

PCM-6896

Intel 815E compact board with PCI slot, Audio, LAN, CompactFlash, 4 COM ports, PC/104 & PC/104 Plus

Copyright Notice

This document is copyrighted, 2001. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties which may result from its use.

Acknowledgments

VIA is a trademark of VIA Technology, Inc.

AMD is a trademark of Advanced Micro Devices, Inc.

Award is a trademark of Award Software International, Inc.

Cyrix is a trademark of Cyrix Corporation.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows[®] is a registered trademark of Microsoft Corp.

SMC is a trademark of Standard Microsystems Corporation.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

C&T is a trademark of Chips and Technologies, Inc.

UMC is a trademark of United Microelectronics Corporation.

All other product names or trademarks are properties of their respective owners.

Manual PCM-6896 6th Edition

Prepared in Taiwan, May 2003

Packing List

Before you begin installing your card, please make sure that the following materials are included:

- PCM-6896 Intel 815E all-in-one CPU Card
- Quick Installation Guide
- Supporting CD-ROM that contains the following:
 - User's Manual (this manual in PDF file)
 - VGA drivers and utilities
 - Audio drivers and utilities
 - Latest BIOS (as of the CD-ROM was made)

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

FCC STATEMENT

This device complies with part 15 FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received including interference that may cause undesired operations.

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.

A Message to the Customer

AAEON Customer Services

Each and every AAEON's product is built to meet your exact needs and specifications to ensure excellent performance in the harsh and demanding conditions which is typical of the industrial environments. Whether the new AAEON equipment is designed for the laboratory or the factory floor, you can be assured that the product will provide the reliability and ease of operation for which the name AAEON has come to be known.

Your satisfaction is our primary concern, and here is a guide of the services for AAEON's customers. To get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We hope you can get the outstanding performance from our products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally much more detailed than the ones we can provide over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your AAEON products. In fact, most problems reported are minor and could be easily solved over the phone.

In addition, professional technical support is available from AAEON's engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Notice

Dear Customer,

Thank you for purchasing the PCM-6896 board. This user's manual is designed to help you to get the most out of the PCM-6896, please read it thoroughly before you install and use the board. The product that you have purchased comes with a two-year limited warranty, but AAEON will not be responsible for misuse of the product. Therefore, we recommend you to read the manual before using the product.

To get the latest version of the user manual, please visit our Web site at:

<http://www.aaeon.com.tw>

Contents

Copyright Notice.....	ii
Packing List.....	iii
FCC STATEMENT.....	iii
A Message to the Customer	iv
Product Warranty.....	v
Notice.....	vi
Chapter 1: General Information.....	1
Introduction.....	2
Features.....	3
Specifications.....	4
Board Layout.....	8
Board Dimensions.....	9
Chapter 2: Hardware Installation.....	11
Safety precautions	12
Removing the CPU	12
Installing a CPU	13
Setting Jumpers	14
Installing DRAM (DIMMs)	15
Location of Jumpers and Connectors.....	16
List of Jumpers	17
List of Connectors	18
Clear CMOS (JP1).....	19
COM3 & COM4 Selection (JP2 & JP3).....	20
Speaker Out and Line Out (JP4)	21
Front Panel Connector (JP5)	21

PC/104 Plus Voltage Select (JP6).....	21
COM 2 Setting (JP8 , JP7).....	22
CPU/SDRAM Setting (JP9).....	23
DOC Socket	24
DOC 2000 Installation.....	25
DOC Memory Address Selection (JP10)	26
CPU and System Fan Power Connector (CN1 & CN24)....	27
USB Connector (CN5 & CN6).....	28
IDE Hard Drive Connector (CN7).....	29
IR Connector (CN10).....	31
ATX Power Connector (CN11)	31
DVO Connector (CN12).....	32
Keyboard and Mouse Connector (CN13).....	33
VGA Display Connector (CN14).....	34
Audio Connector (CN15).....	35
Parallel Port Connector (CN16).....	35
100Base-Tx Ethernet Connector (CN17).....	36
COM1/COM2/COM3/COM4 Connector (CN18).....	37
Floppy Drive Connector (CN19).....	38
Digital I/O Connector (CN20).....	40
LAN LED signal connector (CN21).....	41
Audio Out Connector 1 Watt (CN22).....	42
Wake On Lan (CN25 pin1-pin5).....	42
AT/ATX Power Select (CN25 pin6-pin7).....	42
CompactFlash Connector (CN8).....	43
Chapter 3:BIOS Setup.....	45
General information.....	46
Main Menu.....	47
Advanced Setup.....	51
Defaults Setup.....	70

Security Setup.....	71
PC Health Setup.....	73
Clk/Voltage Setup.....	74
Exit Setup.....	75
Chapter 4: Driver Installation	77
Appendix A: WatchDos Timer.....	82

General Information

This chapter gives background information on the PCM-6896.

Sections include:

- Card specifications
- Card layout and dimensions

Introduction

AAEON new compact size board PCM-6896 targets high-end multimedia and networking applications. This board is supported by Intel Celeron and Pentium !!! CPU. Easy upgrading allows you to take full advantages of Intel Development of even-higher speed Celeron and Pentium !!! CPU. This is a perfect choice for embedded applications that require cost-effective high computing power communications.

The PCM-6896 also adopts the 10/100MB Intel 815E Ethernet controller that offers higher network performance and reliability. In addition, the PCM-6896 also features power management to minimize power consumption. It complies with the ACPI standard and supports Suspend Mode. The board watchdog timer automatically resets the system or generates an interrupt in case the system stops.

The onboard CompactFlash will offer a larger memory bank for data storage of all types. CompactFlash requires a fraction of power used to drive floppy disk or CD-ROMs, also no battery is required to save the data when the computer powers down.

The onboard 10/100Base-T Ethernet interface and Sound Blaster - compatible audio opens up worlds of possibilities for kiosks, gaming systems, POS systems, medical and educational products.

The Fast Ethernet controller provides a tenfold increase in network capability; and is fully compatible with traditional 10Mbps network facilities.

PCM-6896 also includes four high-speed serial ports (three RS-232, one RS-232/422/485), one multimode (ECP/EPP/SPP) parallel port, 2 floppy drives, an Ultra DMA/100, Enhanced IDE controller supporting up to two devices with data transfer rate up to 100MB per second, and a keyboard/PS/2 mouse interface. This AAEON embedded PC includes almost everything you need for fast, worry-free embedded PC performance.

The addition of PC/104 Plus will allow a wide selection of accessory cards to be added to the PCM-6896. Such accessories as Ultra Wide 2 SCSI, fax modem, vehicle power supply, extra DiskOnChip, PCMCIA module, etc.

Features

- Supports both Intel FC-PGA Pentium III and Celeron CPU's
- High Speed Micro AGP 2X for VGA function onboard
- One 10/100 Base-T Fast Ethernet
- Supports H/W status monitoring
- Integrated AC-97 2.1 SoundBlaster compatible PCI 3D Audio
- Supports DiskOnChip (SSD) and CompactFlash memory
- Four USB ports onboard
- DVI Interface onboard

Specifications

CPU: Intel FC-PGA 370-pin Pentium III and Celeron CPU (with system bus frequencies of 66/100/133MHz)

CPU Socket: Intel socket 370

BIOS: Award 2MB Flash BIOS

Chipset: Intel 815E

I/O Chipset: ITE-8712. Fully 16-bit I/O decoded. Windond 83977EF as 2nd SIO for COM3, COM4 port.

ISA bus interface: ITE IT8888F PCI to ISA bridge.

Memory: Onboard One 168-pin DIMM socket supports up to 512 Mbytes SDRAM (PC 100/133 support)

Enhanced IDE: Supports two IDE devices. Supports Ultra DMA/100 mode with transfer rate up to 100MB/sec.

Connector: One 40-pin (2.54mm) pin header with box

FDD interface: Supports up to two floppy disk drives, 5.25" (360KB and 1.2 MB) and/or 3.5" (720KB, 1.44MB and 2.88MB)

Connector: One 34-pin (2.54mm) pin header with box

Parallel Port: One bi-directional parallel port. Supports SPP, ECP, and EPP modes

Connector: One 26-pin (2.00mm) pin header

Serial Port: Three RS-232 serial ports, can be configured as COM1, COM2, COM3, COM4, or disabled individually and one RS-232/422/485(COM2). Either COM1, COM2 can be S/W configurable to support Ring wake up function and COM3, COM4 provide the option to select 12V/Ring function by jumper setting (16C550 equivalent)

Connector: One 40-pin (2.54mm) pin header

IrDA port: Support SIR and CIR

Connector: One 6-pin (2.54mm) pin header

KB/PS2 Mouse connector: A 7-pin (4*2-1) header supports PC/AT Keyboard and PS/2 mouse and Wake on KBD function.

USB connectors: Two 10-pin header onboard supports four USB ports

Connector: Two 10-pin (2.00mm) pin header

Front Panel Connector: Provide the signals of RSTIN, HDD LED, Buzzer and Intrude Alarm input.

Connector: 10-pin (2.00mm) pin header

GPIO port: Support 4 general purpose I/O each with TTL level interface

Connector: 10-pin (2.0mm) pin header

Battery: Lithium battery for data retention

Watchdog Timer: Can generate a system reset, IRQ 15 or NMI. Supports Win95, Win3.1. Software selectable time-out interval (1 sec.~255 min., 1 min./step)

DMA: 7 DMA channels (8237 equivalent)

Interrupt: 15 interrupt levels (8259 equivalent)

Power management: Supports ATX power supply. I/O peripheral device support power saving and doze/standby/suspend modes. APM 1.2 compliant

H/W status monitoring: Embedded in ITE 8712 supports power supply voltages and temperatures monitoring

Audio Interface:

Chipset: 815E

Codec: ALC201 or compatible

Interface: One 14-pin (2.00mm) pin header for MIC in, line in, line out, speaker out, CD-in. One 4 pin wafer for Speaker output of 1W + 1W. One 4 pin wafer for CD audio input

Flat Panel/CRT Interface

VGA: Onboard 815E

Chipset output AGP port: AGP 2X (Default from Intel 815E built-in)

Display memory: Share memory max to 4MB (Max)

Display Type: Supports non-interlaced CRT
Supports to display both CRT and flat panel simultaneously (DVI)

Connector: 16 pin (2.54mm) for CRT, 50-pin (2.00mm) pin header for LCD

Resolution: Up to 1024 X 768 @ 256K colors

Expansion Interface

PC/104 Plus Connector: One 16-bit 104-pin and one 32-bit 120-pin connector onboard for expansion.

PCI Slot: One 32-bit PCI slot onboard

Ethernet

Chipset: Intel 815E + Intel 82562

Ethernet interface: One 10/100Base-T RJ45 connector, LAN LED support (Link, RX, TX) Support WOL and optional support for AOL

SDD Interface: One 32-pin DIP socket supports M-Systems DiskOnChip 2000 series up to 1GB / Type II CompactFlash Slot

Mechanical and Environmental

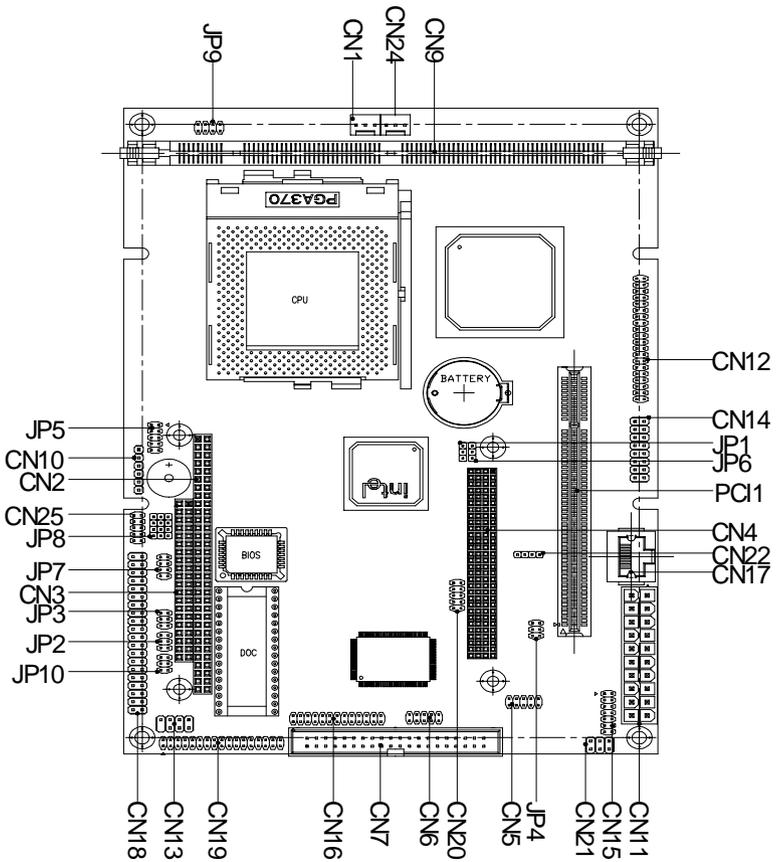
Power Supply voltage: +5V, +12V, +3.3V, -5V, -12V, -3.3V

Operating temperature: 32 to 140 degrees F (0-60 degrees C)

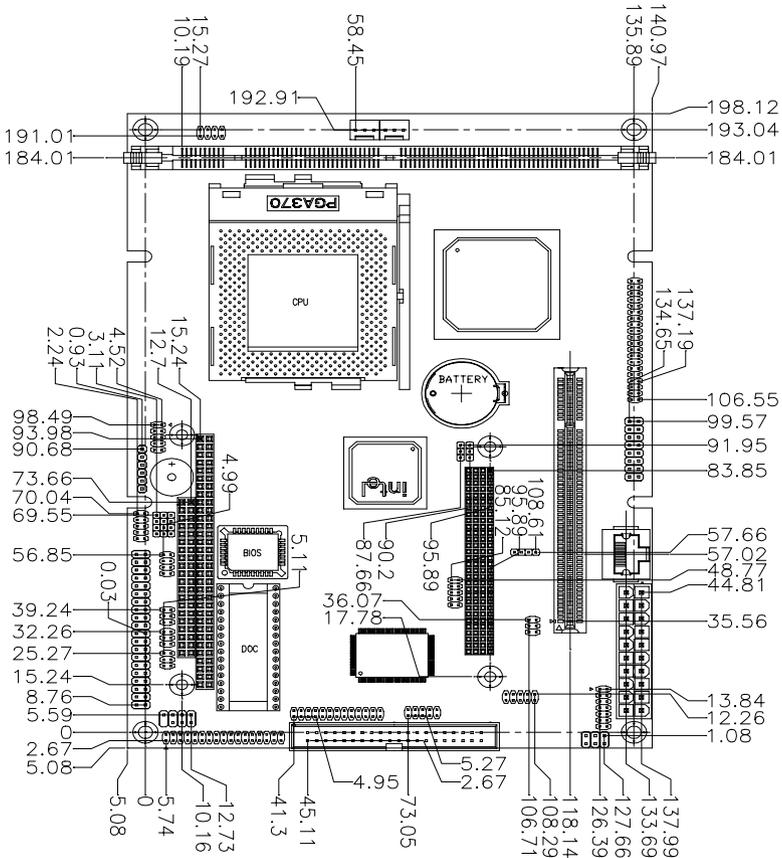
Board Size: 8" (L) x 5.75" (W) (203mm x 146mm)

Weight: 1.2 lb. (0.5Kg)

Board Layout



Board Dimensions



CHAPTER 2

Installation

This chapter provides information regarding PCM-6896 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

Safety precautions

Warning! Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the PC chassis.



Caution! Always ground yourself to remove any static charge before touching the CPU card. 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.



Removing the CPU

The PCM-6896 all-in-one CPU module supports most P !!! CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's PGA socket by following the procedures outlined below. If your system has an existing CPU, please remove it before installing the new CPU.

Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.
2. Lift the CPU out of the PGA socket. The old chip may be difficult to remove. You may find spray chip lubricant, designed for pin-grid-array (PGA) devices, and a chip puller helpful. These are available at electronics hobbyists' supply stores.

Installing A CPU

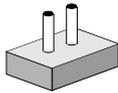
To install the CPU, follow the instructions that came with it. If no documentation was provided, the general procedures for installing a CPU are outlined below:

1. Lubricate the pins on the CPU with lubricant for PGA devices. This makes the CPU slide in much easier and greatly reduces the chance of damaging the pins and other components.
2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.
3. Gently push the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. **DO NOT USE EXCESSIVE FORCE!**

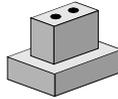
When you install a new CPU, you may have to adjust other settings on the board, such as CPU type, CPU clock, and PCI speed, to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

Setting jumpers

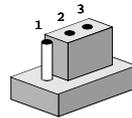
Configure your card to match the needs of your applications by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you can connect the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

The jumper settings are schematically depicted in this manual as follows:



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 applications, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a jumper to make most connections.

Installing DRAM (DIMMs)

System Memory

PCM-6896 contains one socket for 168-pin dual in-line memory module (DIMM). The socket uses 3.3 V unbuffered synchronous DRAM (SDRAM). DIMM is available in capacities of 16, 32, 64, 128, 256, or 512 MB.

Supplementary information about DIMM

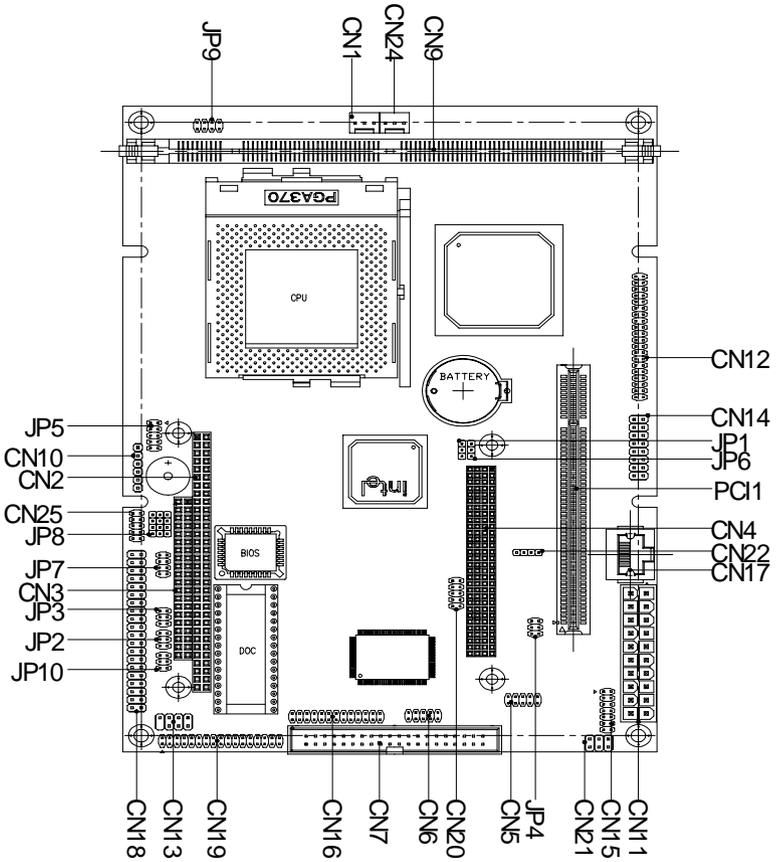
Your PCM-6896 can accept both regular and PC-100/133 SDRAM Module(with or without parity).

Single-sided modules are typically 16 or 128MB; double-sided modules are usually 32 or 256 MB.

Memory Installation Procedures

Installing the SDRAM is simple and may be performed quickly. First, line up the card to the bracket. Making sure the teeth on the card lines up to the bracket inserts. Hold the card at a 90 degree angle in your hand, push the card into the bracket. The card will click into place, by itself. To remove the card push outwards on the two handles on the sides of the bracket. The card will eject by itself.

Location of Jumpers & Connectors



List of Jumpers

Jumpers allow users to manually customize system configurations to their suitable application needs.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers	
Label	Function
JP1	Clear CMOS Setting
JP2, JP3	COM3, COM4 Pin 9 Selection
JP4	Speaker Out/Line Out
JP5	Front Panel Connector
JP6	PC/104 Plus Voltage Select
JP7	COM2 Selection
JP8	COM2 Select for RS-232/422/484
JP9	CPU/SDRAM Speed Select
JP10	DOC Address Select

List of Connectors

Connectors on board access link to external devices such as hard disk drives, a keyboard, VGA, or floppy drives.

The following consist the list of each connector function:

Connectors	
Label	Function
CN1 & CN24	CPU Fan Connector
CN2, CN3	PC/104 Connector
CN4	PC/104 Plus Connector
CN5, CN6	USB Port
CN7	IDE Connector
CN8	CompactFlash Slot
CN9	DIMM Connector
CN10	IR Connector
CN11	ATX Power Connector
CN12	Digital Video Output Connector
CN13	Keyboard & Mouse Connector
CN14	VGA Connector
CN15	Audio Connector
CN16	Parallel Port
CN17	100Base-TX Ethernet Connector
CN18	COM1/COM2/COM3/COM4 Connector
CN19	Floppy Disk Drive Connector
CN20	Digital I/O **
CN21	LAN LED Connector
CN22	Speaker Out (1 WATT)
CN25	AT/AX Power Select (Pins 6-7)
CN25	Wake On Lan (Pins 1-5)

** PCM-6896B1.1 did not support digital function**

Clear CMOS Selection (JP1)

Safety precautions in setting up clear CMOS must be taken, always place jumper on *protect mode*. In clearing CMOS, place jumper for just a second (*follow clear CMOS illustration*) then, immediately return jumper to *protect mode*.

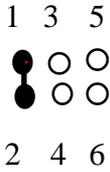
Clear CMOS Selection (JP1)

* Protect			Clear CMOS		
1	2	3	1	2	3
					

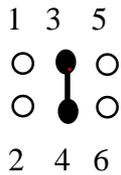
* Default

COM3 & COM4 Selection (JP2 & JP3)

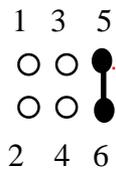
+12V



+5V

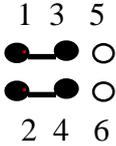


RI (default)

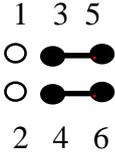


Speaker Out and Line out (JP4)

Line Out



Speaker Out (default)



Front Panel Connector (JP5)

Front Panel Connector (JP5)

Pin	Signal	Pin	Signal
1	GND	2	Power on Button
3	IDE LED	4	VCC
5	Speaker	6	VCC
7	Case Open	8	GND
9	HWRST #	10	GND

PC/104 Plus Voltage Select (JP6)

PC/104 Plus Voltage Select (JP6)



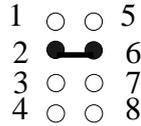
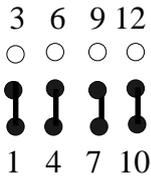
* Default

RS-232/422/485 COM 2 (JP8 , JP7) Setting

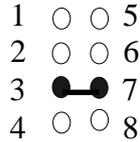
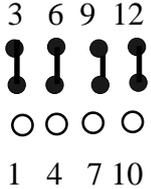
The PCM-6896 COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting JP8 and JP7.

JP8	JP7
-----	-----

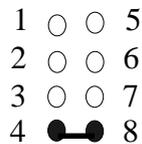
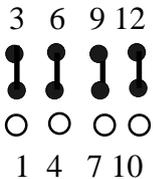
***RS-232 (default)**



RS-422



RS-485



CPU/SDRAM Speed Select (JP9)

Auto Detect

Auto Detect*

1 ●● 2
3 ●● 4
5 ○○ 6
7 ○○ 8

CPU/66MHz

SDRAM100MHz

1 ○○ 2
3 ○○ 4
5 ●● 6
7 ●● 8

CPU/100MHz

SDRAM/100MHz

1 ○○ 2
3 ○○ 4
5 ○○ 6
7 ●● 8

CPU/133MHz

SDRAM/133MHz

1 ○○ 2
3 ○○ 4
5 ○○ 6
7 ○○ 8

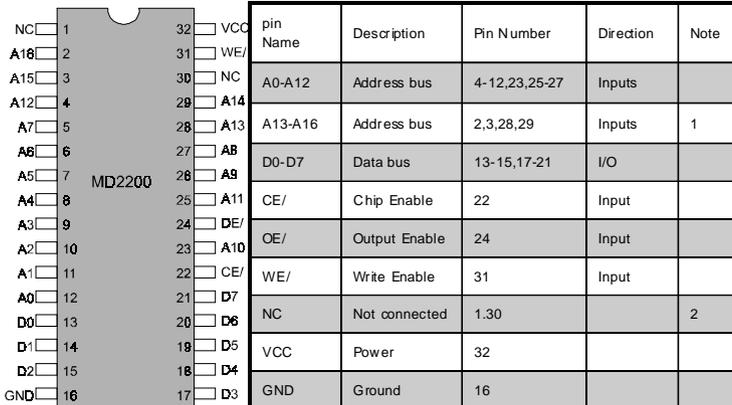
DiskOnChip socket

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. The DiskOnChip is a small plug and play Flash disk. It is easy to use, and it saves integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 1GB, unformatted. In order to manage the disk, the DiskOnChip 2000 includes the True FFS, M-Systems Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with a standard 32-pin EPROM device.

Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

Note 2: Pins 1 and 30 are not used by MD2200



DiskOnChip (DOC) 2000 Installation

When the DOC is installed correctly, a DOC will work like an HDD or an FDD. To install the DOC on the mainboard, follow the instructions below:

1. Plug the DOC into the socket. Make sure pin 1 of the DOC is aligned with pin 1 of the socket.
2. Push the DOC into the socket until it is firmly seated in the socket.

Caution: DOC may be damaged if it is installed incorrectly.

3. Set the jumper for the memory address of the DOC.

Note:

The memory shadow function sometimes will create conflicts with the memory window. You should disable the memory shadow from the BIOS SETUP if the DOC cannot be accessed.

Configure DOC as a boot device

To configure a DOC as a boot drive, you should copy the operating system files onto the DOC. The following procedure is an example of the initialization process.

1. Install a DOC into your system.
2. Insert a bootable floppy disk in drive A: and boot the system.
3. At the DOS prompt, type **SYS C:** to transfer the DOS system files to the DOC (assuming the DiskOnChip is installed as drive C:). Reboot the system.
4. Go to the BIOS Setup Utility by hitting the key. Set the type of Primary Master or C: Drive as *Not Installed*.
5. Remove the floppy disk from the drive A: and leave the BIOS Setup Utility. The system should boot from the DOC.

DOC Memory Address Selection (JP10)

The DiskOnChip 2000 occupies a 8 Kbyte window in the upper memory (address range is shown as below). You should ensure this dose not conflict with any other device's memory address. JP10 can control the memory address of Flash disk.

DiskOnChip 2000 memory address	
Memory address (HEX)	JP10
DISABLE	1 ●● 2
	3 ●● 4
	5 ○○ 6
DC00	1 ●● 2
	3 ○○ 4
	5 ○○ 6
D800*	1 ○○ 2
	3 ●● 4
	5 ○○ 6
D400	1 ○○ 2
	3 ○○ 4
	5 ○○ 6

* default setting

These addresses might conflict with the ROM BIOS of other peripheral boards. Please select appropriate memory address to avoid memory conflict.

CPU and System Fan Power Connector (CN1 & CN24)

One 3-pin plug in and error free onboard connectors are located accessibly for trouble-free connection and disconnection. For CPU fan it is labeled **CN1** for system fan. Pin definitions are listed below:

CPU Fan Power Connector (CN1)

Pin	Signal
1	GND
2	+12V
3	Fan Speed Sensor

Fan Power Connector (CN24)

Pin	Signal
1	GND
2	+12V
3	NC

USB Connector (CN5 & CN6)

PCM-6896 is equipped with four USB ports onboard .

It acquires the new generation of plug and play (*Hot Plugging*) feature, for both low speed and high speed devices. It could also be expanded up to 127 connections through USB hub. Refer pin definitions as follows:

USB Connector (CN5)

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

USB Connector (CN6)

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

IDE Hard Drive Connector (CN7)

If customers have (Necessity) to use ATA-100 HDD and ATA-33 CABLE you must alter two settings in the Award BIOS. The two settings are IDE Primary Master UDMA and IDE Primary Slave UDMA. Set these two functions as disabled.

Primary IDE Hard Drive Connector (CN7)

You can attach up to three Enhanced Integrated Device Electronics hard disk drives to the mainboard's internal controller. The mainboard's IDE controller uses a PCI local-bus interface. This advance interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

Connecting the hard drive

Connecting drives, their done in a daisy-chain fashion and requires one of the three cables, depending on the drive size. 1.8" and 2.5" drives need one 44-pin to two 44-pin flat cable connector. 3.5" drives use one 44-pin to two 40-pin connector.

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 CN7. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is marked and connectors are slotted.
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 as described above.

Unlike floppy drives, IDE hard drives can be connected to either end of the cable. The pin definitions for this section are listed on the next page.

IDE Hard Drive Connector (CN7)

If customers have (necessity) to use ATA-100 HDD and ATA-33 Cable you must alter two settings in the Award BIOS. The two settings are IDE Primary Master UDMA and IDE Primary Slave UDMA. Set these two functions as disabled.

IDE Hard Drive Connector (CN7)

Pin	Signal	Pin	Signal
1	IDERESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IOREADY	28	GND
29	DACK	30	GND
31	IRQ14	32	N.C.
33	ADDR 1	34	ATA66 DETECT
35	ADDR 0	36	ADDR 2
37	CS#1	38	CS#3
39	IDEACTP	40	GND

IR Connector (CN10)

The IrDA connector (CN10) can be configured to support wireless infrared module, with this module and application software such as laplink or Win95 Direct Cable connection, user can transfer files to or from laptops, notebooks, PDA and printers. Install infrared module onto IrDA connector and enable infrared function from BIOS setup. Make sure to have correct orientation when you plug onto IrDA connector CN10.

IrDA connector (CN10) pin definitions

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

ATX Power Connector (CN11)

For ease and reliability, a standard 20-pin ATX power supply connector is onboard. Which also provide positive plugging through it's guided and locking mechanism. Pin definitions as follows:

ATX Power Connector (CN11)

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

Digital Visual Output Connector (CN12)

Digital Visual Output Connector (CN12)			
Pin	Signal	Pin	Signal
A1	FTCLK0	B1	FTD0
A2	FTCLK1	B2	FTD1
A3	CRTHSYNC	B3	FTD2
A4	FTBLNK#	B4	GND
A5	FTHSYNC	B5	FTD3
A6	FTVSYNC	B6	FTD4
A7	SL_STALL	B7	FTD5
A8	GND	B8	CRTVSYNC
A9	3VFTSCL	B9	FTD6
A10	3VFTSDA	B10	FTD7
A11	3VHIPLG	B11	FTD8
A12	VCC(5V)	B12	VEE_OK
A13	PCIRST#	B13	FTD9
A14	VCC(12V)	B14	FTD10
A15	FPVDDEN	B15	FTD11
A16	GND	B16	VCC(3.3V)
A17	PGMSEL	B17	VCC(3.3V)
A18	SMBSDA	B18	GND
A19	SMBSCL	B19	VCC(3.3V)
A20	VCC(5V)	B20	FPBLEN

Keyboard and Mouse Connector (CN13)

The PCM-6896 provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on-self-test (POST) after a reset if the keyboard is not present. The mainboard BIOS Advanced setup menu allows you to select "Present" or "Absent" under the "System Keyboard" section. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

Keyboard and Mouse Connector (CN13), Dual mini-din connector

Pin	Signal
1	KBDATA
2	KBCLK
3	GND
4	VCC
5	MSDATA
6	MSCLK
7	N/C
8	N/C

1 ○ ○ 2

3 ○ ○ 4

5 ○ ○ 6

7 ○ ○ 8

VGA Display Connector (CN14)

The PCM-6896 PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD, and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

A standard conventional D-sub connector is equipped to interface with conventional CRT displays. Refer to pin definitions as follows:

VGA Display Connector (CN14)

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	Vcc
10	GND
11	N/C
12	DDCSDA
13	H-SYNC
14	V-SYNC
15	DDCSCL
16	N/C

Audio Connector (CN15)

Audio Connector (CN 15)

Pin	Signal	Pin	Signal
1	MIC IN	2	MIC VCC
3	GND	4	CD-GND
5	LINE-INL	6	CD-INL
7	LINE-INR	8	CD-GND
9	GND	10	CD-INR
11	LINE-OUTL	12	LINE-OUTR
13	GND	14	GND

Parallel Port Connector (CN16)

The mainboard is designed to support one parallel port. Port 1 connector (CN16) also designated as LPT1 is a standard 25-pin D-sub connector specially prepared for external interface. The interfaces can be enabled and disabled in the BIOS system setup. For example if LPT1 is disabled, LPT2 or LPT3 is enabled and if LPT2 is disabled, LPT1 or LPT3 is enabled.

The pin definitions for CN16 are listed as follows:

Parallel Port Connector (CN 16)

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

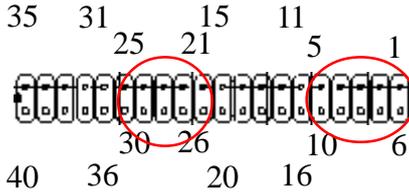
100 Base-Tx Ethernet Connector (CN17)

PCM-6896 is outfitted with a standard RJ-45 LAN connector. With support from Intel 815E chipset using either 10Mbps or 100Mbps are possible through it's N-way auto-negotiation featured operation. Refer to the pin definitions listed below:

RJ-45 Ethernet Connector (CN17)

Pin	Signal	Pin	Signal
1	TX+	2	TX-
3	RX+	4	GND
5	GND	6	RX-
7	GND	8	GND

COM1, COM2, COM3, COM4 Connector (CN18)



COM1				COM2			
1	SDCDB1X	6	SDSRB1X	11	CM2-1	16	SDSRB2X
2	SRXDB1	7	SRTSB1X	12	CM2-2	17	SRTSB2X
3	STXDB1	8	SCTSB1X	13	CM2-3	18	SCTSB2X
4	SDTRB1X	9	SRIB1X	14	CM2-4	19	SRIB2X
5	COM1GND	10	N/C	15	COM2GND	20	N/C
COM3				COM4			
21	DCDA	26	DSRA	31	DCDB	36	DSRB
22	RXDA	27	RTSA	32	RXDB	37	RTSB
23	TXDA	28	CTSA	33	TXDB	38	CTSB
24	DTRA	29	*	34	DTRB	39	**
25	COM3GND	30	N/C	35	COM4GND	40	N/C

(*) Depending on the jumper setting you select from JP3. The signal can be either VCC12, VCC5, or RI.

() Depending on the jumper setting you select from JP2. The signal can be either VCC12, VCC5, or RI.**

Floppy drive connector (CN19)

You can attach up to two floppy drives to the mainboard controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy chain drive connector cable for (CN19) is required for a dual-drive system. On one end of the cable is a 34-pin flat cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives). Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into **CN19**. Make sure that the red or blue wire corresponds to pin 1 on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information. If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

Please refer to the pin definitions on the next page.

Floppy Drive Connector (CN19)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N.C.
5	GND	6	N.C.
7	GND	8	INDEX
9	GND	10	MOTOR A
11	GND	12	DRIVESELECTB
13	GND	14	DRIVESELECTA
15	GND	16	MOTOR B
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	N.C.	30	READ DATA
31	GND	32	SIDE 1
33	N.C.	34	DISK CHANGE

Digital I/O Connector (CN20)

* Ver. B1.1 & 1.2 not support

PCM-6896 offers 4-pair of digital I/O functions and its address is 801H.

Digital I/O Connector (CN20)

Pin	Signal	Pin	Signal
1	IN1	2	IN2
3	IN3	4	IN4
5	OUT1	6	OUT2
7	OUT3	8	OUT4
9	+5V	10	GND

The pin definitions and register mappings are illustrated below.

Address: 801H

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
GPI27	GPI26	GPI25	GPI24	GPO23	GPO22	GPO21	GPO20
MSB							LSB

LAN LED signal connectors (CN21)

The PCM-6896 supports three sets of LED connector for external LED indicators.

Ethernet active signal LED

Flashing Tx or Rx LEDs indicate that the PCM-6896 is transmitting or receiving data.

Ethernet link signal LED

A continuously lit LED indicates good linkage between the PCM-6896 and its supporting hub.

Ethernet LED signal connectors (CN21)

Pin	Signal
1	ACTIVE LED
2	VCC
3	LINK LED
4	VCC
5	SPEED LED
6	VCC

5 3 1
○ ○ ○
○ ○ ○
6 4 2

Audio Out Connector 1 Watt (CN22)

Audio Out Connector 1 Watt (CN22)

Pin	Signal
1	OUTL+
2	OUTL-
3	OUTR+
4	OUTR-

CN25 Wake On Lan (Pins 1-5)

(CN25) Wake On Lan (Pins 1-5)

Pin	Signal
1	VCC5SBY
2	GND
3	PCI_PME#
4	SMBDATA
5	SMBCLOCK
6	VCC5SBY
7	VCC
8	VCC
9	GND
10	NC

CN25 AT/ATX Power Select (Pins 6-7)

(CN25) AT/ATX Power Select (Pins 6-7)

CN25	Power select
Pins 6-7 (On)	AT
Pins 6-7 (Off)	ATX

CompactFlash Connector (CN8)

Compact Flash Connector

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	IOREAD
10	GND	35	IOWRITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N.C.
16	GND	41	IDERESET
17	GND	42	IOREADY
18	ADDR2	43	N.C.
19	ADDR1	44	+5V
20	ADDR0	45	DASP
21	DATA0	46	DIAG
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	N.C.	49	DATA10
25	GND	50	GND

CHAPTER 3

BIOS Setup

This chapter describes how to set BIOS configuration data.

General information

BIOS Setup configures system information that is stored in CMOS RAM.

Starting BIOS setup

As POST executes, the following appears;

Hit if you want to run SETUP

Press to run BIOS setup.

Using a mouse with BIOS setup

BIOS Setup can be accessed via keyboard, mouse. The mouse click functions are:

- single click to change or select both global and current fields
- double click to perform an operation in the selected field

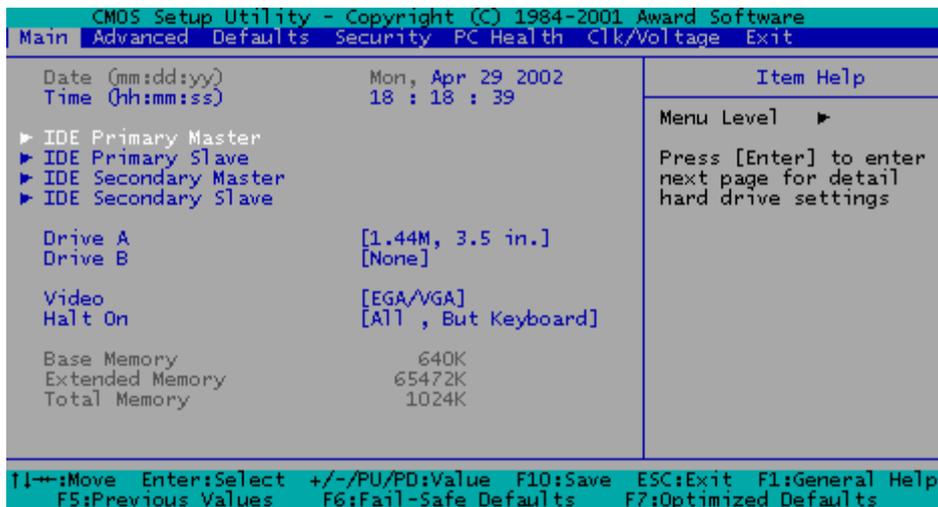
Using the keyboard with BIOS setup

BIOS Setup has a built-in keyboard driver that uses simple key-stroke combinations:

Keystroke	Function
→, ←, ↑, ↓	Move to the next field.
<ENTER>	Select the current field.
+	Increments a value.
-	Decrements a value.
<ESC>	Close the current operation and return to the previous level.
<PgUp>	Return to the previous page.
<PgDn>	Advance to the next page.
F1	Get the general help
F2	Get the item help.
F5	Load the previous values.
F6	Load the Fail-safe defaults.
F7	Load the optimized defaults.
F9	Go to the menu in BIOS.
F10	Save to CMOS and exit.

Main Menu

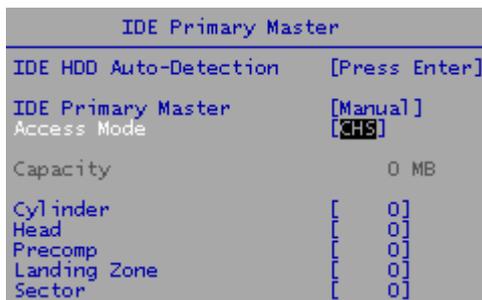
The Main Menu appears as follows:



Date and Time Configuration

The current values for each category are displayed. Enter new values through the keyboard.

IDE Primary/Secondary Master/Slave



The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, but we recommend you to select type AUTO for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. If you don't want to select AUTO, other methods of selecting the drive type are available:

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

Here is a brief explanation of drive specifications:

Mode:Auto, CHS, Large, or LBA

Capacity:Disk drive capacity (approximate). Please note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

Cylinder:Number of cylinders

Head:Number of heads

Precomp:Write precompensation cylinder

Landz:Landing Zone

Sector:Number of sectors

Drive A

Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 mega byte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 mega byte capacity

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

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

During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

The choices: All,But Keyboard; All,But Diskette; All,But Disk/Key; All Errors; No Errors.

Memory

You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

Base Memory

Base memory also called conventional memory is typically 640 KB . The DOS operating system and conventional applications use this area.

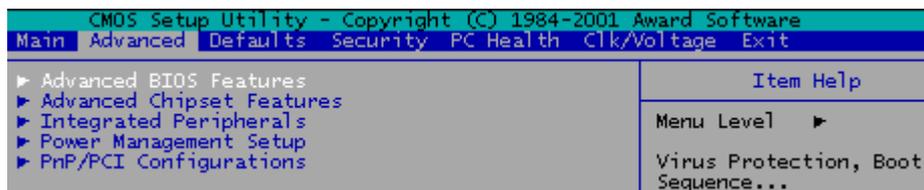
Extended Memory

Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

Total Memory

The section shows the total of base memory and extended memory.

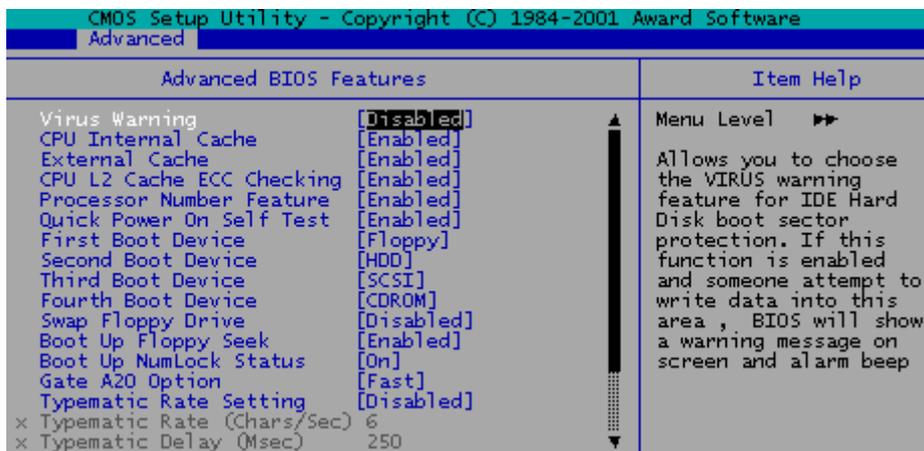
Advanced Setup



Select the Advanced Setup from the BIOS Setup main menu to enter Advanced setup.

The Advanced Setup options described in this section are the standard options as shown on the following screen.

Advanced BIOS Features



Advanced BIOS Features

Function	Options
Virus Warning	Disabled Enabled
CPU Internal Cache	Enabled Disabled
External Cache	Enabled Disabled
CPU L2 Cach ECC Checking	Enabled Disabled
Processor Number Feature	Enabled Disabled
Quick Power On Self Test	Enabled Disabled
First/Second/Third/Fourth Boot Device	Floppy LS120 HDD SCSI CDROM ZIP100 LAN Disabled
Swap Floppy Drive	Disabled Enabled
Boot Up Floppy Seek	Enabled Disabled
Boot Up Numlock Status	On Off
Gate A20 Option	Fast Normal
Typematic Rate Setting	Disabled Enabled
Typematic Rate (Chars/Sec)	6,8,10,12,15,20,24,30
Typematic Delay (Msec)	250,500,750,1000,
Security Option	Setup System
OS Select For DRAM>64MB	Non-OS2 OS2
HDD S.M.A.R.T. Cabability	Disabled Enabled

Report No FDD For Win95	Yes No
Full Screen Logo Show	Enabled Disabled
Small Logo (EPA) Show	Enabled Disabled

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

CPU Internal Cache/External Cache

Cache memory is additional memory that is much faster than conventional DRAM. CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The External Cache field may not appear if your system does not have external cache memory.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

Processor Number Feature

This option is for Pentium III processor. If Enabled, this will check the CPU Serial number. Disable this option if you don't want the system to know the serial number.

Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on-self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

First/Second/Third/Fourth Boot Device

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

Swap Floppy 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

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

Typematic Dealy (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

OS Select For DRAM>64MB

Select the operating system that is running with greater than 64MB or RAM on the system.

HDD S.M.A.R.T Capability

Hard disk drives have built in problem detection capability. If a foreseen problem is about to take place, the computer will give you a warning signal.

Report No FDD For WIN 95

Whether report no FDD for Win 95 or not.

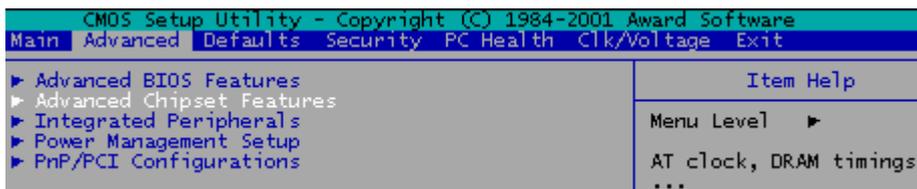
Full Screen Logo Show

This field allows user to choose whether logo is displayed when computer is turning on and off.

Small Logo (EPA) Show

If you want to show the logo (EPA) on the screen, please choose "Enabled".

Advanced Chipset Features



Select the Advanced Chipset Features from the Advanced Setup menu to enter the Advanced Chipset Features setup.

The standard options of the Chipset Setup are shown in the following table. A detailed list of available options is also provided.



Advanced Chipset Features

Function	Options
SDRAM CAS Latency Time	3 2
SDRAM Cycle Time Tras/Trc	7/9 5/7 Auto
SDRAM RAS-to-Cas Delay	3 2 Auto
SDRAM RAS Precharge Time	3 2 Auto

System BIOS Cacheable	Disabled Enabled
Video BIOS Cacheable	Disabled Enabled
Memory Hole At 15M-16M	Disabled Enabled
CPU Latency Timer	Enabled Disabled
Delayed Transaction	Enabled Disabled
AGP Graphics Aperture Size	64MB 32MB
Display Cache Frequency	100MHz 133MHz
System Memory Frequency	Auto 100MHz 133MHz
On-Chip Video Window Size	64MB Disabled
CAS# Latency	3 2
Paging Mode Control	Open Close
RAS-to-CAS Override	By CAS# LT Override (2)
RAS# Timing	Fast Slow
RAS# Precharge Timing	Fast Slow

SDRAM CAS Latency Time

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.

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Memory Hole At 15-16m

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

CPU Latency Timer

During enable, a deferrable CPU cycle will only be Deferred after it has been in Snoop Stall for 31 clocks and another ADS# has arrived. During disable, a deferrable CPU cycle will be deferred immediately after the GMCH receives another ADS#.

Delayed 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.

AGP Graphics Aperture Size

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Display Cache Frequency

Select the Onboard display cache frequency. The settings are 100 MHz, 133MHz, or Auto.

System Memory Frequency

Select the Onboard system memory frequency. The settings are 100 MHz, 133MHz, or Auto. Default is set as Auto we recommend leaving the setting at default.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use.

Cas# Latency

Select the local memory clock period. The number of clock cycles of CAS# Latency depends on the Onboard Display Cache timing.

Paging Mode Control

Select the paging mode control.

RAS-to-CAS Override

This item allows you to insert a timing delay between the CAS and RAS strobe signals, used when Onboard display cache is written to, read from, or refreshed. During by CAS#LT, this will depend on the Onboard Display Cache CAS# Latency setting. During Override (2), RAS-to-CAS time = 2

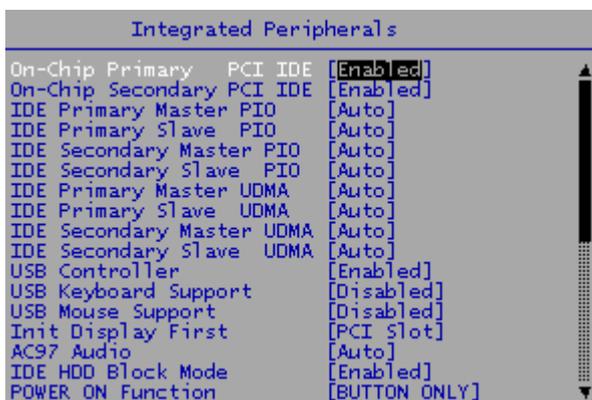
Ras# Timing

This item controls RAS# active to Precharge, and refresh to RAS# active delay (in local memory clock).

Ras# Precharge Timing

This item controls RAS# precharge (in local memory clocks).

Integrated Peripherals



Integrated Peripherals

Function	Options
On-Chip Primary/Secondary PCI IDE	Enabled Disabled
IDE Primary/Secondary master/Slave PIO	Auto Mode0, Mode1, Mode2, Mode3, Mode4
IDE Primary/Secondary master/Slave UDMA	Auto Disabled
USB Controller	Enabled Disabled
USB Keyboard Support	Disabled Enabled
USB Mouse Support	Disabled Enabled
Boot From LAN Support	Disabled Enabled

Init Display First	PCI Slot Onboard/AGP
AC97 Audio	Auto Disabled
IDE HDD Block Mode	Enabled Disabled
POWER ON Function	Password Hot KEY Any KEY BUTTON ONLY Keyboard 98
KB Power ON Password	Enter
Hot Key Power ON	Ctrl-F1 Ctrl-F2 : Ctrl-F12
Onboard FDC Controller	Enabled Disabled
Onboard Serial Port 1/2	Disabled 3F8/IRQ4 2F8/IRQ3 3E8/IRQ4 2E8/IRQ3 Auto
UART Mode Select	Normal IrDA ASKIR SCR
UR2 Duplex Mode	Full Half
Onboard Parallel Port	Disabled 378/IRQ7 278/IRQ5 3BC/IRQ7
Parallel Mode	SPP EPP ECP ECP+EPP
ECP Mode Use DMA	1 3
PWRON After PWR-Fail	Off On Formal-Sts

Onboard Serial Port 3	Disabled 3F8 2F8 3E8 2E8
Serial Port 3 Use IRQ	IRQ10 IRQ11
Onboard Serial Port 4	Disabled 3F8 2F8 3E8 2E8
Serial Port 4 Use IRQ	IRQ10 IRQ11

On-Chip Primary PCI IDE

The system chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

On-Chip Secondary PCI IDE

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

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmable Input/Output) fields let you set a PIO mode (0-1) 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.

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

USB Controller

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

USB Keyboard Support

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

USB Mouse Support

Select Enabled if your system contains a Universal Serial Bus controller and you have a USB mouse

Init Display First

This item allows you to active PCI slot or onboard first.

AC97 Audio

The default setting of Auto enables the AC97 audio if it is detected onboard

IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

Power ON Function

Select the different manners for powering on the system.

KB Power ON Password

The system will ask for a password, after entering the correct password the keyboard can then be used.

Hot Key Power On

When the power is on the "standby" mode, you can turn on the power by pressing Ctrl+F1 or Ctrl+F2, Ctrl+F3....,according to the choice you make in the BIOS.

Onboard FDC Controller

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

Onboard Serial Ports (1, 2,3,4)

Normally, the main boards I/O chips will occupy a certain portion of memory space. For each I/O device the computer provides an I/O address. The more devices attached the more address needed to organize the memory storage areas. If all the I/O devices were run through the same address, your devices would come to a near halt. By providing the end user with four serial ports this allows devices to run more efficiently if needed. Also the corresponding interrupt needs to be selected.

UART Mode Select

Select an operating mode for the second serial port:

Normal	RS-232C serial port
Standard	RS-232C serial port
IrDA 1.0	Infrared port compliant with IrDA 1.0 specification
IrDA SIR	IrDA-compliant serial infrared port
IrDA MIR	1 MB/sec infrared port
IrDA FIR	Fast infrared standard
FIR	Fast infrared standard
MIR 0.57M	0.57-MB/sec infrared port
MIR 1.15M	1.15-MB/sec infrared port
Sharp IR	4-MB/sec data transmission
HPSIR	IrDA-compliant serial infrared prot
ASK IR	Amplitude shift keyed infrared port

UR2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port. Hot Key Power On

Simply pressing on the preselected keyboard key the system will power on.

Onboard Parallel Port

Select a logical LPT port address and corresponding interrupt for the physical parallel port

Parallel Port Mode

Two bi-directional parallel ports. Supports SPP, ECP, EPP, ECP+EPP.

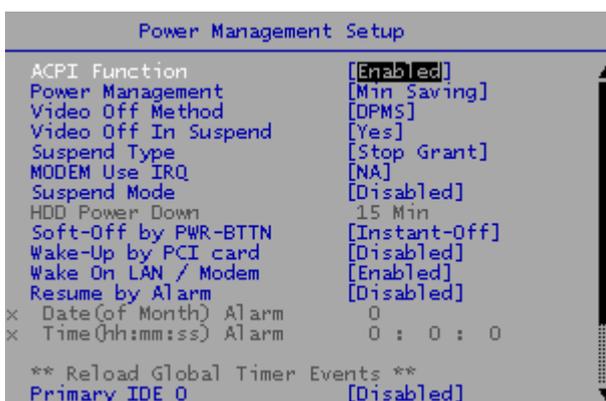
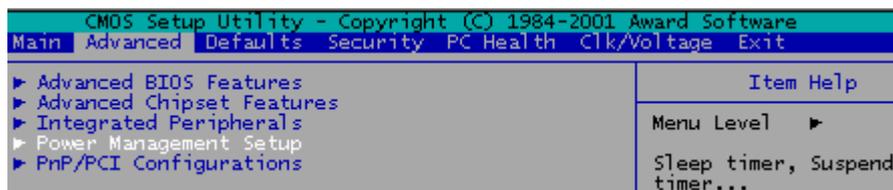
ECP Mode Use DMA

Select a DMA channel for the port.

PWRON After PWR-Fail

This option will determine how the system will power on after a power failure.

Power Management Setup



Power Management Setup

Function	Options
ACPI Function	Enabled Disabled
Power Management	Min Saving
Video off Method	DPMS Blank Screen V/H SYNC+Blank
Video off In Suspend	Yes No
Suspend Type	Stop Grant PwrOn Suspend
Modem Use IRQ	NA 3, 4, 5, 7, 9, 10, 11
Suspend Mode	Disabled 1~2 Min 2~3 Min 4~5 Min 8~9 Min 12~13 Min 20~21 Min 30~31 Min 40~41 Min 1Hour
HDD Power Down	15 Min
Soft-Off by PWR-BTTN	Instant -Off Delay 4 Sec.
Wake-Up by PCI card	Disabled Enabled
Wake-On LAN/Modem	Enabled Disabled
Resume by Alarm	Disabled Enabled
Primary/Secondary IDE 0/1	Disabled Enabled
FDD, COM, LPT Port	Disabled Enabled
PCI PIRQ[A-D]#	Disabled Enabled

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Min. Power Saving
2. Max. Power Saving
3. User Defined

Disable (Default)	No power management. Disable all four modes.
Min. Power Saving	Minimum power management. Doze mode = 1 hour. Standby mode = 1 hour. Suspend mode = 1 hour. HDD Power Down =15 minutes.
Max.Power Saving	Maximum power management--ONLY AVAILABLE FOR SL CPU'S. Dose mode = 1 min., Standby mode = 1 min., Suspend mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the tanges are from 1 min. to 1 hour except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer
Blank Screen	This option only writes blanks to the video buffer
DPMS	Initial display power management signaling

Video Off In Suspend

After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes. In this case the video hardware can be selected to shut off after a period of system inactivity. This determines the manner in which the monitor is blanked.

Suspend Type

This item allows you to select the suspend type. Stop Grant means wake up by IRQ, and PowerOn Suspend means wake up by ACPI wake up event.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

Suspend Mode

After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes.

HDD Power Down

After the selected period of drive inactivity, the HDD powers down while all other devices remain active.

Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has hung.

Wake Up On LAN/Modem

The board enabled or disabled will execute a wake up process whenever LAN (Intel 815E) or modem receives a wake up event such as a magic packet.

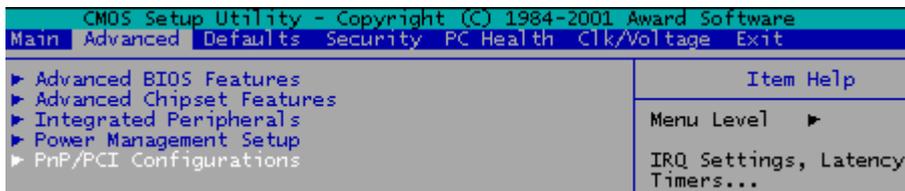
Resume By Alarm

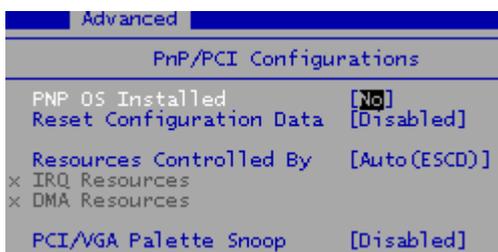
This option is used to Enable/Disable USB keyboard wake up with suspend to RAM.

Date/Time Alarm

If the "Resume By Alarm" item is enabled, press "Enter" to configure the date and time to carry on the function of alarm.

PnP/PCI Configurations





PnP/PCI Configurations

Function	Options
PNP OS Installed	No Yes
Reset Configurayions Data	Disabled Enabled
Resources Controlled By	Auto(ESCD) Manual
PCI/VGA Palette Snoop	Disabled Enabled

PnP OS Installed

This item allows you to determine whether that PnP OS is installed 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 reconfiguration has caused such a serious conflict that the operating system can not boot.

Resources Controlled By

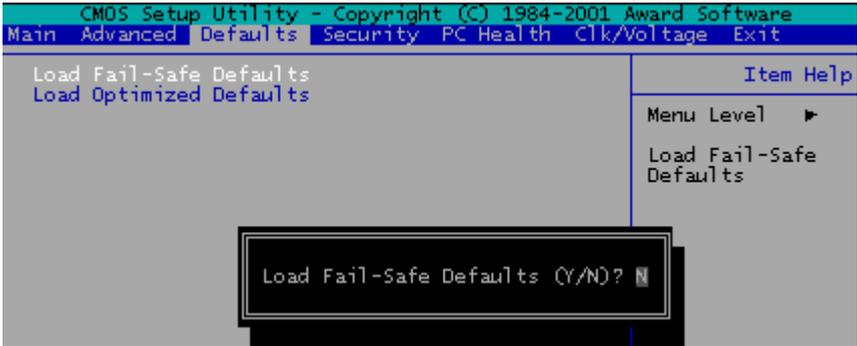
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. If you set this field to manual choose specific resources by going into each of the sub menu that follows this field.

PCI/VGA Palette Snoop

Leave this field at Disabled.

Defaults Setup

Load Fail-Safe Defaults

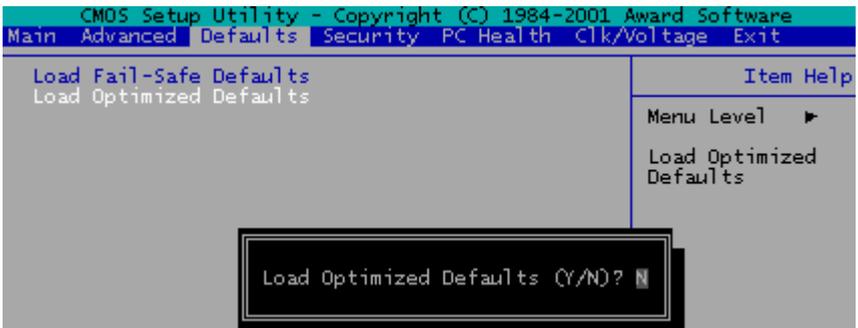


When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

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

Load Optimized Default



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 factory settings for optimal performance system operations

Security Setup

Set Supervisor Password



When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.

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 when ever you enter Setup.

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

Set User Password



When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

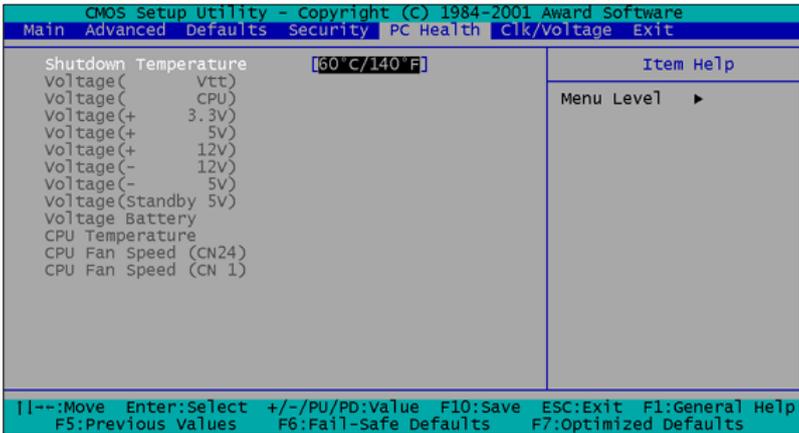
In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System Enter a password each time the system boots and when ever you enter Setup.

Setup Enter a password when ever you enter Setup.

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

PC Health Setup



Shutdown Temperature

Your system can be configured to shutdown once reaching a certain temperature. To protect your system from overheating or damage, select a certain temperature level in the PC Health Status menu. Please note this function is only working for Win 98 OS with ACPI BIOS.

The Choices: 60°C/140°F, 65°C/149°F, 70°C/158°F, Disabled.

Clk/Voltage Setup



Clk/Voltage Setup

Function	Options
Auto Detect DIMM/PCI Clk	Enabled Disabled
Spread Spectrum	Disabled Enabled
Clock By Slight Adjust	66-166
CPU Clock Ratio	X 3, X 3.5, X 4, X 4.5, X 5, X 5.5, X 6, X 6.5, X 7, X 7.5, X 8

Auto Detect DIMM/PCI CLK

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

Spread Spectrum

This allows you to enable/disable the spread spectrum modulate. When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme pulse spikes to flat curves thus reducing EMI.

Clock By Slight Adjust

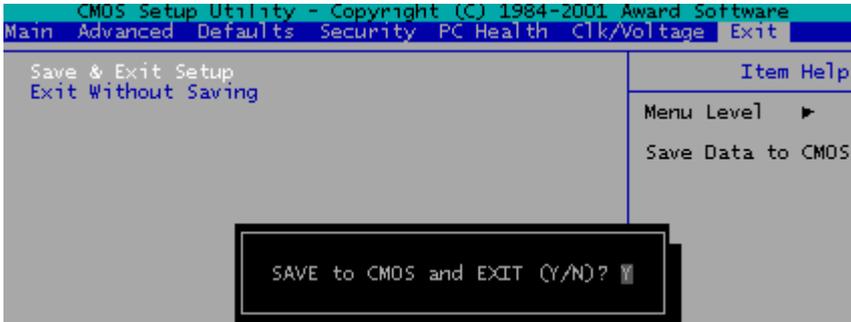
This item allows you to select the CPU clock from 133 MHz to 166 MHz or 100 MHz to 133 MHz depending on the CPU host clock.

CPU Clock Ratio

This item allows you to select the CPU ratio.

Exit Setup

Save & Exit Setup



Pressing <Enter> on this item asks for confirmation:

Save to CMOS and Exit (Y/N)?

Pressing "Y" stores the selections made in the menus in CMOS, a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving



Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

CHAPTER 4

Drivers Installation

This PCM-6896 is equipped with an audio VGA and LAN interface. This chapter provides instructions for installing the software drivers on these peripherals.

Installing Drivers

Attention

First if using operating systems such as Windows 98/2000, a chipset driver must be installed before VGA, LAN or Audio drivers are installed.

Second if using Windows 98/2000 operating systems, an Ultra ATA storage driver also must be installed after the chipset driver installation.

Attention

The PCM-6896 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 - Intel INF Update for Windows 98 - XP

Step 2 - Intel 815 Graphic Driver

Step 3 - Intel Application Accelerator for Windows 98 -XP

Step 4 - Intel LAN Driver V6.4

Step 5 - Realtek Audio Driver

Applicable for Windows 2000/98/NT 4.0

1. Insert the supporting CD-ROM into drive.
2. Click on **Start** button and then click on **Run** button, find the installation wizard ***infnst_autol*** in the following path:
cd-rom: |Driver| Step 1 - Install INF Update for Windows 98 - XP

For Step 2, , look for the respective OS folders in the following path
cd-rom: | Driver | Step 2 - Install 815 Graphic Driver. Under the selected OS folder, find the installation wizard.

For Step 3, find the installation wizard ***iaa23_enu*** in the following path:
cd-rom: |Driver| Step 3 - Intel Application Accelerator for Windows 98 - XP

For Step 4, find the installation wizard in the following path:
cd-rom: |Driver| Step 4 - Intel LAN Driver V6.4

For Step 5, , look for the respective OS folders in the following path
cd-rom: | Driver | Step 5 - Realtek Audio Driver. Under the selected OS folder, find the installation wizard ***Setup.exe*** button.

3. The setup will automatically detect your OS and complete the installation.
Simply following the step-by-step instruction.
4. Shut down and restart your system.

APPENDIX
A

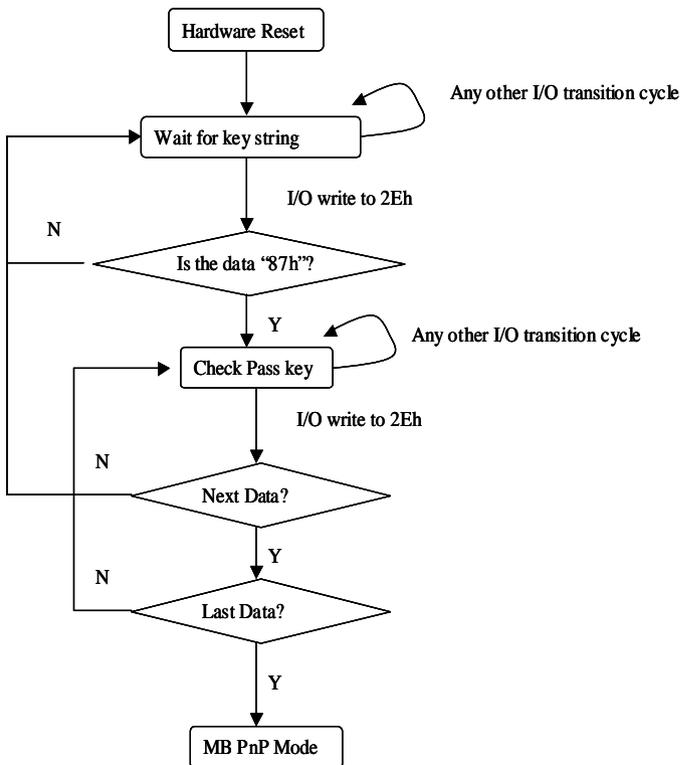
WatchDog Timer

WatchDog Timer

PCM-6896 utilizes ITE 8712 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

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

IT8712 Watch Dog 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