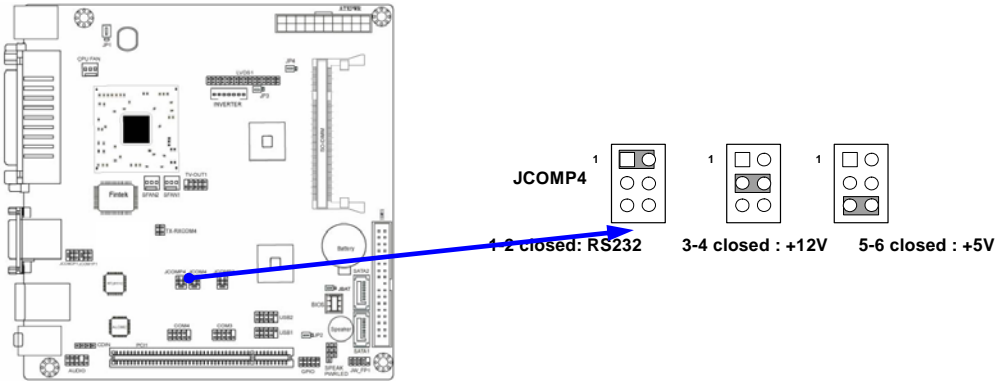
(9) JCOMP3: COM3 Pin9 function select

JCOMP3

1-2 closed: RS232 **3-4 closed : +12V** **5-6 closed : +5V**
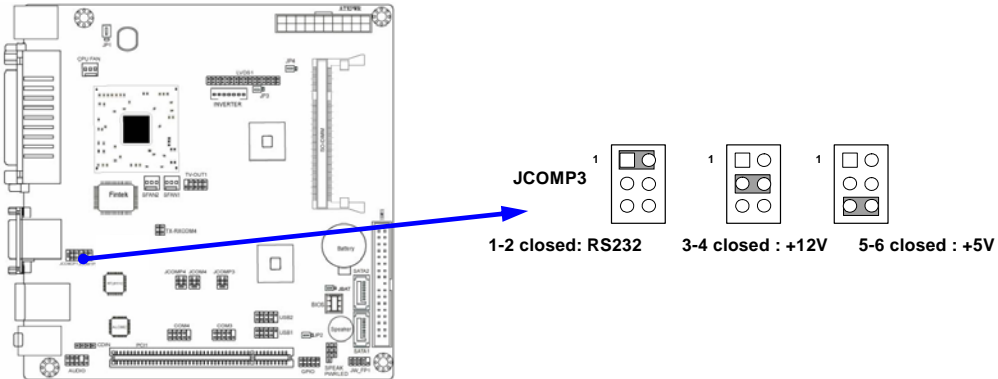
2-2 Connectors and Headers
2-2-1 Connectors

(1) Audio Connector: (Line-IN/ Line-Out/ MIC-In)

