WMIX-D5250

Intel Atom D525

User Manual

Rev.05, Nov. 2010

Statement

Packing List

- ☐ WMIX-D5250
- ☐ Driver CD (Include user's manual)

Ordering Information

- ☐ 1 x PS2 Y Cable(KB and Mouse)
- ☐ 1 x LPT Cable with Bracket
- ☐ 1 x 2 Port COM Cable with Bracket
- ☐ 1 x 2 Port USB Cable with Bracket
- ☐ 1 x SATA Cable
- ☐ 1 x SATA Power Cable
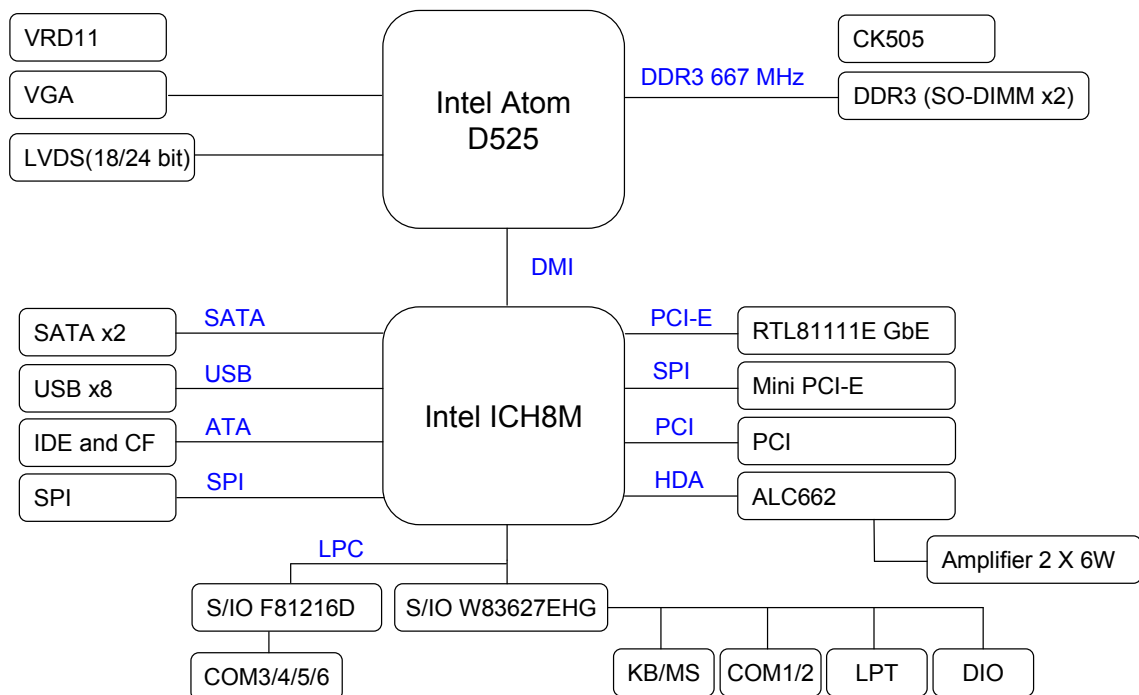- ☐ 1 x RJ50 10P10C to COM Cable
- ☐ 1 x IDE Cable

Contents

Chapter 1 Product Information

This chapter introduces the product features, jumper and connector information.

1.1 Block Diagram

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VRD11                                              CK505

VGA          Intel Atom    DDR3 667 MHz    DDR3 (SO-DIMM x2)
             D525
LVDS(18/24 bit)

                      DMI

SATA x2    SATA                  PCI-E    RTL81111E GbE
USB x8     USB      Intel ICH8M  SPI      Mini PCI-E
IDE and CF ATA                   PCI      PCI
SPI        SPI                   HDA      ALC662

             LPC                                Amplifier 2 X 6W

S/IO F81216D   S/IO W83627EHG

COM3/4/5/6              KB/MS  COM1/2  LPT  DIO
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1.2 Features

System Processor / Chipset	Processor	Intel ATOM D525 1.8 GHz (Dual Core)
	Chipset	ICH8M
	BIOS	AWARD 16Mb SPI
Memory	Technology	Dual DDR3 800 MHz SDRAM
	Max. Capacity	Up to 4GB
	Socket	2 x SO-DIMM DDR3
Display	Chipset	Intel D525 integrated refresh of the 3rd generation graphics core
	VRAM	Shared with 224MB system memory
	Resolution	Analog Display: Up to 2048 x 1536 (QXGA)
	LVDS	18/24 bit, Single channel
	LVDS Resolution	Digital LVDS: Up to 1366 x 768 (UXGA)
	Dual Display	CRT + LVDS
Ethernet	Interface	10/100/1000 Mbps
	Controller	Realtek RTL8111E
Audio	Interface	High Definition Audio
	Controller	Realtek ALC662 HD CODEC
SATA	Max. Data Transfer Rates	300 MB/s
	Port	2
IDE	Mode	Ultra ATA 100/66/33, 1x 44 Pin connector for 2.5" slim type with power
	Channel	1
	Compact Flash	1, Compact Flash Type I/II
Expansion Slot	PCI	1 (Support Riser card up to 3 PCI slots)
	Mini PCI-E	1 (Top Side)
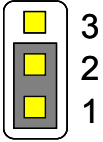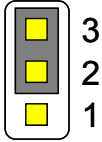
Internal Connector	LVDS	1 (18/24 bit single channel)
	USB 2.0	4
	COM	2 (RS-232, supply 5V / 12V)
	Parallel	1
	Audio Amplifier	1 [6W(4Ω) stereo]
	Compact Flash	1 (Bottom Side)
	Digital IO	8 bit GPIO (4 IN + 4 OUT)
Rear I/O	PS2	1(1 K/B and 1 Mouse by Y-Cable)
	VGA	1
	COM	4 (RS-232, supply 5V / 12V), (3 x DB9, 1 x DB50)
	LAN	1(RJ-45)
	USB2.0	4
	Audio	1 (Line-out)
	Cash Drawer	1x RJ11(+12V, 3 bit Digital I/O(1 In + 2 Out))
Power	Type	4 Pin DC +12V or ATX Power connector (Optional)
Watchdog Timer	Interval	Programmable 1~255 sec./min.
	Output	System reset
Environment	Operating Temp.	-5°C~ 60°C (23°F ~ 140°F)
	Storage Temp.	-20°C~ 80°C (-4°F ~ 176°F)
	Relative Humidity	0%~ 95% (non-condensing)
Form Factor	Dimension (L x W)	Mini-ITX (170mm x 170mm) (6.69" x 6.69")

1.3 PCB Layout
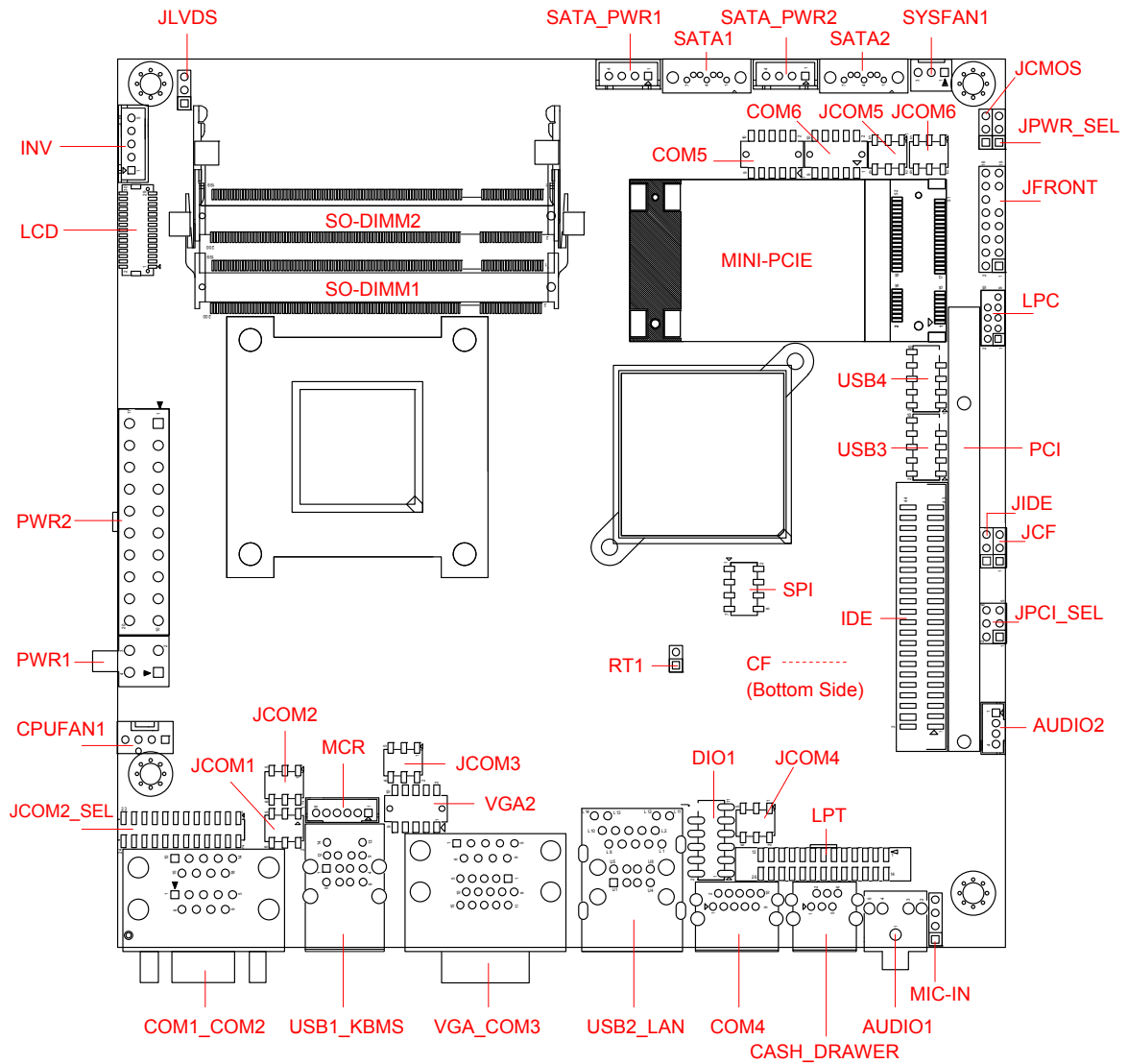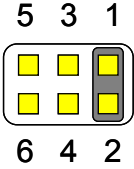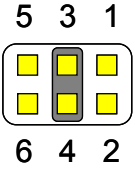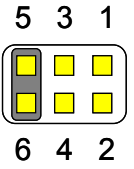
1.4 Jumper Setting
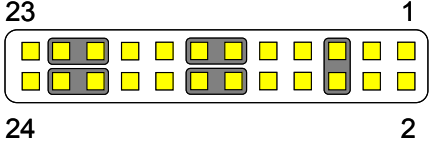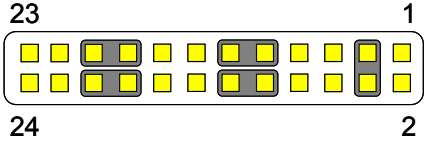
JCMOS：CMOS Clear

Pin No.	1-2	2-3
Function	Normal Operation (Default)	Clear CMOS Contents
Jumper Setting		
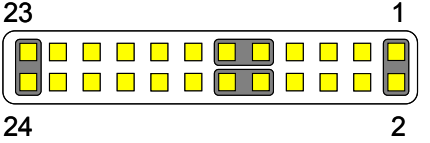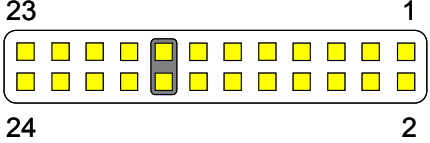
JCOM1 / JCOM2 /JCOM3 / JCOM4 / JCOM5 / JCOM6：(5V/12V/RI) Select

Pin No.	1-2	3-4	5-6
Function	+5V	Modem Ring In (Default)	+12V
Jumper Setting			
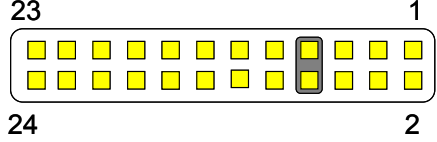
JCOM2_SEL：COM2 (RS-232/RS-422/RS-485) Select (1/3)

Pin No.	5-6, 11-13, 12-14, 19-21, 20-22	3-4, 9-11, 10-12, 17-19, 18-20
Function	RS-232 (Default)	RS-422
umper Setting		

JCOM2_SEL：COM2 (RS-232/RS-422/RS-485) Select (2/3)
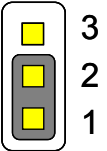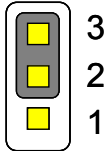
Pin No.	1-2, 9-11, 10-12, 23-24	15-16
Function	RS-485	RS-422 RX 100Ω Termination
Jumper Setting		

