SBC84826 Series
Intel® Atom™ All-In-One Capa Board
User's Manual

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Caution

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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Printed in Taiwan

ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them

Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.

Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

Trademarks Acknowledgments

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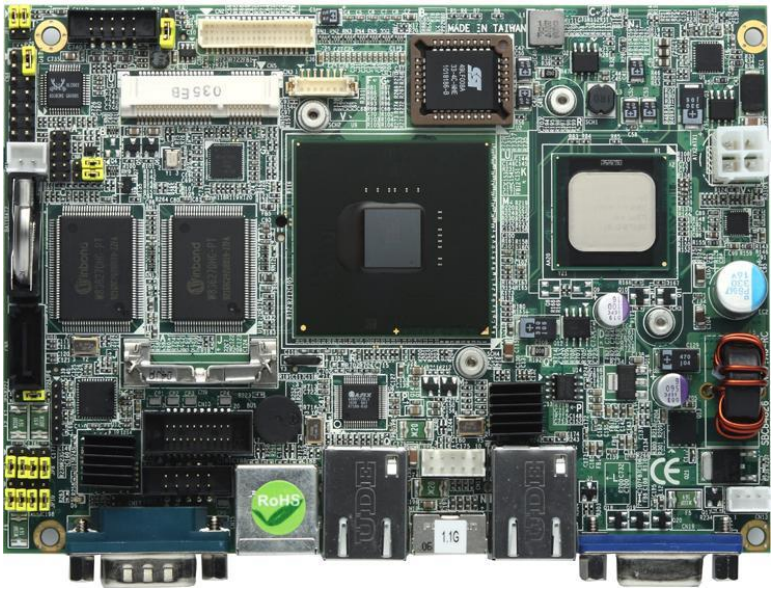
CHAPTER 1
INTRODUCTION



The SBC84826 is a Capa board with support for Intel® Atom™ processor Z510PT, and integrates chipset Intel® System Controller Hub US15WPT that delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. The board has one 200-pin unbuffered SODIMM sockets for DDR2 400/533 MHz SO-DIMM memory, maximum memory capacity up to 2GB. It also features dual-display by VGA and LVDS, one Gigabit and one Fast Ethernet, one Serial ATA port, four USB 2.0 high speed compliant, built-in High Definition Audio Codec that can achieve the best stability and reliability for industrial applications. It provides you with unique embedded features, such as four serial ports (4x RS-232) and 3.5'' form factor that applies an extensive array of PC peripherals.

1.1 Specifications

- **CPU**
  - Intel® AtomTM processor Z510PT
- **System Chipset**
  - Intel® System Controller Hub US15WPT
- **BIOS**
  - Phoenix-Award BIOS
  - 8Mbit FWH Flash
- **System Memory**
  - One x 200-pin unbuffered DDR2 SODIMM socket
  - Maximum to 2GB DDR2 400/533 MHz memory
- **CompactFlash™ Socket**
  - One CompactFlash™ Type II Socket
- **USB Interface**
  - Four USB ports compliant with USB Spec. Rev. 2.0
- **Onboard Multi I/O**
  - Controller: Winbond W83627DHG-P
  - Serial Ports:four ports for RS-232
- **Display**
  - One 2 x 20-pin LVDS connector, one 7-pin wafer connector for inverter control
  - One D-sub 15-pin slim type connector
- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Ethernet**
  - One port with Intel82574IT for Gigabit/Fast Ethernet
  - One port with AX88772B for Fast Ethernet
- **Audio**
  - HD Audio compliant via Realtek ALC662
  - Speaker-out/line-out & Line-in & MIC-in via Box Header connector
- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)
- **Form Factor**
  - 3.5'' form factor

 *Note: All specifications and images are subject to change without notice.*

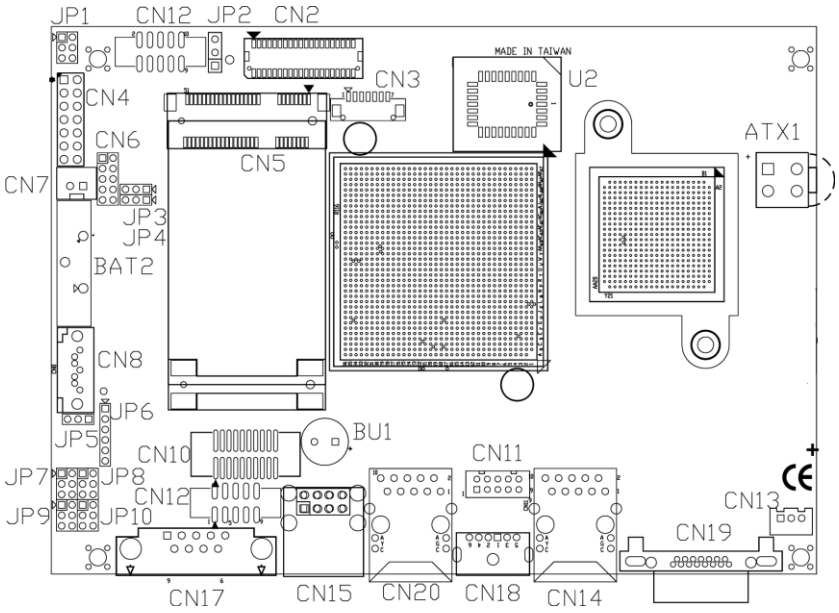
1.2 Utilities Supported

- **Chipset Driver**
- **Graphic Drivers**
- **Ethernet Driver**
- **Audio Drivers**

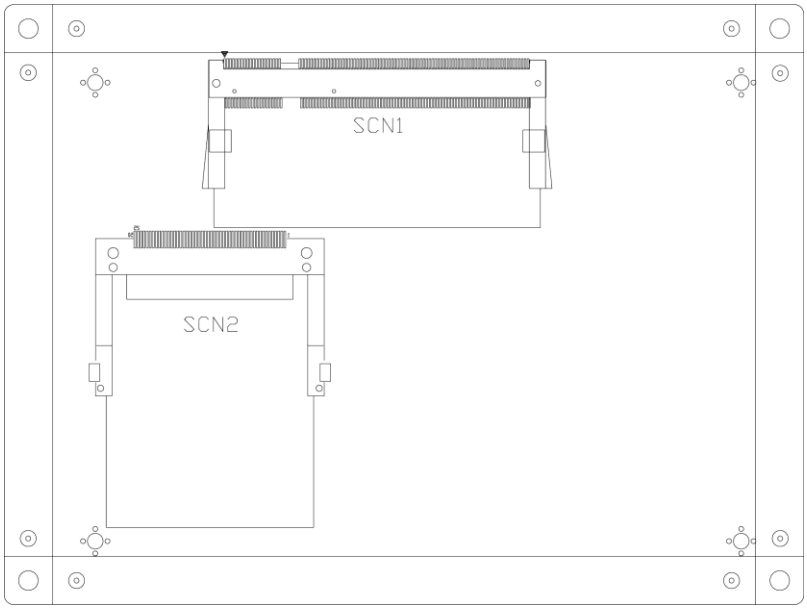
MEMO:

CHAPTER 2
JUMPERS AND CONNECTORS

2.1 Board Layout

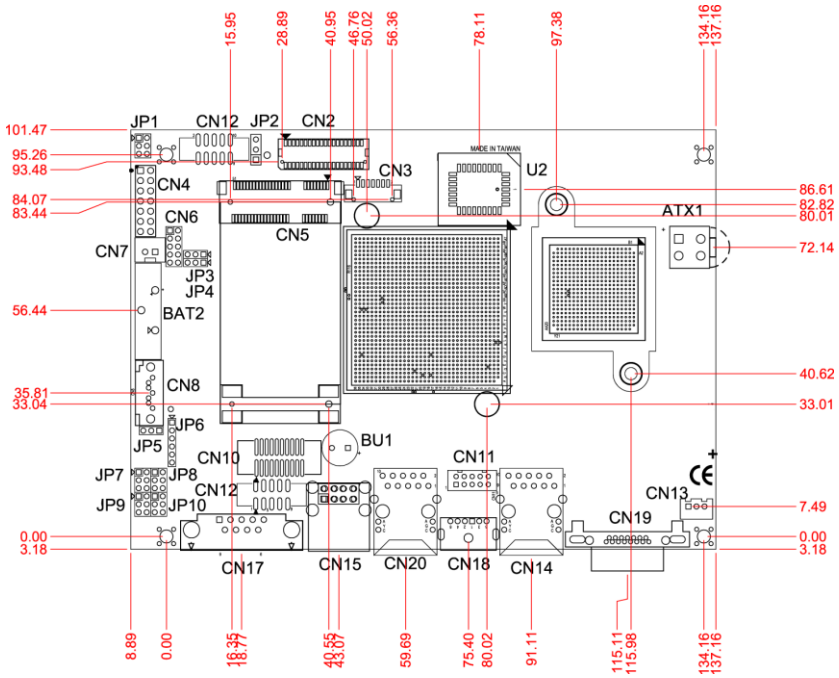


Top Side

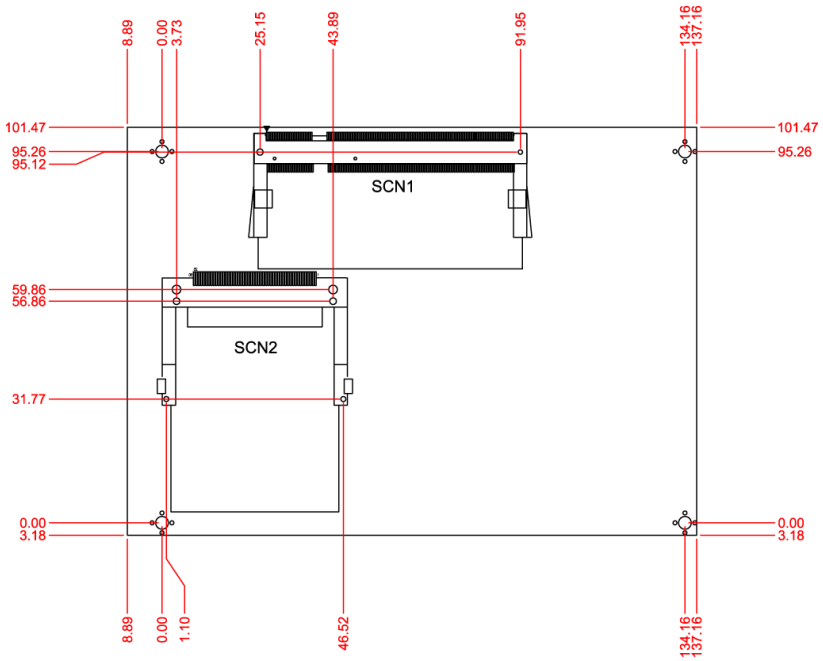


Bottom Side

2.2 Board Dimension and Fixing Holes



Top Side


8.89
0.00
3.73
25.15
43.89
91.95
134.16
137.16
101.47
95.26
95.12
SCN1
59.86
56.86
SCN2
31.77
0.00
3.18
8.89
0.00
1.10
46.52
134.16
137.16
101.47
95.26
0.00
3.18

Bottom Side

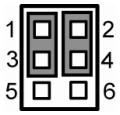
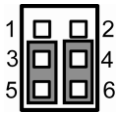
2.3 Jumper Settings

Proper jumper settings configure the SBC84826 to meet your application purpose. We are here with listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Function/Default Setting	Jumper Setting
JP1	HD Audio Line Out / Speaker Out Select Default: Line Out	Short 1-3, 2-4
JP2	LVDS LCD Type Support Selection Default: 3.3V type LVDS LCD Support	Short 1-2
JP3	CompactFlashTM Type Selection Default: 3.3V type CompactFlashTM support	Short 1-2
JP4	Normal Operation/Clear CMOS Setting Default: Normal Operation	Short 1-2
JP5	Power On Control Mode Default: Power On control by Front Panel Connector	Short 1-2
JP6	Reserved	N/A
JP7	COM3 Data/Power Mode Select Default: RS-232 Data	Short 3-5, 4-6
JP8	COM4 Data/Power Mode Select Default: RS232 Data	Short 3-5, 4-6
JP9	COM1 Data/Power Mode Select Default: RS232 Data	Short 3-5, 4-6
JP10	COM2 Data/Power Mode Select Default: RS232 Data	Short 3-5, -6

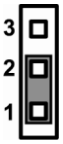
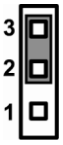
2.3.1 HD Audio Line Out / Speaker Out Select (JP1)

This jumper is to select which source for the audio output (CN1). When the Speaker Out is set, it delivers 2W/channel continuous into 8 Ohm loads.