PS/2 Keyboar

Parallel Connector

COM Connector

RJ45 LAN

Line-In/ SPDIF Out

Line-Out

MIC In

USB Connector

VGA Connector

DVI-D Connector

COM Connector
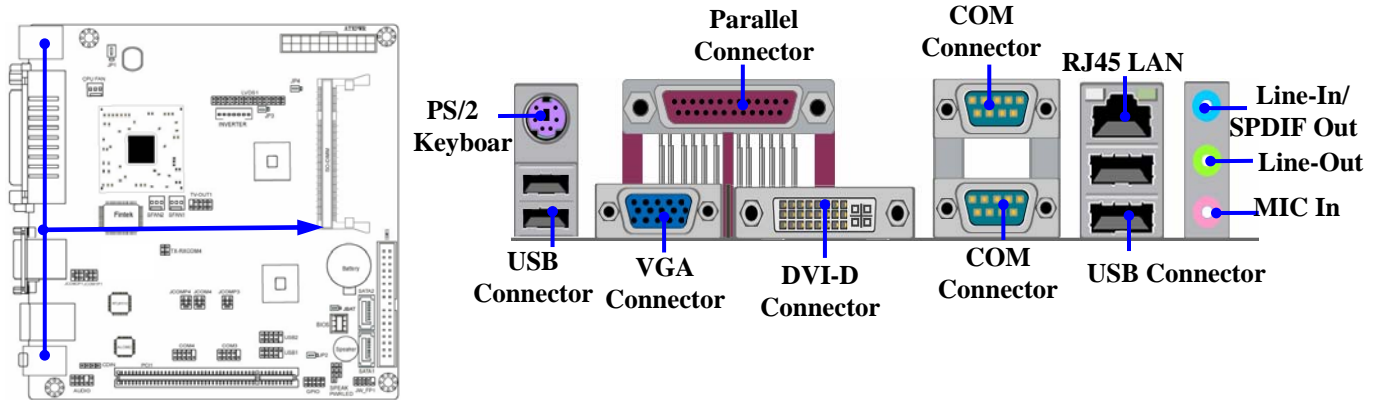
USB Connector

(2) Serial-ATA Port connector: SATA1/SATA2

Serial-ATA Connectors
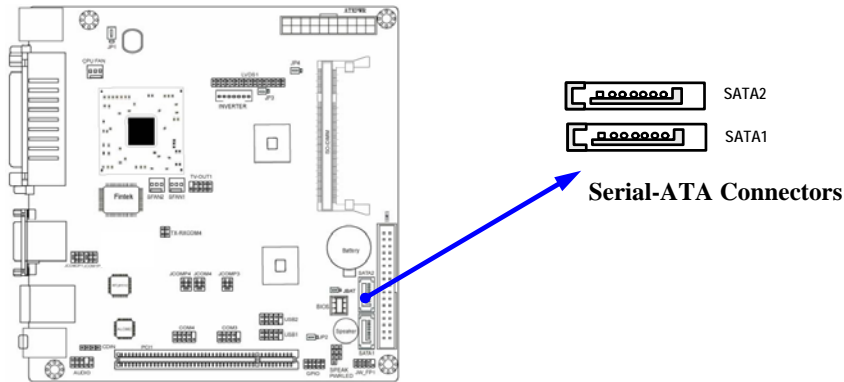
2-2-2 Headers

(1) Front panel audio (9-pin): AUDIO1

Line-Out, MIC Headers
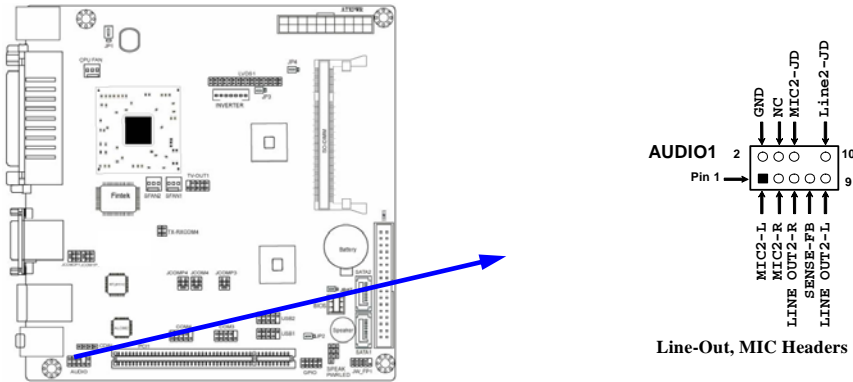
(2)　CD AUDIO-In Headers (4-pin): CDIN
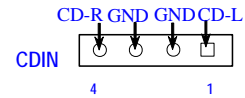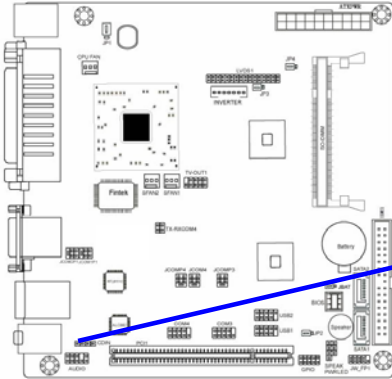
CD Audio-In Headers

(3)　LVDS Headers: LVDS

Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	NC	Pin 2	NC
Pin 3	LVDS_CLKBN	Pin 4	LVDS_CLKBP
Pin 5	LVDSA_DATAN2	Pin 6	LVDSA_DATAP2
Pin 7	LVDSA_DATAN1	Pin 8	LVDSA_DATAP1
Pin 9	LVDSA_DATAN0	Pin 10	LVDSA_DATAP0
Pin 11	LVDS_DDC_DATA	Pin 12	LVDS_DDC_CLK
Pin 13	GND	Pin 14	GND
Pin 15	GND	Pin 16	GND
Pin 17	NC	Pin 18	NC
Pin 19	LVDS_CLKAP	Pin 20	LVDS_CLKAN
Pin 21	LVDSB_DATAP2	Pin 22	LVDSB_DATAN2

Pin 23	LVDSB_DATAP1	Pin 24	LVDSB_DATAN1
Pin 25	LVDSB_DATAP0	Pin 26	LVDSB_DATAN0
Pin 27	PVDD	Pin 28	PVDD
Pin 29	PVDD	Pin 30	PVDD
Pin 31	GND	Pin 32	GND

LVDS Header

Pin 2   Pin 1
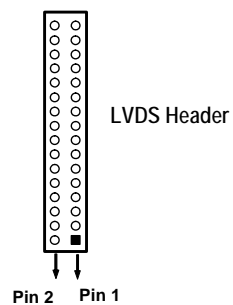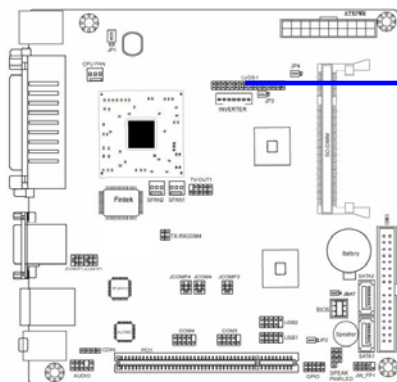
(4) **Pin-headers of LVDS Inverter:**

Pin 1 and pin2: VCC of inverter

Pin3、pin4 and pin6:　GND

Pin5:　Backlight

Pin7:　Brightness

Brightness
GND
Backlight
GN
GN
VI
VC
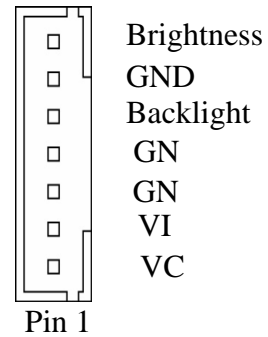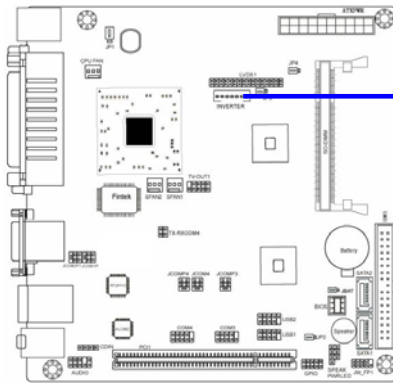
Pin 1

(5) **HDTV-OUT1 Header:**
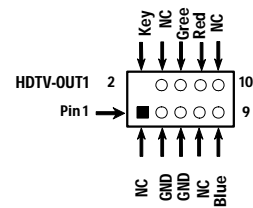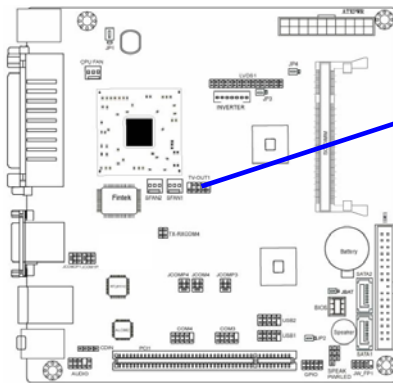
HDTV-OUT Header

(6)TX-RXCOM4 Header:
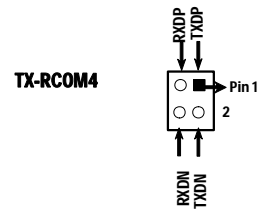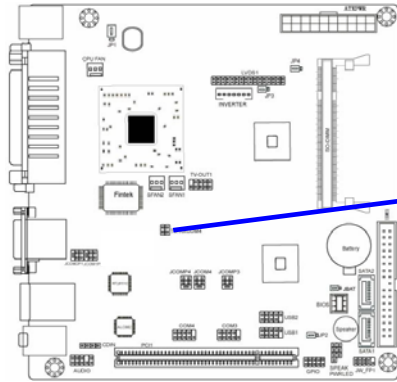
TX-RCOM4 Header

