



SBC84621 Series
AMD[®] Geode GX3 All-In-One
Capa Board
User's Manual

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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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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.

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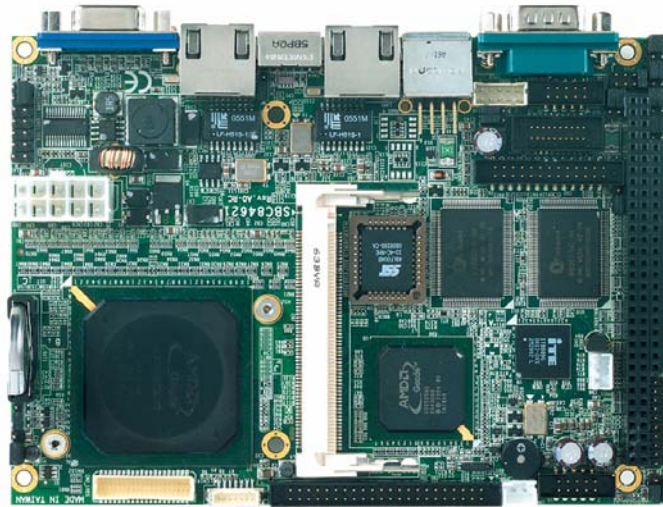
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MEMO


Chapter 1

Introduction




The **SBC84621 Series** is a Capa board with support for AMD[®] LX800 CPU at FSB 500 MHz (optional LX700 433 MHz) that features graphics, Fast Ethernet and audio interface. The board can be adapted to AMD[®] processors with its designing for space-limited applications, and a standard format conforming to the size of a 3.5" Hard Disk drive. To simplify the system integration, super I/Os, LVDS, Ethernet and solid state disk are provided to make all on one single board. Four serial ports (3 x RS-232, 1 x RS-232/422/485) with +5V/12V power capability make a unique embedded feature to apply an extensive array of PC peripherals. The industrial-grade construction of **SBC84621 Series** allows your system to endure the continuous operation in hostile environments where most require stability and reliability. The system dependability of **SBC84621 Series** can be enhanced by its built-in watchdog timer, a special industrial feature not commonly seen on other motherboards.

1.1 Specifications

- CPU
 - AMD[®] LX800 (GX3) and optional LX700 processors
 - System Chipset
 - CS5536AD
 - CPU Frequency
 - FSB 533 MHz (optional LX700 433 MHz)
 - BIOS
 - Phoenix-Award BIOS, Y2K compliant
 - 4Mbit Flash, DMI, Plug and Play
 - PXE Ethernet Boot ROM
 - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
 - System Memory
 - One 200-pin DDR SODIMM socket
 - Maximum up to 1GB DDR333 memory
 - Onboard IDE
 - One PATA-100 with 40-pin 2.0 pitch box-header
 - PATA-100 as PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100
 - CompactFlash Socket
 - One Compact Flash Type II Socket
 - Onboard Multi-I/O
 - One PCI/104 slot
-  **NOTE** The PCI/104 slot supports I/O mode module only.
- Three RS-232, one RS-232/422/485
- USB Interface
 - Four USB ports with fuse protection and comply with USB Spec. Rev. 2.0

- **Real Time Clock**
 - Integrated CS5536AD
- **Watchdog Timer**
 - 1~255 seconds; up to 255 levels
- **Graphics/Streaming**
 - Integrated LX800
 - Unified Memory Architecture shares system memory up to 254M
 - LCD Interface -- support up to 24-bit LVDS
 - Single display mode maximum resolutions
 - ◆ CRT -- 1600 x1200 x 32bpp
 - LCD -- 1600 x 1200 x 32bpp
- **Ethernet**
 - Realtek RTL8139DL PCI Bus 10/100M Base-T
 - Wake On LAN (via ATX power supply)
 - Equipped with RJ-45 interface
- **Audio**
 - Realtek ALC202A AC'97 codec audio
 - Amplify for speaker-out with 1W for each channel
 - MIC-in, Line-in, Line-out/Speaker-out (jumper selectable)
- **Power Management**
 - ACPI (Advanced Configuration and Power Interface) / APM
- **Form Factor**
 - **3.5" hard disk drive form factor**

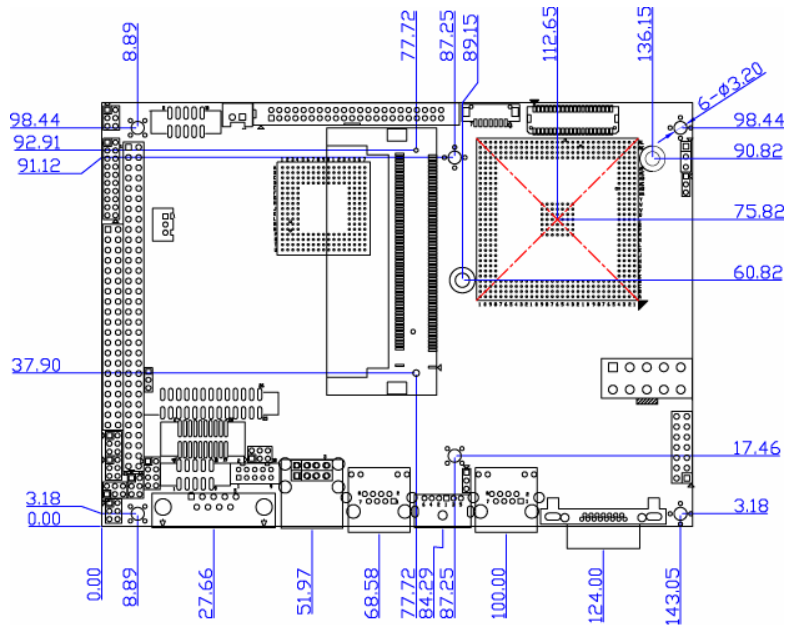
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1.2 Utilities Supported

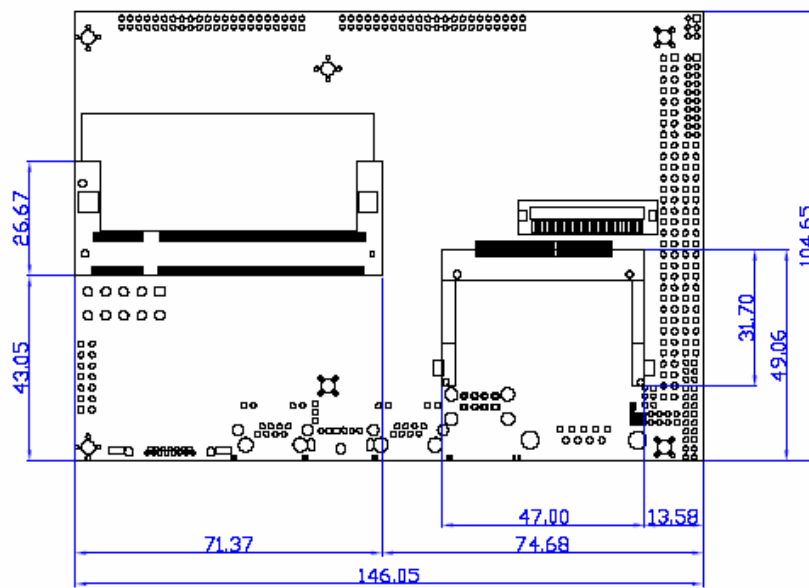
- Chipset Driver
- VGA Driver
- PCI Bridge Driver
- LAN Driver
- Audio Driver

Chapter 2 Jumpers and Connectors

2.1 Board Dimensions and Fixing Holes

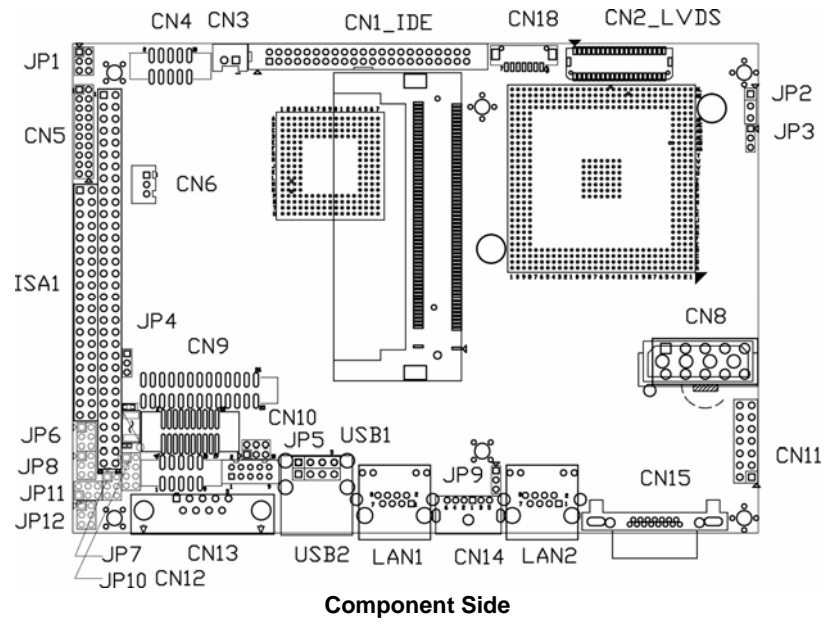



Component Side

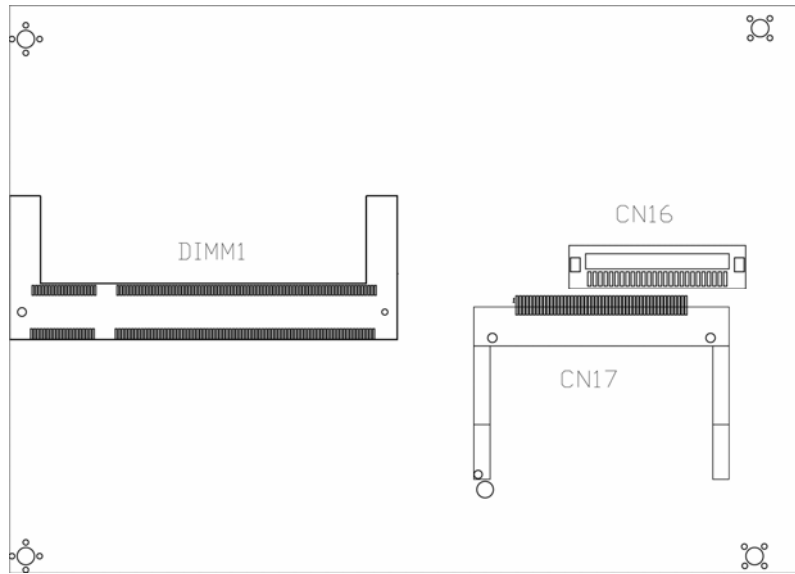


Solder Side

2.2 Board Layout



 **NOTE** The limited height for component side is 30mm.



Solder Side

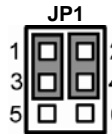
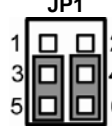
2.3 Jumper Settings

