PCM-8500

Socket 478 based Pentium® 4
/ Pentium® 4 Processor-M
/ Celeron® Processors
Compact Board
With LCD, Ethernet, USB &
PCMCIA / Mini PCI

PCM-8500 Rev. A Manual
Oct. 2003

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Packing List

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

- 1 PCM-8500 Compact Board

- 1 Quick Installation Guide

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

- 1 Jumper Cap

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

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Chapter

1

General Information

1.1 Introduction

PCM-8500 is first Pentium® 4 industrial board in AAEON Compact Board product line. It features a PGA478 socket that can accommodate Pentium® 4 / Pentium® 4 Processors-M and Celeron® Processor, supporting FSB up to 400/533MHz.

Best performance for multimedia solution

AAEON's PCM-8500 also supports DDR DRAM up to 1GB, 4X AGP, and 6 channels audio output. It can provide the strong multimedia functions. Therefore PCM-8500 can be broadly implemented in several markets, such as Point of sale, point of information (Kiosk), and gaming markets.

Multi-Function Pentium4 Platform

If you are looking for powerful multi-media applications, PCM-8500 is the one. PCM-8500 successfully integrates VGA, Audio and Ethernet function into 5.75" size board; meanwhile it also supports 6 USB2.0, mini PCI, and PCMCIA (optional item) slots. PCM-8500 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 whom application
is various or changing, PCM-8500 reserves more than enough
flexibility for future expansion.

More

PCM-8500 provides more CPU options for different applications.
You can choose Pentium® 4 processor up to 3.06G for high
performance application or choose Pentium® 4 processor-M for
thermal concerned operative environment. Low-cost Socket 478
Celeron processors are also supported by PCM-8500 for
cost-intensive projects. Most of all Pentium® 4 Level processors are
suitable for PCM-8500. Talking about the display signal transmission,
PCM-8500 integrated 48-bit dual channel LVDS interface onboard,
which allows long distance display signal transmission. Besides LCD
supports, PCM-8500 also allows customer to show different contents
on CRT and LCD at same time. It meets multi-display demand at
most cost-efficient way.

1.2 Features

- Support Intel Socket 478 Pentium® 4 / 4 Processor-M / Celeron Processors

- Support Intel Hyper-Threading Technology

- Support 266/333MHz DDR SDRAM

- High Speed AGP 4X for VGA display

- Support 48bit Dual Channel LVDS

- Support TV-Out Function

- Integrated AC-97 5.1 3D Audio

- One 10/100Base-T Fast Ethernet

- Support CompactFlash memory storage

- Six USB 2.0 Ports

- Digital I/O (8 in, 8 out as Default, up to 16 in or 16 out)

1.3 Specifications

System

- CPU   Intel Socket 478 Pentium® 4 ／

  4 Processor-M ／

  Celeron® Processor,

  Hyper-Threading Technology

  supported (Standard Cooler

  Supported)

- Memory   184pin DIMM × 1, Support DDR

  266／333MHz up to 1GB

- Chipset   Intel ® i845GV ／ ICH4   ITE

  8712 × 2

- BIOS   Award 512 KB FLASH BIOS

- Audio   ALC 650 Codec 6 Channel, AC97

- SSD   One Type II CompactFlash Card

- Watchdog timer   Generate a system reset

- DMA   7DMA channels (8237 equivalent)

- Interrupt   15 interrupt levels (8259 equivalent)

- Ethernet   Intel 82562 10／100 PHY chip

- Expansion Interface PCI slot × 1, Mini PCI slot × 1,

  PCMCIA Type II × 2. (Optional)

- H／W status monitoring

  Power supply voltages and

  temperatures monitoring functions

- Battery   Lithium battery for data retention

Display

- Memory size   Share Memory, Dynamically Adjusts by OS.
- Resolution   Up to 1600 X 1200 for CRT

  Up to 1280 X 1024 for TFT
- LCD Interface   Up to 48-bit Dual Channel LVDS

  TFT LCD (Chrontel 7017)
- TV Out   Support NTSC/PAL standard

  1024×768 (Chrontel 7017)
- Dual Display   Simultaneous Scan: CRT   LCD

  Dual View: CRT   LCD

I/O

- MIO

  $1 \times$ EIDE (Ultra DMA100),

  $1 \times$ FDD,

  $1 \times$ K/B,

  $1 \times$ Mouse,

  $1 \times$ RS-232/422/485,

  $3\times$ RS-232,

  $1 \times$ LPT,

$1 \times$ CRT

- Digital I/O port   Support 8 in, 8 out as default, up to 16 in or 16 out.

- IR interface   Support one IrDA Tx/Rx header

- Ethernet $1 \times$ RJ45 Connector

- Audio   Mic in, Line in, Line out ／ Speak out, CD Audio in, With special connector for 5.1 channel audio

- USB   USB 2.0 $\times$ 3sets. Total 6 ports

- TV-Out   Support S-terminal and RCA type

Chapter

2

Quick Installation Guide

Attention:

1. There are two different models of PCM-8500 for supporting Desktop or Mobile type of Pentium® 4 Processors, please make sure appropriated processor is installed on PCM-8500 before your turn on the power.

2. The setting of "Advanced Chipset Features \ Speed Step Mode (Pentium® 4 Mobile)" in BIOS should be disabled when desktop version Pentium® 4 or Celeron® are adopted, otherwise the system cannot boot. Clear CMOS will be required to rescue your PC from this situation. For Mobile Pentium® 4, this item can be disabled or enabled to get the best performance or maximum power saving of the processor.

OZONE SAFE

RECYCLABLE

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

Component Side
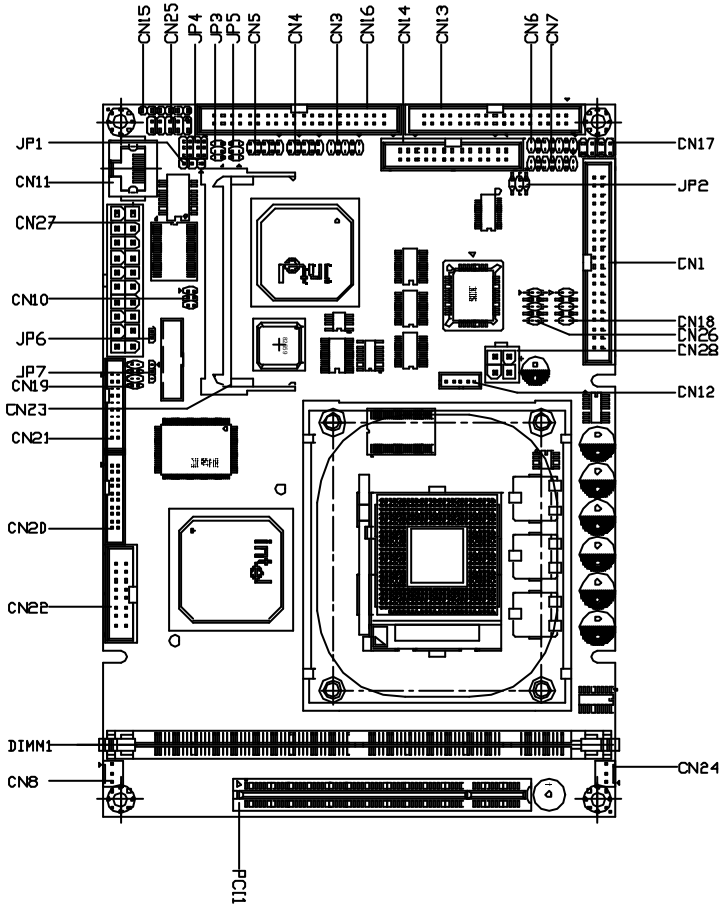
Solder Side
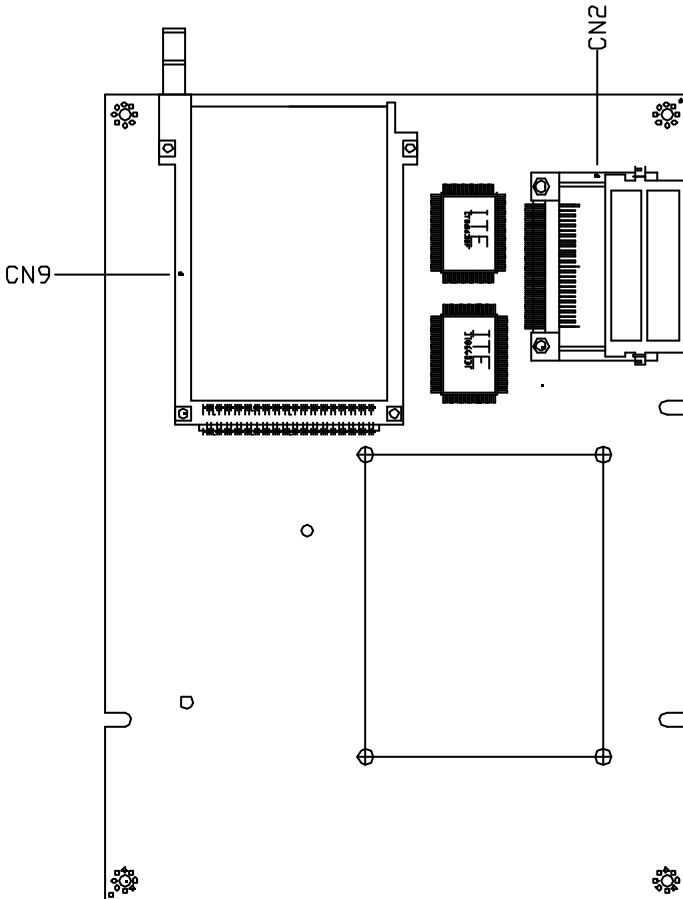
2.3 Mechanical Drawing

Component Side
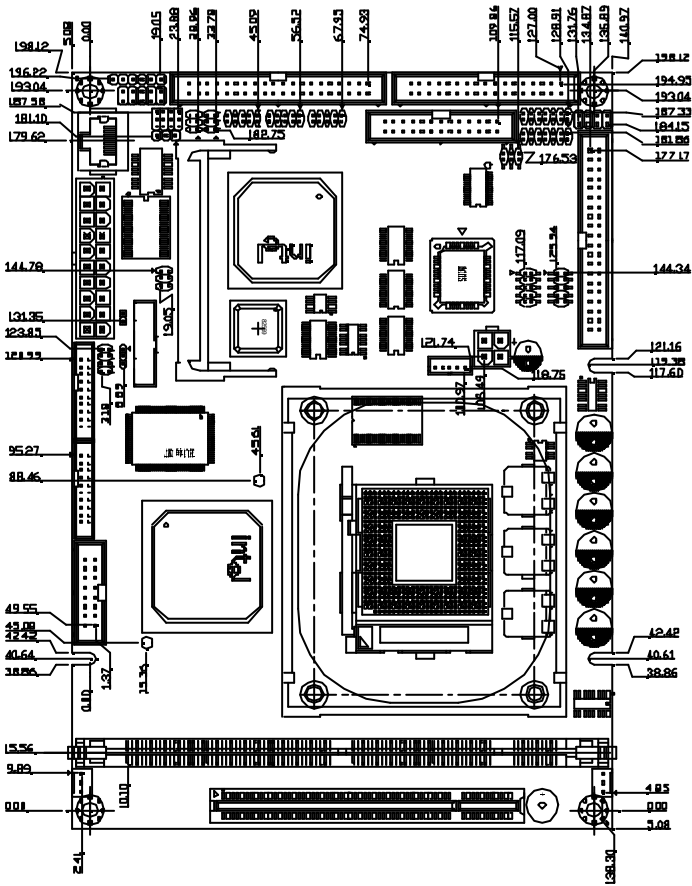
Solder Side
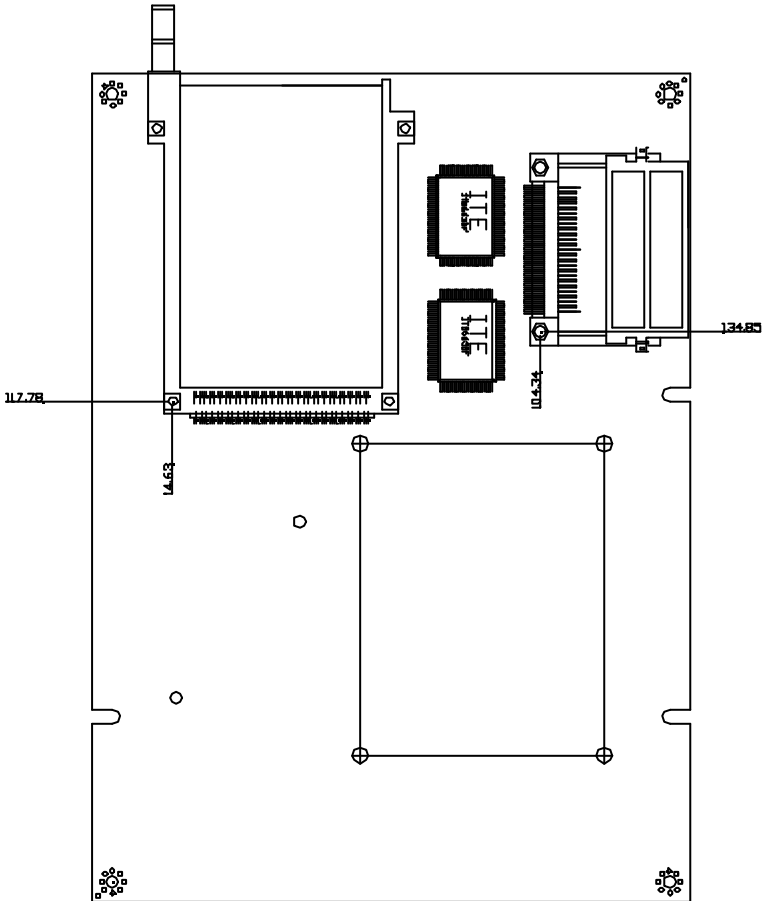
2.4 List of Jumpers

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 RTC
JP2	Audio Out Select
JP3	COM2 Ring/+5V/+12V Selection
JP4	COM2 RS-232/422/485 Selection
JP5	COM2 RS-232/422/485 Selection
JP6	ATX Power simulate AT Power
JP7	LCD Voltage 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 board's connectors:

Connectors

Label	Function
CN1	EIDE HDD Connector
CN2	CompactFlash Connector / CompactFlash Socket
CN3/CN4/CN5	USB1/2/3 Connector
CN6	Audio 5.1 Channel / SPDIF Connector
CN7	Audio Connector
CN8.CN24	Fan Connector
CN9	PCMCIA Slot
CN10	LAN LED Connector
CN11	RJ-45 Connector
CN12	Option PME Connector
CN13	Floppy Connector
CN14	LPT Port Connector
CN15	IrDA Connector
CN16	RS-232 Serial Port (COM1~COM4) Connector
CN17	PS2 Keyboard/Mouse Connector
CN18.CN26	Digital I/O 16bit Connector
CN19	TV Out Connector
CN20	Channel1 LVDS Connector
CN21	Channel2 LVDS Connector
CN22	VGA Display Connector
CN23	MINI PCI SLOT
CN25	Front Panel
CN27	ATX Power Connector
CN28	ATX Power 12V 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**
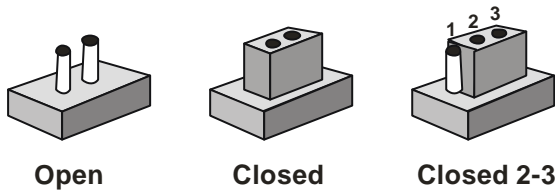
A pair of needle-nose pliers may be helpful when working with jumpers.

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	Active (Default)
2-3	Clear

2.8 Audio Out Select (JP2)

JP2	Function
1-3, 2-4	W/O Amplifier (Default)
3-5, 4-6	W/ Amplifier

2.9 COM2 Ring/+5V/+12V Selection (JP3)

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

2.10 COM2 RS-232/422/485 Select (JP4&JP5)

JP4	JP5	Function
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

2.11 ATX Power simulate AT Power (JP6)

JP6	Function
1-2 ON	ATX Power Simulate AT Power
1-2 OFF	ATX Standard (Default)

2.12 LCD Voltage Selection (JP7)

JP7	Function
1-2	+5V
2-3	+3.3V (Default)

2.13 IDE Connector (CN1)

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

2.14 CompactFlash Connector (CN2)

Pin	Signal	Pin	Signal
1	GND	26	GND
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IO READ
10	GND	35	IO WRITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N.C
16	GND	41	IDE RESET
17	GND	42	IO READY
18	ADDR2	43	N.C
19	ADDR1	44	+5V
20	ADDR0	45	DASP
21	DATA0	46	DIAG

2.15 USB1 Connector (CN3)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD0-	4	GND
5	USBD0+	6	USBD1+
7	GND	8	USBD1-
9	GND	10	+5V

2.16 USB2 Connector (CN4)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD2-	4	GND
5	USBD2+	6	USBD3+
7	GND	8	USBD3-
9	GND	10	+5V

2.17 USB3 Connector (CN5)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD4-	4	GND
5	USBD4+	6	USBD5+
7	GND	8	USBD5-
9	GND	10	+5V

2.18 Audio 5.1 Channel/SPDIF Connector (CN6)

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

2.19 Audio Connector (CN7)

Pin	Signal	Pin	Signal
1	MIC IN	2	MIC VCC
3	GND	4	CD-GND
5	LINE-IN L	6	CD-IN L
7	LINE-IN R	8	CD-GND
9	GND	10	CD-IN R
11	LINE-OUT L	12	LINE-OUT R
13	GND	14	GND

2.20 Fan Connector (CN8&CN24)

Pin	Signal
1	GND
2	+5V
3	FAN SPEED SENSE

2.21 LAN LED Connector (CN10)

Pin	Signal	Pin	Signal
1	Active LED	2	+3.3V
3	Link LED	4	+3.3V
5	Speed LED	6	+3.3V

2.22 10/100Base-Tx Ethernet Connector (CN11)

Pin	Signal	Pin	Signal
1	TX+	9	N.C
2	TX-	10	N.C
3	RX+	11	GND
4	N.C	12	GND
5	N.C	13	N.C
6	RX-	14	N.C
7	N.C	15	N.C
8	N.C	16	N.C

2.23 Option PME Connector (CN12)

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

2.24 Floppy Connector (CN13)

Pin	Signal	Pin	Signal
1	GND	2	REDWC
3	GND	4	N.C
5	GND	6	DS1
7	GND	8	INDEX
9	GND	10	MOTOR A
11	GND	12	DRIVE SELECT B
13	GND	14	DRIVE SELECT A
15	GND	16	MOTOR B
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	SIDE1
33	GND	34	DISK CHANGE

2.25 LPT Port Connector (CN14)

Pin	Signal	Pin	Signal
1	STROBE	2	AFD
3	PTD0	4	ERROR
5	PTD1	6	INIT
7	PTD2	8	SLIN
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND
15	PTD6	16	GND
17	PTD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N.C

2.26 IrDA Connector (CN15)

Pin	Signal
1	+5V
2	CIRTX
3	IRRX
4	GND
5	IRTX
6	CIRRX

2.27 COM1~4 RS-232/422/485 Serial Port Connector (CN16)

Pin	Signal	Pin	Signal
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	N.C
11	DCD2	12	RXD2 (422RXD+)
13	TXD2	14	DTR2 (422RXD-)
15	GND	16	DSR2
17	RTS2	18	CTS2
19	RI2/+5V/+12V	20	N.C
21	DCD3	22	RXD3
23	TXD3	24	DTR3
25	GND	26	DSR
27	RTS3	28	CTS3
29	RI3	30	N.C
31	DCD4	32	RXD4
33	TXD4	34	DTR4
35	GND	36	DSR4
37	RTS4	38	CTS4
39	RI4	40	N.C

2.28 PS2 Keyboard/Mouse Connector (CN17)

Pin	Signal
1	KB_DATA
2	KB_CLK
3	GND
4	+5V
5	MS_DATA
6	MS_CLK

2.29 Digital I/O-2 Connector (CN18)

This connector offers 4-pair of digital I/O functions and address is 841H. The pin definitions are illustrated below: Please refer to Page 3-10 for digital I/O BIOS setting.

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

The pin definitions and registers mapping are illustrated below:

Address: **841H**

4 in / 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPO 27	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

2.30 Digital I/O-1 Connector (CN26)

This connector offers 4-pair of digital I/O functions and address is 801H. The pin definitions are illustrated below: Please refer to Page 3-10 for digital I/O BIOS setting.

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

The pin definitions and registers mapping are illustrated below:

Address: 801H

4 in/ 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPO 27	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

2.31 TV Out Connector (CN19)

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

2.32 Channel1 LVDS Connector (CN20)

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-
19	ENBKL	20	N.C

2.33 Channel2 LVDS Connector (CN21)

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-

2.34 VGA Display Connector (CN22)

Pin	Signal	Pin	Signal
1	Red	9	GND
2	VCC	10	HSYNC
3	Green	11	GND
4	GND	12	VSYNC
5	Blue	13	GND
6	N.C	14	SCL
7	N.C	15	GND
8	SDA	16	N.C

2.35 Front Panel (CN25)

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

2.36 ATX Power Connector (CN27)

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

2.37 ATX Power 12V Connector (CN28)

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

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 PCM-8500 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.

```
          Phoenix - AwardBIOS CMOS Setup Utility
 ▶ Standard CMOS Features        ▶ Frequency/Voltage Control
 ▶ Advanced BIOS Features           Load Fail-Safe Defaults
 ▶ Advanced Chipset Features        Load Optimized Defaults
 ▶ Integrated Peripherals           Set Supervisor Password
 ▶ Power Management Setup           Set User Password
 ▶ PnP/PCI Configurations           Save & Exit Setup
 ▶ PC Health Status                 Exit Without Saving

 Esc : Quit    F9 : Menu in BIOS    ↑ ↓ → ←  : Select Item
 F10 : Save & Exit Setup

             Time, Date, Hard Disk Type...
```

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.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     Standard CMOS Features
┌────────────────────────────────────────────┬──────────────────────┐
│   Date (mm:dd:yy)          Tue, Sep 30 2003  │      Item Help        │
│   Time (hh:mm:ss)          17 : 26 :  4      │                       │
│                                              │  Menu Level   ▶       │
│ ▶ IDE Primary Master                         │                       │
│ ▶ IDE Primary Slave                          │  Change the day, month,│
│ ▶ IDE Secondary Master                       │  year and century      │
│ ▶ IDE Secondary Slave                        │                       │
│                                              │                       │
│   Drive A                  [1.44M, 3.5 in.]  │                       │
│   Drive B                  [None]            │                       │
│                                              │                       │
│   Video                    [EGA/VGA]         │                       │
│   Halt On                  [All , But Keyboard]│                     │
│                                              │                       │
│   Base Memory                   640K         │                       │
│   Extended Memory             64512K         │                       │
│   Total Memory                65536K         │                       │
│                                              │                       │
├──────────────────────────────────────────────────────────────────────┤
│ ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values    F6: Fail-Safe Defaults  F7: Optimized Defaults │
└──────────────────────────────────────────────────────────────────────┘
```

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 PCM-8500

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     Advanced BIOS Features
 ┌──────────────────────────────────────────┬─────────────────────────┐
 │ Virus Warning              [Disabled]   ▲ │      Item Help          │
 │ CPU L1 & L2 Cache          [Enabled]      │                         │
 │ Hyper-Threading Technology [Enabled]      │ Menu Level    ▶         │
 │ Quick Power On Self Test   [Enabled]      │                         │
 │ First Boot Device          [Floppy]       │ Allows you to choose    │
 │ Second Boot Device         [HDD-0]        │ the VIRUS warning       │
 │ Third Boot Device          [CDROM]        │ feature for IDE Hard    │
 │ Boot Other Device          [Enabled]      │ Disk boot sector        │
 │ Swap Floppy Drive          [Disabled]     │ protection. If this     │
 │ Boot Up Floppy Seek        [Enabled]      │ function is enabled     │
 │ Boot Up NumLock Status     [On]           │ and someone attempt to  │
 │ Gate A20 Option            [Fast]         │ write data into this    │
 │ Typematic Rate Setting     [Disabled]     │ area , BIOS will show    │
 │ x Typematic Rate (Chars/Sec) 6            │ a warning message on    │
 │ x Typematic Delay (Msec)     250          │ screen and alarm beep   │
 │ Security Option            [Setup]        │                         │
 │ APIC Mode                  [Enabled]      │                         │
 │ MPS Version Control For OS [1.4]          │                         │
 │ OS Select For DRAM > 64MB  [Non-OS2]      │                         │
 │ Report No FDD For WIN 95   [Yes]          │                         │
 │ Full Screen LOGO Show      [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 │
 └─────────────────────────────────────────────────────────────────────┘
```

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 PCM-8500.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features
┌─────────────────────────────────────────┬────────────────────────┐
│ DRAM Timing Selectable   [By SPD]      ▲ │      Item Help         │
│ CAS Latency Time         [1.5]         ▓ ├────────────────────────┤
│ Active to Precharge Delay [7]          ▓ │      Item Help         │
│ DRAM RAS# to CAS# Delay  [3]           ▓ ├────────────────────────┤
│ DRAM RAS# Precharge      [3]             │ Menu Level    ►        │
│ Turbo Mode               [Disabled]      │                        │
│ Memory Frequency For     [Auto]          │ When you use Pentium 4 │
│ System BIOS Cacheable    [Enabled]       │ CPU,you must disable   │
│ Video  BIOS Cacheable    [Disabled]      │ this function. If else │
│ Memory Hole At 15M-16M   [Disabled]      │ the system can not be  │
│ Delayed Transaction      [Enabled]       │ boot,then you must     │
│ Delay Prior to Thermal   [16 Min]        │ clear the CMOS to fix  │
│ AGP Aperture Size (MB)   [64]            │ it. When you use       │
│ Speed Step Mode(P4 Mobile)[Disabled]     │ Pentium 4 Mobile CPU   │
│                                          │ you can disable/enable │
│ ** On-Chip VGA Setting **                │ this function either.  │
│ On-Chip VGA              [Enabled]       │ Enable -> Maximum      │
│ On-Chip Frame Buffer Size [8MB]          │ Performance , Disable  │
│ Boot Display             [CRT]           │ -> Save Power          │
│ Panel Type(LVDS)         [800X600  1CH 18bit]                      │
│ TV Mode                  [NTSC]        ▼ │                        │
├──────────────────────────────────────────┴────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults     │
└────────────────────────────────────────────────────────────────────┘
```
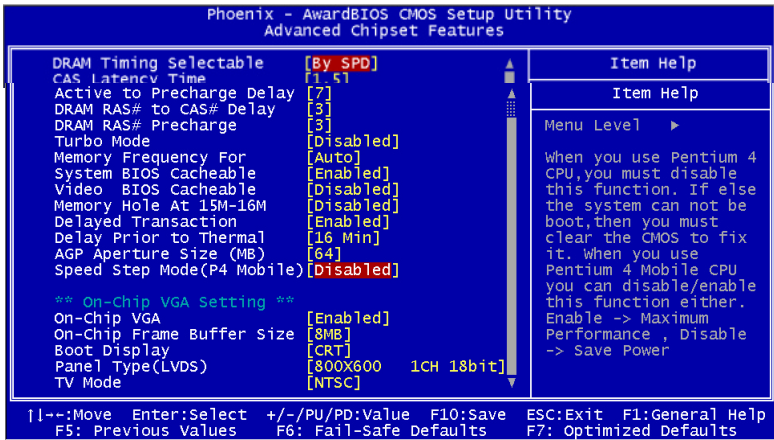
Attention:

1. There are two different models of PCM-8500 for supporting Desktop or Mobile type of P4 Processors, please make sure appropriated processor is installed on PCM-8500 before your turn on the power.

2. The setting of " Advanced Chipset Features \ Speed Step Mode (P4 Mobile) " in BIOS should be disable when desktop version Pentium 4 or Celeron are adopted, otherwise the system cannot boot. Clear CMOS will be required to rescue your PC from this situation. For Mobile Pentium 4, this item can be disable or enable to get the best performance or maximum power saving of the processor.

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 PCM-8500.
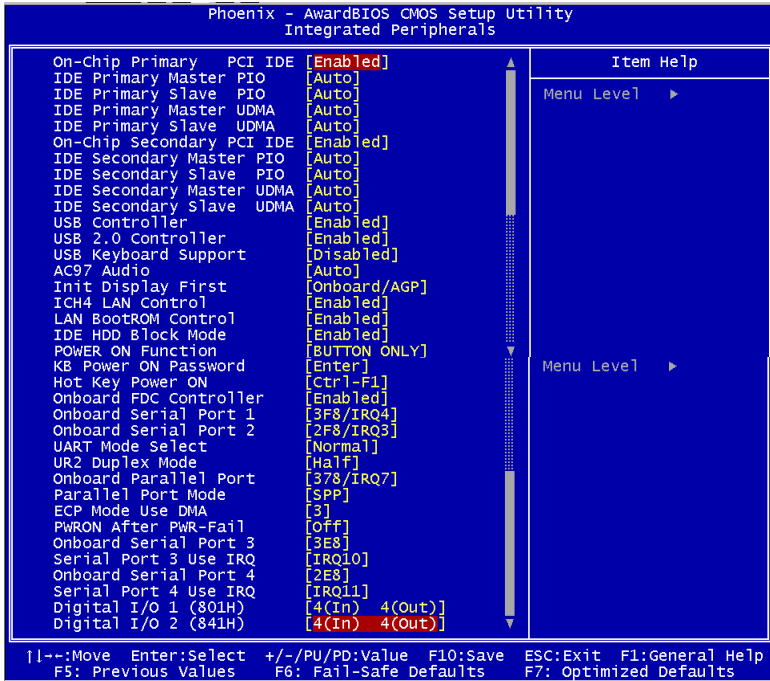
```
               Phoenix - AwardBIOS CMOS Setup Utility
                       Integrated Peripherals
─────────────────────────────────────────────────────────────────────
   On-Chip Primary   PCI IDE  [Enabled]      ▲        Item Help
   IDE Primary Master PIO     [Auto]
   IDE Primary Slave  PIO     [Auto]                Menu Level   ▶
   IDE Primary Master UDMA    [Auto]
   IDE Primary Slave  UDMA    [Auto]
   On-Chip Secondary PCI IDE  [Enabled]
   IDE Secondary Master PIO   [Auto]
   IDE Secondary Slave  PIO   [Auto]
   IDE Secondary Master UDMA  [Auto]
   IDE Secondary Slave  UDMA  [Auto]
   USB Controller             [Enabled]
   USB 2.0 Controller         [Enabled]
   USB Keyboard Support       [Disabled]
   AC97 Audio                 [Auto]
   Init Display First         [Onboard/AGP]
   ICH4 LAN Control           [Enabled]
   LAN BootROM Control        [Enabled]
   IDE HDD Block Mode         [Enabled]
   POWER ON Function          [BUTTON ONLY]  ▼
   KB Power ON Password       [Enter]                Menu Level   ▶
   Hot Key Power ON           [Ctrl-F1]
   Onboard FDC Controller     [Enabled]
   Onboard Serial Port 1      [3F8/IRQ4]
   Onboard Serial Port 2      [2F8/IRQ3]
   UART Mode Select           [Normal]
   UR2 Duplex Mode            [Half]
   Onboard Parallel Port      [378/IRQ7]
   Parallel Port Mode         [SPP]
   ECP Mode Use DMA           [3]
   PWRON After PWR-Fail       [Off]
   Onboard Serial Port 3      [3E8]
   Serial Port 3 Use IRQ      [IRQ10]
   Onboard Serial Port 4      [2E8]
   Serial Port 4 Use IRQ      [IRQ11]
   Digital I/O 1 (801H)       [4(In)   4(Out)]
   Digital I/O 2 (841H)       [4(In)   4(Out)]  ▼
─────────────────────────────────────────────────────────────────────
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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 PCM-8500.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       Power Management Setup
┌─────────────────────────────────────────────────┬──────────────────────┐
│   ACPI Function            [Enabled]          ▲  │     Item Help        │
│   ACPI Suspend Type        [S1(POS)]             │                      │
│ x Run VGABIOS if S3 Resume  Auto                 │  Menu Level   ▶      │
│   Power Management         [User Define]         │                      │
│   Video Off Method         [DPMS]                │                      │
│   Video Off In Suspend     [Yes]                 │                      │
│   Suspend Type             [Stop Grant]          │                      │
│   MODEM Use IRQ            [3]                    │                      │
│   Suspend Mode             [Disabled]            │                      │
│   HDD Power Down           [Disabled]            │                      │
│   Soft-Off by PWR-BTTN     [Instant-Off]         │                      │
│   Wake-Up by PCI card      [Enabled]             │                      │
│   Power On by Ring         [Enabled]             │                      │
│ x USB KB Wake-Up From S3    Disabled             │                      │
│   Resume by Alarm          [Disabled]         ▓  │                      │
│ x  Date(of Month) Alarm     0                    │                      │
│ x  Time(hh:mm:ss) Alarm     0 : 0 : 0            │                      │
│                                                  │                      │
│    ** Reload Global Timer Events **           ▼  │                      │
│   Primary IDE 0            [Disabled]            │                      │
│   Primary IDE 1            [Disabled]            │                      │
│   Secondary IDE 0          [Disabled]            │                      │
│   Secondary IDE 1          [Disabled]            │                      │
│   FDD,COM,LPT Port         [Disabled]            │                      │
│   PCI PIRQ[A-D]#           [Disabled]         ▼  │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults    │
└──────────────────────────────────────────────────────────────────────────────┘
```
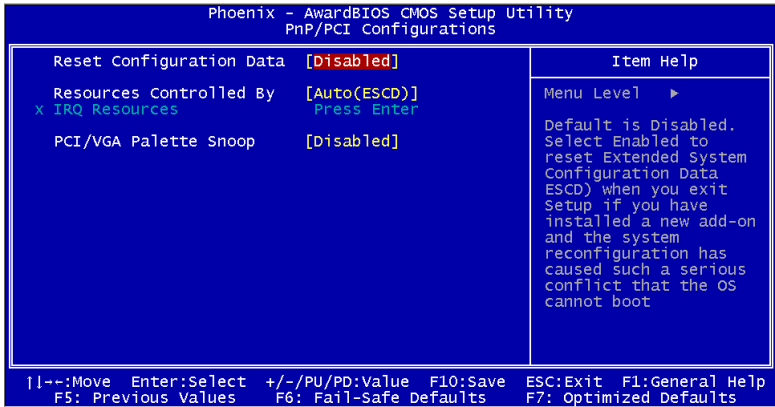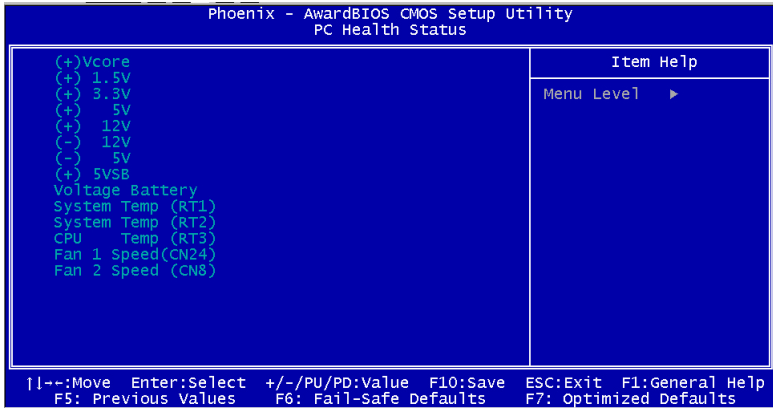
3.8 PnP/PCI configuration

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 PCM-8500.
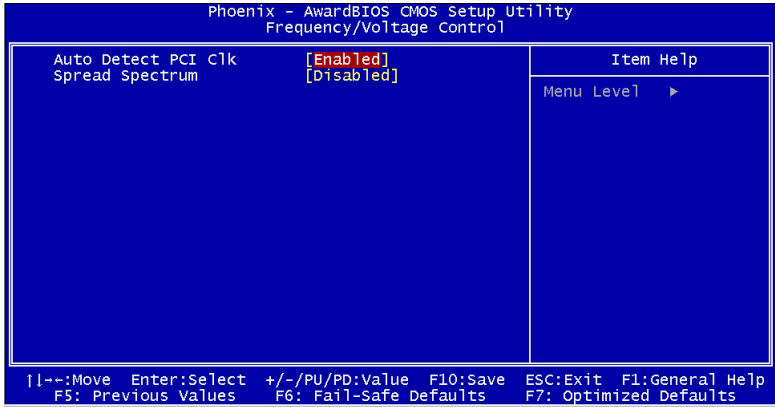
```
          Phoenix - AwardBIOS CMOS Setup Utility
                   PnP/PCI Configurations
   Reset Configuration Data    [Disabled]              Item Help

   Resources Controlled By     [Auto(ESCD)]       Menu Level    ▶
 x IRQ Resources                Press Enter
                                                 Default is Disabled.
   PCI/VGA Palette Snoop       [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
                                                 reconfiguration has
                                                 caused such a serious
                                                 conflict that the OS
                                                 cannot boot



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

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 PCM-8500.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                      PC Health Status
  (+)Vcore                          │        Item Help
  (+) 1.5V                          │
  (+) 3.3V                          │  Menu Level   ▶
  (+)   5V                          │
  (+)  12V                          │
  (-)  12V                          │
  (-)   5V                          │
  (+) 5VSB                          │
  Voltage Battery                   │
  System Temp (RT1)                 │
  System Temp (RT2)                 │
  CPU   Temp (RT3)                  │
  Fan 1 Speed(CN24)                 │
  Fan 2 Speed (CN8)                 │

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

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 PCM-8500.

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

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 PCM-8500 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 INF Driver

Step 2 – Install VGA Driver

Step 3 – Install IAA Driver

Step 4 – Install LAN Driver

Step 5 – Install Audio Driver

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 4.1-4.2

4.1 Installation 1:

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

1. Insert the PCM-8500 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.
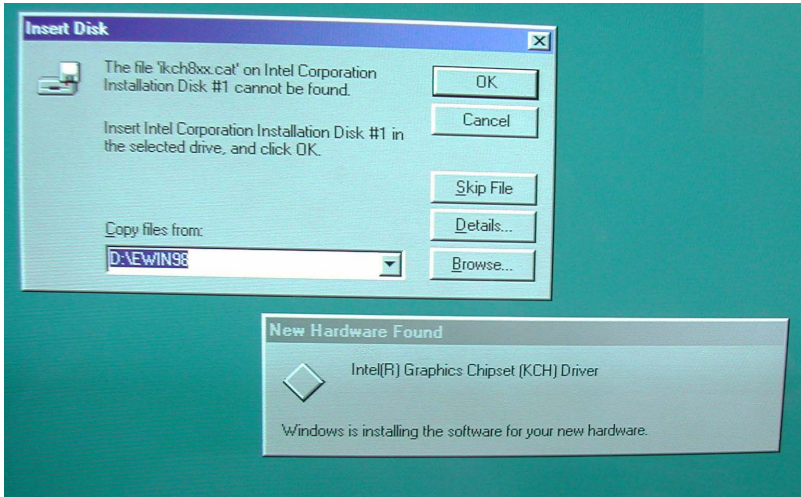
> 4. *Please change the path to the installation folder and search for the two files named as ikch8xx.cat and isb8xx.cat.*

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 NT 4.0

1. Insert the **PCM-8500 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 PCM-8500

PCM-8500 utilizes ITE 8712 chipset as its watchdog timer controller. Here are the procedures below 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.
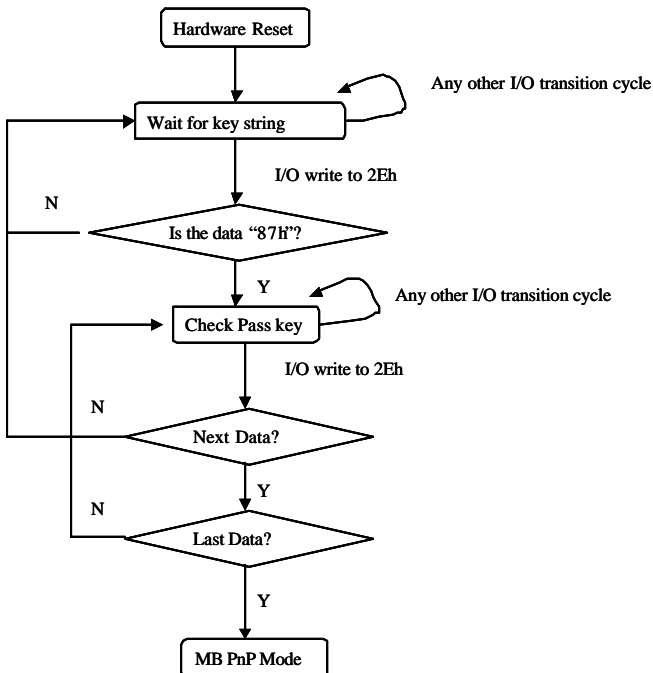
There are three steps to complete the configuration setup:

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