(7) JW-FP（9-pin）
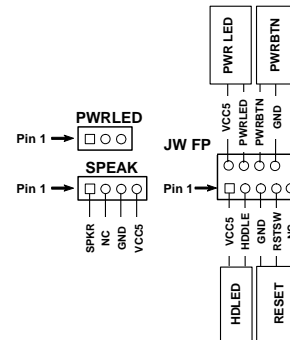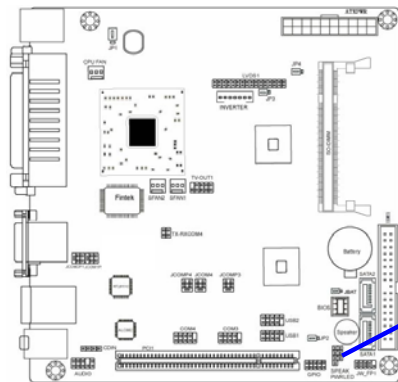
System Case Connections

(8) FAN Speed Headers (3-pin): CPUFAN, SFAN1/SFAN2
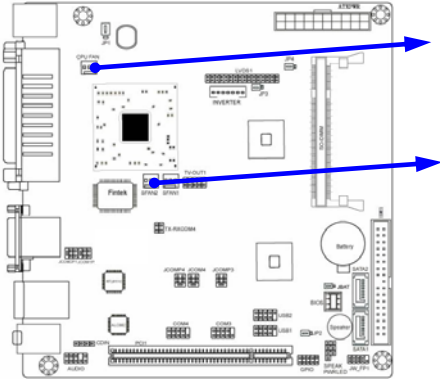
Pin 1 — CPUFAN

Pin 1 — SYS FAN1

Pin 1 — SYS FAN2

(9) COM Connectors (9-pin):

COM   2   RXD DTR DSR CTS   10

Pin 1   9

DCD TXD GND RTS RI
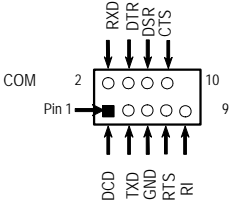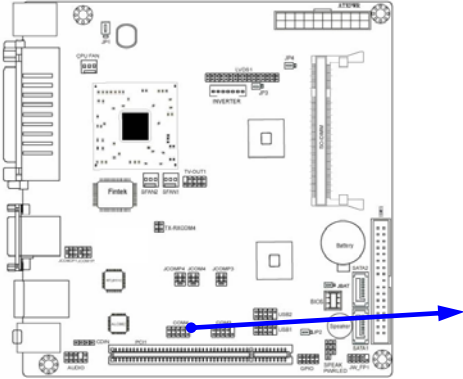
COM Connector

(10) GPIO Connectors (9-pin):
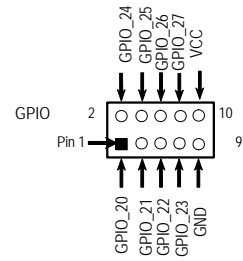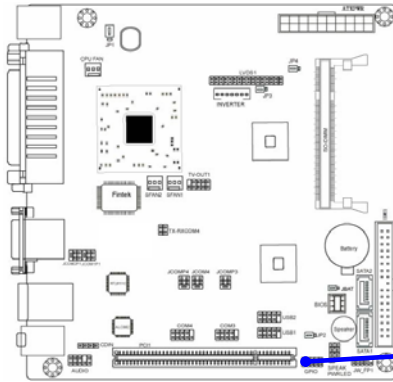
GPIO Connector

Chapter 3

Introducing BIOS

Attention:	The BIOS options shown in this manual is for reference use only. We reserve the right to update the BIOS version without advance notice.

The BIOS is a program located on a Flash Memory on the motherboard.   This program is a bridge between motherboard and operating system.   When you start the computer, the BIOS program will gain control.   The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization.   Only when these tasks are completed done it gives up control of the computer to operating system (OS).   Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options.   We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

3-1   Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.   If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <F1> to continue, or <Del> to enter Setup

3-2   Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

3-3   The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen.   The Main Menu allows you to select from fourteen setup functions and two exit choices.   Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
            Phoenix – AwardBIOS CMOS Setup Utility

┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│  Standard CMOS Features        Miscellaneous Control              │
│                                                                   │
│  Advanced BIOS Features        Load Optimized Defaults            │
│                                                                   │
│  Advanced Chipset Features     Load standard Defaults             │
│                                                                   │
│  Integrated Peripherals        Set Supervisor Password            │
│                                                                   │
│  Power Management Setup         Set User Password                 │
│                                                                   │
│  PnP/PCI Configurations        Save & Exit Setup                  │
│                                                                   │
│  PC Health Status              Exit Without Saving                │
├─────────────────────────────────────────────────────────────────┤
│    Esc : Quit   F9 : Menu in BIOS    ↑↓→← : Select Item           │
│  F10 : Save & Exit Setup                                          │
└─────────────────────────────────────────────────────────────────┘

                        Figure 3-1
```

Standard CMOS Features
Use this Menu for basic system configurations.

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

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

Miscellaneous Control

Use this menu to specify your settings for **Miscellaneous Control**.

PC Health Status

This entry shows your PC health status.

Power User Overclock Settings

Use this menu to specify your settings (frequency, Voltage) for overclocking demand

CPU Thermal Throttling Setting

The selection is set for activating the active CPU Thermal Protection by flexible CPU loading adjustment in the arrange of temperature you defined.

Load Optimized Defaults

Use this menu to load the BIOS default values these are setting for optimal performances system operations for performance use.

Password Settings

This entry for setting Supervisor password and User password

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3-4 Advanced BIOS Features

```
                Phoenix – AwardBIOS CMOS Setup Utility

                        Advanced BIOS Features
┌─────────────────────────────────────────────┬─────────────────────┐
│  Virus Warning                 Disabled      │                     │
│  CPU L3 Cache                  Enabled       │     Item Help       │
│  CPU Feature                   Press Enter   │                     │
│  Hard Disk Boot Priority       Press Enter   ├─────────────────────┤
│  Hyper Disk Boot Priority      Enabled       │  Menu Level >       │
│  Quick power on self Test      Enabled       │                     │
│  First Boot Device             HARD DISK     │                     │
│  Second Boot Device            CDROM         │                     │
│  Third Boot Device             Disabled      │                     │
│  Boot other  Device            Enabled       │                     │
│  Boot Up NumLock Status        On            │                     │
│  Typematic Rate Setting        Disabled      │                     │
│  Typematic Rate (Chars/Sec)    6             │                     │
│  Typematic Delay (Msec)        250           │                     │
│  Security Option               Setup         │                     │
│  APIC Mode                     Enabled       │                     │
│  MPS Version Control For OS     1.4          │                     │
│  OS Select For DRAM > 64MB     Non-OS2       │                     │
│  HDD S.M.A.R.T. Capability     Disabled      │                     │
│  Report No FDD For Windows     Yes           │                     │
│                                              │                     │
├─────────────────────────────────────────────┴─────────────────────┤
│  ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│      F5:Previous Values  F6:Optimized Defaults   F7:Standard Defaults │
└────────────────────────────────────────────────────────────────────┘
```

Hard Disk Boot Priority
The selection is for you to choose the hard disk drives priorities to boot from.
Virus Warning
The selection Allow you to choose the VIRUS Warning feature for IDE Hard Disk boot sector
protection. If this function is enabled and someone attempt to write data into this area, BIOS
will show a warning message on screen and alarm beep.

Disabled (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enabled Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

The default value is Enabled.

Enabled (default) Enable cache

Disabled Disable cache

Note: The internal cache is built in the processor.

External Cache

Choose Enabled or Disabled. This option enables the Level 2 cache memory.

Quick Power On Self-Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled (default) Enable quick POST

Disabled Normal POST

First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-3, SCSI, CDROM, LAD and Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K; 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

The default value is on.

On (default) Keypad is numeric keys.

Off Keypad is arrow keys.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

Typematic Rate (Chars/Sec)
Set the number of times a second to repeat a keystroke when you hold the key down.   The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic Delay (Msec)
Sets the delay time after the key is held down before beginning to repeat the keystroke.   The settings are 250, 500, 750, and 1000.

Security Option
This category allows you to limit access to the system and Setup, or just to 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 (default)	The system will boot, but access to Setup will be denied if the correct password is not entered prompt.

HDD S.M.A.R.T Capability

This option allow you to enable the HDD S.M.A.R.T Capability (Self-Monitoring, Analysis and Reporting Technology) . You can choose from Enabled and Disabled.

MPS Version Control For OS   1.4
This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use.

OS Select For DRAM > 64MB
Allows OS2® to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

3-4-1 CPU Feture

```
              Phoenix – AwardBIOS CMOS Setup Utility

                          CPU Features
┌─────────────────────────────────────────────┬──────────────────────────┐
│ Limit CPUID Maxval              Disabled     │       Item Help          │
│ Enhanced Intel Speedstep Tech    Enabled     ├──────────────────────────┤
│                                              │ Menu Level >             │
├──────────────────────────────────────────────────────────────────────┤
│  ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│     F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults   │
└──────────────────────────────────────────────────────────────────────┘
```

Limit CPUID Maxval
This option support the max ID of comparatively old processor.

Enhanced Intel Speedstep Tech
This option can provide average power savings depending on system usage and design.

3-5 Intergrated peripherals