Proper jumper settings configure the **SBC84621 Series** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Default Setting		Jumper Setting
JP1	Audio Line Out/Speaker Out: Line Out		Short 1-3, 2-4
JP2	LVDS Voltage select : 3.3V		Short 1-2
JP3	Clear CMOS Setting : Normal		Short 1-2
JP4	Compact Flash Power Select : 3.3V		Short 1-2
JP5	COM1 Mode Select: RS-232		Short 3-5, 4-6
JP6	COM1 Mode Select	CN13 Pin 1: DCD	Short 3-5
		CN13 Pin 9: RI	Short 4-6
JP7	COM1 Mode Select: RS-232		Short 3-5, 4-6
JP8	COM2 Mode Select	CN10 Pin 1: DCD	Short 3-5
		CN10 Pin 8: RI	Short 4-6
JP9	Compact Flash Select : Slave		Short 1-2
JP10	COM1 Mode Select: RS-232		Short 1-2
JP11	COM4 Mode Select	CN10 Pin 11: DCD	Short 3-5
		CN10 Pin 18: RI	Short 4-6
JP12	COM3 Mode Select	CN12 Pin 1: DCD	Short 3-5
		CN12 Pin 8: RI	Short 4-6



2.3.1 Audio Output Selection Jumper (JP1)

This jumper makes the selection of Audio output.

Description	Function	Jumper Setting
Audio Output Selection	Line Out (Default)	
	Speak Out	

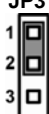

2.3.2 LVDS Voltage Selection Jumper (JP2)

This jumper is to select the voltage for LVDS interface.

Description	Function	Jumper Setting
LVDS Voltage Selection	3.3V (Default)	
	5V	



2.3.3 CMOS Clear Jumper (JP3)

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

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	
	Clear CMOS	

2.3.4 CompactFlash Power Jumper (JP4)

This jumper is to select the voltage for Compact Flash interface.

Description	Function	Jumper Setting
Compact Flash Power Select	3.3V (Default)	
	5V	

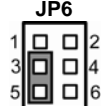
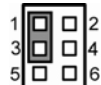
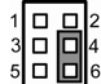
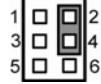
2.3.5 COM1 Mode Select for RS-232/422/485 Jumpers (JP5, JP7, JP10)

These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting
COM1	RS-232 (Default)	
	RS-422	
	RS-485	

2.3.6 COM1 Mode Select Jumper (JP6)

These jumpers select the COM1 port's DCD and RI mode.

Description	Function	Jumper Setting
COM1 (JP6)	*Pin 1=DCD (Default)	 <p>JP6</p> <p>1 2 3 4 5 6</p>
	*Pin 1=5V	 <p>JP6</p> <p>1 2 3 4 5 6</p>
	*Pin 9=RI	 <p>JP6</p> <p>1 2 3 4 5 6</p>
	*Pin 9=+12V	 <p>JP6</p> <p>1 2 3 4 5 6</p>

2.3.7 COM2 Mode Select Jumper (JP8)

These jumpers select the COM2 port's DCD and RI mode.

Description	Function	Jumper Setting
COM2 (JP8)	*Pin 1=DCD (Default)	
	*Pin 1=5V	
	*Pin 9=RI	
	*Pin 9=+12V	





2.3.8 CompactFlash Setting Jumper (JP9)

Use this jumper to set Master/Slave Compact Flash interface.

Description	Function	Jumper Setting
Compact Flash Master/Slave Selection	Master	
	Slave (Default)	

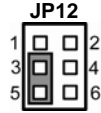
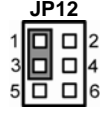
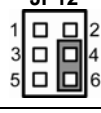
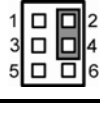
2.3.9 COM4 Mode Select Jumper (JP11)

These jumpers select the COM4 port's DCD and RI mode.

Description	Function	Jumper Setting
COM4 (JP11)	*Pin 1=DCD (Default)	<p>JP11 2 4 6  1 3 5</p>
	*Pin 1=5V	<p>JP11 2 4 6  1 3 5</p>
	*Pin 9=RI	<p>JP11 2 4 6  1 3 5</p>
	*Pin 9=+12V	<p>JP11 2 4 6  1 3 5</p>

2.3.10 COM3 Mode Select Jumper (JP12)

These jumpers select the COM3 port's DCD and RI mode.

Description	Function	Jumper Setting
COM3 (JP12)	*Pin 1=DCD (Default)	 <p>JP12</p> <p>1 2 3 4 5 6</p>
	*Pin 1=5V	 <p>JP12</p> <p>1 2 3 4 5 6</p>
	*Pin 9=RI	 <p>JP12</p> <p>1 2 3 4 5 6</p>
	*Pin 9=+12V	 <p>JP12</p> <p>1 2 3 4 5 6</p>

2.4 Connectors

Connectors connect the CPU card 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 **SBC84621 Series**.

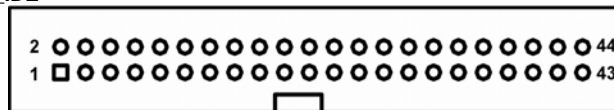
Connectors	Label	Connectors	Label
Enhanced IDE Interface Connector	CN1_IDE	Serial Port2/4 Connector	CN10
LVDS Connector	CN2_LVDS	Front Panel Bezel Connector	CN11
-5V Power Connector	CN3	Serial Port3 Connector	CN12
Audio Connector	CN4	Serial Port1 Connector	CN13
Digital I/O Connector	CN5	6-Pin Mini Dim Keyboard/ Mouse Connector	CN14
SMBUS Connector	CN6	VGA Connector	CN15
MINIPCI Connector	CN7	FDD Connector	CN16
ATX Power Connector	CN8	Compact Flash Connector	CN17
Parallel Port Interface Connector	CN9	USB Port0 & Port1 Connector	USB2
LAN1 Connector	LAN1	USB Port2 & Port3 Connector	USB1
LAN2 Connector	LAN2	DDR SO-DIMM	DIMM1
PC/104 Slot	ISA1	LVDS inverter connector	CN18

2.4.1 Enhanced IDE Interface Connector (CN1_IDE)

There is a PCI bus enhanced IDE controller that supports master/slave mode, post write transaction mechanisms with 64-byte buffer and master data transaction.

Pin	Signal	Pin	Signal	Pin	Signal
1	Reset #	2	GND	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	GND	20	No connector	21	No connector
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	No connector	29	No connector	30	GND-Default
31	Interrupt	32	No connector	33	SA1
34	No connector	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND	41	VCC	42	VCC
43	GND	44	N.C		

CN1_IDE



2.4.2 LVDS Flat Panel Connectors (CN2_LVDS, CN18)

The LVDS connector on the SBC is a 40-pin connector to support 18/24-bit single- or dual-channel type LCD.

NOTE 1 The LVDS connector **CN2_LVDS** is a 40-pin connector. It is strongly recommended to use the matching JST SHDR-40V-S-B connector.

NOTE 2 The LVDS connector **CN18** is a 7-pin inverter connector. It is strongly recommended to use the matching Hirose DF13-7S-1.25C connector.

CN2_LVDS: 40-pin Connector for LVDS Flat Panel

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
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

CN2_LVDS



*CN2_LVDS Axiomtek P/N : 5411220B450E

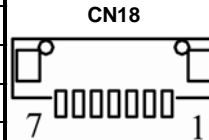
SMD GLA1001WV-S-2x20P P=1.0(RC)

*CN18 Axiomtek P/N : 5411107B350E

SMD GLA1252WV-S-7P gilded

CN18: 7-pin Connector for Inverter

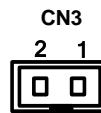
Pin	Signal
1	12V
2	12V
3	5V
4	ENAB
5	GND
6	GND
7	GND



2.4.3 -5V Power Connector (CN3)

The **CN3** is a -5V power connector for PC/104 expansion slot's power supply.

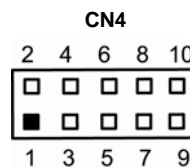
Pin	Signal
1	-5V
2	GND



2.4.4 Audio Connector (CN4)

The **SBC84621** supports an audio interface. CN4 is a 10-pin header connector commonly for the audio function.

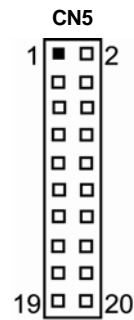
Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



2.4.5 Digital I/O Port (DIO) Connector (CN5)

The board is equipped an 8-channel digital I/O connector **CN5** 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.

Pin	Signal	Pin	Signal
1	DO0	2	DI0
3	DO1	4	DI1
5	DO2	6	DI2
7	DO3	8	DI3
9	DO4	10	DI4
11	DO5	12	DI5
13	DO6	14	DI6
15	DO7	16	DI7
17	GND	18	GND
19	N.C.	20	N.C.



2.4.6 SMBUS Connector (CN6)

Connector SMBUS1 is for SMBUS interface support.

Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.7 Mini PCI Connector (CN7)

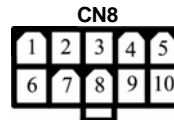
Pin	Signal	Pin	Signal
1	TIP	2	RING
	KEY		KEY
3	LAN_RD+	4	LAN_TD+
5	LAN_RD-	6	LAN_TD-
7	RJ45 termination	8	RJ45 termination
9	RJ45 termination	10	RJ45 termination
11	LAN_LED1+	12	LAN_LED2+
13	LAN_LED1-	14	LAN_LED2-
15	CHGND	16	RESERVED
17	INTB#	18	5V
19	3.3V	20	INTA#
21	RESERVED	22	RESERVED
23	GND	24	3.3VAUX
25	CLK	26	RST#
27	GND	28	3.3V
29	REQ#	30	GNT#
31	3.3V	32	GND
33	AD31	34	PME#
35	AD29	36	RESERVED
37	GND	38	AD30
39	AD27	40	3.3V
41	AD25	42	AD28
43	RESERVED	44	AD26
45	C/BE3#	46	AD24
47	AD23	48	IDSEL
49	GND	50	GND
51	AD21	52	AD22
53	AD19	54	AD20
55	GND	56	PAR
57	AD17	58	AD18
59	C/BE2#	60	AD16
61	IRDY#	62	GND
63	3.3V	64	FRAME#
65	CLKRUN#	66	TRDY#
67	SERR#	68	STOP#


Pin	Signal	Pin	Signal
69	GND	70	3.3V
71	PERR#	72	DEVSEL#
73	C/BE1#	74	GND
75	AD14	76	AD15
77	GND	78	AD13
79	AD12	80	AD11
81	AD10	82	GND
83	GND	84	AD09
85	AD08	86	C/BE0#
87	AD07	88	3.3V
89	3.3V	90	AD06
91	AD05	92	AD04
93	RESERVED	94	AD02
95	5V	96	AD00
97	5V	98	RESERVED
99	AD01	100	RESERVED
101	GND	102	GND
103	RESERVED	104	RESERVED
105	RESERVED	106	RESERVED
107	RESERVED	108	RESERVED
109	RESERVED	110	RESERVED
111	RESERVED	112	RESERVED
113	RESERVED	114	GND
115	RESERVED	116	RESERVED
117	RESERVED	118	RESERVED
119	RESERVED	120	RESERVED
121	RESERVED	122	RESERVED
123	RESERVED	124	RESERVED

2.4.8 ATX Power Connector (CN8)

Steady and sufficient power can be supplied to all components on the board by connecting the power connector. Please make sure all components and devices are properly installed before connecting the power connector. Align the power connector with its proper location on the board, and connect it tightly.

Pin	Signal	Pin	Signal
1	PS_ON	2	GND
3	GND	4	+12V*
5	N.C.	6	+SB5V
7	+5V	8	+5V
9	N.C.	10	GND



 **NOTE** +12V is only for LCD Inverter, PC/104 and COM Port pin 9.

2.4.9 Parallel Port Interface Connector (CN9)

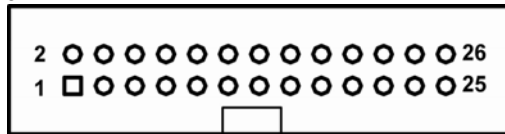
The board has one one 26-pin header connector **CN9** for onboard parallel port. The onboard PRN is a multi-mode parallel port that supports:

1. **Standard mode:**
IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port
2. **Enhanced mode:**
Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
3. **High speed mode:**
Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
Pin	Signal	Pin	Signal

19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC

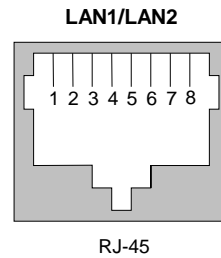
CN9



2.4.10 Ethernet RJ-45 Connectors (LAN1, LAN2)

The RJ-45 connector is for Ethernet. To connect the board to a 100/10 Base-T hub, just plug one end of the cable into **LAN1/LAN2**, and connect the other end (phone jack) to a 1000/100/10-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




2.4.11 PC/104 Connectors (ISA1)

PC/104 Bus Pin Assignment

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
1	IOCHCHK	2	GND	3	SD7	4	RESETDRV
5	SD6	6	+5V	7	SD5	8	IRQ9
9	SD4	10	-5V	11	SD3	12	DRQ2
13	SD2	14	-12V	15	SD1	16	ENDXFR
17	SD0	18	+12V	19	IOCHRDY	20	GND
21	AEN	22	SMEMW	23	SA19	24	SMEMR
25	SA18	26	IOW	27	SA17	28	IOR
29	SA16	30	DACK3	31	SA15	32	DRQ3
33	SA14	34	DACK1	35	SA13	36	DRQ1
37	SA12	38	REFRESH	39	SA11	40	SYSCLK
41	SA10	42	IRQ7	43	SA9	44	IRQ6
45	SA8	46	IRQ5	47	SA7	48	IRQ4
49	SA6	50	IRQ3	51	SA5	52	DACK2
53	SA4	54	TC	55	SA3	56	SALE
57	SA2	58	+5V	59	SA1	60	OSC
61	SA0	62	GND	63	GND	64	GND

PC/104 Bus Pin Assignments

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
1	GND	2	GND	3	MEMCS16	4	SBHE
5	IOCS16	6	LA23	7	IRQ10	8	LA22
9	IRQ11	10	LA21	11	IRQ12	12	LA20
13	IRQ15	14	LA19	15	IRQ14	16	LA18
17	DACK0	18	LA17	19	DRQ0	20	MEMR
21	DACK5	22	MEMW	23	DRQ5	24	SD8
25	DACK6	26	SD9	27	DRQ6	28	SD10
29	DACK7	30	SD11	31	DRQ7	32	SD12
33	+5V	34	SD13	35	MASTER	36	SD14
37	GND	38	SD15	39	GND	40	(KEY)

 **NOTE** The PCI/104 slot supports I/O mode module only.

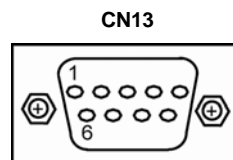
2.4.12 Serial Port Interface Connectors (CN10, CN12, CN13)

The board has four onboard serial ports, COM2~COM4 (RS-232) and COM1 (RS-232/422/485). They are jumper selectable with auto flow control features. All ports supply +5V power capability on DCD, and +12V on RI (excluding 5V), depending on jumper setting.

2.4.12.1 COM1 Port Connector (CN13)

The COM 1 Port connector **CN13** is a standard DB-9 connector.

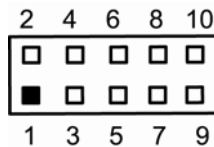
Pin	Signal
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator



2.4.12.2 COM3 Port Connector (CN12)

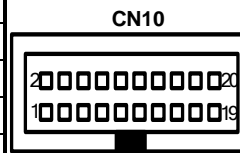
Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC

CN12



2.4.12.3 COM2/COM4 Port Connector (CN10)

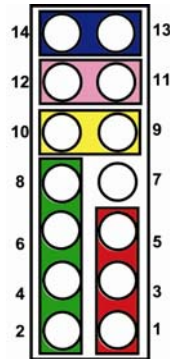
Pin	Signal	Pin	Signal
1	NDCD2	11	NDCD4
2	NDSR2	12	NDSR4
3	NRX2	13	NRX4
4	NRTS2	14	NRTS4
5	NTX2	15	NTX4
6	NCTS2	16	NCTS4
7	NDTR2	17	NDTR4
8	NRI2	18	NRI4
9	GND	19	GND
10	N.C	20	N.C



2.4.12.4 COM1 (CN13) RS-422/485 Pin Assignment Table

Pin #	Signal Name	
	RS-422	RS-485
1	TX-	DATA-
2	TX+	DATA+
3	RX+	No connector
4	RX-	No connector
5	No connector	No connector
6	No connector	No connector
7	No connector	No connector
8	No connector	No connector
9	GND	GND

2.4.13 Flat Panel Bezel Connector (CN11)



- **Power LED**

This 3-pin connector denoted as Pin 1 and Pin 5 connects the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

Pin 2, 4, 6 and 8 can be connected to 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 2 (-).

- **ATX Power On/Off Button**

This 2-pin connector denoted as Pin 9 and 10 connects the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

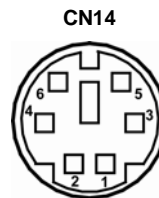
■ **HDD Activity LED**

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 -, and Pin 14 as +.

2.4.14 Keyboard & PS/2 Mouse Port Connector (CN14)

The board supports a keyboard and Mouse interface. Connector **CN14** is a DIN connector for PS/2 keyboard Connection VIA “Y” Cable.

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

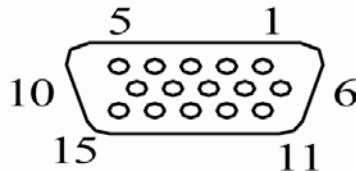


2.4.15 VGA Connector (CN15)

The board has three connectors to support CRT VGA and flat panel displays, individually or simultaneously. **CN15** is a slim type 15-pin D-Sub connector commonly for the CRT VGA display. The VGA interface configuration is done via the software utility, and no jumper setting is required.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	GND	8	AGND	9	N/A
10	GND	11	N/A	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

CN15



2.4. 16 CompactFlash™ Socket (CN17)

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.

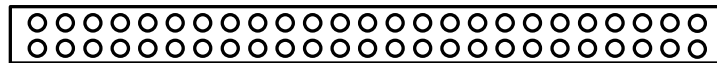
When installing or removing the CompactFlash disk card, please make sure that the system power is off.

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

Pin	Signal	Pin	Signal
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND

CN17

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25



2.4.17 USB Connectors (USB1, USB2)

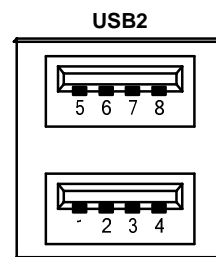
The board supports four Universal Serial Bus (USB) connectors compliant with USB 2.0 (480Mbps) that can be adapted to any USB peripherals, such as monitor, keyboard, and mouse.

2.4.17.1 USB Port Connector (USB2)

The Universal Serial Bus (USB) port connector on the board is for the installation of peripherals supporting the USB interface. **USB2** consists of two 4-pin standard USB ports.

USB0 and USB1

Pin	Signal
1, 5	USB Vcc
2, 6	USB -
3, 7	USB +
4, 8	USB GND

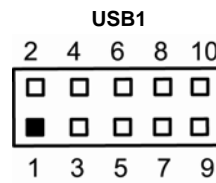


2.4.17.2 USB Connector (USB1)

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. **USB1** is a 10-pin standard onboard USB connector.

USB2 and USB3

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	D0-	4	D1-
5	D0+	6	D1+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)



MEMO

Chapter 3

Hardware Description

3.1 Microprocessors

The **SBC84621 Series** supports LX700/LX800 processors, which make your system operated under Windows XP and Linux environments. The system performance depends on the microprocessor. Make sure your installed microprocessor with all correct settings that prevents the CPU from damages.

3.2 BIOS

The **SBC84621 Series** uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

3.3 System Memory

The **SBC84621 Series** industrial CPU card supports one 200-pin DDR SODIMM socket for a maximum memory of 1GB DDR SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB and 1GB.

3.4 I/O Port Address Map

There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
1F0-1F8	Fixed disk controller
250-25F	HR I/O
300-31F	Prototype card
380-38F	SDLC #2
3A0-3AF	SDLC #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)
3F0-3FF	Super I/O

3.5 Interrupt Controller

The **SBC84621 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	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

MEMO

Chapter 4

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 immediately, or press the 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 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 TO ENTER SETUP

4.2 Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
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 will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.

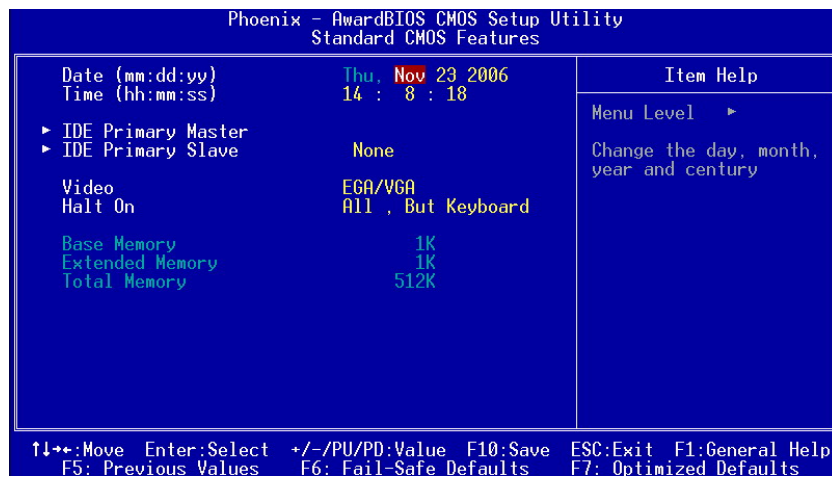


NOTE If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

4.5 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



- **Date**

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

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**

The time format is <hour> <minute> <second> accepting either functions key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master / Primary Slave**

The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 users definable types are for Enhanced IDE BIOS. Type 1 to Type 45 is predefined. Type User is user-definable.

Press <PgUp>/<+> or <PgDn>/<-> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, select "Type 1".

If the controller of HDD interface is SCSI, select "None".

If the controller of HDD interface is CD-ROM, select "None".

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

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

- **Halt On**

This field determines whether the system will halt if an error is detected during power up.

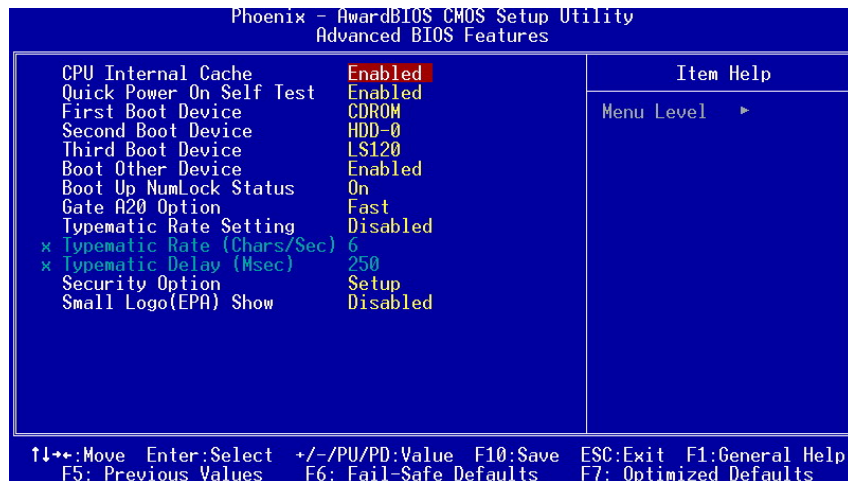
No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detect a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.

All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all 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 and allows you to set up some system features according to your preference.



- **CPU Internal Cache**

This option speed up memory access. However, it depends on the CPU/chipset design. The default setting is “Enabled”. CPUs with no built-in internal cache will not provide the “CPU Internal Cache” item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **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 allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes *Floppy*, *LS120*, *ZIP100*, *HDD0~3*, *SCSI*, and *CDROM*.

- **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**

Selects power on state for NumLock. The default value is "On".

- **Gate A20 Option**

The default value is "Fast".

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**

This determines the typematic rate of the keyboard. The default value is "Disabled".

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec)**

This option refers to the number of characters the keyboard can type per second. The default value is "6".

6	6 characters per second
8	8 characters per second
10	10 characters per second

12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**

This option sets the display time interval from the first to the second character when holding a key. The default value is "250".

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**

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

System	The system will not boot and access to Setup will be denied if the incorrect password is entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.



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

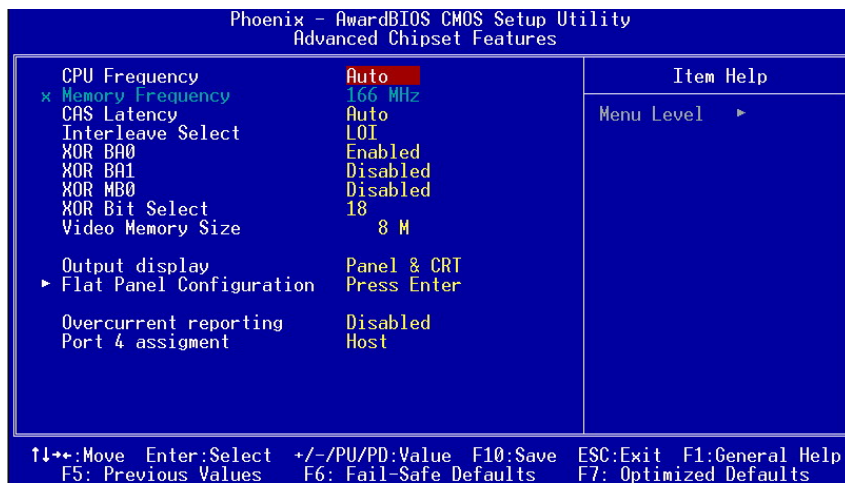
- **Small Logo (EPA) Show**

If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

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

4.7 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.



- CPU Frequency**
 Use this item to set the CPU Frequency with these options: Auto, 333MHz, 400MHz, 433MHz and 500MHz. The default setting is "Auto".
- CAS Latency**
 You can select CAS latency time in 1.5, 2.0, 2.5, 3.0, 3.5, or Auto. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.
- Interleave Select**
 Select the address interleaving mode. The choice: HOI, LOI. The GLMC(GeodeLink™ Memory Controller) module supports two address translations depending on the method used to interleave pages. High Order Interleaving (HOI) uses fixed upper address bits to map the GLIU address to a component bank. LOI uses variable lower address bits depending on page size, number of module banks, and number of component banks of the DIMMs, plus an

option to XOR with upper address bits.
The default setting is "LOI".

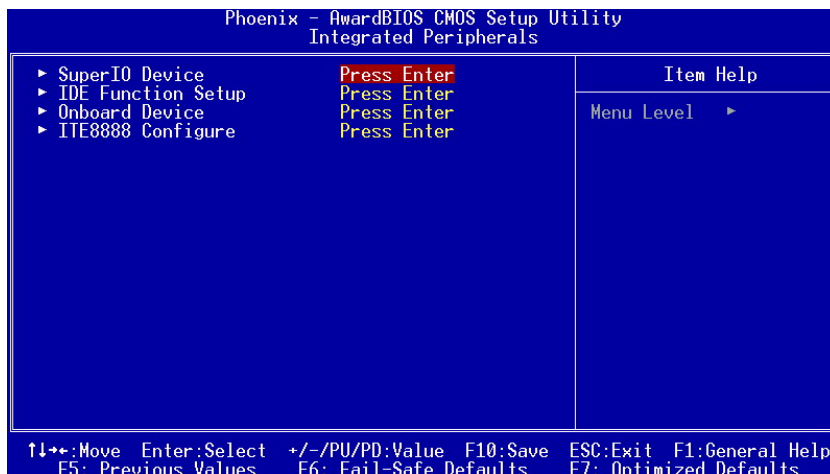
- **XOR BA0/ BA1/MB0**
Enables XORing of component bank select BA0/BA1/MB0 with upper GLIU address bit. The default value is "Disabled".
- **XOR Bit Select**
Select which upper GLIU address bit to XOR with MB0, BA1 or BA0. Only applies to LOI mode. The choice: 18, 19, 20, 21. The default value is "18".
- **Video Memory Size**
The options available are [8M] [16M] [32M] [64M] [128M] [254M].
- **Output Display**
This allows you to choose output for your system display.
Configuration options: [CRT] [Flat Panel] [Panel +CRT]. The default value is "Panel +CRT".
- **Flat Panel Configuration**
Press Enter to set the following items.
- **Resolution**
Select the resolution for LVDS panel.
- **Data Bus Type**
Select the Data Bus Type for LVDS panel.
- **Refresh Rate**
Select the refresh rate for LVDS panel.
- **HSYNC Polarity**
The choice: HI, LOW.
- **VSYNC Polarity Active**
The choice: HI, LOW.
- **SHFCLK Active Period**
Select the shift clock (SHFCLK) to be either free running, or active only during the display period. Some TFT panels recommend keeping the shift clock running during the retrace time.
- **LP Active Period**
Select the polarity of the LDE/MOD pin. This can be used for panels that require an active low timing LDE interface signal.

- **Overcurrent reporting**
Select for USB controller. The options available are Enabled and Disabled.
- **Port 4 assignment**
Select for USB Port.

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

4.8 Integrated Peripherals

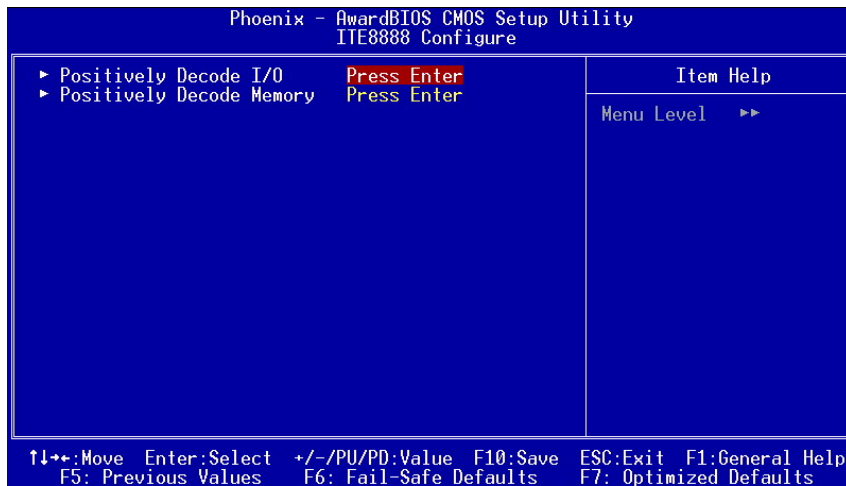
This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.



- **Onboard Serial Port 1/Port 2**
Select an address and corresponding interrupt for the first and second serial ports.
- **Parallel Port Mode**
Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are "EPP1.9", "ECP", "SPP", "ECPEPP1.7" and "EPP1.7".

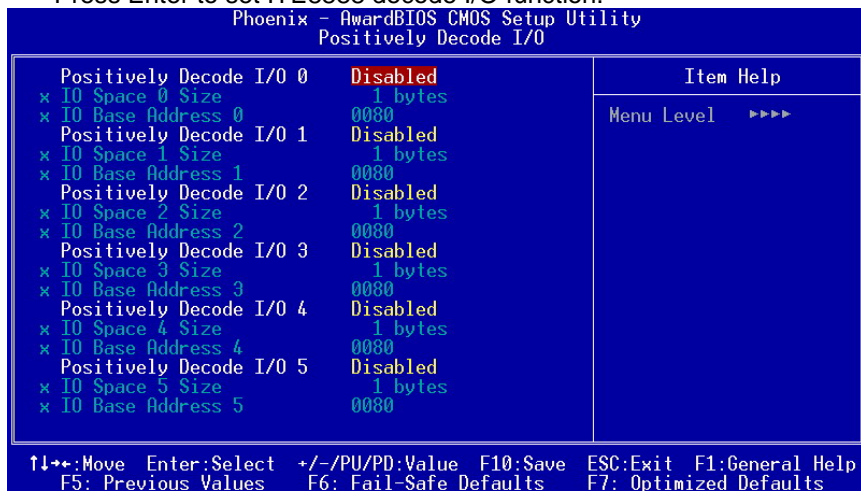
- **ECP Mode Use DMA**
Select a DMA channel for the parallel port for use during ECP mode.
- **Onboard Serial Port 3/Port 4**
Select an address for the third and fourth serial ports. The options available are "3F8", "2E8", "3E8", "2F8" and "Disabled".
- **Serial Port 3/Port 4 Use IRQ**
Select corresponding interrupt for the third and fourth serial ports. The options available are "IRQ10" and "IRQ11".
- **IDE Primary Master/Slave PIO**
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The options available are "Auto", "Mode 0", "Mode 1", "Mode 2", "Mode 3" and "Mode 4".
- **IDE Primary Master/Slave UDMA**
Ultra DMA 66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software support Ultra DMA 33/66/100, select Auto to enable BIOS support. The options available are "Auto", "Mode 0", "Mode 1" and "Mode 2".
- **IDE HDD Block Mode**
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.
- **Onboard Audio**
Select Enabled if your system contains a Audio controller and you want to use it.
- **Onboard LAN Boot ROM**
This item allows you to decide to boot from whether LAN1 or LAN2. The options available are "LAN1", "LAN2" and "Disabled".

- **ITE8888 Configuration**



- **Positively Decode I/O**

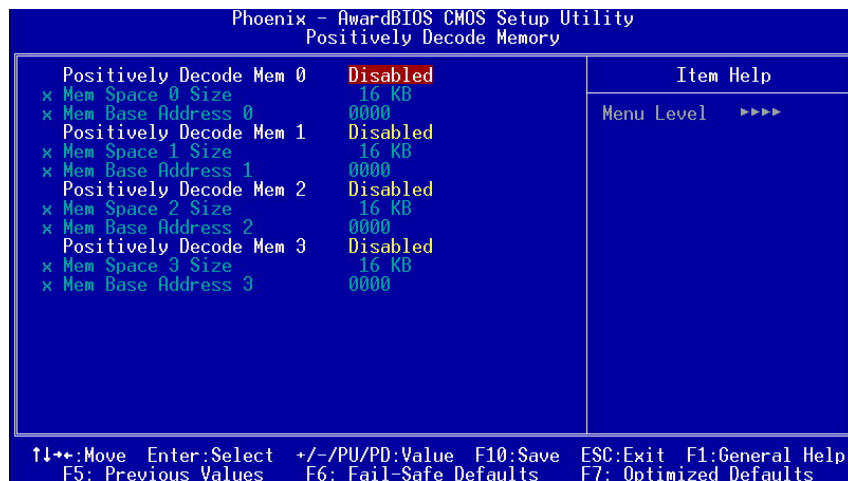
Press Enter to set ITE8888 decode I/O function.



- **Positively Decode I/O 0/1/2/3/4/5 IO Space 0 Size**

This item allows the user to enable/disable the Positively Decode I/O 0/1/2/3/4/5. The default setting is "Disabled".

- **IO Space 0/1/2/3/4/5 Size**
This item allows the user to decide the Size of I/O Space 0/1/2/3/4/5. The options available are “1, 2, 4, 8, 16, 32, 64 and 128”.
- **IO Base Address 0/1/2/3/4/5**
This item allows the user to decide the Base Address of Decode I/O 0/1/2/3/4/5. The available value are 0000~FFFF.
- **Positively Decode Memory**
Press Enter to set ITE8888 Decode Memory function.

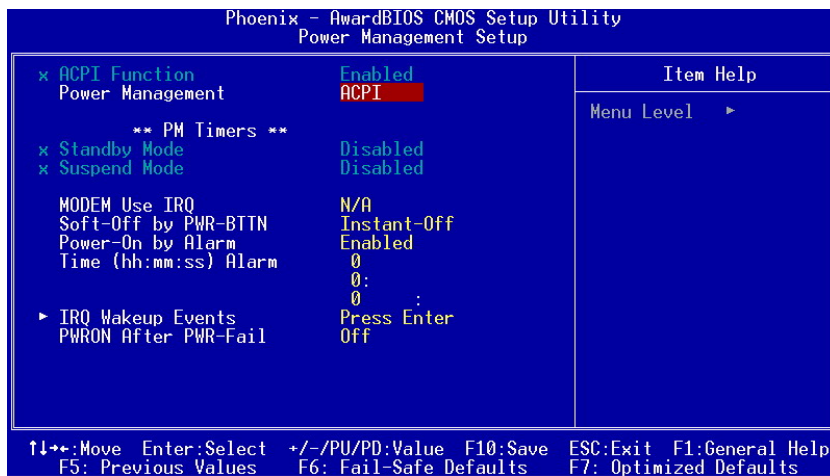


- **Positively Decode Mem 0/1/2/3 IO Space 0 Size**
This item allows the user to enable/disable the Positively Decode Mem 0/1/2/3. The default setting is “Disabled”.
- **Mem Space 0/1/2/3 Size**
This item allows the user to decide the Size of Memory Space 0/1/2/3. The options available are “16KB, 32 KB, 64 KB, 128 KB, 256 KB, 512 KB, 1MB and 2MB”.
- **Mem Base Address 0/1/2/3**
This item allows the user to decide the Base Address of Decode Memory 0/1/2/3/4/5. The available value are 0000~FFFF.

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 allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always Enabled.
- **Power Management**
This option allows you to select the type of power Management. The options available are APM, ACPI.
- **Standby Mode**
After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed. The default value is "Disabled".

Disabled	System will never enter STANDBY mode.
1/2/4/6/8/10/20/30/4 0 Min/1 Hr	Defines the continuous idle time before the system entering STANDBY mode. If any item defined in (J) is enabled & active, STANDBY timer will be reloaded.

- **Suspend Mode**

After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is "Disabled".

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/ 20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **Modem Use IRQ**

3, 4, 5, 7, 9, 10, 11, NA	For external modem, 3 or 4 will be used for card type modem. It is up to card definition. Default is 3.
--------------------------------------	---

- **Soft-Off by PWR-BTTN**

This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is "Instant-Off".

Instant-Off	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

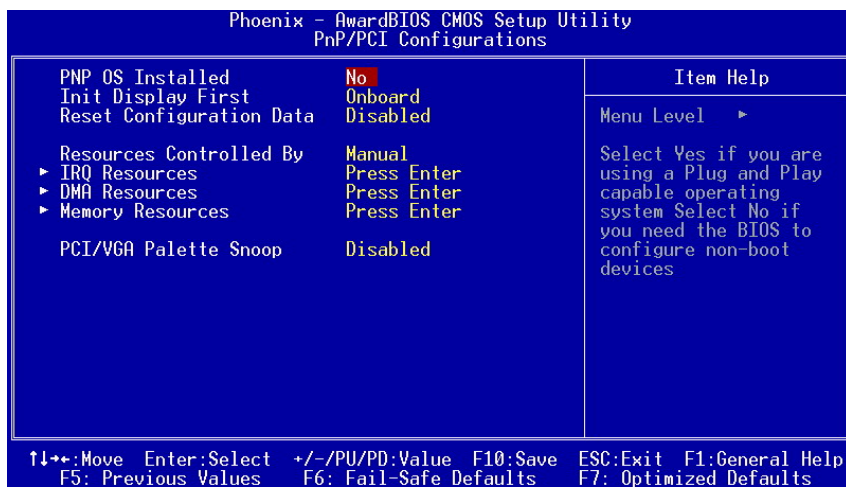
- **PWRON After PWR-Fail**

This option allows you to select the type of power loss function. The options available are On, Off. The default value is "Off".

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

4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



- **PNP OS Installed**
Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is "No".
- **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. Options are: "Enabled, Disabled".
- **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 assigns them. The default value 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:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
2. 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*".

- **DMA Resources**

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.

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*".

- **Memory Resources**

This sub menu can let you control the memory resource.

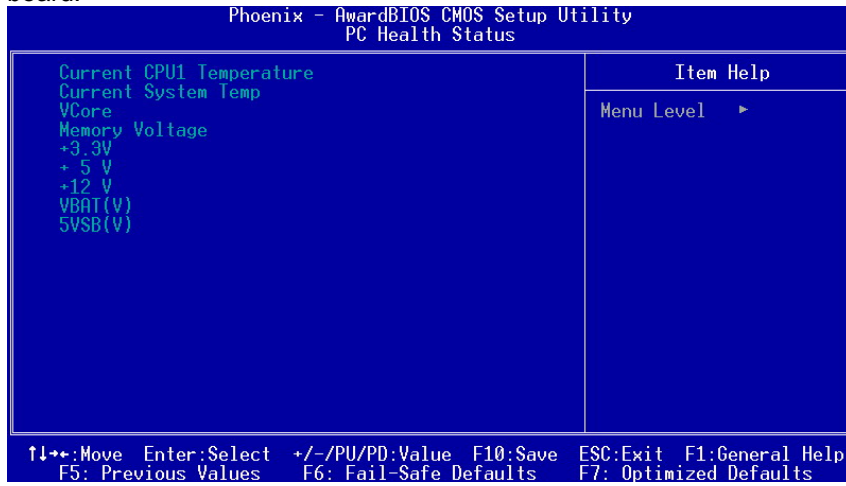
- **PCI/VGA Palette Snoop**

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.

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.



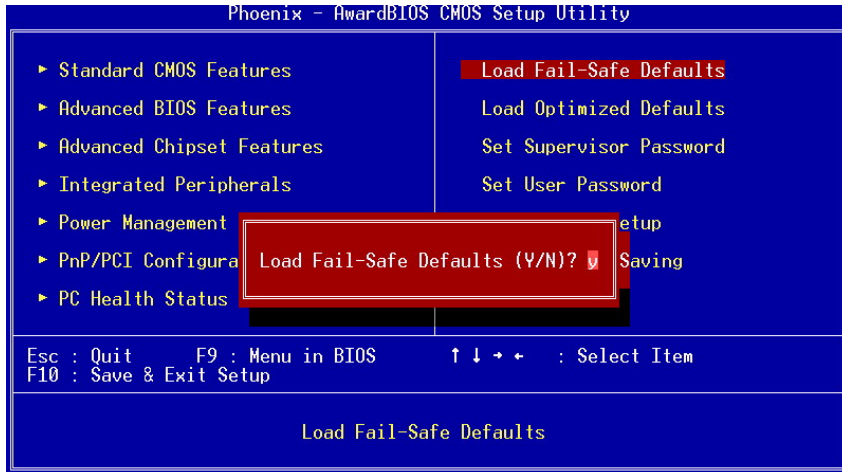
- **Current CPU Temperature**

These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

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

4.12 Load Fail-Safe Default

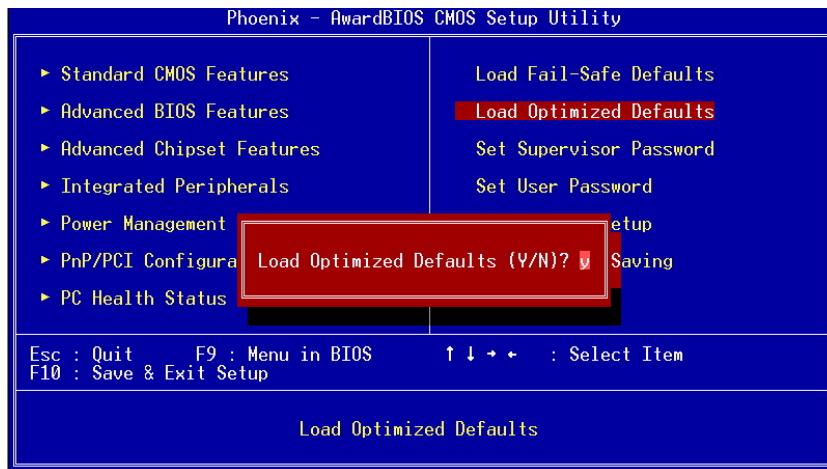
When you press <Enter> on this item, a confirmation dialog box pops out to show you such a message:



Please press “Y” to load default values that will be factory settings for accomplishing the optimal performance of system operations.

4.13 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

4.14 Set Supervisor/User Password

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

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **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

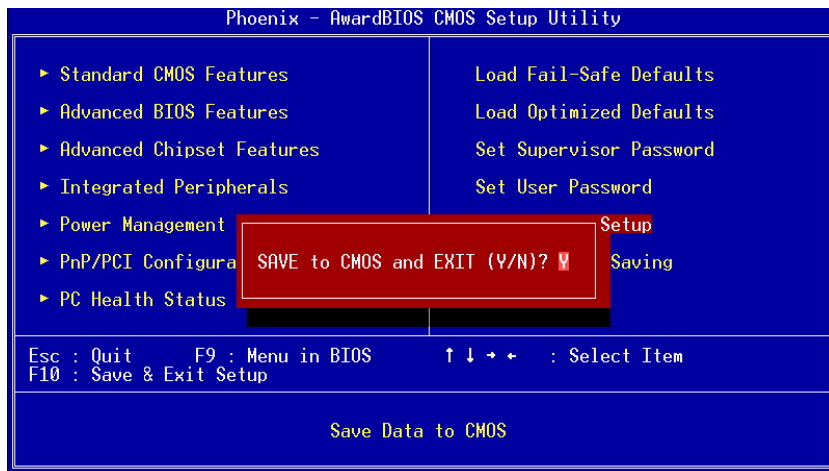
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

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.

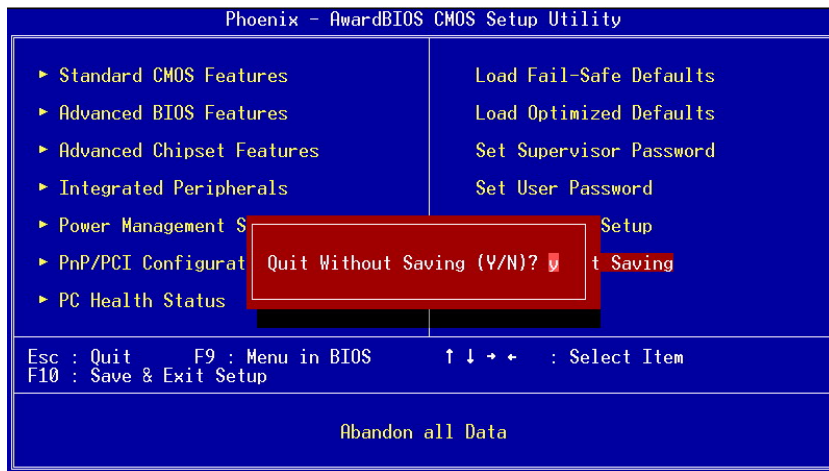
4.15 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing “Y” quits the setup utility and saves all changes into the CMOS memory. Typing “N” brings you back to Setup utility.



4.16 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.



Appendix A

Watchdog Timer

Watchdog Timer Setting

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.

Using the Watchdog Function

Start



Un-Lock WDT:

O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O



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 N N=00 or 08(See below table)



Set base timer :

O 2E F6
O 2F M=00,01,02,...FF(Hex) , Value=0 to 255



WDT counting re-set timer :

O 2E F6
O 2F M ; M=00,01,02,...FF(See below table)

; IF to disable WDT:

○ 2E 30

○ 2F 00 ; Can be disable at any time

- Timeout Value Range
 - 1 to 255
 - Minute / Second
- Program Sample

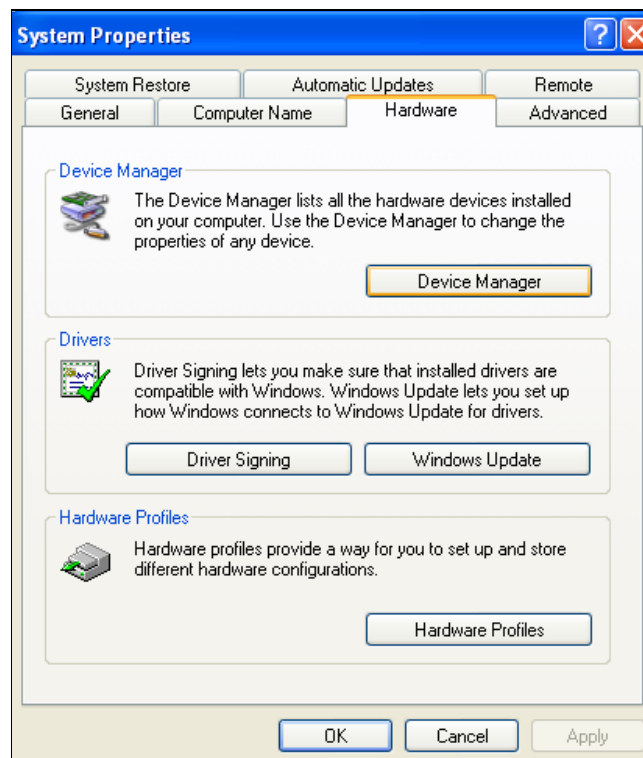
Watchdog Timer can be set to system reset after 5-second timeout.

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

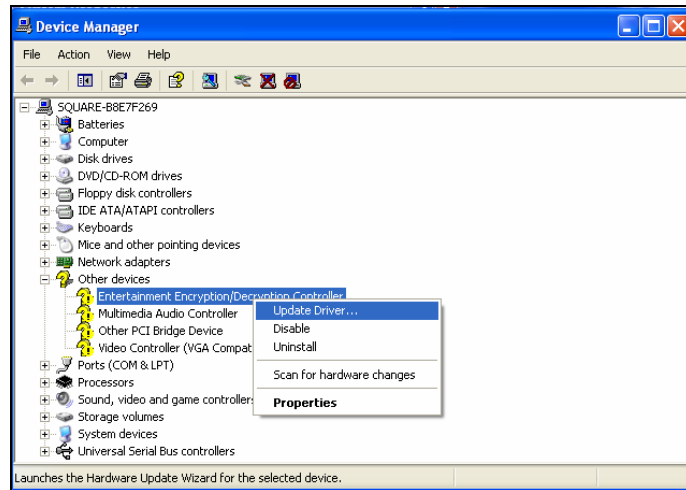
Appendix B Installation of Drivers

1. Installation of AES Driver

1-1. Click the "Device Manager" button.



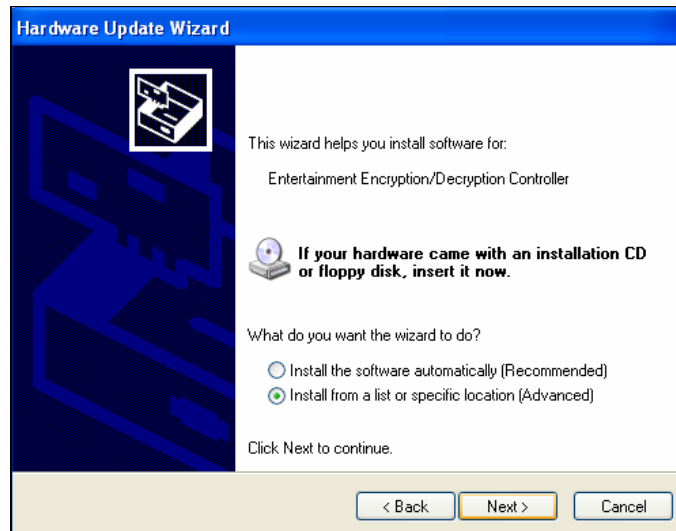
1-2. Click the “Update Driver” option.



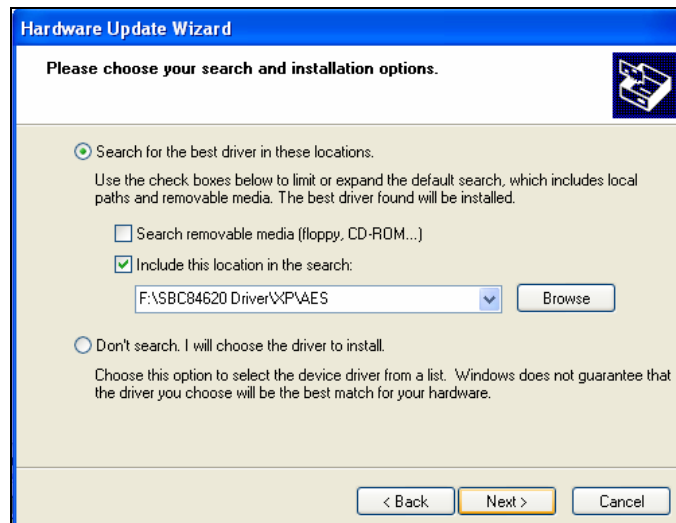
1-3. Click the “Next” button.



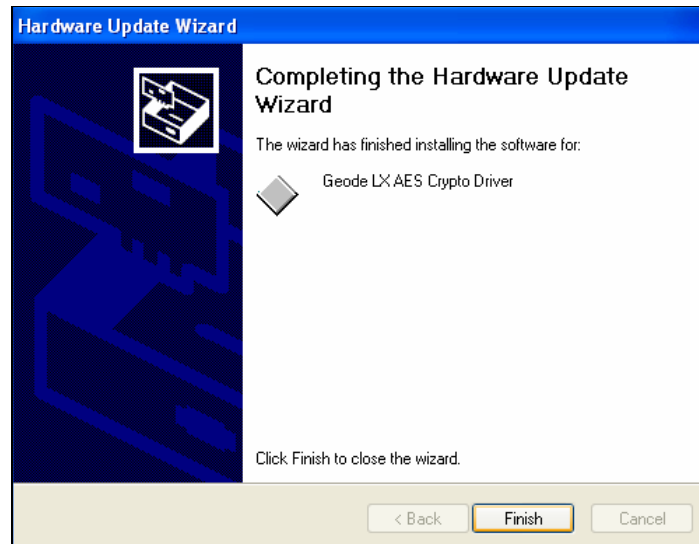
1-4. Click the "Next" button.



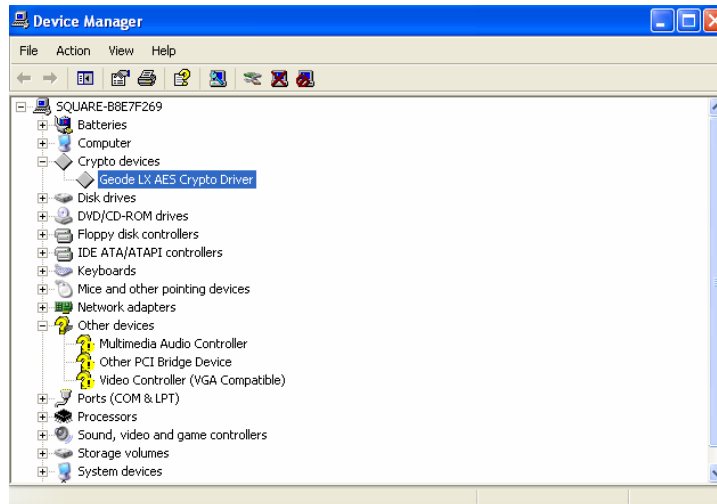
1-5. Click the "Browse" button to select AES Driver Folder, and then click the "Next" button.



1-6. Click the “Finish” button.

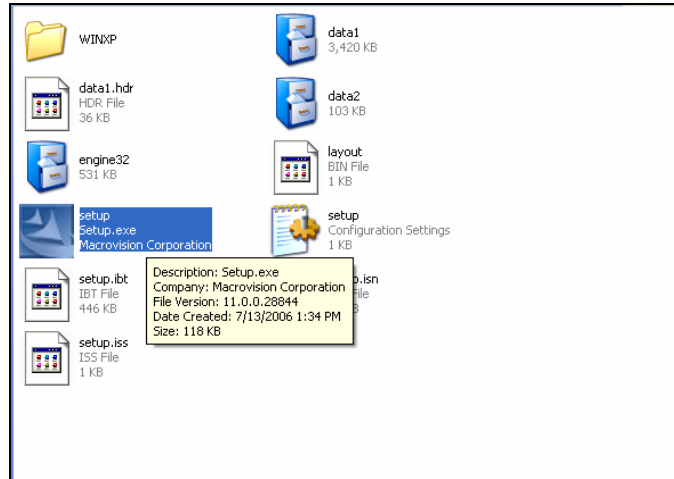


1-7. The Geode LX AES Crypto Driver installation is finished.

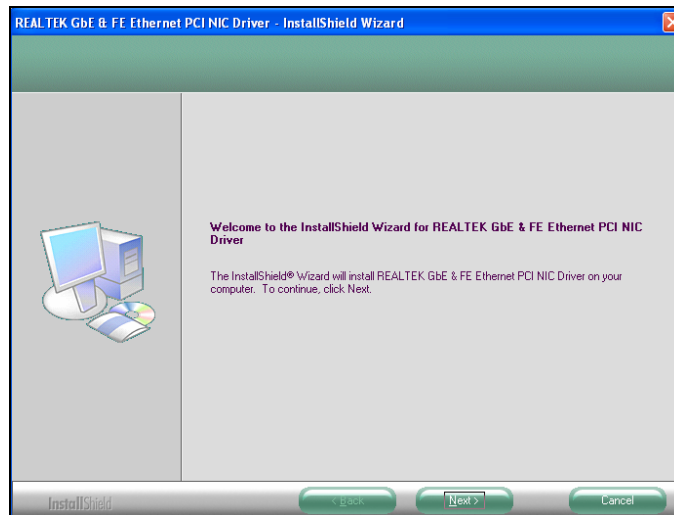


2. Installation of LAN Driver

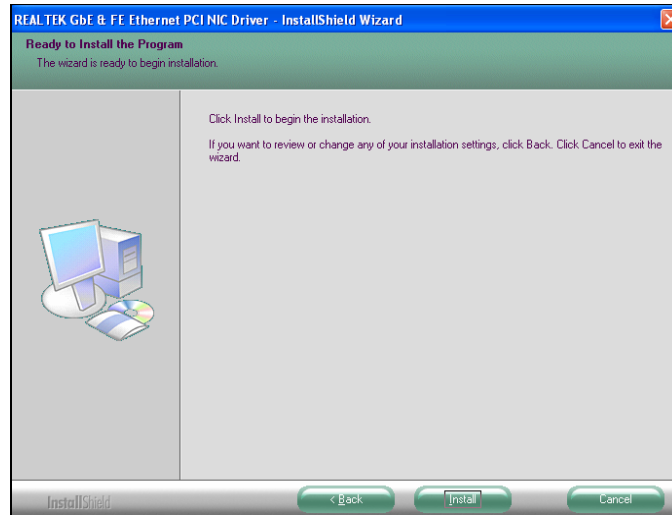
2-1. Click the "Setup" icon.



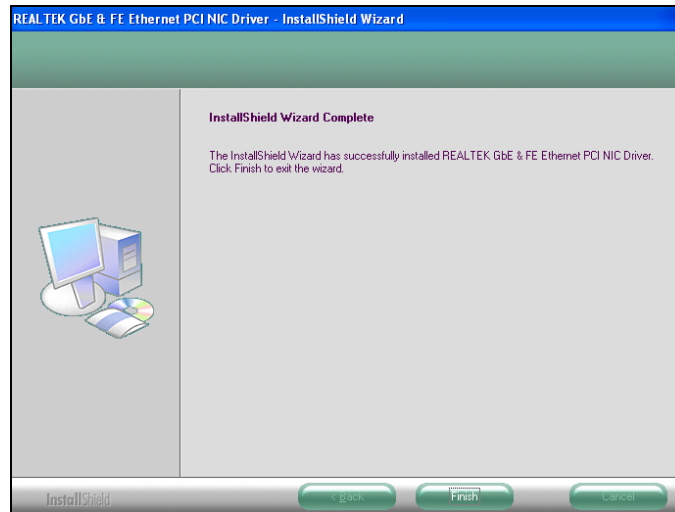
2-2. Click the "Next" button.



2-3. Click the “Install” button.

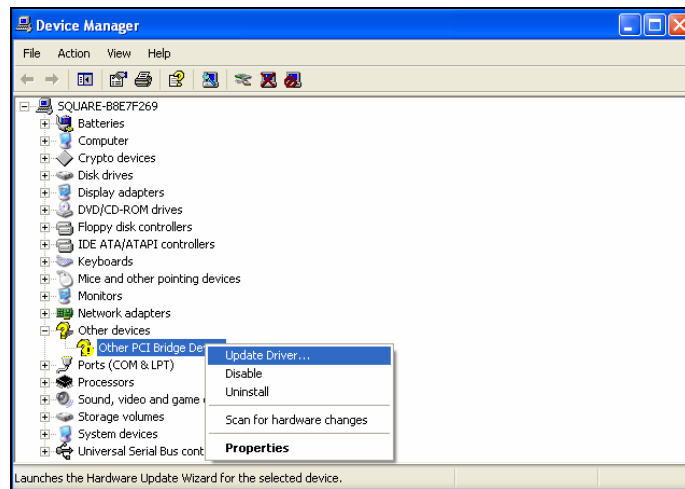


2-4. Click the “Finish” button.

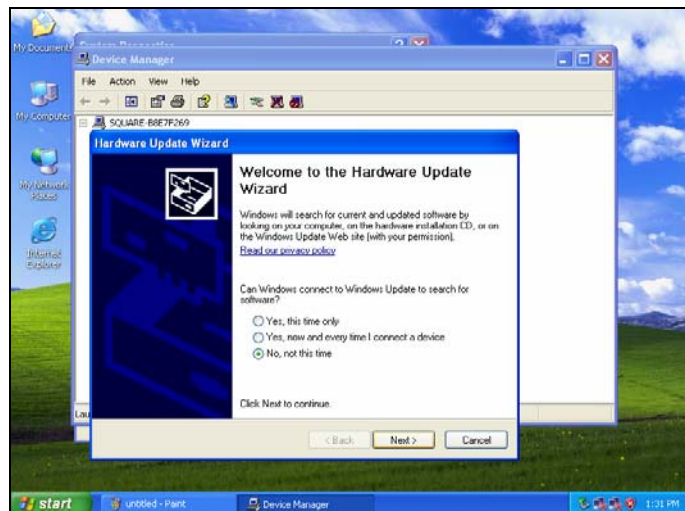


3. Installation of PCI Bridge Driver

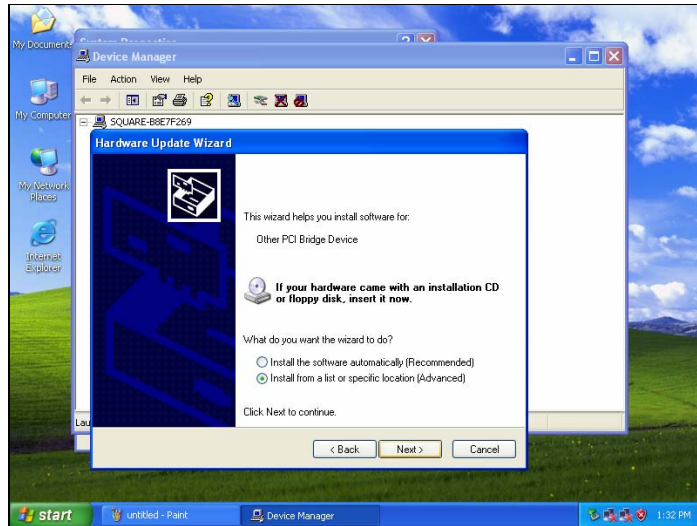
3-1. Enter the "Device Manager" window, click right mouse button on the "Other PCI Bridge Device" icon, and a pull-down list pops out. Please select the "Update Driver" option.



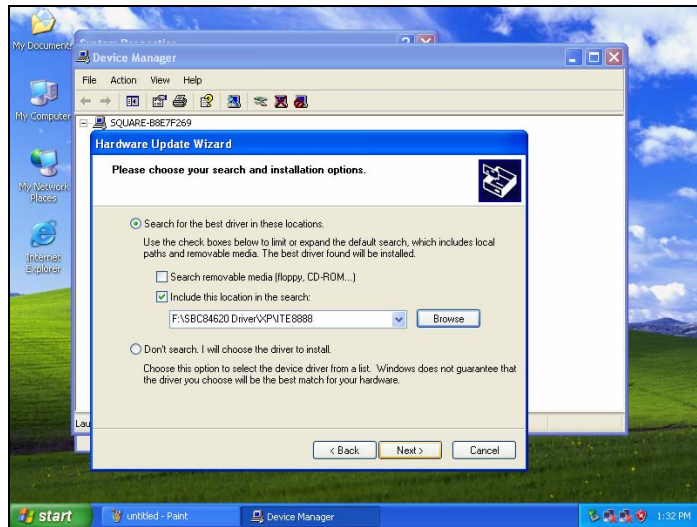
3-2. Click the "Next" button.



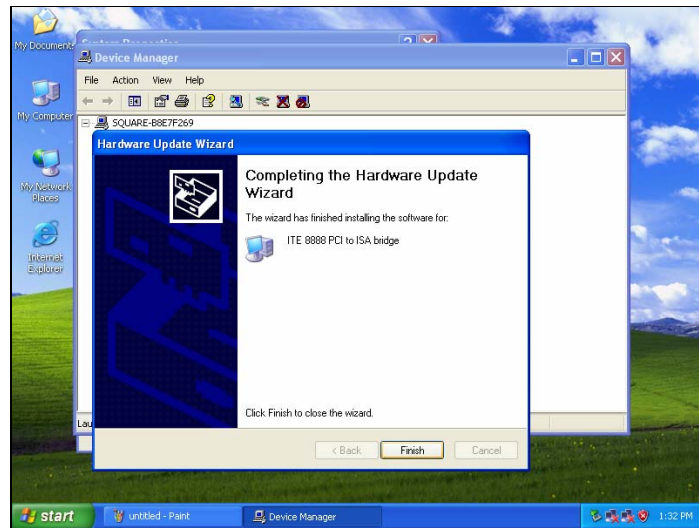
3-3. Click the “Next” button.



3-4. Click the “Browse” button to access the correct directory of PCI Bridge for ITE8888 driver.

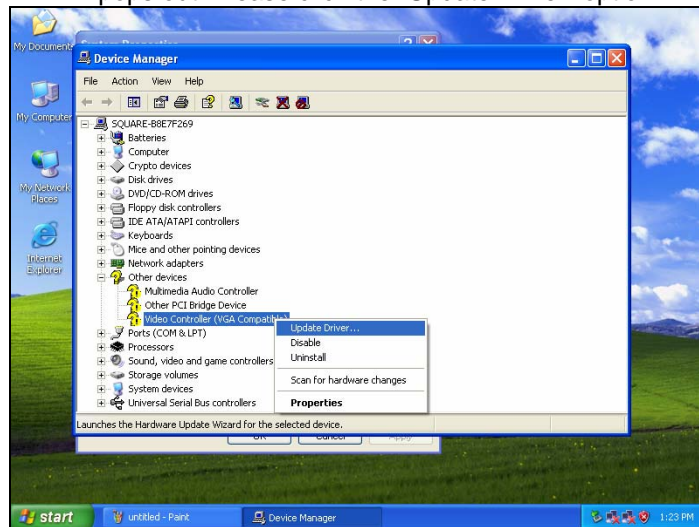


3-5. Click the “Finish” button.



4. Installation of VGA Driver

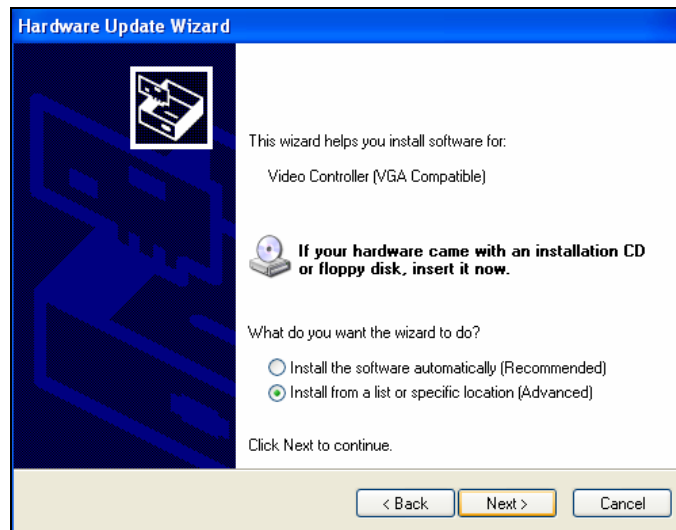
- 4-1. Enter the “Device Manager” window, click right mouse button on the “Video Controller” icon, and a pull-down list pops out. Please click the “Update Driver” option.



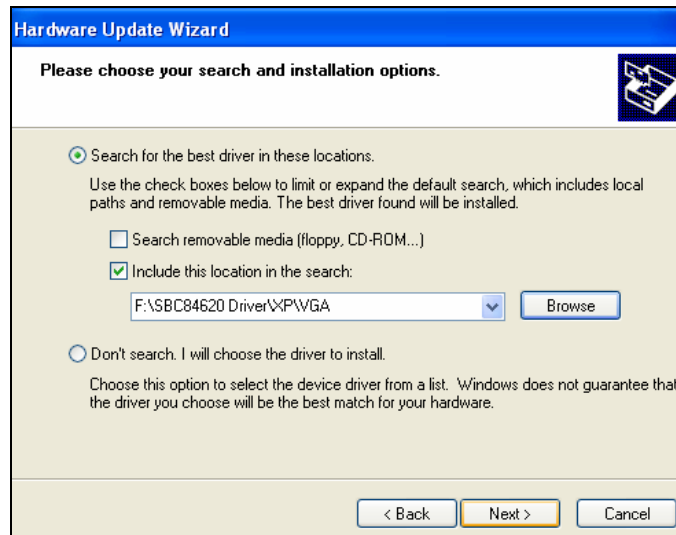
- 4-2. Click the “Next” button.



4-3. Click the “Next” button.



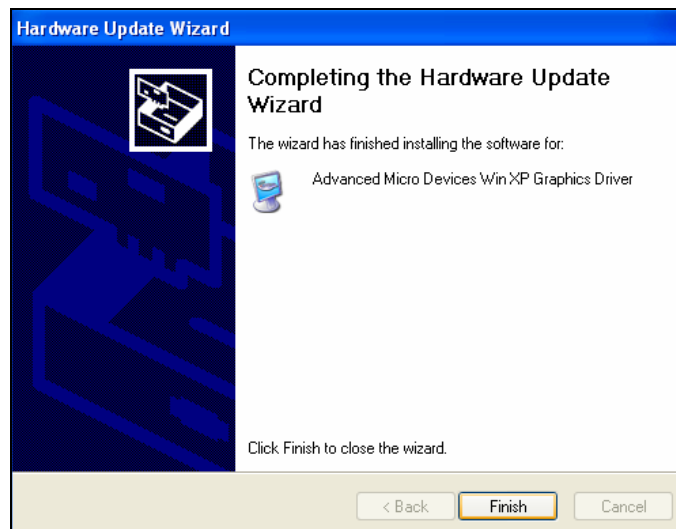
4-4. Click the “Next” button.



4-5. Click the “Continue Anyway” button.



4-6. Click the “Finish” button.



*** Please reboot the system after finishing all drivers' installation.**

Appendix C

Digital I/O

Using the Digital Input Function

Start
↓
Un-Lock Super I/O:
O 4E 87 ; Un-lock super I/O
O 4E 87 ; Un-lock super I/O
↓
Select Multiplexed pin to GPIO Function :
O 4E 2A
O 4F FF
↓
Select Logic device:
O 4E 07
O 4F 07
↓
Activate Logic Device:
O 4E 30
O 4F 01
↓
Select GPI Function:
O 4E F0
O 4F FF
↓
Read Data:
O 4E F1
I 4F
XX (XX is input Data;
if no input source,the value is FF)

Using the Digital Output Function

Start



Un-Lock SuperI /O:

O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O



Select Multiplexed pin to GPIO Function :

O 2E 2A
O 2F FF



Select Logic device:

O 2E 07
O 2F 07



Activate Logic Device:

O 2E 30
O 2F 01



Select GPO Function:

O 2E F0
O 2F 00



Output Data:

O 2E F1
O 2F 00
O 2E F2
O 2F XX=00,01,02,...FF(XX is Output Data)