PCM-5894 B1.1

All-in-One Single Board Pentium Computer with SVGA, Ethernet and 4 serial ports

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 OPERATION.

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 AGAINTST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQENCY ENERGY AND , IF NOT INSTATLLED 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.

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Part No. 2047589401 Manual PCM-5894 2nd Edition
Printed in Taiwan March 2001

Packing list

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

- 1 PCM-5894 B 1.1 All-in-One Single Board Computer
- 1 User's Manual
- 1 Quick Installation Guide
- 1 CD with PCI SVGA utility programs and drivers for Windows 3.1, Windows 95, Windows NT 3.51, Windows NT 4.0, OS/2, and Ethernet drivers

The mainboard require several cables for normal operation. You can make them yourself or purchase an optional cable kit PCM-10489-4.

If you need revised version manual, Driver and Utility, you may visit our Internet home page (www.aaeon.com.tw) and download it.

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

Contents

CHAPTER 1

General Information

This chapter gives background information on the mainboard.

Sections include:

- Card specifications
- Card layout and dimensions

Introduction

The PCM-5894 B1.1 is a Pentium single board computer with one on-board PCI SVGA controller, one PCI Ethernet interface and one PCI expansion slot. Equipped with 64 bits local bus architecture, the PCM-5894 B1.1releases Pentium's full potential and provides unprecedented performance compared to current 32-bit processor boards. The PCM-5894 offers all the functions of industrial computer on a single board, but fits in the space of a 5¼" floppy drive (only 5.75" x 8"). For maximum performance, the PCM-5894 also supports 2nd level cache 512 KB on board. SSD interface supports one 32-pin DIP socket for M-system DiskOn-Chip 2000 series, memory capacity from 2 MB to 288MB.

On-board features include four serial ports (three RS-232 and one RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, one floppy drive controller and one keyboard/PS/2 mouse interface. The built-in high speed PCI IDE controller supports both PIO and bus master modes. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives and other IDE devices.

The PCM-5894 B1.1 also features power management to minimize power consumption. It complies with the “Green Function” standard and supports three types of power saving features: Doze mode, Standby mode and Suspend mode. In addition, the board’s watchdog timer can automatically reset the system or generate an interrupt in case the system stops due to a program bug or EMI.

On-board peripherals with true PCI performance

The PCM-5894 B1.1 is a highly integrated, all-in-one single board computer. All on-board peripherals (including PCI flat panel/VGA interface, PCI Ethernet and PCI IDE) adopt PCI technology and operate through internal PCI bus. Integrating a Pentium board with PCI architecture has unleashed a revolutionary level of performance. *The PCM-5894 B1.1 is the smallest and most powerful all-in-one Pentium board available*.

Features

- Little Board form factor (203mm x 146mm)
- Supports Intel P54C/P55C, AMD K5/K6/K6-2 and Cyrix M1/M2 CPUs
- DiskOnChip (SSD) up to 288MB
- Display both CRT and LCD (TFT, DSTN, Mono, EL) simultaneously
- 100-Base Ethernet, supports boot function
- Bus Master IDE and Ultra DMA/33 supported
- Three RS-232 and one RS-232/422/485 serial ports
- Customized BIOS is provided for special applications

Specifications

Standard SBC functions

- **CPU:** Intel Pentium 75~233 MHz ,P55C (MMX), Cyrix / IBM / SGS 6X86 PR100+~200+, AMD K5 PR75~166, K6/K6-2 166~300
- **BIOS:** AMI FLASH BIOS
- **Chipset:** SiS5582/ 5598 (for PCM-5894C)
- **2nd Level Cache:** On board 512KB pipeline burst 2nd level cache.
- **RAM memory:** 8MB to 128MB. Two 72-pin SIMM socket on board
- **Enhanced IDE hard disk drive interface:** Support up to two hard disk drives. BIOS auto-detect. Supports PIO mode 4 and Bus Master. Also supports Multi-word DMA and Ultra DMA/33
- **Floppy disk drive interface:** Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and /or 3.5" (720KB, 1.44MB and 2.88MB)
- **Multi-mode parallel port:** Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP, ECP and EPP
- **Serial ports:** Three RS-232 and one RS-232/422/485 serial ports. Ports can be configured as COM1, COM2, COM3, COM4 or disabled individually. Four 16C550 serial UARTs. IR connector reserved for future use
- **Keyboard/mouse connector:** 8 pin connector supports standard PC/ AT keyboard and PS/2 mouse
- **USB connectors:** Dual USB connectors on board
- **Watchdog Timer:** Can generate a system reset, IRQ15 or NMI. Support software selectable timeout interval. (2 sec. ~ 128 min., 1 sec./step)
- **DMA channels:** 7
- **Interrupt levels:** 15

- **Power management:** I/O peripheral devices support power saving and doze/standby/suspend modes. APM 1.2 compliant

VGA interface

- **VGA Controller:** C&T 69000
- **Display memory:** Built in 2MB SDRAM
- **Display type:** Supports CRT and flat panel (TFT, DSTN, Mono and EL) display. Can display both CRT and flat panel simultaneously (PCM-5894C supports CRT display type only)
- **Resolution:** Up to 1024x768@64K colors
- **Panel link:** One set of daughter boards support Panel Link function (Optional)

SSD interface

- One 32-pin DIP socket supports M-system DiskOnChip 2000 series, memory capacity from 2 MB to 288 MB.

Ethernet interface

- **Chipset:** Reltek8139C 100-Base Ethernet controller
- **Ethernet interface:** 10-Pin header supports RJ-45 jack. Software drivers available with remote boot funtion

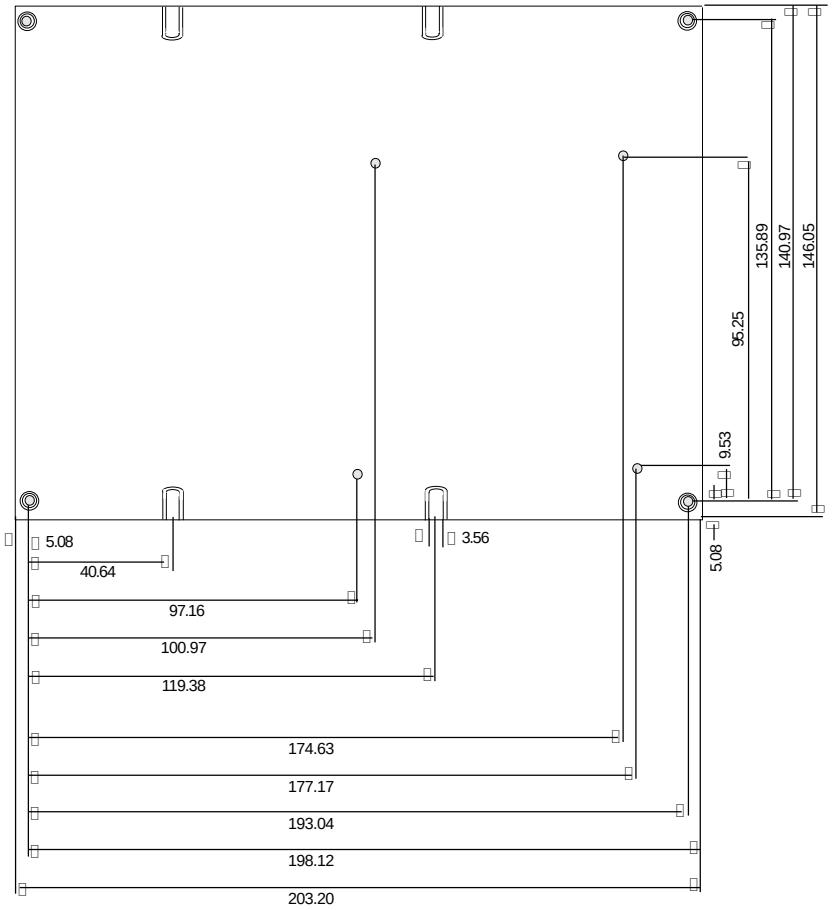
Expansion Slots

- **PC/104 connector:** 104-pin connector for a 16-bit bus expansion
- **PCI slot:** One PCI slot on board for expansion. PCI riser card optional.

Mechanical and environmental

- **Power supply voltage:** +5V (4.75V to 5.25V) and +12V (11.4V to 12.6V)
- **Power Requirements:**
  Bare Board: +5V @ 1.5A
  Pentium MMX onboard: +5V@6A
  AMD K6-233 onboard: +5V@10A
- **Operating temperature:** 32 to 140° F (0 to 60° C)
- **Board Size:** 8”(L) x 5.75”(W) (203mm x 146mm)
- **Weight:** 0.66 lb. (0.3 Kg)

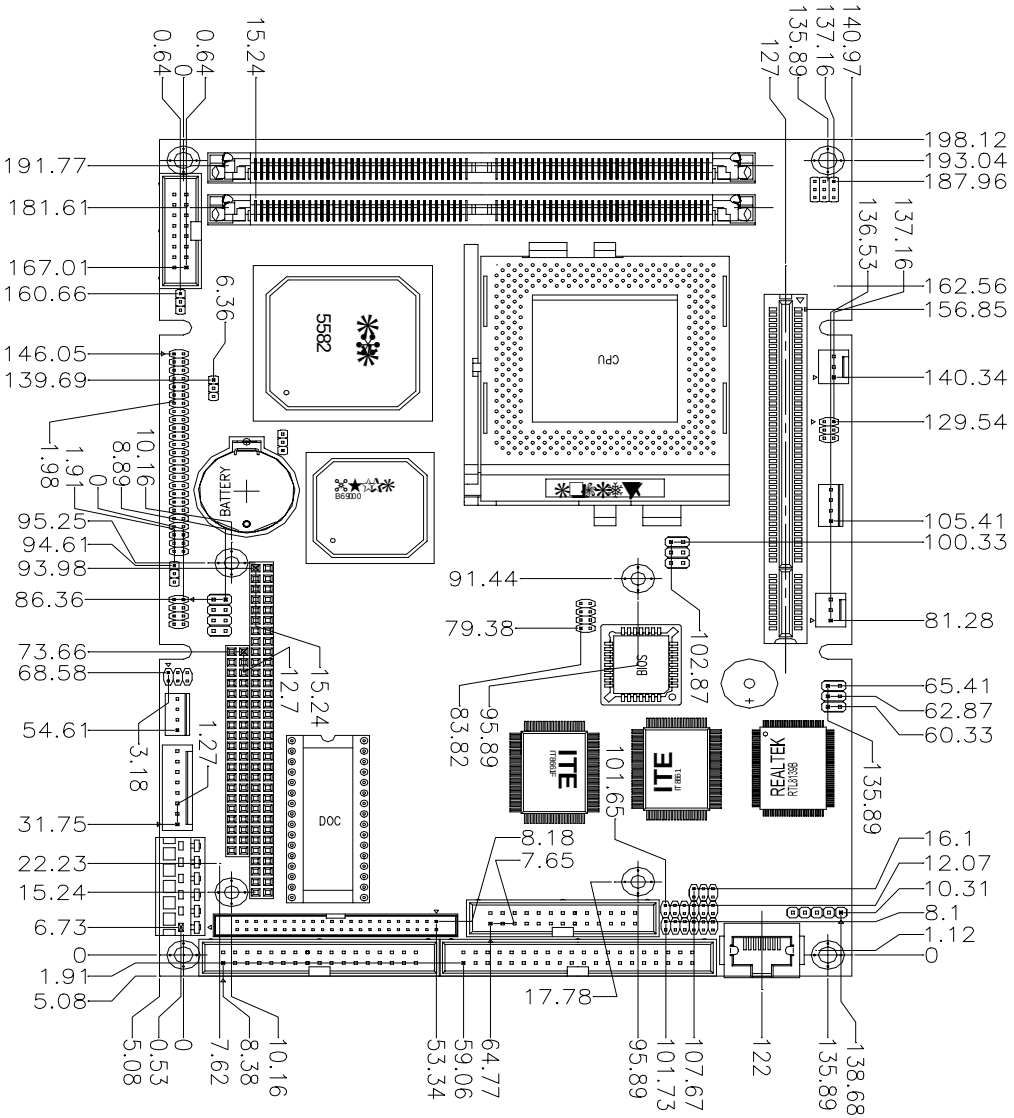
Board dimensions



Dimensions in mm

PCM-5894 dimensions

Board dimensions



CHAPTER 2

Installation

This chapter describes how to set up the main-board 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.

Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

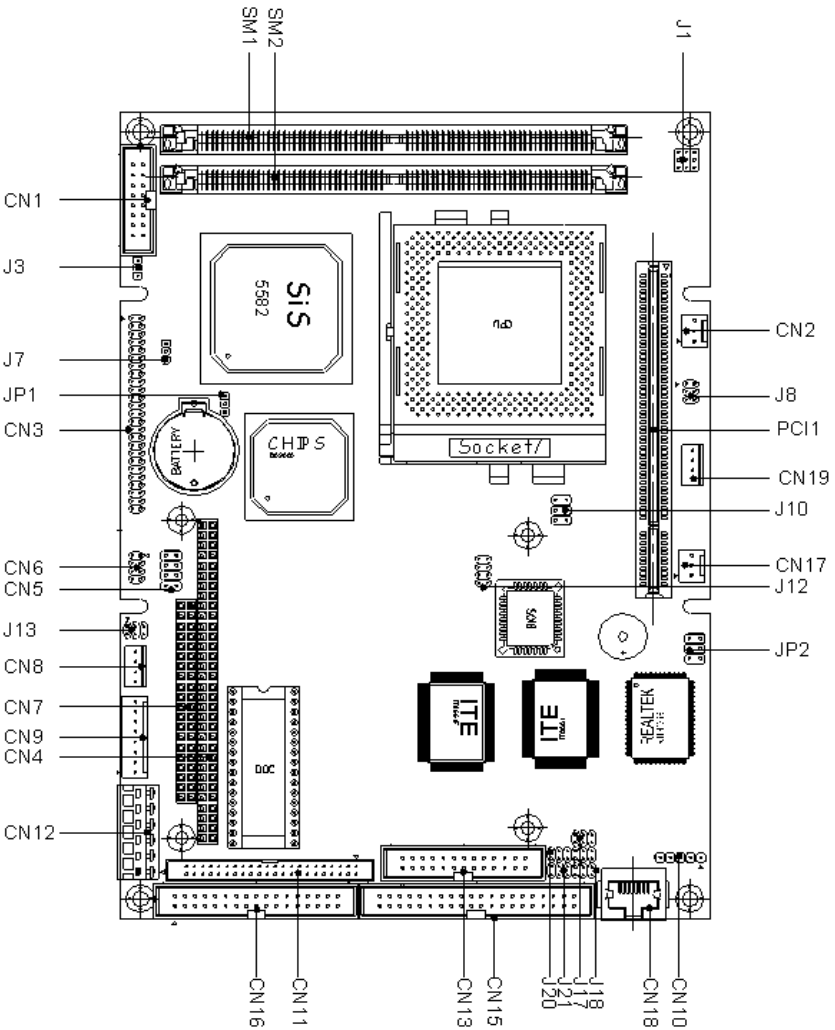
The table below lists the function of each of the board's jumpers and connectors.

Jumpers	
Label	**Function**
JP1	LCD Shift Clock Setting
JP2	LED-Tx connector
JP2	LED-Rx connector
JP2	LED-LINK connector
J2	System clock setting
J3	LCD voltage setting
J7	CMOS setup
J8	CPU frequency ratio
J10	CPU type select
J12	CPU voltage setting
J13	Memory address selection (D.O.C.)
J17	COM2 selection
J18	COM2 selection
J20	COM3 RI Pin setting
J21	COM4 RI Pin setting

Connectors

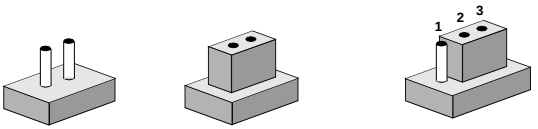
Label	Function
CN1	CRT display connector
CN2	Fan Power connector
CN3	Flat panel display connector
CN5	USB connector
CN6	Front panel connector
CN8	Peripheral power connector (-5V, -12V)
CN9	Keyboard and mouse connector
CN10	IrDA connector
CN11	IDE hard drive connector
CN12	Main power connector (+5V, +12V)
CN13	Parallel port connector
CN18	Ethernet 100/10BASE-T connector
CN15	Serial port (RS-232/422/485)
CN16	Floppy drive connector
CN17	Fan Power connector
U16	DiskOnChip socket

Locating Jumpers & Connectors



Setting jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



Open **Closed** **Closed 2-3**

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

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

CPU installing and upgrading

You can upgrade to a higher power Pentium CPU at any time. Simply remove the old CPU, install the new one, and set the jumpers for the new CPU type and speed.

Warning! *Always disconnect the power cord from your chassis when you are working on it. Do not make connections while the power is on as 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 PC board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

When you install a new CPU, be sure to adjust the board settings, such as CPU type and CPU clock. **Improper settings may dama**

LCD Shift Clock Select (JP1)

LCD Shift Clock Select

	SHFCLK*	-SHFCLK
JP1	 1 2 3	 1 2 3

* default setting

Ethernet configuration

The mainboard is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

Configuration is very simple and is done via the BIOS setup. The medium type can be configured via the program included on the utility disk.

LAN LED connector (JP2)

You can connect three LED to show the status of the communication link and traffic.

LAN LED connector (JP2)

Connector	Function
1-2	LED-Tx connector
3-4	LED-Rx connector
5-6	LED-LINK connector

System clock setting (J2)

J2 is used to sychronize the system clock with the CPU clock and PCI clock. You may need to adjust the CPU clock according to the base CPU speed.

CPU clock setting

J2	CPU	PCI
	60MHz	30MHz
 *	66MHz	33.3MHz

*default setting

LCD Voltage Setting (J3)

LCD Voltage Setting

	5V	+3.3V*
J3	 1 2 3	 1 2 3

* default setting

CMOS setup (J7)

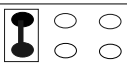
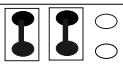
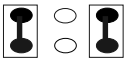
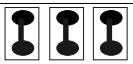
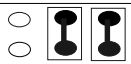
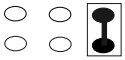
CMOS setup

	Protect*	Clear CMOS
J7		

* default setting

CPU frequency ratio (J8)

CPU frequency ratio

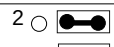
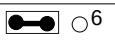
	J8	P54C	P55C	AMD-K6/K6-2
*		1.5	3.5	3.5
		2.0	2.0	2.0
		2.5	2.5	2.5
		3.0	3.0	3.0
				4.0
				4.5
				5.0
				5.5

* default setting

CPU type select (J10)

J10 must be set to match the CPU type between Dual-Voltage (e.g.P55C) and Single-Voltage(e.g.P54C)type CPU. The chart below shows the proper jumper setting for their respective CPU type.

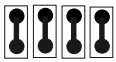
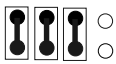
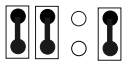
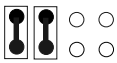
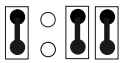
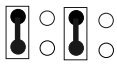
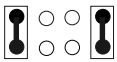
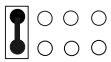
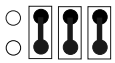
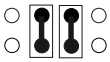
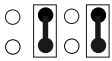
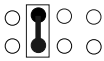
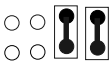
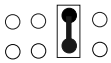
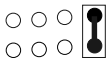
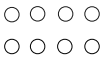
CPU type select

	Dual-Voltage*	Single-Voltage
J10		

* default setting

CPU voltage setting (J12)

J12 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{CC}.

CPU voltage setting		
3.6v	3.5v	3.4v
		
3.3v	3.2v	3.1v
		
3.0v	2.9v	2.8v*
		
2.7v	2.6v	2.5v
		
2.4v	2.3v	2.2V
		
2.1v		
		

*default setting

Installing DRAM (SIMMs)

The mainboard provides two 72-pin SIMM (Single In-line Memory Module) sockets and supports either Fast Page Mode (FPM) or Extended Data Output (EDO) DRAM with a speed of at least 70 ns. Unlike most other CPU cards, the mainboard supports both single and dual insertion into the memory bank. Depending on the combination of modules you use, you can install from 1 MB to 128 MB of RAM.

Installing SIMMs

NOTE: The modules can only fit into a socket one way. Their chips must face the CPU, and their gold pins must point down into the SIMM socket.

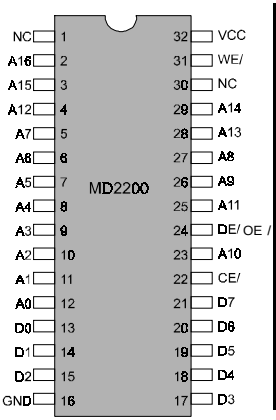
1. Ensure that all power sources are disconnected.
2. Slip the memory module into the socket at a 45 degree angle.
3. Push the module toward the vertical posts at both ends of the socket until the module is upright, and the retaining clips at both ends of the module click into place. When positioned correctly, the pins on top of the vertical posts should correspond to the circular holes on the ends of the module.
4. Repeat steps 2 and 3 for each module you install.

the cable. If you install two drives, you will need to set one as the

DiskOnChip socket (U16)

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 small, plug and play Flash disk. It is easy to use and save integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 288 MB, unformatted. This way, the same socket on the target platform will not have to be changed. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems' Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with standard 32-pin EPROM device.



pin Name	Description	Pin Number	Direction	Note
A0-A12	Address bus	4-12,23,25-27	Inputs	
A13-A16	Address bus	2,3,28,29	Inputs	1
D0-D7	Data bus	13-15,17-21	I/O	
CE/	Chip Enable	22	Input	
OE/	Output Enable	24	Input	
WE/	Write Enable	31	Input	
NC	Not connected	1.30		2
VCC	Power	32		
GND	Ground	16		

Figure1-MD2200 Pin-out

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

Memory address selection (J13)

The DiskOnChip 2000 occupies a 8 Kbyte window in the upper memory address range of C800 to E000. You should ensure this dose not conflict with any other device's memory address. J13 control the memory address of Flash disk.

DiskOnChip 2000 memory address	
Memory address (HEX)	J13
DISABLE	
DC00*	
D800	
D400	
D000	
CC00	

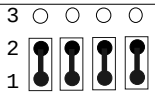
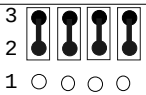
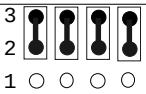
* default setting

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

Serial port RS-232/422/485 selection (J17, J18)

The serial port connectors are mounted on the right hand edge of the card. The 40-pin, dual-in-line, male header to the right of the card is for the RS-232 and RS-232/422/485 ports.

COM2 Selection (J17, J18)

	*RS-232	RS-422	RS-485
J17			
J18			

*default

The IRQ and address range for those ports are fixed. However if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table below shows the settings for the mainboard's ports.

Serial port settings (Default)

Port	Address Range	Interrupt	Default
COM1	2E8~3F8	IRQ4	3F8
COM2	2E8~3F8	IRQ3	2F8
COM3	2E8~3F8	IRQ5/IRQ10	3E8
COM4	2E8~3F8	IRQ10/IRQ5	2E8

COM3/COM4 RI pin setting (J20, J21)

The COM3 and COM4 can supply +5V or +12V power to the serial devices via RI pin of the COM port connector. The outputs of COM3, COM4 RI pins are selected by setting J20, J21.

COM3 RI pin setting

	RI *	+5V	+12V
J20	5 ▬ 6 3 ○ ○ 4 1 ○ ○ 2	5 ○ ○ 6 3 ▬ 4 1 ○ ○ 2	5 ○ ○ 6 3 ○ ○ 4 1 ▬ 2

COM4 RI pin setting

	RI*	+5V	+12V
J21	5 ▬ 6 3 ○ ○ 4 1 ○ ○ 2	5 ○ ○ 6 3 ▬ 4 1 ○ ○ 2	5 ○ ○ 6 3 ○ ○ 4 1 ▬ 2

VGA interface connections

The mainboard's 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 card has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

CRT display connector (CN1)

CN1 is a 16-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN1 to a standard 15-pin D-SUB connector commonly used for VGA.

CRT display connector

Pin	Signal	Pin	Signal
1	RED	9	VCC +5V
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	DCC DAT
5	GND	13	H-SYC
6	GND	14	V-SYNC
7	GND	15	DCC CLK
8	GND	16	N/C

When the mainboard's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the VGA interface is done completely via the software utility. You don't have to set any jumpers.

Flat panel display connector (CN3)

CN3 consists of a 50-pin, dual-in-line header. Power supplies (+12 V, -12 V) present on CN3 depend on the supply connected to the board. Ensure that both CN8 and CN12 are connected for ±12 V power supply.

The mainboard provides a bias control signal on CN3 which can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V) and panel video signals are stable. Under normal operation the control signal (ENAVEE) is active high. When the PCM-5894's power is applied, the control signal is low until just after the relevant flat panel signals are present.

* Pin5 and Pin6 : 5V or 3V selected by J3 and J11.

Flat panel display connector (CN3)

Flat panel display connector			
Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	+5V (or 3V)	6	+5V (or 3V)
7	ENAVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

USB Connector (CN5)

You can connect your USB (Universal Serial Bus) devices to USB connector. With USB, there is no need to have separate connectors for keyboards, modems, and mice. USB provides a common interface for all your peripherals.

USB connector

Pin	Function	Pin	Function
1	Vcc	5	Vcc
2	$UV1^-$	6	$UV0^-$
3	$UV1^+$	7	$UV0^+$
4	GND	8	GND

Front panel connector (CN6)

Next you may want to install external switches to monitor and control the mainboard. These features are completely optional — install them only if you need them. The front panel connector (CN6) is an 8-pin male, dual in-line header and provides connections for a speaker, hard disk access indicator and an input switch for resetting the card.

Front panel connector (CN6)

Front panel connector

Pin	Signal
1	HDD LED- (HARD DISK ACTIVE)
2	HDD LED+ (V_{CC})
3	SPEAKER+
4	SPEAKER- (GND)
5	GND
6	NC
7	RESET SWITCH- (GND)
8	RESET SWITCH+

Speaker

The mainboard can drive an 8Ω speaker at 0.5 watts. Ensure that alternatives to this specification do not overload the card.

LED interface

The front panel LED indicator for hard disk access is an active low signal (24 mA sink rate).

Keyboard and mouse connector (CN9)

The mainboard 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 "System Keyboard" under the "Present" or "Absent" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

Keyboard and mouse connector (CN9)

Keyboard and mouse connector	
Pin	Signal
1	GND
2	MS V_{CC}
3	MS DATA
4	MS CLOCK
5	GND
6	KB V_{CC}
7	KB DATA
8	KB CLOCK

IrDA connector (CN10)

The IrDA connector can be configured to support wireless infrared modul, with this module and application software such as Laplink, user can transfer file to or form laptops, note books, PDA and printers. The pin asssignment as follows:

IrDA Connector

Pin	Function
1	Vcc
2	FIR RX
3	IR Rx
4	GND
5	IR Tx

IDE hard drive connector (CN11)

You can attach one or two 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 advanced interface supports fster data transfer and allows the IDE hard drive to exceed 528 MB.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connect.

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

1. Connect one end of the cable to CN11. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 one the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector).

   Connect a second drive as described above.

   Unlike drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just on drive, set it as the master.

IDE hard drive connector (CN11)

IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET	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	SIGNAL GND	20	N/C
21	HDDRQ-	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	NC
29	HDACK#	30	GND
31	IRQ14	32	NC
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND
41	VCC	42	MVCC
43	GND	44	N/C

Parallel port connector (CN13)

Normally, the parallel port is used to connect the card to a printer. The mainboard includes an on-board parallel port, accessed through CN13, a 26-pin flat-cable connector. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

Parallel port IRQ

The mainbaord supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Parallel port connector (CN13)

Parallel port connector

Pin	Signal	Pin	Signal
1	/STROBE	2	\AUTOFD
3	DO	4	ERR
5	D1	6	\INIT
7	D2	8	\SLCTINI
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	\ACK	20	GND
21	BUST	22	GND
23	PE	24	GND
25	SLCT	26	N/C

Ethernet 100/10BASE-T connector (CN14)

100Base-Tx Ethernet connector (CN14)			
Pin	Signal	Pin	Sig
1	Tx+	5	N/C
2	TX-	6	RX-
3	RX+	7	N/C
4	N/C	8	N/C

Serial ports (CN15)

The mainboard offers four serial ports: three RS-232 and one RS-232/422/485. These ports allow you to connect them to serial devices (mouse, printers, etc.).

COM 1-4 RS-232/422/485 serial ports (CN15)

COM1, COM2, COM3, COM4 RS-232/422/485 serial port				
	PIN	SIGNAL	PIN	SIGNAL
COM1	1	DCDA	2	DSRA
	3	RXDA	4	RTSA
	5	TXDA	6	CTSA
	7	DTRA	8	RIA
	9	GND	10	N.C.
COM2	11	DCDB (422TXD-/485DATA-)	12	DSRB(422RXD+)
	13	RXDB (422TXD+/485DATA+)	14	RTSB(422RXD-)
	15	TXDB	16	CTSB
	17	DTRB	18	RIB
	19	GND	20	N.C.
COM3	21	DCDC	22	DSRC
	23	RXDC	24	RTSC
	25	TXDC	26	CTSC
	27	DTRC	28	RIC/+5V/+12V
	29	GND	30	N.C.
COM4	31	DCDD	32	RSRD
	33	RXDD	34	RTSD
	35	TXDD	36	CTSD
	37	DTRD	38	RID/+5V/+12V
	39	GND	40	N.C.

Floppy drive connector (CN16)

You can attach up to two floppy disks 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 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).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN16. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on th eother 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 one. Look for a number printed on the circuit board indicating pin number one. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one 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.

Floppy drive connector (CN16)

Floppy drive connector			
Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	NC
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
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	GND	30	READ DATA
31	GND	32	HEAD DELECT
33	GND	34	DISK CHANGE

Power connectors (CN8, CN12, CN2,CN19 and CN17)

Peripheral power connector, -5V, -12V (CN19)

CN8 supplies secondary power to devices which require -5 V and -12 V power.

Peripheral power connector

Pin	Function
1	GND
2	-5 V
3	GND
4	-12 V

Main power connector, +5V, +12V (CN8,CN12)

CN8		CN12	
Pin	Signal	Pin	Signal
1	+12 V	1	GND
2	GND	2	GND
3	GND	3	-5V
4	+5V	4	+5V
		5	+5V
		6	+5V

Fan power connector (CN2 and CN17)

Provides power supply to optional CPU cooling fan. Only present when +5 V and +12 V power is supplied to the board.

Fan power connector

Pin	Signal
1	+5 V
2	+12V
3	GND

CHAPTER 3

Award BIOS Setup

This chapter describes how to configure the BIOS.

Starting setup

The Award BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:
1.By pressing Del immediately after switching the system on, or
2.By pressing Del or pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing Ctr-Alt-Del. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Setup keys

These keys helps you navigate in Setup:

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	Main Menu: Quit and not save changes into CMOS RAM Other pages: Exit current page and return to Main Menu
PgDn/+	Increase the numeric value or make changes
PgDn/-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Change color from total 16 colors. F2 to select color forward, Shift-F2 to select color backward
F3	Calendar, only for Status Page Setup Menu
F4	Reserved
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F8	Reserved
F9	Reserved
F10	Save all the CMOS changes, only for Main Menu

Getting help

Press F1 to pop up 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 Esc or the F1 key again.

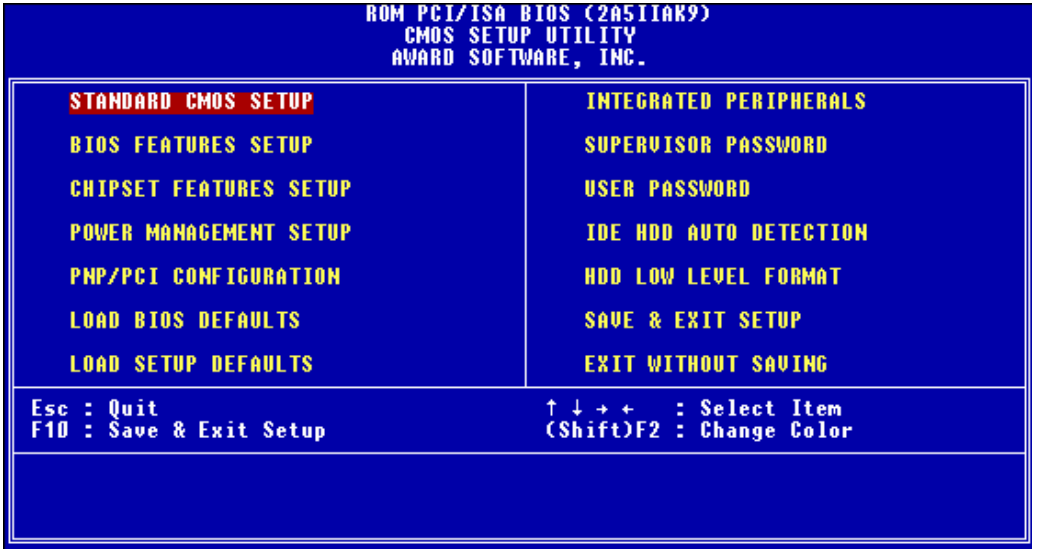
In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the **Award-BIOS** supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing Insert; when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing Ctrl-Alt-Delete.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Award Software or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may causing the system to become unstable.

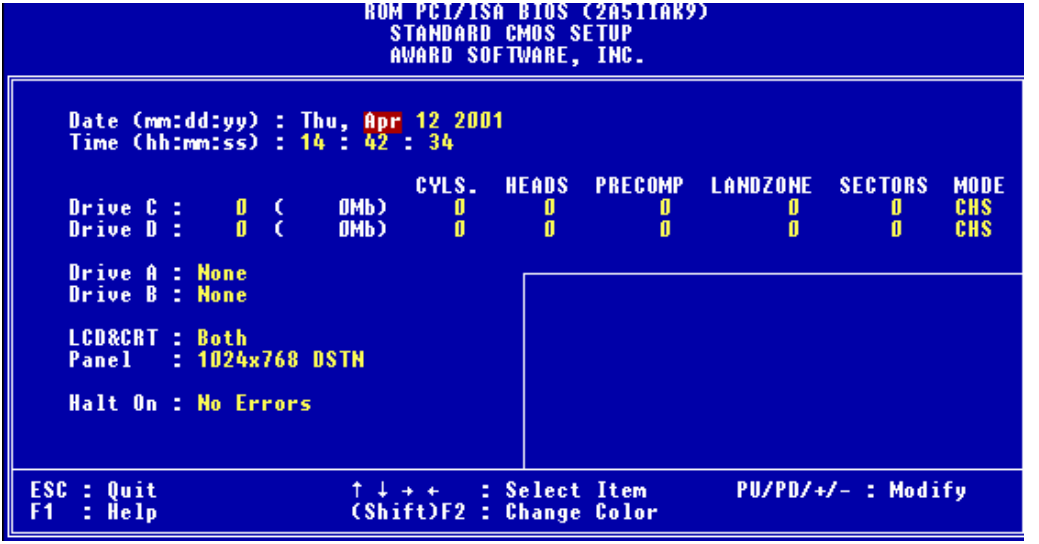
Main setup Menu



Standard CMOS	Options in the original PC AT-compatible BIOS.
BIOS Features	Award Software enhanced BIOS options.
Chipset Features	Options specific to your system chipset.
Power Management	Advanced Power Management (APM) options.
PnP/PCI Configuration	Plug and Play standard and PCI Local Bus configuration options.
Integrated Peripherals	I/O subsystems that depend on the integrated peripherals controller in your system.
Supervisor/User Password Setting	Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access.
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk parameters.

HDD Low Level Format	If supported by your system, this provides a hard disk low level format utility.
Load BIOS Defaults	BIOS defaults are factory settings for the most stable, minimal-performance system operations.
Load Setup Defaults	Setup defaults are factory settings for optimal-performance system operations.
Save & Exit Setup	Save settings in nonvolatile CMOS RAM and exit Setup.
Exit Without Save	Abandon all changes and exit Setup.

Standard CMOS setup



When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu, the screen above is displayed.

This standard setup menu allows users to configure system components such as the date, time, hard disk drive, floppy drive, display, and memory. Online help for each field can be accessed by pressing F1.

Date and Time Configuration

The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

HARD DISKS: Drive C & Drive D

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

***NOTE**: We recommend that you select type AUTO for all drives.*

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

during POST, every time the system boots.

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

1.Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.

2.Select USER and enter values into each drive parameter field.

3.Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

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

•**Size**: Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

• **Cyls**: Number of cylinders

• **Head**: Number of heads

• **Precomp**: Write precompensation cylinder

• **Landz**: Landing zone

• **Sector**: Number of sectors

• **Mode**: Auto, Normal, Large, or LBA

- **Auto**: The BIOS automatically determines the optimal mode.
- **Normal**: Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.

- **Large**: For drives that do not support LBA and have more than 1024 cylinders.

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

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

LCD &CRT

Select your video diplay device:

LCD	Notebook liquid crystal display
CRT	Auxiliary monitor
Both	Both CRT and LCD

Panel

This allows you to select the resolution type of your visual display.

The choices: 1024 x 768 DSTN, 800 x 600 TFT, 1024 x 768 TFT,
640 x 480 18-bit TFT, 640 x 480 12-bit TFT,
800 x 600 DSTN, 640 x 482 DSTN, 640 x 480 MONO

Halt On

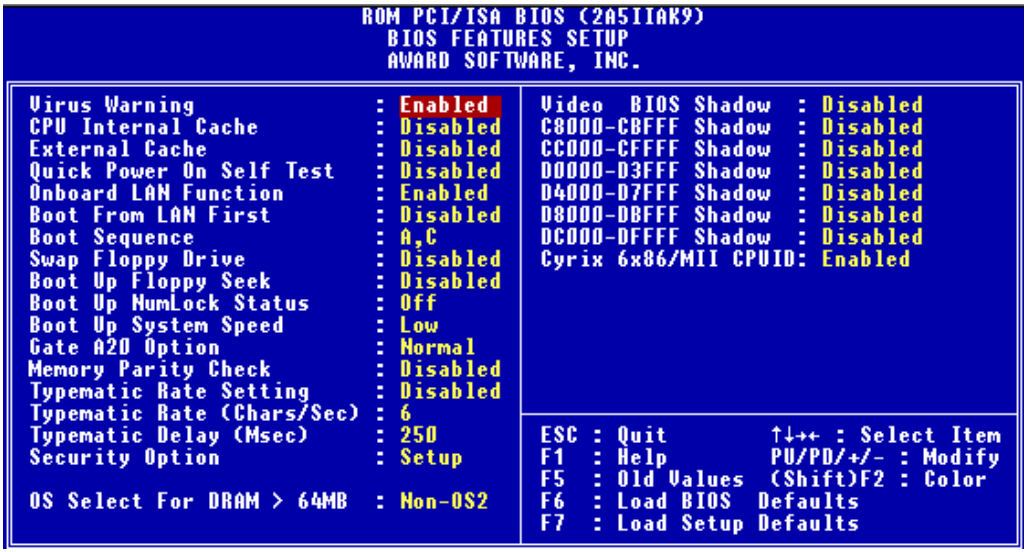
During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

- **No errors:** POST does not stop for any errors.
- **All errors If**: the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
- **All, But Keyboard**: POST does not stop for a keyboard error, but stops for all other errors
- **All, But Diskette**: POST does not stop for diskette drive errors, but stops for all other errors.
- **All, But Disk/Key**: POST does not stop for a keyboard or disk error, but stops for all other errors.

•Other Memory

Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.

BIOS features setup



By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen above is displayed.

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.

NOTE: *Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.*

CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) 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.

External Cache

Cache memory is additional memory that is much faster than conventional DRAM. Most but not all modern PC's have additional external 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.

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.

Boot Sequence

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, the BIOS now offers many boot sequence options.

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.

Boot from LAN First

When enabled the BIOS attempts to boot from LAN boot image before it attempts to boot from a local storage device.

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.

Boot Up System Speed Select high to boot at the default CPU speed; select low to boot at the speed of the AT bus. Some andd in peripherals or old software may require a slow CPU speeed. The default setting is high.

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.

The choice: Enabled/Disabled

Typematic Rate (Chars/Sec)- Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30

Typematic Delay (Msec)- Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000

OS Select For DRAM>64MB-Select the operating system that is running with greater than 64MB or RAM on the system.

The choice: Non-OS2, OS2

Shadow

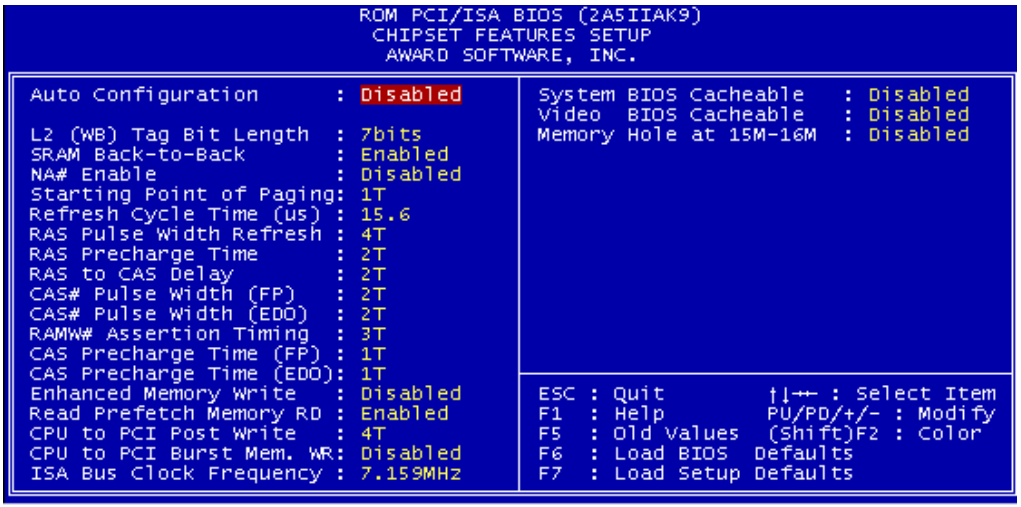
Software that resides in a read-only memory (ROM) chip on a device is called firmware. The AwardBIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C8000-CBFFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

CHIPSET features setup



By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen above is displayed.

Auto Configuration

Auto configuration selects predetermined optimal values of chipset parameters. When disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when auto configuration is enabled.

L2 (WB) Tag Bit Length

The systems uses tag bits to determine the status of data in the cache. Set this field to match the specifications of the system external cache.

SRAM Back to Back

Selecting enabled reduces the latency between 32-bit data transfers, so data is transferred in 64-bit bursts.

NA# Enable

Starting Point of Paging

This value controls the start timing of memory paging operations.

Refresh Cycle Time

Select the period required to refresh the DRAMs, according to DRAM specifications.

RAS Pulse Width Refresh

The system designer must select the number of CPU clock cycles allotted for the RAS pulse refresh, according to DRAM specifications.

RAS Precharge Time

The precharge time is the number of cycles it takes for the TAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

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. Disabled gives faster performance; and enabled gives more stable performance.

CAS# Pulse Width (FP)

The system designer must set the duration of a CAS signal pulse (In timer ticks)

CAS# Pulse Width (EDO)

The system designer must set the duration of a CAS signal pulse (In timer ticks)

RAMW# Assertion Timing

RAMW is an output signal to enable local memory writes. The system designer select normal or faster according to DRAM specifications.

CAS Precharge Time (FP)

Select the number of CPU clocks allocated for the CAS# signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data loss occurs.

CAS Precharge TIME (EDO)

Select the number of CPU clocks allocated for the CAS# signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data loss occurs.

Enhanced Memory Write

Select enabled or disabled for the memory write and invalidate command on the PCI bus. This field must be disabled if cache size is 512KB and the tag address is 8 bits.

Read Prefetch Memory

When this item is enabled the system is allowed to prefetch the next read instruction and initiate the next process.

CPU to PCI Post Write

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

CPU to PCI Burst Memory

When this option is enabled the chipset is allowed to assemble long PCI bursts from the data held in its buffers

ISA Bus Clock Frequency

The ISA bus clock speed is the speed at which the CPU communicates with the AT bus. The speed is measured as a fraction of PCICLKI, the timing signal of the PCI bus. Experiment with setting the bus timing to a lower speed if an installed expansion peripheral has performance problems.

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.

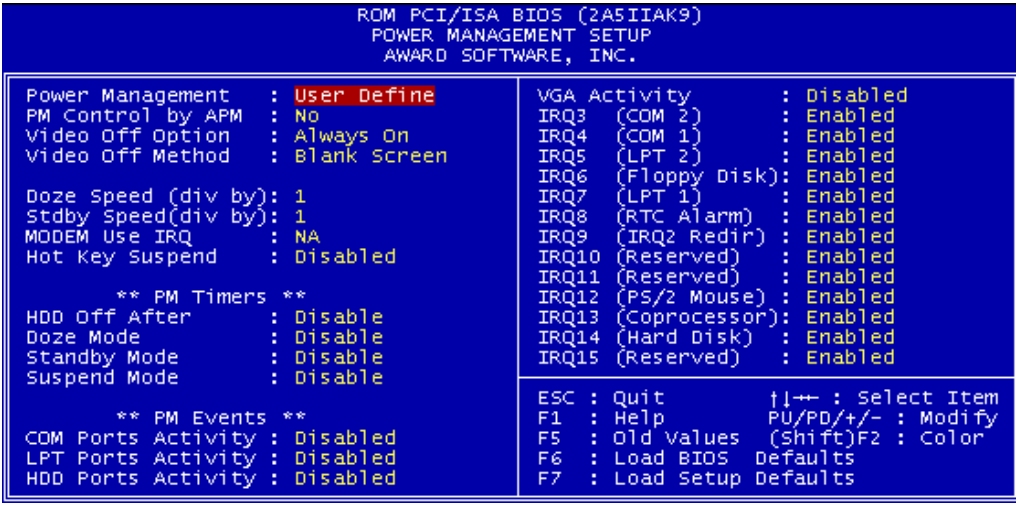
Video BIOS Cacheable

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 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirement.

Power management setup



By choosing the POWER MANAGEMENT option from the INITIAL SETUP SCREEN menu, the screen above is displayed.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the section for each mode, below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

Doze Mode

After the selected period of system inactivity, the CPU clock throttles to a small percentage of its duty cycle — between 10 percent and 25 percent for most chipsets. All other devices still operate at full speed.

Standby mode

After the selected period of system inactivity, the CPU clock stops, the board drive enters an idle state, and the L2 cache enters a power-save mode. All other devices still operate at full speed.

HDD Power Down

After the selected period of drive inactivity, any system IDE devices compatible with the ATA-2 specification or later power manage themselves, putting themselves into an idle state after the specified time-out and then waking themselves up when accessed.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Hot Key Suspend

Select enabled if your system has a hot key for suspend.

IRQ3 (COM2)
IRQ4 (COM1)
IRQ5 (LPT2)
IRQ6 (Floppy Disk)
IRQ7 (LPT1)
IRQ8 (RTC Alarm)
IRQ9 (IRQ2 Redir)
IRQ10 (Reserved)
IRQ11 (Reserved)
IRQ12 (PS/2 mouse)
IRQ13 (Coprocessor)
IRQ14 (Hard Disk)
IRQ15 (Reserved)

As able the default setting are Disable.

PM Control of APM

If advanced power management is installed on your system, selecting yes gives better power management.

Video Off Option

Selects the power saving modes during which the monitor goes blank.

Always On	Monitor remains on during power saving modes.
Suspend-off	Monitor blanked when system enters suspend mode.
Suspend Standby-off	Monitor blanked when system enters either suspend or standby mode.
All modes-off	Monitor blanked when system enters any power saving mode.

Video Off Method

Determines the manner in which the monitor is blanked.

V/H SYNC+Blank	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the display power management signaling standard of the video electronics standards association. Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

HDD Off After

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active. Selecting suspend tells the drive to power down immediately.

Power Management Events

COM Ports Activity

When enabled, if the com port system or IRQs has any sort of activity, the system will awake.

LPT Ports Activity

When enabled, if the LPT port system or IRQs has any sort of activity, the system will awake.

HDD Ports Activity

When enabled, if the HDD port system or IRQs has any sort of activity, the system will awake.

VGA Activity

When enabled, if the VGA port system or IRQs has any sort of activity, the system will awake.

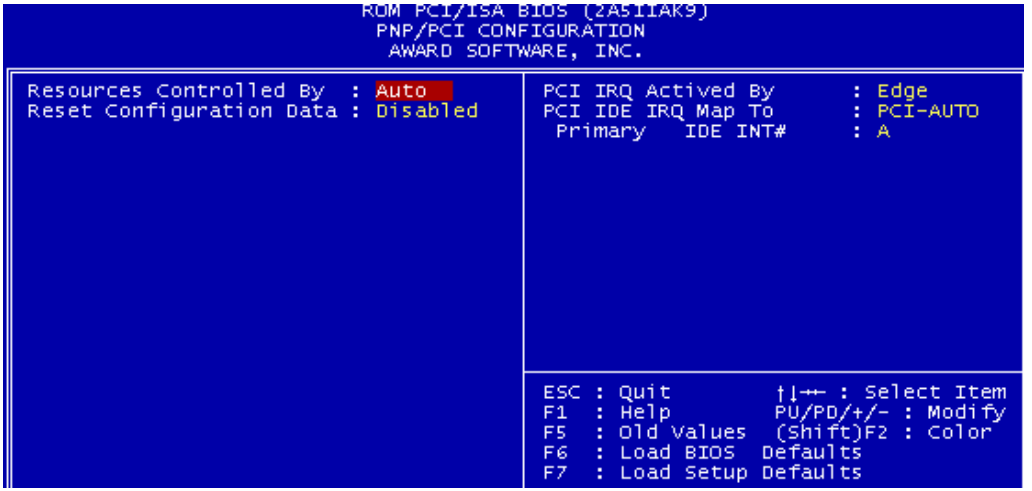
Doze Speed

Select a divisor to reduce the CPU speed during Doze mode to a fraction of the full CPU speed.

Standby Speed

Select a divisor to reduce the CPU speed during Standby mode to a fraction of the full CPU speed.

PNP/PCI configuration setup



By choosing the PNP/PCI CONFIGURATION SETUP option from the initial SETUP SCREEN menu, the screen above is displayed.

PCI IDE IRQ Map to

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ 15 for secondary.

Resources Controlled By

The Plug and Play AwardBIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

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 cannot boot.

PCI IRQ Activated by

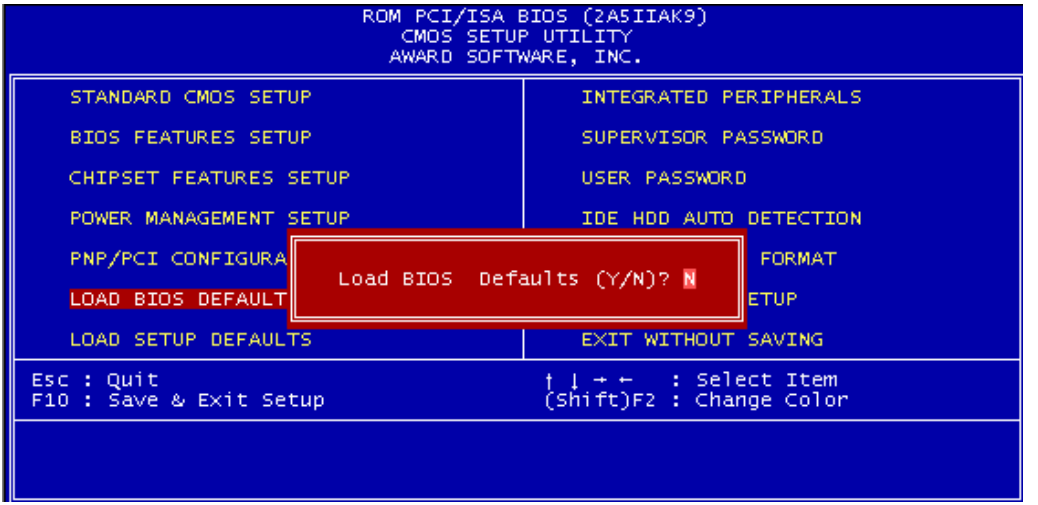
Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.

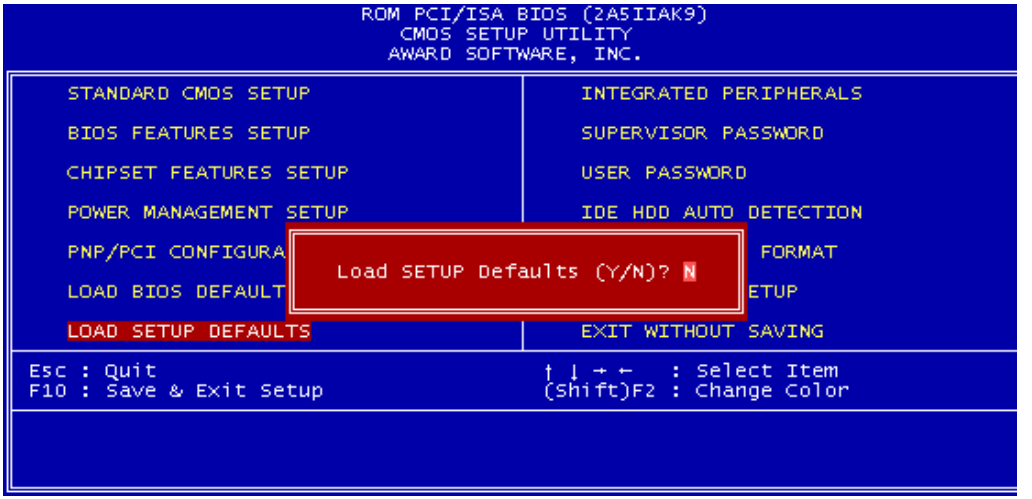
Primary IDE INT#

Each PCI peripheral connection is capable of activating up to four interrupts: INT#A, INT#B, INT#C and INT#D. By default a PCI connection is assigned INT#A. Assigning INT#B has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary had secondary IDE INT# field defaults to values appropriate for two PCI IDE channels, with the primary PCI IDE channels having a lower interrupt than the secondary.

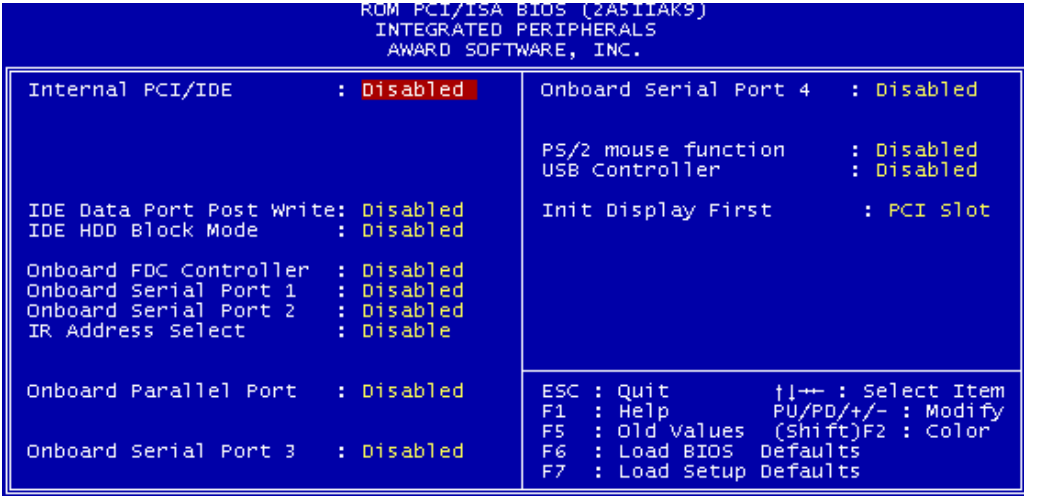
Load BIOS defaults/Load setup defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. The BIOS DEFAULTS provides the most stable settings, though they do not provide optimal performance. LOAD SETUP DEFAULTS, on the other hand, provides for maximum system performance. If the stored record created by the setup utility becomes corrupted (and therefore unusable), BIOS defaults will load automatically when you turn the Gene-4310 on.





Integrated peripherals setup



By choosing the INTEGRATD PERIPHERALS option from the initial SETUP SCREEN menu, the screen above is displayed.

Internal PCI/IDE

The chipset contains a PCI IDE interface that supports two IDE channels: Primary (IRQ14) and Secondary (IRQ15). Each channel supports two IDE devices, so the system is capable of supporting a total of four IDE devices. Select Primary, Secondary, or both to active chipset IDE interfaces installed on your system board.

IR Address select: Set IR address as (2F8H, 3E8H, 2E8H, 3E0H, 2E0H, 3F8H)

Onboard parallel port

You can enable or Disable the parallel port address / IRQ as 278/ IRQ5, 378/IRQ7, 3BC/IRQ7, for user option.

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

Normally, the main board's 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.

Selections of logical COM port addresses are as follows. (3F8/ IRQ4, 3E8/IRQ5, 2F8/IRQ3, 2E8/IRQ10)

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.

USB Controller

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

Init Display First

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

The choice: PCI slot, onboard

PS/2 Mouse Function Control

If your system has a PS/2 mouse port and you install a serial pointing device, select disabled.

IDE Data Port Post Write

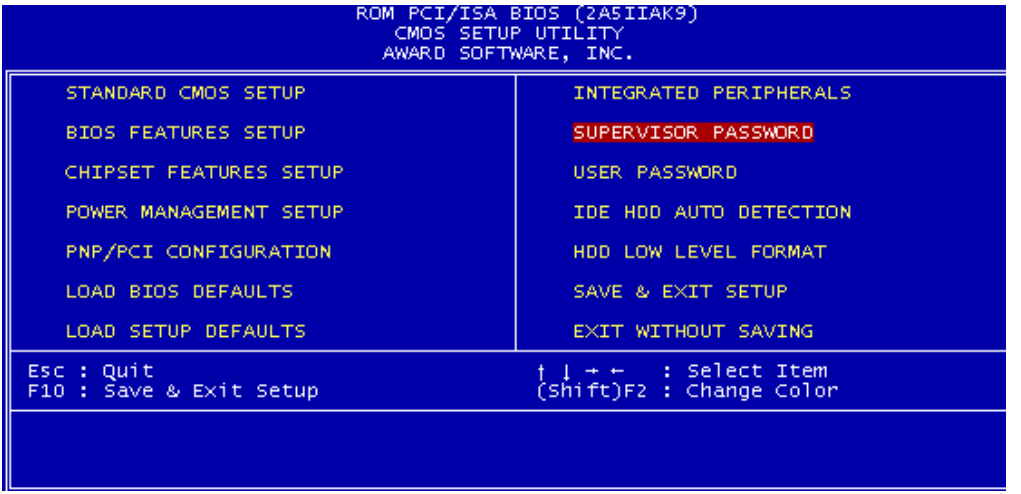
Selecting enabled speeds up processing of drive reads and writebut may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to disabled.

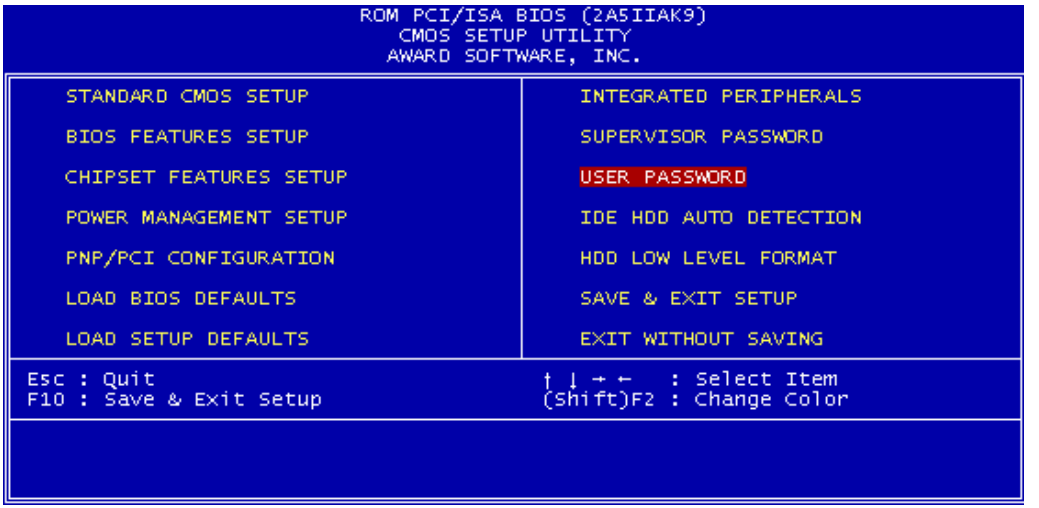
IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

Supervisor/User password setting

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





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:

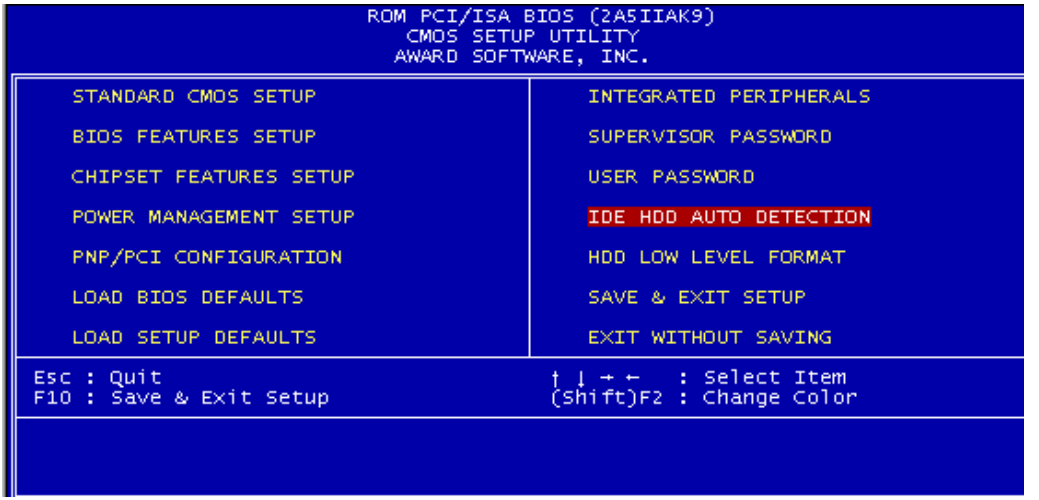
System Enter a password each time the system boots and when ever you enter Setup.

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.*

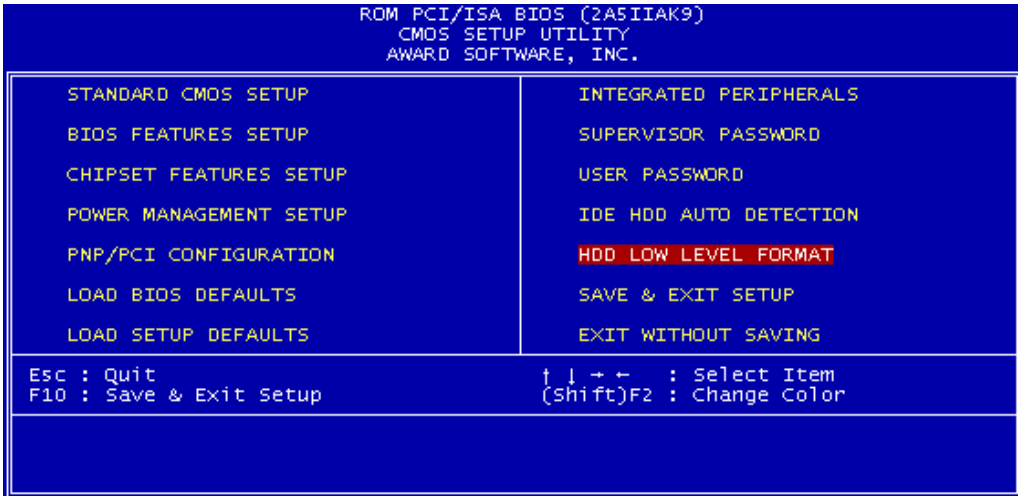
IDE HDD auto detection

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration. You need to repeat the setup for each of the IDE combinations:



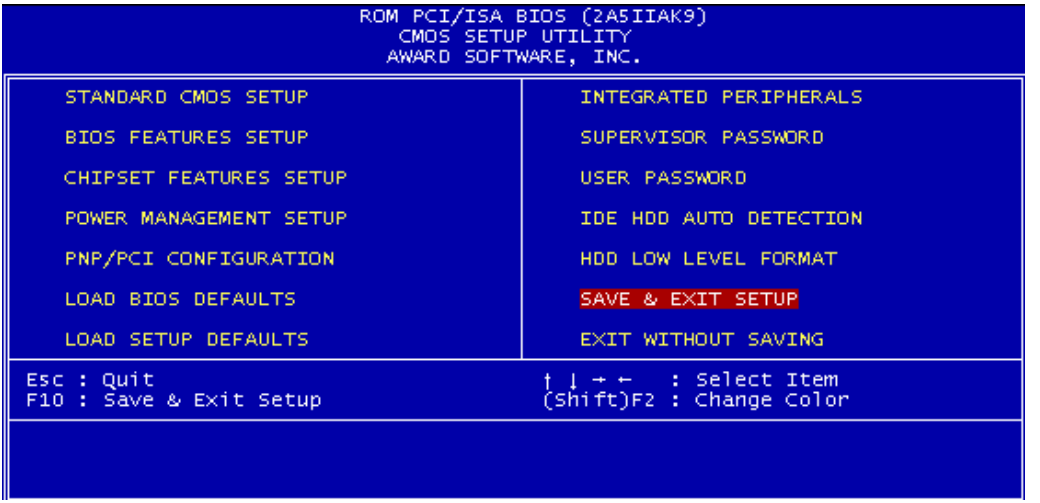
HDD Low Level Formatt

If supported by your system, this provides a hard disk low level format utility.



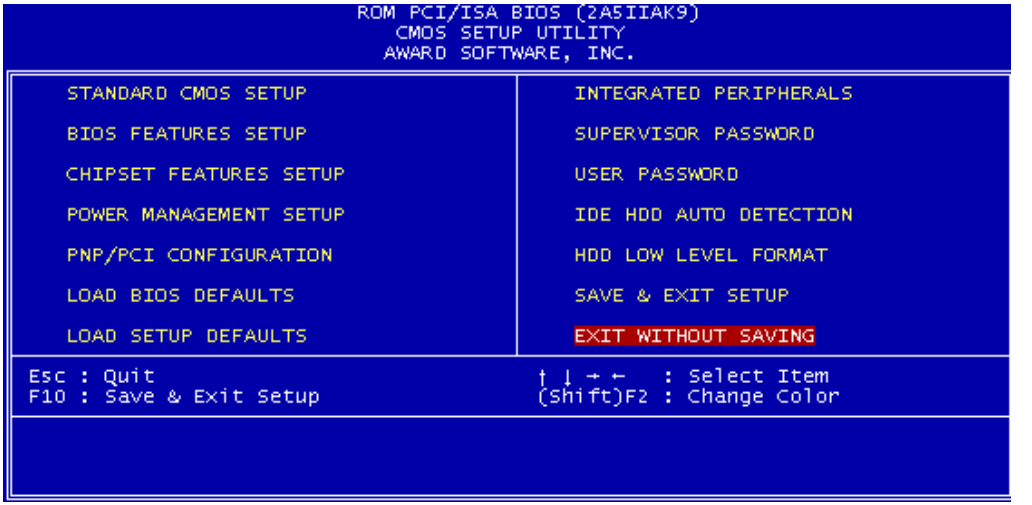
Save & exit setup

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



Exit without saving

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



CHAPTER 4

C&T69000 Flat Panel/CRT Controller Display Drivers and Utilities

This chapter provides information about:

- Driver types and installation

Software drivers

This chapter describes the operation and installation of the display drivers supplied on the Supporting CD-ROM that are shipped with your product.

The onboard VGA adapter is based on the CHIPS VGA Flat Panel/CRT controller and is fully IBM VGA compatible. This controller offers a large set of extended functions and higher resolutions. If you intend to use your VGA adapter in standard VGA modes only, you do not need to install any of these drivers. Since your VGA adapter is fully compatible, it does not require any special drivers to operate in standard modes.

The purpose of the enclosed software drivers is to take advantage of the extended features of the CHIPS VGA Flat Panel/CRT controller.

Hardware configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.

Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver from the Supporting CD-ROM, you should:

- Know how to copy files from a CD-ROM to a directory on the hard disk
- Understand the MS-DOS directory structure

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information before you proceed with the installation.

Before you begin

Make sure you know the version of the application for which you are installing drivers. The Supporting CD-ROM contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

Windows® 95/98/2000

These drivers are designed to work with Microsoft® Windows®. You just install these drivers through the Windows® operating system.

Driver installation

1. Install Windows® 95 as you normally would for a VGA display. Click the Start button, go to Settings and click on Control Panel. Choose the Display icon and double click on the icon. In the Display Properties window, show as figure 1:

figure 1

Click the setting buttom, then click the Advanced Properties icon into the Advanced Display properties windows, show as figure2:

figure 2

click on Change Display Type. In the Change Display Type window, click on the Change button under Adapter Type into the select Device window show as figure 3: This will bring up the Select Device window.

figure 3

2. Place the Supporting CD-ROM in your CD-ROM drive.

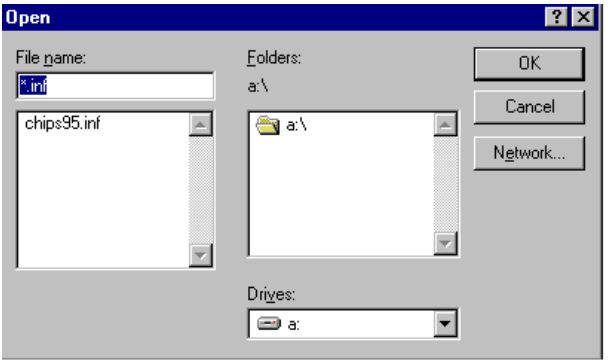


figure 4

In the Select Device window, click on Have Disk, Select Browse, and find the Win95 driver "chips95.inf" in the Supporting CD-ROM:

cd-rom: \CD ROM\model name\driver\vga driver
\win95\chips95.inf and then click OK.

"cd-rom" : the drive letter of your CD-ROM drive

"model name" : the model number of your product

The name of the Chips And Tech "69000 PCI " driver will appear highlighted in the Models list boxfhow as figure. Click OK to start the driver installation show as figure 5:

figure 5

3. Once the installation is complete, the Advanced display Properties window will reappear. Show as figure 6:

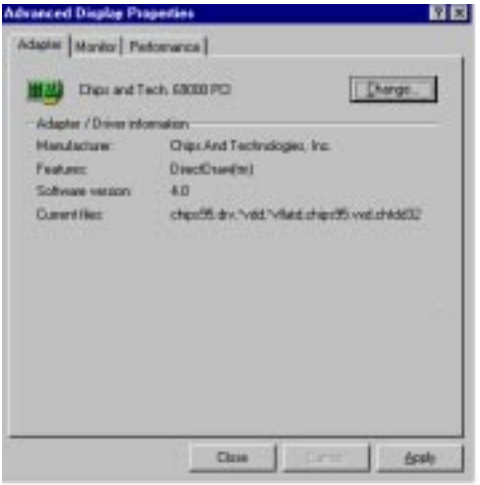


figure 6

Click on close to close the window. Then the Display Properties window will reappear. Show as figure 7:

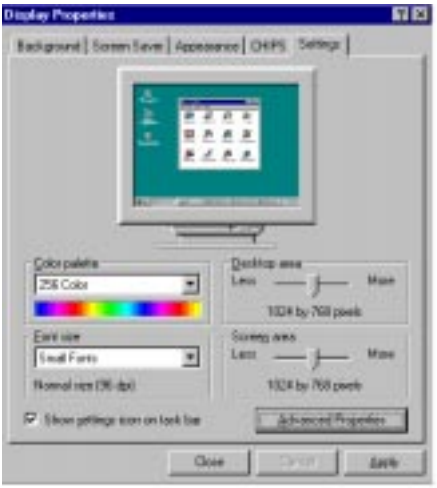


figure 7

Click on Apply. Restart the system for the new settings to take effect, show as figure 8:

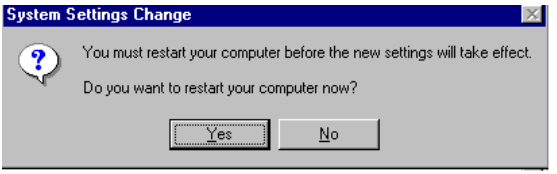


figure 8

Windows® 3.1

These drivers are designed to work with Microsoft Windows Version 3.1. You should install these drivers through Windows.

Driver installation

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.
2. Place the Supporting CD-ROM into your CD-ROM drive. In Windows Program Manager, choose File from the Options Menu. Then from the pull-down menu, choose Run. At the Command Line prompt, type.

   cd-rom:\CD ROM\model name\driver\vga driver\win31\setup.exe

   Press the <ENTER> key or click OK to begin the installation.

   "cd-rom" : the drive letter of your CD-ROM drive

   "model name" : the model number of your product

At this point the setup program locates the directory where Windows is installed. For proper operation, the drivers must be installed in the Windows subdirectory.

3. Press <ENTER> to complete the installation. Once completed, you can find the icon Chips CPL under the Control Panel. The icon allows you to select and load the installed drivers.

OS/2

These drivers are designed to function with the OS/2 Version 4.0, 3.0 and 2.11 operating systems.

To install this driver, do the following steps:

1. Open an OS/2 full screen or windowed session.
2. Place the Supporting CD-ROM into your CD-ROM drive.
3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

   cd-rom :\CD ROM\model name\driver\vga driver\os2\setup.cmd

   "cd-rom" : the drive letter of your CD-ROM drive

   "model name" : the model number of your product

When the Setup Program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

A log of the information output during the install can be found

in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:

   1. Open the OS/2 System folder.
   2. Open the System Setup folder.
   3. Open the Display Driver Install Object.

This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

   4. When the Display Driver Install window appears, select Primary Display and then select OK.
   5. When the Primary Display Driver List window appears, select "Chips and Technologies 69000" from the list of adapter types, then select OK or install the video driver.

6. When the installation is complete, you will need to shut down and then restart the system for the changes to take effect. Make sure to remove the installation diskette before restarting the system.

Windows® NT 3.51

These drivers are designed to work with Microsoft® Windows®.

Driver installation

1. Install Windows® NT 3.51 as you normally would for a VGA display. Click the Star buttom, go to Settings and click on Control Panel icon. Then choose the Display and double click on the icon. In the Display Properties window, click the Setting buttom, then click the Display Type buttom into the Display Type windows, then click on Change buttom from the Adapter Type icon. And click on Have Disk buttom in the change display window.

2. Place the Supporting CD-ROM into your CD-ROM drive.

   and type:

   cd-rom: \CD ROM\model name\drive\vga drive\
   win98 nt\windows.nt\nt35\Oemsetup.inf

   "cd-rom" : the drive letter of your CD-ROM drive

   "model name" : the model number of your product

   Select the adapter "Chips and Tech 69000PCI" and click OK.

   Click on Install to install the selected driver. Once the installation is complete, shut down and restart the system.

Windows® NT 4.0

Driver installation

1. Install Windows® NT 4.0 as you normally would for a VGA display. Click the Star buttom, go to Settings and click on Control Panel icon. Then choose the Display and double click on the icon. In the Display Properties window, click the Setting buttom, then click the Display Type buttom into the Display Type windows, then click on Change buttom from the Adapter Type icon. And click on Have Disk buttom in the change display window.

2. Place the Supporting CD-ROM into your CD-ROM dirve. In the Select Device window, click on Have Disk, select "Browse" and find the NT 4.0 driver from:

   cd-rom : \CD ROM\model name\dirver\vga driver\
   win98 nt\windows.nt\nt40\Oemsetup.inf

   "cd-rom" : the drive letter of your CD-ROM drive

   "model name" : the model number of your product

   and then click OK. The name of the Chips and Technologies, Inc. Video Controller driver will appear highlighted in the Modules list box. Select Chips and Tech. 69000 and Click OK. Click OK to start the driver installation.

3. Once the installation is complete, the Change Display Type window will reappear. Click on close to close the window. Then the Display Properties window will reappear. Click on Apply. Restart the system for the new settings to take effect.

APPENDIX A

Programming the Watchdog Timer

The mainboard is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial stand-alone and unmanned environments.

Programming the watchdog timer

An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or un-manned applications. When the watchdog timer activates(CPU processing has come to a halt), it can reset the system, or generate an interrupt on IRQ10, IRQ11, IRQ15, NMI. This can be set via I/O Port 444, the functions as following:

0 : RESET
1 : IRQ10
2 : IRQ15
3 : IRQ11
4 : NMI

If you decide to program the watchdog timer, you must write data to I/O port 443 (hex). The output data is a value timer. You can write from 80 (hex) to FF (hex) for input minute data plus from 00 (hex) to 7F (hex) for input second data, and the related timer is 2 second to 127 minutes plus 127 seconds sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should write I/O port 80 (hex) a Hex value.

The following procedure is a sample program for the watchdog timer:

- Type C:\DOS\Debug <ENTER>
- To start watchdog timer and set function "Reset" type;
  o 444 0 <Enter>; out 444h data 0
- To input Watchdog timers time-out interval of 5 seconds type;
  o 443 05 <Enter>; out 443h data 05
- To disable the watchdog timer type;
  o 80 x <Enter>; out 080h data x (x can be any Hex value)

The time interval data of the watchdog timer is shown in binary code (8 bits).

8	7	6	5	4	3	2	1
x							

If bit 8 is "0" = To input "second"

Sample 2 : 5 seconds	0	0	0	0	0	1	0	1