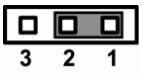
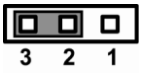
Function	Jumper Setting
Line Out (Default)	
Speaker Out	

2.3.2 LVDS LCD Type Support Selection (JP2)

The board supports 3.3V or 5V type LCD displays.

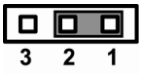
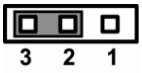
Function	Jumper Setting
3.3V type LVDS LCD support (Default)	
5V type LVDS LCD support	

2.3.3 CompactFlash™ Type Selection (JP3)

Function	Jumper Setting
3.3V type CompactFlashTM support (Default)	
5V type CompactFlashTM support	

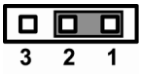
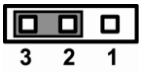
2.3.4 CMOS Clear (JP4)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Function	Jumper Setting
Normal (Default)	
Clear CMOS	

2.3.5 Power On Control Mode (JP5)

The Power On Control mode provides two kinds of power on mode as follows,

Function	Jumper Setting
Power On control by Front Panel Connector (Default)	
Power On control by Power Supply	

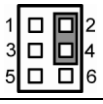
2.3.6 COM1 Data/Power Mode Select (JP9)

The COM1 (CN17) ports have +5V level power capability on DCD and +12V level power capability for RI, depending on the JP9 setting.

Mode	Jumper Setting
CN17 Pin 1 is +5V level	
CN17 Pin 1 is DCD (Default)	
CN17 Pin 9 is +12V level	
CN17 Pin 9 is RI (Default)	

2.3.7 COM2 Data/Power Mode Select (JP10)

The COM2 (CN12) ports have +5V level power capability on DCD and +12V level power capability for RI, depending on the JP10 setting.

Mode	Jumper Setting
CN12 Pin 1 is +5V level	
CN12 Pin 1 is DCD (Default)	
CN12 Pin 8 is +12V level	
CN12 Pin 8 is RI (Default)	

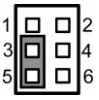
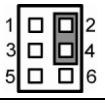
2.3.8 COM3 Date/Power Mode Select (JP7)

The COM3 (CN10) ports have +5V level power capability on DCD and +12V level power capability for RI, depending on the JP7 setting.

Mode	Jumper Setting
CN10 Pin 1 is +5V level	
CN10 Pin 1 is DCD (Default)	
CN10 Pin 8 is +12V level	
CN10 Pin 8 is RI (Default)	

2.3.9 COM4 Data/Power Mode Select (JP8)

The COM4 (CN10) ports have +5V level power capability on DCD and +12V level power capability for RI, depending on the JP8 setting.

Mode	Jumper Setting
CN10 Pin 11 is +5V level	
CN10 Pin 11 is DCD (Default)	
CN10 Pin 18 is +12V level	
CN10 Pin 18 is RI (Default)	

2.4 Connectors

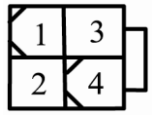
Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the SBC84826 Series.

Connectors	Label
Power Connector	ATX1
DDRII SO-DIMM Connector	SCN1
CompactFlash™ Socket	SCN2
Audio Connector	CN1
LVDS LCD Connector	CN2
LVDS LCD Backlight Connector	CN3
Flat Panel Connector	CN4
PCI-Express Mini card connector	CN5, CN9
Digital I/O Connector	CN6
SATA power connector	CN7
SATA Connector	CN8
COM3,4 Connector	CN10
USB Connector	CN11
COM2 Connector	CN12
SMBus Connector	CN13
LAN Connector	CN14
USB Stack Connector	CN15
COM1 Connector	CN17
PS/2 Keyboard and Mouse Connector	CN18
VGA Connector	CN19
LAN Connector	CN20

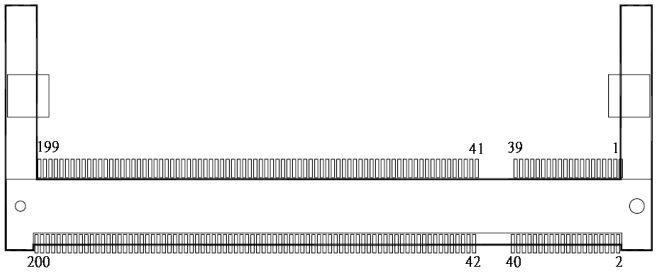
2.4.1 POWER Connector (ATX1)

This connector is satand ATX 4 pin 12V Power Connector. Connect it to the power supply ATX12V power.

Pin	Signal
1	GND
2	GND
3	+12V
4	+12V



2.4.2 DDRII SO-DIMM Connector(SCN1)



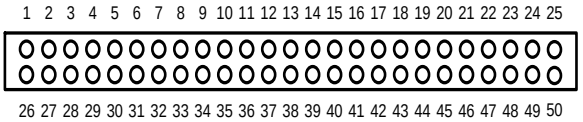
2.4.3 CompactFlash™ Socket (SCN2)

The board is equipped with a CompactFlash™ disk type-II socket on the solder side that supports the IDE interface CompactFlash™ disk card with DMA mode supported. The socket is especially designed to avoid any incorrect installation of the CompactFlash™ disk card.

When installing or removing the CompactFlash™ disk card, please make sure that the system power is off. The CompactFlash™ disk card is defaulted as the C: or D: disk drive in your PC system.

Pin13 and Pin 38 power voltage can be referred to JP3 Jumper Setting.

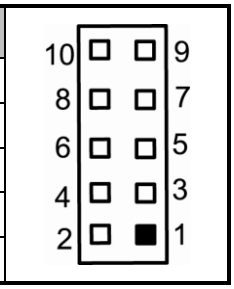
Pin	Signal	Pin	Signal	Pin	Signal
1	GND	18	Address 2	35	IOWR#
2	Data 3	19	Address 1	36	WE#
3	Data 4	20	Address 0	37	INTR
4	Data 5	21	Data 0	38	VCC
5	Data 6	22	Data 1	39	CSEL#
6	Data 7	23	Data 2	40	VS2#
7	CS0#	24	IOCS16#	41	RESET#
8	GND	25	CD2#	42	IORDY#
9	ATASEL	26	CD1-	43	DMAREQ
10	GND	27	Data 11	44	DMAACK-
11	GND	28	Data 12	45	DASP#
12	GND	29	Data 13	46	PDIAG#
13	VCC	30	Data 14	47	Data 8
14	GND	31	Data 15	48	Data 9
15	GND	32	CS1#	49	Data 10
16	GND	33	VS1#	50	GND
17	GND	34	IORD#		



2.4.4 Audio Connector (CN1)

Pin 7 and Pin 9 can be referred to JP1 Jumper Setting to set the audio source.

Pin	Signal	Pin	Signal
1	MIC_IN	2	Ground (GND)
3	LINE_IN_L	4	Ground (GND)
5	LINE_IN_R	6	Ground (GND)
7	AUDIO_OUT_L	8	Ground (GND)
9	AUDIO_OUT_R	10	Ground (GND)



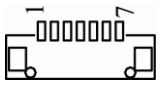
2.4.5 LVDS LCD Connector (CN2)

The board has a 40-pin connector CN2 for LVDS Interface LCD. It is strongly recommended to use the matching GL A1001WV-S-2x20P 40-pin connector for LVDS on the board. Pin1~6 VCCM can be set +3V level or +5V level by JP2.

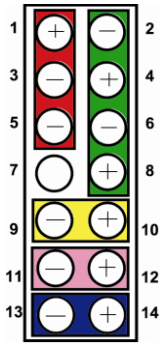
Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	N.C.	12	N.C.
13	N.C.	14	N.C.
15	GND	16	GND
17	N.C.	18	N.C.
19	N.C.	20	N.C.
21	GND	22	GND
23	Channel A D0-	24	N.C.
25	Channel A D0+	26	N.C.
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

2.4.6 LVDS LCD Backlight Connector (CN3)

CN3 is DF13-7S-1.25C 7-pin connectors for inverter. We strongly recommend you to use the matching DF13-7S-1.25C connector.

Pin	Signal	
1	+12V	
2	+12V	
3	+5V	
4	ENABLE +5V	
5	GND	
6	GND	
7	GND	

2.4.7 Flat Panel Connector (CN14)



- **Power LED**

  Pin 1 connects Anode (+) of LED and either Pin 3 or Pin5 connects Cathode (-) of LED. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 connect the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2,4; while connecting to an external speaker, you need to set pins 2,4 to Open and connect the speaker cable to pin 8 (+) and pin 6 (-).

- **ATX Power On/Off Button**

  Pin 9 and 10 connect the ATX power button on front panel to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

  Pin 11 and 12 connect the case-mounted reset switch that reboots your computer without turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

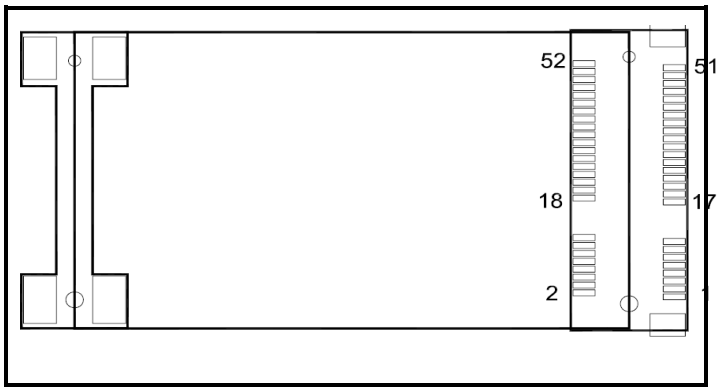
- **HDD Activity LED**

  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as Cathode (-), and Pin 14 as Anode (+).

2.4.8 PCI-Express Mini Card Connector: (CN5,CN9)

CN5, CN9 is a PCI Express Mini Card connector with support of USB interface only. A PCI Express Mini Card can be applied to USB 1.1 and 2.0.

Note: The PCI-Express Mini Card connecter can support Mini card in PCI Express interface if we remove SATA function by BOM options.

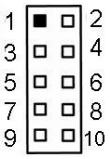


Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3Vaux
3	N.C	4	GND
5	N.C	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	N.C	18	GND
19	N.C	20	W_DISABLE#
21	GND	22	PERST#
23	PERN1	24	+3.3Vaux
25	PERP1	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
33	PETP1	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3Vaux	40	GND
41	+3.3Vaux	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	N.C	46	LED_WPAN#
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3Vaux

2.4.9 Digital I/O Connector (CN6)

The board is equipped with a 8-channel (3in, 5out only) digital I/O connector that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers and sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming. (The application method can be referred to Appendix B.)

