

MB-562

All-in-One LPX Pentium MMX
Mainboard

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 UNDESIRE 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 AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND , IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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Packing list

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

- 1 All-in-One LPX Mainboard
- 1 User's Manual (this book)
- 1 utility disk with Ethernet drivers
- 4 utility disks with PCI SVGA utility programs and drivers for DOS, Windows 3.1, Windows 95, windows NT 3.51/4.0 and OS/2
- 3 utility disks with Audio utility programs and drivers for DOS, Windows 3.1, and Windows 95
- 1 primary IDE cable (40-pin)
- 1 secondary IDE cable (44-pin)
- 1 floppy disk drive cable (34-pin)
- 1 parallel port adapter (26-pin) and COM4 adapter (RS-232/422/485) kit
- 1 screw and support accessory

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

Notice

Dear Customer,

Thank you for purchasing the MB-562 board. The user manual is designed to help you to get the most out of the MB-562, please read it thoroughly before you install and use the board. This product that you have purchased comes with a one-year limited warranty; AAEON will not be responsible for any misuse of the product. Therefore, we strongly urge that user first read the manual before using the product.

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

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General Information

This chapter gives background information on the MB-562.

Sections include:

- Specifications
- Layout and dimensions

Introduction

The MB-562 is an all-in-one LPX Pentium MMX computer with an on-board PCI SVGA controller, a PCI Ethernet interface and a PISA expansion slot (one dedicated PISA slot for PCI/ISA riser card option). Equipped with 64 bits and local bus architecture, the MB-562 releases Pentium's full potential and provides unprecedented performance compared to current 32-bit processor boards. Supports Intel Pentium P54C/P55C(MMX), AMD K5/K6, and Cyrix M1/M2 CPUs. The MB-562 offers all the functions of an industrial computer on a single board, but fits in the space of LPX form factor (only 225mm x 220mm). For maximum performance, the MB-562 also supports 2nd level cache sized 512 KB.

On-board features include four serial ports (three RS-232 and one RS-232C/422/485), one multi-mode parallel (ECP/EPP/SPP) port, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high-speed PCI IDE controller supports both PIO bus master and Ultra DMA/33 modes. Up to four IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives, and other IDE devices.

The MB-562 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 MB-562 is a highly integrated, all-in-one LPX computer. All on-board peripherals (including PCI flat panel/VGA interface, PCI Ethernet, and PCI IDE) adopt PCI technology and operate through an internal PCI bus. Integrating a Pentium board with PCI architecture has unleashed a revolutionary level of performance.

Features

- Accepts Intel Pentium MMX 166-233MHz, AMD-K6/200~300AFR, Cyrix/IBM/6x86MX-PR166~266GP, and IDT winchip C6 180~225 MHz.
- Award Flash BIOS: Flat-Panel configured by programming Flash chip
- 2nd level cache: supports Pipeline burst RAM module, 512 KB cache memory
- 32-bit PCI-bus SVGA controller, supports flat panel (TFT, STN, mono and EL) and CRT displays
- 32-bit PCI-bus Ethernet interface
- One PISA slot for PCI/ISA riser card
- Built-in, bus-master PCI IDE controller supports both PIO bus master and Ultra DMA/33 mode up to four IDE devices (large hard disk, CD-ROM, tape backup, etc.)
- Supports Fast Page normal and EDO type DRAM, from 8 MB to 128 MB of DRAM
- One 168-pin SDRAM DIMM socket
- Two USB ports on board
- One 32-pin DIP socket supports M-Systems DiskOnChip 2000 series, memory capacity from 2 MB to 72 MB
- Two enhanced multi-mode SPP/EPP/ECP parallel ports, four serial ports: three RS-232 and one RS-232/422/485 selectable
- Green function: supports doze/standby/suspend modes
- Dimensions: 225mm x 220mm

Specifications

Standard MB functions

CPU: Intel Pentium MMX 166~233 MHz,
Cyrix / IBM / SGS 6x86-PR 166 ~266GP
AMD-K6/200~300AFR
IDT Winchip C6 188~225 MHz

BIOS: Award 128KB FLASH BIOS

Chipset: SiS 5582

Super I/O: SMC37C669, and UM8669F

Cache memory: Onboard 512 KB pipeline burst RAM 2nd level cache

RAM memory: 8MB to 128MB. Two 72-pin SIMM socket, and one 168-pin SDRAM DIMM socket

IDE hard disk drive interfaces: Supports both PIO bus master and Ultra DMA/33 mode up to four IDE (AT bus) drives. BIOS auto-detect. (44 pin, patch 2.0mm connector x 1; 40 pin, pitch 2.54mm connector x 1)

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: Two bi-directional parallel ports. Ports can be configured to LPT1, LPT2, LPT3 or disabled. Support 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.

DMA channels: 7

Interrupt levels: 15

Keyboard/mouse connector: 6 pin mini DIN connector x 2 support standard PS/2 keyboard and PS/2 mouse.

USB ports: Two USB ports on board.

Battery: Lithium battery for data retention of up to 10 years.

Power management: I/O peripheral devices support power saving and Doze/Standby/Suspend modes. AMP 1.2 compliant.

Flat panel VGA interface (PCI Bus)

Chipset: C&T 65550

Display memory: 2MB

Display type: Supports CRT and flat panel (TFT, DSTN, mono and EL) display. Can display both CRT and flat panel simultaneously.

Resolution: 1024x768 @64K colors

Ethernet interface (PCI Bus)

Chipset: Realtek RTL8029AS PCI bus Ethernet controller.

Ethernet interface: Software compatible with Novell NE2000 driver. On board 10Base-T. Software drivers optional. Supports remote boot ROM function. [Optional]

Sound interface (ISA Bus)

Compatible with Sound Blaster, Sound Blaster Pro, and Windows Sound System.

Dual DMA support w/FIFO buffers, full duplex operation.

MPC level-2 compatible MIDI interface.

Game Port.

SSD interface

One 32-pin DIP socket supports M-System DiskOnChip 2000 series, memory capacity from 2MB to 72MB.

Expansion slots

PISA slot: One dedicated PISA slot for PCI/ISA riser card

Mechanical and environmental

Power supply voltage: +5V (4.75V to 5.25V)

Max. power requirements:

Bare Board: +5V @ 1.5A

Pentium MMX-233: +5V @ 6A

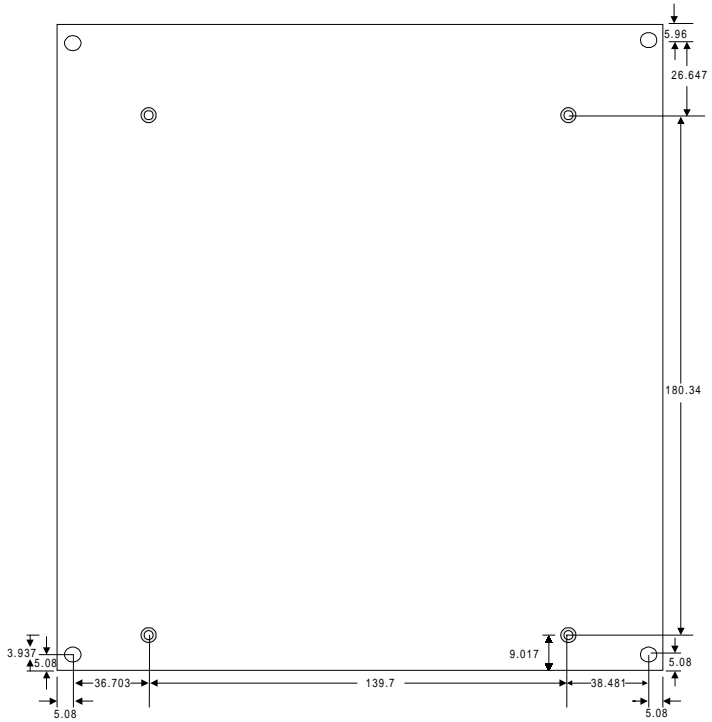
AMD K6-233: +5V @ 10A

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

Board size: 225mm (L) x 220mm (W)

Weight: 1.1 lb. (0.5 Kg)

Board dimensions



Dimensions in mm

MB-562 dimensions

Installation

This chapter describes how to set up the mainboard 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

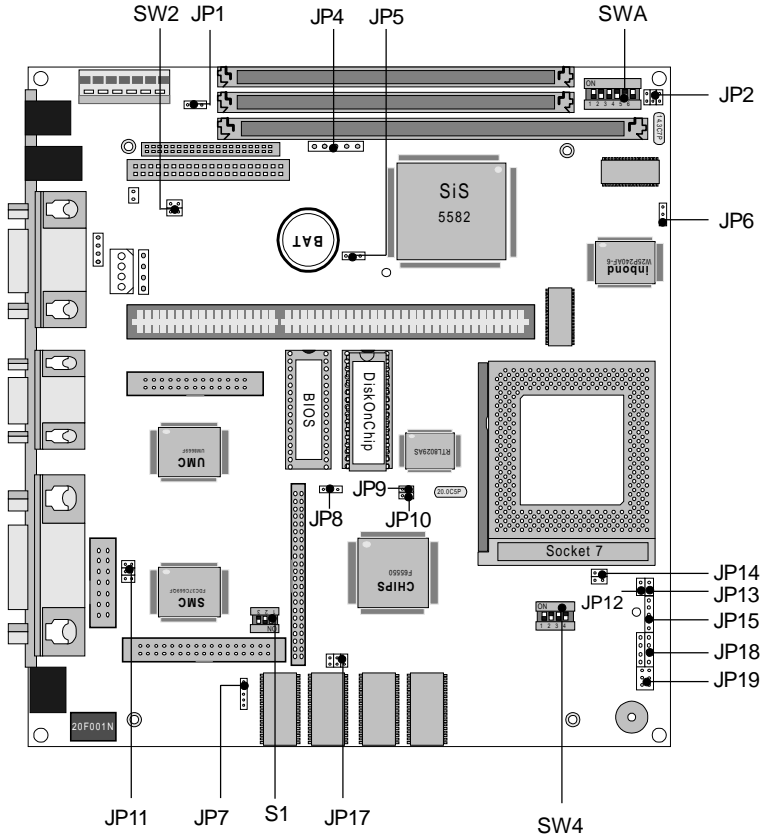
Connectors on the board link them to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

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

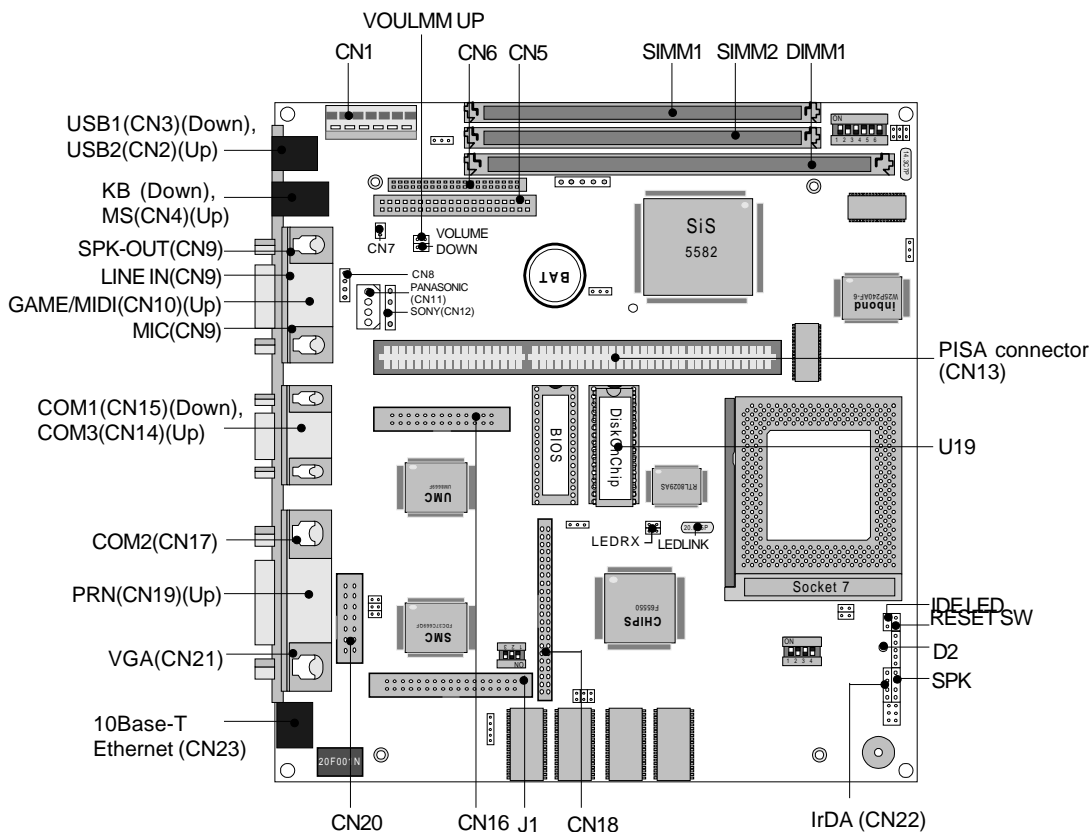
Jumpers	
Label	Function
SWA1,SWA2,SWA3	System clock setting
SWA4,SWA5,SWA6	CPU frequency ratio
SW4-1,SW4-2,SW4-3,SW4-4	CPU voltage setting
S1-1, S1-2,S1-3	DOC address select
(SW2)VOLUME UP	Volume control-Up header
(SW3)VOLUME DOWN	Volume control-Down header
J1	Floppy drive connector
JP1	SIMM type select
JP2	Internal VGA setting
JP4	GPIO connector
JP5	Clear CMOS
JP6	PCI clock setting
JP7	LCD backlight control
JP8	LCD signal select
JP9	Ethernet active signal LED
JP10	Ethernet link signal LED
JP11	RS-232/422/485 select
JP12	IDE LED connector
JP13	Hardware reset
JP14	CPU type select
JP15	PowerLED & Keylock
JP17	LCD driving voltage select
JP18	System speaker
JP19	COM2/IrDA select

Connectors	
Label	Function
CN1	Power connector
CN2	USB2 connector
CN3	USB1 connector
(CN4) down	Keyboard connector
(CN4) up	PS/2 mouse connector
CN5	IDE hard drive connector (40 pin)
CN6	IDE hard drive connector (44 pin)
CN7	Modem interface connector
CN8	Stereo Line-Out connector
CN9	Stereo Line-In, MIC & Speaker-out connector
CN10	Game/Joystick/MIDI connector
(CN11)PANASONIC	Panasonic CD Audio Input connector
(CN12)SONY	SONY CD Audio connector
CN13	PISA card slot
CN15/CN17/CN14	COM1/COM2/COM3 for RS-232 connector
CN16	Parallel port connector (26 pin)
CN18	LCD connector
CN19	Parallel port connector (DB-25)
CN20	RS-232/422/485 connector (COM4)
CN21	SVGA connector
CN22	IrDA connector
CN23	10Base-T connector
D2	Power LED
DIMM1	SDRAM socket
SIMM1,SIMM2	FPM/EDO DRAM socket
U19	DiskOnChip socket

Locating jumpers

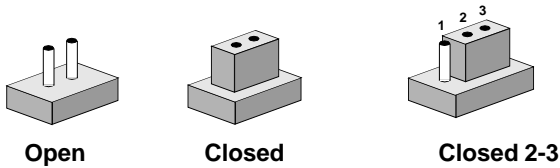


Locating connectors

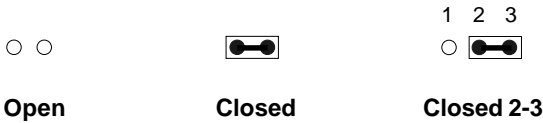


Setting jumpers

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.



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



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 damage the CPU.**

System clock setting (SWA1, SWA2, SWA3)

SWA1, SWA2 and SWA3 are used to synchronize the system clock with the CPU type. You may need to adjust the CPU clock according to the base CPU speed.

System clock select (SWA1, SWA2, SWA3)					
	50MHz	55MHz	60MHz	66MHz*	75MHz
SWA1	ON	ON	OFF	ON	OFF
SWA2	ON	ON	ON	OFF	ON
SWA3	ON	OFF	ON	ON	OFF

* Default

CPU frequency ratio (SWA4, SWA5, SWA6)

CPU frequency ratio (SWA4, SWA5, SWA6)									
System frequency									
	1.5x	2x	2.5x	3x*	3.5x	4x	4.5x	5.0x	5.5x
SWA4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SWA5	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF
SWA6	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF

* Default

CPU voltage setting (SW4-1, SW4-2, SW4-3, SW4-4)

SW4-1, SW4-2, SW4-3, SW4-4 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{cc} .

CPU voltage setting (SW4-1, SW4-2, SW4-3, SW4-4)				
CPUVcc	SW4-1	SW4-2	SW4-3	SW4-4
2.2V	OFF	OFF	ON	OFF
2.5V	OFF	ON	OFF	ON
2.7V	OFF	ON	ON	ON
2.8V*	ON	OFF	OFF	OFF
2.9V	ON	OFF	OFF	ON
3.1V	ON	OFF	ON	ON
3.2V	ON	ON	OFF	OFF
3.4V(STD/VER)	ON	ON	ON	OFF
3.5V	ON	ON	ON	ON

* Default

DOC address select (S1-1, S1-2, S1-3)

The DiskOnChip 2000 occupies an 8 Kbyte window in the upper memory address range of CC00 to DC00. You should ensure this does not conflict with any other device's memory address.

DiskOnChip 2000 memory address (S1-1, S1-2, S1-3)			
Memory address (HEX)	S1-1	S1-2	S1-3
CC00	OFF	OFF	OFF
D000*	OFF	OFF	ON
D400	OFF	ON	OFF
D800	OFF	ON	ON
DC00	ON	OFF	OFF

* Default

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

Floppy drive connector (J1)

You can attach up to two floppy disks to the MB-562's on-board 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 J1. Make sure that the red wire corresponds to pin 1 on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector. If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

Installing DRAM (SIMM1, SIMM2, DIMM1)

The MB-562 LPX Mainboard provides two 72-pin SIMM (Single In-line Memory Module) sockets and one 168-pin DIMM (Dual-in-line Memory Module). The SIMM supports either Fast Page Mode (FPM) or Extended Data Output (EDO) DRAM with a speed of at least 70 ns. The DIMM supported by this mainboard are always 64-bit wide SDRAM (Synchronous DRAM). Depending on the combination of modules you use, you can install from 8 MB to 128 MB of RAM.

Warning: SDRAM operates at 3.3V while SIMM (FPM/EDO) modules operate at 5V. Unless you have 5V tolerance SDRAM, *DO NOT* use SIMM and SDRAM DIMM at the same time.

Installing SIMMs & DIMM

NOTE 1: Pentium or compatible processors adopt 64 bit data bus. Since 72-pin SIMM can only provide 32 bit data bus width, two SIMM modules are required as one memory bank, and both SIMMs must be the same size and type.

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.

NOTE 2: Do not insert any SIMM that contains more than 24 memory chips. SIMMs contain more than 24 chips exceed the driving capability of new generation chipsets.

SIMM type select (JP1)

MB-562 supports both 3V and 5V SIMM (FPM/EDO DRAM) modules. The configuration is as follows:

SIMM type select (JP1)

5V DRAM*



3V DRAM



* Default

- Notice:
1. The 168-pin DIMM only support 3V SDRAM memory.
 2. Do not use SIMM and DIMM modules in one system

Internal VGA setting (JP2) (for SiS5598 chipset only)

If the core logic chipset is SiS5598, you can enable or disable the internal VGA functions by setting JP2.

Internal VGA setting (JP2)

Enable*



Disable



JP2

* Default.

GPIO connector (JP4) (Reserved)

GPIO connector (JP4)

Pin	Function
1	AGPI01
2	AGPI02
3	AGPI03
4	AGPI04
5	AGPI05

Clear CMOS (JP5)

You can connect an external jumper cap or switch to clear CMOS.

Clear CMOS procedure:

1. Disconnect all power source.
2. Move JP5 from 1-2 to 2-3 for few seconds.
3. Move JP5 back to 1-2.

Clear CMOS (JP5)

Protect*



Clear CMOS



*Default

PCI clock setting (JP6)

JP6 is used for setting the PCI bus clock to synchronize or asynchronize with the CPU clock. In synchronized mode, the PCI bus clock will be 1/2 CPU clock. In asynchronized mode, the PCI bus clock will be fixed to 33MHz.

PCI clock setting (JP6)

PCI clock	33 MHz	1/2 CPU clock*
-----------	--------	----------------



*Default

LCD backlight control (JP7)

The JP7 is a 5-pin inverter connector which could provide the power for LCD inverter. The following table shows the pin assignments of JP7. The pin-5 "BKL_ON" is normally active "high". Please refer to "Power Management Setup" in the BIOS SETUP Menu and select "LCD off Option" to enable power management.



JP7 offers LCD backlight control signals for your applications. The pin assignments are as follows:

LCD backlight control (JP7)

PIN	Function
1	+12V
2	GND
3	GND
4	NC
5	BKL_ON

LCD signal select (JP8)

You can select the LCD shift clock mode by setting JP8. The following charts show the available options.

LCD signal select (JP8)		
SHF CLK from C&T65550*	ASHF CLK (inverted SHF CLK)	
1 2 3 	1 2 3 	

* Default

Ethernet active/link signal LED (JP9)(JP10)

The mainboard can connect two LED indicators to show the status of the communication link and traffic. The functions are showed as follows:

Ethernet active signal LED (JP9)

A flashing LED indicates that the MB-562 is transmitting or receiving data.




Ethernet link signal LED (JP10)

A continuously lit LED indicates good linkage between the MB-562 and its supporting hub.

COM4 RS-232/422/485 select (JP11)

The COM4 can be configured to operate in RS-232, RS-422, or RS-485 mode. The operation mode can be set via (JP11).

COM4 RS-232/422/485 select (JP11)

	*RS-232	RS-422	RS-485
JP11			

* Default

IDE LED connector (JP12)

You can connect an LED to indicate that an IDE device is in use. The pin assignments for this jumper are as follows:

IDE LED connector (JP12)

Pin	Function
1	-R/W IDE
2	Pull high

Reset switch (JP13)

You can connect an external switch to easily reset your computer. This switch restarts your computer as if you had turned off the power then turned it back on. The following table shows the pin assignments.



Reset switch (JP13)

Pin	Function
1	Ground
2	Reset

CPU type select (JP14)

JP14 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 (JP14)

	Dual-Voltage*	Single-Voltage
J14	2 ○ ○ 1 4 ○ ○ 3	2  1 4  3

* Default

WARNING: Improper setting could damage the CPU.

Power LED and keylock (JP15)

You can connect an LED to indicate when the CPU card is on. Pin 1 of JP15 supplies power to the LED; Pin 3 is the ground.

You can use a switch (or a lock) to disable the keyboard. In this state, the PC will not respond to any input. This is useful if you do not want anyone to change or stop a running program. Simply connect the switch between Pins 4 and 5. The pin assignments appear in the following table:





Power LED and keylock (JP15)

Pin	Function
1	LED Power (+5 V)
2	No Connector
3	Ground
4	Keyboard lock
5	Ground

LCD driving voltage select (JP17)

You can select the LCD driving voltage by setting JP17. The configurations as follows:

LCD driving voltage select (JP17)

5V*	3.3V
5 3 1 	5 3 1 
 6 4 2	 6 4 2

* Default

System speaker (JP18)

The CPU card has its own buzzer. You can disable the internal buzzer and connect an external speaker to JP18.

System speaker (JP18)

Pin	Function
-----	----------

1	Vcc
2	Speaker output
3	Buzzer in *
4	Speaker output *

*Default: connect a jumper between pin 3 and pin 4 for internal buzzer output.

COM2/IrDA select (JP19)

JP19 can be selected as COM2 (RS-232) or IrDA connector active. The setting is as follows:

COM2/IrDA Select (JP19)

COM2 (RS-232)*	IrDA
----------------	------



* Default

Power connector (CN1)

AT Power Connector (CN1)

The following table lists the pin assignments for the Power Connector:

Power Connector			
Pin	Signal	Pin	Signal
1	PG	7	GND
2	+5V	8	GND
3	+12V	9	-5V
4	-12V	10	+5V
5	GND	11	+5V
6	GND	12	+5V

Power LED (D2)

The power LED indicates when the mainboard is on.

USB connectors (USB1/CN3, USB2/CN2)

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

Keyboard and PS/2 mouse connectors (KB/down, MS/up)(CN4)

The MB-562 board provides a keyboard connector and a PS/2 mouse connector. 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 MB-562's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications without the system halt under POST (power-onself-test).

IDE hard drive connectors (CN5, CN6)

You can attach one to four Enhanced Integrated Device Electronics hard disk drives to the MB-562 internal controller. The MB-562's IDE controller uses a PCI local-bus interface. This advanced interface supports faster 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 for CN6. 3.5" drives use a 1 x 40-pin to 2 x 40-pin connector for CN5.

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

1. Connect one end of the cable to CN5 or CN6. 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 on 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 floppy 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 one drive, set it as the master.

Modem interface connector (CN7) (Reserved)

This connector provides chip select signal (MCS) and IRQ input (MIRQ) pins to control external devices such as modem.

Internal stereo Line-Out connector (CN8)

The Internal Stereo Line-Out connector provides the non-amplified output for the stereo channels (left and right). The output is for attaching powered speakers or an external audio amplifier. When used in conjunction with the Speaker Out output, the surround sound function will be activated. The pin assignments appear in the following table:

Stereo Line-Out Connector (CN8)	
Pin	Function
1	Line out-R
2	GND
3	GND
4	Line out-L

Stereo Line-In connector (CN9)

The Stereo Line-In phone-jack is used to attach stereo devices such as cassette, digital audio tape, or minidisk players for playback, mixing, or recording.

Audio Speaker-Out connector (CN9)

The Audio Speaker-Out phone-jack provides the built-in power amplifier outputs for the left and right stereo channels. When used in conjunction with Line-Out output, the surround sound function will be activated.

MIC connector (CN9)

The Microphone In phone-jack is used to attach a microphone for live audio input for playback, mixing, or recording. A 20dB gain can be obtained internally. The microphone input impedance will be around 1.8k ohm.

Game/Joystick/MIDI connector (CN10)

The Game/MIDI Port connector (15-pin D-sub) is used to attach a joystick for game interface or to attach an external FM synthesizer for playback, mixing, or recording.

Panasonic CD Audio-Input connector (CN11)

The Panasonic CD audio input connector is used to connect the audio cable from Panasonic CD-ROM drive for playback, mixing, and recording.

SONY CD Audio-Input connector (CN12)

The SONY CD audio input connector is used to connect the audio cable from SONY CD-ROM drive for playback, mixing, and recording.

Volume Control-Up header (VOLUME UP)(SW2)

This pin header can be connected to an external Volume Control-Up switch.

Volume Control-Down header (VOLUME DOWN)(SW3)

This pin header can be connected to an external Volume Control-Down switch.

Serial port connectors (COM1/CN15, COM2/CN17, COM3/CN14, COM4/CN20)

The MB-562 offers four serial ports: three RS-232 (COM1/CN15, COM2/CN17, COM3/CN14) and one RS-232/422/485 (COM4/CN20). These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

Parallel Port connectors (CN19, CN16)

Normally, the parallel port is used to connect the card to a printer. The MB-562 includes two on-board parallel ports, accessed through CN19 (a DB-25 connector) and CN16 (a 26-pin flat-cable connector). You will need an adapter cable if you do not use a traditional DB-25 connector. The cable has a 26-pin female connector on one end and a DB-25 female connector on the other.

Display connectors (CN21 ,CN18)

The MB-562'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(CN21) and one for flat panel displays(CN18).

The MB-562 Main Board's SVGA connector (CN21) with PCI bus supports monochrome display as well as high-resolution color displays. The card also features a LCD connector (CN18), which allows you to connect various flat panel displays. The following table lists pin assignments of CN18:

LCD connector (CN18)			
Pin	Function	Pin	Function
1	+12V _{DC}	2	+12V _{DC}
3	GND	4	GND
5	+5V _{DC}	6	+5V _{DC}
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	GND	34	GND
35	SHFCLK	36	FLM (V SYS)
37	M	38	LP (H SYS)
39	GND	40	ENABKL
41	N.C.	42	N.C.
43	N.C.	44	N.C.

SVGA connector (CN21)

Pin	Function
1	Red video
2	Green video
3	Blue video
4	Not used
5	GND
6	Red return (GND)
7	Green return (GND)
8	Blue return (GND)
9	Key (no pin)
10	Sync return (GND)
11	Monitor ID (not used)
12	Monitor ID
13	Horizontal sync
14	Vertical sync
15	Not used

IrDA connector (CN22)

The IrDA connector can be configured to support a wireless infrared module. With this module and application software such as Laplink, user can transfer file to or from laptops, note books, PDA and other infrared devices. The pin assignments are as follows:

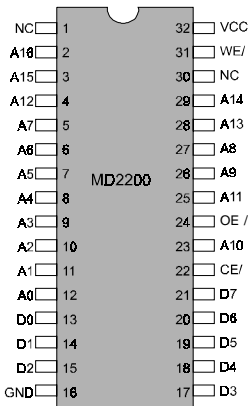
IrDA Connector (CN22)

Pin	Function
1	Rx
2	GND
3	Tx
4	Vcc

DiskOnChip socket (U19)

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

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 72 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 a standard 32-pin EPROM device.



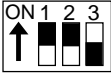
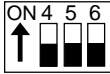






























pin Name	Description	Pin Number	Direction	Note
A0-A12	Address bus	4-12,23,25-27	Inputs	
A13-A16	Address bus	2,3,28,29	Inputs	1
D0-D7	Data bus	13-15,17-21	I/O	
CE/	Chip Enable	22	Input	
OE/	Output Enable	24	Input	
WE/	Write Enable	31	Input	
NC	Not connected	1,30		2
VCC	Power	32		
GND	Ground	16		

Figure1-MD2200 Pin-out

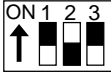
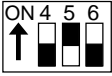

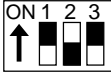
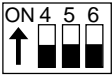
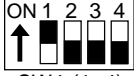
Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

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

CPU jumper setting example

CPU	Internal Clock	SWA1-3 Clock	SWA4-6 Ratio	JP14 Dual/single-Voltage	SW4(1-4) Vcore
Intel Pentium P54C(75)	75MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(90)	91MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(100)	100MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(120)	120MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(133)	133MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(150)	150MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(166)	166MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
Intel Pentium P54C(200)	200MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)

CPU jumper setting example

CPU	Internal Clock	SWA1-3 Clock	SWA4-6 Ratio	JP14 Dual/single-Voltage	SW4(1-4) Vcore
Intel Pentium P55C PP/MT (200)	200MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Intel Pentium P55C PP/MT (233)	233MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)

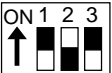

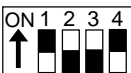





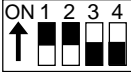






CPU jumper setting example

CPU	Internal Clock	SWA1-3 Clock	SWA4-6 Ratio	JP14 Dual/single-Voltage	SW4(1-4) Vcore
Cyrix MX-PR-166	133MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix MX-PR166	150MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR200	150MHz	 SWA(1~3)	 SWA(1~3)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR200	166MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR233	188MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR233	200MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR266	225MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
Cyrix M2-PR266	233MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)

CPU jumper setting example

CPU	Internal Clock	SWA1-3 Clock	SWA4-6 Ratio	JP14 Dual/single-Voltage	SW4(1-4) Vcore
AMD K5 PR75	75MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
AMD K5 PR90	90MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
AMD K5 PR100	100MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
AMD K5 PR120	120MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)
AMD K5 PR133	133MHz	 SWA(1~3)	 SWA(4~6)	 4 3	 SW4-(1~4)

CPU jumper setting example

CPU	Internal Clock	SWA1-3 Clock	SWA4-6 Ratio	JP14 Dual/single-Voltage	SW4(1-4) Vcore
AMD K6 PR2-166	166MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
AMD K6 PR2-200	200MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
AMD K6 PR2-233	233MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
AMD K6 PR2-266	200MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)
AMD K6 PR2-300	233MHz	 SWA(1~3)	 SWA(4~6)	2 1 ○ ○ ○ ○ 4 3	 SW4-(1~4)

Ethernet Software Configuration

This chapter details the Ethernet software configuration information. It shows you how to configure the card to match your application requirements.

Ethernet software configuration

The on-board Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Award BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, please refer to the following instructions:

1. Power on and boot up the system.
2. Change the working drive and directory to where the RSET8029.EXE file is located.
3. At the DOS prompt type RSET8029.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
4. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
5. After you have made your selections and the configuration is what you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen which shows the format and result of any diagnostic tests undertaken.

Install Sound System Driver for Windows 95

Use this chapter to install Sound System drivers for Windows 95:

- Installation procedures
- Use OPL SoftSynth to set up GM configuration

Introduction

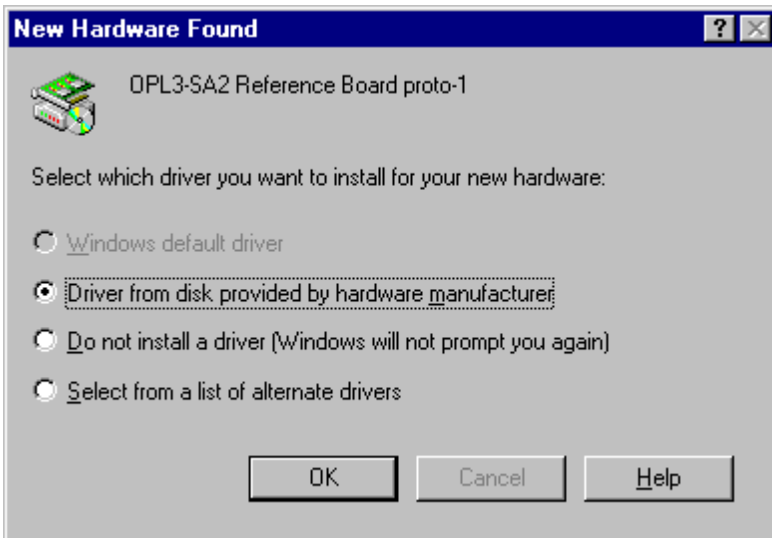
The Sound System (YAMAHA OPL3-SA_x Sound System) drivers are stored in three floppy disks.

Please install Windows 95 driver when operating in the Windows 95 environment.

Installing the Driver

The Sound System supports Windows 95 Plug-and-Play. When you start Windows 95, the automatic search option for the Add New Hardware Wizard works as shown below.

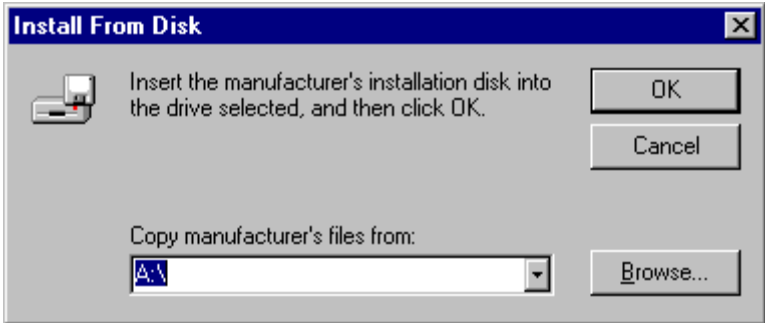
1. The following dialog box appears. Select “Driver from disk provided by hardware manufacturer” as shown below, then click OK.



NOTE:

When the resource data is for OPL3-SA3, the dialog box represents the OPL3-SA3. When OPL3-SA2 is mounted, the display shows “OPL3-SA2” Sound Board.

The following dialog box appears.



Insert the Driver floppy disk into the disk drive, identify appropriate directory, and click OK.

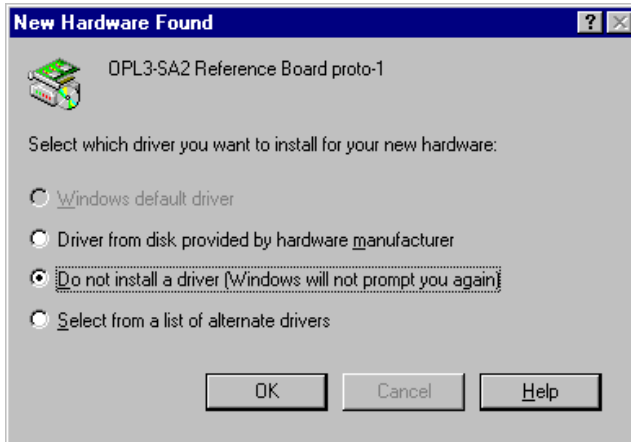
The drivers will be installed into your hard disk drive.



This is for the Sound System (YAMAHA OPL3-SAx Sound System) installation.

The game port joystick driver is detected and installed automatically.

2. The following dialog box appears. Select “Do not install a driver” as shown below, then click OK.

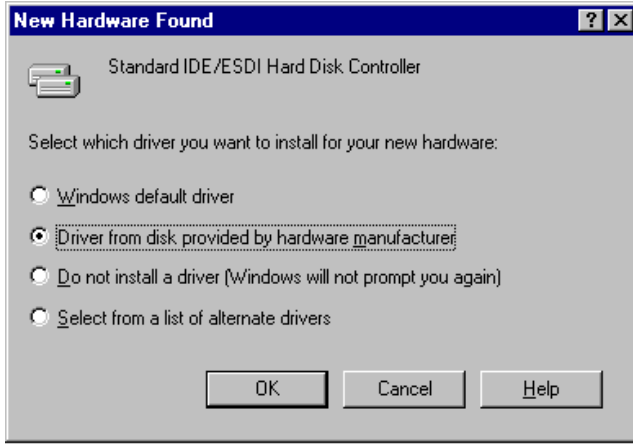


Note:

You can use the Sound System (YAMAHA OPL3-SA_x Sound System) COM port for modem interface. In this case, install Windows standard driver or identify YAMAHA Windows 95 driver same as above 1.

The following dialog box appears.

Select “Driver from disk provided by hardware manufacturer” as shown below, then click OK.

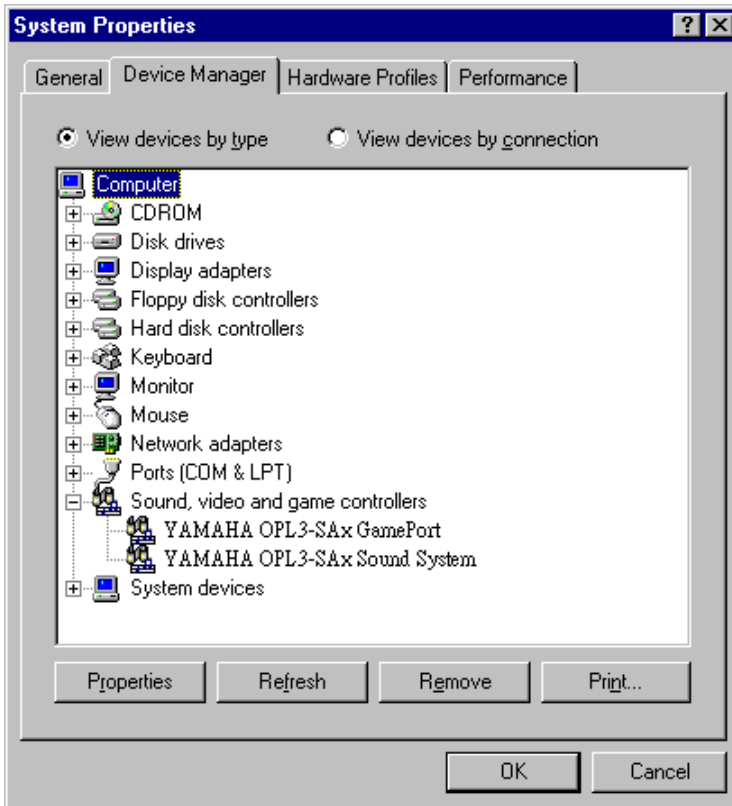


Note:

This is for standard IDE/ESDI Hard Disk Controller installation. If the board does not support the controller, select “Do not install a driver”.

3. To make sure that the Sound System (YAMAHA OPL3-SAX Sound System) Driver has been installed correctly, open the System Properties dialog box in the control panel.

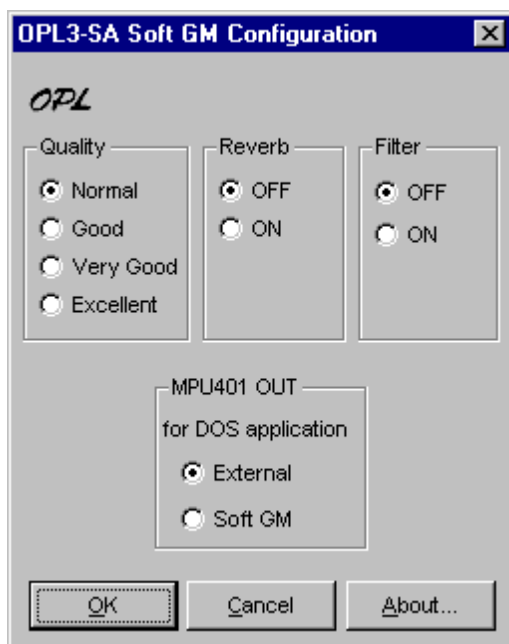
Example 1. Sound System & Game Port Joystick



If "YAMAHA OPL3-SAx Game Port" and "YAMAHA OPL3-SAx Sound System" appear, the Sound System installation is successfully completed.

OPL SoftSynth Control Panel

The Soft Synthesizer supports GM System Level 1 MIDI data. Its volume is adjusted by the Wave volume control. The OPL SoftSynth Control Panel shown below is used to set up the Soft Synthesizer.



Quality

These four options determine the sound quality (i.e., sampling rate) and the number of voices that the SoftSynth can produce simultaneously. Select a mode appropriate for the CPU performance of your computer. If you choose a high-quality mode and your computer does not have adequate processing performance, the SoftSynth may not produce sound fluently. In this case, select a lower quality mode.

Mode	Sampling Rate (kHz)	Max Voices
Normal	11.025	16
Good	22.025	16
Very Good	22.025	24
Excellent	22.025	32

Reverb

If you choose ON, you can add reverb to the sound of the SoftSynth.

Filter

The SoftSynth sound is more fluent with the filter ON. This, however with the filter ON, requires CPU resources.

MPU401 OUT

These settings allow you to select an External MIDI instrument or the SoftSynth for use with DOS-based games that are played on Window box. The MS-DOS Prompt item in the Main Program Group opens a MS-DOS window. Select General MIDI in the game settings to use this function.

Full Duplex

It is possible to record a new Wave file while playing an existing Wave file.

Note:

SoftSynth/WaveOut of the Sound System (YAMAHA OPL3-SA2 Sound System) is cooperative mode you can play Wave data and SoftSynth MIDI simultaneously.

< MIC Volume Control >

When the “MIC +20dB” is checked, microphone volume increases 20dB during playback and recording.

< Tone Configuration >

This function can be controlled using YMF715 (OPL3-SAX).

Tone Control

The quantity of bass and treble can each be adjusted by 2 pieces of slider.

3D Enhanced

“Ymersion” is a Yamaha's original technology for wide stereo.

Default

When this button is clicked, each value can be returned to default.

Installing the Application (YSTATION) and the Configuration Utility (SETUPSA)

If you install both the Audio Rack application “YSTATION” and the configuration utility (SETUPSA) for DOS MODE of Win95, please refer to <case1>.

If you install

only the Audio Rack application “YSTATION”, please refer to <case2>.

If you install

only the configuration utility (SETUPSA) for DOS MODE of Win95, please refer to <case3>

Note:

“DOS MODE” means the status in which you select “shutdown” Windows 95 in the start menu and “Restart the computer in MS-DOS mode”.

< case1 > Installing the Application (YSTATION) and the Configuration Utility (SET- UPSA)

To install the Audio Rack “YSTATION” application and configuration utility (SETUPSA) for DOS MODE of Win95:

1. Insert Disk [SA31INST] into your floppy disk drive.
2. Launch the MS-DOS prompt.
3. At the C:\DOS prompt, type

A:

then press Enter.

If your floppy disk drive is the B drive, type B:, then press Enter.

4. Type “WINSTALL -a”, and press Enter.

5. Follow the on-screen instructions to complete the installation.

< case2 > Installing the Application

To install the Audio Rack Application:

1. Insert Disk [SA31INST] into your floppy disk drive.

2. Launch the MS-DOS prompt.

3. At the C:\DOS prompt, type

A:

then press Enter.

If your floppy disk is the B, type B: instead of A:, then press Enter.

4. Type “WINSTALL”, and press Enter.

5. Follow the on-screen instructions to complete the installation.

< case3 > Installing the Configuration Utility (SETUPSA)

To install the configuration utility (SETUPSA) for only DOS MODE of Win95:

1. Insert Disk [SA31INST] into your floppy disk drive.
2. Launch the MS-DOS prompt.
3. At the C:\DOS prompt, type

A:

then press Enter.

If your floppy disk is the B, type B: instead of A:, then press Enter.

5. Follow the on-screen instructions to complete the installation.

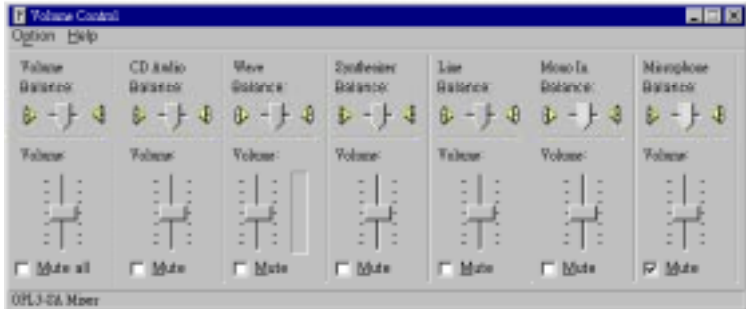
Note:

If you go to DOS-MODE from Win95, press “Start” button, select “Shut Down...”, and select “Restart the computer in MS-DOS mode?”.

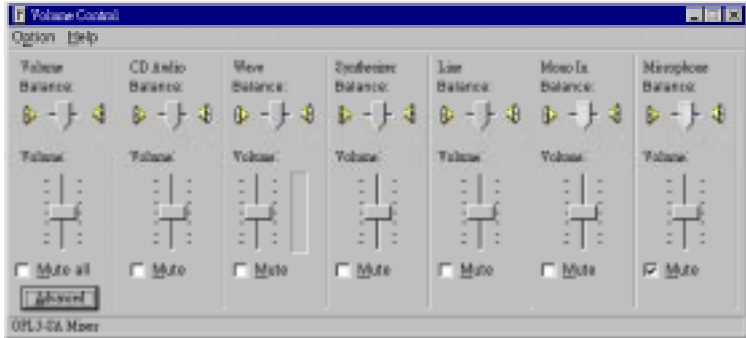
Then you can run the configuration utility (SETUPSA).

Ymersion control supported by OPL3-SAX

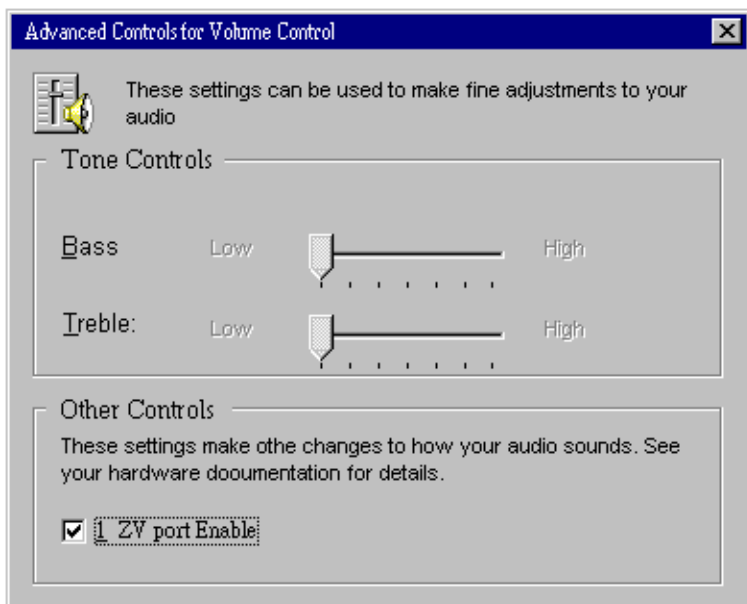
Ymersion, on-chip Yamaha 3D sound enhancement, can be controlled by the Windows 95 standard volume control.



(1) Click “Options”, and select “Advanced Controls”.



(2) Click left-bottom “Advanced” control button.



Note:

Do not check “ZV port Enable” while ZV port is not supported.

Flat Panel/CRT Controller Display Drivers and Utilities

This chapter provides information about:

- Driver types and installation
- Software utility installation and use

Software drivers

This chapter describes the operation and installation of the software drivers supplied on the *Display Driver Diskettes* that are shipped with your VGA adapter.

Your 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 or utility, you should:

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

If you are uncertain about any of these concepts, please refer to the DOS Windows[®] 95 or OS/2 user reference guides for more information before you proceed with the installation.

Before you begin

Before you begin the driver software installation, you should make backup copies of the *Display Driver Diskettes*. Store the original disks in a safe place.

Make sure you know the version of the operating system for which you are installing drivers. Your *Display Driver Diskettes* contain drivers for several versions of certain operating system. For your driver to operate properly, you must install the driver for your version of the operating system program.

Windows® 95

These drivers are designed to work with Microsoft® Windows® 95. You can 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, click on the **Settings** tab. Then click on **Change Display Type**. In the *Change Display Type* window, click on the **Change** button under *Adapter Type*. This will bring up the *Select Device* window.
2. Place the Windows® 95 *Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, Press <ENTER> and the name of the *Chips and Technologies, Inc. Video Controller* driver will appear highlighted in the *Models* list box. Select Chips and Tech. 6555x PCI (new).
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 new settings to take effect.

Window 3.1

These drivers are designed to work with Microsoft Windows Version 3.1. You may install these drivers either through Windows or in DOS.

Driver installation - Windows setup

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.
2. Place the Win3.1 Display Driver in drive A. In Windows Program Manager, choose *File* from the Options Menu. Then from the pull-down menu, choose *Run*. At the Command Line prompt, type A:\WINSETUP. Press the <ENTER> key or click OK to begin the installation.

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, the Display Driver Control Panel appears on the screen. This Control Panel allows you to select and load the installed drivers.

Another method of installing these drivers is through the File Manager. Click on *Drive A:*, and then double-click on WINSETUP.EXE to begin installation.

Changing Display Drivers from Windows

To change display drivers from Windows, select the *Windows Setup* icon from the *Main* window. You will be shown the current setup configuration. Select *Change System Settings* from the *Options* menu. Click on the arrow at the end of the *Display* line. You will be shown a list of display drivers. Click on the driver you want to select it. Then click on the *OK* button. Follow the directions to complete the setup.

Changing Color Schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. You can correct this by choosing the same color scheme or a new color scheme. First select the **Control Panel** from the **Main** window. Select the **Color** icon. You will be shown the current color scheme. Choose a new color scheme and click the **OK** button.

DOS

Driver installation - DOS Setup

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly. Then exit from Windows.
2. Place the DOS Display Driver in drive A. Type A: <ENTER> to make this the default drive.
3. Type SET<ENTER> to run the driver SETUP program. Press any key to get to the applications list.
4. Using the arrow keys, select *Windows Version 3.1* and press the <ENTER> key. Press the <ENTER> key to select *All Resolutions*, then press <END> to begin the installation.
5. At this point you will be asked for the path to your Windows System directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press <ESC> followed by Y to exit to DOS.
6. Change to the directory where you installed Windows (usually C:\WINDOWS).
7. Type SETUP <ENTER> to run the Windows Setup program. It will show the current Windows configuration. Use the up arrow key to move to the *Display* line and press <ENTER>.
8. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (*) and press <ENTER>.

9. Follow the directions on the screen to complete the setup. In most cases, you may press <ENTER> to accept the suggested option. When Setup is done, it will return to DOS. Type WIN <ENTER> to start Windows with the new display driver.

Changing Display Drivers from DOS

To change display drivers from DOS, change to the Windows directory and run Setup, repeating steps 4 and 5 from the previous page.

Besides the special display drivers marked by an asterisk (*), you should be able to use the following standard drivers:

VGA	640 x 480, 16 colors
Super VGA	800 x 600, 16 colors

Panning Drivers

Special panning drivers are provided to allow high-resolution modes to be displayed on a flat panel or CRT. These drivers will show a section of a larger screen and will automatically pan or scroll the screen horizontally and vertically when the mouse reaches the edge of the display.

OS/2

These drivers are designed to function with the OS/2 Version 3 and 2.1 operating systems.

Driver installation

NOTE: *Always use the INSTxx.CMD for the FIRST installation of the video device drivers. To change video resolutions, follow Step 3 below.*

To install the drivers, follow these instructions:

1. The system display must be set to VGA mode before installing the OS/2 SVGA drivers. Open an OS/2 full screen or windowed session.

2. Place the OS/2 Display Driver Diskette in drive A. Type A:<ENTER> to make this the default drive. Then type INST2X A: C:<ENTER> (for OS/2 2.1x systems) or INST30 A: C:<ENTER> (for OS/2 Version 3 systems). Once the Install Program is completed, do a system shutdown and reboot.
3. After the system has rebooted, follow these instructions:

A) OS/2 2.1x

Open an OS/2 full-screen or windowed session. At the OS/2 prompt, type DSPINSTL <ENTER> to install the new device driver and configure the video system.

B) OS/2 Version 3

Go to the System Setup folder and run Selective Install to install the new device driver and configure the video system.

Follow the instructions of the program to set up the OS/2 drivers in your system. First, select *Primary Display*. From the list of Primary Display Adapter Types, select *Chips and Technologies 655XX*. From the list of available Display Resolutions, select a display resolution. The correct source directory must be specified. Once the installation is complete, the system must be shut down and restarted for changes to take effect.

WIN-OS/2

Please note the following limitations regarding WIN-OS/2.

1. The WIN-OS/2 full-screen session should be set to Enhanced Capability. The default setting is Standard Mode. If this setting is not changed, Windows will not run.
2. WIN-OS/2 should be started by selecting the WIN-OS/2 Full Screen Icon in the Command Prompts folder, or with the WIN command in a DOS Full Screen or OS/2 Full Screen session.
3. Do not start WIN-OS/2 in a DOS or OS/2 Window. The system does not support the enhanced video mode being used in a window, and therefore will not run.

4. When running WIN-OS/2, DO NOT use <ALT>+<HOME> to switch a DOS or OS/2 Full Screen session to Windows. If this happens, do a system shutdown and reboot.

Driver diskette copy

NOTE: Diskette copies of the OS/2 drivers must have a VOLUME LABEL that reads "DISP 1" in order to be an installable diskette.

To copy the OS/2 *Display Driver Diskette*, follow these instructions:

1. Copy all files on the *OS/2 Display Driver Diskette* as you normally would onto another diskette.
2. Place the diskette copy in drive A. At the C:\ prompt, type LABEL A: DISP 1 to properly label your diskette. Then store your diskette copy in a safe place.

For proper installation of OS/2 drivers, all diskette copies must be properly labeled "DISP 1".

Windows® NT

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

Windows® NT 3.51 Driver installation

1. Install Windows® NT 3.51 as you normally would for a **VGA** display. Run Windows® NT Control Panel from the Main Group. Choose the **Display** option. In the *Display Settings* dialog box, click on **Change Display Type**. Click on **Change** from the Adapter Type in the Display Type dialog box. Click on **Other** in the *Select Device* dialog box.
2. Place the Windows® NT *Display Driver Diskette* in drive A. Press <ENTER> and the following driver names will appear highlighted in the *Models* list box:

CHIPS Video Accelerator (64310, 65545, 65548, 65550)

CHIPS Video Accelerator (65510, 65530, 65535, 65540)

Click on Install to **Install** the selected driver. Once the installation is complete, shutdown and restart the system.

3. Upon restart, at the *Invalid Display Selection* message, click on **OK** and select the desired display settings from the Display Settings dialog box. Click on **Test** to test the newly selected graphic mode. A color test screen should appear, followed by the *Testing Mode* window. Click on **Yes** to continue. The Display Settings Change window will appear. Click on **Restart Now** for the new settings to take effect.

Windows® NT 4.0

Driver installation

1. Install Windows® NT 4.0 as you normally would for a **VGA** display. First click the **Start** button, go to **Settings** and click on **Control Panel**. Choose the **Display** icon and click on the icon. In the *Display Properties* window, click on the **Settings** tab. Then click on **Change Display Type**. In the *Change Display Type* window, click on the **Change** button under *Adapter Type*. This will bring up the Select Device window.
2. Place the Windows® NT *Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, Press <ENTER> and the name of the *Chips and Technologies, Inc. Video Controller* driver will appear highlighted in the *Models* list box. Select Chips and Tech. 655xx PCI (new).
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 new settings to take effect.

SOFTWARE UTILITIES

This chapter describes the operation and installation of the following software utilities supplied on the *Display Driver Diskettes*:

- CHIPSDSP
- CHIPSCPL

The CHIPSDSP utility program

This utility program is designed to work with Microsoft® Windows® 95.

Installing the utility

CHIPSDSP.DLL is located on the CHIPS Windows® 95 driver disk. This file is a Windows® 95 based utility for selecting display type and refresh rate. It is a **Display Properties Refresh** window that is automatically installed when installing CHIPS Windows® 95 display drivers. The **Display** icon is in the **Control Panel** group. To invoke the **Display** icon, simply click on the Start button, go to **Settings**, click on **Control Panel**, and then double click on the **Display** icon. Click on the property sheet with the heading **Refresh**.

How to use the utility

DISPLAY DEVICE allows you to select the display type from the following:

- CRT only <ALT C>
- LCD (Flat Panel) only <ALT I >
- Both CRT and LCD (Flat Panel) <ALT B>

REFRESH RATE allows you to select the refresh rate from the following:

- Interlaced
- 56 Hz
- 60 Hz
- 70 Hz
- 72 Hz
- 75 Hz
- 85 Hz

The refresh rate is available in **CRT Mode** only.

- Note: 1. The refresh rates that are supported by the selected monitor are the only refresh rates that will show and be selectable.
2. The above refresh rates may not be supported by all Chips products.

WINDOWS® DEFAULT allows you to return to the default refresh rate setting for the selected monitor in Windows® 95.

The CHIPSCPL utility program

This utility program is designed to work with Microsoft® Windows® · Version 3.1.

Installing the utility

CHIPSCPL.CPL is a Windows® 3.1 based utility to select resolutions and color depth. It is a Control Panel Applet with its own icon that is automatically installed when installing CHIPS Windows® 3.1 linear drivers. The **Control Panel** icon is in the *Main* Windows® group. To invoke the control panel applet, simply click on the icon. The driver resolution and color depth take effect only after Windows® is rebooted with the new driver.

How to use the utility

SCREEN SIZE <ALT S> allows you to select from the following resolutions:

- 640x480
- 800x600
- 1024x786
- 1280x1024

By selecting the resolution first, it will determine the allowable selections for color depth.

COLOR <ALT O> allows you to select the number of colors from the following:

- 16 (4 bits per pixel)
- 256 (8bpp)
- 32K (15bpp)
- 64K (16bpp)
- 16M (24bpp)

By selecting the color depth first, it will determine the allowable selections for resolution.

DPI <ALT P> allows you to select a large or small font.

DISPLAY <ALT D> allows you to select the display type from the following:

- CRT only
- LCD (Flat Panel) only
- Both CRT and LCD (Flat Panel)

MONITOR SELECTION <ALT M> allows you to select from the list of monitors.

REFRESH <ALT R> allows you to select the refresh rate from the following:

- Interlaced
- 56 Hz
- 60 Hz
- 70 Hz
- 72 Hz
- 75 Hz

The refresh rate is available on **CTR Mode** only. The refresh rates supported by the selected monitor are the only available refresh rates that can be selected.

CURSOR-ANIMATION <ALT A> allows you to select an animated cursor instead of the hourglass wait cursor.

BIG CURSOR <ALT G> allows you to select a big cursor for better visibility on the Flat Panel.

Version <ALT V> displays version information about the current driver.

HELP <ALT H> displays help information on how to use the Display Driver Control Panel.

CHAPTER

6

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

System test and initialization

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

press <F1> to RESUME

Write down the message, and press the F1 key to continue the bootup sequence.

System configuration verification

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

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

1. You are starting your system for the first time.
2. You have changed the hardware attached to your system.
3. The CMOS memory has lost power and the configuration information has been erased.

The mainboard CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

AWARD BIOS setup



Setup program initial screen

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

Entering setup

Power up the computer and press immediately. This will allow you to enter Setup.

Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.



CMOS setup screen

LCD & CRT

This option allows user to select the different display terminal.

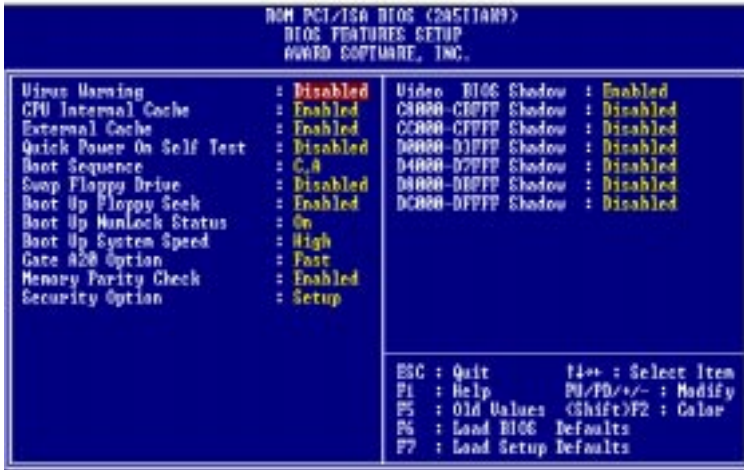
Pannel:

This selection item allow user to select LCD BIOS to match the LCD types. There are eight LCD types available for users to select as their LCD display modes as below:

Brand name	Model name	Format	PCM-5894	PCM-5892
Sharp	LX 15X80	1024 x 768 DSTN	Yes	Yes
Sharp	LM 64183P	640 x 480 MONO	Yes	Yes
Sharp	LM 64C35P	640 x 480 DSTN	Yes	Yes
Sharp	LM 12S40	800 x 600 DSTN	Yes	Yes
NEC	NL 6448AC33-10	640 x 480 TFT (12 bits)	Yes	Yes
Toshiba	LTM 10C209A	640 x 480 (18 bits)TFT	Yes	Yes
NEC	NL 8060AC26-04	800 x 600 TFT	Yes	Yes
Sharp	14x03	1024x768 TFT (36 bits)	Yes	Yes

BIOS features setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. The following configurations are based on the SETUP DEFAULTS settings.



BIOS features setup

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterward, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

! WARNING !

Disk boot sector is to be modified

Type "Y" to accept write or "N" to abort write

Award Software, INC.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Quick Power-On Self-Test

This category speeds up Power-On Self-Test(POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS).

Swap Floppy Drive

This item allows you to determine whether you want to swap floppy drive or not.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

Boot Up System Speed

This allows you to determine the Boot Up Speed. The choice : High / Low.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbyte. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Memory Parity Check

Set this option to Enabled to Check the Parity of all system memory.

Security Option

This category allows you to limit access to the system.

CHIPSET features setup

By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. The following configurations are based on the SETUP DEFAULTS settings.



chipset Features setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Auto Configuration

Set this item to *Enabled* to pre-defined values for DRAM, cache timing according to CPU type & system clock. Thus, each item value may display differently depending on your system configurations.

When this item is enabled, the pre-defined items will become SHOW-ONLY.

NA# Enable

This item allows you to select between two methods of chipset NA# asserted during CPU write cycle/CPU line fills, Enabled and Disabled.

RAS Precharge Time

DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the Row Address Strobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

RAS to CAS Delay

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

CPU to PCI Post Write

Set this option to Enabled to give priority to posted messages from the CPU to PCI bus.

CPU to PCI Burst Men_{WR}

Set this option to Enabled to allow write instructions to be combined in PCI burst mode. The settings are Enabled or Disabled.

ISA Bus Clock Frequency

This item allows you to select the ISA bus clock PCICLK/3 OR PCICLK/4.

System BIOS Cacheable

When enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Video BIOS Cacheable

As with caching the System BIOS above, enabling the Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. The memory must be mapped into the memory space below 16 MB.

Boot ROM Function

This item allows you to set the Enabled or Disabled Ethernet Boot ROM function.

Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. The following configurations are based on SETUP DEFAULTS settings.



Power management setup

Power Management

There are four selections for Power Management: Disabled, Min Saving, Max Saving, User Define. Except Disabled, three of the above selections have fixed mode settings. When PM is set Disabled, the pre-defined items will become read only.

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max Power Saving mode and stop the CPU internal clock.

Video Off Option

User can select All Modes→Off , Always On, Suspend→Off, or Susp, Stby→Off to execute the PM mode.

Video Off Method

This determines the manner in which the monitor is blanked.

Blank screen	This option only writes blanks to the vide obuffer.
DPMS	Initial display power management signaling.

LCD Off Option

You can set up LCD Off Options by selecting All Modes→Off, Always On, Suspend→Off, or Susp, Stby→Off. For detailed setup, you can select saving mode for switch function, time interval for Doze, Stdby, and MODEN, and Hot Key Power Off. When LCD off is executed, the LCD's backlight will be turned off and save system power consumption. The on-board 5-pin inverter power connector CN11 allows user to use this PM function and truly increase the life of backlight. The item of Hot Key SMI allows user to use "Ctl-Alt-Back Space" to enter Suspend Mode, and press any key to wake-up.

PM Timers

The following four modes are Green PC power-saving functions which are only user configurable when User Defined Power Management has been selected. See above for available selections.

HDD Off After

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video will be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut down.

PM Events

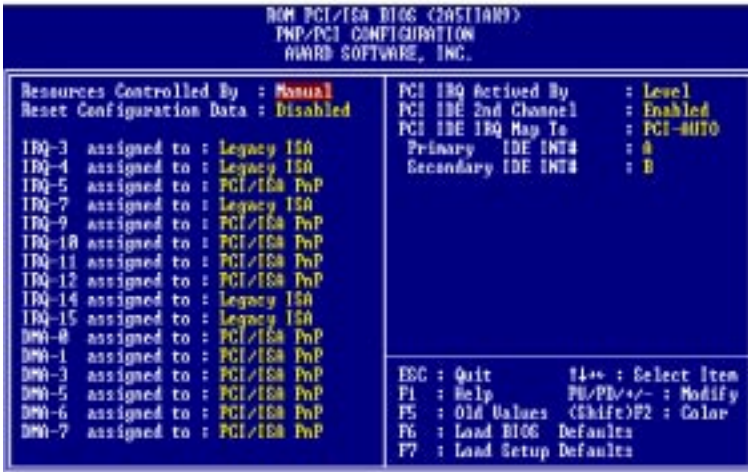
PM events are I/O events whose occurrence can prevent the system from entering a power-saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled*, even when the system is in a power down mode.

The following is a list of IRQ, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

- 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 (Reserved)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PnP/PCI Configuration

By choosing the PCI CONFIGURATION SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This section describes configuring the PCI bus system. PCI, or Personal Computer 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. This section covers some very technical items, and it is strongly recommended that only experienced users should make any changes to the default settings. The following configurations are based on SETUP DEFAULTS Settings.



PnP/PCI Configuration setup

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 means absolutely nothing unless you are using a Plug and Play operating system such as Windows™ 95.

Reset Configuration data

This item allows you to reset the configuration data or not.

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

This item allows you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

PCI IRQ Activated by

This 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 manufacturer.

Choices are *Level* and *Edge*.

PCI IDE IRQ Map to

This allows you to configure your system to the type of IDE disk controller in use. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows 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, you will note that the primary has a lower interrupt than the secondary.

Selecting *PCI Auto* allows the system to automatically determine how your IDE disk system is configured.

Primary/Secondary IDE INT#

Refer to the above description of PCI IDE IRQ.

Integrated Peripherals



IDE Primary/Secondary Master/Slave PIO

These four lines set the hard disk PIO transfer mode, which affects the hard disk data transfer rate. The system will auto-detect the PIO mode of a device in any of these positions when they are set to 'Auto', the recommended setting. Alternatively, you can set the mode manually. Modes 0 to 4 are supported.

Primary/Secondary Master/Slave UltraDMA

These four lines enable hard disk UltraDMA transfer mode, which requires a drive that supports this data transfer method. The system will auto-detect an UltraDMA device in any of these four positions when they are set to 'Auto', the recommended setting. The other setting is 'Disabled'. You can leave these set to Auto without effect if there are no UltraDMA devices installed.

IDE Burst Mode

When this item is *Enabled*, the system will support burst data transfer mode to increase HDD transfer speed.

IDE Data Port Post Write

This item allows users to select Enabled to use data port post write for IDE drive.

IDE HDD Block Mode

Set this item to Enabled to use HDD block transfer mode.

Onboard FDD Controller

Enables or Disables the onboard Floppy Drive controller.

Onboard Parallel Port

Sets the I/O address for the onboard parallel port. The setting options are:

378H/IRQ7 (default)

Disabled

278H/IRQ5

38CH/IRQ7

Onboard Serial Port 3/4

Sets the I/O address for serial ports 3/4. The system will auto-detect the COM port address when this item is set Auto, the default setting.

COM1/3F8

COM2/2F8

COM3/3E8

COM4/2E8

USB Controller/ USB Keyboard Support

Enables or Disables the onboard USB port controller and USB Keyboard support.

Load BIOS / Setup default

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



Load BIOS defaults screen

Change password

To change the password, choose the PASSWORD SETTING option from the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, there is a default password which is stored in the ROM. The screen will display the following messages:

Enter Password:

Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

Confirm Password:

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most 8 characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

Auto detect hard disk

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.

ROM PCI/ISA BIOS (2A511AK9) CMOS SETUP UTILITY AWARD SOFTWARE, INC.						
CYLS. HEADS PRECOMP LANDZONE SECTORS MODE						
Drive C : (Mb)						
Select Drive C Option (N=Skip) : N						
Options	SIZE	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS MODE
1(Y)	0	0	0	0	0	0
NORMAL			ESC = SKIP			

IDE HDD auto detection screen

HDD low level format

Selecting this utility allows you to execute HDD low level formatting. This Award Low-Level-Format Utility is designed as a tool to save your time 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 menu which appears after you enter into the Award Low-Level-Format Utility.

ROM PCI/ISA BIOS (2A511AK9) CMOS SETUP UTILITY AWARD SOFTWARE, INC.							
Hard Disk Low Level Format Utility				NO. CYLS HEAD			
SELECTDRIVE BADTRACKLIST PREFORMAT							
Current Select Drive IS: C							
Drive: C	Cylinder:	Head:					
	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Drive C:	54	996	16	65535	995	63	NORMAL
Drive D:	0	0	0	0	0	0	AUTO
←→↑↓: SELECT ITEM ENTER: ACCEPT ESC: Exit/Abort							
Copyright (c) Award Software, Inc. 1992-1994 All Rights reserved							

HDD low level format screen

Save & exit setup

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

Exit without saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

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

How to program the WATCHDOG TIMER

1. To set the time-out interval of watchdog timer:
 - output the desired value to port **0x443**. Since the data is of 1 byte, the maximum value will be 255. In our design 1 ~ 127 will denote 1sec ~ 127sec, though 129 ~ 255 will denote 1min ~ 127min.
e.g.
outportb(0x443, 30); // set interval to 30 seconds
outportb(0x443, 0x85); // set interval to 5 minutes
2. To set the time-out event:
 - output data to **port 0x444**,
 - 0: reset system
 - 1, 2, 3: IRQ 10, 15, 11 respectively
 - 4: NMI
 - e.g.
outportb(0x444, 0); // set time-out event to reset-system
3. To disable watchdog timer:
 - output any value to port 0x80, e.g.
outportb(0x80, data); // disable watchdog timer
4. To enable or refresh watchdog timer(the watchdog timer will return to its initial value, then count down):
 - access the I/O port **0x443**, e.g.
outportb(0x80, 0); // disable watchdog timer
inportb(0x443); // refresh watchdog timer
 - * note: if you want to refresh the watchdog timer, you have to disable it first.

Demo program

```
outportb(0x444, 0);           // set time-out event to reset-system
outportb(0x443x 10);        // set time-out interval to 10 seconds
iutportb(0x443);           // enable watchdog timer
customer_job();            // execute your job here, be sure your
                             // job will finished within 10 seconds
outportb(0x80, 0);         // refresh watchdog timer, otherwise
                             // the system will reset after time-out
outputb(0x443, 20);        // set time-out interval to 20 seconds
inportb(0x443);           // enable watchdog timer
another_job();            // another job finished in 20 seconds
outportb(0x80, 0)         // disable watchdog timer
...
...
```