JCOM2_SEL：COM2 (RS-232/RS-422/RS-485) Select (3/3)
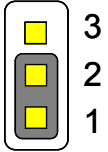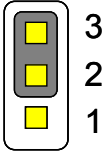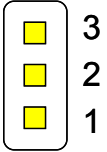
Pin No.	7-8	
Function	RS-422 TX 100Ω / RS-485 Termination	
Jumper Setting	23 1 24 2	

Note: Not Recommended for RS-422 TX 100Ω Termination
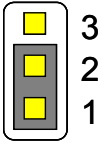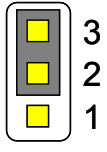
JCF: Compact Flash (Master / Slave) Select

Pin No.	1-2	2-3
Function	Master	Slave (Default)
Jumper Setting	3 2 1	3 2 1
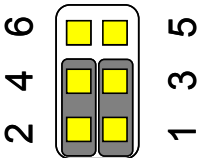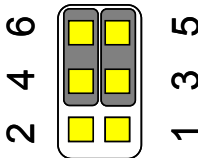
JIDE: IDE ATA Mode Select

Pin No.	1-2	2-3	All Open
Function	Max. UDMA Mode 1 (33M)	Auto Detect UDMA Mode (Default)	Min. UDMA Mode 2 (66M)
Jumper Setting	3 2 1	3 2 1	3 2 1
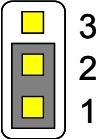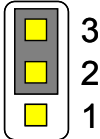
JLVDS：LCD Power (+3.3V / +5V) Select

Pin No.	1-2	2-3
Function	LCD Power +3.3V (Default)	LCD Power +5V
Jumper Setting	3 2 1	3 2 1

JPCI_SEL：PCI Riser card support slot select

Pin No.	1-3, 2-4	3-5, 4-6
Function	Not support PCI Riser card slot 3 (Default)	Support PCI Riser card slot 3
Jumper Setting		

JPWR_SEL: AT / ATX Mode Select

Pin No.	1-2	2-3
Function	AT Mode	ATX Mode (Default)
Jumper Setting		

1.5 Connector Function List

Connector	Function	Note
AUDIO1	Line-out connector	
AUDIO2	6W amplifier Line-out connector	
CASH_DRAWER	Cash Drawer with RJ11-6P6C connector	
COM1_COM2	Serial port connector	
CF	Copact Flash connector	
COM4	Serial port with RJ50-10P10C connector	
COM5,COM6	Serial port with Box-header	
CPUFAN1	CPUFAN 4-pin connector	
DIO1	Digital Input/output with Pin-header	
IDE	IDE with Box-header	
INV	LCD inverter connector	
JFRONT	Front Panel with Pin-header	
LCD	LVDS connector	
LPC	Reserved for debug	
LPT	Parallel Port with Box-header	
MCR	MCR with Box-header	
MIC-IN	Micro phone input with Pin-header	
MINI-PCIE	Mini PCI Express connector	
PCI	PCI slot	
PWR1	ATX 2x2 connector	
PWR2	ATX 2x10 connector (Reserved)	
RT1	Reserved for external thermistor	
SATA1, SATA2	SATA connector	
SATA_PWR1,	SATA Power with Box-header	
SO-DIMM1,	DDR3 SO-DIMM connector	
SPI	Reserved for debug	
SYSFAN1	System FAN connector	
USB1_KBMS	USBx2, PS2 Keyboard and PS2 Mouse	
USB2_LAN	USBx2 and RJ45 connector	
USB3, USB4	USBx2 with Pin-header	
VGA_COM3	VGA and serial port connector	
VGA2	VGA with Box-header	

1.6 Internal Connector Pin Define

AUDIO2：Audio Amplifier Output with Wafer connector (2.0 mm)
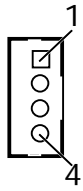
Pin No.	Signal
1	Audio Amplifier Out Right
2	Ground
3	Ground
4	Audio Amplifier Out Left

CASH_DRAWER：Digital IO with RJ-11-6P6C connector
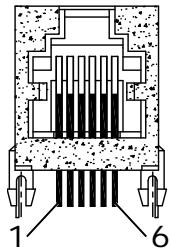
Pin No.	Signal
1	Ground
2	DIO_Out1 (bit1)
3	+12V
4	DIO_IN0 (bit2)
5	DIO_Out0 (bit0)
6	Ground

COM4 : Serial Port with RJ50-10P10C connector
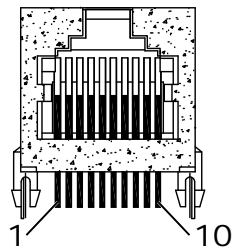
Pin No.	Signal	Pin No.	Signal
1	NC	2	DCD
3	DSR	4	RXD
5	RTS	6	TXD
7	CTS	8	DTR
9	Ground	10	RI/+5V/+12V

COM5, COM6：Serial Port with Box-header (2.0 mm)
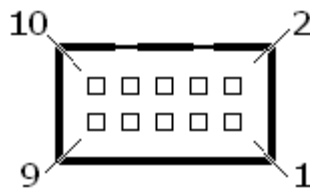
Pin No.	Signal	Pin No.	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8,10	RI/+5V/+12V
9	Ground		

CPUFAN1：4Pin FAN connector
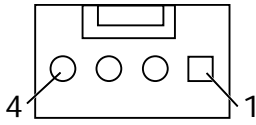
Pin No.	Signal
1	Ground
2	Fan Power (+12V)
3	Speed Sense
4	Control

DIO1：Digital I/O with Pin-header (2.54mm)
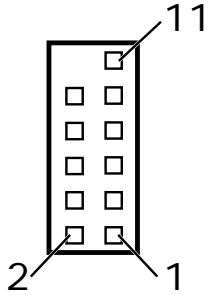
Pin No.	Signal	Pin No.	Signal
1	DIO-Out0 bit0	2	DIO-In0 bit2
3	DIO-Out1 bit1	4	DIO-In1 bit3
5	DIO-Out2 bit6	6	DIO-In2 bit4
7	DIO-Out3 bit7	8	DIO-In3 bit5
9	+12V	10	+5V
11	Ground	12	NC

IDE： IDE with Box-header (2.0mm)
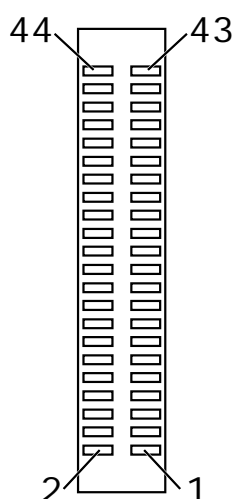
Pin No.	Signal	Pin No.	Signal
1	RESET#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull-down
29	DMA ACK#	30	Ground
31	INT REQ	32	NC
33	SA1	34	UDMA DETECT
35	SA0	36	SA2
37	HDC CS1#	38	HDC CS3#
39	HDD Active#	40	Ground
41	+5V	42	+5V
43	Ground	44	NC

INV：Inverter with Box-header (2.50 mm)
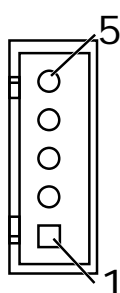
Pin No.	Signal
1	+12V
2	+12V
3	Ground
4	Inverter Brightness Abject
5	Inverter Enable

JFRONT：Front Panel with Pin-header (2.54mm)
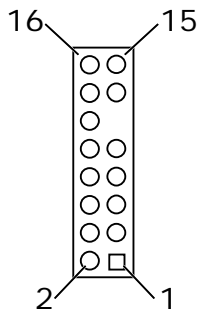
Pin No.	Signal	Pin No.	Signal
1	+5V (470 Ohm), (Power LED+)	2	+5V (470 Ohm), (HDD LED+)
3	NC	4	HDD LED#, (HDD LED-)
5	Ground, (Power LED-)	6	5VSB (470 Ohm), (Suspend LED+)
7	RESET#, (Reset Button Pin1)	8	Suspend LED#, (Suspend LED-)
9	Ground, (Reset Button Pin2)	10	FSPK# (Beep), (Speaker-)
11	NC	12	NC
13	SW_PWR#, (Power ON Button Pin1)	14	NC
15	Ground, (Power ON Button Pin2)	16	+5V, (Speaker+)

LCD：LVDS Panel Signal with Box-header (1.0 mm)
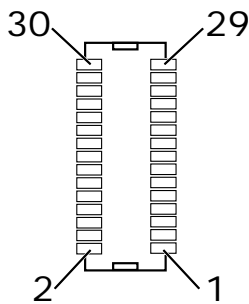
Pin No.	Signal	Pin No.	Signal
1	Ground	2	Ground
3	NC	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	Ground	14	Ground
15	L_DC3P	16	L_DC3N
17	L_CLKP	18	L_CLKN
19	L_DC2P	20	L_DC2N
21	L_DC1P	22	L_DC1N
23	L_DC0P	24	L_DC0N
25	Ground	26	Ground
27	LVDS Power	28	LVDS Power
29	LVDS Power	30	LVDS Power

Note1：LVDS Power = +5V or +3.3V (Default)

Note2：Pin15-Pin24 for LVDS 18/24 bit
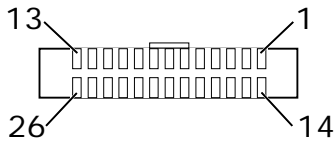
LPT：Parallel Port with Box-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	Ground
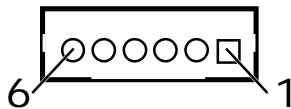
MCR：Internal Keyboard with Box-header (2.0 mm)

Pin No.	Signal
1	+5V
2	KCLK_CON
3	KCLK_KBC
4	KDAT_CON
5	KDAT_KBC
6	Ground

Note：If not use MCR need short (Pin2 to Pin3) and (Pin4 to Pin5) to enable PS2 Keyboard

MIC-IN：Micro phone input with Pin-header

Pin No.	Signal
1	MIC Input Left
2	MIC Jack Detection
3	Audio Ground
4	MIC Input Right
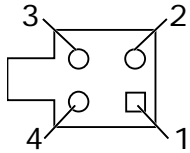
PWR1：ATX 2x2 +12V Input

Pin No.	Signal	Pin No.	Signal
1	Ground	2	Ground
3	+12V	4	+12V
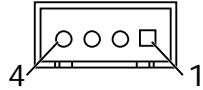
SATA_PWR1, SATA_PWR2：SATA Power with Box-header (2.50mm)

Pin No.	Signal
1	+5V
2	Ground
3	Ground
4	+12V
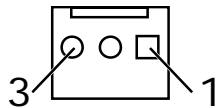
SYSFAN：System FAN 3 Pin connector

Pin No.	Signal
1	Ground
2	Fan Power (+12V)
3	Speed Sense
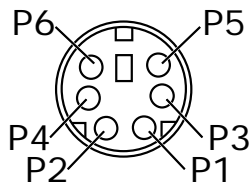
USB1_KBMS: USBx2, PS2 Keyboard and PS2 Mouse connector (PS2 Y-Cable)

Pin No.	Signal
U1	USB Power (+5V)
U2	USB Data0N
U3	USB Data0P
U4	USB_Ground
U5	USB Power (+5V)
U6	USB Data1N
U7	USB Data1P
U8	USB_Ground
P1	PS2_Ground
P2	PS2 Keyboard Data
P3	PS2 Mouse Data
P4	PS2 Power (+5V)
P5	PS2 Keyboard Clock
P6	PS2 Mouse Clock

USB3: USB3/4 Port with Pin-header (2.54mm)
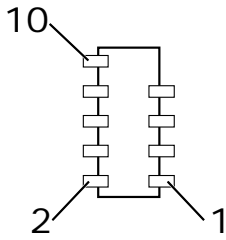
Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	USB Power (+5V)
3	USB DATA4N	4	USB DATA5N
5	USB DATA4P	6	USB DATA5P
7	USB Ground	8	USB Ground
9	NC	10	Shield Ground

USB4：USB6/7 Port with Pin-header (2.54mm)
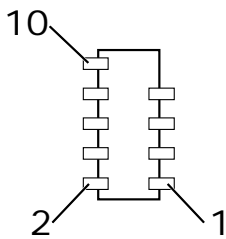
Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	USB Power (+5V)
3	USB DATA6N	4	USB DATA7N
5	USB DATA6P	6	USB DATA7P
7	USB Ground	8	USB Ground
9	NC	10	Shield Ground

VGA2：VGA with Box-header (2.0 mm)
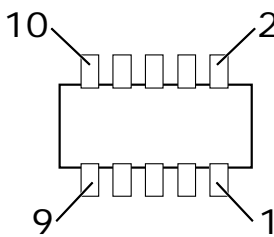
Pin No.	Signal	Pin No.	Signal
1	VGA_RED	2	VGA_DDC_DATA
3	VGA_GREEN	4	VGA_DDC_CLK
5	VGA_BLUE	6	Ground
7	VGA_ HSYNC	8	Ground
9	VGA_ VSYNC	10	Ground

COM2: Serial Port Connector
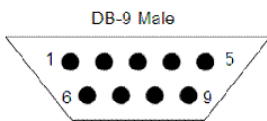
Pin No.	RS-232 Pin define	RS-422 Pin define	RS-485 Pin define
1	DCD	TX-	DATA-
2	RXD	TX+	DATA+
3	TXD	RX+	
4	DTR	RX-	
5	GROUND		
6	DSR		
7	RTS		
8	CTS		
9	RI/+5V/+12V		

Chapter 2 BIOS Setup

This chapter introduces BIOS setup information.