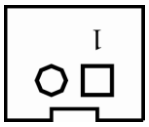
Pin	Signal	Pin	Signal
1	DIO 0(Bit0)	2	DIO 3(Bit3)
3	DIO 1(Bit1)	4	DIO 4(Bit4)
5	DIO 2(Bit2)	6	DIO 5(Bit5)
7	Ground	8	DIO 6(Bit6)
9	Ground	10	DIO 7(Bit7)



2.4.10 SATA Power Connector (CN7)

CN7 is a pitch 2.5mm wafer connector for Serial ATA Power.

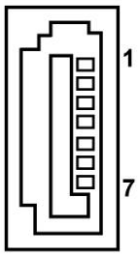
Pin	Signal
1	+5V
2	GND



2.4.11 SATA Connector (CN8)

CN8 is for high-speed SATA interface port and can be connected to hard disk devices.

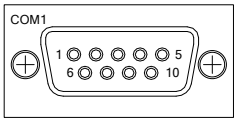
Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.4.12 COM 1 Connector (CN17)

The COM 1 port has +5V level power capability on DCD and 12V level power capability for RI, depending on the JP9. The RS-232 pin assignments are listed on the following table. CN17 is a standard DB-9 connector for COM 1.

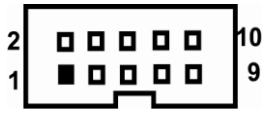
Pin	Signal
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator



2.4.13 COM 2 Connector (CN12)

The COM 2 port has +5V level power capability on DCD and 12V level power capability for RI, depending on the JP10. The RS-232 pin assignment is listed on the following table for COM2.

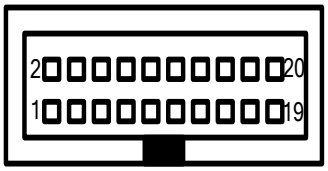
Pin	Signal
1	Data Carrier Detect (DCD)
2	Data Set Ready (DSR)
3	Receive Data (RXD)
4	Request to Send (RTS)
5	Transmit Data (TXD)
6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)
8	Ring Indicator (RI)
9	Ground (GND)
10	NC



2.4.14 COM 3, 4 Connector (CN10)

The COM 3 & COM 4 port have +5V level power capability on DCD and 12V level power capability for RI, depending on the JP7 and JP8 jumper setting. The RS-232 pin assignments are listed on the following table.

Pin	Signal
1	NDCD3
2	NDSR3
3	NRX3
4	NRTS3
5	NTX3
6	NCTS3
7	NDTR3
8	NRI3
9	GND
10	N.C
11	NDCD4
12	NDSR4
13	NRX4
14	NRTS4
15	NTX4
16	NCTS4
17	NDTR4
18	NRI4
19	GND
20	N.C

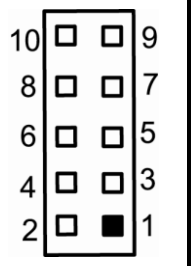


2.4.15 USB Connector (CN11)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. This is a 10-pin standard USB connector.

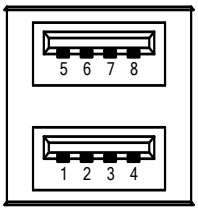
Note: USB D6 supports USB2.0 only.

Pin	Signal	Pin	Signal
1	USB VCC1 (5VSBY)	2	USB VCC1 (5VSBY)
3	USB D4-	4	USB D6-
5	USB D4+	6	USB D6+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)



2.4.16 USB Stack Connector (CN15)

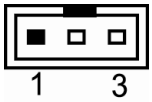
Pin	Signal	Pin	Signal
1	USB VCC0 (5VSBY)	5	USB VCC0 (5VSBY)
2	USB D0-	6	USB D1-
3	USB D0+	7	USB D1+
4	Ground (GND)	8	Ground (GND)



2.4.17 SMBus Connector (CN13)

CN13 is for SMBus interface support.

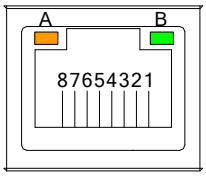
Pin	Signal	Pin	Signal
1	CLOCK	3	GND
2	DATA		



2.4.18 LAN Connector (CN14)

CN14 is the RJ-45 connector is for Ethernet. Just plug in one end of the cable and connect the other end (phone jack) to a 1000/100/10-Base-T hub.

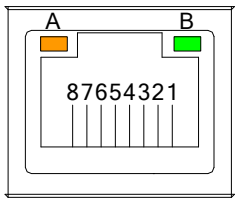
Pin	Signal
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-
A	Active LED (Yellow)
B	100 LAN LED (Green) / 1000 LAN LED (Orange)



2.4.19 LAN Connector (CN20)

CN20 is the RJ-45 connector is for Ethernet. Just plug in one end of the cable and connect the other end (phone jack) to a 100/10-Base-T hub.

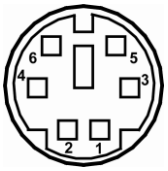
Pin	Signal
1	Tx+(Data transmission positive)
2	Tx-(Data transmission negative)
3	Rx+(Data reception positive)
4	RJ45 termination
5	RJ45 termination
6	Rx- (Data reception negative)
7	RJ45 termination
8	RJ45 termination
A	Active LED (Yellow)
B	100 LAN LED (Green)



2.4.20 PS/2 Keyboard and Mouse Connector (CN18)

CN18 is a DIN connector for PS/2 keyboard and mouse connection via "Y" Cable.

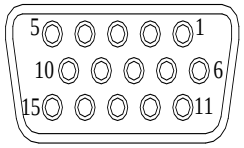
Pin	Signal
1	Keyboard Data
2	Mouse Data
3	GND
4	VCC
5	Keyboard Clock
6	Mouse Clock



2.4.21 VGA Connector (CN19)

CN19 is a standard 15-pin DB15 connector commonly for the CRT VGA display.

Pin	Signal
1	Red
2	Green
3	Blue
4	N.C
5	Ground (GND)
6	AnalogGround（AGND）
7	AnalogGround（AGND）
8	AnalogGround（AGND）
9	N.C
10	Ground (GND)
11	N.C
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLK



CHAPTER 3
HARDWARE DESCRIPTION

3.1 Microprocessors

The SBC84826 Series supports Intel® Atom™ processor Z510PT which makes your system operated under Windows XP, and Linux environment. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The SBC84826 Series uses Award Plug and Play BIOS with a single 8Mbit FWH Flash, DMI, Plug and Play.

3.3 System Memory

The SBC84826 Series industrial CPU card supports one 200-pin unbuffered DDR2 SODIMM socket for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

3.4 I/O Port Address Map

The Intel® Atom™ processor Z510PT can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-02D 024-025 028-029 02C-02D	Interrupt controller #1
02E-02F	Forwarded to LPC(LPC Super I/O 2)
030-031 034-035 038-039 03C-03D	Interrupt controller #2
040-043 050-053	Timer/Counter (8254)
04E-04F	Forwarded to LPC(LPC Super I/O 1)
060-06F	Forwarded to LPC(Microcontroller for Keyboard Controller)
070-077	Real time clock, NMI
080-091	DMA page register
092	Processor I/F(Reset Generator)
093-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Processor I/F
0F8-0FF	Math processor
170-177	Forward to SATA(SATA Controller)
1F0-1F7	Forward to SATA(SATA Controller)
250-25F	HR I/O
300-31F	Prototype card
376	Forward to SATA(SATA Controller)
378-37F	Parallel Port (LPT)
380-38F	SDLC #2
3A0-3AF	SDLC #1

Address	Devices
3B0-3BF	MDA video card
3C0-3CF	EGA card
3D0-3DF	CGA card
3F6	Forward to SATA (SATA Controller)
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)

3.5 Interrupt Controller

The SBC84826 Series is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	—
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	—
IRQ11	—
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

CHAPTER 4
PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2 Control Keys

Up arrow	Move to the previous item
Down arrow	Move to the next item
Left arrow	Move to the left side
Right arrow	Move to the right side
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"−" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

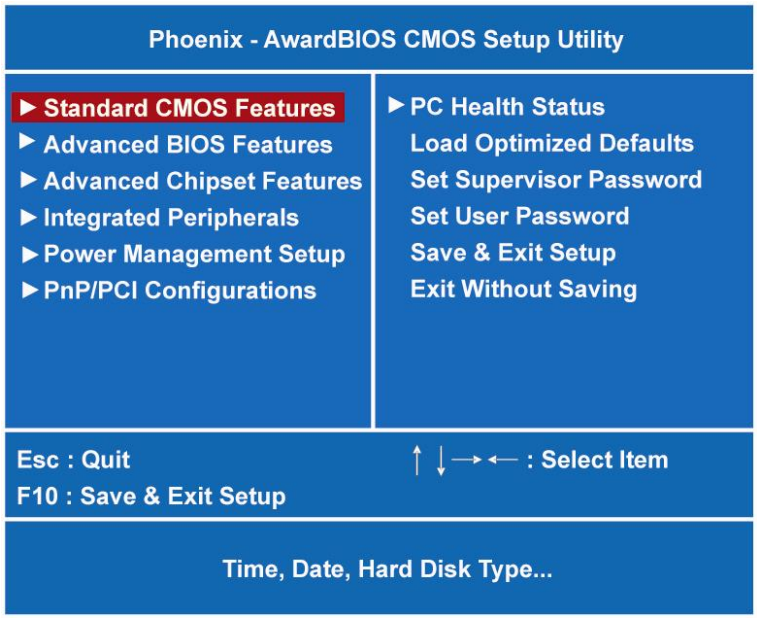
4.3 Getting Help

Main Menu The online 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 out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

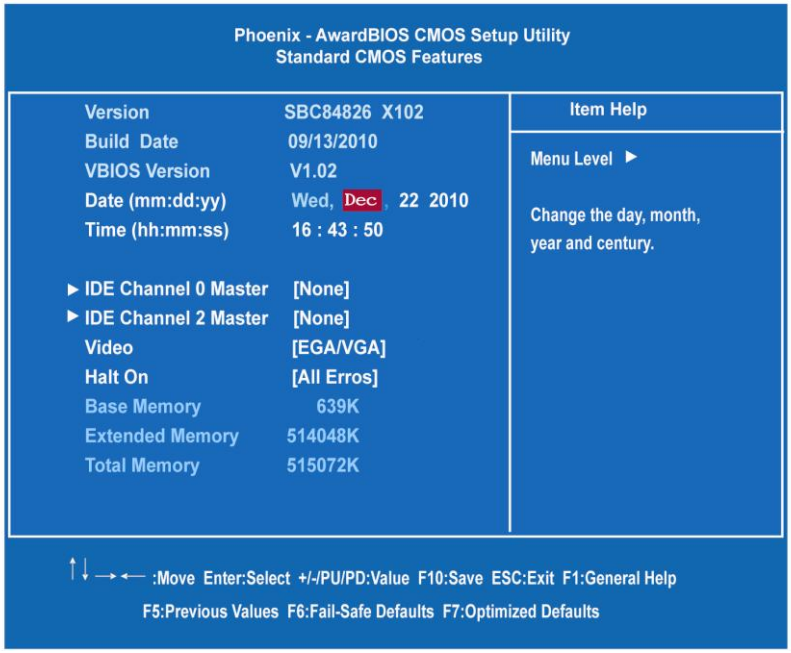


Note: If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.

Note: It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5 Standard CMOS Features

The Standard CMOS Features Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> key to select the value you want in each item.