```
                   Phoenix – AwardBIOS CMOS Setup Utility
                          Intergrated peripheral
```

Onboard IDE Function Press Enter Onboard Device Function Press Enter Onboard Superio Function Press Enter		Item Help
PWR Status after PWR Failure Always Off Init Display First PCI Slot		Menu Level >>

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

```
                   Phoenix – AwardBIOS CMOS Setup Utility
                          Onboard  Device Function
```

Onboard PCIE Lan Controller Enabled Onboard PCIE Lan BootRom Disabled High Definition Audio Enabled		Item Help
USB Host Controller Enabled USB 2.0 Function Enabled USB Keyboard Legacy Support Disabled USB Mouse Legacy Support Disabled USB Storage Legacy Support Enabled		Menu Level >>

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

Onboard HD Audio

This item allows you to decide to enable/disable the chipset family to support HD Audio. The settings are: Enabled, Disabled.

Onboard PCIE LAN Bootrom

Decide whether to invoke the boot ROM of the onboard LAN chip.

3-5-1 Onboard Super IO Function

```
                Phoenix – AwardBIOS CMOS Setup Utility

                        Onboard  Super IO Function
┌─────────────────────────────────────────────────┬──────────────────────┐
│  Onboard Serial Port1            3F8/IRQ4         │                      │
│  Onboard Serial Port2            2F8/IRQ3         │      Item Help       │
│  UART2 Mold Select                Normal          │                      │
│  *IR Duplex Mold                 Half             ├──────────────────────┤
│  Add-on Serial port 3            3E8/IRQ4         │  Menu Level >>       │
│  Add-on Serial port 3 Mode        RS232           │                      │
│  Add-on Serial port 4             3E8/IRQ4        │                      │
│  Add-on Serial port 4 Mode        RS232           │                      │
│  Onboard Parallel Port           3F8/IRQ7         │                      │
│  Parallel Port Mold               SPP             │                      │
│  *ECP Mold Use DMA               3                │                      │
│  Watchdog Timer Select           Disabled         │                      │
│  *Watchdog Timer Value           255              │                      │
│  *WATCHDOG Timer Unit            Sec.             │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│   ↑↓→←  Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│        F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```

Onboard Serial Port 1/2

The optional settings are：Disabled, 3F8/IRQ4，2F8/IRQ3, 3E8/IRQ4，2E8/IRQ3, and Auto.

UART2 Mode Select

This item allows you to determine which InfraRed(IR) function of the onboard I/O chip. The optional settings are Normal and IrDA.

Onboard Parallel Port

The optional settings are: Disabled, 378/IRQ7, 278/IRQ5 and 3BC/IRQ7.

Parallel Port Mode

    SPP :   Standard Parallel Port

    ECP :   Enhanced Com Port

    EPP :   Enhanced Parallel Port

SPP/ ECP +EPP 1.7/ EPP 1.9

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP."   To operate the onboard parallel port in the EPP modes simultaneously, choose "EPP."   By choosing "ECP", the onboard parallel port will operate in ECP mode only.   Choosing "ECP+EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.   The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature.   After selecting it, the following message will appear: "ECP Mode Use DMA" at this time, the user can choose between DMA channels 3 to 1.   The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select."   At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

Watchdog Timer Select

This item is used to activate the watchdog function. The optional settings are: Enabled; Disabled. When set it as Enabled user can choose configuration figures in subitems.

Watchdog Timer Value

This item is only activated when Watchdog Timer Select is set as Enabled and users can set a value from the range of 0~255

Watchdog Timer Unit

This item is only activated when Watchdog Timer Select is set as Enabled and the optional units are: Sec. and Min.

*Note: User needs an additional Watchdog Programming Reference Code to make use of this BIOS function. Detailed procedures please download from our website if necessary.

3-6 PC Health Status

This section shows the Status of you CPU, Fan, and Warning for overall system status.   This is only available if there is Hardware Monitor onboard.

```
               Phoenix – AwardBIOS CMOS Setup Utility

                         PC Health Status
┌──────────────────────────────────────────────────┬───────────────────┐
│ Shutdown Temperature             Disabled         │                   │
│ CPU Thermal-Throttling           Disabled         │     Item Help     │
│ CPU Thermal-Throttling Temp      70c              │                   │
│ CPU Thermal-Throttling Duty      50%              ├───────────────────┤
│ CPU Thermal-Throttling Beep      Enabled          │                   │
│ Show PCHealth in POST            Enabled          │  Menu Level >     │
│ Smart fan configurations         Press Enter      │                   │
│ VCC 3V                            3.42V           │                   │
│ Vcore                             1.16V           │                   │
│ NB                                1.03V           │                   │
│ +5v                               5.04v           │                   │
│ +12v                             12.14V           │                   │
│ +5VSB                             5.08V           │                   │
│ VDIMM                             1.76V           │                   │
│ VSB 3V                            3.37V           │                   │
│ 3.3 SUS                           3.34V           │                   │
│ VBAT                              3.29V           │                   │
│ CPU Temperature                  43c/107F         │                   │
│ SYS Temperature                  46c/114F         │                   │
│ CPU FAN Speed                     0RPM            │                   │
│ SYS FAN1 Speed                    0RPM            │                   │
│ SYS FAN2 Speed                    0RPM            │                   │
├──────────────────────────────────────────────────┴───────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│        F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults │
└────────────────────────────────────────────────────────────────────────┘
```

Show PC Health in Post

During Enabled, it displays information list below.   The choice is either Enabled or Disabled

CPU Smart FAN Configurations
CPU Full-Speed Temp

This item allows you setting the FAN works in full speed when the temperature over the value which out set.   If the temperature below the value but over the Idle Temperature, the FAN will works over 60% of full speed, and the higher temperature will gain higher FAN speed, after over the temperature which this item setting, the FAN works in full speed.
CPU Idle Temp

This item allows you setting the FAN works in 60% of full speed, when the temperature lower than the temperature which you setting.

Current CPU Temperature/Current System Temp/Current FAN1, FAN2 Speed/Vcore/ Vdd/3.3V/+5V/+12V/-12V/VBAT(V)/5VSB(V)
This will show the CPU/FAN/System voltage chart and FAN Speed.

3-7   Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers.   These registers control most of the system options in the computer.

```
             Phoenix – AwardBIOS CMOS Setup Utility

                    Advanced Chipset Features

 ┌─────────────────────────────────────────────┬──────────────────────────────┐
 │  DRAM Timing selectable          By SPD      │                              │
 │  SDRAM CAS Latency Time          Auto        │                              │
 │  SDRAM Cycle Time                Auto        │                              │
 │  SDRAM RAS-to-CAS Delay          Auto        │                              │
 │  SDRAM RAS Precharge Time        Auto        │    Menu Level >              │
 │  System BIOS Cachable            Enabled     │                              │
 │  Video BIOS Cachabled            Enabled     │                              │
 │  Memory Hole at 15M-16M          Disabled    │                              │
 │  VGA SETTING                                 │                              │
 │  Onchip Fram Buffer Size          8MB        │                              │
 │  Dvmt Mode                       DVMT        │                              │
 │  DVMT/FI x ED Memory Size        128MB       │                              │
 │  Boot Display                    Auto        │                              │
 │  Panel Number                   800*600      │                              │
 │  TV Standard                      Off        │                              │
 ├─────────────────────────────────────────────┴──────────────────────────────┤
 │   ↑↓→← Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit  F1:General Help│
 │        F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults     │
 └─────────────────────────────────────────────────────────────────────────────┘
```

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 settings are: Enabled and Disabled.

3-8   Power Management Setup

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

```
                Phoenix – AwardBIOS CMOS Setup Utility

                       Power Management Setup
┌──────────────────────────────────────────┬─────────────────────────┐
│  ACPI Function               Enabled      │                         │
│  ACPI Suspend Type           S1(pos)      │      Item Help          │
│  Power Management            USER Define   │                         │
│  Video off Method           V/H SYNC+Blank ├─────────────────────────┤
│  Video off Suspend           Yes          │                         │
│  MODEN USE IRQ               3            │   Menu Level >          │
│  Suspend Mode                Disabled     │                         │
│  Soft-off by PWR-BTTN        Instant-off  │                         │
│  Wake-up by PCI card         Disabled     │                         │
│  Power on by ring            Disabled     │                         │
│  Wake up by USB KB from S3(S4)  Disabled  │                         │
│  PS2 KB/MS Wake-up from S3-S5   Disabled  │                         │
│  Resume by Alarm             Disabled     │                         │
│  Date (of Month) Alarm       0            │                         │
│  Time (hh:mm:ss)Alarm        0:0:0        │                         │
│  PM Timer Reload Events      Press Enter  │                         │
│  PCI Express PM Function     Press Enter  │                         │
│                                           │                         │
├──────────────────────────────────────────┴─────────────────────────┤
│  ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│     F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults │
└─────────────────────────────────────────────────────────────────────┘
```

ACPI Function

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI).   The settings are Enabled and Disabled.

Video Off Method

This determines the manner in which the monitor is blanked.

DPMS (default) Initial display power management signaling.

Blank Screen   This option only writes blanks to the video buffer.

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.

MODEM Use IRQ

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

Soft-Off by PWRBTN

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake up Alarms. This item lets you install a software power down that is controlled by the power Button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down.

3-9 PnP/PCI Configuration

Pnp/PCI Configuration

		Item Help
IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
PCI Express Relative Items		
Maximum Payload size	128	Menu Level >

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

3-10 Miscellaneous Configuration

Miscellaneous Control

		Item Help
CPU Clock Ratio unclock	Enabled	
CPU Clock Ratio	10X	
Auto Detect PCI Clock	Disabled	
Spread Spectrum	Disabled	
Current Host/PCI Clock is 133/33MHz		Menu Level >
Current DRAM Clock is 533MHz		
DRAM Clock at Next Boot	By SPD(DDR533)	
SB1.5 Select	1.5000v(Default)	
NB 1.05 Select	1.0500v(Default)	
VDIMM Select	1.800v(Default)	

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

```
          Phoenix – AwardBIOS CMOS Setup Utility
                    Miscellaneous Control
┌─────────────────────────────────────────┬─────────────────────────┐
│  CPU Clock Ratio unclock        Enabled  │                         │
│  CPU Clock Ratio                10X      │       Item Help         │
│  Auto Detect PCI Clock          Disabled │                         │
│  Spread Spectrum                Disabled ├─────────────────────────┤
│  Current Host/PCI  Clock is 133/33MHz    │   Menu Level >          │
│  Current DRAM Clock is 533MHz            │                         │
│  DRAM Clock at Next Boot       By SPD(DDR533) ├────────────────────┤
│  SB1.5 Select              1.5000v(Default) │ SB 1.5 Select        │
│  NB 1.05 Select            1.0500v(Default) │                      │
│  VDIMM Select               1.800v(Default) │   1.5000v      [  ]  │
│                                          │   1.5234v      [  ]    │
│                                          │   ........             │
│                                          │   2.1563v        [  ]  │
│                                          │                        │
│                                          │ ↑↓:Move ENTER:Accept   │
│                                          │ ESC:Abort              │
├──────────────────────────────────────────┴────────────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│       F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults │
└────────────────────────────────────────────────────────────────────┘
```

Miscellaneous Control

```
CPU Clock Ratio unclock              Enabled
CPU Clock Ratio                      10X               Item Help
Auto Detect PCI Clock                Disabled
Spread Spectrum                      Disabled
Current Host/PCI  Clock is 133/33MHz                 Menu Level >
Current DRAM Clock is 533MHz
DRAM Clock at Next Boot        By SPD(DDR533)
SB1.5 Select                  1.5000v(Default)    NB 1.05 Select
NB 1.05 Select                1.0500v(Default)
VDIMM Select                  1.800v(Default)      1.0500v          [  ]
                                                    1.0664           [  ]
                                                    ………
                                                    1.5094v          [  ]


                                                    ↑↓:Move ENTER:Accept
                                                    ESC:Abort
```

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

Miscellaneous Control

CPU Clock Ratio unclock	Enabled	Item Help
CPU Clock Ratio	10X	
Auto Detect PCI Clock	Disabled	
Spread Spectrum	Disabled	Menu Level >
Current Host/PCI Clock is 133/33MHz		
Current DRAM Clock is 533MHz		
DRAM Clock at Next Boot	By SPD(DDR533)	
SB1.5 Select	1.5000v(Default)	VDIMM Select
NB 1.05 Select	1.0500v(Default)	
VDIMM Select	1.800v(Default)	1.800v [ ]
		1.825 [ ]
		....
		2.500v [ ]
		↑↓:Move ENTER:Accept
		ESC:Abort

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults

CPU Vcore

This item allows you select the CPU Vcore Voltage xx% more than the standard value, by this function for the precise over-clocking for extra demanding of performance.

VDIMM Voltage

This item allows you select the voltage of the memory.