Power on or reboot the system board, when screen appears message as "Press DEL to enter SETUP". Press <DEL> key to run BIOS SETUP Utility.

Note: The BIOS configuration for reference only, it may subject to change without prior notice.

2.1 Main Menu

Please use arrow keys to select item, then press <Enter> key to accept or enter the sub-menu.

```
                Phoenix – AwardBIOS CMOS Setup Utility

  ►  Standard CMOS Features          ►  Frequency / Voltage Control

  ►  Advanced BIOS Features             Load Fail-Safe Defaults

  ►  Advanced Chipset Features          Load Optimized Defaults

  ►  Integrated Peripherals             Set Supervisor Password

  ►  Power Management Setup             Set User Password

  ►  PnP/PCI Configurations            Save & Exit Setup

  ►  PC Health Status                  Exit Without Saving

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

                    Time, Date, Hard Disk Type…
```

2.2 Standard CMOS Features

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

     Date (mm:dd:yy)         Tue. Sep  28  2010        Item Help
     Time (hh:mm:ss)          14  :  45  :  54
                                                  Menu Level    ►
  ►  IDE Channel 0 Master        [ None ]
  ►  IDE Channel 0 Slave         [ None ]         Change the day, month,
  ►  IDE Channel 2 Master        [ None ]         year and century
  ►  IDE Channel 2 Slave         [ None ]
  ►  IDE Channel 3 Master        [ None ]

     Video                   [ EGA / VGA ]
     Halt On                 [ All , But Keyboard ]
     Base Memory                  639K
     Extended Memory            1037312K
     Total Memory               1038336K



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

□ **Date**

Set system date.

□ **Time**

Set system time.

□ **IDE Channel 0 Master/Slave**

Press <Enter> for IDE device automatic detection.

□ **IDE Channel 2 Master/Slave**

Press <Enter> for IDE device automatic detection.

□ **IDE Channel 3 Master**

Press <Enter> for IDE device automatic detection.

□ **Video**

Select Video device type.

□ **Halt on**

Select stop procedure or ignore when error detected during POST (Power On Self Test).

2.3 Advanced BIOS Features

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

  ►  CPU Feature                  [ Press Enter ]         Item Help
  ►  Hard Disk Boot Priority      [ Press Enter ]
     Virus Warning                [ Disabled ]         Menu Level    ►
     CPU L3 Cache                 [ Enabled ]
     Hyper-Threading Technology   [ Enabled ]
     Quick Power On Self Test     [ Enabled ]
     First Boot Device            [ CDROM ]
     Second Boot Device           [ Hard Disk ]
     Third Boot Device            [ USB-FDD ]
     Boot Other Device            [ Enabled ]
     Boot Up NumLock Status       [ On ]
     Gate A20 Option              [ Fast ]
     Typematic Rate Setting       [ Disabled ]
  X  Typematic Rate (Chars/Sec)   6
  X  Typematic Delay (Msec)       250
     Security Option              [ Setup ]
     MPS Version Control For OS    [ 1.4 ]
     Os Select For DRAM > 64MB    [ Non-OS2 ]
     Report No FDD For WIN 95     [ No ]
     Small Logo(EPA) Show         [ Disabled ]

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

☐ **CPU Feature**

Press <Enter> to select CPU parameter.

☐ **Hard Disk Boot Priority**

Press <Enter> to select Hard Disk boot device priority.

☐ **Virus Warning**

Select "Virus Warning" Enabled/Disabled.

☐ **CPU L3 Cache**

Select "CPU L3 Cache" Enabled/Disabled.

☐ **Hyper-Threading Technology**

Select "Hyper-Threading Technology" Enabled/Disabled

☐ **Quick Power On Self Test**

Select "Quick Power On Self Test" Enabled/Disabled.

☐ **First/Second/Third Boot Device**

Select boot device priority.

☐ **Boot Other Device**

Select "Boot Other Device" Enabled/Disabled.

☐ **Boot Up NumLock Status**

Select <NumLock> key ON/Off when system boot up.

☐ **Gate A20 Option**

Select Gate A20 controlled by Keyboard controller (Normal) or Port 92 (Fast).

☐ **Typematic Rate Setting**

Select "Typematic Rate Setting" Enabled to set,

Typematic Rate (Chars/Sec): Number of characters repeated in one second.

Typematic Delay (Msec): When holding one key, set the time between the first and second character displayed.

☐ **Security Option**

Select security mode,

Setup: Require password to permit BIOS setup utility.

System: Require password to permit boot-up and BIOS setup utility.

☐ **MPS Version Control For OS**

Select MPS (Multiprocessor Specification) Version 1.4 to added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. It is also required for a secondary PCI bus to work without the need for a bridge. Select Version 1.1 for older Operating Systems.

☐ **OS Select For DRAM > 64M**

Select "OS2" only if you are running older version of IBM OS/2 Operating System with greater than 64MB of RAM on the system. Otherwise select "Non-OS/2" setting.

☐ **Report No FDD For WIN 95**

If running Windows 95/98 without floppy diskdrive, select "Enabled" to release IRQ6. This is required to pass Windows 95/98's SCT test, If select "Disabled", BIOS will not report missing floppy drive to Win95/98.

☐ **Small Logo(EPA) Show**

Select EPA (Environmental Protection Agency) Energy Star logo appears during the system boot-up process.

2.4 Advanced Chipset Features

```
                  Phoenix – AwardBIOS CMOS Setup Utility
                        Advanced Chipset Features

  ►  PCI Express Root Port Func     [ Press Enter ]           Item Help

       ** VGA Setting **                                  Menu Level   ►
       On-Chip Frame Buffer Size    [ 8MB ]
       DVMT Mode                    [ Enable ]
       Total GFX Memory             [ 128MB ]
       Boot Display                 [ CRT+LVDS ]
       LVDS-18 Panel Type           [ 1024x768 ]

       ** CH7036 Setting **
       CH7036 LVDS Format           [ 18Bit => 18Bit ]

       ** BackLight Setting **
       BackLight Active Mode        [ DC Mode ]
       BackLight Voltage Level      [ +3.3V Level ]
       BackLight Output Level       [ Step 10 ]


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

☐ **PCI Express Root Port Func**

Press <Enter> to setting PCI Express function

☐ **On-Chip Frame Buffer Size**

Select share system memory 1MB or 8MB.

☐ **DVMT Mode**

DVMT (Dynamic Video Memory Technology) allowing the system to dynamically allocate memory resources according to the demands of the system at any point in time, that improve efficiency of the memory allocated to either system or graphics processor.

☐ **Total GFX Memory**

Select Total GFX Memory: 128MB, 256MB, or MAX. (For Win XP, the MAX Value is base on system memory size, 512MB for 1GB DRAM, 768MB for 1.5GB to 2GB, 1GB fro above 2GB.)

☐ **Boot Display**

Select boot display device type: CRT, LVDS, or CRT+LVDS.

☐ **LVDS-18 Panel Type**

Select LCD 18 bit resolution

☐ **CH7036 LVDS Format**

Select CH7036 LVDS Format type: 18Bit→18Bit or 18Bit→24Bit.

☐ **BackLight Active Mode**

Select BackLight Active Mode: PWN Mode or DC Mode.

☐ **BackLight Voltage Mode**

Select BackLight Voltage Mode: +5.0V Level or +3.3V Level.

☐ **BackLight Output Mode**

Select BackLight Output Mode: Step1 to Step 10.

2.5 Integrated Peripherals

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                            Integrated Peripherals

    ►  OnChip IDE Device      [ Press Enter ]              Item Help
    ►  Onboard Device         [ Press Enter ]
    ►  Super IO Device        [ Press Enter ]       Menu Level    ►
    ►  SecondIO Device        [ Press Enter ]
    ►  USB Device Setting     [ Press Enter ]




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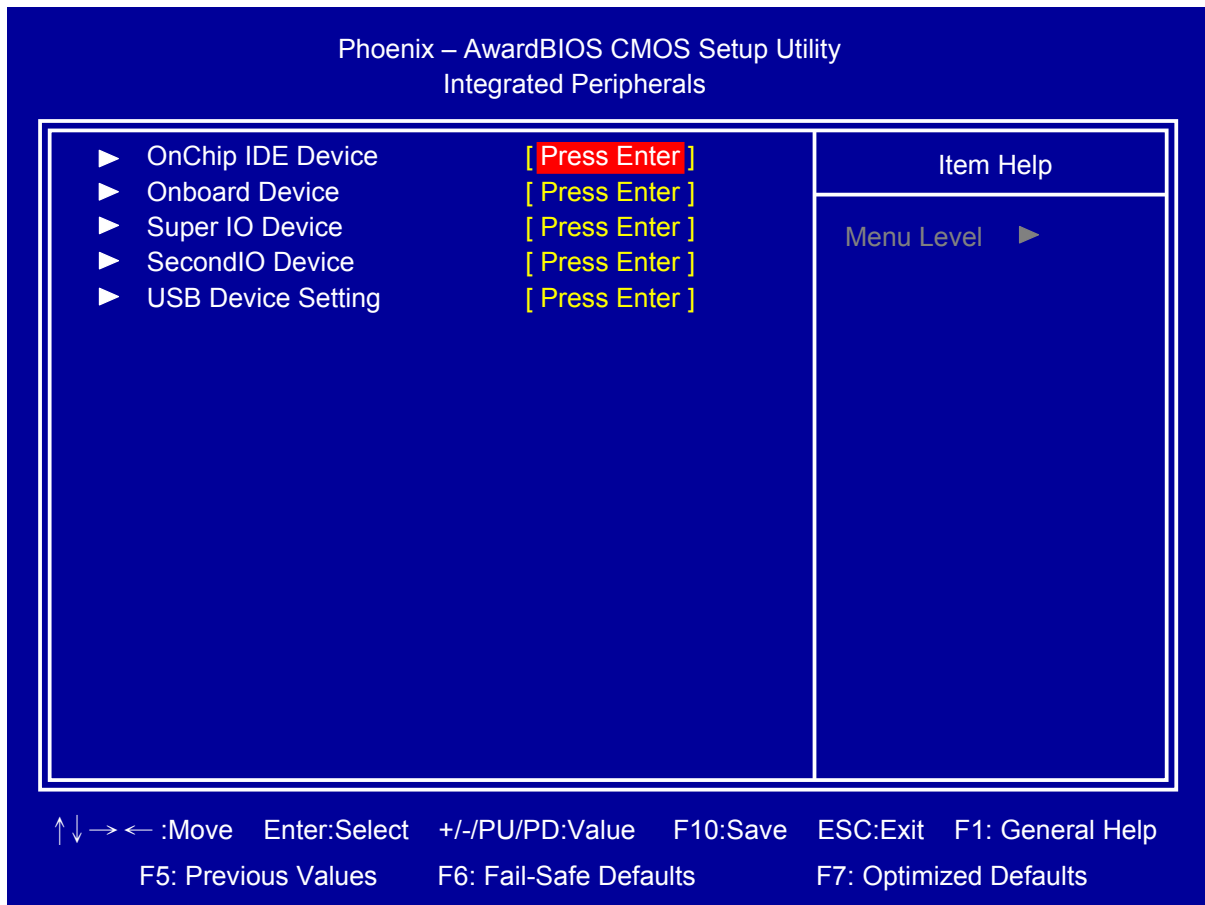
☐ OnChip IDE Device

Press <Enter> to set IDE and SATA device configuration.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                      OnChip IDE Device

   IDE HDD Block Mode        [ Enabled ]          Item Help
   IDE DMA transfer access   [ Enabled ]
                                            Menu Level    ▶
   *** On-Chip Serial ATA Setting ***
   SATA Mode                 [ IDE ]         If your IDE hard drive
   On-Chip Serial ATA        [ Enhanced Mode ]  supports block mode
                                            select Enabled for
   *** On-Chip PATA Setting ***             automatic detection of
   On-Chip Primary  PCI  IDE [ Enabled ]    the optimal number of
   IDE Primary Master PIO    [ Auto ]       block read/writes per
   IDE Primary Slave   PIO   [ Auto ]       sector the drive can
   IDE Primary Master UDMA   [ Auto ]       support
   IDE Primary Slave   UDMA  [ Auto ]
   On-Chip Secondary  PCI  IDE [ Enabled ]
   IDE Secondary Master PIO  [ Auto ]
   IDE Secondary Slave   PIO [ Auto ]
   IDE Secondary Master UDMA [ Auto ]
   IDE Secondary Slave   UDMA [ Auto ]


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

☐ IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write.

☐ IDE DMA transfer access

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s.

☐ On-Chip Serial ATA Setting

There have three selections in "SATA mode":

- ■ IDE: Default
- ■ RAID: Set this item to enable SATA AHCI function for WinXP-SPI+IAA driver support AHCI mode.
- ■ AHCI: Enable SATA RAID function

If you select IDE, there will show "On chip Serial ATA" for you to set. There have five selections in "On chip Serial ATA":

- Disabled: Disable on-board serial ATA function.
- Auto: Auto detect Serial ATA device.
- Combined Mode: SATA and PATA drives are auto-detected and placed in Legacy mode.
- Enhanced Mode: Default, SATA and PATA drives are auto-detected and placed in Native mode.
- SATA Only: Serial ATA function only.

☐ **On-Chip Primary PCI IDE**
☐ **On-Chip Secondary PCI IDE**

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

☐ **IDE Primary Master PIO**
☐ **IDE Primary Slave PIO**
☐ **Secondary Master PIO**
☐ **Secondary Slave PIO**

The four IDE PIO (Programmed Input/Output) fields let you set a PIOmode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

☐ **IDE Primary Master UDMA**
☐ **IDE Primary Slave UDMA**
☐ **IDE Secondary Master UDMA**
☐ **IDE Secondary Slave UDMA**

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

☐ **Onboard Device**

```
               Phoenix – AwardBIOS CMOS Setup Utility
                            Onboard Device

     Onboard Lan1  :          [ Enabled ]              Item Help
     ADO Control  :           [ Enabled ]
     Chrontel CH7036          [ Enabled ]          Menu Level    ►

     Onboard Lan Boot ROM     [ Disabled ]




   ↑↓→←:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help
       F5: Previous Values       F6: Fail-Safe Defaults       F7: Optimized Defaults
```
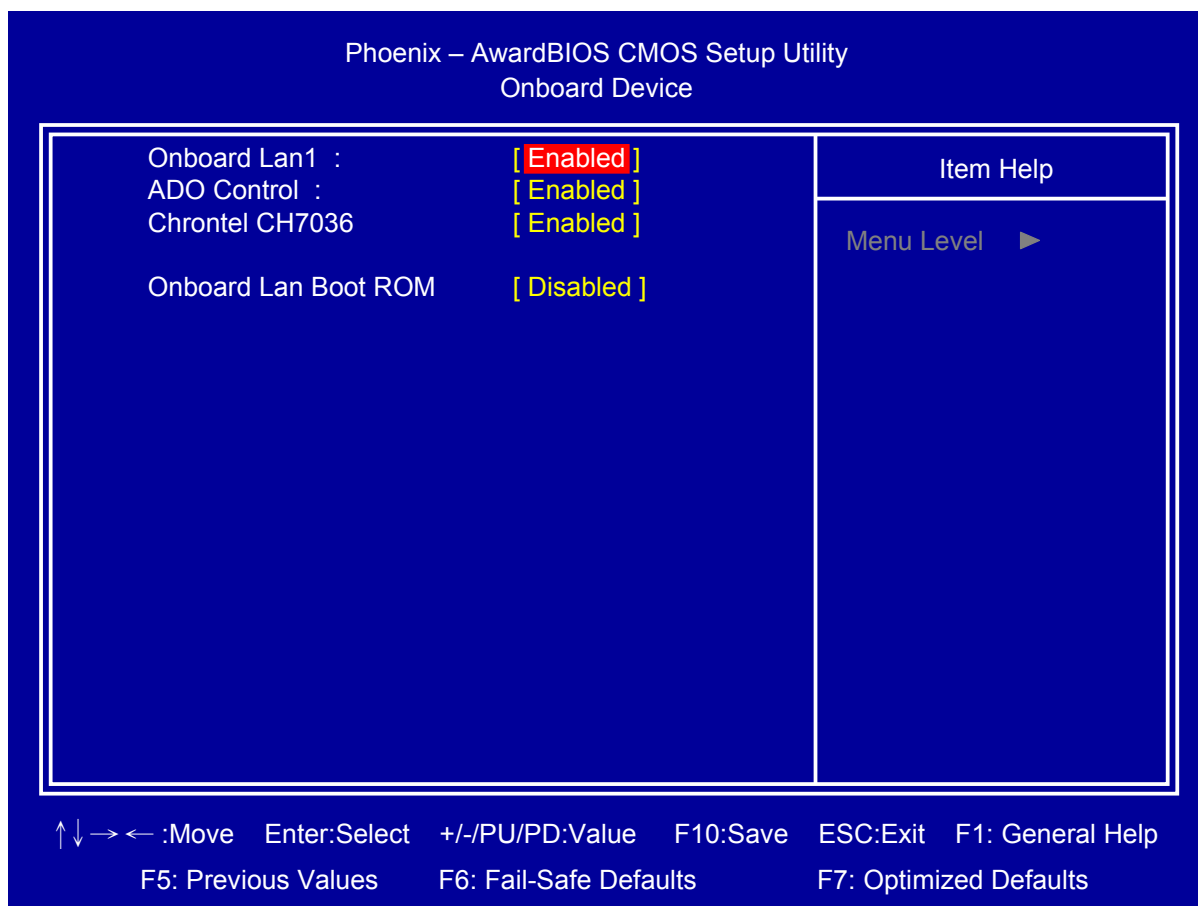
☐ **Onboard Lan1**

Enable/Disable onboard Lan1.

☐ **ADO Control**

Enable/Disable Audio control.

☐ **Chrontel CH7036**

Select Enable or Disabled Chrontel CH7036.

☐ **Onboard Lan Boot ROM**

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

☐ **Super IO Device**

Press <Enter> to select Serial, Parallel and "I" configuration.

```
             Phoenix – AwardBIOS CMOS Setup Utility
                         Super IO Device
┌──────────────────────────────────────────┬──────────────────────┐
│   Onboard Serial Port 1      [ 3F8/IRQ4 ] │      Item Help       │
│   Onboard Serial Port 2      [ 2F8/IRQ3 ] │                      │
│   UART Mode Select           [ Normal ]   │   Menu Level    ►    │
│ X RxD , TxD Active             Hi, Lo     │                      │
│ X IR Transmission Delay        Enabled    │                      │
│ X UR2 Duplex Mode              Half       │                      │
│ X Use IR Pins                  IR-Rx2Tx2  │                      │
│   Onboard Parallel Port      [ 378/IRQ7 ] │                      │
│   Parallel Port Mode         [ SPP ]      │                      │
│ X EPP Mode Select              EPP1.7     │                      │
│ X ECP Mode Use DMA             3          │                      │
│   PWRON After PWR-Fail       [ Off ]      │                      │
│   Watch Dog Timer Select     [ Disable ]  │                      │
│                                           │                      │
├──────────────────────────────────────────┴──────────────────────┤
│ ↑↓→← :Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help │
│      F5: Previous Values     F6: Fail-Safe Defaults      F7: Optimized Defaults      │
└──────────────────────────────────────────────────────────────────┘
```

☐ **Onboard Serial Port 1**

Select serial port 1 address: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Auto.

☐ **Onboard Serial Port 2**

Select serial port 2 address: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Auto.

☐ **UART Mode Select**

Select UART Mode: IrDA, ASKIR, or Normal.

☐ **Onboard Parallel Port**

Select onblard parallel port: Disabled, 378/IRQ7, 278/IRQ5, or 3BC/IRQ7.

☐ **Parallel Port Mode**

Select Parellel Port Mode: SPP, EPP, ECP, ECP+EPP, or Normal.

☐ **PWRON After PWR-Fail**

Select Power ON after Off/On

☐ **Watch Dog Timer Select**

Select Watch dog Disabled or set timer value: 10sec, 20sec, 30sec, 40sec, 1 min, 2min, or 4min.

☐ **Second IO Device**

```
                Phoenix – AwardBIOS CMOS Setup Utility
                          Second IO Device
┌─────────────────────────────────────────────┬──────────────────────┐
│                                              │      Item Help       │
│   Onboard Serial Port 3     [ 3E8h ]         │                      │
│   Serial Port 3 Use IRQ     [ IRQ10 ]        │   Menu Level   ►     │
│   Oboard Serial Port 4      [ 2E8h ]         │                      │
│   Serial Port 4 Use IRQ     [ IRQ10 ]        │                      │
│   Onboard Serial Port 5     [ 4F8h ]         │                      │
│   Serial Port 5 Use IRQ     [ IRQ10 ]        │                      │
│   Oboard Serial Port 6      [ 4E8h ]         │                      │
│   Serial Port 6 Use IRQ     [ IRQ10 ]        │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
└─────────────────────────────────────────────┴──────────────────────┘
 ↑↓→← :Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help
      F5: Previous Values      F6: Fail-Safe Defaults      F7: Optimized Defaults
```

☐ **Onboard Serial Port 3/4/5/6**

Select serial port address.

☐ **Serial Port 3/4/5/6 Use IRQ**

Select serial port IRQ. Support IRQ sharing mode.

□ **USB Device Setting**

Press <Enter> to select USB device configuration.

```
                Phoenix – AwardBIOS CMOS Setup Utility
                          USB Device Setting
┌─────────────────────────────────────────────┬─────────────────────────┐
│   USB 1.0 Controller      [ Enabled ]        │       Item Help         │
│   USB 2.0 Controller      [ Enabled ]        │                         │
│   USB Operation Mode      [ High Speed ]     │   Menu Level      ►     │
│   USB Keyboard Function   [ Enabled ]        │                         │
│   USB Mouse Function      [ Enabled ]        │   [Enable] or [Disable] │
│   USB Storage Function    [ Enabled ]        │   Universal Host        │
│                                              │   Controller Interface  │
│                                              │   for Universal Serial  │
│   *** USB Mass Storage Device Boot Setting ***│  Bus.                  │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
└──────────────────────────────────────────────┴────────────────────────┘
   ↑↓→←:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help
      F5: Previous Values       F6: Fail-Safe Defaults      F7: Optimized Defaults
```

2.6 Power Management Setup

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

        ACPI Function                [ Enabled ]              Item Help
        ACPI Suspend Type            [ S1(POS) ]
        Soft-Off by PWR-BTTN         [ Instant-Off ]     Menu Level    ►
        Power On by Ring             [ Disabled ]
        Resume by Alarm              [ Disabled ]
      X    Date(of  Month) Alarm       0
      X    Time(hh:mm:ss) Alarm        0 : 0 : 0
      ►  PCI Express PM Function      [ Press Enter ]




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

☐ **ACPI Function**

Select ACPI (Advanced Configuration and Power Management) Enabled/Disabled.

☐ **ACPI Suspend Type**

Select S1(POS) type.

☐ **Soft-Off by PWR_BTTN**

Select power button function,

Instant-off: Press power button will power off instantly.

Delay 4 Sec: Press power button 4 second to power off.

☐ **Power On by Ring**

Select Power on by Ring Indicator signal from Modem.

☐ **Resume by Alarm**

Set date and time to power on system from soft-off state.

☐ PCI Express PM Function

Press <Enter> to select "Wake-up by LAN" Enabled/Disabled.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                      PCI Express PM Function

   Wake-up by Lan              [ Disabled ]           Item Help

                                                   Menu Level    ►




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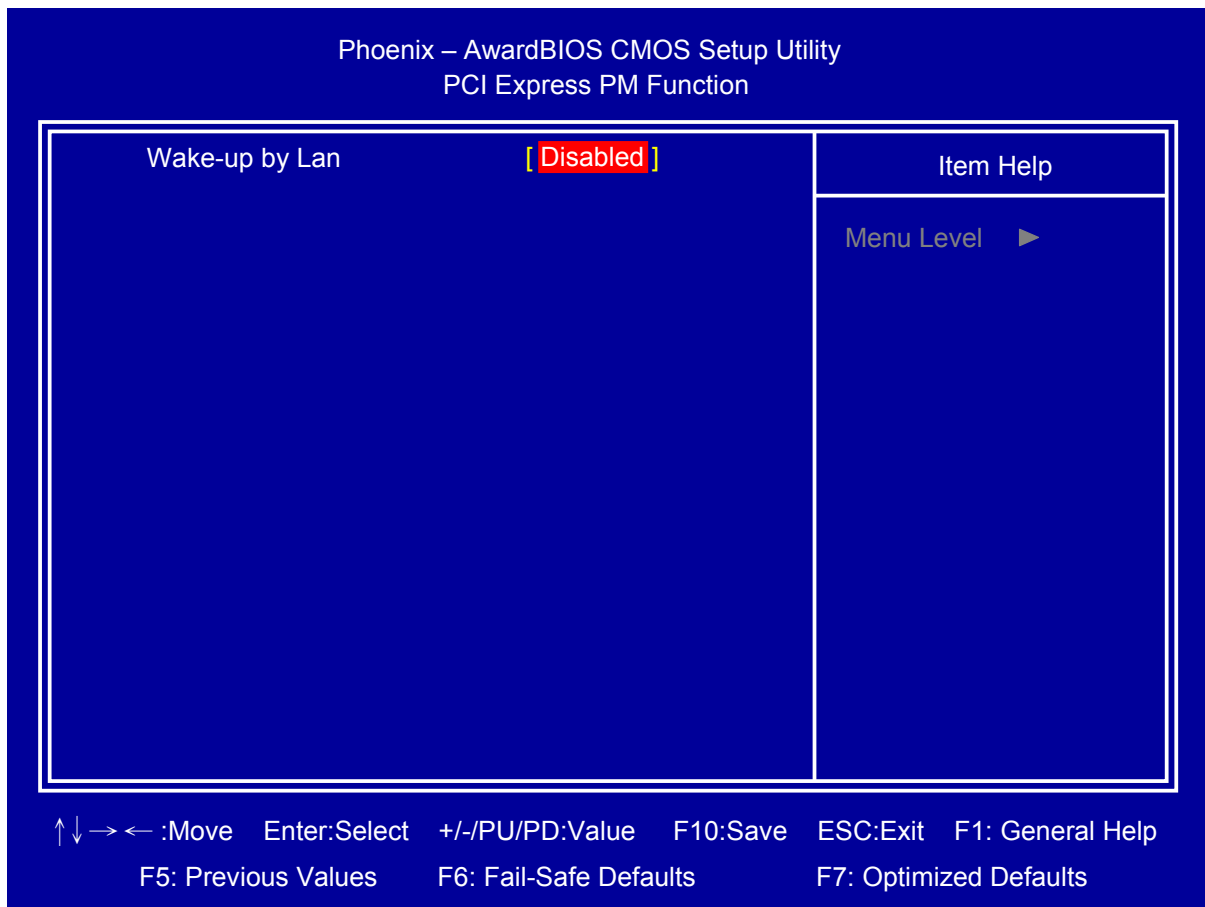
☐ Wake-up by Lan

Select wake-up by Lan Enabled/Disabled.

2.7 PnP/PCI Configurations

```
              Phoenix – AwardBIOS CMOS Setup Utility
                      PnP / PCI Configurations
┌────────────────────────────────────────────────┬──────────────────────┐
│   Init Display First          [ Onboard ]        │      Item Help        │
│   Reset Configuration Data    [ Disabled ]       │                       │
│                                                  │   Menu Level    ►     │
│ X Resources Controlled By     [ Auto(ESCD) ]     │                       │
│   IRQ Resources                 Press Enter      │                       │
│                                                  │                       │
│   PCI/VGA Palette Snoop        [ Disabled ]      │                       │
│                                                  │                       │
│   ** PCI Express relative items **               │                       │
│   Maximum Payload Size          [ 128 ]          │                       │
│                                                  │                       │
│                                                  │                       │
│                                                  │                       │
│                                                  │                       │
└────────────────────────────────────────────────┴──────────────────────┘
  ↑↓→← :Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help
        F5: Previous Values      F6: Fail-Safe Defaults      F7: Optimized Defaults
```

☐ **Init Display First**

Select initial display by PCI or Onboard device.

☐ **Reset Configuration Data**

Select Enabled to reset Extended System Configuration Data (ESCD) when you exit BIOS setup utility, if you have installed new add-on card and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

☐ **Resources Controlled By**

BIOS can automatically configure all the boot and Plug and Play compatible devices.
If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

☐ **PCI/VGA Palette Snoop**

Select PCI/VGA Palette Snoop Enabled/Disabled.

☐ **Maximum Payload Size**

Set maximum TLP payload size for the PCI Express devices. The unit is byte.

2.8 PC Health Status

```
                  Phoenix – AwardBIOS CMOS Setup Utility
                              PC Health Status

     Shutdown Temperature          [ Disabled ]              Item Help
     CPU Warning Temperature       [ Disabled ]
     Current CPU Temperature          30°C/  86°F        Menu Level    ►
     Current SYStem Temperature       27°C/  80°F
     CPU Fan Speed                  8035 RPM
     System Fan Speed                  0 RPM
     Vcore                           1.15 V
     +12 (V)                        12.19 V
     +1.05 (V)                       1.05 V
     +1.5 (V)                        1.54 V
     +5 (V)                          5.10 V
     +3.3 (V)                        3.36 V
     VBAT (V)                        2.97 V
     3.3VSB (V)                      3.34 V

     ** Smart FAN Setting **
     CPU Smart Fan Temp.           [ Disabled ]
     System Smart Fan Temp.        [ Disabled ]


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

☐ **Shutdown Temperature**

If CPU temperature reaches the setting value will automatic shutdown system.

☐ **CPU Warning Temperature**

If CPU temperature reaches the setting value will beep in DOS mode.

☐ **CPU Smart Fan Temperature**

Setup CPU Smart FAN temperature.

☐ **System Smart Fan Temp.**

Setup System Smart FAN temperature.

2.9 Frequency/Voltage Control

```
               Phoenix – AwardBIOS CMOS Setup Utility
                      Frequency / Voltage Control
 ┌──────────────────────────────────────────────┬─────────────────────────┐
 │   Auto Detect PCI Clk      [ Enabled ]        │       Item Help         │
 │   Spread Spectrum          [ Disabled ]       │                         │
 │                                               │   Menu Level    ►       │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 └──────────────────────────────────────────────┴─────────────────────────┘
  ↑↓→← :Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1: General Help
       F5: Previous Values      F6: Fail-Safe Defaults      F7: Optimized Defaults
```
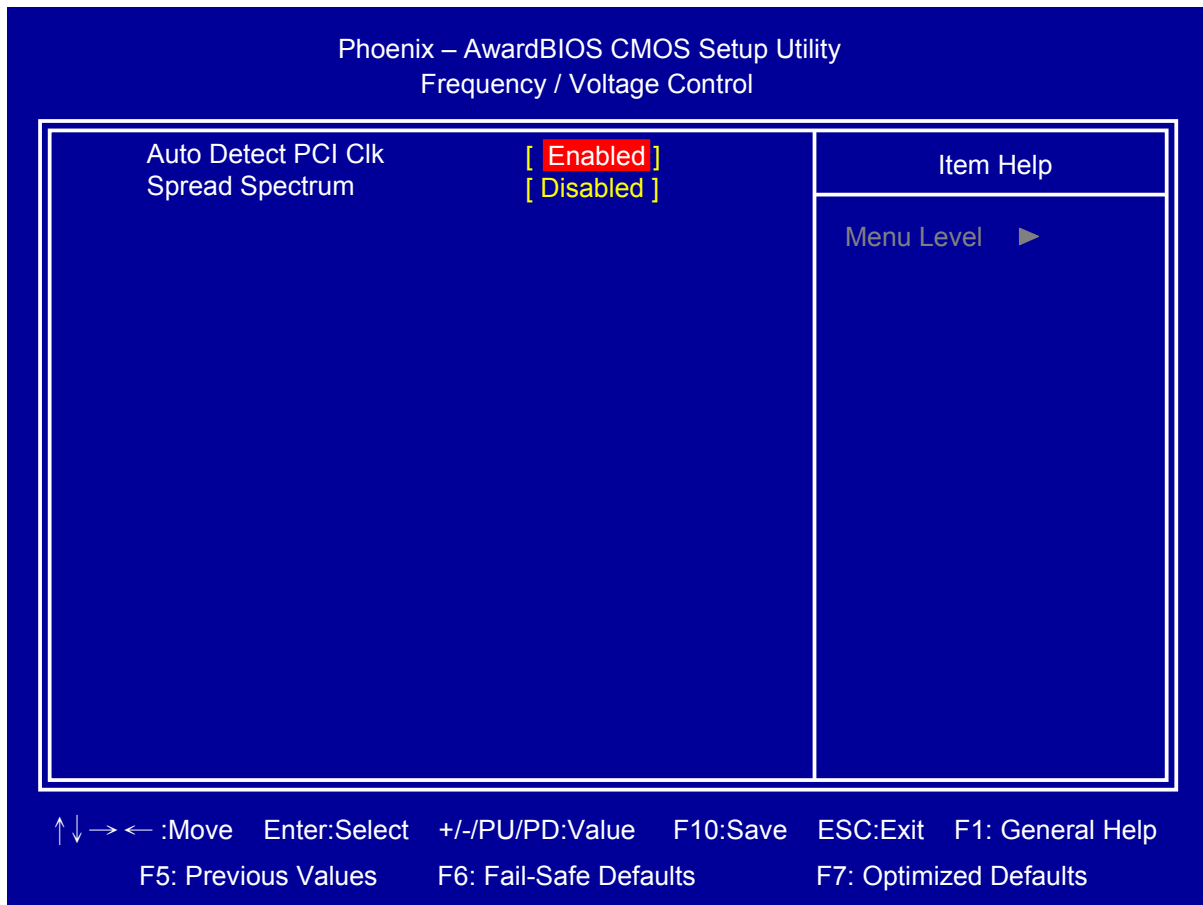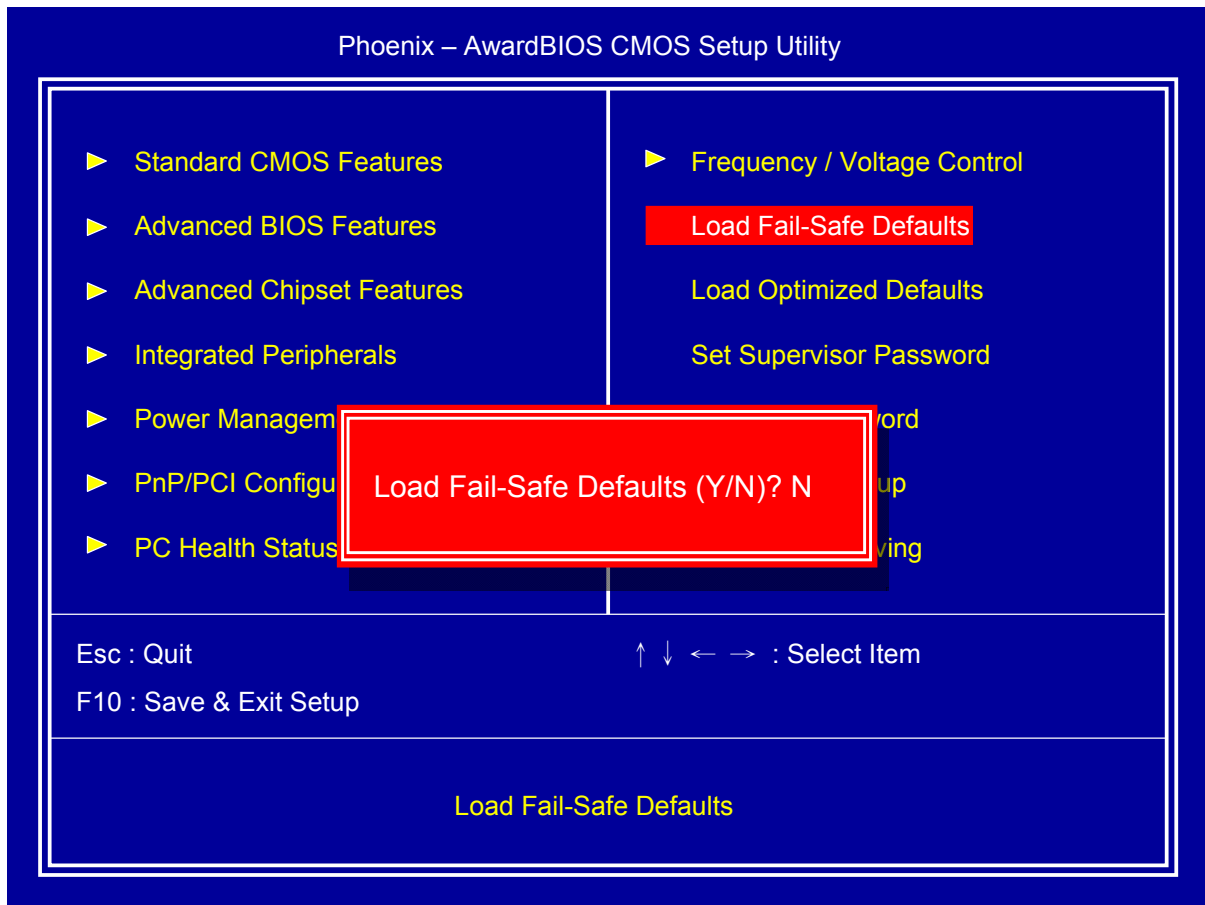
☐ **Auto Detect PCI Clk**

Select "Auto Detect PCI Clk" Enabled/Disabled

☐ **Spread Spectrum**

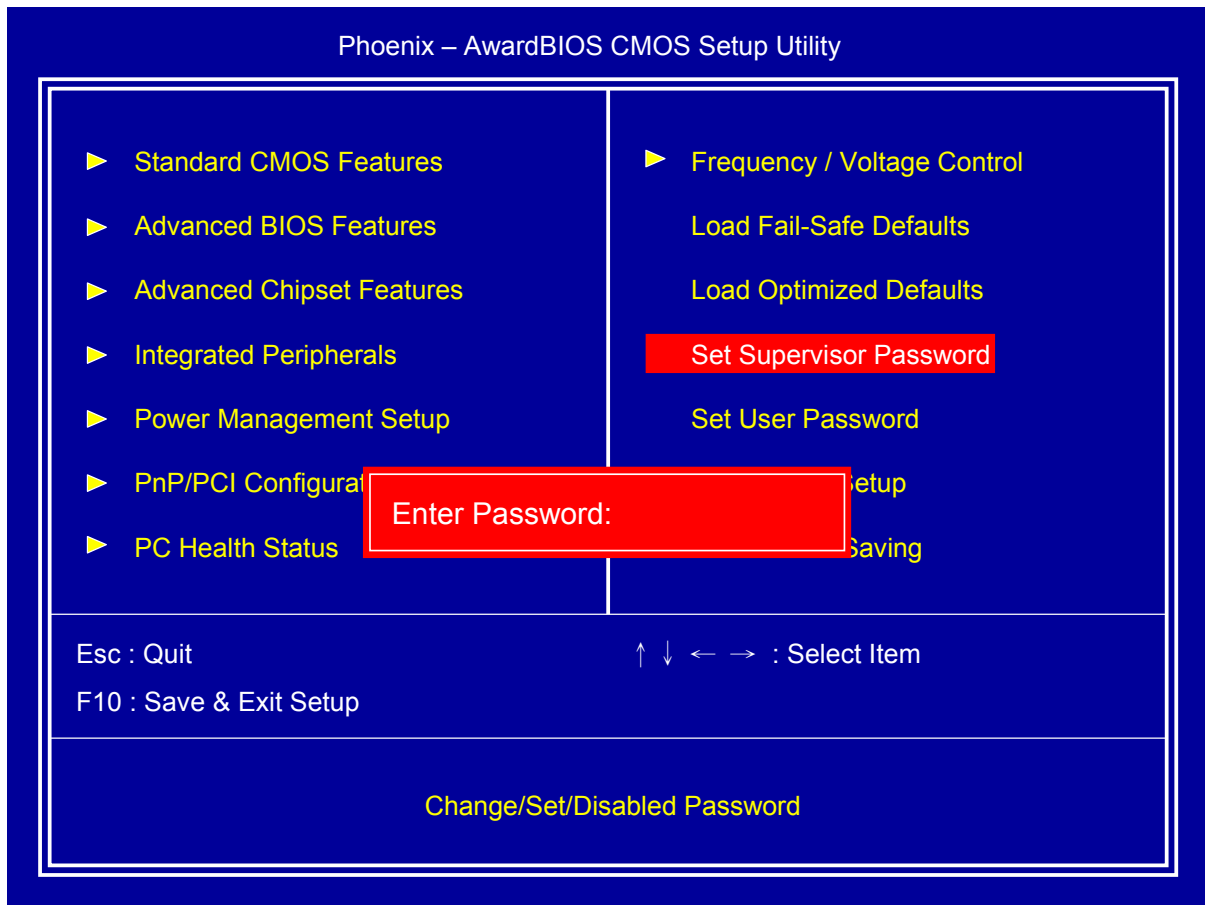Select "Spread Spectrum" Enabled/Disabled.

2.10 Load Fail-Safe Defaults

```
                Phoenix – AwardBIOS CMOS Setup Utility

   ► Standard CMOS Features          ► Frequency / Voltage Control

   ► Advanced BIOS Features            Load Fail-Safe Defaults

   ► Advanced Chipset Features         Load Optimized Defaults

   ► Integrated Peripherals            Set Supervisor Password

   ► Power Managem                               ord
                    Load Fail-Safe Defaults (Y/N)? N        up
   ► PnP/PCI Configu

   ► PC Health Status                               ving

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

                      Load Fail-Safe Defaults
```

This item will set configuration for non optimized system operation.

2.11 Load Optimized Defaults
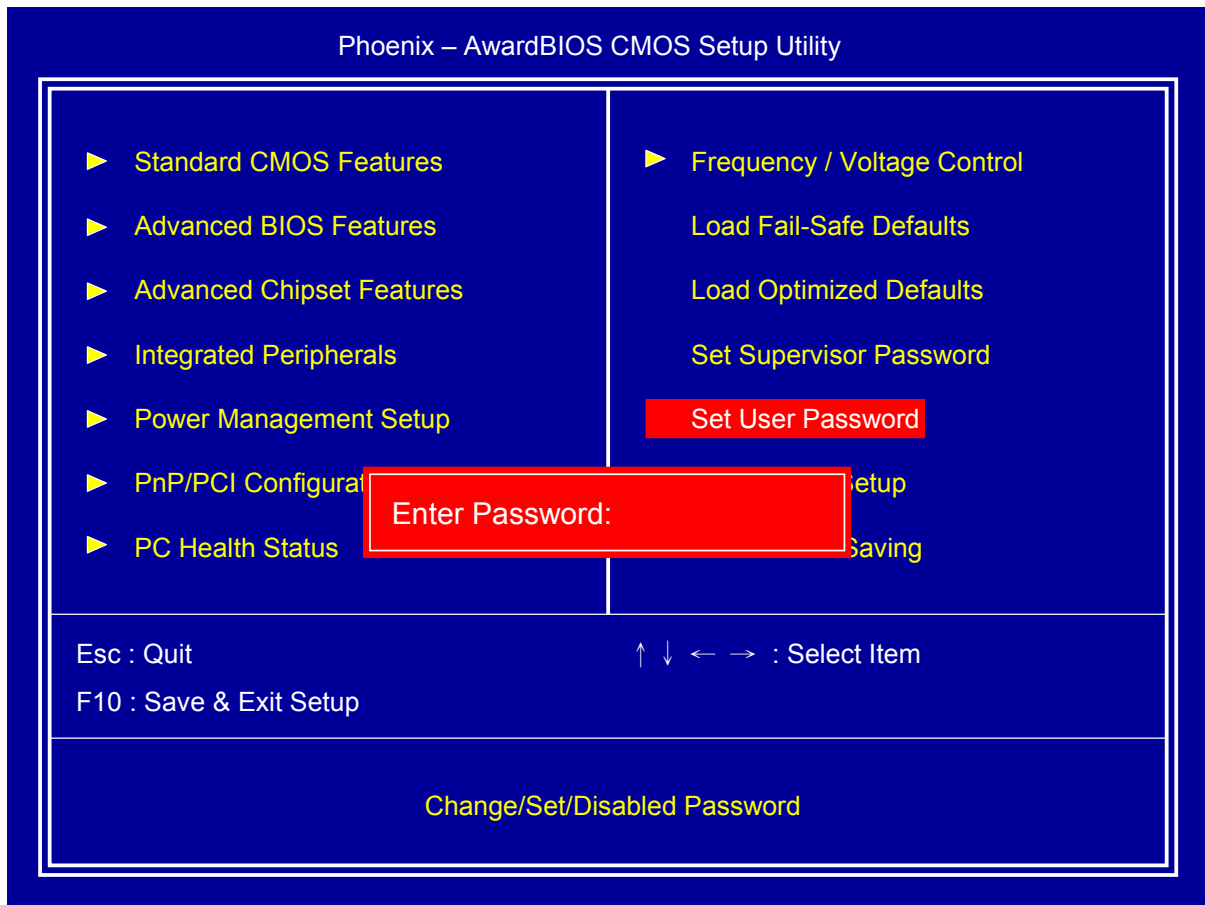
```
                  Phoenix – AwardBIOS CMOS Setup Utility

    ►  Standard CMOS Features          ►  Frequency / Voltage Control

    ►  Advanced BIOS Features             Load Fail-Safe Defaults

    ►  Advanced Chipset Features          Load Optimized Defaults

    ►  Integrated Peripherals            Set Supervisor Password

    ►  Power Managem┌─────────────────────────────┐ord
                    │                             │
    ►  PnP/PCI Configu│  Load Optimized Defaults (Y/N)? N │ up
                    │                             │
    ►  PC Health Status└─────────────────────────────┘ving


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


                        Load Optimized Defaults
```

This item will restore factory default setting for optimized system operation.

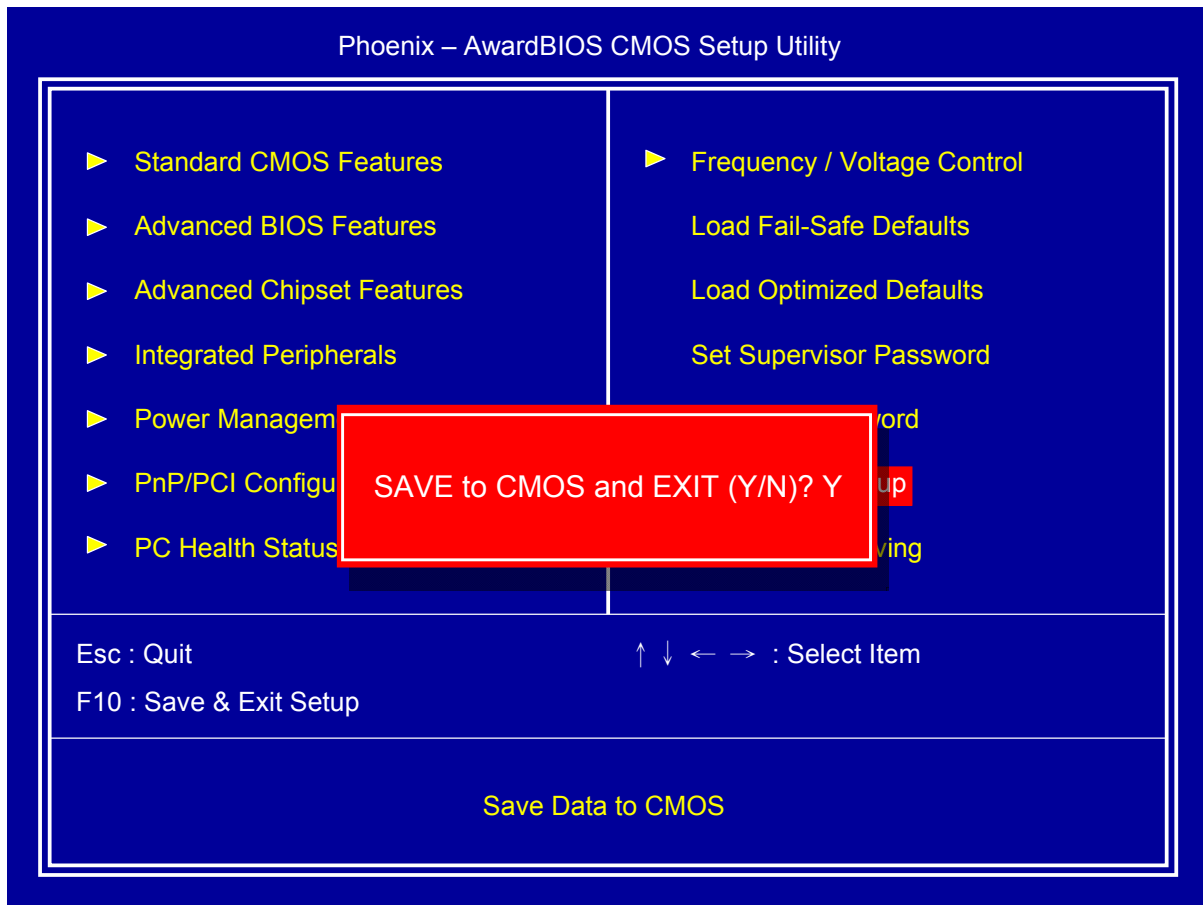## 2.12 Set Supervisor Password

```
              Phoenix – AwardBIOS CMOS Setup Utility

  ►  Standard CMOS Features      ►  Frequency / Voltage Control

  ►  Advanced BIOS Features          Load Fail-Safe Defaults

  ►  Advanced Chipset Features        Load Optimized Defaults

  ►  Integrated Peripherals          Set Supervisor Password

  ►  Power Management Setup           Set User Password

  ►  PnP/PCI Configura                              etup
                         Enter Password:
  ►  PC Health Status                              Saving

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

                   Change/Set/Disabled Password
```

If set supervisor password, it will request typing password to enter BIOS setup utility.

2.13 Set User Password

```
                Phoenix – AwardBIOS CMOS Setup Utility

    ►   Standard CMOS Features        ►   Frequency / Voltage Control

    ►   Advanced BIOS Features            Load Fail-Safe Defaults

    ►   Advanced Chipset Features         Load Optimized Defaults

    ►   Integrated Peripherals            Set Supervisor Password

    ►   Power Management Setup            Set User Password

    ►   PnP/PCI Configura          Enter Password:          etup

    ►   PC Health Status                                      Saving


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

                     Change/Set/Disabled Password
```

If set user password will request typing password to enter BIOS setup utility, and does not allow modifying configuration.

2.14 Save & Exit Setup

```
Phoenix – AwardBIOS CMOS Setup Utility

  ►   Standard CMOS Features        ►   Frequency / Voltage Control

  ►   Advanced BIOS Features            Load Fail-Safe Defaults

  ►   Advanced Chipset Features         Load Optimized Defaults

  ►   Integrated Peripherals            Set Supervisor Password

  ►   Power Managem                     ord
                   SAVE to CMOS and EXIT (Y/N)? Y
  ►   PnP/PCI Configu                              up

  ►   PC Health Status                            ving

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

                      Save Data to CMOS
```

This item confirm save configuration or not before exit BIOS setup utility,
Press <Y> and <Enter> to save configuration, then reboot system.
Press <N> and <Enter> will back to BIOS setup utility.

2.15 Exit Without Saving

```
                Phoenix – AwardBIOS CMOS Setup Utility

   ►  Standard CMOS Features          ►  Frequency / Voltage Control

   ►  Advanced BIOS Features             Load Fail-Safe Defaults

   ►  Advanced Chipset Features          Load Optimized Defaults

   ►  Integrated Peripherals             Set Supervisor Password

   ►  Power Managem                              ord
                      Quit Without Saving  (Y/N)? N
   ►  PnP/PCI Configu                            up

   ►  PC Health Status                           ving

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

                        Abandon all Data
```
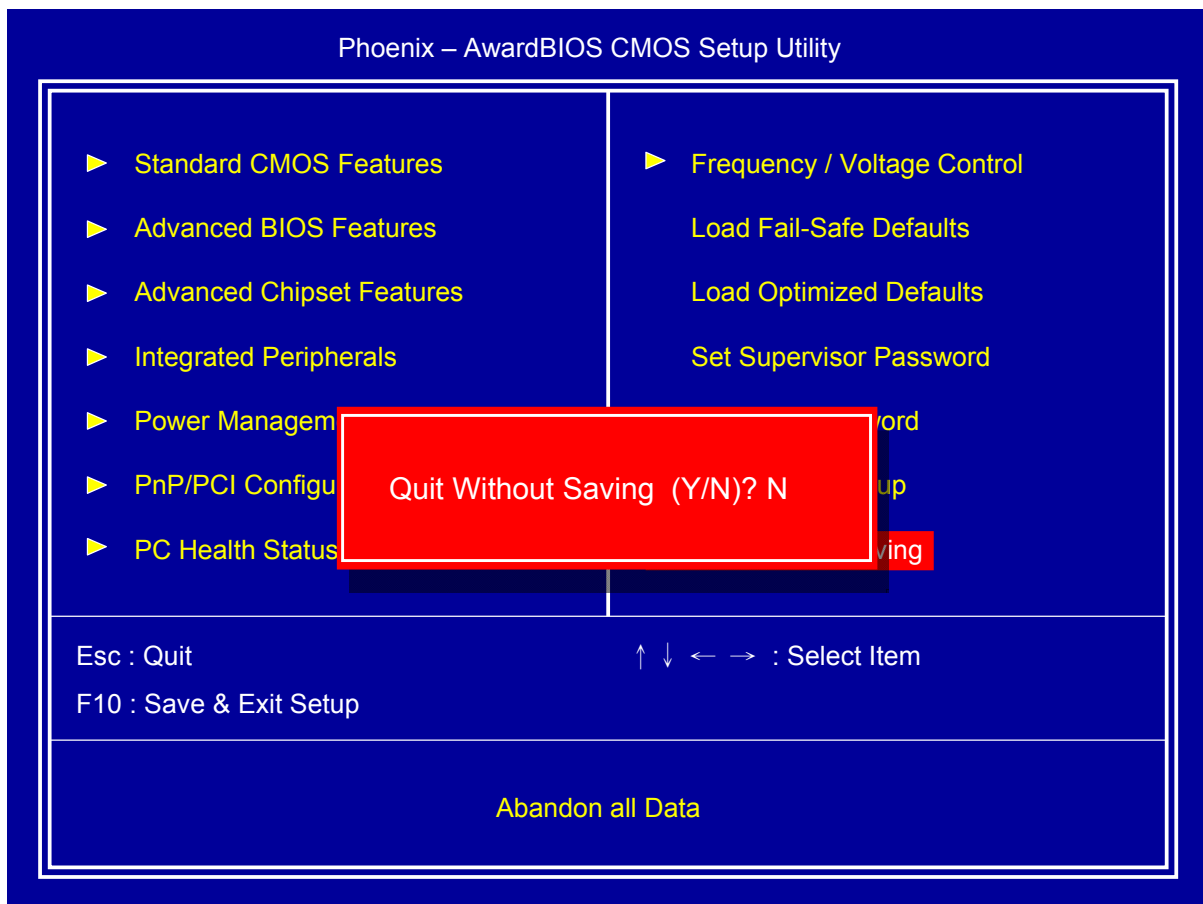
This item confirm save configuration or not before quit BIOS setup utility,
Press <Y> and <Enter> will not save configuration, then reboot system.
Press <N> and <Enter> will back to BIOS setup utility.

Chapter 3 Drivers Installation

This chapter introduces driver installation information.

Please insert the utility CD to CD-ROM drive, the install menu will appear automatically, if the install menu did not list suitable driver of Operate System or did not appear automatically, please select corresponding driver of utility CD to install.

The Windows XP driver installation steps are as below.

3.1 Intel Chipset Device Software

Step 1. Click "Next" to continue

Step 2. Read the License Agreement and click "Yes" to continue

Step 3. Click "Next" to continue

Step 4. Click "Finish" to complete setup

3.2 Intel Graphic Media Accelerator Driver

Step 1. Click "Next" to continue

Step 2. Read the License Agreement and click "Yes" to continue
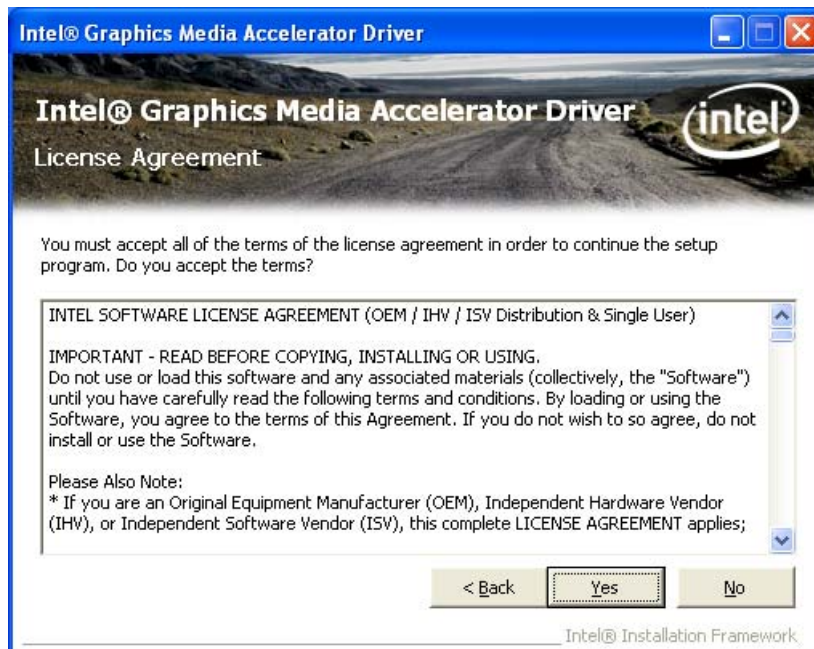
Step 3. Click "Next" to continue
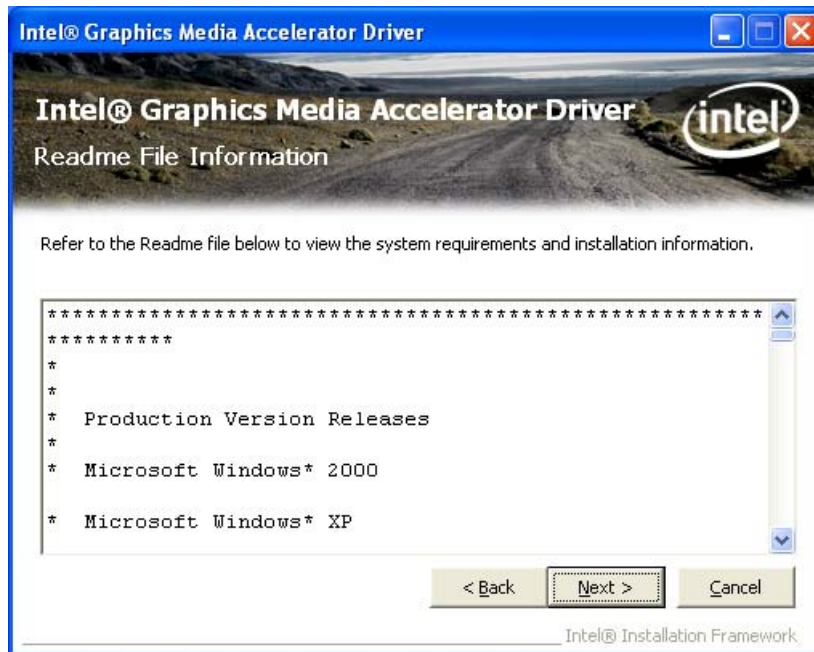
Step 4. Click "Next" to continue
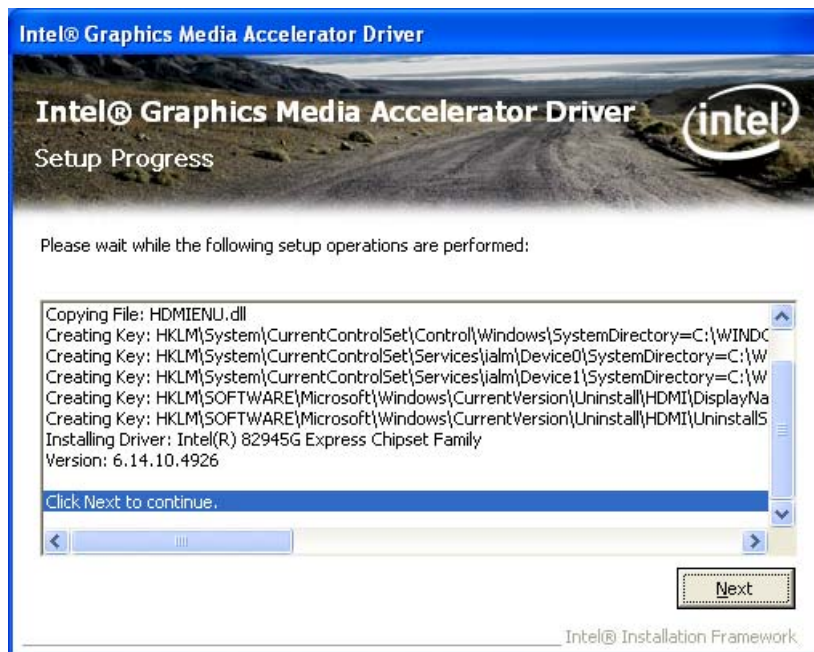
Step 5. Click "Finish" to complete setup
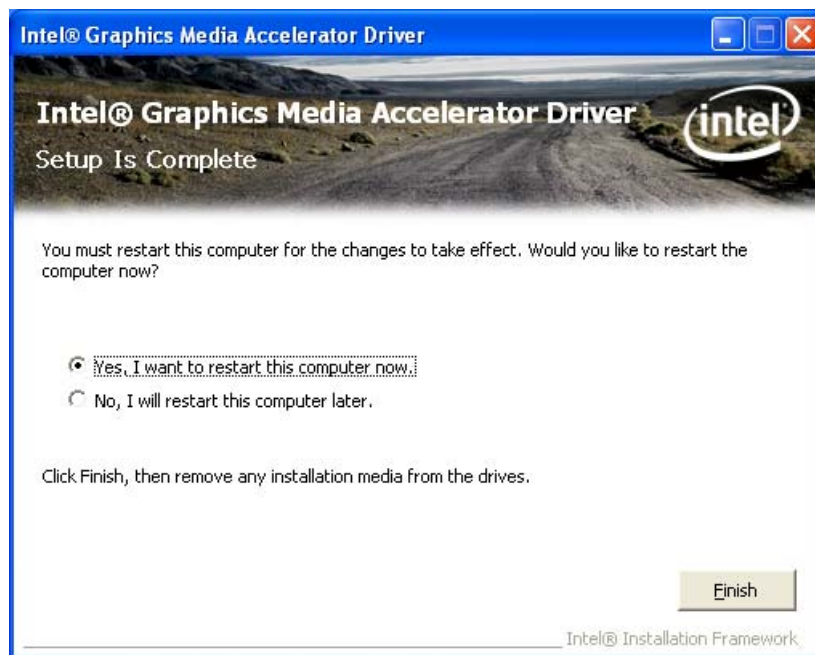
3.3 LAN Driver

Step 1. Click "Next" to continue
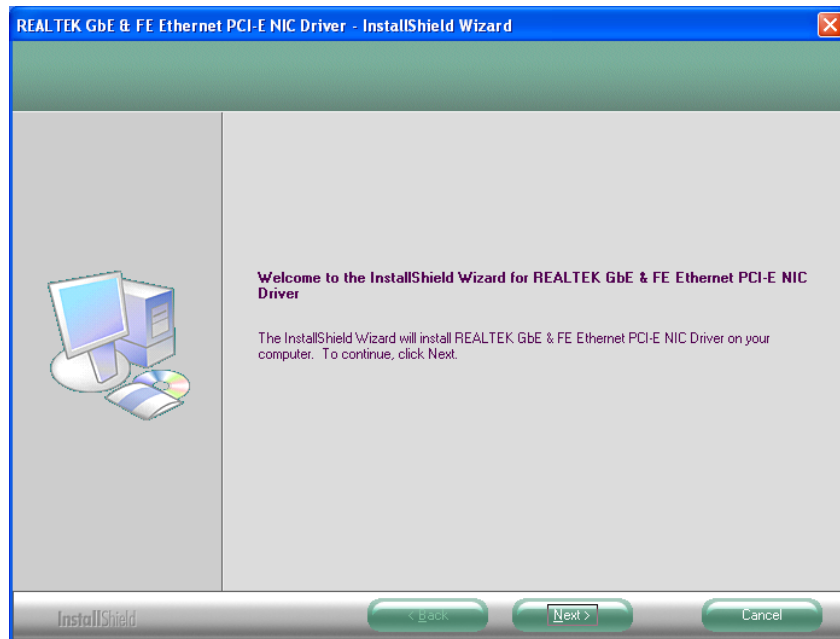
Step 2. Click "Install" to continue
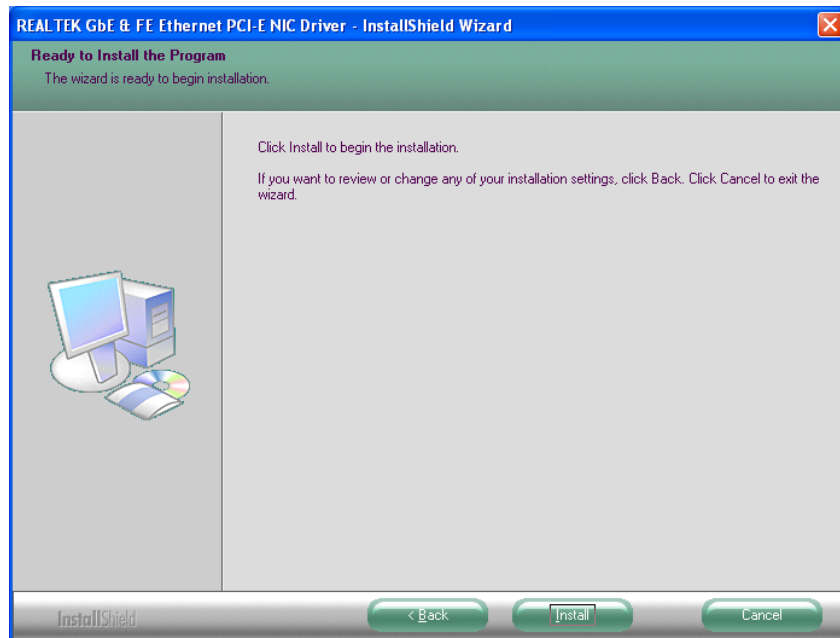
Step 3. Click "Finish" to complete setup
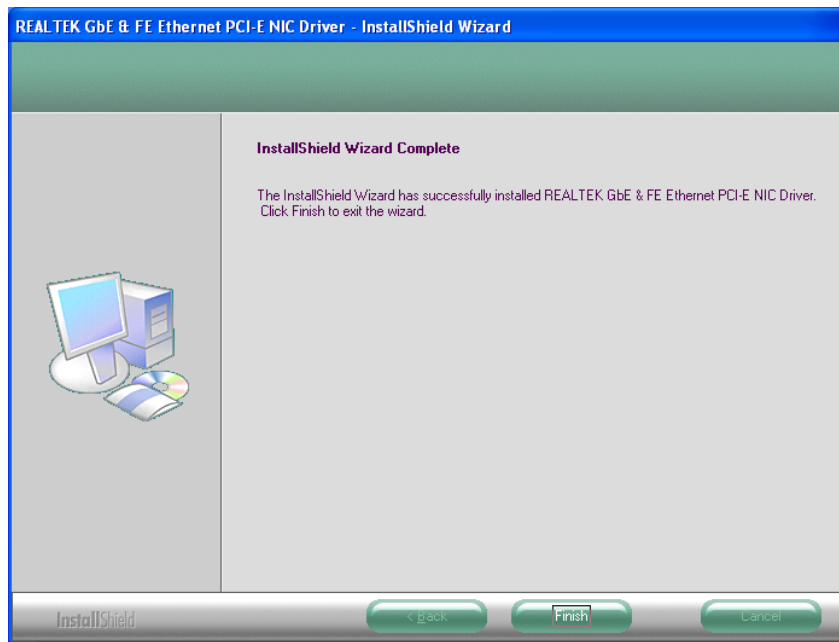
3.4 Audio Driver

Step 1. Click "Next" to continue
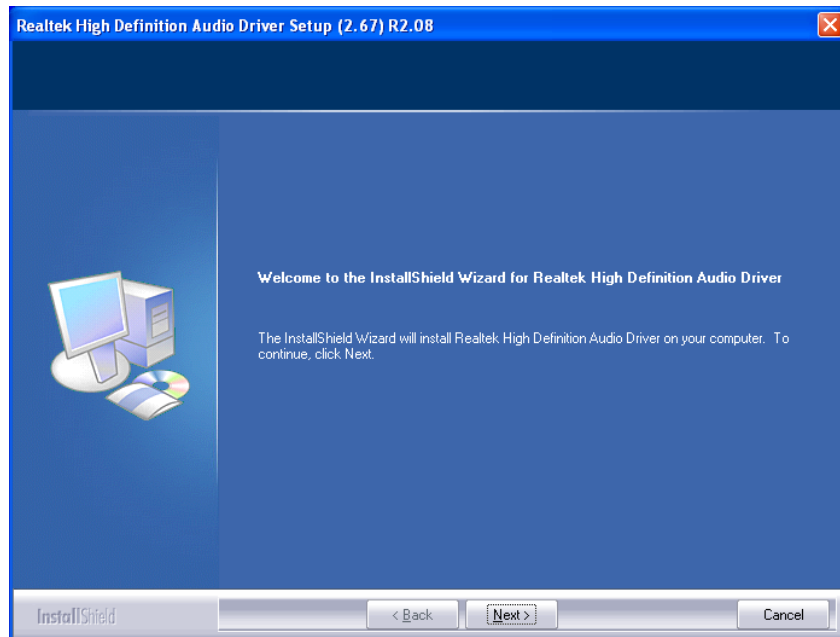
Step 2. Click "Finish" to complete setup
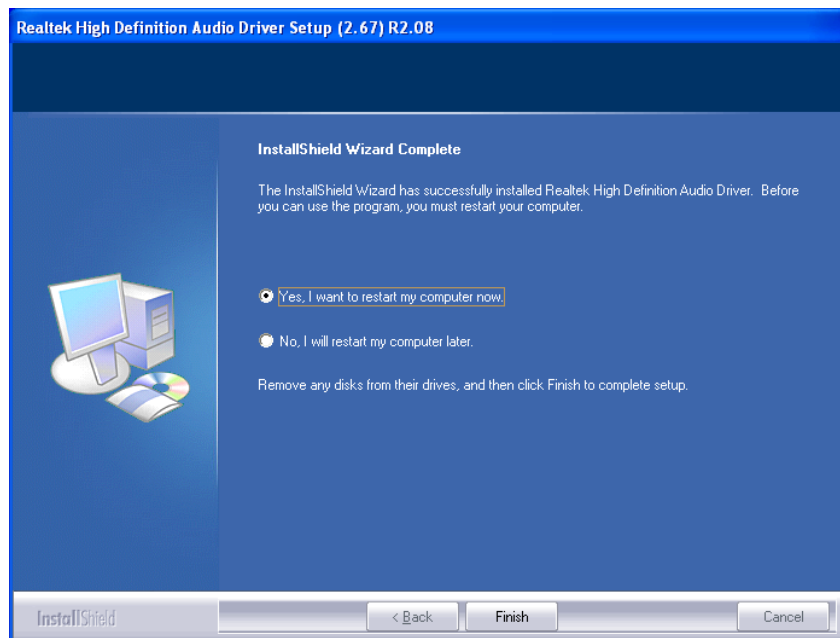
Appendix-A Watchdog

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

The System Board allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset, when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process.

WDT program should keep the counting process running under normal condition. WDT should never generate a system reset unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately.

To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

For more information about WDT, please refer to Winbond W83627EHF data sheet.

There are two PnP I/O port addresses that can be used to configure WDT,

1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)

2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

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

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin 77 to be a WDTO# Signal
outp(0x002E, 0x2D);
outp(0x002F, inp(0x002F) & 0xFE);

// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);

// Active Logic Device 8
outp(0x002E, 0x30);
outp(0x002F, 0x01);

//Clear WDTO# Status
outp(0x002E, 0xF7);
outp(0x002F, inp(0x2F) & 0xEF);

// Select Count Mode (Second / Minute)
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | ( Count-mode Register  & 0x08));

// Set Time-out Value
outp(0x002E, 0xF6);
outp(0x002F,  Time-out Value Register );

// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

Value of Count-mode Register :

1) 0x00 -- Count down in seconds (Bit3=0)

2) 0x08 -- Count down in minutes (Bit3=1)

Value of Time-out Value Register :

1) 0x00 -- Time-out Disable

2) 0x01~0xFF -- Value for counting down

Appendix-B GPIO

The System Board provides 4 dedicated output ports and 4 programmable I/O ports that can be individually configured to perform a simple I/O function. Users can configure 4 programmable I/O ports to become an input or output port by programming register bit of I/O Selection . *To invert port value, the setting of Inversion Register has to be made*(Note). Port values can be set to read or write through Data Register.

Note : Only 4 programmable I/O ports support.

Additionally, 4 Digital Output ports amplified signals from GPIO ports. There are open-drain buffers, which can offer greater driving capacity up to 100mA.

For more information about GPIO, please refer to Winbond W83627EHF data sheet.

The related Control Registers of GPIO are all included in the following sample program that is written in C language. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

There are two PnP I/O port addresses that can be used to configure GPIO ports,

1) 0x2E - EFER (Extended Function Enable Register, for entering Extended Function Mode)
    - EFIR (Extended Function Index Register, for identifying CR index number)

2) 0x2F - EFDR (Extended Function Data Register, for accessing desired CR)

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

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin121-128 to be GPIO port
outp(0x002E, 0x29);
outp(0x002F, inp(0x002F) | 0x01);
```

```
// Select Logic Device 7
outp(0x002E, 0x07);
outp(0x002F, 0x07);

// Active Logic Device 7
outp(0x002E, 0x30);
outp(0x002F, 0x01);

// Select Inversion Mode
outp(0x002E, 0xF2);
outp(0x002F, (inp(0x002F) & 0x3C) | ( Inversion Register  & 0xC3));

// Select I/O Mode
outp(0x002E, 0xF0);
outp(0x002F, (inp(0x002F) & 0x3C) | ( I/O Selection Register  & 0xC3));

// Access GPIO ports
outp(0x002E, 0xF1);
outp(0x002F, (inp(0x002F) & 0x3C) | ( Output Data  & 0xC3));
or
 Input Data  = inp(0x002F);

// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

Each bit in the lower nibble of each Register represents the setting of a GPIO port.

Super IO Pin	Bit	GPIO DIO
128	0	GPIO DIO-Out0
127	1	GPIO DIO-Out1
126	2	GPIO DIO-In0
125	3	GPIO DIO-In1
124	4	GPIO DIO-In2
123	5	GPIO DIO-In3
122	6	GPIO DIO-Out2
121	7	GPIO DIO-Out3

Value of │ Inversion Register │ :

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in Data Register.

Value of │ I/O Selection Register │ :

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

Value of │ Output Data │ / │ Input Data │ :

If a port is assigned to be an output port, then its respective bit can be read/written.

If a port is assigned to be an input port, then its respective bit can be read only.

Note :

DIO_IN0/DIO_IN1/DIO_IN2/DIO_IN3 are programmed as **Inputs** by BIOS default.

Parameter	Conditions
VinH	min +1.857V
VinL	max +0.525V
Rated Vin	-8V ~ +12V
NC Status	High by Default

** Attention : If **DIO_IN0/DIO_IN1/DIO_IN2/DIO_IN3 are programmed as Output signal, they can only offer a normal signal transfer.(NOT amplified signals.)**

Parameter	Conditions
VoutH	3.3V thru 10k
VoutL	0V thru 1k

DIO_OUT0/DIO_OUT1/DIO_OUT2/DIO_OUT3 are fixed as **Outputs** by BIOS.

Parameter	Conditions
Open-drain buffer	Power-on default = Open
Driving Capacity	max 100mA continue