USER'S MANUAL

EBC-E400C

VIA EDEN 5.25"
Embedded Card
With VGA/LAN/SOUND

EBC-E400C

EBC-E400C
5.25" Embedded CPU Board
With VGA / LAN/ SOUND

OPERATION MANUAL

CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

TABLE OF CONTENTS

APPENDIX A EXPANSION BUS

APPENDIX B TECHNICAL SUMMARY

INTRODUCTION

CHAPTER

1

This chapter gives you the information for EBC-E400C. It also outlines the System specifications.

Section includes:

- About This Manual
- System Specifications
- Safety precautions

Experienced users can skip to chapter 2 on page 2-1 for a Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our EBC-E400C, 5.25" Embedded CPU Board enhanced with VGA/Sound/LAN, is fully PC / AT/ATX compatible. The EBC-E400C provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters :

Chapter 1 Introduction

This chapter introduces you to the background of this manual, and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this Embedded Board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. In the end of this chapter, you will learn how to set jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the VGA Utility, LAN Utility, Sound Utility, and Flash BIOS Update. It also describes the Watchdog-timer configuration.

Chapter 4 Award BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A Expansion Bus

This Appendix introduces you the expansion bus for PC/104, PC/104+, Compact Flash, and PCI.

Appendix B Technical Summary

This section gives you the information about the Technical maps.

1-2. SYSTEM SPECIFICATIONS

- **CPU :**
  VIA Eden 400MHz processors (EBC-E400C)
  VIA Eden 800MHz processors (EBC-E400C-800)
  VIA Eden 1GMhz processors (EBC-E400C-1000)
  Auto detect voltage regulator.

- **SYSTEM CHIPSET :**
  VIA VT8606, VT82C686B

- **MEMORY :**
  Up to 512MB SDRAM
  One 168-pin DIMM socket on board.

- **CACHE :**
  Built-in CPU.

- **REAL-TIME CLOCK / CALENDAR :**
  CMOS data back up from BIOS set or BIOS default.
  Built-in VIA VT82C686B.

- **BIOS :**
  PhoenixAward PnP BIOS Memory size 2 Mbytes, with VGA BIOS.
  Supports Green Function.
  Supports S/IO Setup.

- **KEYBOARD CONNECTOR :**
  PS/2 keyboard with 1 x 4 pin wafer connector.

- **MOUSE CONNECTOR :**
  PS/2 mouse connector with 1 x 4 pin wafer connector.

- **BUS SUPPORT :**
  PC/104
  PC/104+
  Compact Flash (for second IDE)
  PCI Bus

- **DISPLAY :**
  Built-in VIA VT8606, supports CRT, TTL & LVDS.
  Integrated S3®'s Savage4™ 2D/3D/Video Accelerator.
  Optimized Shared Memory Architecture (SMA).
  2~32 MB Frame Buffer using system memory.
  Supports simultaneous display of CRT & LCD.
  Interface:
  One 15-pin connector supports for CRT Monitor.
  One 41-pin connector support 18 bit or 24 bit panel for TTL.
  One 30-pin connector support 18 or 36 bit LVDS panel.

- **WATCHDOG :**
  Time-out timing select 1~255 secs.

- **IDE INTERFACE :**
  One IDE port with 40-pin boxheader on board supports Ultra DMA-100/66/33.
  One IDE port with 44-pin boxheader on board.
  One channel supports up to two devices.

- **FLOPPY DISK DRIVER INTERFACE :**
  Supports up to two Floppy Disk Drives (1.44M).

- **USB CONNECTOR :**
  Universal Serial Bus Connector, supports up to four USB1.1 ports.

- **LAN ADAPTER :**
  Dual ports.
  LAN1: Realtek 8100C, 10/100 Base-TX Ethernet. (EBC-E400C-xxx02)
  LAN2: Realtek 8110S, 10/100/1000 Base-TX Ethernet. (EBC-E400C-xxx05)
  Support Wake-On-LAN when use ATX power.

- **SERIAL PORT :**
  Four high speed 16550 Compatible UARTs with Send / Receive 16 Byte FIFOs; COM1, 3, 4 for RS-232; COM2 for RS-232/422/485. All COM ports are with +5V/+12V power. (For 16550-compatible type of UART)

- **PARALLEL PORT :**
  Supports SPP, ECP, EPP Function mode.

Bi-directional parallel port.

- **SOUND FUNCTION :**
  Integrated Sound Blaster / DirectSound AC97 audio with VIA VT1612A.
  Dual Full duplex direct sound channels bet. system memory & AC97 link.
  32 byte FIFO of each Direct Sound Channel.

- **Solid-State Disk Socket :**
  Memory System DiskOnChip SSD Module support up to 288MB.

- **INFRARED CONNECTOR :**
  One IrDA Port；Support v1.0 SIR protocol

- **HARDWARE MONITORING FUNCTION :**
  Monitor CPU Voltage, CPU temperature, and Cooling Fan.

- **LED INDICATOR :**
  HDD LED: one 2-pin headpin on board
  Power LED: one 2-pin headpin on board

- **DMA CONTROLLER :**
  82C37 x 2

- **DMA CHANNELS :**
  7

- **INTERRUPT CONTROLLERS :**
  82C59 x 2

- **INTERRUPT LEVELS :**
  15

- **OPERATING TEMPERATURE :**
  0 to 60°C (32°F to 140°F)

- **INPUT POWER REQUIREMENT :**
  +5V ±5% and ±12V ±5%. Or only ±12V ±5% (for power module only)

- **BOARD DIMENSION :**
  203mm x 146mm (7.99” x 5.75”)

- **BOARD NET WEIGHT :**
  340g (0.751 lb)

1-3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION

CHAPTER

2

*** QUICK START ***

Helpful information describes the jumper & connector settings, and component locations.

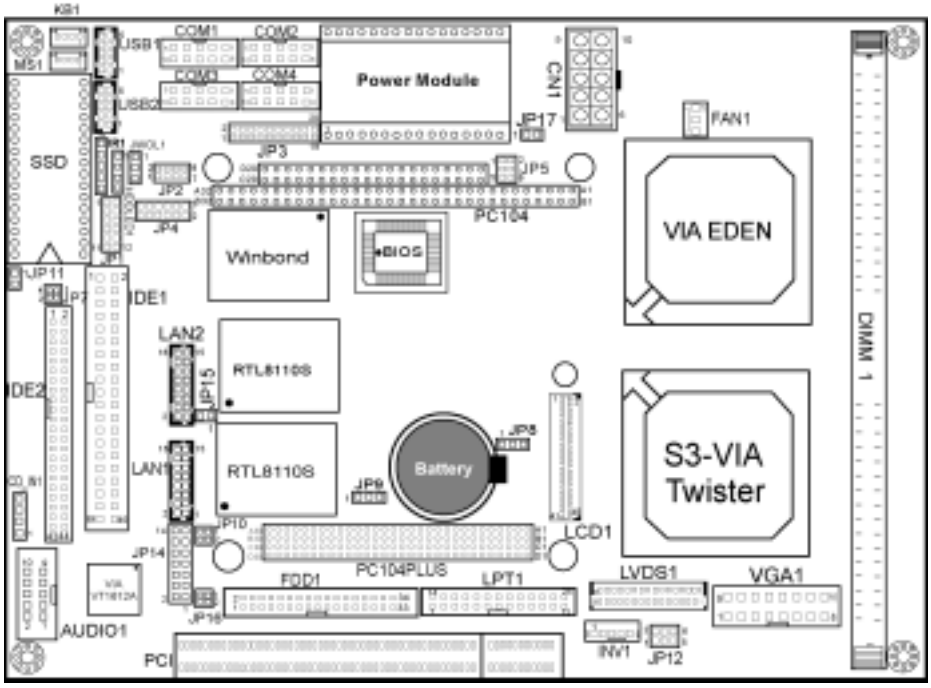
This section includes:

- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper settings
- Connector‘s Pin Assignments

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

COM Connector	COM1, COM2
	COM3, COM4
RS232/422/485 (COM2) Selection	JP3
COM Port RI & Voltage Selection	JP2, JP4
Keyboard Connector	KB1
Mouse Connector	MS1
Power LED Connector	JP14 (3-4)
Reset Connector	JP14 (5-6)
Hard Disk Drive LED Connector	HDLED1
External Speaker Connector	JP14 (1-2)
Power Button	JP14 (7-8)
IrDA Connector	IR1
Inverter Connector	INV1
VGA Connector	VGA1
LVDS Connector	LVDS1
LVDS Panel Voltage Selection	JP12
LCD Connector	LCD1
Universal Serial Bus Connector	USB1, USB2
Floppy Disk Drive Connector	FDD1
Hard Disk Drive Connector	IDE1, IDE2
Printer Connector	LPT1
NMI/Reset Selection	JP7
LAN Connector	LAN1, LAN2
Onboard LAN Selection	JP10
ATX Power Connector	CN1
AT/ATX Power Selection	JP14 (9-12), JP17
Sound Connector	AUDIO1
Onboard Audio Selection	JP11
CD Audio-in Connector	CD_IN1
Clear CMOS Selection	JP8
Memory Installation	DIMM1
Wake on LAN Connector	JWOL1
Compact Flash Master/Slave Selection	JP15
Power Module/Power Supply Selection	JP5
SSD Memory Mapping Selection	JP1
PCI/Riser Card Selection	JP9, JP16

2-2. COMPONENT LOCATIONS



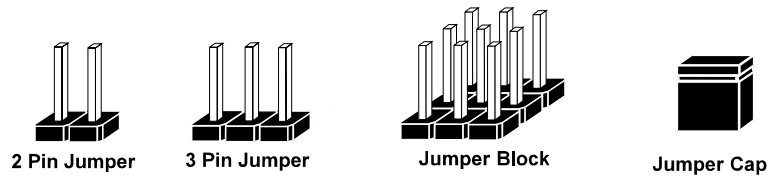
EBC-E400C Connector, Jumper and Component locations

2-3. HOW TO SET THE JUMPERS

You can configure your board by setting the jumpers. Jumper is consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", Also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "opening" or "closing" pins.

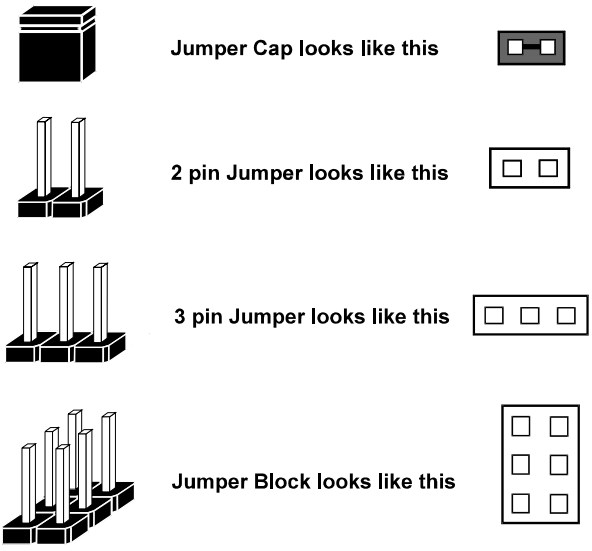
The jumper can be combined into sets that called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

JUMPERS AND CAPS

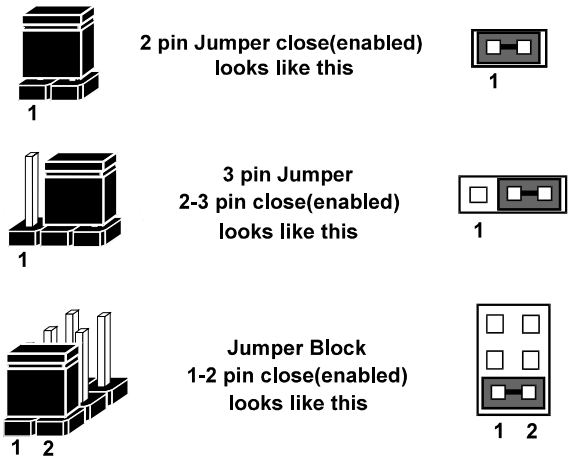


If a jumper has three pins (for example, labelled PIN1, PIN2, and PIN3), You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagram looks like and what they represent.

JUMPER DIAGRAMS



JUMPER SETTINGS

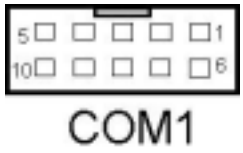


2-4. COM PORT CONNECTOR

There are four COM ports enhanced in this board namely: COM1, COM2, COM3 and COM4. COM1, COM3 and COM4 are fixed for RS-232, while COM2 is selectable for RS-232/422/485.

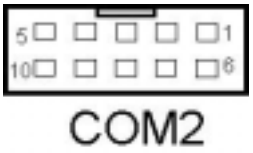
COM1 : COM1 Connector
The COM1 Connector assignments are as follows :

PIN	ASSIGNMENT
1	TDCD1
2	TIN1
3	ROUT1
4	RDTR1
5	GND
6	TDSR1
7	TRTS1
8	RCTS1
9	RIN1
10	NC



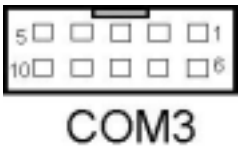
COM2 : COM2 Connector
The COM2 Connector assignments are as follows :

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	TDCD2	TX-	TX-
2	TIN2	TX+	TX+
3	ROUT2	RX+	RX+
4	RDTR2	RX-	RX-
5	GND	GND	GND
6	TDSR2	RTS-	NC
7	TRTS2	RTS+	NC
8	RCTS2	CTS+	NC
9	RIN2	CTS-	NC
10	NC	NC	NC



COM3 : COM3 Connector
The COM3 Connector assignments are as follows :

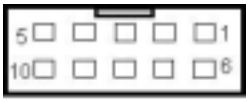
PIN	ASSIGNMENT
1	TDCD3
2	TIN3
3	ROUT3
4	RDTR3
5	GND
6	TDSR3
7	TRTS3
8	RCTS3
9	RIN3
10	NC



COM3

COM4 : COM4 Connector
The COM4 Connector assignments are as follows :

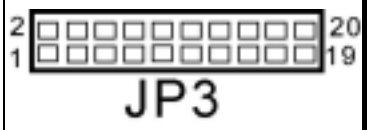
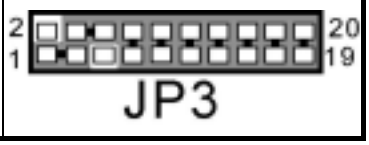
PIN	ASSIGNMENT
1	TDCD4
2	TIN4
3	ROUT4
4	RDTR4
5	GND
6	TDSR4
7	TRTS4
8	RCTS4
9	RIN4
10	NC



COM4

2-5. RS232/422/485 (COM2) SELECTION

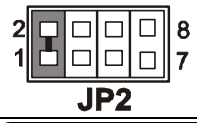
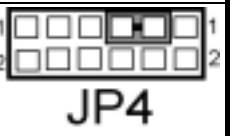
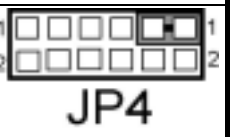
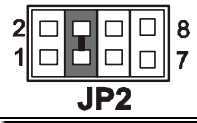
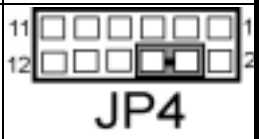
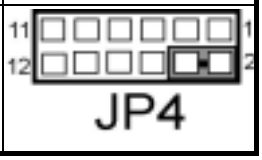
JP3 : RS-232/422/485 Selection
COM2 is selectable for RS-232, 422, 485 function.
The jumper settings are as follows :

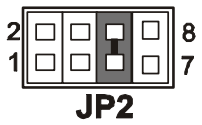
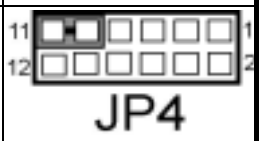
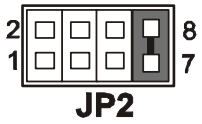
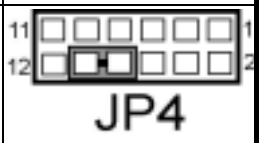
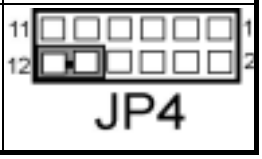
COM 2 FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
RS-232	Open	
RS-422	1-2, 5-6, 7-8, 9-10 11-12, 13-14, 15-16 17-18, 19-20	
RS-485	1-3, 4-6, 7-8, 9-10 11-12, 13-14, 15-16 17-18, 19-20	

*** Manufactory default --- RS-232.

2-6. COM PORT RI & VOLTAGE SELECTION

JP2, JP4 : COM Port RI & Voltage Selection
The selections are as follows:

COM PORT	SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
COM1	RI	JP2 1-2	
	+5V	JP4 3-5	
	12V	JP4 1-3	
COM2	RI	JP2 3-4	
	+5V	JP4 4-6	
	12V	JP4 2-4	

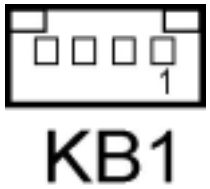
COM3	RI	JP2 5-6	
	+5V	JP4 7-9	
	12V	JP4 9-11	
COM4	RI	JP2 7-8	
	+5V	JP4 8-10	
	12V	JP4 10-12	

***Manufacturing Default – RI. (All jumpers are closed).

2-7. KEYBOARD CONNECTOR

KB1 : PC/AT Keyboard Connector, support Y-cable
The jumper settings are as follows:

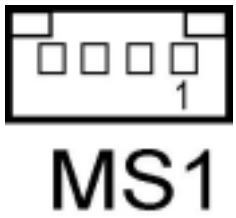
PIN	ASSIGNMENT
1	KB_CK
2	KB_DT
3	GND
4	KBVCC



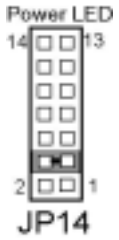
2-8. PS/2 MOUSE CONNECTOR

MS1 : PS/2 Mouse Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	MS_CK
2	MS_DT
3	GND
4	MSVCC



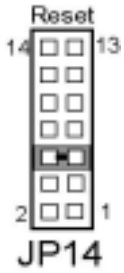
2-9. POWER LED CONNECTOR



JP14 (3-4) : Power LED Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
3	PWLED-
4	PWLED+

2-10. RESET CONNECTOR



JP14 (5-6) : Reset Connector.
The pin assignments are as follows :

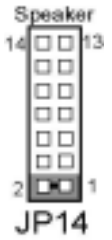
PIN	ASSIGNMENT
5	GND
6	RSTSW

2-11. HARD DISK DRIVE LED CONNECTOR

HDLED : Hard Disk Drive LED Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	HD_LED-
2	HD_LED-
3	HD_LED-
4	HD_LED+

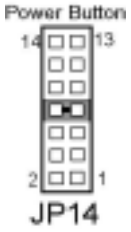
2-12. EXTERNAL SPEAKER CONNECTOR



JP14 (1-2) : External Speaker Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	Speaker+
2	Speaker-

2-13. POWER BUTTON



JP14 (7-8) : Power Button
The pin assignments are as follows:

PIN	ASSIGNMENT
7	GND
8	PW_BN

2-14. IRDA CONNECTOR

IR1 : IrDA (SIR) Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX

2-15. INVERTER CONNECTOR

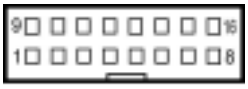
INV1 : Wake On LAN Connector
The pin assignment is as follows:

INV1

PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC
4	GND
5	ENABKL

2-16. VGA CONNECTOR

VGA1 : VGA Connector
The pin assignments are as follows:



VGA1

PIN	ASSIGNMENT
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	NC
12	DDC_DAT
13	HSYNC
14	VSYNC
15	DDC_CLK
16	NC

2-17. LVDS CONNECTOR

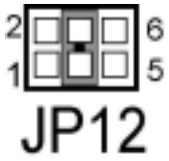
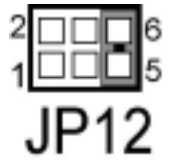
LVDS1 : LVDS Connector
The pin assignments are as follows :

LVDS1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDSVCC	16	YCP
2	GND	17	YCM
3	ZCM	18	GND
4	ZCP	19	Y2P
5	GND	20	Y2M
6	Z2M	21	GND
7	Z2P	22	Y1P
8	GND	23	Y1M
9	Z1M	24	GND
10	Z1P	25	Y0P
11	GND	26	Y0M
12	GND	27	GND
13	Z0P	28	GND
14	Z0M	29	LVDSVCC
15	GND	30	LVDSVCC

2-18. LVDS PANEL VOLTAGE SELECTION

JP12 : LVDS Panel Voltage Selection
The voltage selection are as follows:

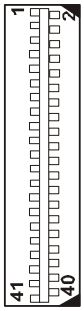
VOLTAGE SELECTION	JUMPER SETTINGS (pin closed)	JUMPER ILLUSTRATION
12V VCC	1-2	
5V VCC	5-6	
3.3V VCC	3-4	

***Manufacturing Default – No default.

2-19. LCD CONNECTOR

LCD1 : LCD Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	P20	2	GND
3	P16	4	LCDVCC5
5	P21	6	P0
7	P17	8	P8
9	P22	10	P1
11	P18	12	P9
13	P23	14	P2
15	P19	16	P10
17	LCDVCC5	18	P3
19	FPVS	20	P11
21	FPDEN	22	P4
23	FPHS	24	P12
25	SHFCLK	26	P5
27	LCDVCC3	28	P13
29	LCDVCC3	30	P6
31	ENABKL	32	P14
33	VCC	34	P7
35	ENVDD	36	P15
37	GND	38	LCDVCC12
39	GND	40	LCDVCC12
41	NC		



LCD1

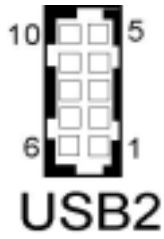
2-20. UNIVERSAL SERIAL BUS CONNECTOR

USB1 : Universal Serial Bus Connector
USB connector of this board can support two USB ports.
The pin assignments are as follows:

PIN	ASSIGNMENT
1	USBVCC
2	USBDT0–
3	USBDT0+
4	GND
5	GND
6	USBVCC
7	USBDT1–
8	USBDT1+
9	GND
10	GND

USB2 : Universal Serial Bus Connector
USB connector of this board can support two USB ports.
The pin assignments are as follows:

PIN	ASSIGNMENT
1	USBVCC
2	USBDT2–
3	USBDT2+
4	GND
5	GND
6	USBVCC
7	USBDT3–
8	USBDT3+
9	GND
10	GND



2-21. FLOPPY DISK DRIVE CONNECTOR

FDD1 : Floppy Disk Drive Connector
You can use a 34-pin daisy-chain cable to connect two FDDs. On one end of this cable there is a 34-pin flat cable to attach the FDD on the board, the other side attaches to two FDDs.
The pin assignments are as follows :

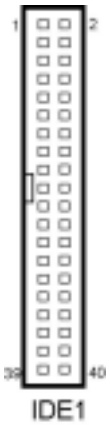
FDD1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	DRVDEN0
3	GND	4	NC
5	GND	6	DRVDEN1
7	GND	8	INDEX
9	GND	10	MTR0
11	GND	12	DRV1
13	GND	14	DRV0
15	GND	16	MTR1
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WDATA
23	GND	24	WGATE
25	GND	26	TRK0
27	GND	28	WRPRT
29	GND	30	RDATA
31	GND	32	SEL
33	GND	34	DSKCHG

2-22. HARD DISK DRIVE CONNECTOR

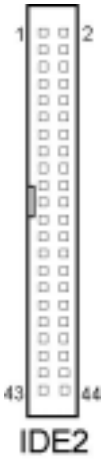
IDE1 : Hard Disk Drive Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	GND	20	NC
21	DDREQA	22	GND
23	-DIOWA	24	GND
25	-DIORA	26	GND
27	HDRDYA	28	PULL LOW
29	-DDACKA	30	GND
31	IRQ14	32	NC
33	PDA1	34	PD_80P
35	PDA0	36	PDA2
37	-PDCS1	38	-PDCS3
39	HDLED1	40	GND



IDE2 : Hard Disk Drive Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	IDERST	2	GND
3	SDD7	4	SDD8
5	SDD6	6	SDD9
7	SDD5	8	SDD10
9	SDD4	10	SDD11
11	SDD3	12	SDD12
13	SDD2	14	SDD13
15	SDD1	16	SDD14
17	SDD0	18	SDD15
19	GND	20	NC
21	DDREQB	22	GND
23	DIOWBJ	24	GND
25	DIORBJ	26	GND
27	HDRDYB	28	PULL LOW
29	DDACKBJ	30	GND
31	IDE_IRQ15	32	NC
33	SDA1	34	SD_80P
35	SDA0	36	SDA2
37	SDCSJ1	38	SDCSJ3
39	HDLEDJ2	40	GND
41	VCC	42	VCC
43	GND	44	NC



2-23. PRINTER CONNECTOR

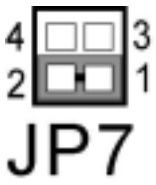
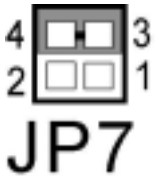
LPT1 : Printer Connector
As to link the Printer to the card, you need a cable to connect both DB25 connector and parallel port.
The pin assignments are as follows :

LPT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STROBE-	14	P_AFD
2	PPD0	15	P_ERR
3	PPD1	16	P_INIT
4	PPD2	17	P_SLIN
5	PPD3	18	GND
6	PPD4	19	GND
7	PPD5	20	GND
8	PPD6	21	GND
9	PPD7	22	GND
10	P-ACK	23	GND
11	P_BUSY	24	GND
12	P_PE	25	GND
13	P_SLCT	26	NC

2-24. RESET/NMI SELECTION

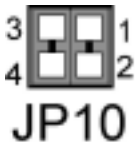
JP7: Reset/NMI Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
RESET	1-2	
NMI	3-4	

***Manufacturing Default is set as Reset.

2-25. ONBOARD LAN SELECTION (OPTION)

JP10 : Onboard LAN Selection
The selections are as follows:

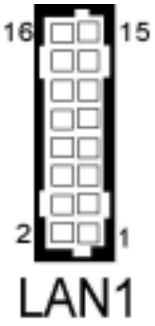
FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Enabled	Close	
Disabled	Open	

***Manufacturing Default: Enable.

2-26. LAN CONNECTOR

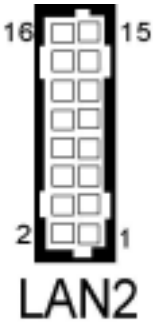
LAN1 : LAN Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	1MDI_3+
2	1MDI_3-
3	1MDI_2+
4	1MDI_2-
5	1MDI_1+
6	1MDI_1-
7	1MDI_0+
8	1MDI_0-
9	AVDDL
10	GND
11	AVDDH
12	GND
13	LINK
14	ACT
15	SPEED100
16	SPEED1000



LAN2 : LAN Connector
The pin assignments are as follows:

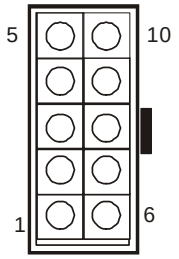
PIN	ASSIGNMENT
1	2MDI_3+
2	2MDI_3-
3	2MDI_2+
4	2MDI_2-
5	2MDI_1+
6	2MID_1-
7	2MDI_0+
8	2MDI_0-
9	AVDDL
10	GND
11	AVDDH
12	GND
13	LINK_2
14	ACT_2
15	SPEED100_2
16	SPEED1000_2



2-27. ATX POWER CONNECTOR

CN1 : Power Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	VCC
2	VCC
3	GND
4	GND
5	+12V
6	+5V SBY
7	VCC
8	GND
9	PS_ON
10	-12V



CN1

2-28. ONBOARD AUDIO SELECTION

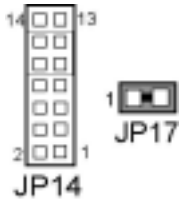
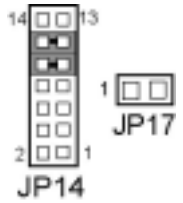
JP11 : Onboard Audio Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Enabled	Close	 JP11
Disabled	Open	 JP11

***Manufacturing Default: Enable.

2-29. AT/ATX POWER SELECTION

JP14(11,12,13,14) : AT/ATX Power Selection
The selections are as follows:

POWER SELECTION	JUMPER SETTING (pin closed)		JUMPER ILLUSTRATION
	JP14 (9-10, 11-12)	JP17	
ATX	Open	Close	
AT	Close	Open	

***Manufacturing Default: ATX

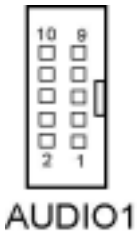
As a reminder, when you choose to use the ATX function, please be sure to set the corresponding configuration found in BIOS setup such as:

1. Inside the “POWER MANAGEMENT” setting, set the ACPI function to enable.

2-30. SOUND CONNECTOR

AUDIO1 : Sound Connector
This connector is used to connect the microphone, line-in, and line-out through our adapter card. The pin assignments are as follows:

PIN	ASSIGNMENT
1	MIC-IN
2	MIC-VDD
3	GND
4	GND
5	LINE-L
6	LINE-R
7	GND
8	GND
9	SPK-L
10	SPK-R



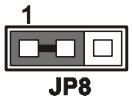
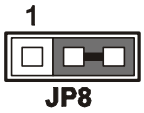
2-31. CD AUDIO-IN CONNECTOR

CD_IN1 : CD Audio-in Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	AUXAL
2	GND_CD
3	GND_CD
4	AUXAR

2-32. CLEAR CMOS SELECTION

JP8 : Clear CMOS Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Normal	1-2	
Clear CMOS	2-3	

*** Manufacturing Default – Normal.

2-33. MEMORY INSTALLATION

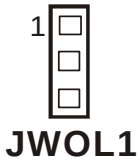
The EBC-E400C Embedded Computer supports one SODIMM bank.

DRAM BANK CONFIGURATION

DIMM 1	TOTAL MEMORY
32MB	32MB
64MB	64MB
128MB	128MB
256MB	256MB
512MB	512MB

2-34. WAKE ON LAN CONNECTOR

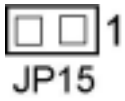
JWOL1 : Wake On LAN Connector
The pin assignment is as follows:



PIN	ASSIGNMENT
1	5VSB
2	GND
3	RI

2-35. COMPACT FLASH MASTER/SLAVE SELECTION

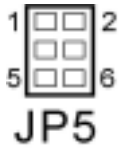
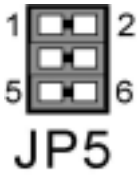
JP15 : IRQ12 Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Master	Close	
Slave	Open	

*** Manufacturing Default – Master.

2-36. POWER MODULE/POWER SUPPLY SELECTION

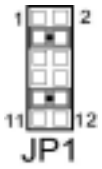
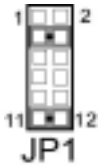
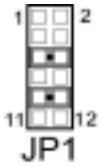
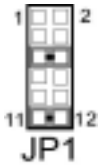
JP5 : Power Module/ Power Supply Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
±12V from Power Module	open	
±12V from Power Supply	1-2, 3-4, 5-6	

*** Manufacturing Default –±12V from Power Supply.

2-37. SSD MEMORY MAPPING SELECTION

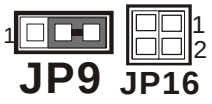
JP1 : SSD Memory Mapping Selections
A 32-pin SSD socket supports Disk-on-Chip up to 144MB. This PnP Flash ROM SSD can be install as one of user's hard disk drive.
The SSD Memory Mapping Selections are as follows:

SSD Memory Map	JUMPER SETTING (pin closed)		JUMPER ILLUSTRATION
D0000h-D1FFFh	3-4	9-10	
D4000h-D5FFFh	3-4	11-12	
D8000h-D9FFFh	5-6	9-10	
DC000h-DDFFFh	5-6	11-12	

*** Manufactory default --- D0000h-D1FFFh.

2-38. PCI/RISER CARD SELECTION

JP9, JP16 : PCI/Riser Card Selection
The selections are as follows:

FUNCTION	JUMPER SETTING		JUMPER ILLUSTRATION
	JP9 (pin closed)	**JP16 (pin closed)**	
PCI	2-3	Open	
Riser Card	1-2	1-2, 3-4	

*** Manufacturing Default –Riser Card.

SOFTWARE UTILITIES

CHAPTER

3

This chapter comprises the detailed information of VGA driver, LAN driver, sound driver, and Flash BIOS update. It also describes how to install the watchdog timer configuration.

Section includes:

- VIA 4 IN 1 Service Pack Driver
- VGA Driver Utility
- Flash BIOS Update
- LAN Driver Utility
- Sound Driver Utility

3-1. INTRODUCTION

Enclosed with our EBC-E400C package is our driver utility, which may comes in a form of a CD ROM disc or floppy diskettes. For CD ROM disc user, you will only need some of the files contained in the CD ROM disc, please kindly refer to the following chart:

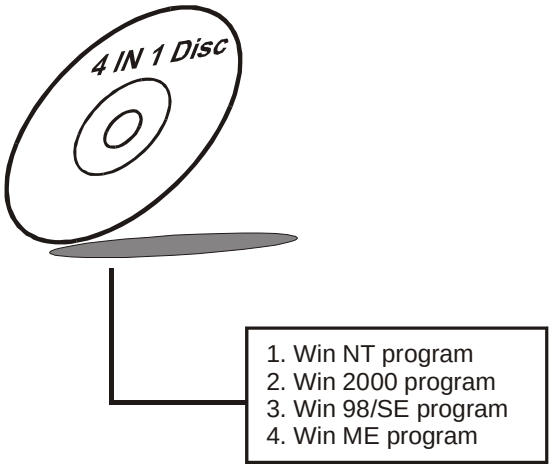
Filename (Assume that CD ROM drive is D:)	**Purpose**
D:\Utility\ ****Install this software first*!*	VIA 4in1 Service Pack Driver Utility
D:\VGA\	For VGA driver installation
D:\Flash\	For BIOS update
D:\LAN\	Realtek RTL8110S For LAN Driver installation
D:\SOUND\	For Sound Driver installation

3-2. VIA 4IN1 SERVICE PACK DRIVER

3-2-1. Introduction

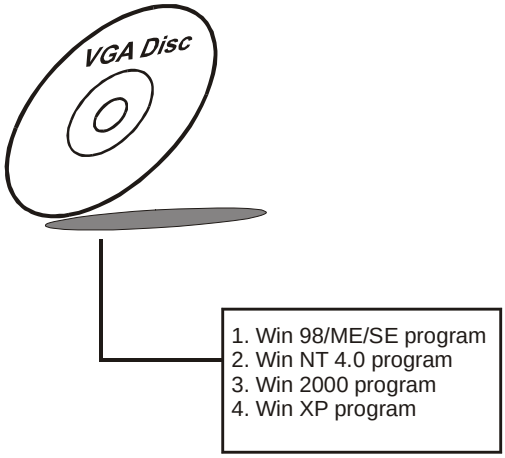
The 4-in-1 drivers are a collection of periodically updated drivers that provide enhanced VIA chipset to support under Microsoft Windows. This drivers should be installed after the OS is fully installed, to improve performance, fix issues, and minimize any incompatibilities.

The VIA 4 In 1 driver includes four system drivers to improve the performance and maintain the stability of systems using VIA chipsets. These four drivers are: VIA Registry (INF) Driver, VIA AGP VxD driver, VIA ATAPI Vendor Support Driver and VIA PCI IRQ Miniport Driver



3-3. VGA DRIVER UTILITY

The VGA interface embedded with our EBC-E400C can support a wide range of display mode, such as SVGA, STN, TFT .....etc. You can display CRT and LVDS simultaneously with the same mode.



3-4. FLASH BIOS UPDATE

3-4-1. System BIOS Update:

Users of EBC-E400C can use the program "Awdflash.exe" contained in the Utility Disk for system BIOS and VGA BIOS update.

3-4-2. To update VGA BIOS for LCD Flat Panel Display:

As EBC-E400C user, you have to update the VGA BIOS for your specific LCD flat panel you are going to use. For doing this, you need two files. One is the "Awdflash.exe" file and the other is the VGA BIOS for LCD panel display. Both file must be provided by the vendor or manufacturer. When you get these two files ready, follow the following steps for updating your VGA BIOS:

1. Install "Awdflash.exe" from Utility Disk to Drive C.
2. Insert the VGA BIOS file you have obtained from the vendor.
3. Type the path to Awdflash.exe and execute the VGA BIOS update with file C30bxxxx.bin
   C:\UTIL\AWDFLASH>AWDFLASH C30bxxxx.bin
4. The screen will display the table below:

FLASH MEMORY WRITER v8.XX (C) Award Software 2000 All Rights Reserved
For 8604-686B-6A6LLP69C-0 DATE: 04/23/2001 Flash Type - MXIC 29F002(N)T /5V File Name to Program: C30bxxxx.bin Checksum: XXXXX
Error Message : Do You Want To Save BIOS (Y/N)

If you want to save up the original BIOS, enter "Y" and press < Enter > .
If you choose "N", the following table will appear on screen.

FLASH MEMORY WRITER v8.XX (C) Award Software 2000 All Rights Reserved
For 8604-686B-6A6LLP69C-0 DATE: 04/23/2001 Flash Type - MXIC 29F002(N)T /5V File Name to Program: C30bxxxx.bin Checksum: XXXXX
Error Message : Are You Sure To Program (Y/N)

Select "Y", and the BIOS will be renewed. When you are refreshing the BIOS, do not turn off or reset the system, or you will damage the BIOS. After you have completed all the programming, the screen displays the table below:

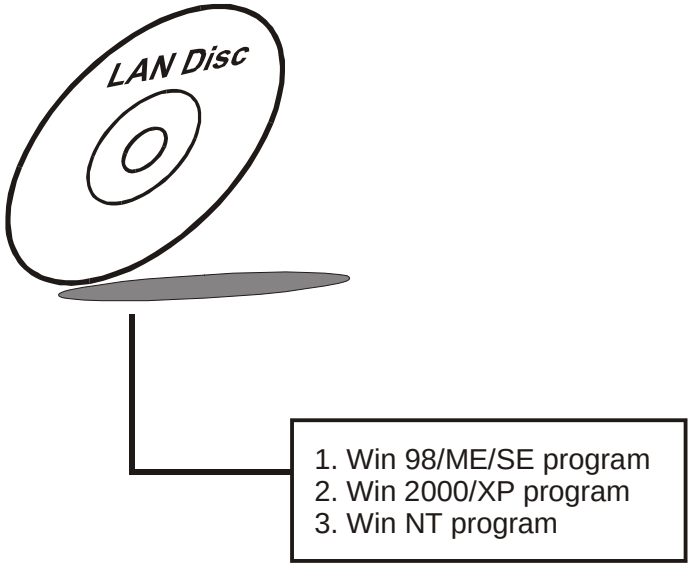
FLASH MEMORY WRITER v8.XX (C) Award Software 2000 All Rights Reserved
For 8604-686B-6A6LLP69C-0 DATE: 04/23/2001 Flash Type - MXIC 29F002(N)T /5V File Name to Program: C30bxxxx.bin Checksum: XXXXX Reset System or Power off to accomplish update process!
F1: Reset F10: Exit

Please reset or power off the system, and then the Flash BIOS is fully implemented.

3-5. LAN DRIVER UTILITY

3-5-1. Introduction

EBC-E400C Embedded Board is enhanced with LAN function that can support various network adapters. Installation programs for LAN drivers are listed as follows:



3-5-2. Installation Procedures of LAN Driver

1. Install LAN Driver to Windows 98/2000/XP

Executing Windows 98/Windows 2000/Windows XP, it will auto-detect your system configuration and find the adapter hardware.

(1) Ask you to select which driver you want to install, select "Driver from disk provided by hardware manufacturer".

(2) Insert the Realtek RTL8100S driver disk into the drive A or CD drive and specify the setup file pathname, ex: A:\ .

(3) Win 98/ Win 2000 will appear some messages to insert Windows 98/Win2000 system disk to complete setup step.

(4) Windows 98/Windows 2000 will finish the other installation procedure automatically, and then restart the system.

2. Install LAN Driver to Windows NT 3.0/4.0

(1) In the Main group of NT, select the "Control Panel" icon.
(2) In the Control Panel window, choose the "Network" icon.
(3) In the Network Settings dialog box, choose the "Add adapter" button. The Add Network Adapter dialog box appears.
(4) In the list of network cards, select "<other> Requires disk from manufacturer", and then press <Enter> button.
(5) Insert the LAN driver utility, and enter the filename (ex. A:\ pathname) where the setup file OEMSETUP.INF is located, and then choose OK button.
(6) The screen will appear "Select Line Speed" dialog box, which is provided by R8139n5.SYS driver. The default value is "auto" so that the line speed can be auto detected as 10MB or 100MB, while the R8139n5.SYS is loading.
(7) The screen will appear "Input Ethernet ID" dialog box, which is provided by R8139n5.SYS driver. This option is only required when you have more than one RTL8100B PCI Fast Ethernet adapters on this computer. Select "SKIP" if only one adapter is installed on this computer.
(8) "Bus Location" displayed in next screen. Your machine contains more than one hardware bus, please select the Bus Type and Bus number on which your network adapter card is installed.
(9) NT will then perform the binding process. If any additional network software options were installed, you may be prompted for specific information for these packages.
(10) Re-starting your system you will acquire network service.

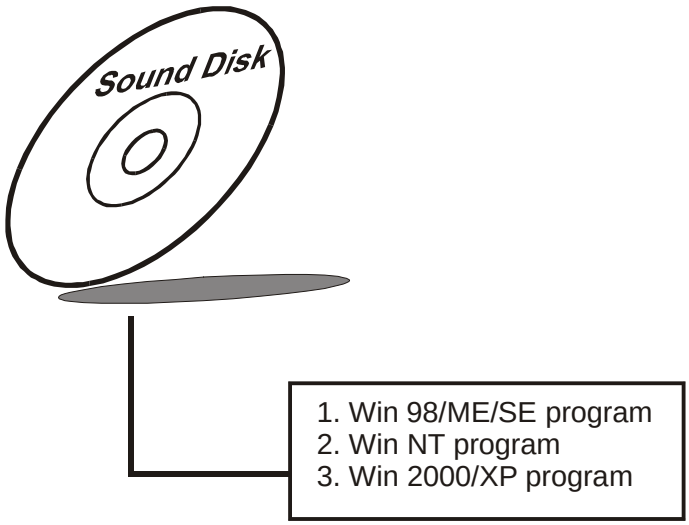
🗁 Note: For Installing Multiple LAN Adapters:
Enter Windows NT and follow above setup procedure step 2, in the "Network Settings" dialog box, choose the "Configure..." button. The "Input Ethernet ID" dialog box appears and input adapter's Ethernet ID. Last step to select OK and close NETWORK SETUP. Select SKIP if only one adapter is installed on this computer.

For more information on installation procedure, please refer to TXT directory found on LAN DRIVER UTILITY.

3-6. SOUND DRIVER UTILITY

3-6-1. Introduction

The sound function enhanced in this system is fully compatible with Windows 9x/98SE/ME, Windows NT, DOS, OS2, Linux, and Windows 2000. Below, you will find the content of the Sound driver :



3-6-2. Installation Procedure In Windows NT

(1) Open “Main” Window in Program Manager.
(2) Select “Control Panel” in Main Window, then open it.
(3) Select “Drivers” in Control Panel. Double Click it to open this window. Then choose “ADD” item to add driver.
(4) Choose “Unlisted or Updated Driver” on the list. Then press “OK” button.
(5) Change the “Install Driver” directory to the “VIA Audio Driver directory”. Then press “OK” button.
(6) If it correct, you will see a pop window, which shows “VIA PCI Audio Controller”. Press “OK” button to process installing.
(7) Restart the computer.

AWARD BIOS SETUP

CHAPTER 4

This chapter shows how to set up the Award BIOS.

Section includes:

- Introduction
- Entering Setup
- The Standard CMOS Features
- The Advanced BIOS Features
- The Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PNP/PCI Configuration
- PC Health Status
- Frequency/Voltage Control
- Load Fail-Safe Defaults
- Load Optimized Defaults
- Password Setting
- Save and Exit Setup
- Exit Without Saving

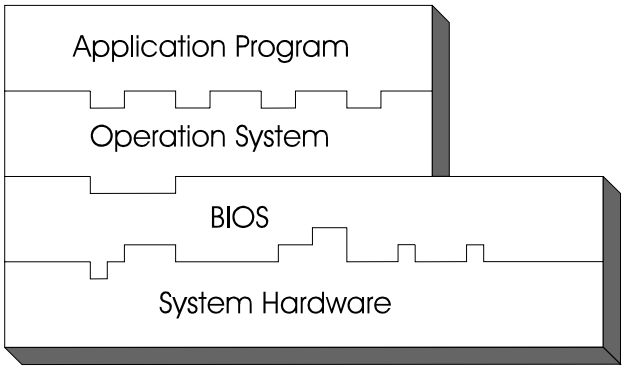
4-1. INTRODUCTION

This chapter will show you the function of the BIOS in managing the features of your system. The EBC-E400C half size Embedded Board is equipped with the BIOS for system chipset from Award Software Inc. This page briefly explains the function of the BIOS in managing the special features of your system. The following pages describe how to use the BIOS for system chipset Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drives, and memory.

The operating system relies on the BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip, to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS enables you to make basic changes to your system's hardware without having to write a new operating system.

The following diagram illustrates the interlocking relationships between the system hardware, BIOS, operating system, and application program:



4-2. ENTERING SETUP

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

PRESS <DEL> TO ENTER SETUP, ESC TO SKIP MEMORY TEST

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Award SETUP program will appear on the screen:

Phoenix - AwardBIOS CMOS Setup Utility

►Standard CMOS Features	►Frequency/Voltage Control
►Advanced BIOS Features	Load Fail-Safe Defaults
►Advanced Chipset Features	Load Optimized Defaults
►Integrated Peripherals	Set Password
►Power Management Setup	Save & Exit Setup
►PnP/PCI Configurations	Exit Without Saving
►PC Health Status	
Esc : Quit F10 : Save & Exit Setup	↑↓→← : Select Item
Time, Date, Hard Disk Type ….	

Setup program initial screen

You may use the cursor the up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

4-3. THE STANDARD CMOS FEATURES

Highlight the "STANDARD CMOS FEATURES" and press the <ENTER> key and the screen will display the following table:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Sun Feb 10 2002	Item Help
Time (hh:mm:ss)	22 : 20 : 6	Menu Level ►
► IDE Primary Master	[None]	Change the day, month, year and century
► IDE Primary Slave	[None]	
► IDE Secondary Master	[None]	
► IDE Secondary Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	506880K	
Total Memory	507904K	

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

CMOS Setup screen

In the above Setup Menu, 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:

< Month >, < Date > and <Year >. Ranges for each value are in the CMOS Setup Screen, and the week-day will skip automatically.

Time:

< Hour >, < Minute >, and < Second >. Use 24 hour clock format, i.e., for PM numbers, add 12 to the hour. For example: 4: 30 P.M. You should enter the time as 16:30:00.

IDE Primary Master / Slave:
IDE Secondary Master / Slave:

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detect its specifications during POST, every time system boots.

If you do not want to select drive type AUTO, other methods of selecting drive type are available:

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for hard drive types 1 through 45.
2. Select USER and enter values into each drive parameter field.
3. Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any predefine type are classified as type USER.

- Size: Disk drive capacity (approximate). Note that this size is usually greater than the size of a formatted disk given by a disk-checking program.
- Cyls: number of cylinders.
- Head: number of heads.
- Precomp: write precompensation cylinders.
- Landz: landing zone.
- Sector: number of sectors.
- Mode: Auto, Normal, Large or LBA.

  Auto: The BIOS automatically determines the optimal mode.

  - Normal: Maximum number of cylinders, heads, sectors supported are 1024, 16 and 63.
  - Large: For drives that do not support LBA and have more than 1024 cylinders.

- LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms the data address described by sector, head and cylinder number into a physical block address, significantly improving data transfer rates. For drives greater than 1024 cylinders.

DRIVE A AND DRIVE B:

Select the type of floppy disk drive installed in your system. The available options are 360KB 5.25in, 1.2KB 5.25in, 720KB 3.5in, 1.44MB 3.5in, 2.88MB 3.5in and None.

VIDEO:

This category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup. Available Options are as follows:

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode.
CGA 80	Color Graphics Adapter, power up in 80 column mode.
MONO	Monochrome adapter, includes high resolution monochrome adapters.

HALT ON:

This category allows user to choose whether the computer will stop if an error is detected during power up. Available options are “All errors”, “No errors”, “All, But keyboard”, “All, But Diskette”, and “All But Disk/Key”.

BASE MEMORY:

Displays the amount of conventional memory detected during boot up.

EXTENDED MEMORY:

Displays the amount of extended memory detected during boot up.

TOTAL MEMORY:

Displays the total memory available in the system.

HARD DISK ATTRIBUTES:

Type	Cylinders	Heads	V-P comp	LZone	Sect	Capacity
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	30
4	940	8	512	940	17	62
5	940	6	512	940	17	46
6	615	4	65535	615	17	20
7	642	8	256	511	17	30
8	733	5	65535	733	17	30
9	900	15	65535	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	49
13	306	8	128	319	17	20
14	733	7	65535	733	17	42
15	000	0	0000	000	00	00
16	612	4	0000	663	17	20
17	977	5	300	977	17	40
18	977	7	65535	977	17	56
19	1024	7	512	1023	17	59
20	733	5	300	732	17	30
21	733	7	300	732	17	42
22	733	5	300	733	17	30
23	306	4	0000	336	17	10
24	977	5	65535	976	17	40
25	1024	9	65535	1023	17	76
26	1224	7	65535	1223	17	71
27	1224	11	65535	1223	17	111
28	1224	15	65535	1223	17	152
29	1024	8	65535	1023	17	68
30	1024	11	65535	1023	17	93
31	918	11	65535	1023	17	83
32	925	9	65535	926	17	69
33	1024	10	65535	1023	17	85
34	1024	12	65535	1023	17	102
35	1024	13	65535	1023	17	110
36	1024	14	65535	1023	17	119
37	1024	2	65535	1023	17	17
38	1024	16	65535	1023	17	136
39	918	15	65535	1023	17	114
40	820	6	65535	820	17	40
41	1024	5	65535	1023	17	42
42	1024	5	65535	1023	26	65
43	809	6	65535	852	17	40
44	809	6	65535	852	26	61
45	776	8	65335	775	33	100
47			AUTO			

Award Hard Disk Type Table

4-4. THE ADVANCED BIOS FEATURES

Choose the "ADVANCED BIOS FEATURES" in the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	[Disabled]	Item Help
CPU Internal Cache	[Enabled]	
External Cache	[Enabled]	Menu Level ►
CPU L2 Cache ECC Checking	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[HDD-0]	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
OS Select for DRAM > 64MB	[Non-OS2]	
Video BIOS Shadow	[Enabled]	
C8000-CBFFF Shadow	[Disabled]	
CC000-CFFFF Shadow	[Disabled]	
D0000-D3FFF Shadow	[Disabled]	
D4000-D7FFF Shadow	[Disabled]	
D8000-DBFFF Shadow	[Disabled]	
DC000-DFFFF Shadow	[Disabled]	
Small Logo (EPA) Show	[Enabled]	

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

BIOS Features Setup Menu

The "BIOS FEATURES SETUP" allow you to configure your system for basic operation. The user can select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

A brief introduction of each setting in the BIOS FEATURES SETUP program is given below.

VIRUS WARNING :

This item allows you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

CPU INTERNAL CACHE/EXTERNAL CACHE :

These two categories speed up memory access. However, it depends on CPU/chipset design.

CPU L2 CACHE ECC CHECKING :

This item allows you to enable or disable CPU L2 Cache ECC checking.

QUICK POWER ON SELF-TEST:

This item allows you to speed up Power On Self Test (POST) after power-up the computer. When enabled, the BIOS will shorten or skip some check items during POST.

FIRST/SECOND/THIRD/OTHER BOOT DEVICE:

The BIOS attempt to load the operating system from the devices in the sequence selected in these items.

SWAP FLOOPY DRIVE:

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

BOOT UP FLOPPY SEEK:

You may enable / disable this item to define whether the system will look for a floppy disk drive to boot at power-on, or proceed directly to the hard disk drive.

BOOT UP NUMLOCK STATUS:

Select power on state for NumLock.

GATE A20 OPTION:

This entry allows you to select how the gate A20 is handled. When Normal was set, a pin in the keyboard controller controls Gate A20. And when Fast was set, the chipset controls Gate A20.

TYPEMATIC RATE SETTING:

Enable this item if you wish to be able to configure the characteristics of your keyboard. Typematic refers to the way in which characters are entered repeatedly if a key is held down. For example, if you press and hold down the "A" key, the letter "a" will repeatedly appear on your screen on your screen until you release the key. When enabled, the typematic rate and typematic delay can be selected.

TYPEMATIC RATE (CHARS/SEC):

This item sets the number of times a second to repeat a key stroke when you hold the key down.

TYPEMATIC DELAY (MSEC):

The item sets the delay time after the key is held down before it begins to repeat the keystroke.

SECURITY OPTION:

This category allows you to limit access to the system and Setup, or just to Setup.

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

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

OS SELECT FOR DRAM >64MB :

Select the operating system that is running with greater than 64MB or RAM on the system. You may choose OS2 or Non-OS2.

VIDEO BIOS SHADOW :

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

C8000-CBFFF SHADOW ~ DC000-DFFFF SHADOW:

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

4-5. ADVANCED CHIPSET FEATURES

Choose the "ADVANCED CHIPSET FEATURES" from the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		Item Help
DRAM Timing by SPD	[Enabled]	
x DRAM Clock	Host CLK	
x SDRAM Cycle Length	3	Menu Level ►
x Bank Interleave	Disabled	
Memory Hole	[Disabled]	
P2C/C2P Concurrency	[Enabled]	
System BIOS Cacheable	[Disabled]	
Video RAM Cacheable	[Disabled]	
Frame Buffer Size	[16M]	
Panel Type	[07]	
Boot Device Select	[Auto]	
OnChip USB	[Enabled]	
USB Keyboard Support	[Disabled]	
OnChip Sound	[Auto]	
CPU to PCI Write Buffer	[Enabled]	
PCI Dynamic Bursting	[Enabled]	
PCI Master 0 WS Write	[Enabled]	
PCI Delay Transaction	[Disabled]	
PCI#2 Access #1 Retry	[Enabled]	

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

Chipset Features Setup Screen

The parameter allows you to configure the system based on the specific features of the installed chipset. The chipset manages bus speed and access to system memory resources, such as DRAM and the external cache.

It also coordinates communications between conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM TIMING BY SPD:

User can control DRAM Timing by SPD.

DRAM CLOCK:

This item allows you to control the DRAM speed.

SDRAM CYCLE LENGTH:

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

BANK INTERLEAVE:

This item allows you to set how many banks of SDRAM support in your mainboard.

MEMORY HOLE:

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

P2C/C2P CONCURRENCY:

This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency.

SYSTEM BIOS CACHEABLE:

This item allows you to enable 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.

VIDEO RAM CACHEABLE:

Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

FRAME BUFFER SIZE:

This item allows you to control the VGA frame buffer size.

PANEL TYPE:

Tune the resolution of panel.

BOOT DEVICE SELECT:

Decide to display from both panel and CRT, or one of them. "AUTO" denotes the display depends on the existence of CRT and LCD panel.

ONCHIP USB:

This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

USB KEYBOARD SUPPORT:

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

ONCHIP SOUND:

This item allows you to control the onboard AC '97 audio.

CPU TO PCI WRITE BUFFER:

When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI DYNAMIC BURSTING:

When Enabled, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and non-burstable transaction don't.

PCI MASTER 0 WS WRITE:

When Enabled, writes to the PCI bus are executed with zero wait states.

PCI DELAY TRANSACTION:

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

PCI#2 ACCESS #1 RETRY:

When disabled, PCI#2 will not be disconnected until access finishes. When Enabled, PCI#2 will be disconnected if max retries are attempted without success.

4-6. INTEGRATED PERIPHERALS

Choose "INTEGRATED PERIPHERALS" from the main setup menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

	On-Chip IDE Channel0	[Enabled]	Item Help
	On-Chip IDE Channel1	[Enabled]	
	IDE Prefetch Mode	[Enabled]	Menu Level ►
	Primary Master PIO	[Auto]	
	Primary Slave PIO	[Auto]	
	Secondary Master PIO	[Auto]	
	Secondary Slave PIO	[Auto]	
	Primary Master UDMA	[Auto]	
	Primary Slave UDMA	[Auto]	
	Secondary Master UDMA	[Auto]	
	Secondary Slave UDMA	[Auto]	
	Init Display First	[Onboard VGA]	
	IDE HDD Block Mode	[Enabled]	
	Onboard FDD Controller	[Enabled]	
	Onboard Serial Port 1	[3F8 / IRQ4]	
	Onboard Serial Port 2	[2F8 / IRQ3]	
	UART 2 Mode	[Standard]	
x	IR Function Duplex	Half	
x	TX,RX inverting enable	No, Yes	
	Onboard Parallel Port	[378/IRQ7]	
	Onboard Parallel Mode	[Normal]	
x	ECP Mode Use DMA	3	
x	Parallel Port EPP Type	EPP1.9	
	Onboard Serial Port 3	[3E8]	
	Serial Port 3 User IRQ	[IRQ10]	
	Onboard Serial Port 4	[2E8]	
	Serial Port 4 Use IRQ	[IRQ11]	
	IO Channel Check NMI	[Disabled]	
	Watch Dog Timer Select	[Disabled]	

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

Integrated Peripherals Setup Screen

By moving the cursor to the desired selection and by pressing the <F1> key, the all options for the desired selection will be displayed for choice.

ONCHIP IDE CHANNEL 0/1:

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

IDE PREFETCH MODE:

The onboard IDE drive interfaces supports IDE pre-fetching for faster drive accesses. If you install a primary and or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support pre-fetching.

PRIMARY MASTER/SLAVE PIO:
SECONDARY MASTER/SLAVE PIO:

The four IDE PIO fields allow you to 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.

PRIMARY MASTER/SLAVE UDMA:
SECONDARY MASTER/SLAVE UDMA:

Ultra DMA/33 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 you hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

INIT DISPLAY FIRST:

This item allows you to decide to active whether PCI Slot or on-chip VGA first. The choices are PCI Slot and Onboard.

IDE HDD BLOCK MODE:

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

ONBOARD FDD CONTROLLER:

Select Enabled if the system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled.

ONBOARD SERIAL PORT 1:
ONBOARD SERIAL PORT 2:
ONBOARD SERIAL PORT 3:
ONBOARD SERIAL PORT 4:

Select an address and corresponding interrupt for the 1st, 2nd, 3rd and forth serial ports.

UART 2 MODE:

This item allows you to select which mode for the Onboard Serial Port 2.

IR FUNCTION DUPLEX:

This item allows you to select the IR half/full duplex function.

TX, RX INVERTING ENABLE:

This item allows you to enable TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.

ONBOARD PARALLEL PORT:

This item allows you to determine access onboard parallel port controller with which I/O address.

ONBOARD PARALLEL MODE:

Select an operating mode for the onboard (printer) port. Select *Normal* unless you are certain your hardware and software both support one of the other available modes.

ECP MODE USE DMA:

Select a DMA channel for the parallel port for use during ECP mode.

PARALLEL PORT EPP TYPE:

Select EPP port type 1.7 or 1.9 as required by your parallel peripheral.

SERIAL PORT 3 USE IRQ:
SERIAL PORT 4 USE IRQ:

Select an address and corresponding interrupt for the 3rd and forth serial ports.

IO CHANNEL CHECK NMI:

This field enables or disables IO channel check NMI. Before selecting this function, the user should check first that NMI function is enabled as described in chapter 2 (Reset/NMI/Clear Watchdog Selection)

WATCHDOG TIMER SELECT:

The value denotes the count-down value of watchdog timer. If time is up, the system will restart or assert a I/O channel NMI signal which can be decide by hardware jumpers.

4-7. POWER MANAGEMENT SETUP

Choose `POWER MANAGEMENT SETUP´ option on the main menu, a display will be shown on screen as below :

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI function	[Disabled]	Item Help
Power Management	[Press Enter]	
PM Control by APM	[Yes]	Menu Level ►
Video Off Option	[Suspend -> Off]	
Video Off Method	[V/H SYNC+Blank]	
MODEM Use IRQ	[3]	
Soft-off by PWRBTN	[Instant-off]	
State After Power Failure	[Off]	
►Wake Up Events	[Press Enter]	

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

Power Management Setup Screen

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

ACPI FUNCTION:

Users are allowed to enable or disable the Advanced Configuration and Power Management (ACPI).

POWER MANAGEMENT:

This item allows the user to select the type or degree of power saving and is directly related to HDD Power Down, Doze Mode and Suspend Mode.

PM CONTROL BY APM:

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

VIDEO OFF OPTION:

This category determines the power-saving modes during which the monitor goes blank:

ALWAYS ON	Monitor remains on during power-saving modes.
SUSPEND → OFF	Monitor blanked when system enters Suspend mode.
SUSP,STBY → OFF	Monitor blanked when system enters either Suspend or Standby mode.
ALL MODES → OFF	Monitor blanked when system enters any power saving mode.

VIDEO OFF METHOD:

This category determines the manner in which the monitor is blanked.

V/H SYNC+BLANK	This selection will cause the system to turn off the vertical & horizontal synchronization ports and writes blanks to video buffer.
BLANK SCREEN	This selection only writes blanks to video buffer.
DPMS SUPPORT	Initial display power management signaling.

MODEM USE IRQ:

This item enable you to name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

SOFT-OFF BY PWRBTN:

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung". The choices are Delay 4 Sec and Instant-Off.

STATE AFTER POWER FAILURE:

This field lets you determine the state that your PC returns to after a power failure. If set to Off, the PC will not boot after a power failure. IF set to On, the PC will restart after a power failure.

WAKE UP EVENTS:

Wake up events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device, which is configured as ON, even when the system is in a power down mode.

VGA:

When Enabled, you can set the VGA awakens the system.

LPT & COM:

When *ON of LPT & COM*, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD & FDD:

When *ON of HDD & FDD*, any activity from one of the listed system peripheral devices wakes up the system.

PCI MASTER:

When *ON of PCI Master*, any activity from one of the listed system peripheral devices wakes up the system.

WAKE UP ON LAN/RING:

This category allows you to wake up the system from LAN from remote host. And it also can be awaken from an input signal on serial Ring Indicator (RI) line (incoming call on the modem).

RTC ALARM RESUME:

When Enabled, you can set the date and the time at which the RTC alarm awakens the system from Suspend mode.

PRIMARY INTR:

When set to Off, IRQ Activity Monitoring is set to BIOS default. When set to On, user may select the desired setting.

4-8. PNP/PCI CONFIGURATION

Choose "PNP/PCI CONFIGURATION" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

PNP OS Installed	[Yes]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ►
x IRQ Resources	Press Enter	
x DMA Resources	Press Enter	Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ for VGA	[Enabled]	
Assign IRQ for USB	[Enabled]	

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

PNP/PCI Configuration Setup Screen

This section describes how to configure PCI bus system. PCI, also known as Personal Computer Interconnect, is a system, which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components. This section covers technical items, which is strongly recommended for experienced users only.

PNP OS INSTALLED:

This item allows you to determine install PnP OS or not.

RESET CONFIGURATION DATA:

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system configuration has caused such a serious conflict that the operating system cannot boot.

RESOURCE CONTROLLED BY:

The Award Plug and Play Bios can automatically configure all of the booth and Plug and Play-compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. By choosing "manual", you are allowed to configure the *IRQ Resources*, *DMA Resources* and *Memory Resources*. The choices are Auto (ESCD) and Manual.

IRQ RESOURCES:

You may assign each system interrupt a type, depending on the type of device using the interrupt.

DMA RESOURCES:

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DMA channel.

PCI/VGA PALETTE SNOOP:

Leave this field at disabled.

ASSIGN IRQ FOR USB:

Enable or Disable to assign IRQ for USB.

ASSIGN IRQ FOR VGA:

Enable or Disable to assign IRQ for VGA.

4-9. PC HEALTH STATUS

Choose "PC HEALTH STATUS" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current CPU Temp.	28ºC/ 82ºF	Menu Level ►
Vcore	1.08V	
2.5V	2.52V	
3.3V	3.35V	
5V	4.88V	
12V	12.12V	

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

PC Health Status Setup Screen

The setup menu allows you to select whether to choose between monitoring or ignoring the hardware monitoring function of your system.

CPU WARNING TEMPERATURE:

In the DOS environment, if the temperature reaches the warning point the buzzer will act.

CURRENT CPU TEMPERATURE:

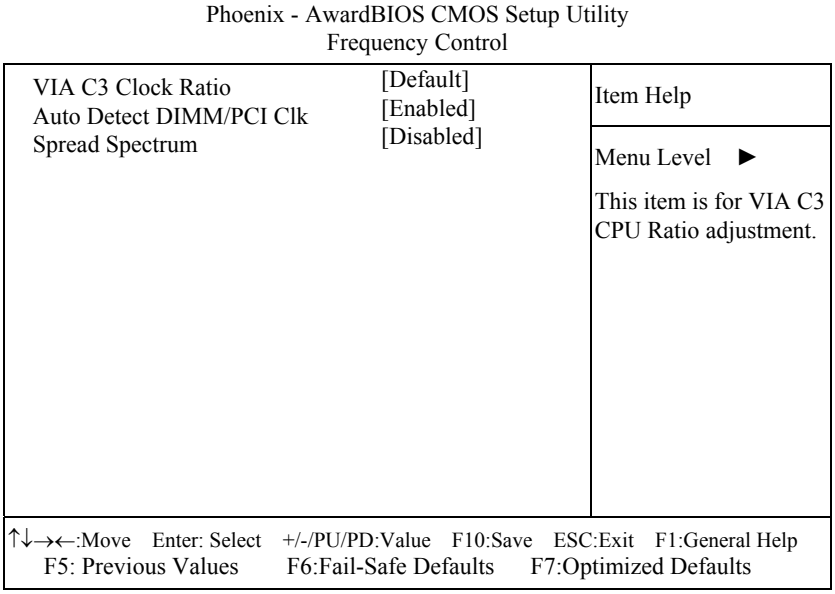
This item shows you the current CPU temperature.

VCORE:

This item shows you the current system voltage.

4-10. FREQUENCY/VOLTAGE CONTROL

Choose "FREQUENCY/VOLTAGE CONTROL" from the main menu, a display will be shown on screen as below:



Frequency / Voltage Control Setup Screen

This setup menu allows you to specify your settings for frequency/voltage control.

VIA C3 CLOCK RATIO:

This item is for VIA C3 CPU ratio adjustment.

AUTO DETECT DIMM/PCI CLK:

This item allows you to enable or disable auto detect DIMM/PCI Clock.

SPREAD SPECTRUM:

This item allows you to enable or disable the spread spectrum modulate.

4-11. LOAD FAIL-SAFE DEFAULTS

By pressing the <ENTER> key on this item, you get a confirmation dialog box with a message similar to the following:

```
Load Fail-Safe Defaults ( Y/N ) ? N
```

To use the BIOS default values, change the prompt to "Y" and press the <Enter > key. CMOS is loaded automatically when you power up the system.

4-12. LOAD OPTIMIZED DEFAULTS

When you press <Enter> on this category, you get a confirmation dialog box with a message similar to the following:

```
Load Optimized Defaults ( Y/N ) ? N
```

Pressing "Y" loads the default values that are factory setting for optimal performance system operations.

4-13. PASSWORD SETTING

User is allowed to set either supervisor or user password, or both of them. The difference is that the supervisor password can enter and change the options of the setup menus while the user password can enter only but do not have the authority to change the options of the setup menus.

TO SET A PASSWORD

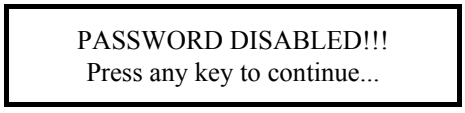
When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Type the password up to eight characters in length, and press < Enter >. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press the < Enter > key. You may also press < Esc > to abort the selection and not enter a password.

- User should bear in mind that when a password is set, you will be asked to enter the password everything you enter CMOS setup Menu.

TO DISABLE THE PASSWORD

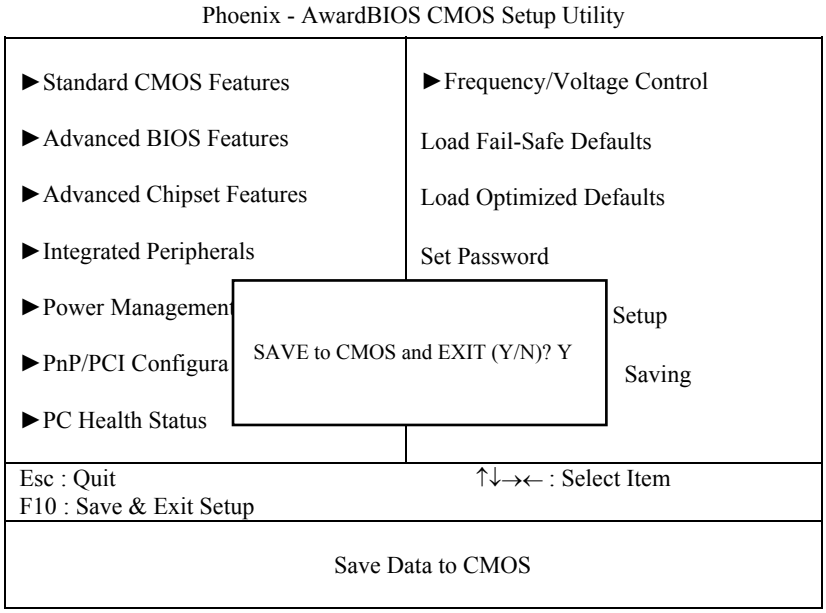
To disable the password, select this function (do not enter any key when you are prompt to enter a password), and press the <Enter> key and a message will appear at the center of the screen:



Press the < Enter > key again and the password will be disabled. Once the password is disabled, you can enter Setup freely.

4-14. SAVE & EXIT SETUP

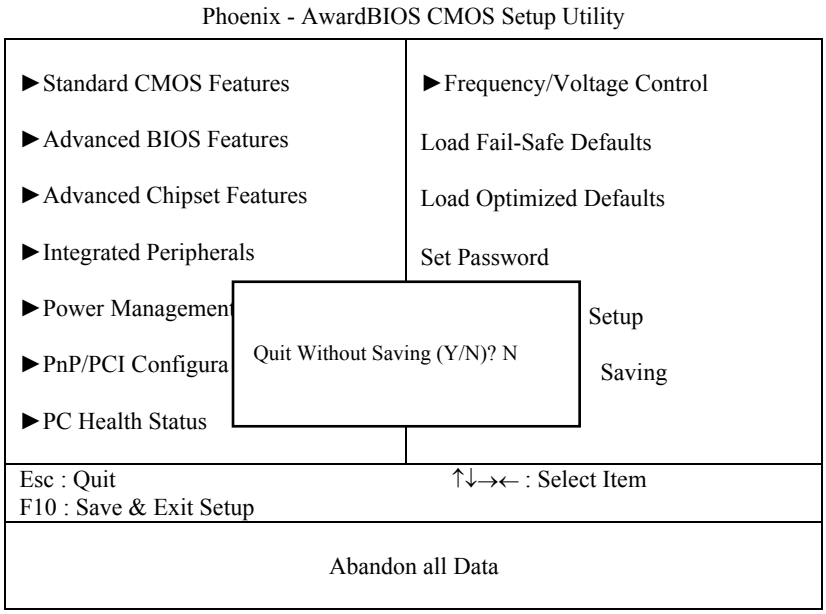
After you have completed adjusting all the settings as required, you must remember to save these setting into the CMOS RAM. To save the settings, select "SAVE & EXIT SETUP" and press <Enter>, a display will be shown as follows:



When you confirm that you wish to save the settings, your system will be automatically restarted and the changes you have made will be implemented. You may always call up the setup program at any time to adjust any of the individual items by pressing the <Del> key during boot up.

4-15. EXIT WITHOUT SAVING

If you wish to cancel any changes you have made, you may select the "EXIT WITHOUT SAVING" and the original setting stored in the CMOS will be retained. The screen will be shown as below:



EXPANSION BUS

APPENDIX

A

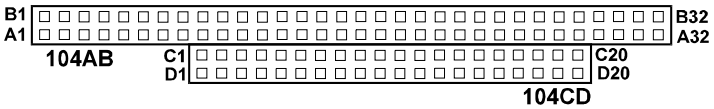
This appendix indicates you the pin assignments.

Section includes:

- PC-104 Connector Pin Assignment
- PC-104 Plus Connector Pin Assignment
- Compact Flash Card Connector Pin Assignment
- PCI BUS Pin Assignment

PC-104 CONNECTOR PIN ASSIGNMENT

104AB, 104CD : PC-104 Connector



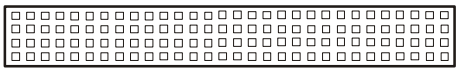
The PC-104 can support multi-pieces of PC-104 modules. It has two connectors : one (104AB) consists of 64 pin; the other one (104CD) consists of 40 pin, both of them are dual-in-line headers

The pin assignments for connector 104AB & 104CD are as follow:

PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	IOCHK	B1	GND	C1	GND	D1	GND
A2	D7	B2	REST	C2	SBHE	D2	MEMCS16
A3	D6	B3	VCC	C3	LA23	D3	IOCS16
A4	D5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	D4	B5	-5V	C5	LA21	D5	IRQ11
A6	D3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	D2	B7	-12V	C7	LA19	D7	IRQ15
A8	D1	B8	OWS	C8	LA18	D8	IRQ14
A9	D0	B9	+12V	C9	LA17	D9	DACK0
A10	IOCHRDY	B10	GND	C10	MEMR	D10	DRQ0
A11	AEN	B11	SMEMW	C11	MEMW	D11	DACK5
A12	A19	B12	SMEMR	C12	D8	D12	DRQ5
A13	A18	B13	IOW	C13	D9	D13	DACK6
A14	A17	B14	IOR	C14	D10	D14	DRQ6
A15	A16	B15	DACK3	C15	D11	D15	DACK7
A16	A15	B16	DRQ3	C16	D12	D16	DRQ7
A17	A14	B17	DACK1	C17	D13	D17	VCC
A18	A13	B18	DRQ1	C18	D14	D18	MASTER
A19	A12	B19	REFRESH	C19	D15	D19	GND
A20	A11	B20	CLK	C20	KEY PIN	D20	GND
A21	A10	B21	IRQ7				
A22	A9	B22	IRQ6				
A23	A8	B23	IRQ5				
A24	A7	B24	IRQ4				
A25	A6	B25	IRQ3				
A26	A5	B26	DACK2				
A27	A4	B27	TC				
A28	A3	B28	BALE				
A29	A2	B29	VCC				
A30	A1	B30	OSC				
A31	A0	B31	GND				
A32	GND	B32	GND				

PC/104 PLUS BUS CONNECTOR PIN ASSIGNMENT

PC/104 Plus Bus connector is divided into four rows. Each row consists of 30 pins. The pin assignments are as followed:



A		B		C		D	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	GND	B1	Reserved	C1	+5V	D1	AD00
A2	V/I/O	B2	AD02	C2	AD01	D2	+5V
A3	AD05	B3	GND	C3	AD04	D3	AD03
A4	C/BE0#	B4	AD07	C4	GND	D4	AD06
A5	GND	B5	AD09	C5	AD08	D5	GND
A6	AD11	B6	V/I/O	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1#	C8	AD15	D8	+3.3V
A9	SERR#	B9	GND	C9	SB0#	D9	PAR
A10	GND	B10	PERR#	C10	+3.3V	D10	SDONE
A11	STOP#	B11	+3.3V	C11	LOCK#	D11	GND
A12	+3.3V	B12	TRDY#	C12	GND	D12	DEVSEL
A13	FRAME#	B13	GND	C13	IRDY#	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	C/BE2#
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	C/BE3#	C19	V/I/O	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0#	B23	GND	C23	REQ1#	D23	V/I/O
A24	GND	B24	REQ2#	C24	+5V	D24	GNT0#
A25	GNT1#	B25	V/I/O	C25	GNT2#	D25	GND
A26	+5V	B26	CLK0	C26	GND	D26	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D27	GND
A28	GND	B28	INTD#	C28	+5V	D28	RST#
A29	+12V	B29	INTA#	C29	INTB#	D29	INTC#
A30	-12V	B30	Reserved	C30	Reserved	D30	GND

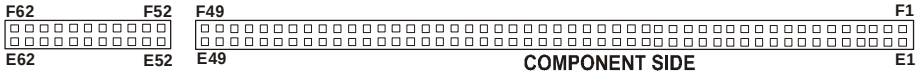
COMPACT FLASH CARD CONNECTOR PIN ASSIGNMENT

The pin assignments of Compact Flash Card connector are stated below.

PIN	Assignment	PIN	Assignment
1	GND	26	-CD1
2	D03	27	D111
3	D04	28	D121
4	D05	29	D131
5	D06	30	D141
6	D07	31	D151
7	-CS0	32	-CS11
8	A102	33	-VS1
9	-ATASEL	34	-IORD
10	A092	35	-IOWR
11	A082	36	-WE3
12	+3.3V	37	INTRQ
13	VCC	38	VCC
14	A062	39	-CSEL
15	A052	40	-VS2
16	A042	41	-RESET
17	A032	42	IORDY
18	A02	43	-INPACK
19	A01	44	-REG3
20	A00	45	-DASP
21	D00	46	-PDIAG
22	D01	47	D081
23	D02	48	D091
24	-IOCS16	49	D101
25	-CD2	50	GND

PCI BUS PIN ASSIGNMENT

The PCI-BUS edge connector is divided into two sets: one consists of 98-pin; the other consists of 22-pin. The pin assignments are as follows :



F		E		F		E	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
F1	-12V	E1	TRST#	F31	+3.3V	E31	AD18
F2	TCK	E2	+12V	F32	AD17	E32	AD16
F3	GND	E3	TMS	F33	C/BE2#	E33	+3.3V
F4	TDO	E4	TDI	F34	GND	E34	FRAME#
F5	+5V	E5	+5V	F35	IRDY#	E35	GND
F6	+5V	E6	INTA#	F36	+3.3V	E36	TRDY#
F7	INTB#	E7	INTC#	F37	DEVSEL#	E37	GND
F8	INTD#	E8	+5V	F38	GND	E38	STOP#
F9	REQ3#	E9	CLKC	F39	LOCK#	E39	+3.3V
F10	REQ1#	E10	+5V(I/O)	F40	PERR#	E40	SDONE
F11	GNT3#	E11	CLKD	F41	+3.3V	E41	SB0#
F12	GND	E12	GND	F42	SERR#	E42	GND
F13	GND	E13	GND	F43	+3.3V	E43	PAR
F14	CLKA	E14	GNT1#	F44	C/BE1#	E44	AD15
F15	GND	E15	RST#	F45	AD14	E45	+3.3V
F16	CLKB	E16	+5V(I/O)	F46	GND	E46	AD13
F17	GND	E17	GNT0#	F47	AD12	E47	AD11
F18	REQ0#	E18	GND	F48	AD10	E48	GND
F19	+5V(I/O)	E19	REQ2#	F49	GND	E49	AD09
F20	AD31	E20	AD30	F52	AD08	E52	C/BE0#
F21	AD29	E21	+3.3V	F53	AD07	E53	+3.3V
F22	GND	E22	AD28	F54	+3.3V	E54	AD06
F23	AD27	E23	AD26	F55	AD05	E55	AD04
F24	AD25	E24	GND	F56	AD03	E56	GND
F25	+3.3V	E25	AD24	F57	GND	E57	AD02
F26	C/BE3#	E26	GNT2#	F58	AD01	E58	AD00
F27	AD23	E27	+3.3V	F59	+5V(I/O)	E59	+5V(I/O)
F28	GND	E28	AD22	F60	ACK64#	E60	REQ64#
F29	AD21	E29	AD20	F61	+5V	E61	+5V
F30	AD19	E30	GND	F62	+5V	E62	+5V

TECHNICAL SUMMARY

APPENDIX

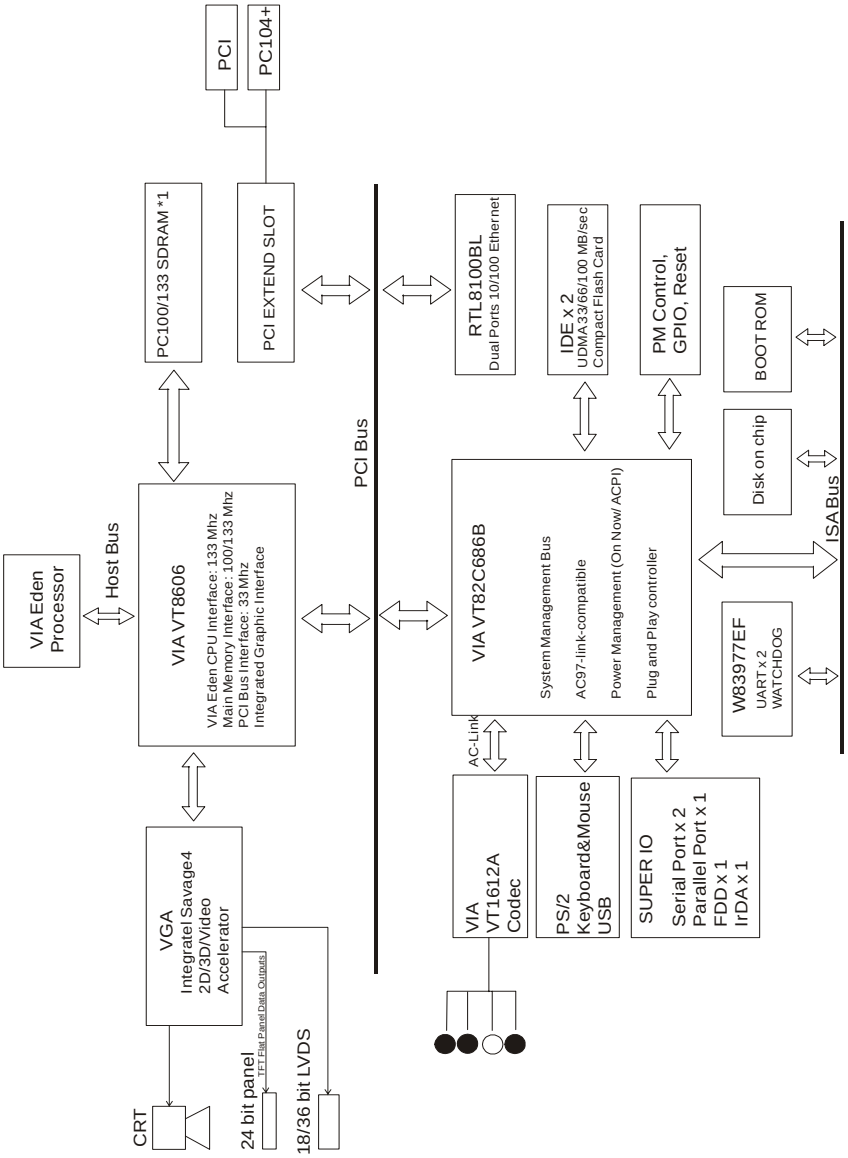
B

This section introduce you the maps concisely.

Section includes:

- Block Diagram
- Interrupt Map
- RTC & CMOS RAM Map
- Timer & DMA Channels Map
- I / O & Memory Map

BLOCK DIAGRAM



INTERRUPT MAP

IRQ	ASSIGNMENT
0	System TIMER interrupt from TIMER-0
1	Keyboard output buffer full
2	Cascade for IRQ 8-15
3	Serial port 2 / Modem
4	Serial port 1
5	Parallel port 2 / Sound Blaster
6	Floppy
7	Parallel port 1
8	RTC clock
9	Available
10	COM4
11	COM3
12	PS/2 Mouse
13	Math coprocessor
14	IDE1
15	IDE2

RTC & CMOS RAM MAP

CODE	ASSIGNMENT
00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	Floppy Disk drive type byte
11	Reserve
12	Hard Disk type byte
13	Reserve
14	Equipment byte
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	Date Century byte
33	Information Flag
34-3F	Reserve
40-7f	Reserved for Chipset Setting Data

TIMER & DMA CHANNELS MAP

Timer Channel Map :

Timer Channel	Assignment
0	System timer interrupt
1	DRAM Refresh request
2	Speaker tone generator

DMA Channel Map :

DMA Channel	Assignment
0	Available
1	Available / Sound Blaster
2	Floppy
3	Available / ECP
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

I/O & MEMORY MAP

Memory Map :

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/ EGA / CGA / MONOCHROME adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFF	System BIOS ROM
0100000-FFFFFFF	System extension memory

I/O Map :

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports.
040-05F	Timer control regsiters.
060-06F	Keyboard interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
278-27F	Parallel port-2
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port-1
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1