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VMICPCI-7585

Intel MMX/AMD-K6 3DNow Processor-Based CompactPCI SBC

Product Manual

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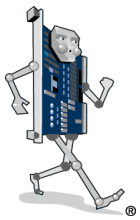
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Overview

Introduction

VMIC's VMICPCI-7585 is a complete IBM PC / AT-compatible Intel MMX / AMD-K6 processor-based computer with the additional benefits of Eurocard construction and full compatibility with the CompactPCI Specification Rev. 2.1. The VMICPCI-7585, with advanced CPCI interface and SDRAM dual-ported to the CPCI bus, is ideal for CPCI system controller applications.

The single-slot CPU board functions as a standard PC / AT, executing a PC / AT-type power-on self-test, then boots up MS-DOS, Windows 3.11, Windows 95, Windows NT or any other PC / AT-compatible operating system.

The VMICPCI-7585 also operates as a CPCI system slot CPU and interacts with other CPCI modules via the on-board embedded bridge.

The VMICPCI-7585 also provides capabilities beyond the features of a typical PC / AT compatible CPU, including a programmable Watchdog Timer and a bootable DiskOnChip system. These features make the unit ideal for embedded applications.

Organization of the Manual

This manual is composed of the following chapters and appendices:

Chapter 1 - Features and Options describes the features of the base unit.

Chapter 2 - Hardware Upgrades describes how to expand the capabilities of the VMICPCI-7585.

Chapter 3 - Watchdog Timer describes the programing and setup of the Watchdog Timer.

Chapter 4 - Maintenance provides information relative to the care and maintenance of the unit.

Appendix A - Jumpers and Connectors illustrates and defines the jumpers and connectors on the VMICPCI-7585.

Appendix B - Award BIOS describes the menus and options associated with the Award BIOS.

References

Some reference sources helpful in using or programming the VMICPCI-7585 include:

VMICPCI-7585 3U CompactPCI Computer Module Setup Guide
VMIC
12090 South Memorial Pkwy.
Huntsville, AL 35803-3308
(800) 322-3616
www.vmic.com

Pentium and Pentium Pro Processors and Related Products
Intel Literature Sales
P.O. Box 7641
Mt. Prospect, IL 60056-7641
(800) 548-4752
www.intel.com

Pentium Processor Family Developer's Manual
Order Number 241428
Intel Corporation
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
(408) 765-8080
www.intel.com

AMD-K6 Data Sheet
One AMD Place
P.O. Box 3453
Sunnyvale, CA 94088-3453
(800) 538-8450
www.amd.com

Award BIOS
Award Software International, Inc.
777 East Middle Field Road
Mountain View, CA 94043-4023
(650) 237-6800
FAX: (650) 968-0274
BBS: (650) 968-0249
www.award.com

Intel 21154 PCI-to-PCI Bridge
Intel Corporation
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119

For additional information please refer to the following

PCI Local Bus Specification, Rev. 2.1

PCI Special Interest Group
P.O. Box 14070
Portland, OR 97214
(800) 433-5177 (U.S.)
(503) 797-4207 (International)
(503) 234-6762 (FAX)

SMC FDC37C669 Enhanced Super I/O Controller

SMC Component Products Division
300 Kennedy Dr.
Hauppauge, NY 11788
(516) 435-6000
(516) 231-6004 (FAX)

ISA & EISA, Theory and Operation

Solari, Edward
Annabooks
15010 Avenue of Science, Suite 101
San Diego, CA 92128 USA
ISBN 0-929392 -15-9

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Email: info@m-sys.com
www.m-sys.com

CMC Specification, P1386/Draft 2.0 from:

IEEE Standards Department
Copyrights and Permissions
445 Hoes Lanes, P.O. Box 1331
Piscataway, NJ 08855-1331, USA

For a detailed description and specification of the CompactPCI bus, please refer to:

CompactPCI™ Specification PICMG 2.0 R2.1

PCI Industrial Computer Manufactures' Group
301 Edgewater Place
Suite 220
Wakefield, MA 01880
(617) 224-1100
(617) 224-1239 (FAX)
www.picmg.org

Safety Summary

The following general safety precautions must be observed during all phases of the operation, service and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of this product.

VMIC assumes no liability for the customer's failure to comply with these requirements.

Ground the System

To minimize shock hazard, the chassis and system cabinet must be connected to an electrical ground. A three-conductor AC power cable should be used. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet.

Do Not Operate in an Explosive Atmosphere

Do not operate the system in the presence of flammable gases or fumes. Operation of any electrical system in such an environment constitutes a definite safety hazard.

Keep Away from Live Circuits

Operating personnel must not remove product covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

Do Not Service or Adjust Alone

Do not attempt internal service or adjustment unless another person capable of rendering first aid and resuscitation is present.

Do Not Substitute Parts or Modify System

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to VMIC for service and repair to ensure that safety features are maintained.

Dangerous Procedure Warnings

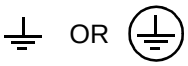
Warnings, such as the example below, precede only potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING: Dangerous voltages, capable of causing death, are present in this system. Use extreme caution when handling, testing and adjusting.

Safety Symbols Used In This Manual



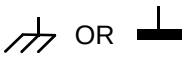
Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 V are so marked).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal which must be connected to ground before operating equipment.



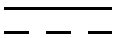
Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. Before operating the equipment, terminal marked with this symbol must be connected to ground in the manner described in the installation (operation) manual.



Frame or chassis terminal. A connection to the frame (chassis) of the equipment which normally includes all exposed metal structures.



Alternating current (power line).



Direct current (power line).



Alternating or direct current (power line).

STOP informs the operator that the practice or procedure should not be performed. Actions could result in injury or death to personnel, or could result in damage to or destruction of part or all of the system.

WARNING denotes a hazard. It calls attention to a procedure, practice, or condition, which, if not correctly performed or adhered to, could result in injury or death to personnel.

CAUTION denotes a hazard. It calls attention to an operating procedure, practice, or condition, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the system.

NOTE denotes important information. It calls attention to a procedure, practice, or condition, which is essential to highlight.

CHAPTER
1

Features and Options

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Introduction

The VMICPCI-7585 is a new generation of advanced technologies in industrial controller systems. It is built with a high performance Pentium type CPU and compatible, high performance PCI Bus and I/O. It incorporates both pipeline burst cache, and third generation VGA with Unified Memory Architecture (UMA). The VMICPCI-7585 provides solutions for system integrators, VARs and turnkey vendors who demand high performance computing and I/O. Its flexibility, compatibility and added features make the VMICPCI-7585 ideal for industrial workstations, or as a system controller in various applications using powerful and accurate measurement instruments.

Refer to *VMICPCI-7585 3U CompactPCI Computer Module Setup Guide* (522-657585-000 REV. A) for more information.

Hardware Components

The VMICPCI-7585 is equipped with either an Intel Pentium-MMX processor up to 233MHz, or a compatible AMD K6-2 CPU at 400 MHz, and the following components:

- Memory support up to 512KB pipeline burst cache and 64MB EDO DRAM (or high performance SDRAM)
- An on-board SMC 37C669 which integrates the floppy controller, two serial ports and one parallel port
- Two on-chip UARTs compatible with NS 16550 (parallel port supports EPP / ECP)
- High performance, VGA graphic and video accelerator featuring unified memory architecture (up to 1024x768, true color and 1280x1024, high color)
- 4MB of shared memory for display purposes
- Ultra DMA / 33 support from the IDE
- Reserved USB ports
- On-board socket for M-Systems' DiskOnChip (up to 288MB)
- High precision real time clock / calendar for accurate scheduling, and a standard Watchdog Timer
- A built-in alarm to monitor the CPU cooling fan

The VMICPCI-7585, a high performance entry to the 3U CompactPCI arena, features a 10BaseT Ethernet controller.

Specifications

- Main Processor - Intel Pentium P54C / P55C 233MHz or AMD K6-2 400MHz
- Main Memory - 144-pin Mini DIMM socket x 1(3.3V type). Extended-Data-Output (EDO) DRAM and SDRAM up to 128Mbytes. For SDRAM mode, Samsung is recommended.
- Cache Memory - 512 Kbytes, Pipe line burst cache only
- BIOS - Award system BIOS, and SiS VGA BIOS stored in flash ROM, 1-MByte flash ROM x 1
- Chipset - SiS 5598 all-in-one system logic graphic / video controller
- Clock / Calendar - Real time clock / calendar with battery backup
- Bus Interface - Compact PCI V2.0 complied, PCI V2.1 complied
- On-Board VGA - Unified memory architecture (UMA)

  Maximum resolution / color / refresh rate - 1280x1024, high color, interlaced
- VGA drivers supported - DOS, Windows 3.1, Windows NT 4.0, OS / 2 Warp 3.0, Windows 95
- Serial Ports (on daughter board)

  Two high-speed serial ports

  Data transfer rates programmable up to 50 Kbytes baud, independently

  COM 2 with option to RS422 / 485
- Parallel Ports (on daughter board) - One ECP / EPP bi-directional parallel port
- PCI IDE Hard Disk Interface

  Two enhanced IDE hard disk or CD-ROM drive up to mode 4 PIO and mode 2 DMA master

  Ultra DMA / 33
- Floppy Drive Controller (on daughter board)

  Up to two floppy drives

  5 1 / 4" drive: available sizes; 360 Kbytes and 1.2 Mbytes

  3 1 / 2" drive: available sizes; 720 Kbytes, 1.2 Mbytes, 1.44 Mbytes and 2.88 Mbytes
- Timers

  Programmable timers
- Watchdog Timer

  1,2,4,8,16,32, 64 second time-out interval

  BIOS Supported
- On-Board Solid State Disk (on daughter board)

  Socket reserved for M-Systems' DiskOnChip (up to 288 Mbytes)

- Front Panel Connectors
  - USB x 2
  - Mouse Mini DIN x 1
  - KBD Mini DIN x 1
  - VGA 15-pin D-SUB x 1
  - Printer Micro conn. X 1
  - COM1 9-pin D-Sub x 1
  - COM2 9-pin D-Sub x 1
- CompactPCI Connectors
  - J1, J2 as the 32-bit PCI Bus
- Power Good
  - Power Good generation with reset time, 300 - 500ms
- Power Requirements
  - +5V @6.0A (Max.), + / - 12V @ 40mA
- Physical Information
  - Dimension: 100mm x 160mm
  - Weight: 400g
- Environmental Information
  - Operating Temperature: 0^{o}C - 60^{o}C
  - Storage Temperature: -20^{o}C -80^{o}C
  - Relative Humidity: 10 - 95%, non-condensing

CHAPTER 2

Watchdog Timer

Contents

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Watchdog Timer Programming Procedure 30

Introduction

The Watchdog Timer (WDT) monitors the computer system as to whether it is working normally. The Watchdog Timer contains a receivable SQW signal from RTC, which can set up a time interval and clear the counter function. When the time interval has expired, the Watchdog Timer can send a Reset or NMI signal.

The operator must write a value into the Watchdog Timer Configuration Register (Write the control value to the Configuration Port), and clear the Watchdog Timer counter (read the Configuration Port).

Watchdog Timer Functions

Table 2-1 Watchdog Timer Function Description

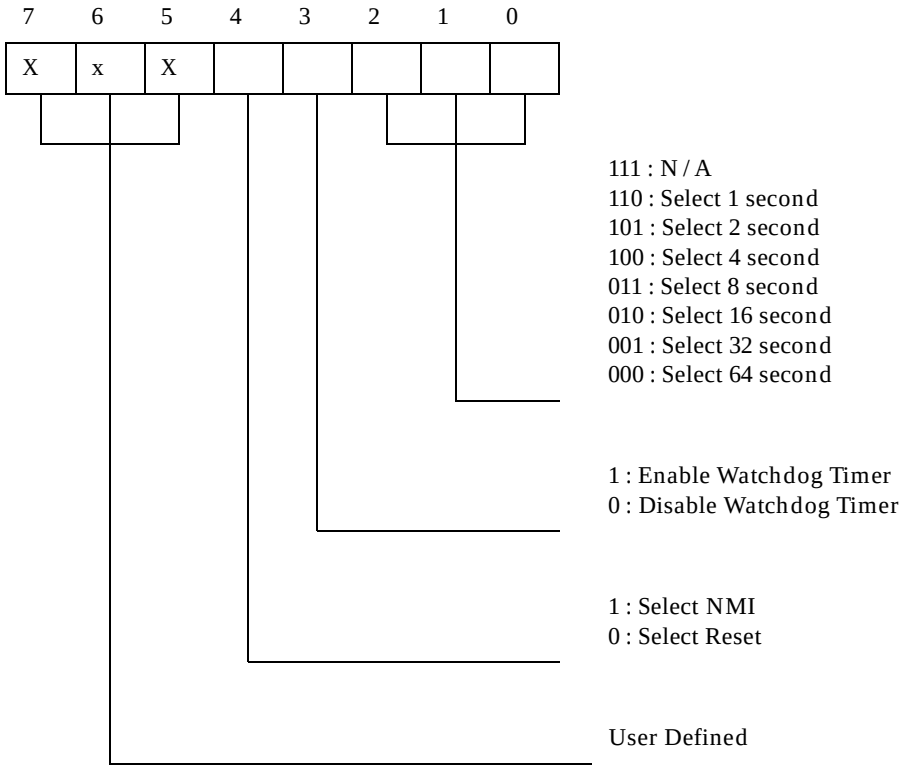
WDT Configuration port	F2	Default at F2
Watchdog Timer	Disabled Enabled	1. Default at disabled 2. Enabled for user's programming
WDT Timeout active for	Reset NMI	Default at Reset
WDT Active Time	1 sec 2 sec 4 sec 8 sec 16 sec 32 sec 64 sec	Default at 64sec

Watchdog Timer Control Register

The Watchdog Timer Control Register controls the WDT working mode, and allows you to write a value to the WDT Configuration Port.

The following is the Control Register bit definition.

Table 2-2 Control Register Bit Definition



Watchdog Timer Programming Procedure

1. Power on or reset the system.

   The initial value of the Watchdog Timer Control Register (D4~D0) is zero, when power is turned on or the system is reset. The following initial values are possible with the Watchdog Timer (00000000b):

Bit	Value	Meaning
4	0	Select Reset
3	0	Disable Watchdog Timer
2, 1, 0	0 0 0	Select 64 second

2. Initialize the SQW of RTC (set SQW output period=0.5 second).

   To initialize the SQW of RTC, the processor sets up the SQW signal whos output period equals 0.5 second. It offers the basic frequency of the Watchdog Timer counter.

   The following is an example of initializing the SQW signal program in Intel 8086 assembly language.

```
; (Generate SQW = 0.5 Sec.)
Mov dx, 70h
Mov ax, 0Ah
Out dx, al  ; Out port 70h = 0Ah
Mov dx, 71h
Mov ax, 2Fh
Out dx, al  ; Out port 71h = 2Fh
; (enable the SQW output)
Mov dx, 70h
Mov ax, 0Bh
Out dx, al  ; Out port 70h = 0Bh
Mov dx, 71h
Mov ax, 0Ah
Out dx, al  ; Out port 71h = 0Ah
```

3. Clear the Watchdog Timer.

   Repeatedly read the Watchdog Timer Configuration Port. The interval cannot be longer than the preset time, otherwise, the Watchdog Timer will generate a NMI or Reset signal for the system.

The following is an example of clearing the Watchdog Timer program in Intel 8086 assembly language.

```
; ( Clear the WDT)
Mov  dx, F2h  ;Setting the WDT configuration port
In    al, dx
```

NOTE: The Watchdog Timer must be cleared before enabling, to ensure the initial value is zero.

4. WDT Control Register (Write to WDT configuration port).

   You can set the WDT Control Register to control the WDT working mode.
   The initial value of the WDT Control Register is as follows:

```
; (Setting the WDT Control Register as AL)
Mov al, 0h  ; Setting initial value = 0 for the WDT Control Register
```

   You must plan the option of the following:
   Select NMI or Reset: decide D4 value in F2.
   I.e. Setting D4 = 0, then its select Reset

```
AND al, 11101111b  ; Select Reset
```

   i.e. Setting D4 = 1, then its select NMI.

```
OR al, 00010000b  ; Select NMI
```

   Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)
   Example: D2~D0 = 0, the time-out interval will be 64 sec.

```
AND  al, 11111000b  ; Setting the time-out interval as 64 sec.
```

   Enable or Disable the WDT (decide D3 value in F2)
   i.e. D3=0, Disable the WDT

```
AND  al, 11110111b  ; Disable the WDT
```

i.e. D3=1, Enable the WDT

```
OR  al, 00001000b  ; Enable the WDT
```

After finishing the above setting, you must output the Control Register's value to the WDT Configuration Port to ensure the WDT will start up according to the above setting.

```
MOV dx, F2h   ; Setting WDT Configuration Port
OUT dx, al  ; Output the Control Register Value
```

5. Build a mechanism in the program to continue to read the WDT Configuration Port for clearing WDT before the time out.

APPENDIX

A

Jumpers and Connectors

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Jumpers

Jumpers on the CPU board are used to select options for certain features. To select any option, jumper the pins (short) or remove jumper (open) from the jumper pins according to the following instructions. See Figure A-1 below for jumper positions.

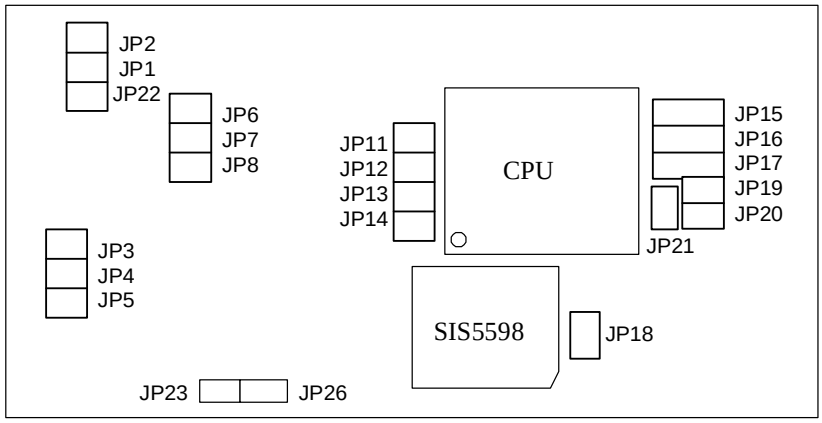


Figure A-1 Jumper Locations

Jumper Setting Tables

The asterisk (*) indicates the factory default settings.

CPU

Table A-1 CPU Jumper Settings

Item	Settings			Remark
CPU Voltage	+3.3V	+3.2V	+2.9V	For V Core Voltage, 3.2V for K6 233 MHz, 2.9V for K6 200 MHz
JP19	NC	1-2	1-2	
JP20	NC	1-2	1-2	
JP1	NC	NC	NC	
JP2	NC	NC	1-2	
JP22	NC	1-2	NC	
CPU Voltage	*+2.8V	+2.2V		2.8V for Pentium MMX CPU
JP19	1-2	1-2		
JP20	1-2	1-2		
JP1	1-2	NC		
JP2	NC	NC		2.2V for AMD
JP22	NC	NC		K6-2 400MHz
CMOS RAM	*Normal		Clear	
JP3	NC		1-2	
PS/2 Mouse	Disable		*Enable	
JP4	1-2		NC	
JP8	2-3		1-2	

Table A-1 CPU Jumper Settings (Continued)

BIOS Write Enable	Disable		*Enable	
JP5	NC		1-2	
VGA Controller	Disable		*Enable	
JP14	1-2		2-3	
JP6	2-3		1-2	
JP7	2-3		1-2	
CPU Type for Cache	Cyrix CPU		*Intel CPU	AMD K5/K6 same as Intel
JP11	1-2		NC	
L1 Cache	WT		*WB	
JP12	1-2		NC	
Pipeline	*Enable		Disable	
JP13	1-2		NC	
Factory DIAG.	Enable		*Disable	
JP23	1-2		NC	
JP26	1-2		NC	

Table A-2 Core/Bus Ratio Settings

Item	Settings						Remarks
Core/Bus Ratio	1	1.5	2	2.5	*3	3.5(P55C)	Default at 200 MHz
JP15	1-2	2-3	2-3	2-3	2-3	1-2	
JP16	X	1-2	1-2	2-3	1-2	1-2	
JP17	X	1-2	2-3	2-3	1-2	2-3	

Table A-2 Core/Bus Ratio Settings (Continued)

Item	Settings						Remarks
Core/Bus Ratio	3.5	4	4.5	5	5.5	6	(for AMD 400 MHz Only)
JP15	1-2	2-3	2-3	2-3	2-3	1-2	
JP16	X	1-2	1-2	2-3	1-2	1-2	
JP17	X	1-2	2-3	2-3	1-2	2-3	

Daughter Board

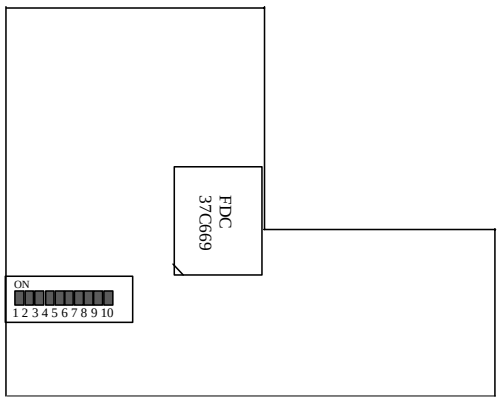


Figure A-2 Daughter Board Jumper Positions

Table A-3 Daughter Board (*: default setup) Jumper Settings

Item	Function			Remark
M-System Address	C0000	C8000	D0000	*D8000
U1-1	ON	OFF	OFF	OFF
U1-2	OFF	ON	OFF	OFF
U1-3	OFF	OFF	ON	OFF
U1-4	OFF	OFF	OFF	ON
COM 2 Control	*RS232	RS422 / 485		
U1-5	OFF	ON		

Table A-3 Daughter Board (*: default setup) Jumper Settings (Continued)

U1-6	OFF	ON		
U1-7	ON	OFF		
Multi I/O	Disable	*Enable		
U1-8	ON	OFF		
Note: RS232 Install -RP1, RP2, RP3,RP12, Keep empty: RP4, 6, 10, 11 RS422 Install- RP4, RP6, RP10 RS485 Install- RP4, RP6, RP10, RP11				
Fan to see Alarm	*Disable	Enable		
U1-9	OFF	ON		

Connectors

Connectors on the CPU board provide interfaces to other devices.

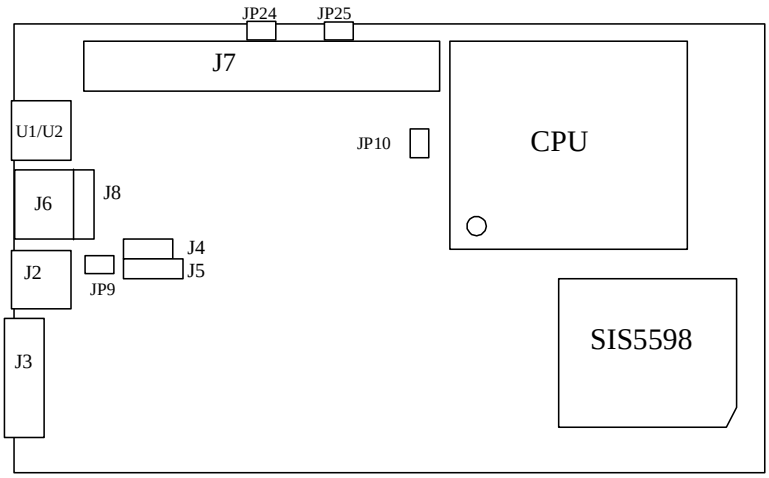


Figure A-3 Main Board Connector Locations

Table A-4 Main Board Connector Definitions

Connector	Function	Remark
J2	PS/2 Keyboard Connector	Shared: KBD/Mouse
J3	VGA DB-15 Connector	
J4	Speaker Connector	
J5	Keylock Connector	
J6	PS/2 Mouse Connector	
J7	IDE Connector with power sources	
J8	Phone jack RJ-45 Connector	10 Base T
J9	3.5” Notebook FDD Connector	Located opposite J3 on solder side of board (not shown)
JP9	Hardware Reset Connector	
JP10	IDE Access LED Connector	
U1/U2	USB Connector	

J2/J6: 6-Pin Mini-DIN Keyboard/Mouse Connector (PS/2 Type)

Table A-5 6-Pin Keyboard/Mouse Connector Pins

PIN No.	Description
1	Keyboard Data
2	Mouse data
3	Ground
4	+5V
5	Keyboard Clock
6	Mouse Clock

J3: VGA Connector

Table A-6 VGA Connector Pins

PIN No.	Description
1	Red
2	Green
3	Blue
4	NC
5	GND
6	GND
7	GND
8	GND
9	+5V
10	GND
11	NC
12	Display data channel data
13	Horizontal Sync
14	Vertical Sync
15	Display Data Channel Clock

J4: Speaker

Table A-7 Speaker Connector Pins

PIN No.	Description
1	Speaker signal
2	Ground
3	Ground
4	+5V

J5: Key Lock

Table A-8 Key Lock Connector Pins

PIN No.	Description
1	+5V
2	N/C
3	Ground
4	Key lock
5	Ground

J7: IDE Interface Connector

Table A-9 IDE Interface Connector Pins

PIN No.	Description	PIN No.	Description
1	Reset#	2	Ground
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	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	N/C
29	DMA ACK	30	Ground
31	Interrupt	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

J8: Phone Jack RJ-45 Connector

Table A-10 Phone Jack Connector Pins

PIN No.	Description
1	NWTD+
2	NWTD-
3	NWRD+
4	NC
5	NC
6	NWRD-
7	NC
8	NC
9	NC
10	NC
11	GND
12	GND

J9: 3.5” Notebook FDD Connector

Table A-11 Notebook FDD Connector Pins

PIN No.	Description	PIN No.	Description
1	VCC	2	Index#
3	VCC	4	DS0#
5	VCC	6	DSHG#
7	NC	8	NC
9	NC	10	MTR0#
11	NC	12	FDIR#
13	DRVEN0	14	STEP#
15	Ground	16	WDATA#
17	Ground	18	WGATE#
19	Ground	20	TRK0#

Table A-11 Notebook FDD Connector Pins (Continued)

21	Ground	22	WRTPR#
23	Ground	24	RDATA#
25	Ground	26	HDSEL#

JP9: Reset Switch

Table A-12 Reset Switch Pins

PIN No.	Description
1	External Reset
2	Ground

JP10: IDE LED Connector

Table A-13 IDE LED Connector Pins

PIN No.	Description
1	HDD Active #
2	+5V

JP24, 25, 27, 28: 2.5” HDD Power Source

Table A-14 HDD Power Source Pins

PIN No.	Description
1	VCC
2	J7 pin20/J7 pin 34

U1/U2: USB Connector

Table A-15 USB Connector Pins

PIN No.	Description
1	VCC
2	SBD0-/SBD1-
3	SBD0+/SBD1+
4	GND

Daughter Board Connector

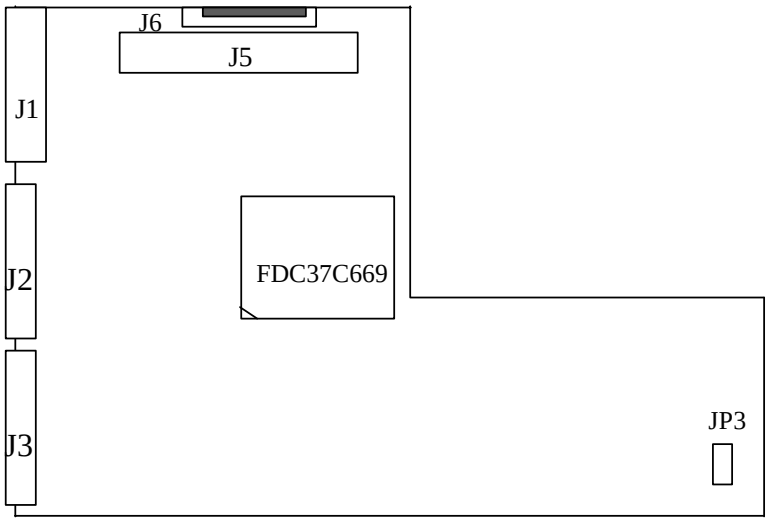


Figure A-4 Daughter Board Connector Locations

Table A-16 Daughter Board Connectors

Connector	Function	Remark
J1	Printer Connector	
J2	Communication Port 1 Connector	
J3	Communication Port 2 Connector	
J5	FDD Connector	
J6	3.5” Notebook FDD Connector	
JP3	Fan Connector	

The remaining tables in this section list the pin definitions of the daughter board connectors.

J1: Parallel Port Connector

Table A-17 Parallel Port Connector Pins

PIN No.	Description	PIN No.	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select	14	Auto Form Feed#
15	Error#	16	Initialize
17	Printer Select IN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

J2, J3: Serial Port Connector -D-Sub 9-Pin

Table A-18 Serial Port Connector Pins

PIN No.	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

J3: Serial Port Connector II for RS422/485

Table A-19 Serial Port Connector II Pins

PIN No.	RS422	RS485
1	TXD-	Data -
2	TXD+	Data +
3	RXD+	-
4	RXD-	-
5	GND	GND
6	RTS-	-
7	RTS+	-
8	CTS-	-
9	CTS+	-

J5: FDC Connector

Table A-20 FDC Connector Pins

PIN No.	Description	PIN No.	Description
1	Ground	2	Density Select
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	Index#
9	Ground	10	Motor Enable A#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor Enable B#
17	Ground	18	Direction#
19	Ground	20	Step#
21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#

Table A-20 FDC Connector Pins (Continued)

27	Ground	28	Write Protect#
29	N/C	30	Read Data#
31	Ground	32	Head Side Select#
33	N/C	34	Disk Change#

J6: 3.5” Notebook FDD Connector

Table A-21 Notebook FDD Connector Pins

PIN No.	Description	PIN No.	Description
1	VCC	2	Index#
3	VCC	4	DS0#
5	VCC	6	DSHG#
7	NC	8	NC
9	NC	10	MTR0#
11	NC	12	FDIR#
13	DRVEN0	14	STEP#
15	Ground	16	WDATA#
17	Ground	18	WGATE#
19	Ground	20	TRK0#
21	Ground	22	WRTPR#
23	Ground	24	RDATA#
25	Ground	26	HDSEL#

JP3: Fan Connector

Table A-22 Fan Connector Pins

PIN No.	Description
1	Ground
2	+12V
3	Fan Sense Signal

Appendix

B

BIOS Setup

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Introduction

The Award BIOS ROM has a built-in Setup program that enables you to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) to retain the Setup information when the power is turned off.

Entering Setup

Power on the VMICPCI-7585 CPU and press DEL immediately to enter the Setup program. Or, when the below message displays briefly at the bottom of the monitor screen during the Power On Self Test (POST)...

```
TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY
```

press DEL or simultaneously press CTRL + ALT + ESC.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF and then ON. If you do not press the keys at the correct time and the system does not boot, a message prompt displays:

```
PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP
```

The BIOS Setup program main screen will be displayed.

Control Key Summary

Table B-1 BIOS Control Key Definitions

Control Key	Description
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp / "+" key	Increase the numeric value or make changes
PgDn / "-" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default , only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Pressing F1 displays a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press F1 or ESC.

Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu (shown below), displays on the screen. The Main Menu enables you to select from 10 setup functions and two exit choices. Use arrow keys to scroll through the items, and press ENTER to accept or enter the sub-menu.

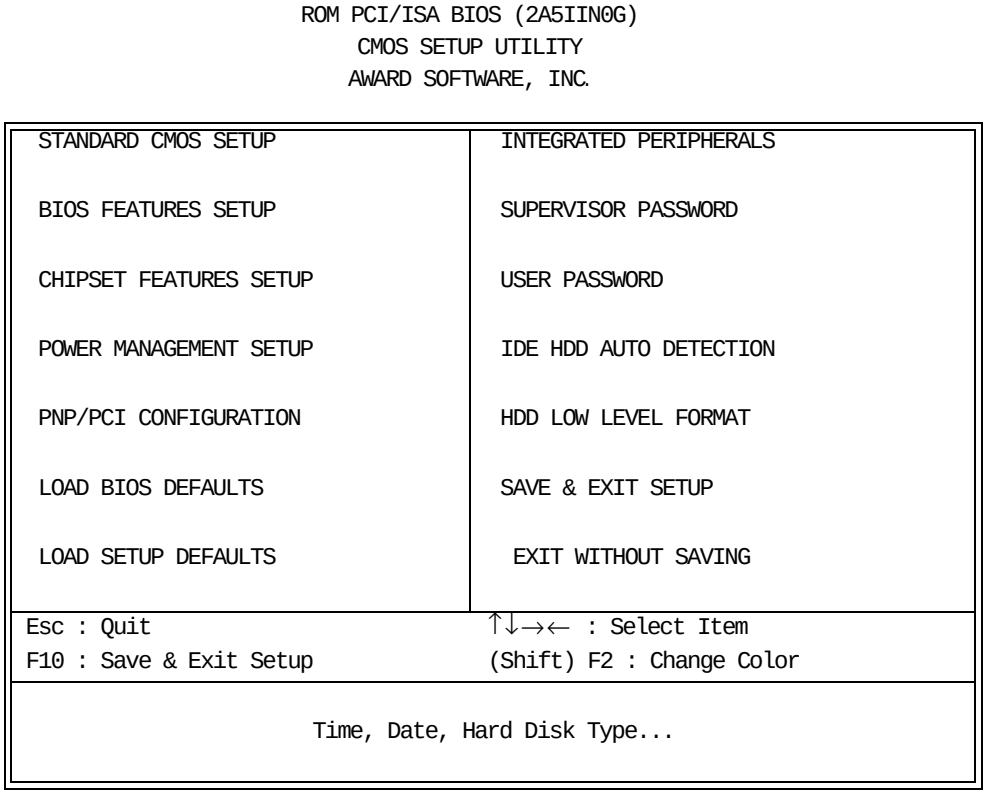


Figure B-1 Main Setup Screen

Standard CMOS Setup

Includes all items in a standard compatible BIOS.

BIOS Features Setup

Includes all Award special enhanced features.

Chipset Features Setup

Includes all the items of chipset special features.

Power Management Setup

Determines system's power consumption after selecting items below. Default value is Disable.

PNP/PCI Configurations

Specifies the assignment of all the IRQ's and DMA's.

Load BIOS Defaults

Loads the factory-defined default values.

Load Chipset Defaults

Indicates the values required by the system for the maximum performance.

Intergrated Peripherals

Allows you to set up the on board I/O controllers (IDE, SCSI, FDC, etc.).

Supervisor/User Password

Use to change, set or disable password of supervisor or user, and limit access to the system and Setup, or just to Setup.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

HDD Low Level Format

Hard disk, low level format utility.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup Menu

Items in the Standard CMOS Setup Menu, shown below, are divided into 10 categories. Each category includes zero, one or multiple setup items. Use the arrow keys to highlight the item, and then use the PGUP or PGDN keys to select the value you want in each item.

ROM PCI/ISA BIOS (2A5IIN0G)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy): Fri, Apr 7 1999
Time (hh:mm:ss): 00:00:00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDE	SECTOR	MODE
Drive C:	Auto	0	0	0	0	0	0	AUTO
Drive D:	Auto	0	0	0	0	0	0	AUTO

Drive A: 1.44M , 3.5 in.
Base Memory: 640K
Drive B: None
Extended Memory:14336K
Video: EGA / VGA
Other Memory:384K
Halt On: All Errors
Total Memory:15360K

ESC:Quit ↑↓→← : Select Item PU / PD / + / -
: Modify
F1: Help (Shift) F2 : Change Color

Figure B-2 Standard CMOS Setup Screen

Date

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

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

Time

The time format is <hour> <minute> <second>. You can use either the function key or numerical key to set the time. The time is calculated based on the 24-hour military-time clock (for example, 1 p.m. is 13:00:00).

Primary Master/Primary Slave

These categories identify the types of drives that have been installed in the computer. There are 45 predefined types and 2 user-definable types, which are for Enhanced IDE BIOS. Type 1 to type 45 are predefined. Type User is user-definable.

Press PGUP / <+> or PGDN / <-> to select a numbered hard disk type, or key in the number and press <ENTER>. Note that the specifications of your drive *must match with the drive table*. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use type User to define your own drive type manually.

If you select type User, you are prompted for related information to the following items. Enter the information directly from the keyboard and press <ENTER>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI the selection must be Type 1.

If the controller of HDD interface is SCSI, the selection must be None.

If the controller of HDD interface is CD-ROM, the selection must be None.

Items specified by the hard disk drive are listed below:

CYLS.	Number of cylinders
HEADS	Number of heads
PRECOMP	Write precom
LANDZONE	Landing Zone
SECTORS	Number of sectors
MODE	HDD access mode

If a hard disk has not been installed select NONE and press <ENTER>.

Drive A Type/Drive B Type

Identifies the types of floppy disks (drive A or drive B) that have been installed in the computer.

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

Video

Selects the type of adapter used for the primary system monitor. The adapter must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

There are two ways to boot the system:

1. With VGA as primary and monochrome as secondary, select video type VGA Mode.
2. When monochrome as primary and VGA as secondary, select video type Monochrome Mode.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array for EGA, VGA, SEGA 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

Error Halt

Determines whether or not the system boot will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk / Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

This category is read-only and is determined by POST of the BIOS.

Base Memory

The POST of the BIOS determines the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512 Kbytes for systems with 512 Kbytes memory installed on the motherboard, or 640 Kbytes for systems with 640Kbytes or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1 Mbyte in the CPU memory address map.

Other Memory

This refers to the memory located in the 640 Kbytes to 1024 Kbytes address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use this area for Shadow RAM.

Total Memory

System total memory is the sum of base memory, extended memory and other memory.

BIOS Features Setup Menu

ROM PCI/ISA BIOS (2A5IIN0G)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFFF Shadow	: Disabled
Boot Up Numlock Status	: ON		
Boot up system speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6	ESC :Quit	↑↓←→: Select Item
Typematic Delay (Msec)	: 250	F1 :Help	PU/PD/+/-: Modify
Security Option	: Setup	F5 :Old Values	(Shift) F2: Color
PCI/VGA Palette Snoop	: Disable	F6 :Load BIOS Default	
OS Select For DRAM >64 Mbytes	: Non-OS2	F7 :Load Setup Default	

Figure B-3 BIOS Features Setup Screen

Virus Warning

Flashes on screen during and after system boot up. Any attempt to write to the boot sector or partition table of the hard disk drive halts the system and the following error message displays. You can run an anti-virus program to locate the problem.

```
! WARNING !
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.
```

Enabled	Activates automatically when the system boots up causing a warning message to display when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message displays when anything attempts to access the boot sector or hard disk partition table.

NOTE: This function is available only for DOS and other operating systems that do not trap INT13.

CPU Internal Cache/External Cache

Both speed up memory access; however, the speed depends on the CPU/chipset design. The default value is Enabled. If your CPU does not have internal cache, then the item CPU Internal Cache is not shown.

Enabled	Enable cache
Disabled	Disable cache

Quick POST (Power On Self Test)

This category speeds up POST after you power on the computer. If it is set to Enabled, the BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

When searching for disk operating system (i.e. DOS), Boot Sequence determines which drive the computer searches first. Default value is `A,C`.

`C,A`	System first searches for a hard disk drive, then for the floppy disk drive
`A,C`	System first searches for a floppy disk drive, and then for a hard disk drive

NOTE: This function is only available for the IDE type. For SCSI type, the system always boots from A.

Boot Up Floppy Seek

During POST, the BIOS determines if the floppy disk drive installed is 40 or 80 tracks. The 360 Kbyte type is 40 tracks, while the 760 Kbyte, 1.2 Mbyte and 1.44 Mbyte types are all 80 tracks.

`Enabled`	BIOS searches the floppy disk drive to determine if it is 40 or 80 tracks. Because the 720 Kbyte, 1.2 Mbyte, or 1.44 Mbyte drive types are all 80 tracks, the BIOS cannot distinguish between these types.
`Disabled`	BIOS does not search for the type of floppy disk drive by track number. *There will not be any warning message if the drive installed is 360 Kbytes.*

Boot Up NumLock Status

The default value is `On`.

`On`	Keypad is number keys
`Off`	Keypad is arrow keys

Boot Up System Speed

Selects the default system speed (speed that the system runs immediately after power up).

`High`	Set the speed to high
`Low`	Set the speed to low

Gate A20 Option

Normal	The A20 signal is controlled by the keyboard controller or chipset hardware.
Fast	Default setting. The A20 signal is controlled by Port 92 or a chipset-specific method.

Typematic Rate Setting

Determines the typematic rate.

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS uses the default rate and delay values; the default is controlled by the keyboard.

Typematic Rate (Chars/Sec)

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When holding a key, the time between the first and second character displays.

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

Security Option

Enables you to limit access to the system and the BIOS setup.

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

NOTE: To disable security, select PASSWORD SETTING at the Main Menu and enter a password when prompted. Press <ENTER> to disable security. Once security is disabled, the system boots and you can enter the BIOS setup freely.

OS Select for DRAM > 64Mbytes

If your operating system is OS/2, and the DRAM used is larger than 64 Mbytes, select OS 2. The default is NON-OS2.

Video BIOS Shadow

Determines whether video BIOS is copied to RAM (optional from chipset design). Video Shadow increases the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/D8000 - DFFFF Shadow

These categories determine whether optional ROM is copied to RAM by 16 Kbytes or 32Kbytes per unit. The size depends on the chipset.

Enabled	Optional shadow is enabled.
Disabled	Optional shadow is disabled.

Note 1 For the C8000-DFFFF option, ROM on the PCI BIOS automatically enables the shadow RAM. You do not have to select the item.
Note 2 IDE second channel control:
Enabled: Enables the secondary IDE port. The BIOS assigns IRQ15 for this port.
Disabled: Disables the secondary IDE port, and IRQ15 is available for other devices.
This item is optional only for the PCI BIOS.
Note 3 Some sound cards have an on-board CD-ROM controller which uses the IDE Secondary Port. To avoid PCI IDE conflict, the IDE secondary channel control must be set to Disabled for the CD-ROM to work.

Chipset Features Setup Menu

Since the features in this section are related to the chipset in the CPU board and all are optimized, *it is not recommended that you change the default settings in the setup table unless you have very detailed knowledge of the chipset features.*

ROM PCI/ISA BIOS (2A5IIN0G)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Disabled	CPU to PCI Burst Mem. WR	:Disabled
		ISA Bus Clock Frequency	:PCICLK/4
L2 (WB) Tag Bit Length	: 8 bits	System BIOS Cacheable	:Enabled
SRAM Back-to-Back	: Disabled	Video BIOS Cacheable	:Enabled
NA # Enable	: Enabled	Memory Hole at 15M-16M	:Disabled
Starting Point of Paging	: 1T	VGA Shared Memory Size	:1MB
Refresh Cycle Time(us)	: 187.2	VGA Memory Clock (MHz)	:55
RAS Pulse Width Refresh	: 7T		
RAS Precharge Time	: 5T		
RAS to CAS Delay	: 5T		
CAS# Pulse Width (FP)	: 2T		
CAS# Pulse Width (EDO)	: 1T		
RAMW# Assertion Timing	: 3T		
CAS Precharge Time(FP)	: 1T/2T		
CAS Precharge Time (EDO)	: 1T/2T		
SDRAM WR Retire Rate	: X-2-2--2	ESC: Quit ↑↓→←: Select item	
SDRAM Wait state control	: 1WS	F1 : Help PU/PD/+/-: Modify	
Enhanced Memory Write	: Disabled	F5 : Old Values (Shift) F2: Color	
Read Prefetch Memory RD	: Enabled	F6 : Load BIOS Defaults	
CPU to PCI Post Write	: Disabled	F7 : Load Setup Defaults	

Figure B-4 Chipset Features Setup Menu Screen

Power Management Setup

The Power Management setup displays on your screen as shown below:

ROM PCI/ISA BIOS (2A5IIN0G)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	VGA Activity	:Disable
PM Control by APM	: Yes	IRQ 3 (COM2)	:Enable
Video Off Option	: Susp, Stby Off	IRQ 4 (COM1)	:Enable
Video Off Method	: V/H SYNC+Blank	IRQ 5 (LPT 2)	:Enable
Switch Function	: Break/Wake	IRQ 6 (Floppy Disk)	:Enable
Doze Speed (div by)	: 2	IRQ 7 (LPT 1)	:Enable
Stdby Speed (div by)	: 3	IRQ 8 (RTC Alarm)	:Disable
Modem Use IRQ	: 3	IRQ 9 (IRQ 2 Redir)	:Enable
		IRQ 10 (Reserved)	:Enable
PM Timers		IRQ 11 (Reserved)	:Enable
HDD Power Down	: Disable	IRQ 12 (PS/2 Mouse)	:Enable
Doze Mode	: Disable	IRQ 13 (Coprocessor)	:Enable
Standby Mode	: Disable	IRQ 14 (Hard Disk)	:Enable
Suspend Mode	: Disable	IRQ 15 (Reserved)	:Enable
		ESC: Quit ↑↓→←: Select item	
** PM Events**		F1: Help PU/PD/+/-: Modify	
COM Ports Activity	: Enable	F5: Old Values (Shift) F2: Color	
LPT Ports Activity	: Enable	F6: Load BIOS Default	
HDD Ports Activity	: Enable	F7: Load Setup Default	

Figure B-5 Power Management Setup Screen

This category determines power consumption for the system after selecting items listed in Table B-1 on page 70. The default value is Disable. The following section lists and describes the options of each item.

Table B-2 Power Management Item Definitions

Item	Options	Description
A. Power Management	1. Disable	Global Power Management is disabled.
	2. User Define	You can configure your own power management.
	3. Min Saving	Pre-defined timer values are used so all timers are at the minimum value.
	4. Max Saving	Pre-defined timer values are used so all timers are at the maximum value.
B. PM Control by APM	1. No	System BIOS ignores APM when power managing the system.
	2. Yes	System BIOS waits for the APM prompt before it enters any PM mode, e.g. Doze, Standby or Suspend If APM is installed, and if there is a task running, the APM does not prompt the BIOS to put the system into any power saving mode.
		If APM is not installed, this option has no effect.
C. Video Off Option	1. Always On	System BIOS never turns off the screen.
	2. Suspend->Off	Screen turns off when the system is in Suspend mode.
	3. Susp, stby->Off	Screen turns off when the system is in Standby or Suspend mode.
	4. All Modes ->Off	Screen turns off when the system is in Doze, Standby or Suspend mode

Table B-2 Power Management Item Definitions (Continued)

D. Video Off Method	1. Blank Screen	The system BIOS only blanks off the screen when disabling the video.
	2. V/H SYN C+Blank	In addition to option 1, the BIOS also turns off the V-SYNC and H-SYNC signals from VGA cards to the monitor.
	3. DPMS Supported	This function is enabled for only the VGA card supporting DPMS. **Note** Green monitors detect the V / H SYNC signals to turn off its electron gun.
E. Switch Function	1. Break	The External Suspend Switch is “Break.”
	2. Wake	The External Suspend Switch is “Wake.”
	3. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system enters Doze mode. If any item defined in (J) is enabled & active, Doze timer will be reloaded. Normally, Standby mode puts the system into low speed or 8 MHz. The screen may be off depending on (E).
F. Doze Speed (div by) Stdby speed (div by).	1 2 3 4 5 6 7 8	System full speed could be divided by the optional integers, the bigger the number the slower the speed under Doze or Standby mode.

Table B-2 Power Management Item Definitions (Continued)

G. Modem Use IRQ	3,4,5,7,9 4,10,11,NA	For the external modem, option 3 or 4 is used for a card-type modem, depending on the card definition. The default is 3.
H. HDD Power Down	1. Disable	HDD motor does not turn off.
	2. 1 Min 2 Min 3 Min 4 Min 5 Min 6 Min 7 Min 8 Min 9 Min 10 Min 11 Min 12 Min 13 Min 14 Min 15 Min	Defines the continuous HDD idle time before the HDD enters power saving mode (motor off).
I. Doze Mode	1. Disable 2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	System never enters Doze mode Defines the continuous idle time before the system enters Doze mode.
J. Standby Mode (*) Remark 1	1. Disable	System never enters Standby mode.
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system enters Standby mode. If any item defined in (J) is enabled and active, the Standby timer is reloaded Normally, Standby mode puts the system into low speed or 8 MHz. The screen may be off depending on (E).

Table B-2 Power Management Item Definitions (Continued)

K. Suspend Mode (*) Remark 1	1. Disable	System never enters Suspend mode.
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system enters Suspend mode. If any item defined in (J) is enabled and active, the Suspend timer is reloaded. Normally, Suspend mode puts the system into low speed or 8 MHz. The clock is stopped and the screen may be off depending on (E).
L. PM Events	1. Disabled	
COM Ports Activity LPT Ports Activity HDD Ports Activity VGA Activity IRQ3 (COM 2) IRQ4 (COM 1) IRQ5 (LPT 2) IRQ6 (Floppy Disk) IRQ7 (LPT 1) IRQ8 (RTC Alarm) IRQ9 (IRQ2 Redir) IRQ10 (Reserved) IRQ11 (Reserved) IRQ12 (PS/2 Mouse) IRQ13 (Coprocessor) IRQ14 (Hard Disk) IRQ15 (Reserved)	2. Enabled	

* Remark 1: Items marked with (*) in this menu are loaded with predefined values as long as the Power Management item' is not configured to User Defined. These items include:

- System Doze
- System Standby
- System Suspend

Remark 2: Although the item HDD Power Down is not controlled by Power Management in terms of timer value, *the HDD (s) will not power down if the global power management is disabled*

PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Peripheral Component Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

It is strongly recommended that only experienced users make changes to the default settings.

ROM PCI / ISA BIOS (2A5IIN0G)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Resources Controlled by : Manual	PCI IRQ Activated By : Level
Reset Configuration Data : Disabled	PCI IDE IRQ Map To : PCI-AUTO
	Primary IDE INT# : A
IRQ-3 assigned to : Legacy ISA	
IRQ-4 assigned to : Legacy ISA	
IRQ-5 assigned to : PCI/ISA PnP	
IRQ-7 assigned to : PCI/ISA PnP	
IRQ- 9 assigned to : PCI/ISA PnP	
IRQ-10 assigned to : PCI/ISA PnP	
IRQ-11 assigned to : PCI/ISA PnP	
IRQ-12 assigned to : PCI/ISA PnP	
IRQ-14 assigned to : Legacy ISA	
IRQ-15 assigned to : Legacy ISA	
DMA-0 assigned to : PCI/ISA PnP	
DMA-1 assigned to : PCI/ISA PnP	
DMA-3 assigned to : PCI/ISA PnP	ESC: Quit ↑↓→←: Select Item
DMA-5 assigned to : PCI/ISA PnP	F1: Help PU/PD/+/-: Modify
DMA-6 assigned to : PCI/ISA PnP	F5: Old Values (Shift) F2: Color
DMA-7 assigned to : PCI/ISA PnP	F6: Load BIOS Defaults
	F7: Load Setup Defaults

Figure B-6 PnP/PCI Configuration Screen

Resource 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 applies only to the Microsoft Windows 95/98 operating systems. Choices for this category are Auto and Manual (default).

Reset Configuration Data

Enables you to determine whether to reset the configuration data or not. Options are Enabled and Disabled (default).

IRQ/DMA Assigned To

Enables you to determine the IRQ / DMA assigned to the ISA bus and is not available to any PCI slot. `Legacy ISA` or `PnP` can be used for both ISA and PCI. Options are `Legacy ISA` and `PCI/ISA PnP`.

PCI IRQ Activated By

Sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Options are `Level` (default) and `Edge`.

PCI IDE IRQ Map to IDE INT#

Enables you to configure your system to the type of IDE disk controller in use. By default, the BIOS setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this setting enables you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, note that the primary drive has a lower interrupt than the secondary as described in `Slot x Using INT#`.

Selecting `PCI Auto` enables the system to automatically determine how your IDE disk system is configured.

Integrated Peripherals

ROM PCI / ISA BIOS (2A5IIN0G)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

Internal PCI/IDE	:Primary	PS/2 Mouse Function	:Enabled
IDE Primary Master PIO	:Auto	* WDT Configuration Port	:F2h
IDE Primary Slave PIO	:Auto	* Watch Dog Timer	:Disabled
IDE Burst Mode	:Disabled	* WDT Time Out Active For	:Reset
IDE Data Port Post Write	:Enabled	* WDT Active Time	:64 sec.
IDE HDD Block Mode	:Enabled	USB Controller	:Disabled
Onboard FDC Controller	:Enabled		
Onboard UART 1	:Auto		
Onboard UART 2	:Auto		
Onboard Parallel Port	:278/IRQ5		
Parallel Port Mode	:Normal		
		ESC: Quit	↑↓→←: Select Item
		F1: Help	PU/PD/+/- : Modify
		F5: Old Values	(Shift) F2: Color
		F6: Load BIOS Defaults	
		F7: Load Setup Defaults	

Figure B-7 Integrated Peripherals Screen

* Refer to Chapter 3 for details of the Watchdog Timer (WDT).

IDE HDD Block Mode

Enables your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode. This is the default setting.
Disabled	IDE controller uses standard mode.

IDE PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master / slave relationship which is determined by the cabling configuration used to connect them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

Programmed Input / Output (PIO) enables the BIOS to communicate with the controller directly, instead issuing a series of commands to effect a transfer to or from the disk drive. The BIOS then lets the controller and the CPU perform the complete task individually. This is simpler, more efficient and faster.

Your system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When `Auto` is selected, the BIOS selects the best available mode. This is true for the next two setup items:

- `IDE Primary Master PIO`
- `IDE Primary Slave PIO`

Onboard FDC Controller

This item is enabled with no jumper setting required

Onboard UART 1 and UART 2

The default is `Auto`; otherwise, the options are as follows:

`COM 1`	3F8H
`COM 2`	2F8H
`COM 3`	3E8H
`COM 4`	2E8H
`Disabled`	

Different ports require different addresses to avoid conflicts.

Onboard Parallel Port

The onboard PIO can be set as below:

`278H/IRQ5`	Default
`378H/IRQ5`	
`378H/IRQ7`	
`3BCH/IRQ7`	
`Disabled`	

If you have additional PIO on the add-on card, make sure to assign a different address. In the IBM PC-compatible system, three PIOs can be installed.

Parallel Port Mode

An example of onboard printer mode is shown below:

Normal	Default
Extended	
EPP mode	
ECP mode	
ECP+EPP	

PS/2 Mouse Function

Enabled	Enable the PS/2 mouse. This is the default setting.
Disabled	Disable the PS/2 mouse.

USB Controller

Enabled	Enable the USB controller. This is the default setting.
Disabled	Disable the USB controller.

When the USB controller is enabled, the USB Keyboard Support item displays with the following options:

Enabled	Enable the USB keyboard control.
Disabled	Disable the USB keyboard control.

Supervisor/User Password Setting

For this setting, you can select either supervisor or user password, or both.

Supervisor Password:	Enables you to enter the BIOS setup and change the options of the setup menus.
User Password:	Enables you to enter the BIOS setup, but you cannot change options of the setup menus.

When you select this function, the following message displays at the center of the screen to assist you in creating a password:

ENTER PASSWORD:

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

To disable a password, press <ENTER> when you are prompted to enter the password. A message displays to confirm that password is to be disabled. Once the password is disabled, the system boots and you can enter the BIOS setup freely.

PASSWORD DISABLED.

When a password has been enabled, you are prompted to enter it every time you enter the BIOS setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This also prevents unauthorized use of your computer.

Use the security option in the BIOS Features Setup menu to determine when the password is required. If the security option is set to System, a password is required both at boot and at entry to the BIOS setup. If the security option is set to Setup, prompting only occurs when trying to enter the BIOS setup. Refer to the page 67 Security Options, for more information.

IDE HDD Auto Detection

The Enhanced IDE feature is included in the BIOS. Below is a brief description of this feature.

Auto-Detection

The BIOS setup displays all possible modes supported by the HDD including NORMAL, LBA (Logical Block Addressing), and LARGE.

If HDD does not support LBA modes, no LBA option will be shown.

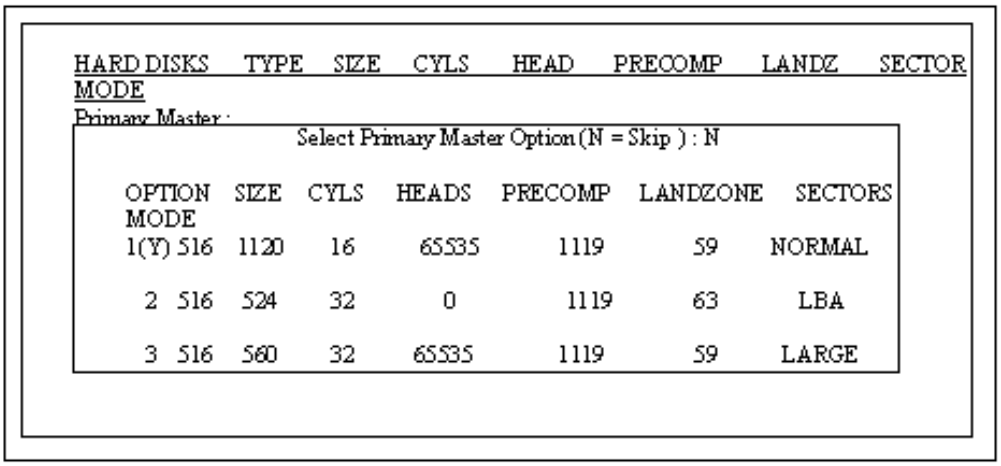


Figure B-8 IDE HDD Auto Detection Screen

Standard CMOS Setup

		CYLS	Heads	Precomp	Landzone	Sector	Mode
Primary Master:	User (516MB)	1120	16	65535	1119	59	Normal
Primary Slave:	None (203MB)	684	16	65535	685	38	------
Secondary Master:	None	0	0	0	0	0	0
Secondary Slave	None	0	0	0	0	0	0

When the HDD type is User type, the MODE option is opened for the user to select the HDD mode.

HDD Modes

The Award BIOS supports three HDD modes : NORMAL, LBA and LARGE.

NORMAL mode: Generic access mode in which neither the BIOS nor the IDE controller make any transformations during accessing.

The maximum number of cylinders, head and sectors for NORMAL mode are 1024, 16 and 63.

no. Cylinder	(1024)
x no. Head	(16)
x no. Sector	(63)
x no. per sector	(512)
528 Mbytes	

If you set your HDD to NORMAL mode, the maximum accessible HDD size is 528 Mbytes, even though its physical size may be greater than that.

LBA (Logical Block Addressing) Mode

This new accessing method allows HDD to overcome the 528 Megabyte bottleneck. The number of cylinders, heads and sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head and cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

no. Cylinder (1024)

x no. Head (255)

x no. Sector (63)

x bytes per sector (512)

3.4 Gigabytes

LARGE mode

Extended HDD Access Mode Supported by Award Software

Some IDE HDDs contain more than 1024 cylinders without LBA support (in some cases, user does not want LBA). The Award BIOS' Extended HDD Access Mode provides an alternative to support this kind of HDD.

Example of LARGE mode:

CYLS.	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS leads DOS (or other OS) to read the number of cylinders as less than 1024 by dividing by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address the right HDD address.

Maximum HDD size:

no. Cylinder (1024)

x no. Head (32)

x no. Sector (63)

x bytes per sector (512)

1 Gigabytes

(3) Remarks

Software located in the Award HDD Service Routine (INT 13h) supports LBA or LARGE mode of HDDs. The software may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

Hard Disk Low Level Format Utility

This Award Low-Level Format Utility is designed to save time in formatting your hard disk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Hard Disk Low Level Format Utility	NO. CYLS HEAD
SELECT DRIVE	
BAD TRACK LIST	
PREFORMAT	
Current select drive is: C	
DRIVE: C CYLINDER: 0 HEAD : 0	

		Size	CYLS	Head	Precomp	Landz	Sector	Mode
Primary Master	:	0	0	0	0	0	0	AUTO
Primary Slave	:	0	0	0	0	0	0	AUTO

Up / Down- Select item ENTER-Accept ESC-Exit / Abort

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Control Keys

Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press ENTER to accept the selection. Press ESC to abort the selection or exit the Utility.

SELECT DRIVE

Select from installed hard disk drive C or D. List at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST

Automatically scans bad tracks and lists the bad tracks in the window at the right side of the screen.

Add Bad Track

Directly type in the information of the known bad tracks in the window at the right side of the screen.

Modify Bad Track

Modify the information of the added bad tracks in the window at the right side of the screen.

Delete Bad Track

Delete the added bad tracks in the window at the right side of the screen.

Clear Bad Track Table

Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT

Interleave

Select the interleave number of the hard disk drive you wish to perform a low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

Auto Scan Bad Track

Allows the utility to scan first, then format by each track.

Start

Press <Y> to start low level format.

Power-On Boot

After you have made all of the changes to the CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON. You may also restart by simultaneously pressing the <Ctrl>, <Alt>, and <Delete> keys. Upon restart of the system, immediately press <Insert> to load BIOS default CMOS values for boot up.

BIOS Reference - POST Message

During the Power On Self Test (POST), if the BIOS detects an error that requires your attention, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

Currently there is only one beep code in the BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS Battery Has Failed

CMOS battery is no longer functional. It should be replaced.

CMOS Checksum Error

The Checksum of the CMOS is incorrect. This can indicate that the CMOS has become corrupted. This error may have been caused by a weak battery. Check the battery and replace if necessary.

Disk Boot Failure, Insert System Disk and Press Enter

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A and press ENTER. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly connected. Also, be sure the disk is formatted as a boot device. Reboot the system.

Diskette Drives or Types Mismatch Error - Run Setup

The type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

Display Switch is Set Incorrectly

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

Display Type Has Changed Since Last Boot

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error
Please Run EISA Configuration Utility

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupted, or the slot has been configured incorrectly. Be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete
Please Run EISA Configuration Utility

The slot configuration information stored in the EISA non-volatile memory is incomplete.

NOTE: When either of these errors appear, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

Error Encountered Initializing Hard Drive

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Be sure the correct hard drive type is selected in Setup.

Error Initializing Hard Disk Controller

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Check to see if any jumper needs to be set correctly on the hard drive.

Floppy Disk Controller Error or No Controller Present

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration
Please Run EISA Configuration Utility

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupted. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

Keyboard Error or No Keyboard Present

Cannot initialize the keyboard. Make sure the keyboard is connected correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error At

Indicates a memory address error at a specific location. You can use this location, along with the memory map for your system, to find and replace the bad memory chips.

Memory Parity Error At

Indicates a memory parity error at a specific location. You can use this location, along with the memory map for your system, to find and replace bad memory chips.

Memory Size Has Changed Since Last Boot

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error At

Indicates an error verifying a value already written to memory. Use this location, along with your system's memory map, to locate the bad chip.

Offending Address Not Found

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the offending address cannot be isolated.

Offending Segment

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the offending segment has been isolated.

Press A Key To Reboot

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key to reboot the system.

Press F1 To Disable NMI, F2 To Reboot

When BIOS detects a Non-Maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM Parity Error - Checking For Segment

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found Please Run EISA Configuration Utility

A valid board ID was found in a slot that was configured as having no board ID.

NOTE: When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found Please Run EISA Configuration Utility

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

System Halted, (CTRL-ALT-DEL) To Reboot

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold the CTRL and ALT keys, then press DEL.

Wrong Board In Slot
Please Run EISA Configuration Utility

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, allowing you to run the EISA Configuration Utility.

BIOS Reference - POST Codes

NOTE: EISA POST codes are typically output to port address 300h. ISA POST codes are output to port address 80h.

POST (hex)	Description
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all standard devices with default values. Standard devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of on-board DRAM & Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
09	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)

0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers 2. Initialize INT no from 33-120 with Dummy (Suprious) Interrupt Handler 3. Issue CPUID instruction to identify CPU type 4. Early Power Management initialization (OEM specific)

This POST code is for boot block

POST (hex)	Description
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all the standard devices with default values Standard devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of on-board DRAM & Cache
C3	Checking checksum of compressed code
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01	Clear base memory 0~640K
0C	Initial interrupt vector 00-1FH
0D	Initial ISA VGA
41H	Enable FDD and detect media type
FFH	Boot from FDD

This page is for Non-Compressed Version only

01-02	Reserved
C0	Turn off OEM specific cache, shadow...

03	1. Initialize EISA registers (EISA BIOS only) 2. Initialize all the standard devices with default values Standard devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
C1	Auto-detection of onboard DRAM & Cache
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
08	Test the first 256K DRAM
09	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers 2. Initialize INT no from 33-120 with Dummy (Suprious) Interrupt Handler 3. Issue CPUID instruction to identify CPU type 4. Early Power Management initialization (OEM specific)

The following POST Codes are for all of Compress Version & Non-Compress Version

POST (hex)	Description
0B	1. Verify whether the RTC time is valid or not 2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PnP initializations including (PnP BIOS only) -Assign CSN to PnP ISA card -Create resource map from ESCD 5. Assign IO & Memory for PCI devices (PCI BIOS only)
0C	Initialization of the BIOS Data Area (40 : 00 - 40:FF)

0D	1. Program some of the Chipset's value according to Setup. (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed 3. Video initialization including Monochrome, CGA, EGA / VGA. If no display device found, the speaker will sound one single long beep followed by two short beeps.
0E	1. Initialize the APIC (Multi-Processor BIOS only) 2. Test video RAM (If Monochrome display device found) 3. Show messages including: -Award Logo, Copyright string, BIOS Date code and Part No. -OEM specific sign on messages -Energy Star Logo (Green BIOS ONLY) -CPU brand, type and speed -Test system BIOS checksum (Non-Compress Version only)
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved
14	Test 8254 Timer 0 Counter 2
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory and Extended Memory Size
31	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1M to the top of memory

32	1. Display the Award Plug and Play BIOS Extension message (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port... according to setup value
33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	1. Initialize keyboard 2. Install PS2 mouse

POST(hex)	Description
3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h
BF	1. Program the rest of the Chipset's value according to Setup (Later Setup Value Program) 2. If auto-configuration is enabled, program the chipset with pre-defined values in the MODBINable Auto-Table
41	Initialize floppy disk drive controller
42	Initialize hard drive controller
43	If it is a PnP BIOS, initialize serial and parallel ports
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved
4E	If there is any error detected (such as video, kb...), show all the error messages on the screen and wait for user to press F1 key
4F	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved

52	1. Initialize all ISA ROMs 2. Later PCI initializations (PCI BIOS only) -assign IRQ to PCI devices -initialize all PCI ROMs 3. PnP Initializations (PnP BIOS only) -assign IO, Memory, IRQ and DMA to PnP ISA devices -initialize all PnP ISA ROMs 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization -Enable / Disable global PM -APM interface initialization
53	1. If it is NOT a PnP BIOS, initialize serial and parallel ports 2. Initialize time value in BIOS data area by translating the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting

This is a current list of the 'Drive Type' table contained in Setup.

Table B-3 Drive Types

Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	20	615	4	17	300	615	Seagate ST225, ST4026
3	30	615	6	17	300	615	
4	62	940	8	17	512	940	
5	46	940	6	17	512	940	
6	20	615	4	17	None	615	Seagate ST125, Tandon TM262
7	30	462	8	17	256	511	
8	30	733	5	17	None	733	Tandon TM 703

Table B-3 Drive Types (Continued)

9	112	900	15	17	None	901	
10	20	820	3	17	None	820	
11	35	855	5	17	None	855	
12	49	855	7	17	None	855	
13	20	306	8	17	128	319	Disctron 526, MMI M125
14	42	733	7	17	None	733	
15		Reserved					
16	20	612	4	17	0	663	Microscien ce HH725, Syquest 3250, 3425
17	40	977	5	17	300	977	
18	56	977	7	17	None	977	
19	59	1024	7	17	512	1023	
20	30	733	5	17	300	732	
21	42	733	7	17	300	732	
22	30	306	5	17	300	733	Seagate ST4038
23	10	977	4	17	0	336	
24	40	1024	5	17	None	976	Seagate ST4051
25	76	1224	9	17	None	1023	Seagate ST4096
26	71	1224	7	17	None	1223	Maxtor 2085
27	111	1224	11	17	None	1223	Maxtor 2140, Priam S14
28	152	1024	15	17	None	1223	Maxtor 2190, Priam S19
29	68	1024	8	17	None	1023	Maxtor 1085, Micropolis 1325
30	93	918	11	17	None	1023	Maxtor 1105 1120, 4780

Table B-3 Drive Types (Continued)

31	83	925	11	17	None	1023	Maxtor 1170
32	69	1024	9	17	None	926	CDC 9415
33	85	1024	10	17	None	1023	
34	102	1024	12	17	None	1023	
35	110	1024	13	17	None	1023	
36	119	1024	14	17	None	1023	
37	17	1024	2	17	None	1023	
38	136	1024	16	17	None	1023	
39	114	918	15	17	None	1023	Maxtor 1140, 4380
40	40	820	6	17	None	820	Seagate ST251
41	42	1024	5	17	None	1023	Seagate 4053 Miniscribe 3053 / 6053
42	65	1024	5	26	None	1023	Miniscribe 3053 / 6053 RLL
43	40	809	6	17	None	852	Miniscribe 3650
44	61	809	6	26	None	852	Miniscribe 3675 RLL
45	100	776	8	33	None	775	Conner CP3104
46	203	684	16	38	None	685	Conner CP3204
User							

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