- **Date**

  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

- **Time**

  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0 / 2 Master**

  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type. If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer. If the HDD interface controller supports ESDI, select "Type 1". If the HDD interface controller supports SCSI, select "None". If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Video**

  Select the display adapter type for your system.

- **Halt On**

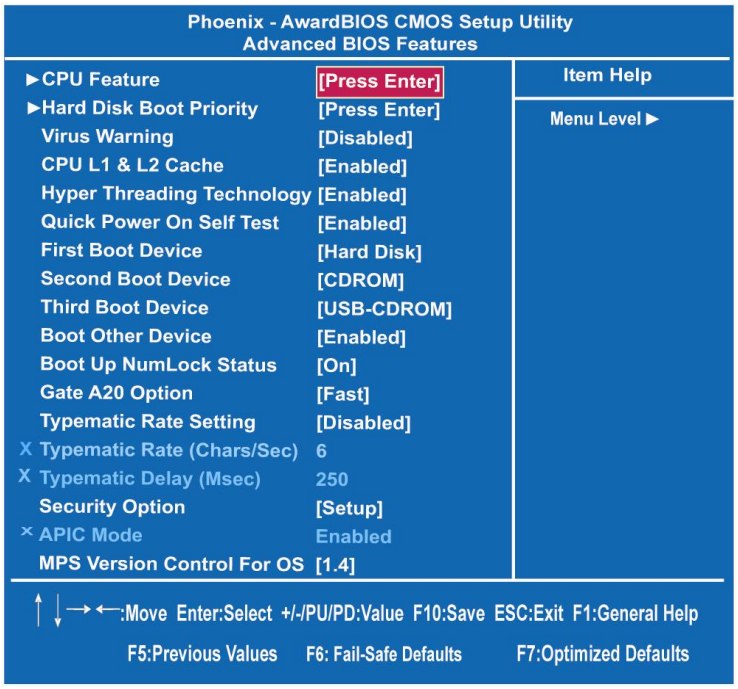
  This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	Whenever BIOS detects error, the system booting will not halt on .
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But	The system booting will not stop for a keyboard
Keyboard	error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

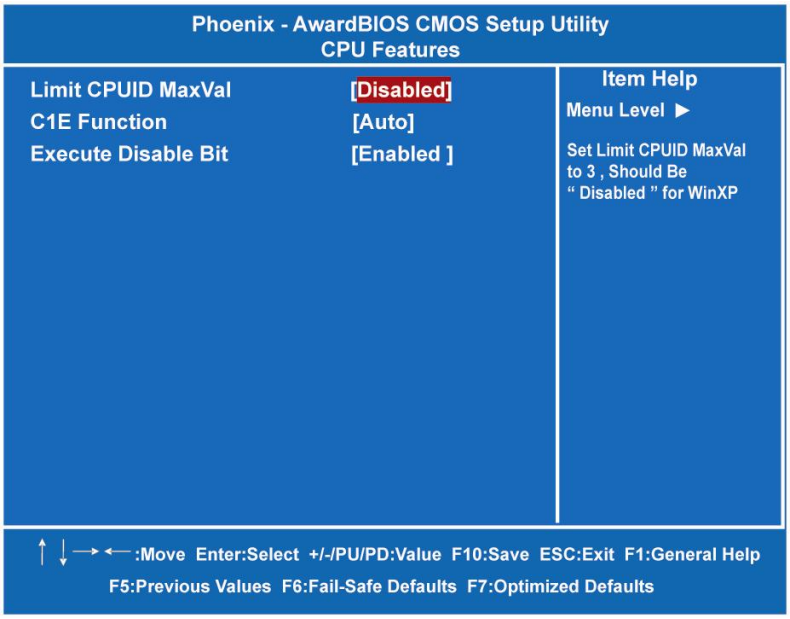
4.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.



- **CPU Features**

  Scroll to this item and press <Enter> to view the CPU Feature sub menu.



  - **Limit CPUID MaxVal**

    When set to "Enable", this item limits the CPUID maximum value to 3, which is usually required for older OS like Windows NT4.0.

    Leave this item at its default "Enable" settings for OS like Windows XP.

  - **C1E Function**

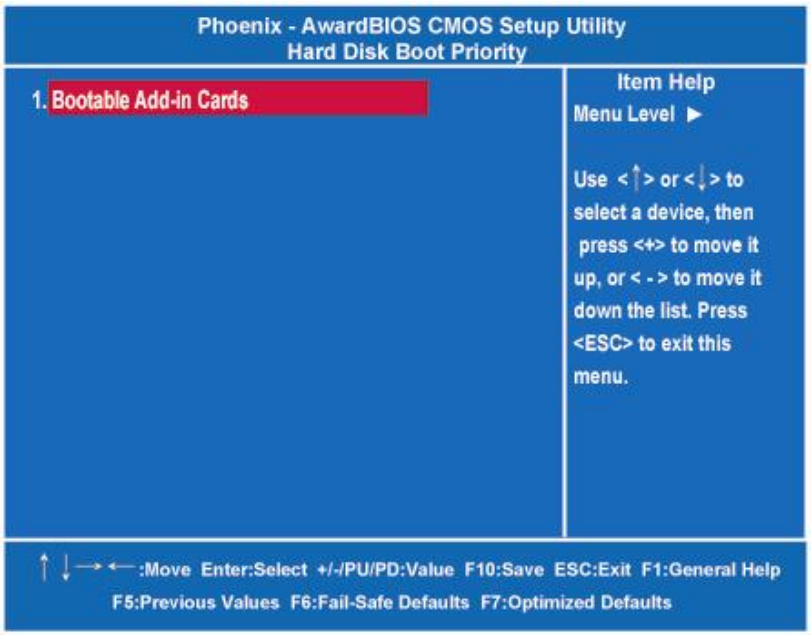
    This item appears only for certain processor with the C1E (Enhanced Halt State) function.

  - **Execute Disable Bit**

    This item appears only for certain processors with the Execute Disanle Bit (XD bit) feature. When set to "Enable", this item allows the processor to prevent data pages from being used by malicious software to execute code and provide memory protection.

- **Hard Disk Boot Priority**

  Scroll to this item and press <Enter> to enter the submenu where the hard disks detected can be selected for the booting sequence to boot up system.



  - **Virus Warning**

    Use this item to Enable/Disable the Virus Warning.

  - **CPU L1 & L2 Cache**

    Use this item to Enable/Disable CPU L1 & L2 Cache.

  - **Hyper-Threading Technology**

    This item is used to enable the functionality of the processor with Hyper-Threading Technology and will appear only when using such processor.

    The Hyper-Threading Technology help the PC work more efficiently by maximizing processor reaources and enabling a single processor to run two separate threads of software simultaneously, bringing forth greater performance and system responsiveness when running multiple application.

- **Quick Power On Self Test**

  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**

  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. There is a wide range of options for your selection.

- **Boot Other Device**

  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "Enabled".

- **Boot Up NumLock Status**

  Set the the Num Lock status when the system is powered on.

  The default value is "On".

- **Gate A20 Option**

  Use this item to switch on or off A20 control by port 92.

- **Typematic Rate Setting**

  Use this item to Enable/Disable the typrmatic control items as the below

  - Typematic Rate (Chars/Sec)

    This item controls the speed at which the system registers auto repeated keystrokes.

  - Typematic Delay (Msec)

    This item sets the key press delay time before auto repeat begins.

- **Security Option**

  This item allows you to limit access to the system and Setup, or just to Setup. The default value is "Setup".

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

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

- **APIC Mode**

  APIC (Advanced Programmable Interrupt Controller) mode is enabled that provides symmetric multiprocessing (SMP) for systems.

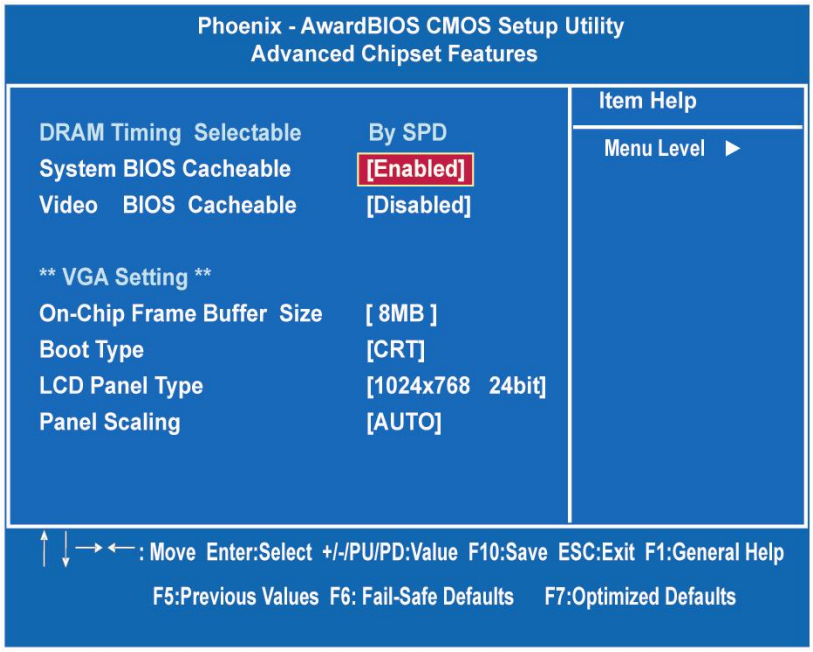
- **MPS Version Control For OS**

  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

Press <Esc> to return to the Main Menu page.

4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.



- **DRAM Timing Selectable**

  Use this item to increase the timing of the memory. This is related to the cooling of memory.

- **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 default value is "Disabled".

- **Video BIOS Cacheable**

  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

  ***** VGA Setting *****

- **On-Chip Frame Buffer Size**

  Use this item to set the VGA frame buffer size.

- **Boot Type**

  This item is to select Display Device that the screen will be shown.

- **LCD Panel Type**

  This item is to allow you to adjust the panel resolution.

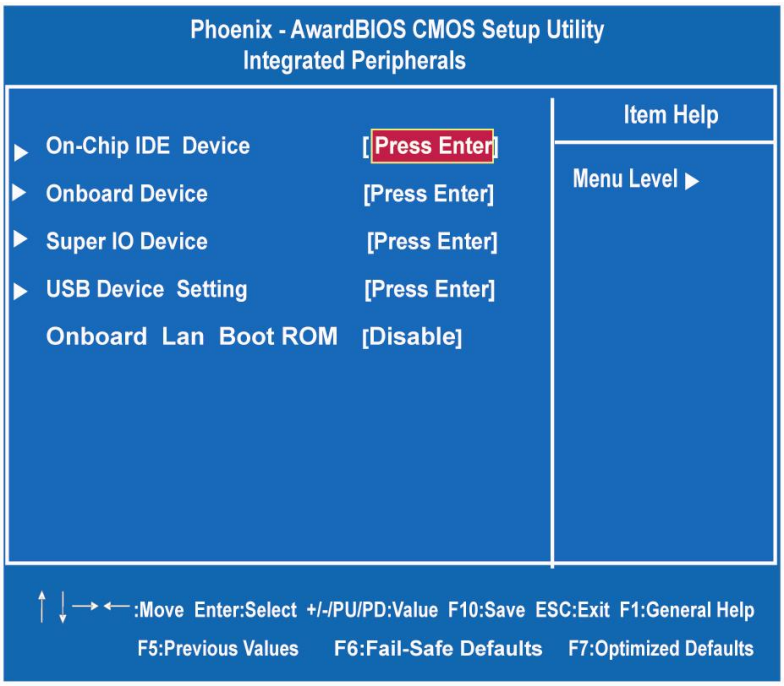
- **Panel Scaling**

  This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.

Press <Esc> to return to the Main Menu page.

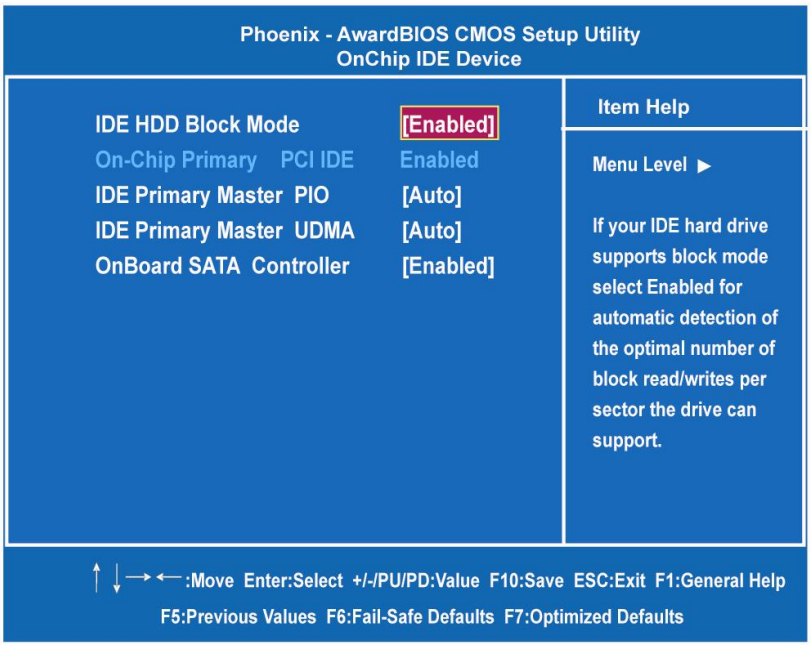
4.8 Integrated Peripherals

This section allows you to configure your OnChip IDE Device, Onboard Device, Super IO Device and USB Device Setting.



- **OnChip IDE Device**

  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.



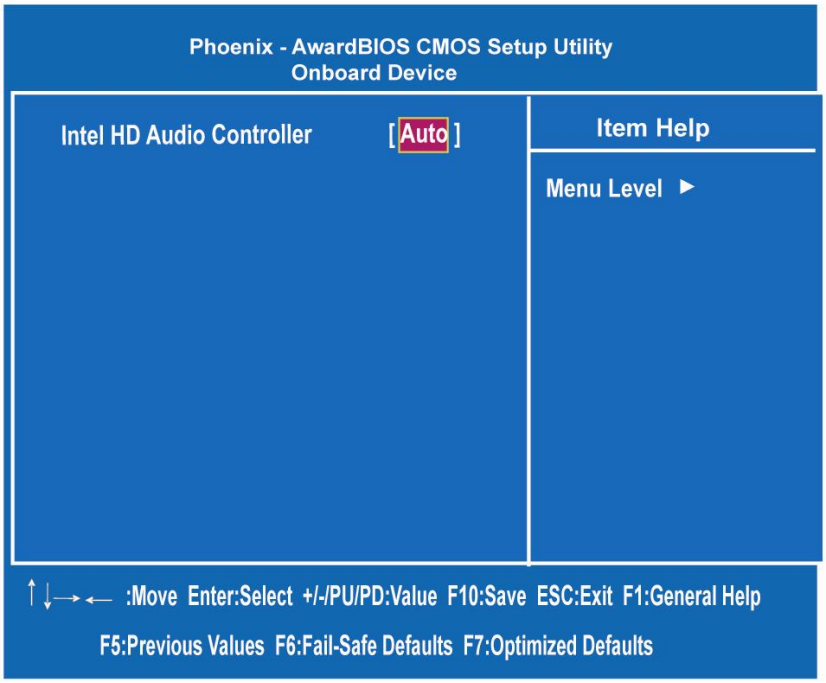
  - IDE HDD Block Mode

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

  Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Device**

  Scroll to this item and press <Enter> to view the sub menu Onboard Device.

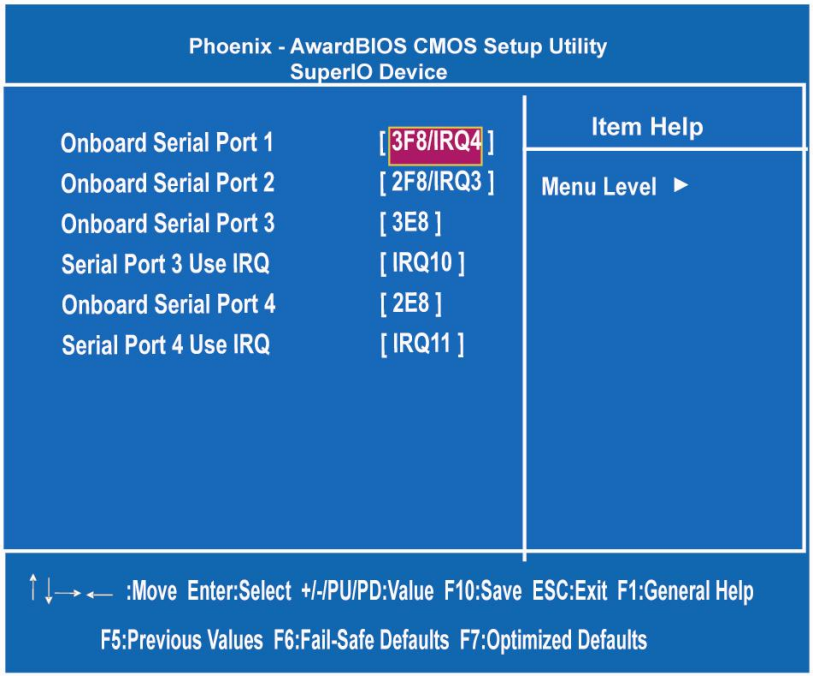


  - Intel HD Audio Controller

    Choose Auto to enable an Intel HD Audio controller.

  Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**



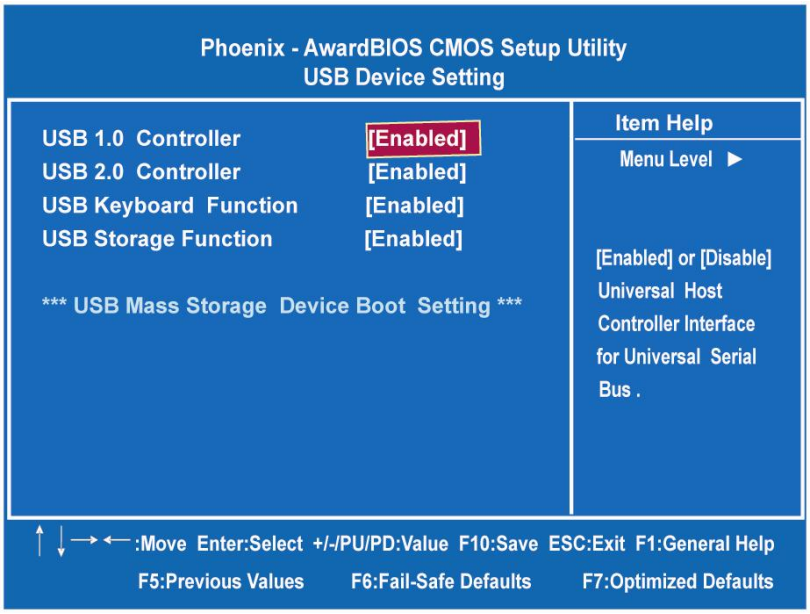
  - Onboard Serial Port 1/2/3/4

    Select an address and corresponding interrupt for the serial port. There are several options for your selection.

Press <Esc> to return to the Integrated Peripherals page.

- **USB Device Setting**

  Scroll to this item and press <Enter> to view the sub menu USB Device Setting.



Press <Esc> to return to the Integrated Peripherals page.

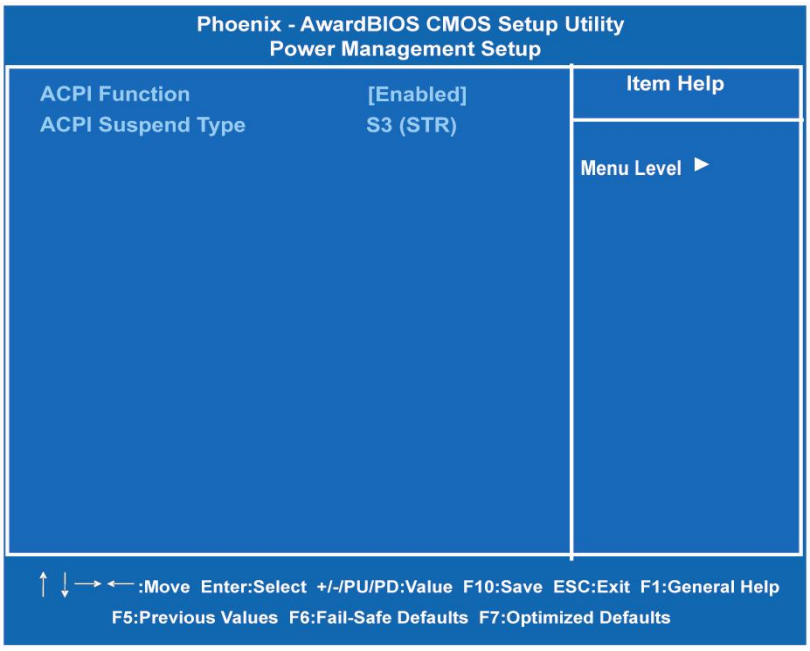
- **Onboard Lan Boot ROM**

  Use this item to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

Press <Esc> to return to the Main Menu page.

4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.



- **ACPI Function**

  This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system and communicates to PC and system devices for improved power management.

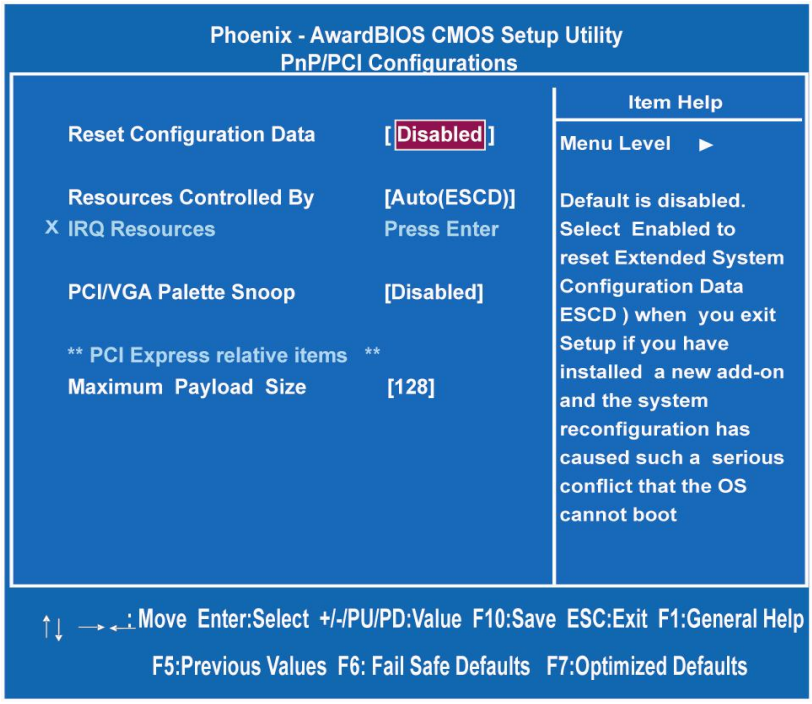
  The function is always "Enabled".

- **ACPI Suspend Type**

  Suspend to RAM.

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.



- **Reset Configuration Data**

  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot.

- **Resources Controlled By**

  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment and Used DMA fields disappear as the BIOS automatically assign them. The default value is "Auto". The other option is "Manual".

- **IRQ Resources**

  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:

  Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

  PCI/ISA PnP Devices compliant with the Plug and Play standard,

  Whether designed for PCI or ISA bus architecture.The default value is "PCI/ISA PnP".

- **PCI/VGA Palette Snoop**

  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

  ** PCI Express relative items **

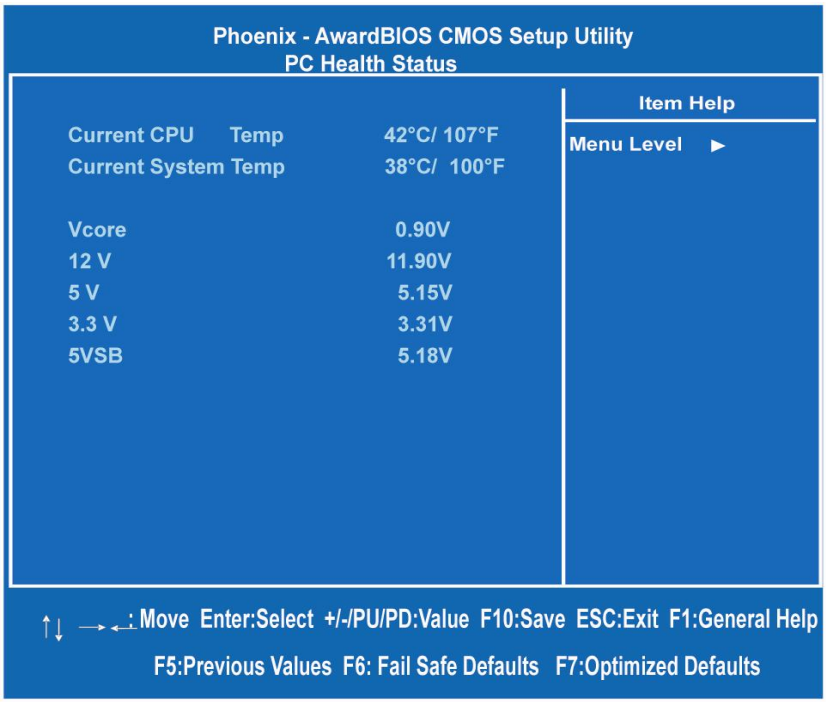
- **Maximum Payload Size**

  When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

4.11 PC Health Status

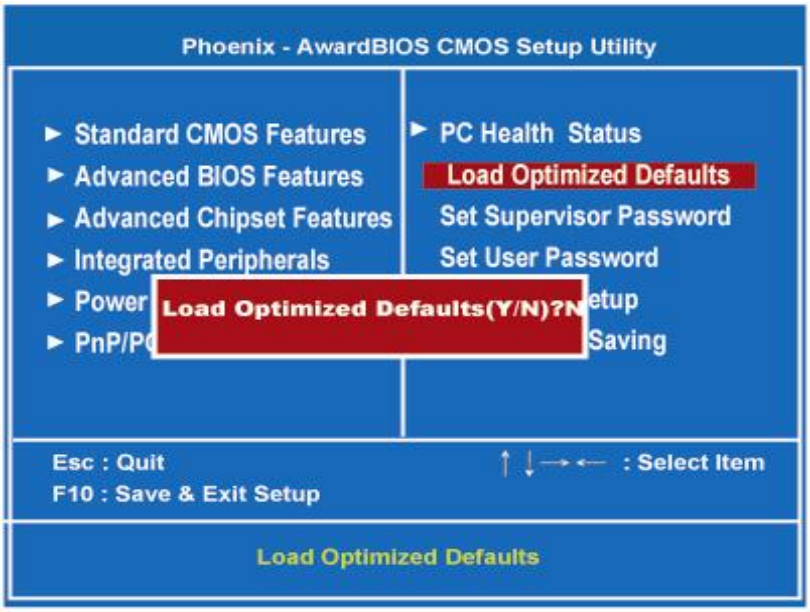
This section supports hardware monitoring that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



Press <Esc> to return to the Main Menu page.

4.12 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.13 Set Supervisor / User Password

You can set a supervisor or user password, or both of them. The differences between them are:

- **Supervisor password: You can enter and change the options on the setup menu.**
- **User password: You can just enter, but have no right to change the options on the setup menu.**

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

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

PASSWORD DISABLED

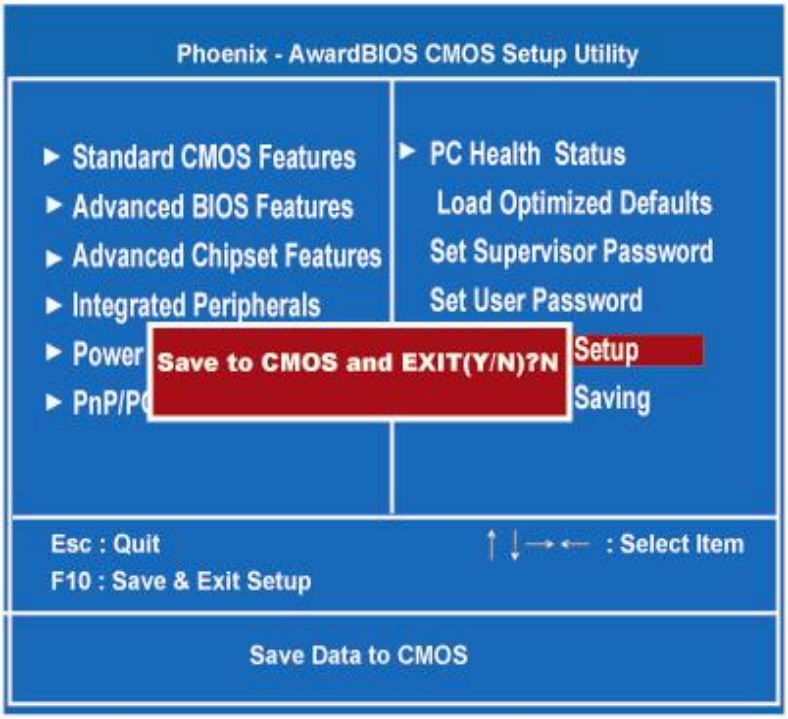
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

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

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

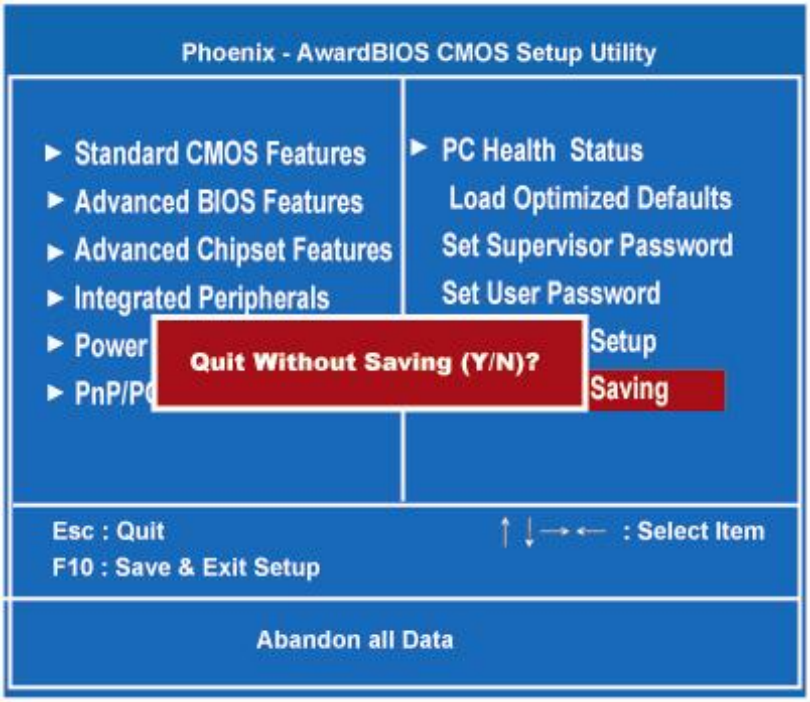
4.14 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



4.15 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.



CHAPTER 5
INSTALLATION OF DRIVERS

The device drivers are located on the Product Information CD-ROM that comes with the SBC84826 Series package. The auto-run function of drivers will guide you to install the utilities and device drivers under a Windows system. You can follow the onscreen instructions to install these devices:

„ Chipset
„ VGA
„ LAN
„ Audio

5.1 Installing Chipset Driver

Run the SETUP.EXE program from the driver directory in your

An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

Please wait while running the following setup operations.


Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework


Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
intel
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) Q963/Q965 PCI Express Root Port - 2991
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH8DO LPC Interface Controller - 2814
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 4 - 2845
Version: 8.3.0.1013
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 5 - 2847
Version: 8.3.0.1013
Next
Intel® Installation Framework

Click "Finish" to complete the setup process.

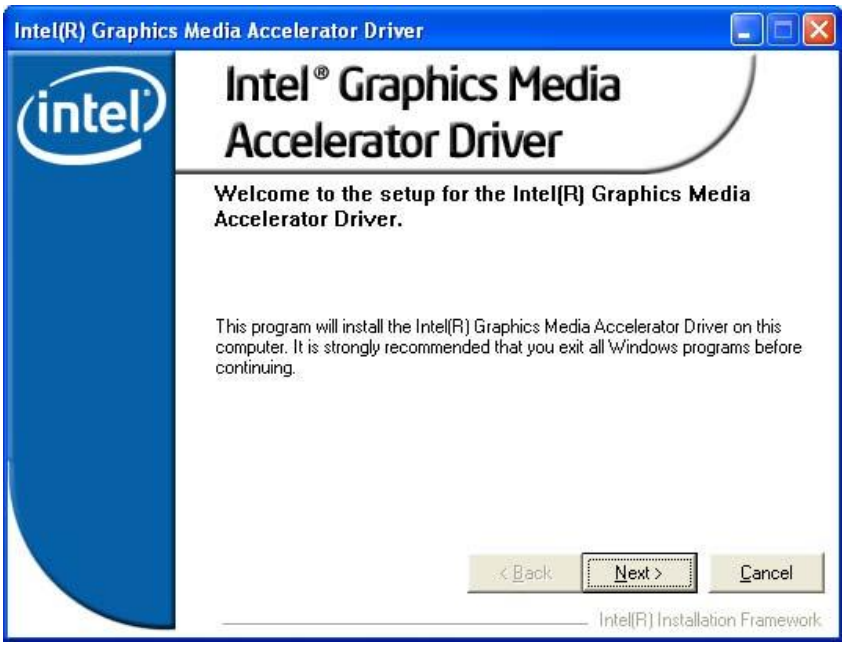
You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and go on next step.

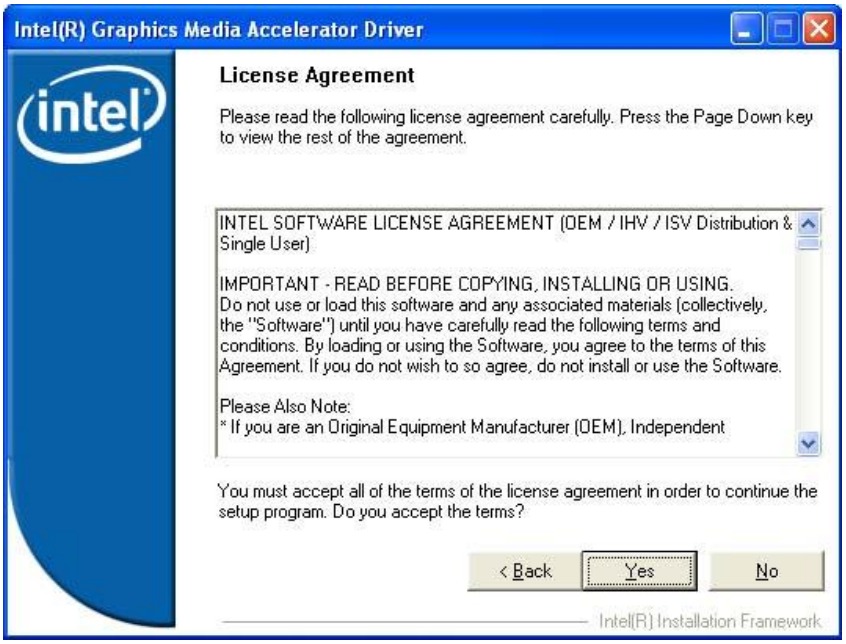
5.2 Installing VGA Driver

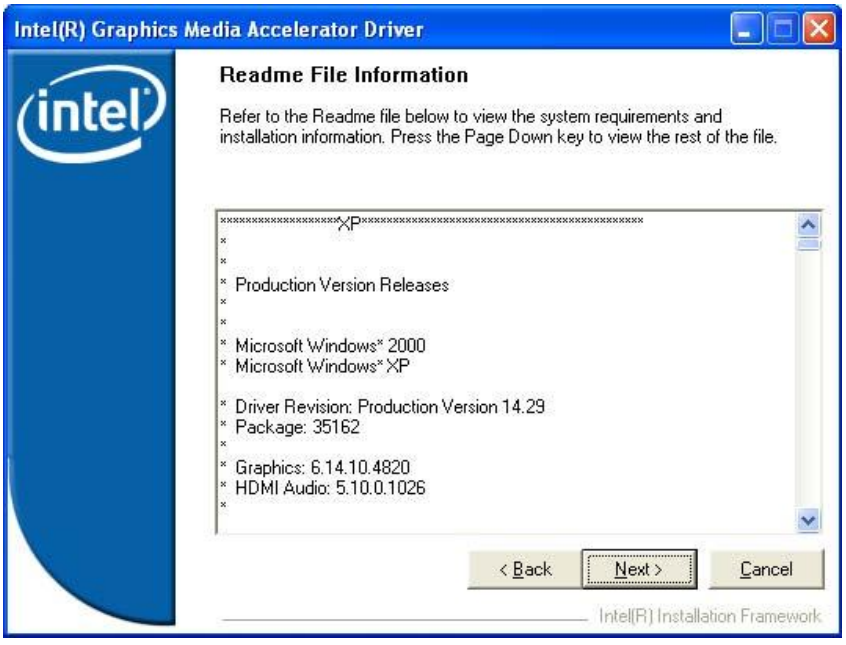
Run the SETUP.EXE program from the driver directory in your driver CD. Click "Next" to next step.

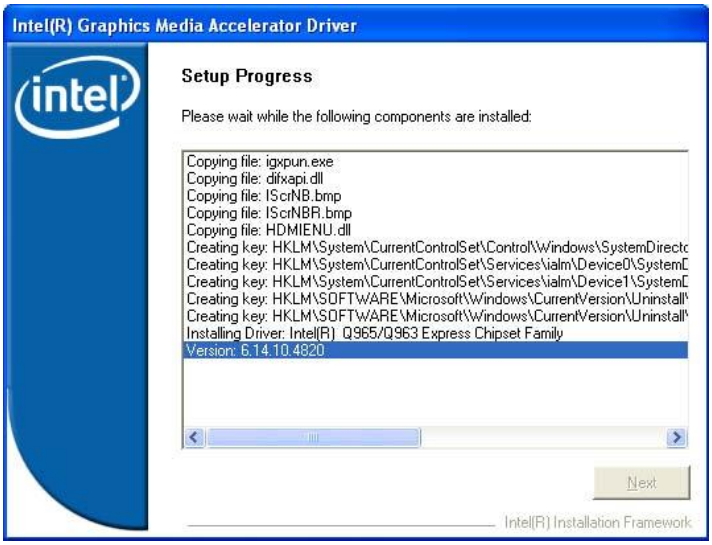
An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

The message of Readme File Information appears to show you the system requirements and installation information. Please click "Next".



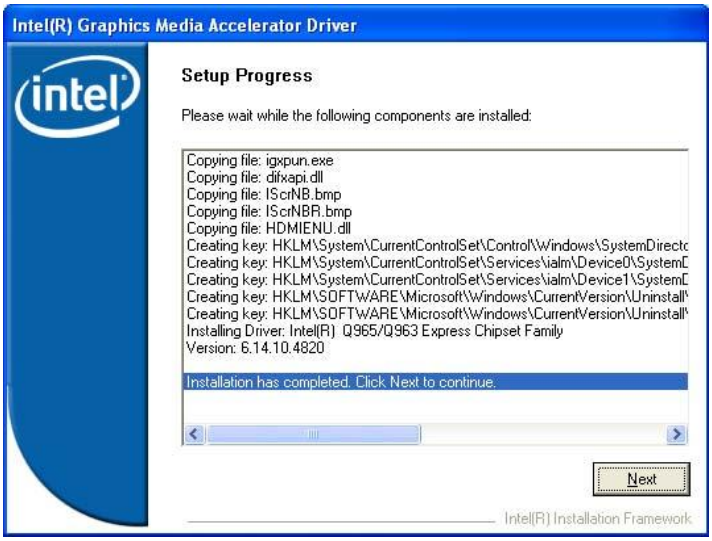

Intel(R) Graphics Media Accelerator Driver
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Framework

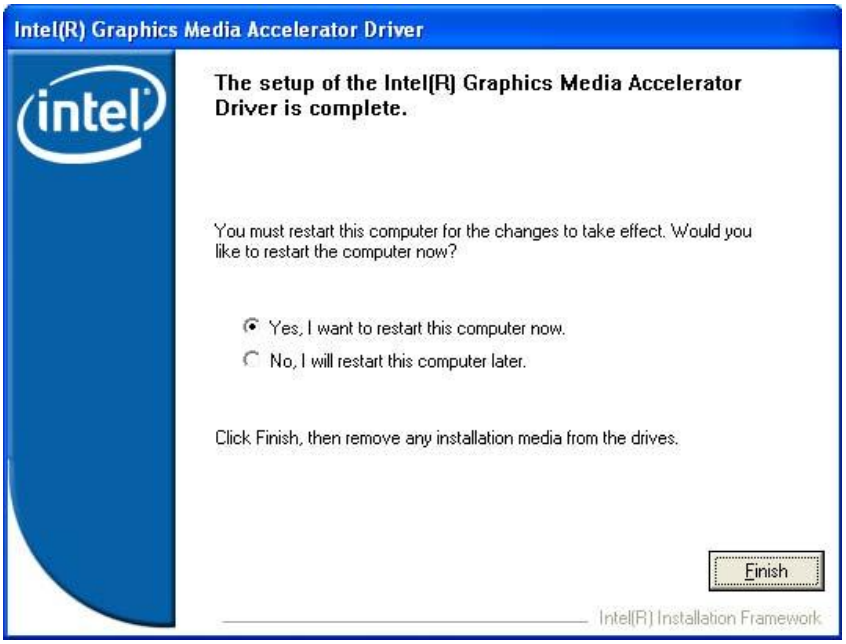

Intel(R) Graphics Media Accelerator Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information. Press the Page Down key to view the rest of the file.
**********XP**********
* Production Version Releases
* Microsoft Windows* 2000
* Microsoft Windows* XP
* Driver Revision: Production Version 14.29
* Package: 35162
* Graphics: 6.14.10.4820
* HDMI Audio: 5.10.0.1026
< Back
Next >
Cancel
Intel(R) Installation Framework



When this message appears, please click "Next".

You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and click "Finish" to complete the installation.





Note: After installing VGA driver, if you restart, please press Hot Key "Ctrl+Alt+F1" to back VGA because the default display is LVDS LCD.

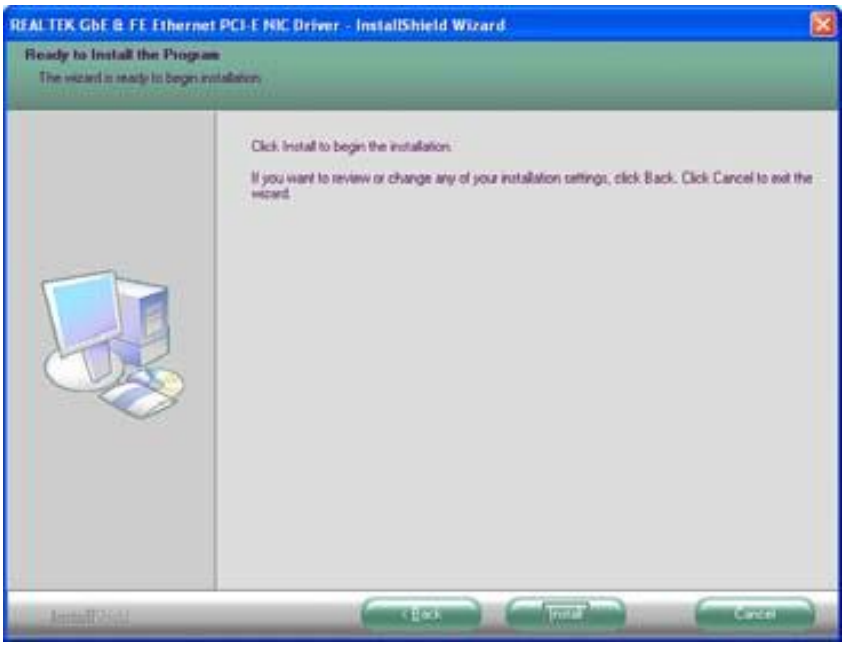
5.3 Installing LAN Driver

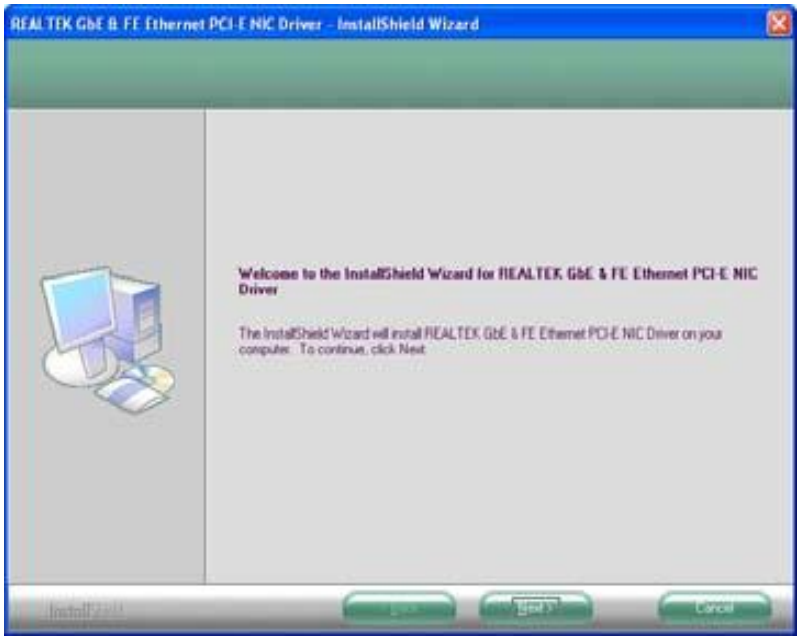
Run the InstallShield Wizard for Ethernet from the driver

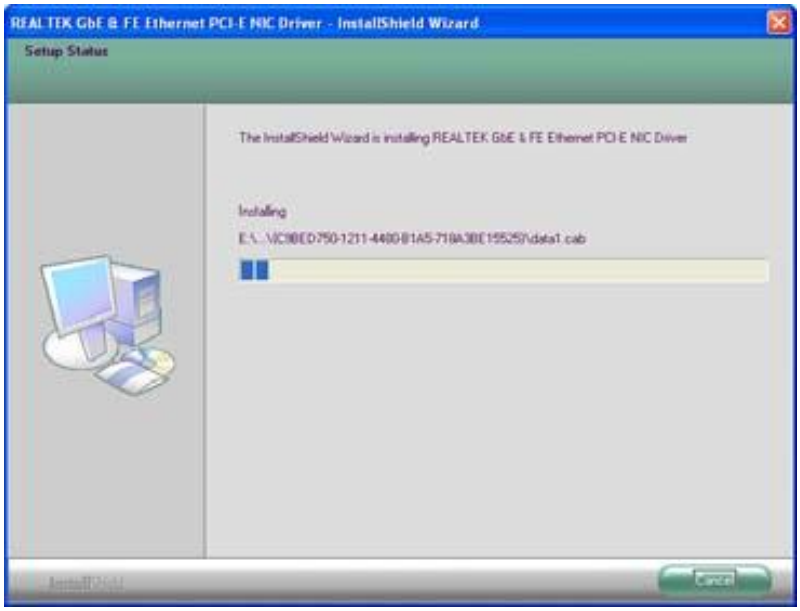
Click "Install" to start the installation.

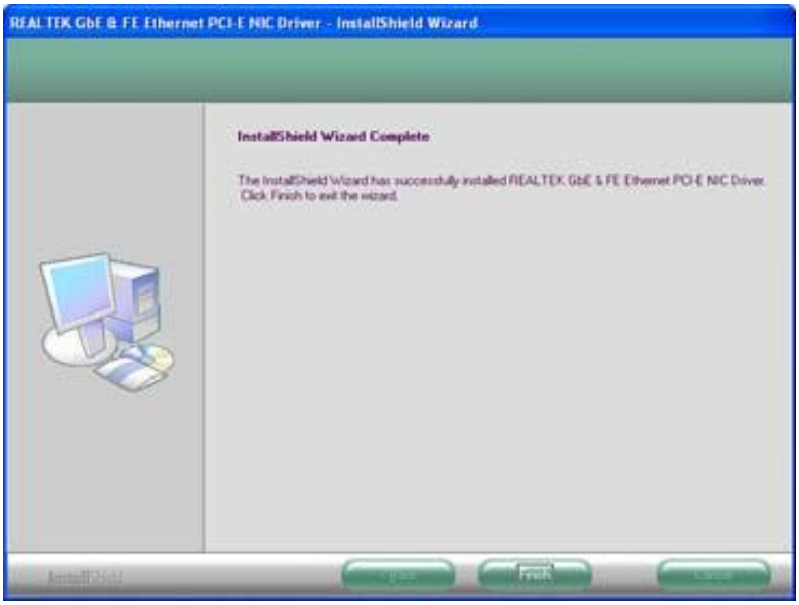
Please wait while running the following installation operation.

Click "Finish" to complete the installation.




REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Setup Status
The InstallShield Wizard is installing REALTEK GbE & FE Ethernet PCI-E NIC Driver
Installing


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
Finish

5.4 Installing Audio Driver

Run the InstallShield Wizard for Audio from the driver directory in yourdriver

CD. Click "Next" to next step.

Please wait while running the following installation operation.


Realtek High Definition Audio Driver R1.90
Setup Status
start

You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and click "Finish" to complete the installation.

MEMO:

APPENDIX A
WATCHDOG TIMER

What is Watchdog Timer

(From Super I/O W83627DHG-P)

The integrated Watchdog Timer can be set up by programming. There are 1~255 levels available. As long as the vaule of timer is set, after enabling, the countdown of the value is starting. It needs to reset or disable watchdog, otherwise auto-reset will be running when the value is counted to 0.

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

How to Use the Watchdog Timer

- **Using the Watchdog Function by debug command of DOS:**

Start
↓
Un-Lock WDT:
O 2E 87 ; Un-lock super I/O
O 2E 87; Un-lock super I/O
↓
WDT Function:
O 2E 2D ;
O 2F 20; Mulit function pin select for WDT
↓
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT:
O 2E 30
O 2F 01
↓
Set Second or Minute:
O 2E F5
O 2F NN=00 or 08 (See below table)
↓
Set base timer :
O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
; IF to disable WDT:
O 2E 30
O 2F 00 ; Can be disable at any time

- **Timeout Value Range:**
  - 1 to 255
  - Minute / Second

- **Program Example:**

  Watchdog Timer can be set to system reset after M-second timeout.

O 2E 87	
O 2E 87	
O 2E 2D	
O 2F 20	
O 2E 07	
O 2F 08	Logical Device 8
O 2E 30	Activate
O 2F 01	
O 2E F5	
O 2F N	Set Minute or Second N=08 (Min),00(Sec)
O 2E F6	
O 2F M	Set Value M = 00 ~ FF

- **Assemble Sample Code:**

```
;Enable WDT:
      mov dx,2Eh
      mov  al,87h                          ; Un-lock super I/O
      out   dx,al
      out   dx,al

;WDT Function:
      mov dx,2Eh
      mov al,2dh      ;  Mulit function pin select for WDT
      out   dx,al
      mov             dx,2Fh
      mov al,20h
      out   dx,al

;Select Logic device:
      mov dx,2Eh
      mov       al,07h
      out       dx,al
      mov dx,2Fh
      mov       al,08h
      out       dx,al

;Activate WDT:
      mov       dx,2Eh
      mov       al,30h
      out       dx,al
      mov       dx,2Fh
      mov       al,01h
      out       dx,al

;Set Second or Minute :
      mov       dx,2Eh
      mov       al,0F5h
      out       dx,al
      mov       dx,2Fh
      mov       al,Nh       ;N=00h or 08h(See below Note)
      out       dx,al
```

```
;Set base timer :
      mov       dx,2Eh
      mov       al,0F6h
      out       dx,al
      mov       dx,2Fh
      mov       al,Mh      ;M=00h,01h,02h,.....FFh (Hex),Value=0 to 255
      out       dx,al; (See below Note)

;Disable WDT:
      mov       dx,2Eh
      mov       al,30h
      out       dx,al
      mov       dx,2Fh
      mov       al,00h     ;Can be disable at ant time
      out       dx,al
```

Note: When N's value is 00h, the time base is set second.

M = 00: Time-out Disable
01: Time-out occurs after 1 second
02: Time-out occurs after 2 seconds
03: Time-out occurs after 3 seconds
..
FF: Time-out occurs after 255 seconds

When N's value is 08h, the time base is set minute.

M = 00: Time-out Disable
01: Time-out occurs after 1 minute
02: Time-out occurs after 2 minutes
03: Time-out occurs after 3 minutes
.FFh: Time-out occurs after 255 minutes

MEMO:

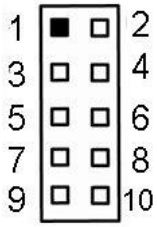
APPENDIX B
DIGITAL I/O

- **Digital I/O Software Programming**

Digital I/O has 8bits (DIO0~7), 3 input and 5 output. Every bit is set pull-high with +5V level (main power) as default.

Hardware default is 3 IN 5 OUT. The default set all of input and output pin to "1".

Pin	Signal
1	Digital Input 0(Bit0)
2	Digital Output 0(Bit3)
3	Digital Input 1(Bit1)
4	Digital Output 1(Bit4)
5	Digital Input 2(Bit2)
6	Digital Output 2(Bit5)
7	Ground
8	Digital Output 3(Bit6)



Using the DIO Function by debug command of DOS

- **Program deafault setting: 3IN/5OUT (W83627DHG-P):**

GPI	GPO
O 2E 87	O 2E 87
O 2E 87	O 2E 87
O 2E 07	O 2E 07
O 2F 09	O 2F 09
O 2E 30	O 2E 30
O 2F 02	O 2F 02
O 2E F9	O 2E F9
O 2F 00	O 2F 00
O 2E F0	O 2E F0
O 2F 07	O 2F 07
O 2E F1	O 2E F1
I 2F	O 2F M (Note1)

- **Digital Input/Output Assembler Sample Code :**

```
 ; Start set DIO program :
      mov       dx,2Eh
mov       al,87h      ;Un-lock super I/O
      out       dx,al
out       dx,al

mov       dx,2Eh
mov       al,07h
out       dx,al
mov       dx,2Fh
mov       al,09h
out       dx,al

mov       dx,2Eh
mov       al,30h
out       dx,al
mov       dx,2Fh
      mov       al,02h
      out       dx,al
mov       dx,2Eh
mov       al,F9h
out       dx,al
mov       dx,2Fh
mov       al,00h
out       dx,al

;Programming DIO as 3in/5out.

mov       dx,2Eh
mov       al,F0h
out       dx,al
mov       dx,2Fh
mov al,07h      ; The value 07h define the DIO as input 3bits
out       dx,al      ; and output 5bits(3in/5out). (Note2)
```

- **Digital Input**

```
;Read DIO digital input pins' value.
mov     dx,2Eh
mov     al,0F1h
out     dx,al
mov     dx,2Fh    ; Bit0 ~ Bit2 represent DIO0 ~ DIO2
in      dx, al    ; Show Bit0 ~ Bit2 DIO0~2 state.
N                 ;(1 High, 0 Low, Note3)
```

- **Digital Output**

```
; Set DIO digital output pins' value.
mov     dx,2Eh
mov     al,0F1h
out     dx,al
mov     dx,2Fh
mov     al,M      ;Bit3 ~ Bit7 represent DO0 ~ DO4,
out     dx,al     ;Set output value M
                  ;Bit 3 ~ Bit 7 are DO Pin 0~4 state. (1 High , 0 Low)
                  ;When M is FF, all DO pins are high.( Note1)
```

Note1:

When M=FFh

DIO7	DIO6	DIO5	DIO4
1	1	1	1
DIO3	**DIO2**	**DIO1**	**DIO0**
1	1	1	1

When M=D7h

DIO7	DIO6	DIO5	DIO4
1	1	0	1
DIO3	**DIO2**	**DIO1**	**DIO0**
0	1	1	1

Note2:

The N has 8bits. Every bit's value is either "1" or "0".

" 1" means that the bit is programmed to input.

" 0" means that the bit is programmed to output.

07h=00000111b.

DIO7	**DIO6**	**DIO5**	**DIO4**
Output	Output	Output	Output
DIO3	**DIO2**	**DIO1**	**DIO0**
Output	Input	Input	Input

Note3:

When DIO0~2 connect external device.

The device sets DIO0~2 are high.

N=FF

DIO7	**DIO6**	**DIO5**	**DIO4**
1	1	1	1
DIO3	**DIO2**	**DIO1**	**DIO0**
1	1	1	1

When DIO0~2 connect external device.

The device sets DIO0 is low and DIO1~2 are high.

N=FE

DIO7	**DIO6**	**DIO5**	**DIO4**
1	1	1	1
DIO3	**DIO2**	**DIO1**	**DIO0**
1	1	1	0

MEMO: