EMB-830

EmbeddedATX

Socket 478 based Intel Pentium 4

With LCD, Ethernet, Audio,&

PCMCIA/Mini PCI

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1   EMB-830 Embedded ATX Board

- 1   Quick Installation Guide

- 1   CD-ROM for manual (in PDF format), BIOS, and drivers

- 1   Jumper cap

- 1   Audio Cable

- 1   USB Cable

- 1   TV-out Cables

- 2   40 pin IDE Cable

- 1   44 pin IDE Cable

- 4 or 2   COM port Cables (Quantity depends on how many COM port on board)

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

Contents

Chapter 1 General Information

Chapter 2 Quick Installation Guide

Chapter 3   Award BIOS Setup

Chapter 4　Driver Installation

Appendix A　Programming the WatchDog Timer

Chapter

1

General Information

1.1 Introduction

EMB-830 is the world's first Pentium 4 industrial board in embedded ATX form factor. It features a PGA478 socket that can accommodate Pentium 4 supporting FSB up to 400/533MHz.

Best performance for multimedia solution

AAEON's EMB-830 also supports DDR DRAM up to 2.0Gbyte, 4X AGP, and 6 channels audio output. It can provide the strong multimedia functions. Therefore EMB-830 can be broadly implemented in several markets, such as Point of sale, point of information (Kiosk), and gaming markets.

Slim form factor

If you are looking for a slim board for space-constrained applications, EMB-830 is the one. EMB-830 is low-profile design, meanwhile it supports 6 USB2.0, mini PCI, and PCMCIA (optional item) slots. EMB-830 promises you the greatest expansion possibilities with the most cost-effective expansion standards, PCMCIA or Mini PCI. With numerous off-the-shelf PCMCIA/Mini PCI modules, you get easy access to solutions ranging from IEEE 1394, Modem, Storage, Sound Card, SCSI card, Audio/Video capture card, Wireless LAN module, to Bluetooth module. Especially for customers whose application is various or changing, EMB-830 reserves more than enough flexibility for future expansion.

More

EMB-830 provides 10/100Base-T Fast Ethernet ports as standard. But for high- speed market, there is another option for you. You can choose to have one 10/100 Base-T Fast Ethernet and one Gigabit Ethernet. Talking about the display signal transmission, EMB-830 integrated dual channel LVDS interface onboard, which allows long distance display signal transmission.

1.2 Features

- Embedded ATX form factor

- ATX family backwards-compatible rear I/O panel

- Supports Intel Pentium 4

- Supports 6 channel audio output

- Onboard with dual channel LVDS interface

- Supports dual 10/100 Base-T Fast Ethernet and Gigabit Ethernet (optional)

- Supports USB 2.0 / Mini PCI/ PCMCIA (**Option**) / CompactFlash

1.3 Specifications

System

- CPU: Support Intel Pentium 4 (400/533 MHz FSB data rate)

- Memory: 184-pin DDR RAM slot x 2, support up to 2.0G byte at 200/ 266/ 333 MHz operation

- Chipset: Intel® 82845 GV, 82801 (ICH4)

- BIOS: Award 4 Mb FLASH BIOS

- Audio: ICH4/ ALC650 to support 6 channel audio output (with headphone amplifier)

- SSD: One Type II CompactFlash Card

- Watchdog timer: Can generate a system reset, Software selectable time-out interval (1sec~255 sec, 1sec/step)

- DMA: 7 DMA channels (8237 equivalent)

- Interrupt: 15 interrupt levels (8259 equivalent)

- Ethernet: **Default**: One 10/100 Base-T Fast Ethernet (Intel 82562ET)

  Optional: one 10/100 Base-T Fast Ethernet and one Gigabit Ethernet (Intel 82562ET/82540EM)

- Expansion Interface: Type   II   PCMCIA   x

2(Cardbus)(**Option**) and Type

MINI PCI x 1 and low-profile PCI expansion via PCI riser x 1 (Option)

- H/W status monitoring: ITE IT8712F integrated, supports power supply voltages and temperatures monitoring and fan monitoring

- Battery: Lithium battery for data retention

- Power supply voltage: ATX

- Operating temperature:32 to 140 ℉ (0 to 60℃)

- Board size/Weight: 9.6" (L) x 9.6" (W) (243.84 mm x 243.83 mm); 0.88lb(0.4Kg)

Display

- Chipset   Built in Intel 82845GV

- Memory size: Share up to 8MB DDR-RAM

- Resolution: CRT   Up to 1600 x 1200 with 24bit color

                       LCD   Up to 1280 x 1024 with 24bit color

- LCD Interface: Up to 2 channels 24-bit LVDS

- Dual Display   **Simultaneous Scan:** CRT+LCD: 1024 x 768 @ 24bpp

- Hardware support for LCD landscape/portrait rotation.

I/O

- MIO: EIDE (Ultra DMA100) x 2, FDD x 1, RS-232/422/485 x 1, RS-232 x 3 or 5 (**COM 5 and COM 6 are optional**), LPT x 1, VGA x 1, External ATX Power Connector x 1, Keyboard/ Mouse Connector x 1

- IR interface: One IrDA Tx/Rx header

- Audio: Mic in, Line in, Line out, CD Audio in, and Audio 6 channel output

- USB: One 5x2 pin header support 2 USB ports and 4 D-sub USB ports

Chapter

2

Quick
Installation
Guide

Notice:
The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.

OZONE SAFE

RECYCLABLE

Chapter 2 Quick Installation Guide

2.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers

Locating connectors and jumpers (component side)
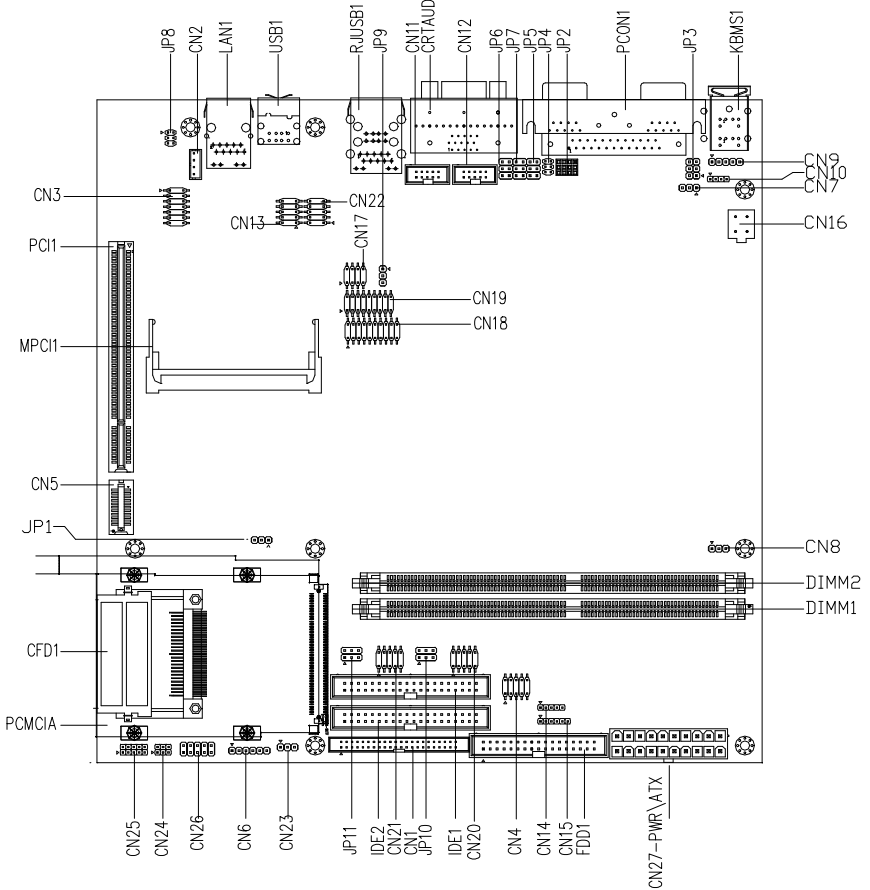
Locating connectors and jumpers (solder side)

CFD2
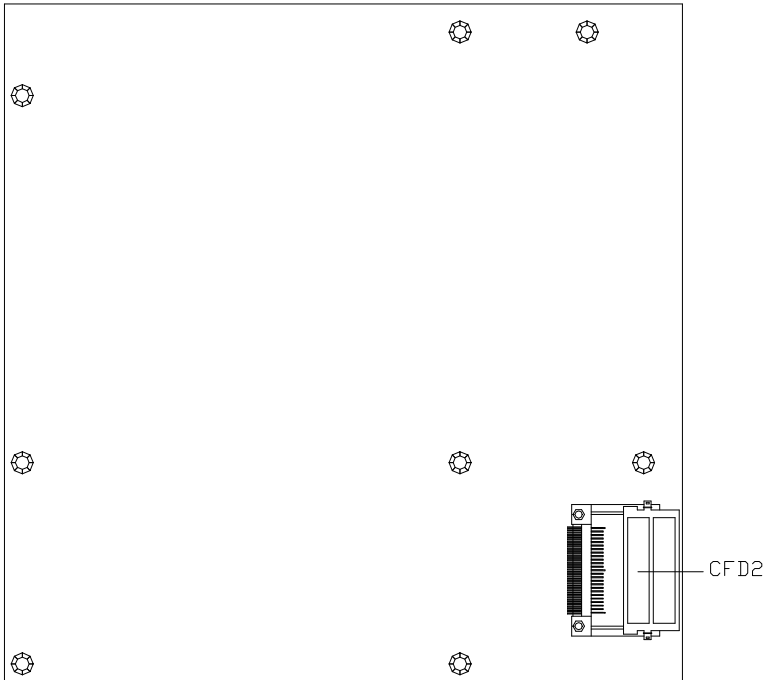
2.3 Mechanical Drawing

Mechanical drawing (component side)
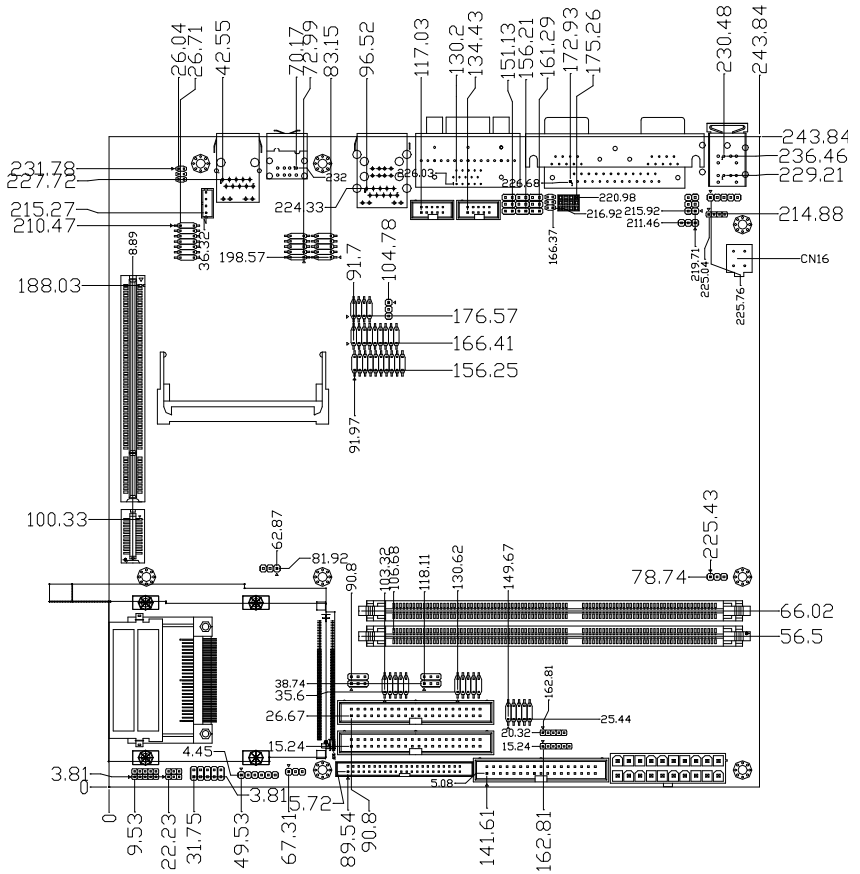
Mechanical drawing (solder side)

243.84

243.84

24.45

39.45

0
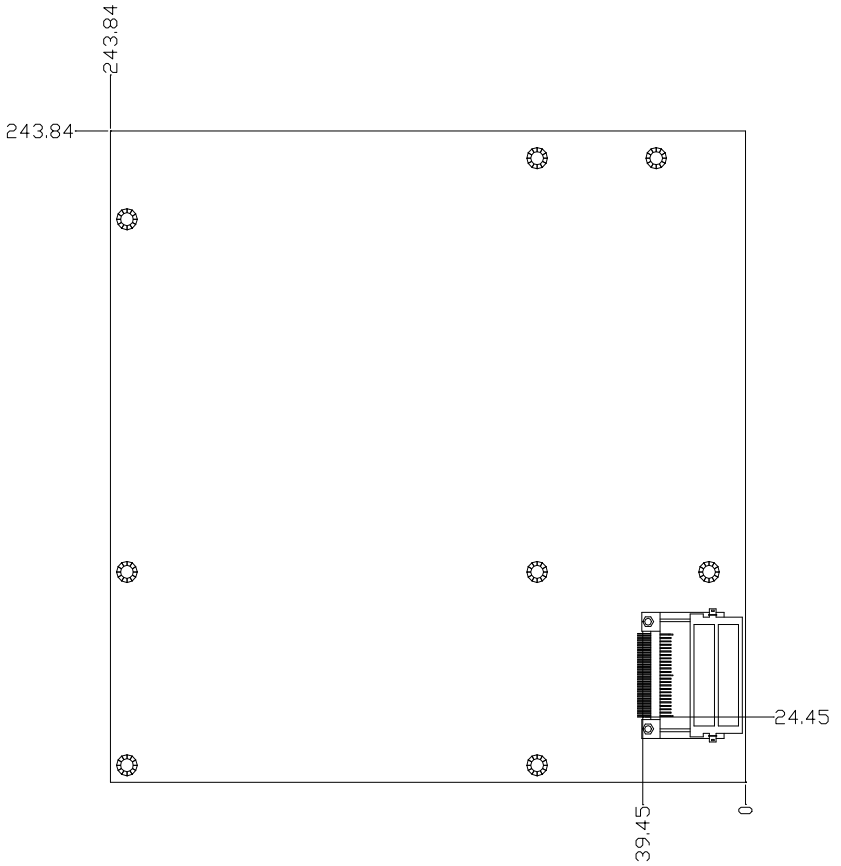
2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	Clear CMOS
JP2	COM2 RS-232/422/485 Selection
JP3	COM1 Ring/+5V/+12V Selection
JP4	COM2 RS-232/422/485 Selection
JP5	COM2 Ring/+5V/+12V Selection
JP6	COM3 Ring/+5V/+12V Selection
JP7	COM4 Ring/+5V/+12V Selection
JP8	Audio Out Selection
JP9	LCD Voltage Selection
JP10	COM6 Ring/+5V/+12V Selection
JP11	COM5 Ring/+5V/+12V Selection

2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application.

The table below shows the function of each of the board's connectors:

Connectors

Label	Function
CN1	Secondary EIDE Connector
CN2	CD-IN Connector
CN3	Audio 5.1 Channel /SPDIF Connector
CN4	USB5 & USB6 Connector
CN5	PCI Extension Connector
CN6	IrDA Connector
CN7	Fan Connector
CN8	Fan Connector
CN9	Internal Keyboard Connector
CN10	Internal Mouse Connector
CN11	COM3 RS-232 Serial Port Connector
CN12	COM4 RS-232 Serial Port Connector
CN13	Digital I/O-2 Connector
CN14	Option PME Connector
CN15	External Power-on Function Connector
CN16	ATX Power_12V Connector
CN17	TV_Out Connector
CN18	Channel1 LVDS Connector
CN19	Channel2 LVDS Connector
CN20	COM6 RS-232 Serial Port Connector
CN21	COM5 RS-232 Serial Port Connector
CN22	Digital I/O-1 Connector
CN23	Fan Connector

CN24	NC
CN25	NC
CN26	Front Panel Connector
CN27	ATX Power Connector
FDD1	Floppy Connector
IDE1	Primary EIDE Connector
IDE2	Secondary EIDE Connector
CRTAUD	VGA Display Connector / Audio Connector
PCON1	COM1 RS-232 & COM2 RS-232/422/485 Serial Port & LPT Port Connector
USB1	USB3 & USB4 Connector
RJUSB1	USB1 & USB2 Connector/ 10/100 Base-Tx Ethernet
LAN1	10/100 or 100/1000 Base-Tx Ethernet Connector
MPCI1	Mini PCI Slot
PCI1	PCI Slot
PCMCIA	PCMCIA Slot
CFD1	CompactFlash Slot
CFD2	CompactFlash Slot
DIMM1	DIMM Slot
DIMM2	DIMM Slot
KBMS1	PS2 Keyboard/Mouse Connector

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.

Open   **Closed**   **Closed 2-3**
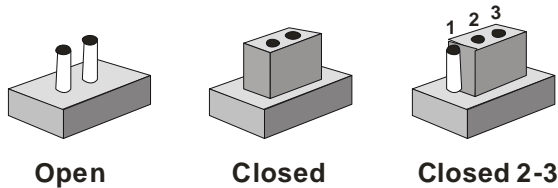
A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 Clear CMOS (JP1)

Warning:

To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "Normal."

JP1	Function
1-2	Protected (Default)
2-3	Clear

2.8 COM2 RS-232/422/485 Selection (JP2 & JP4)

The COM2 port can be selected as RS-232, RS-422 or RS-485 by setting both JP2 and JP4. The following chart shows the jumper setting..

JP2	JP4	COM
1-2, 4-5, 7-8, 10-11	1-2	RS-232 (Default)
2-3, 5-6, 8-9, 11-12	3-4	RS-422
2-3, 5-6, 8-9, 11-12	5-6	RS-485

2.9 COM1 Ring/+5V/+12V Selection (JP3)

JP3	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.10 COM2 Ring/+5V/+12V Selection (JP5)

JP5	Function
1-2	+12V
3-4	+5V

5-6	Ring (Default)

2.11 COM3 Ring/+5V/+12V Selection (JP6)

JP6	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.12 COM4 Ring/+5V/+12V Selection (JP7)

JP7	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.13 Audio Out Selection (JP8)

JP8	Function
1-3, 2-4	Line out via Amplifier (Default)
3-5, 4-6	Line out unvia Amplifier

2.14 LCD Voltage Selection (JP9)

JP9	Function
1-2	+5V
2-3	+3.3V (Default)

2.15 COM6 Ring/+5V/+12V Selection (JP10)

JP10	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.16 COM5 Ring/+5V/+12V Selection (JP11)

JP11	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.17 EIDE Connector (IDE1, IDE2, and CN1)

You can attach up to four Enhanced Integrated Device Electronics hard disk drives to IDE1, IDE2, and CN1. The IDE controller of EMB-830 uses a PCI local bus interface. This advanced interface supports faster data transfer. You can use either IDE2 or CN1 at the same time.

Connecting the hard drive

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

1.   Connect one end of the cable to CN1. Make sure that the red wire corresponds to pin 1 on the connector.

2.   Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drives. (See your hard drive's documentation for the location of the connector).

Connect a second drive with another connector on the cable as described above.

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N.C
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ14	32	N.C
33	ADDR1	34	UDMA DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND
41	+5V	42	+5V
43	GND	44	N.C

2.18 CD-IN Connector (CN2)

Pin	Signal	Pin	Signal
1	CD_IN_L	2	CD_GND
3	CD_GND	4	CD_IN_R

2.19 Audio 5.1 Channel/ SPDIF Connector (CN3)

Pin	Signal	Pin	Signal
1	Front-OUT-R	2	GND
3	Front -OUT-L	4	GND
5	Surr-OUT-R	6	GND
7	Surr-OUT-L	8	GND
9	LFE-OUT	10	GND
11	CNE-OUT	12	GND
13	SPDIF-OUT	14	SPDIF-IN

2.20 USB 5 & USB 6 connector (CN4)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD5-	4	GND
5	USBD5+	6	USBD6+
7	GND	8	USBD6-
9	GND	10	+5V

2.21 PCI Extension Connector (CN5)

Pin	Signal	Pin	Signal
B1	GND	A1	PCI-GNT#B
B2	PCI-CLK	A2	GND
B3	GND	A3	PCI-GNT#3
B4	PCI-REQ#B	A4	GND
B5	GND	A5	NC
B6	PCI-CLK	A6	IDSEL1 (AD30)
B7	GND	A7	NC

B8	PCI-REQ#3	A8	IDSEL2 (AD31)
B9	GND	A9	NC
B10	PCI-REQ#A	A10	+12V
B11	PCI-GNT#A	A11	SERIRQ

2.22 IrDA Connector (CN6)

Pin	Signal	Pin	Signal
1	+5V	2	DIR-TX
3	GND	4	IR-RX
5	IR-RX	6	CIR-RX

2.23 Fan Connector (CN7, CN8, and CN23)

Pin	Signal
1	GND
2	+12V
3	Speed Sense

2.24 Internal Keyboard Connector (CN9)

Pin	Signal
1	KB_CLK
2	KB_DATA
3	N.C
4	GND
5	+5V

2.25 Internal Mouse Connector (CN10)

Pin	Signal	Pin	Signal
1	MS_CLK	2	MS_DATA.
3	GND	4	+5V

2.26 COM3 RS-232 Serial Port Connector (CN11)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5V/+12V	10	N.C

2.27 COM4 RS-232 Serial Prot Connector (CN12)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5V/+12V	10	N.C

2.28 Digital I/O-2 Connector (CN13)

This connector offers 4-pair of digital I/O functions and address is 841H. The pin definitions are illustrated below:

Pin	Signal		
1	Digital-IN-1	2	Digital-IN-2

3	Digital-IN-3	4	Digital-IN-4
5	Digital-OUT-1	6	Digital-OUT-2
7	Digital-OUT-3	8	Digital-OUT-4
9	+5V	10	GND

The pin definitions and registers mapping are illustrated below:

Address: 841H

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO23	GPO22	GPO21	GPO20
MSB							LSB

2.29 Option PME Connector (CN14)

Pin	Signal	Pin	Signal
1	+5VSB	2	GND
3	#PME	4	SMB_DATA
5	SMB_CLK		

2.30 External Power-on Function Connector (CN15)

Pin	Signal	Pin	Signal
1	N.C	2	GND
3	POWER-GOOD	4	GND
5	PS-ON	6	+5VSB

2.31 ATX Power-12V Connector (CN16)

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

2.32 TV-Out Connector (CN17)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	GND	4	GND
5	C	6	N.C
7	GND	8	N.C

2.33 Channel 1 LVDS Connector (CN18)

Pin	Signal(18/24/36-bit)	Pin	Signal(18/24/36-bit)
1	LVDS_TX1+	2	LVDS_TX1-
3	GND	4	GND
5	LVDS_TXCLK+	6	LVDS_TXCLK-
7	GND	8	PPVCC
9	PPVCC	10	PPVCC
11	LVDS_TX2+	12	LVDS_TX2-
13	GND	14	GND
15	LVDS_TX0+	16	LVDS_TX0-
17	LVDS_TX3+	18	LVDS_TX3-
19	ENBKL	20	N.C

2.34 Channel 2 LVDS Connector (CN19)

Pin	Signal	Pin	Signal
1	LVDS_TX1+	2	LVDS_TX1-
3	GND	4	GND
5	LVDS_TXCLK+	6	LVDS_TXCLK-
7	GND	8	PPVCC
9	PPVCC	10	PPVCC
11	LVDS_TX2+	12	LVDS_TX2-
13	GND	14	GND

15	LVDS_TX0+	16	LVDS_TX0-
17	LVDS_TX3+	18	LVDS_TX3-

2.35 COM6 RS-232 Serial Port Connector (CN20)

Pin	Signal		
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5V/+12V	10	N.C

2.36 COM5 RS-232 Serial Port Connector (CN21)

Pin	Signal		
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5V/+12V	10	N.C

2.37 Digital I/O-1 Connector (CN22)

This connector offers 4-pair of digital I/O functions and address is 801H. The pin definitions are illustrated below:

Pin	Signal		
1	Digital-IN-1	2	Digital-IN-2
3	Digital-IN-3	4	Digital-IN-4
5	Digital-OUT-1	6	Digital-OUT-2
7	Digital-OUT-3	8	Digital-OUT-4

9	+5V		10	GND

The pin definitions and registers mapping are illustrated below:

Address: 801H

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO23	GPO22	GPO21	GPO20
MSB							LSB

2.38 Front Panel Connector (CN26)

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	IDE LED (-)	4	IDE LED (+)
5	External Buzzer (-)	6	External Buzzer (+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

2.39 ATX Power Connector (CN27)

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	Power OK
9	+5VSB	10	+12V
11	+3.3V	12	-12V
13	GND	14	PS_ON
15	GND	16	GND
17	GND	18	-5V
19	+5V	20	+5V

Chapter

3

Award BIOS Setup

3.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time

2. You have changed the hardware attached to your system

3. The CMOS memory has lost power and the configuration information has been erased.

The EMB-830 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.
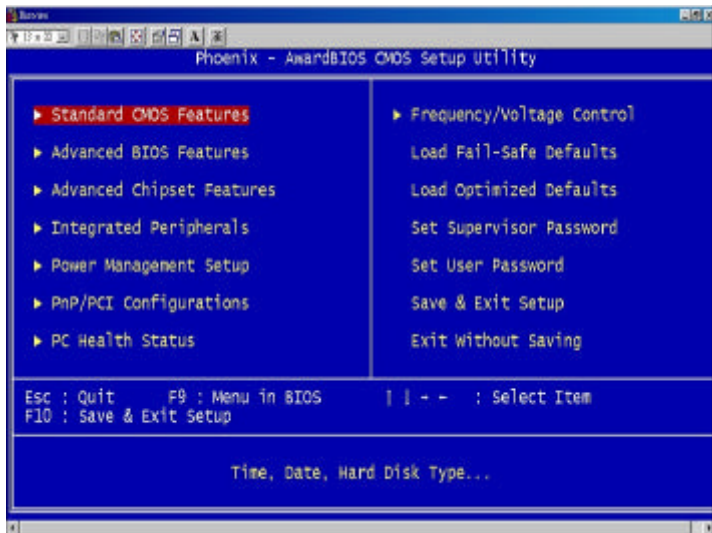
3.2 Award BIOS setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/ voltage control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.3 Standard CMOS Features

When you choose the Standard CMOS Features option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the right box of the Menu screen.
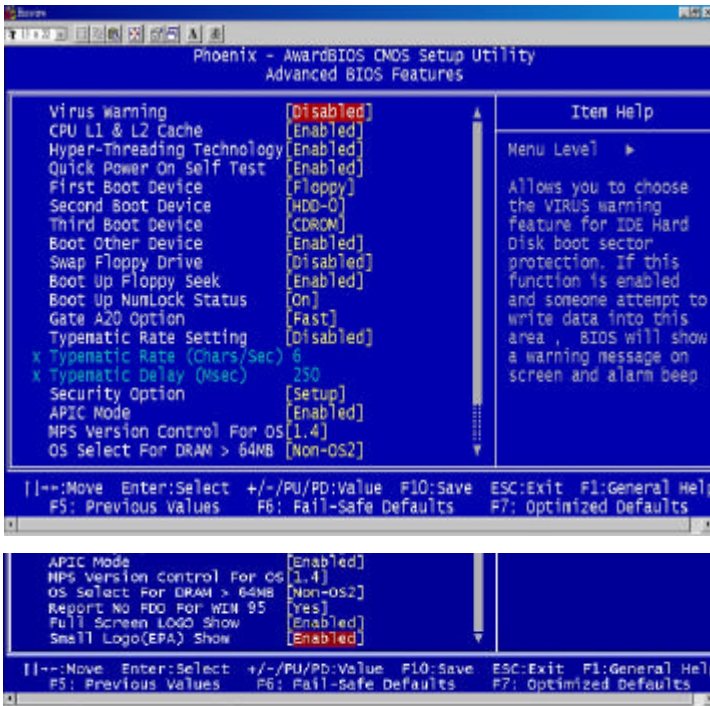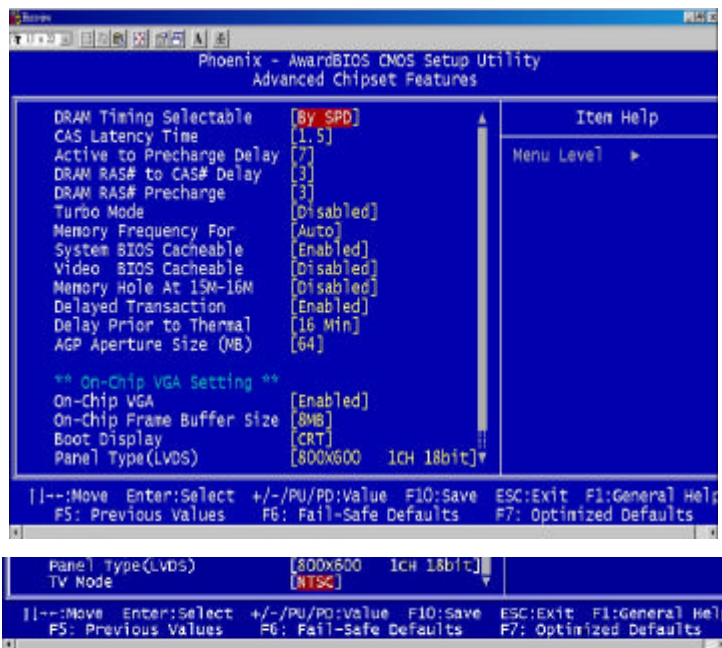
EMB-830
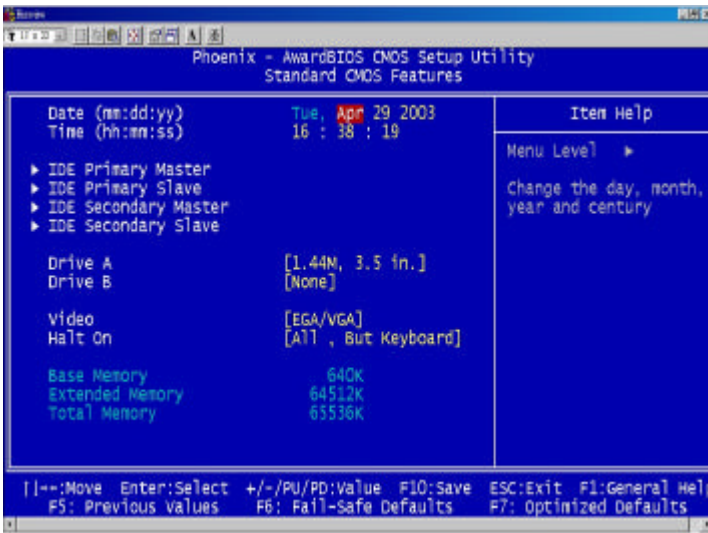
3.4 Advanced BIOS Features

By choosing the Advanced BIOS Features option from the INITIAL
SETUP SCREEN menu, the screen below is displayed. This sample
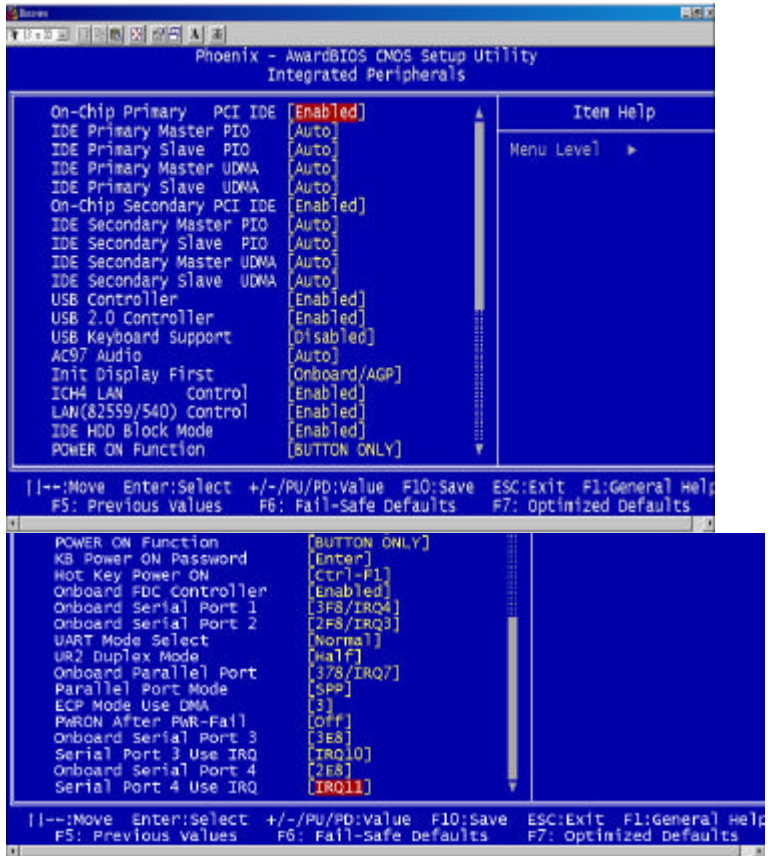screen contains the manufacturer's default values for the EMB-830.

3.5 Advanced Chipset Features

By choosing the Advanced Chipset Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.

3.6 Integrated Peripherals

By choosing the Integrated Peripherals from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.

3.7 Power Management Setup

By choosing the Power Management Setup from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.

3.8 PnP/PCI Configuration

By choosing the PnP/PCI configurations from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.

3.9 PC Health Status

By choosing the PC Health Status from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.
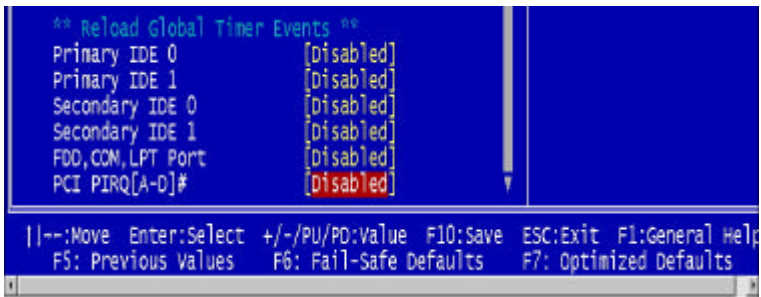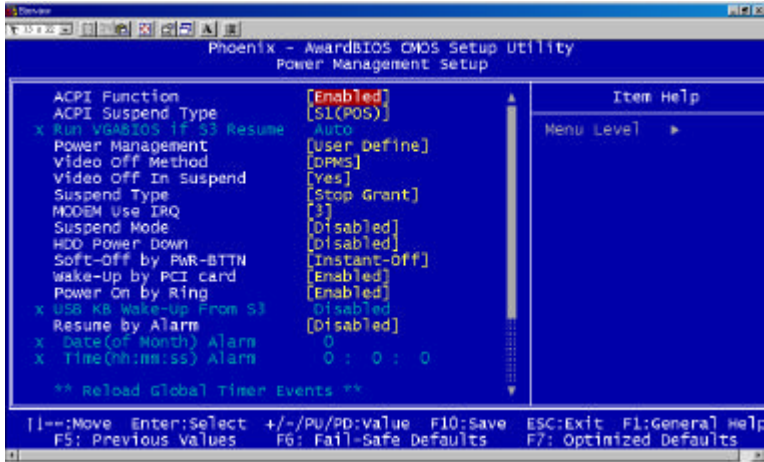
3.10 Frequency/Voltage control

By choosing the Frequency/Voltage Control from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the EMB-830.
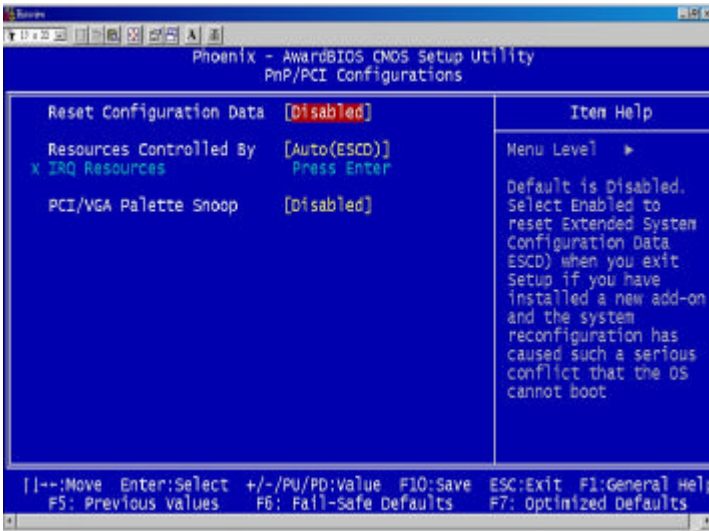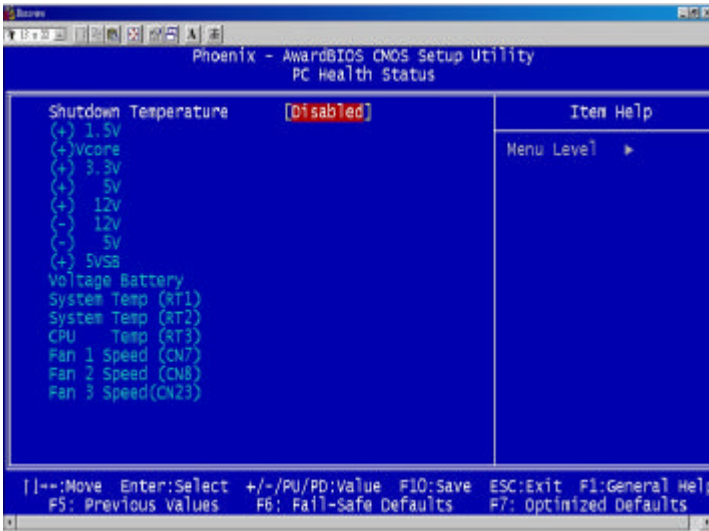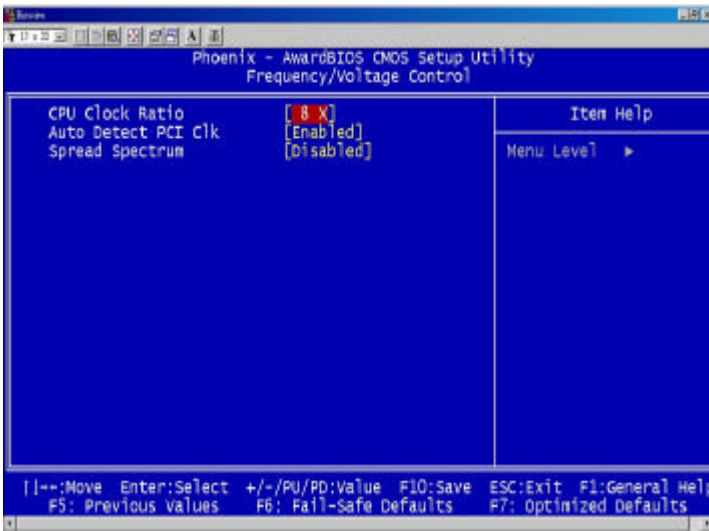
3.11 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

3.12 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are manufacturer's settings for optimal performance system operations.

3.13 Set Supervisor/User Password

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System   Enter a password each time the system boots and when-

ever you enter Setup.

Setup   Enter a password whenever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

3.14 Save & Exit Setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn on your system and compare this to what it finds as it checks the system. This record is required for the system to operate.

3.15 Exit without Saving

Selecting this option and pressing <Enter> allows you to exit the Setup program without recording any new value or changing old one.

Chapter

4

Driver Installation

The EMB-830 comes with a CD-ROM which contains most of drivers and utilities of your needs.

There are several installation ways depending on the driver package under different Operating System application.

If you utilize Windows NT series OS, you are strongly recommended to download the latest version Windows NT Service Pack from Microsoft website and install it before installing any driver.

Please follow the sequence below to install the drivers:

Step 1 – Install Intel INF Update for Windows 95-XP

Step 2 – Install Intel 845G Graphic Driver

Step 3 – Install Intel Application Accelerator for Windows 95-XP

Step 4 – Install Intel LAN Driver V6.4

Step 5 – Install Realtek 2CH AC97 codec Driver

Step 6 – Install ITE 8874 I/O Driver (for COM 5 and COM6 option only)

USB 2.0 Drivers are available for download using Windows Update for both Windows XP and Windows 2000. For additional information regarding USB 2.0 support in Windows XP and Windows 2000, please visit www.microsoft.com/hwdev/usb/.

For installation procedures of each driver, you may refer to section 4.1-4.3.

Notice:

Please install ITE8874 I/O Driver by section 4.2 Installation 2 process for Windows 2000 and Windows XP.

4.1 Installation 1:

Applicable for Windows 2000/9x/ME/NT 4.0

1.   Insert the EMB-830 CD-ROM into the CD-ROM Drive.

2. From the CD-ROM, select the desired component Driver folder, and then select the desired Operation System folder to double click on the Setup.exe icon. A driver installation screen will appear.

    Notice:

    1. **Take VGA driver installation under Windows 98 for example, choose the corresponding folder depending on your OS**

    2. **When installing the VGA driver under Windows 98, the system will ask you to reboot the computer. During the installation process, it will appear the pop up window as following.**
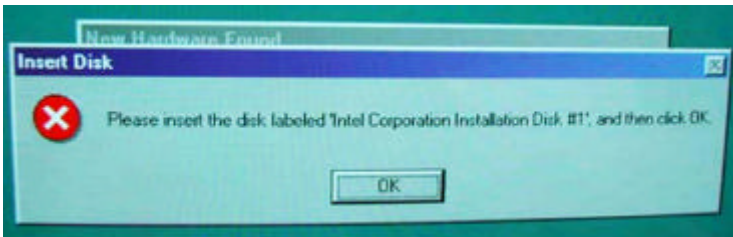
    3. **Please press ok and it will appear the pop up window as following.**
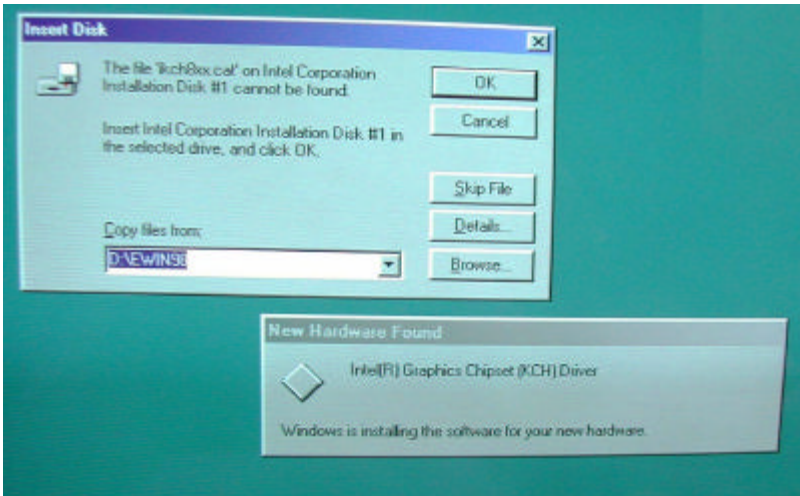
> 4. **Please change the path to the installation folder and search for the two files named as ikch8xx.cat and isb8xx.cat.**

3. A driver installation screen will appear, please follow the onscreen instructions to install the driver in sequence and click on the Next button.
    (Notice: In some cases the system will ask you to insert Windows 98 CD ROM and key in its path. Then click on the OK button to key in path.)

4. Click on the **Finish** button to finish installation process. And allow the system to reboot.

4.2 Installation 2:

Applicable for Windows 2000/ XP

1. Insert the **EMB-830 CD-ROM** into the CD-ROM Drive.

2. Click on **Start** button, select the **Settings**, and then click on the **Control Panel** icon.

3. Double click on the **Add/Remove Hardware** icon and **Add New Hardware Wizard** will appear. Click on the **Next** button.

4. Select **Search for the best driver for your device (Recommended)** and click on the **Next** button.

5. Select **Specify a location,** click on **Have Disk** button then key in the CD-ROM path and specify component drivers and OS folders. Then click on the **Next** button.

6. The Wizard shows that Windows driver file search for the device. Click on the **Next** button.

7. The system will ask you to insert Windows 98 CD ROM. Click on the **OK** button to insert CD-ROM and key in path.

8. Click on the **OK** button.

9. Click on the **Finish** button to finish installation process. And allow the system to reboot.

4.3 Installation 3:

Applicable for Windows NT 4.0

1. Insert the **EMB-830 CD ROM** into the CD-ROM Drive.

2. Start system with Windows NT 4.0 installed.
   IMPORTANT: When the "Please select the operating system to start..." message is displayed, select "Windows NT Workstation Version 4.00 [VGA mode]".

3. From **Start**, select the **Settings group** and then click on the

   Control Panel icon.

4. In the **Control Panel**, select the desired device and click on the icon.

5. Follow the step-by-step instruction and click on **OK** button.

6.　Click on the **Have Disk...** button.

7.　Key in CD-ROM path and specify component drivers, then click on the **OK** button.

8.　From the list of displayed devices, select your desired device.

9.　If a message appears stating the driver is already installed on the system, and asks if you want to use the current or new drivers, be sure to select the **New** button.

10.　If prompted for the driver diskette a second time, click on the **Continue** button.
　(Notice: In some cases the system will ask you to insert Windows NT CD ROM. Follow its instructions to complete the setup procedures.)

11.　When the message **"The drivers were successfully installed"** is displayed, click on the **OK** button.

12.　Reboot the system.
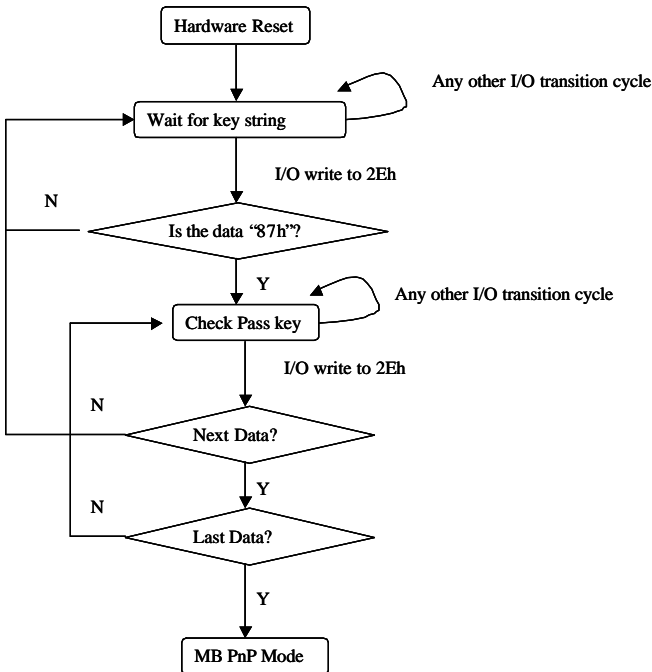
Appendix

A

Programming the

Watchdog Timer

A.1 Watchdog timer of EMB-830

EMB-830 utilizes ITE 8712 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON intial watchdog timer program is also attached based on which you can develop customized program to fit your application.

A.2 Configuring sequence description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.

```
        ┌─────────────────┐
        │  Hardware Reset  │
        └─────────────────┘
                 │
                 ▼
        ┌─────────────────┐ ◄── Any other I/O transition cycle
  ┌────►│ Wait for key string│
  │     └─────────────────┘
  │              │  I/O write to 2Eh
  │              ▼
  │  N      ◇ Is the data "87h"? ◇
  ├───────────────
  │              │ Y
  │              ▼        ◄── Any other I/O transition cycle
  │  ┌─────────────────┐
  │  │  Check Pass key  │◄┐
  │  └─────────────────┘
  │           │  I/O write to 2Eh
  │           ▼
  │  N    ◇ Next Data? ◇
  ├──────────────
  │           │ Y
  │           ▼
  │  N    ◇ Last Data? ◇
  └──────────────
              │ Y
              ▼
        ┌─────────────────┐
        │   MB PnP Mode   │
        └─────────────────┘
```

There are three steps to complete the configuration setup: **(1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode.** Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to **1** to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit   Description

7-2   Reserved

1   Returns to the Wait for Key state. This bit is used when the configuration sequence is completed

0   Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit   Description

7   WDT is reset upon a CIR interrupt

6   WDT is reset upon a KBC (mouse) interrupt

5   WDT is reset upon a KBC (keyboard) interrupt

4   WDT is reset upon a read or a write to the Game Port base address

3-2   Reserved

1   Force Time-out. This bit is self-clearing

0   WDT Status

        1: WDT value reaches 0.

        0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit   Description

7   WDT Time-out value select

        1: Second

        0: Minute

6   WDT output through KRST (pulse) enable

5-4   Reserved

3-0   Select the interrupt level**Note** for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit   Description

7-0   WDT Time-out value 7-0

A.3 ITE8712 WatchDog timer initial program

```
      MODEL   SMALL

      .CODE

Main:

      CALL      Enter_Configuration_mode

      CALL      Check_Chip

      mov       cl, 7

      call      Set_Logic_Device

      ;time setting

      mov   cl, 10  ; 10 Sec

      dec   al

Watch_Dog_Setting:

      ;Timer setting

      mov   al, cl

      mov   cl, 73h
```

```
call      Superio_Set_Reg


;Clear by keyboard or mouse interrupt
mov   al, 0f0h
mov   cl, 71h
call      Superio_Set_Reg
;unit is second.


mov   al, 0C0H
mov   cl, 72h
call    Superio_Set_Reg


; game port enable
mov   cl, 9
call    Set_Logic_Device


Initial_OK:
CALL      Exit_Configuration_mode
MOV    AH,4Ch
INT       21h


Enter_Configuration_Mode   PROC   NEAR
MOV        SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV      DX,02Eh

MOV      CX,04h

Init_1:

MOV      AL,BYTE PTR CS:[SI]

OUT      DX,AL

INC      SI

LOOP     Init_1

RET

Enter_Configuration_Mode    ENDP

Exit_Configuration_Mode    PROC    NEAR

MOV      AX,0202h

CALL     Write_Configuration_Data

RET

Exit_Configuration_Mode    ENDP


Check_Chip PROC    NEAR


MOV      AL,20h

CALL     Read_Configuration_Data

CMP      AL,87h

JNE      Not_Initial


MOV      AL,21h

CALL     Read_Configuration_Data
```

```
    CMP      AL,12h
    JNE      Not_Initial
Need_Initial:
    STC
    RET


    Not_Initial:


    CLC
    RET
    Check_Chip    ENDP
    Read_Configuration_Data    PROC    NEAR
    MOV     DX,WORD PTR CS:[Cfg_Port+04h]
    OUT      DX,AL
    MOV     DX,WORD PTR CS:[Cfg_Port+06h]
    IN        AL,DX
    RET
    Read_Configuration_Data    ENDP


    Write_Configuration_Data    PROC    NEAR
    MOV        DX,WORD PTR CS:[Cfg_Port+04h]
    OUT        DX,AL
    XCHG       AL,AH
    MOV        DX,WORD PTR CS:[Cfg_Port+06h]
```

```
OUT        DX,AL

RET

Write_Configuration_Data    ENDP

Superio_Set_Reg proc        near

push       ax

MOV        DX,WORD PTR CS:[Cfg_Port+04h]

mov        al,cl

out        dx,al

pop        ax

inc        dx

out        dx,al

ret

Superio_Set_Reg endp

Set_Logic_Device            proc        near

push       ax

push       cx

xchg       al,cl

mov        cl,07h

call       Superio_Set_Reg

pop        cx

pop        ax

ret

Set_Logic_Device            endp
```

;Select 02Eh->Index Port, 02Fh->Data Port

Cfg_Port   DB   087h,001h,055h,055h

DW   02Eh,02Fh

END   Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected