

SBC-598

Full-Size PCI/ISA Pentium CPU Card

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 SBC-598 CPU Card
- 1 6-pin mini-DIN dual outlet adapter for keyboard and PS/2 mouse
- 1 Hard disk drive (IDE) interface cable (40 pin)
- 1 Floppy disk drive interface cable (34 pin)
- 1 Parallel port adapter (26 pin) and COM2 adapter (9 pin) kit
- 4 Utility disks with SiS 5598 utility programs and drivers

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

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General Information

This chapter provides background information for the SBC-598.

Sections include:

- Card specifications
- Board layout

Introduction

The SBC-598 is an all-in-one Single Board Computer (SBC) capable of handling the Intel Pentium P54C, P55C (MMX), AMD K6, as well as the Cyrix 6x86 (M1) and 6x86MX (M2) CPUs. Reliability, performance, flexibility, and adequate expansion capabilities are essential qualities for SBCs and their embedded applications and the SBC-598 provides all of these.

If program execution is halted by a program bug or EMI, the board's watchdog timer can automatically reset the CPU or generate an interrupt. This ensures reliability in unmanned or standalone systems.

Our Smart Temperature Control technology (LM75 chip) monitors the CPU temperature and automatically slows down the CPU frequency when the CPU temperature exceeds a specified safe range, helping your system recover from abnormal temperature fluctuations.

The SBC-598 supports the M-Systems DiskOnChip 2000 family of flash disk products which are small, plug-and-play, solid-state disks in a standard 32-pin DIP package with capacities ranging from 2MB to 72MB. This is often a far superior solution to a standard hard drive as the flash disk has no mechanical parts, increasing overall system reliability.

Four synchronous two-way High Drive chips allows you to add more peripheral cards and expand functionality in a reliable manner.

Four 72-pin SIMM sockets as well as one 168-pin DIMM socket gives you the flexibility of having from 2MB to 256MB of DRAM and up to 128MB of SDRAM.

Other features include 2 high speed RS-232 serial ports with 16C550 UARTs, 1 bidirectional SPP/EPP/ECP parallel port and the support for 2 floppy drives. In addition, the SBC-598 has a 512KB pipeline-burst L2 cache for increased performance.

The SBC-598 also includes a high speed, local bus IDE controller which supports (through ATA PIO) mode 3 and mode 4 hard disks, Ultra DMA/33 (data transfer rates up to 33MB/sec) and up to 2 IDE devices.

Features

- Supports Intel Pentium P54C/P55C (MMX) 166~233MHz, AMD K6, and Cyrix M1/M2 CPUs
- Full-size PCI/ISA Bus Card, PICMG 2.0 standard
- High Drive supports more peripheral cards
- SiS 5598 Chipset: XGA controller integrated
- Supports UltraDMA/33 for EIDE interface
- DiskOnChip: One 32-pin DIP socket supports the M-Systems DiskOn-Chip 2000 series, memory capacity from 2MB to 72MB.
- Smart Temperature Control: LM75 supports CPU temperature monitoring.

Specifications

CPU: Intel Pentium P54C, P55C (MMX) 166~233 MHz, Cyrix 6X86 (M1) PR100+~166+, 6x86MX (M2) PR166~266 MHz, AMD K6 PR2 166~233

Bus interface: PCI/ISA bus, PICMG 2.0 standard

CPU Socket: Socket 7

BIOS: Award FLASH BIOS

Chipset: SiS 5598 meets PC97 requirements. Video/graphics accelerator and PMU controller integrated.

Super I/O Chipset: ITE IT8661F

Level 2 Cache: Onboard 512KB pipeline-burst L2 cache.

Smart Temperature Control: LM75 supports CPU temperature monitoring.

System memory: 2MB up to 256MB. Four 72-pin SIMM sockets and one 168-pin DIMM socket onboard.

Enhanced IDE hard disk drive (HDD) interface: Support up to four hard disk drives. Supports PIO mode 1-4, PCI Bus Mastering, Multi-word DMA, and Ultra DMA/33.

High Drive Chips: 4 synchronous two-way High Drive chips onboard.

Floppy disk drive (FDD) 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 ports: Configured to LPT1, LPT2, LPT3, or disabled. Supports SPP, ECP, and EPP.

Serial ports: 2 RS-232 serial ports. Ports can be individually configured as COM1, COM2, COM3, COM4, or disabled.

IrDA interface: Infrared wireless communication with compatible devices.

Keyboard/mouse connector: 6-pin mini DIN connector supports standard PC/AT keyboard and PS/2 mouse.

USB connectors: Dual USB connectors on board.

DMA channels: 7

Interrupt levels: 15

Watchdog Timer: Can generate a system reset, IRQ15, or NMI, and supports selectable timeout interval (2 sec~128 min, 1 sec/step).

VGA controller: SiS 5598, 64-bit graphics engine integrated.

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

Display memory: Supports shared system memory up to 4MB.

Display type: Supports CRT display.

Resolution: Support up to 1024 x 768 @ 16.7M colors.

SSD interface: One 32-pin DIP socket supports the M-Systems DiskOn-Chip 2000 series, memory capacity from 2MB to 72MB.

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

Power Requirement:

Bare Board: +5V @ 2A

Pentium MMX-200: +5V @ 6A

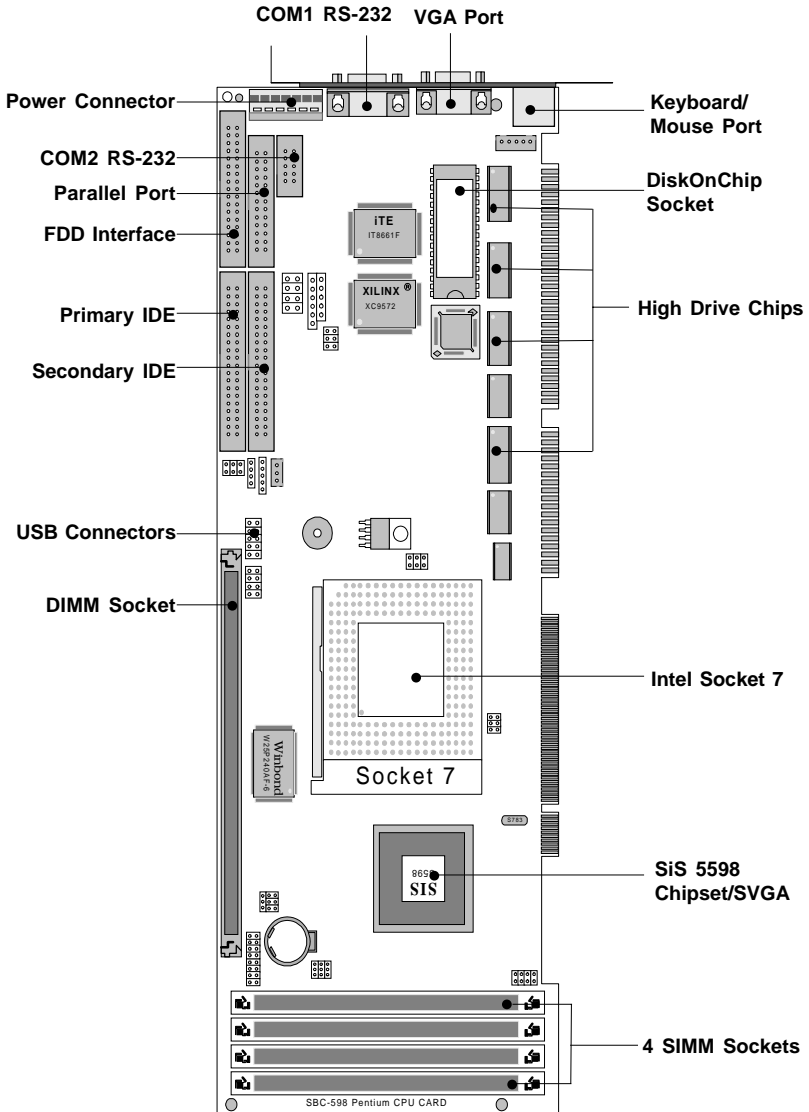
AMD K6-233: +5V @ 10A

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

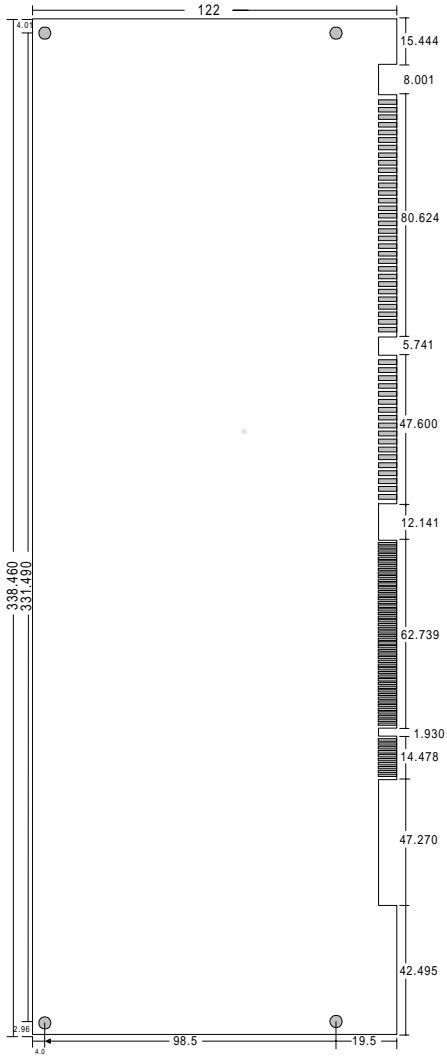
Board size: 13.31" (L) x 4.8" (W) (338 mm x 122 mm)

Board weight: 0.88 lbs (0.4 kg)

Board layout




Card dimensions




Installation

This chapter explains setup procedures for the SBC-598 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Safety precautions

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

Caution!  Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

Conflicts! The VGA controller of SBC-598 uses IDSEL No. 31, which is the same as that of the first PCI slot (i.e., "PCI1") on the PCI backplane (PICMG 2.0 standard). Therefore, when the onboard VGA function is enabled, the first PCI slot on the PCI backplane cannot have a peripheral card plugged in otherwise hardware conflicts can result.

SOCKETS

CPU Installation/Removal

The SBC-598 CPU card supports most Pentiums and Pentium-compatible CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's Intel Socket 7 socket by following the procedures outlined below. If your system has an existing CPU, you need to remove it before installing the new CPU.

Installing the CPU

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

1. Make sure the socket lever is up as far as it can go. The Pin 1 position is indicated by a notch on the corner of the socket.
2. Match Pin 1 on the CPU with the Pin 1 position on the socket.
3. Insert the CPU. If it does not go in easily, lift the lever higher.
4. Press the lever down. The sliding plate will move forward to position the CPU. You will feel some resistance in the lever as the CPU is secured into place. When the CPU is properly installed, the lever will snap into place at the side of the socket.

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

***WARNING:** Improper settings may damage the CPU.*

Removing the CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.
2. Unlock the socket by gently lifting the metal bar and lift the CPU out of the socket. You may find a chip puller helpful which is available at an electronics hobbyist supply store.

SIMM Installation/Removal

Installing SIMMs

Note that the modules can only fit into a socket one way.

1. Insert the memory module into the socket at a moderate angle.
2. 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.
3. Repeat steps 1 and 2 for each module you install.

Removing SIMMs

1. Supporting the SIMM with a finger, use a pen or a similarly shaped object and press one retaining clip straight down.
2. Repeat for the other side. When released, the retaining clips will push the SIMM up and out of its upright position.
3. Carefully pull the SIMM out of the socket with your fingers.
4. Repeat the above steps for each module you remove.

DIMM Installation/Removal

The SBC-598 provides one 168-pin DIMM socket for an SDRAM module. You can select an SDRAM module between 16MB to 64MB. However, please don't use both SIMMs and DIMMs simultaneously.

Installing DIMMs

The DIMM installation procedure is slightly easier.

Note that the module can only fit into a socket one way.

1. Open the fastening clips on both sides of the socket.
2. Insert the DIMM into the socket. Make sure that the pins line up properly.
3. Gently close the fastening clips until the DIMM is firmly seated.

Removing DIMMs

1. Open the fastening clips on both sides of the socket.
2. Remove the DIMM from the socket.

DiskOnChip Socket (U16)

The M-Systems DiskOnChip 2000 (DOC-2000) family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DOC-2000 is a small, plug-and-play, solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability.

The DOC-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 DOC-2000 includes the TrueFFS, M-Systems Flash File System proprietary software. The DOC-2000 package is pin-to-pin compatible with standard 32-pin EPROM devices.

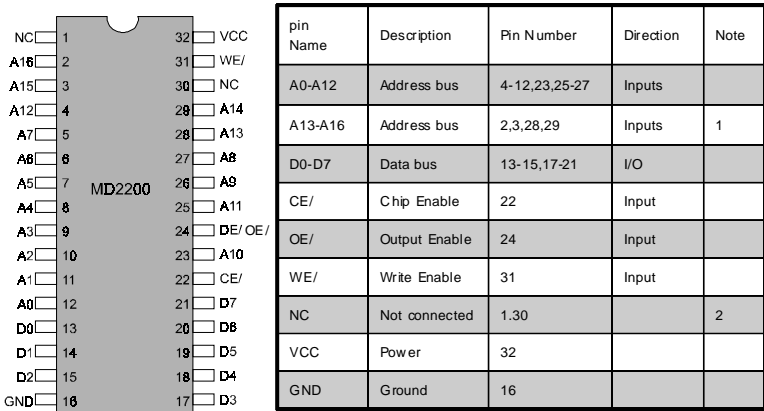


Figure1-MD2200 Pin-out

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 the MD2200

Refer to the instructions for configuring the DOC address (JP11) later in this chapter.

DiskOnChip (DOC) 2000 Installation

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

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

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

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

Note:

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

Configure DOC as a boot device

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

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

Jumpers and Connectors

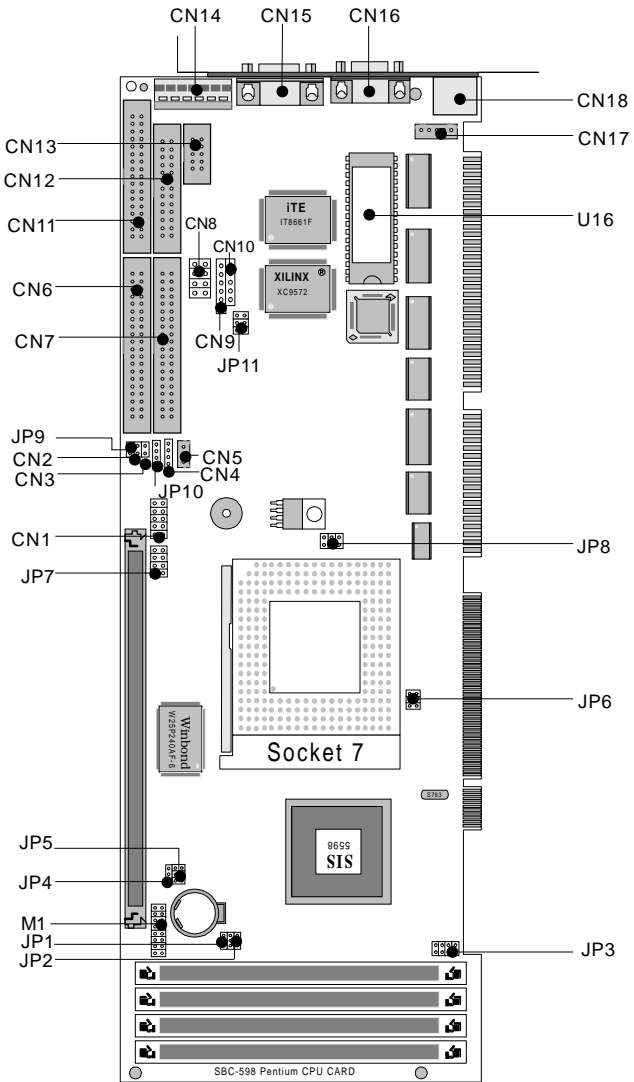
Connectors on the board link to external devices such as hard disk drives, keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your applications.

The tables below lists the function of each of the board jumpers and connectors:

| Jumper Label | Function |
|---------------------|----------------------------------|
| M1 | Memory Bank Selection |
| JP1 | Clear CMOS Data |
| JP2 | Onboard SVGA Setting |
| JP3 | SIMM Voltage |
| JP4 | PCI Bus Clock Sync/Async Setting |
| JP5 | CPU External Clock Selection |
| JP6 | CPU Clock Ratio |
| JP7 | Vcore Voltage Selection |
| JP8 | CPU Type Selection |
| JP9 | Hardware Reset |
| JP10 | Buzzer Setting |
| JP11 | DOC Address |

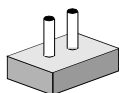
| Connector Label | Function |
|------------------------|---------------------------------|
| CN1 | USB Connector |
| CN2 | HDD LED |
| CN3 | Thermal Alarm LED |
| CN4 | Power LED and Key Lock |
| CN5 | Fan Connector |
| CN6 | Primary IDE |
| CN7 | Secondary IDE |
| CN8 | Digital I/O Port |
| CN9 | Reserved Connector |
| CN10 | Reserved IR Connector |
| CN11 | Floppy Connector |
| CN12 | Parallel Connector |
| CN13 | COM2 Connector |
| CN14 | Power Connector |
| CN15 | COM1 Connector |
| CN16 | CRT Connector |
| CN17 | Keyboard Connector |
| CN18 | PS/2 Mouse & Keyboard Connector |

Locating jumpers, connectors, and sockets

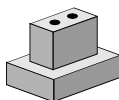


Setting jumpers

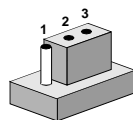
By setting the jumpers, you can configure your card to match the needs of your specific applications. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper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

1 2 3



Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubt about the best hardware configuration for your applications, contact your local distributor or sales representative before you make any changes.

Clear CMOS Data (JP1)





JP1 allows users to clear CMOS data.

Clear CMOS Data (JP1)

| Normal (Default) | Clear CMOS |
|--|--|
| 1 2 3  | 1 2 3  |

Onboard SVGA Setting (JP2)





Onboard SVGA (JP2)

| Enable (Default) | Disable |
|--|--|
| 2 4 6   1 3 5 | 2 4 6   1 3 5 |

SIMM Voltage (JP3)

The SBC-598 supports 5V DRAM and 3.3V DRAM. Set JP3 to match the DRAM voltage type.

SIMM Voltage (JP3)

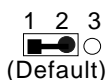
| 3.3V | 5V (Default) |
|---|---|
| 8  7 | 8 ○ ○ 7 |
| 6  5 | 6 ○ ○ 5 |
| 4 ○ ○ 3 | 4  3 |
| 2 ○ □ 1 | 2  1 |

PCI Bus Clock Sync/Async Settings (JP4)

JP4 allows users to select a synchronous (Sync) or an asynchronous (Async) PCI clock. The Sync PCI clock depends on half of the CPU external clock, while the Async PCI Clock is fixed to 33MHz.

PCI Bus Clock Sync/Async Mode (JP4)

33MHz
(Async Mode setting)



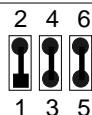
25MHz / 30MHz / 33MHz
(Sync Mode setting)



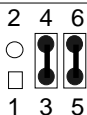
CPU External Clock Selection (JP5)

CPU External Clock (JP5)

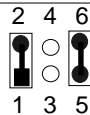
50 MHz



60MHz



66.6MHz (Default)



CPU Clock Ratio (JP6)

JP6 must be set to match the CPU clock ratio. The chart below show the proper jumper settings for P54C, P55C, AMD-K6, and Cyrix 6x86 MX (M2), and their respective clock ratios.

| CPU Clock Ratio (JP6) | | | | |
|--|------|------|--------|--------------|
| JP6 | P54C | P55C | AMD-K6 | Cyrix 6x86MX |
| 2 4 6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="radio"/> <input type="radio"/> 1 3 5 | 1.5 | 3.5 | 3.5 | 3.5 |
| 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="radio"/> <input type="radio"/> 1 3 5 | 2.0 | 2.0 | 2.0 | 2.0 |
| 2 4 6 * <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="radio"/> <input type="radio"/> 1 3 5 | 3.0 | 3.0 | 3.0 | 3.0 |
| 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="radio"/> <input type="radio"/> 1 3 5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 2 4 6 <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="radio"/> <input checked="" type="radio"/> 1 3 5 | - | - | 5.5 | 5.5 |
| 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="radio"/> <input checked="" type="radio"/> 1 3 5 | - | - | 4.0 | 4.0 |
| 2 4 6 <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> 1 3 5 | - | - | 5.0 | 5.0 |
| 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> 1 3 5 | - | - | 4.5 | 4.5 |

* default setting

VCore Voltage Selection (JP7)

CPU core voltage can be set by JP7 to reduce power consumption and heat.

Vcore Voltage settings (JP7)

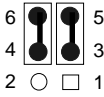
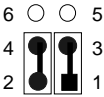
| 2.0V | 2.1V | 2.2V |
|--|--|--|
| 2 4 6 8 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 7 |
| 2.3V | 2.4V | 2.5V |
| 2 4 6 8 <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 |
| 2.6V | 2.7V | 2.8V (Default) |
| 2 4 6 8 <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 |
| 2.9V | 3.0V | 3.1V |
| 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 |
| 3.2V | 3.3V | 3.4V |
| 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 7 |
| 3.5V | | |
| 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 7 | | |

CPU Type Selection (JP8)

JP8 must be set to match the CPU voltage type: either *Single* or *Dual* voltage.

For the P54C and it's compatibles use the *Single Voltage* setting while the P55C (MMX) and it's compatibles (e.g., AMD K6, Cyrix 6x86MX (M2)), use the *Dual Voltage* setting.

CPU Type (JP8)

| Single Voltage | Dual Voltage (Default) |
|---|---|
|  |  |

Hardware Reset (JP9)

One can connect an external reset button or manually reset the board by setting the appropriate jumper as below. This will restart your computer as if you have turned off the power.


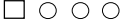
Hardware Reset (JP9)

| Normal (Default) | Reset |
|---|---|
|  |  |

Buzzer Setting (JP10)

The CPU card has its own buzzer. You can also connect to the external speaker on your computer chassis if so desired.

Buzzer setting (JP10)

| Buzzer (Default) | Speaker |
|---|---|
|  |  |
| 1 2 3 4 | 1 2 3 4 |

DOC Address (JP11)

The DiskOnChip (DOC) 2000 is a flash disk and occupies an 8 KB window in the upper memory address range of C800 to E000. You should ensure this does not conflict with any other devices's memory addresses. JP11 controls the starting memory address of the flash disk. For more information about the DOC chip, refer to the "*DiskOnChip Socket (U16)*" section earlier in this chapter .

| DiskOnChip 2000 memory address | |
|--------------------------------|----------------|
| Memory address (HEX) | JP11 |
| DISABLED | D400 |
| | |
| C800 | D800 (Default) |
| | |
| CC00 | DC00 |
| | |
| D000 | E000 |
| | |

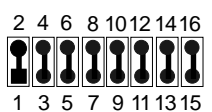
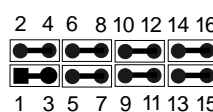
These addresses might conflict with the ROM BIOS of other peripheral boards. Please select appropriate memory address to avoid memory conflicts.

Memory Bank Selection (M1)

The M1 jumper allows the user to select SIMM 1, SIMM 2, or DIMM 1 as Bank 0. Since the SiS 5598 chipset uses shared main memory as video RAM, Bank 0 of memory will be separated into two partitions, one for system memory and the other for video memory.

Therefore, if SIMM 1 and SIMM 2 are set as Bank 0, you should install the DRAM module into SIMM 1 or SIMM 2. If DIMM is set as Bank 0, you should install the SDRAM module into DIMM1. Otherwise, the system will not operate properly.

Memory Bank Selection (M1)

| SIMM 1, 2 (Default) (Bank 0) | DIMM (Bank 0) |
|---|---|
|  |  |

CPU Jumper Setting Example

| CPU | Clock Int/Ext(MHz) | Clock Ratio | JP6 (Ratio) | JP5 (External) | JP7 (Vcore) | JP8 (CPU Type) |
|----------------------------------|-----------------------|----------------|---|--|--|--|
| Intel Pentium (3.3V) | 200/66 | 3 | 2 4 6 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input checked="" type="radio"/> <input checked="" type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input type="radio"/> <input type="checkbox"/> 1 |
| Intel Pentium (3.3V) | 166/66 | 2.5 | 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input checked="" type="radio"/> <input checked="" type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input type="radio"/> <input type="checkbox"/> 1 |
| Intel Pentium MMX (2.8V) | 233/66 | 3.5 | 2 4 6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| Intel Pentium MMX (2.8V) | 200/66 | 3 | 2 4 6 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| Intel Pentium MMX (2.8V) | 166/66 | 2.5 | 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| AMD K6 pr2-233 (3.2V) | 233/66 | 3.5 | 2 4 6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| AMD K6 pr2-200 (2.9V) | 200/66 | 3 | 2 4 6 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| AMD K6 pr2-166 (2.9V) | 166/66 | 2.5 | 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| Cyrix 6x86M2 PR166+ (3.4V) | 133/66 | 2 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |

(continued) CPU Jumper Setting Example

| CPU | Clock Int/Ext (MHz) | Clock Ratio | JP6 (Ratio) | JP5 (External) | JP7 (Vcore) | JP8 (CPU Type) |
|------------------------------------|------------------------|----------------|---|---|--|---|
| Cyrix 6x86M2 MX-PR266 (2.9V) | 233/66 | 3.5 | 2 4 6 <input type="radio"/> <input type="radio"/> <input type="radio"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| Cyrix 6x86M2 MX-PR233 (2.9V) | 200/66 | 3.0 | 2 4 6 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |
| Cyrix 6x86M2 MX-PR200 (2.9V) | 166/66 | 2.5 | 2 4 6 <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> 1 3 5 | 2 4 6 <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> 1 3 5 | 2 4 6 8 <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 1 3 5 7 | 6 <input type="radio"/> <input type="radio"/> 5 4 <input checked="" type="radio"/> <input checked="" type="radio"/> 3 2 <input checked="" type="radio"/> <input checked="" type="radio"/> 1 |

Connector Descriptions

To locate connectors on the SBC-598 refer to the "*Locating jumpers, connectors, and sockets*" section earlier in this chapter.

USB connector (CN1)

The USB connector supports two universal serial ports. This connector allows an optional external adaptor and attached cable to connect external USB devices. If the USB ports are installed, the USB setting in the CMOS setup should be set to *Enabled*. The USB ports also require operating system supporting for USB devices.

The SBC-598 CPU card has two USB Connectors, their connection pin assignment is as follows.

USB Connector (CN1)

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | VCC | 2 | VCC |
| 3 | -DATA0 | 4 | -DATA1 |
| 5 | +DATA0 | 6 | +DATA1 |
| 7 | GND | 8 | GND |
| 9 | NC | 10 | NC |

Hard Disk LED Connector (CN2)

The HDD LED Connector (CN2) allows the user to connect to the hard disk activity indicator light on the case.

Hard Disk LED Connector (CN2)

| Pin | Signal |
|-----|------------|
| 1 | VCC |
| 2 | HDD Active |

Thermal Alarm LED (CN3)

Like CN2, the Thermal Alarm LED connector (CN3) allows the user to connect an alarm indicator light on the case.

Thermal Alarm LED Connector (CN3)

| Pin | Signal |
|-----|--------|
| 1 | Alarm |
| 2 | GND |

Power LED & Keylock Connector (CN4)

You can use a switch (or a lock) to disable the keyboard so that the PC will not respond to any input. This is useful if you do not want anyone to change or stop a running program. Connect the switch between Pins 4 and 5 to lock the keyboard.

Power LED & Keylock Connector (CN4)

| Pin | Signal |
|-----|------------------|
| 1 | Power LED (VCC) |
| 2 | NC |
| 3 | GND |
| 4 | Keylock (IRQ1) |
| 5 | GND |

Fan Connector (CN5)

Provides power supply to optional CPU cooling fan.

Fan power connector

| Pin | Signal |
|-----|--------|
| 1 | +12 V |
| 2 | FAN_ON |
| 3 | +5V |

Primary and Secondary IDE HD connector (CN6, CN7)

You can attach four IDE (Integrated Device Electronics) drives to the SBC-598's internal controller. The SBC-598 CPU card has two Enhanced IDE connectors: PRIMARY IDE and SECONDARY IDE.

Wire number 1 on the cable is red or blue, the other wires are gray. Connect one end to PRIMARY IDE or SECONDARY IDE on the CPU card. Make sure that the red (or blue) wire corresponds to pin 1 on the connector (on the right side).

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 1x44-pin to 2x44-pin flat-cable connector. 3.5" drives use a 1x44-pin to 2x40-pin connector.

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

1. Connect one end of the cable to the IDE connector. 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.

Digital I/O Port connector (CN8)

The SBC-598 provides four channels for digital input and output transactions. The I/O addresses are allocated as 294H, Bit 0 ~ Bit 3.

Digital I/O Port Connector (CN8)

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | IN1 | 2 | OUT1 |
| 3 | IN2 | 4 | OUT2 |
| 5 | IN3 | 6 | OUT3 |
| 7 | IN4 | 8 | OUT4 |

Reserved Connector (CN9)

This connector is reserved for future use.

Reserved IR connector (CN10)

The onboard IR connector supports an Infra-Red port module that enables wireless communication between the computer and other computers and devices with infrared capability. The port module is an optional component. If it is installed, you must set the IR Transfer Mode in the Peripherals section of the CMOS setup utility.

Ir Connector

| Pin | Function |
|-----|-------------------------|
| 5 | IR_TX |
| 4 | GND |
| 3 | IR_RX (Low Frequency) |
| 2 | FIR_RX (High Frequency) |
| 1 | VCC |

Floppy Drive Connector (CN11)

You can attach up to two floppy disks to the SBC-598 onboard 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 CN11. Make sure that the red wire corresponds to pin one 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 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.

Parallel Port Connector (CN12)

Normally, the parallel port is used to connect the card to a printer. The SBC-598 includes an onboard parallel port, accessed through CN12, 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 SBC-598 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.

COM2 Connector (CN13)

The SBC-598 offers two RS-232 serial ports, COM1 and COM2, which let you connect to serial devices (e.g., mouse, printers, etc.) or a communication network. COM-A is COM1, and COM-B is COM2.

COM2 Connector (CN7)

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | DCD | 2 | DSR |
| 3 | RXD | 4 | RTS |
| 5 | TXD | 6 | CTS |
| 7 | DTR | 8 | RI |
| 9 | GND | 10 | NC |

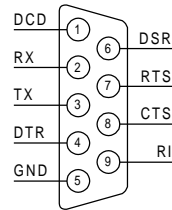
Power Connector (CN14)

In single board computer (non-passive backplane) applications, you need to connect power directly to the SBC-598. This connector is fully compatible with the standard PC power supply connector. See the following table for its pin assignments:

| Power Connector (CN14) | |
|------------------------|--------|
| Pin | Signal |
| 1 | NC |
| 2 | +5V |
| 3 | +12V |
| 4 | -12V |
| 5 | GND |
| 6 | GND |

COM1 Connector (CN15)

The SBC-598 offers two RS-232 serial ports, COM1 and COM2, which let you connect to serial devices (e.g., mouse, printers, etc.) or a communication network. COM-A is COM1 and COM-B is COM2.



The card mounting bracket holds COM-A, the DB-9 serial port connector for the first port. For COM-B, please refer to the jumper settings section.

You can disable each port or select its address using the BIOS Advanced Setup program.

Different devices implement the RS-232 standard in different ways. If you get problems in a serial device, please check the pin assignments of the connector. The above figure shows the pin assignments of the card's RS-232 ports.

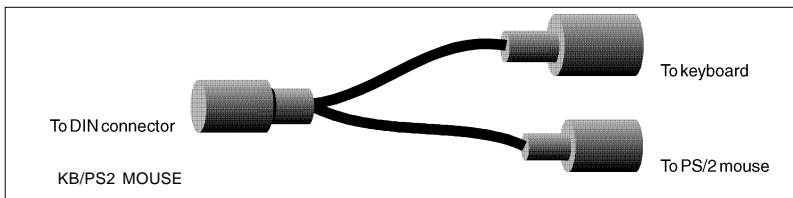
CRT Connector (CN16)

This connector allows the user to connect a CRT monitor.

KB Connector and Keyboard/PS2 Mouse Connector (CN17, CN18)

The SBC-598 board provides two keyboard connectors. There is a 5-pin connector (CN17) which supports passive backplane applications. There is also a second 6-pin mini-DIN connector (CN18) on the card mounting bracket. The card comes with an adapter to convert the 6-pin mini-DIN connector, used for the mouse, to the standard DIN connector for the keyboard.

You can enable or disable the address for each port within the BIOS Peripheral Setup Menu.



Adaptor for connecting a keyboard and PS/2 Mouse.

Keyboard Connector on cable

| Pin | Function |
|-----|----------|
| 1 | KBCLK |
| 2 | KBDATA |
| 3 | NC |
| 4 | KB GND |
| 5 | KB Vcc |

Mouse Connector on cable

| Pin | Function |
|-----|----------|
| 1 | MSCLK |
| 2 | MSDATA |
| 3 | NC |
| 4 | KB GND |
| 5 | KB Vcc |

CHAPTER

3

Award BIOS Setup

This chapter describes how to configure the BIOS for the SBC-598.

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 nonfatal. The system can usually continue the boot up sequence with nonfatal errors. Nonfatal 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

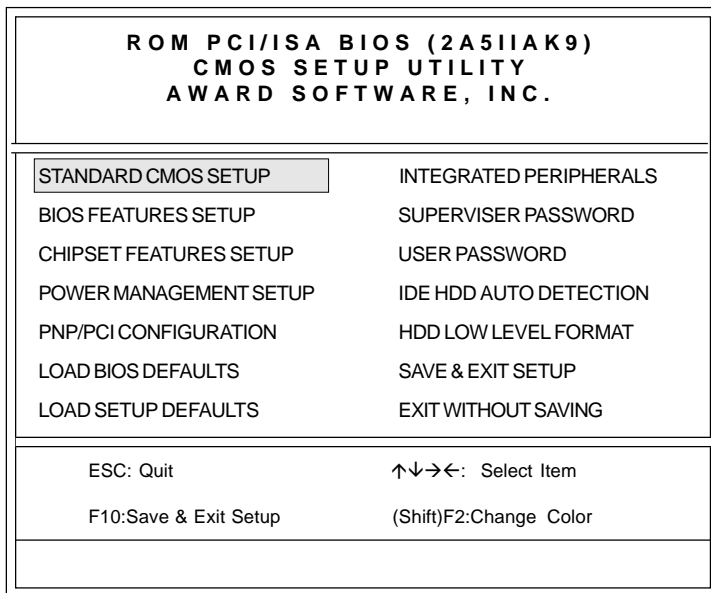
These routines check the current system configuration against the values stored in the card's CMOS memory. If they don't match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

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

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

The SBC-598's CMOS memory has a lithium battery backup.

Award BIOS setup



Setup Utility Initial Screen

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

Many fields in the setup screens have on-line help descriptions available: press F1 to access this help.

Entering setup

Power on the computer and press immediately. This will allow you to enter the utility and the utility screen should appear (see figure above).

Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu, the screen below 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.

| ROM PCI/ISA BIOS (2A511AK9) | | | | | | | |
|-------------------------------------|------------------------|------|------------------|--------------------------|---------|-------|-------------|
| STANDARD CMOS SETUP | | | | | | | |
| AWARD SOFTWARE, INC. | | | | | | | |
| Date (mm:dd:yy) : Fri, Jan 16, 1998 | | | | | | | |
| Time (hh:mm:ss) : 8:20:23 | | | | | | | |
| HARD DISKS | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR MODE |
| PRIMARY MASTER | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 AUTO |
| PRIMARY SLAVE | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 AUTO |
| SECONDARY MASTER | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 AUTO |
| SECONDARY SLAVE | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 AUTO |
| Drive A : 1.44M, 3.5 in. | | | | Base Memory : 640K | | | |
| Drive B : None | | | | Extended Memory : 27648K | | | |
| Video : EGA/VGA | | | | Other Memory : 384K | | | |
| Halt On : All, But Keyboard | | | | Total Memory : 28672K | | | |
| ESC: Quit | ↑↓→← :Select Item | | PU/PD/+/-:Modify | | | | |
| F1:Help | (Shift)F2:Change Color | | | | | | |

CMOS setup screen

BIOS Features Setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu. The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

| ROM PCI/ISA BIOS (2A5IIAK9) | | | | | |
|-----------------------------|---|----------------|-------------------------|---|-------------------|
| BIOS FEATURES SETUP | | | | | |
| AWARD SOFTWARE, INC. | | | | | |
| Virus Warning | : | Enabled | Video BIOS Shadow | : | Enabled |
| CPU Internal Cache | : | Enabled | C8000-CBFFF Shadow | : | Disabled |
| External Cache | : | Enabled | CC000-CFFFF Shadow | : | Disabled |
| Quick Power On Self Test | : | Disabled | D0000-D3FFF Shadow | : | Disabled |
| Boot Sequence | : | C, A | D4000-D7FFF Shadow | : | Disabled |
| Swap Floppy Drive | : | Disabled | D8000-DBFFF Shadow | : | Disabled |
| Boot Up Floppy Seek | : | Enabled | DC000-DFFFF Shadow | : | Disabled |
| Boot Up NumLock Status | : | On | | | |
| Boot Up System Speed | : | High | | | |
| Gate A20 Option | : | Fast | | | |
| Security Option | : | Setup | | | |
| | | | Esc:Quit | | ↑↓→←: Select Item |
| | | | F1: Help | | PU/PD/+/-: Modify |
| | | | F5: Old Values | | (Shift)F2: Color |
| | | | F6: Load BIOS Defaults | | |
| | | | F7: Load Setup Defaults | | |

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 modification attempts. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, you can 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, if enabled, can speed up memory access. However, it depends on the 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 operating system.

Swap Floppy Drive

This item allows you to swap the floppy drive assignments so that drive A is treated as drive B and drive B is treated as drive A under DOS. The default setting is *Disabled*.

Boot Up Floppy Seek

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

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad on an IBM-compatible extended keyboard.

Boot Up System Speed

This allows you to determine the Boot Up Speed. The choices are *High/Low*.

Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 MB. Initially, gate A20 was handled via a pin on the keyboard. Today keyboards still provide this support, however it is more common and much faster for the system chipset to provide support for gate A20. The choices are thus: *Normal* and *Fast*.

Security Option

This category allows you to limit access to the system. The choices are *System*: which requires a password at boot up and *Setup*: which only requires a password to access the setup utility.

Video BIOS Shadow

Determines whether the video display card BIOS will be copied into system DRAM in order to increase display speed and is required for system performance. However, it is optional depending on the chipset design. The default setting is *Enabled*.

Shadowing Address Ranges

The next six lines, from C8000-CBFFF Shadow to CD000-DFFFF Shadow are address ranges for shadowing other expansion card ROMs. If there are any expansion cards with ROMs installed in your system, you have to know the address range they use in order to shadow them specifically. The default setting for all of these is *Disabled*.

CHIPSET Features Setup

By choosing the CHIPSET FEATURES SETUP option from the initial SETUP SCREEN menu. The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

| ROM PCI/ISA BIOS (2A5IIAK9) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC. | |
|---|--|
| Auto Configuration | : <input type="text" value="Enabled"/> |
| L2 (WB) Tag Bit length | : 8bits |
| SRAM Back-to-Back | : Enabled |
| NA# Enable | : Disabled |
| Starting point of paging | : 1T |
| Refresh Cycle Time (us) | : 187.2 |
| RAS Pulse Width Refresh | : 6T |
| RAS Precharge Time | : 4T |
| RAS to CAS Delay | : 4T |
| CAS# Pulse Width (FP) | : 2T |
| CAS# Pulse Width (EDO) | : 1T |
| RAMW# Assertion Timing | : 3T |
| CAS Precharge Time (FP) | : 1T/2T |
| CAS Precharge Time (EDO) | : 1T/2T |
| SDRAM CAS Latency | : 3T |
| SDRAM WR Retire Rate | : X-2-2-2 |
| SDRAM Wait State Control | : 1WS |
| Enhanced Memory Write | : Disabled |
| Read Prefetch Memory RD | : Enabled |
| CPU to PCI Post Write | : 3T |
| CPU to PCI Burst Mem. WR | : Disabled |
| ISA Bus Clock Frequency | : PCICLK/4 |
| System BIOS Cacheable | : Enabled |
| Video BIOS Cacheable | : Enabled |
| Memory Hole at 15M-16M | : Disabled |
| VGA Shared Memory Size | : 4 MB |
| VGA Memory Clock (Mhz) | : 55 |
| CPU Warning Temperature | : Disabled |
| Current CPU Temperature | : 0C/32F |
| CPU Speed Overheat | : Full |
| Speaker Alarm Overheat | : Disabled |
| System Fan Work Control | : Always On |
| Esc:Quit | ↑↓→←: Select Item |
| F1 : Help | PU/PD/+/- : Modify |
| F5 : Old Values | (Shift)F2 : Color |
| F6 : Load BIOS Defaults | |
| F7 : Load Setup Defaults | |

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.

Because of the complexity and technical nature of some of the options, not all of the options are described here.

Auto Configuration

Set this item to *Enabled* to select predefined values for DRAM, cache, timing, etc., according to your CPU type and system clock. Thus, each item value may display differently depending on your current system configuration.

System BIOS Cacheable

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached if the cache controller is enabled.

Video BIOS Cacheable

As with caching the system BIOS above, enabling the video BIOS cache will cause access to the 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, but must be mapped below 16 MB.

VGA Shared Memory Size

This sets the size of the 5598 model's onboard video display memory, which is drawn from the total installed system memory. The options range from *0.5MB* to *4MB* in *0.5MB* intervals. Remember, when you increase the amount of display memory you are subtracting from the system memory.

VGA Memory Clock

You can choose different speeds for the VGA Memory Clock: from *40* up to *70MHz* in *1MHz* increments.

Smart Temperature Control Settings

One of the key features of the SPC-598 is its "Smart Temperature Control" feature that automatically trigger events in the event of CPU overheating. The sensitivity of the triggers are determined by the user. The following 5 items can be customized.

CPU Warning Temperature

The LM75 chip monitors the CPU temperature and triggers alarms depending on the BIOS settings. The temperature at which the events are triggered range from *50C/122F* to *100C/212F* in 5C increments.

Current CPU Temperature

Provides the current temperature of the CPU in both Celsius and Fahrenheit.

CPU Speed Overheat

This setting determines what happens to the CPU speed if it is detected to be overheating (as determined by the "CPU Warning Temperature" setting above). The available choices are *Full Speed*, *1/4*, *1/3*, and *1/2*.

Speaker Alarm Overheat

The user can choose to have a speaker alarm sound if the CPU is detected to be overheating (as determined by the "CPU Warning Temperature" setting above). The choices are *Enabled* or *Disabled*.

System Fan Work Control

The user can determine what happens to the externally connected fan (see CN5 - Fan Connector) if the CPU is detected to be overheating (as determined by the "CPU Warning Temperature" setting above). The choices are *Overheat* or *Always On*.

Power Management Setup

By choosing the POWER MANAGEMENT SETUP option from the initial SETUP SCREEN menu. The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

| ROM PCI/ISA BIOS (2A511AK9) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC. | |
|---|--|
| Power Management | : <input type="text" value="Disable"/> |
| PM Control by APM | : Yes |
| Video Off Option | : Always on |
| Video Off Method | : DPMS Supported |
| Doze Speed (div by) | : 2 |
| Stdy Speed (div by) | : 3 |
| MODEM Use IRQ | : 3 |
| Hot Key SMI | : Disabled |
| **PM Timers** | |
| HDD Off After | : Disable |
| Doze Mode | : Disable |
| Standby Mode | : Disable |
| Suspend Mode | : Disable |
| **PM Events** | |
| COM Ports Activity | : Enabled |
| LPT Ports Activity | : Enabled |
| HDD Ports Activity | : Enabled |
| VGA Activity | : Disabled |
| IRQ3 (COM 2) | : Enabled |
| IRQ4 (COM 1) | : Enabled |
| IRQ5 (LPT 2) | : Enabled |
| IRQ6 (Floppy Disk) | : Enabled |
| IRQ7 (LPT 1) | : Enabled |
| IRQ8 (RTC Alarm) | : Disabled |
| IRQ9 (IRQ2 Redir) | : Enabled |
| IRQ10 (Reserved) | : Enabled |
| IRQ11 (Reserved) | : Enabled |
| IRQ12 (PS/2 Mouse) | : Enabled |
| IRQ13 (Coprocessor) | : Enabled |
| IRQ14 (Hard Disk) | : Enabled |
| IRQ15 (Reserved) | : Enabled |
| Esc: Quit ↑↓→←: Select Item | |
| F1 : Help PU/PD/+/-: Modify | |
| F5 : Old Values (Shift)F2 : Color | |
| F6 : Load BIOS Defaults | |
| F7 : Load Setup Defaults | |

Power management setup

Power Management

Power management lets you set up your computer to save electricity when it is not actively in use by putting the system into progressively greater power saving modes. In the power management scheme there are four system states which proceed in the following sequence:

Normal → *Doze* → *Standby* → *Suspend*

There are four selections for Power Management (PM):

| | |
|---------------------|--|
| <i>Disabled</i> | Turns off PM |
| <i>Max Saving</i> | Maximized power saving by activating maximum power saving settings after one minute of system inactivity. |
| <i>Min Saving</i> | Produces less power saving by activating moderate power saving settings after one hour of system inactivity. |
| <i>User Defined</i> | You set the power saving options manually. |

With the exception of *Disabled*, three of the above selections have "fixed-mode" settings. Therefore, when PM is set to *Disabled*, some items which are predefined will become unmodifiable.

PM Control by APM

When this is set to *Yes*, the Advanced Power Management feature in Microsoft Windows controls power management operation. The default setting is *No*.

Video Off Option

User can select 4 different modes for turning off the video. The modes are a function of the PM mode of the computer. The choices are *All Modes* → *Off*, *Always On*, *Suspend* → *Off*, and *Susp*, *Stby* → *Off*.

The table below summarizes the behavior of the monitor in relation to the four PM modes.

| <u>PM Mode</u> | <u>Monitor Behavior</u> |
|-------------------|-------------------------|
| <i>All Modes</i> | <i>Off</i> |
| - | <i>Always On</i> |
| <i>Suspend</i> | <i>Off</i> |
| <i>Susp, Stby</i> | <i>Off</i> |

For example, if you choose *Suspend* → *Off*, then the monitor will turn off if the computer is in the *Suspend* PM mode.

Video Off Method

This governs monitor power saving by controlling how power management blanks the monitor screen. The default setting blanks the screen and turns off vertical and horizontal scanning and requires a monitor with "green" features. If you don't have this type of monitor, use the *Blank* option. DPMS (Display Power Management System) allows the BIOS to control the video display card if the card has the DPMS feature.

| | |
|--------------|----------------------------------|
| <i>Blank</i> | <i>Blank</i> |
| BLANK | (non-green monitor, less saving) |
| DPMS | (Display card must support DPMS) |

Modem Use IRQ

If you have a modem installed in your system, you can enter which IRQ it is using so that APM can control it.

Hot Key SMI

This allows the user to use the <CTL-ALT-BACK SPACE> hot key to enter the Suspend mode. Press any key to wake up the computer. The default setting is *Disabled*.

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 the available Power Management selections.

HDD Off After

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

Doze Mode

This sets the period of system inactivity after which the system goes into *Doze* mode, the most limited power saving state. The settings range from 20 seconds to 40 minutes and can be set manually when power management is in *User Define* mode. The default setting is *Disabled*. When the system goes into power saving mode, power management will skip to the next mode in the sequence if this is disabled.

Standby Mode

This sets the period of system inactivity after which the system goes into *Standby* mode, the intermediate power saving state. The settings range from 20 seconds to 40 minutes and can be set manually when power management is in *User Define* mode. The default setting is *Disabled*. When the system goes into power saving mode, power management will skip to the next mode in the sequence if this is disabled.

Suspend Mode

This sets the period of system inactivity after which the system goes into *Suspend* mode, the maximum power saving state. The settings range from 20 seconds to 40 minutes and can be set manually when power management is in *User Define* mode. The default setting is *Disabled*. When the system goes into power saving mode, power management will skip to the next mode in the sequence if this is disabled.

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.

When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ (Interrupt ReQuest) to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. The following is a list of IRQs, which can be disabled:

- COM Ports Activity
- LPT Ports Activity
- HDD Ports Activity
- VGA Activity
- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PNP/PCI Configuration setup

By choosing the PCI CONFIGURATION SETUP option from the initial SETUP SCREEN menu, the screen below is displayed. The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

| ROM PCI/ISA BIOS (2A5IIAK9) PNP/PCI CONFIGURATION SETUP AWARD SOFTWARE, INC. | | | |
|---|---------------------------------------|--------------------------|--------------------|
| Resources Controlled By | : <input type="text" value="Manual"/> | PCI IRQ Activated By | : Level |
| Reset Configuration Data | : Disabled | PCI IDE 2nd Channel | : Enabled |
| | | PCI IDE IRQ Map to | : PCI-AUTO |
| | | Primary IDE INT# | : A |
| | | Secondary IDE INT# | : B |
| IRQ-3 Assigned to | : Legacy ISA | | |
| IRQ-4 Assigned to | : Legacy ISA | | |
| IRQ-5 Assigned to | : PCI/ISA PnP | | |
| IRQ-7 Assigned to | : Legacy ISA | | |
| IRQ-9 Assigned to | : PCI/ISA PnP | | |
| IRQ-10 Assigned to | : PCI/ISA PnP | | |
| IRQ-11 Assigned to | : PCI/ISA PnP | | |
| IRQ-12 Assigned to | : PCI/ISA PnP | | |
| IRQ-14 Assigned to | : Legacy ISA | | |
| IRQ-15 Assigned to | : Legacy ISA | | |
| DMA-0 Assigned to | : PCI/ISA PnP | | |
| DMA-1 Assigned to | : PCI/ISA PnP | | |
| DMA-3 Assigned to | : PCI/ISA PnP | | |
| DMA-5 Assigned to | : PCI/ISA PnP | | |
| DMA-6 Assigned to | : PCI/ISA PnP | | |
| DMA-7 Assigned to | : PCI/ISA PnP | | |
| | | Esc:Quit | ↑↓→← : Select Item |
| | | F1 : Help | PU/PD/+/-: Modify |
| | | F5 : Old Values | (Shift)F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

PNP/PCI Configuration setup

This section describes configuring the Peripheral Component Interconnect (PCI) bus system which allows I/O devices to operate at speeds nearing the speed of the CPU when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users make any changes to the default settings.

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 will only work if you are running a Plug and Play operating system such as Windows® 95.

Reset Configuration Data

This item allows you to reset the configuration data.

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

These items allow 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 by your system manufacturer. The choices are *Level/Edge*.

PCI IDE 2nd Channel

This item allows you to designate an IDE controller board inserted into one of the physical PCI slots as your secondary IDE controller. If *Enabled*, the External IDE controller is designated as the secondary controller, if *Disabled*, no IDE controller is occupying a PCI slot.

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.

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.

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 SBC-598 on.

| ROM PCI/ISA BIOS (2A511AK9) CMOS SETUP UTILITY AWARD SOFTWARE, INC. INTEGRATED PERIPHERALS | |
|---|-------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISER PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSSWORD |
| POWER MANAGEMENT SETUP | IDE HDD AUTO DETECTION |
| PNP/PCI CONFIGURATION | HDD LOW LEVEL FORMAT |
| LOAD BIOS DEFAULTS | SAVE & EXIT SETUP |
| LOAD SETUP DEFAULTS | EXIT WITHOUT SAVING |
| ESC: Quit | ↑↓→←: Select Item |
| F10: Save & Exit Setup | (Shift)F2: Change Color |
| Time, Date, Hard Disk Type.... | |

Integrated Peripherals Setup

Integrated Peripherals options are displayed by choosing the INTEGRATED PERIPHERALS menu item from the initial setup screen. This section sets the IDE transfer mode for all IDE channels. It also configures the other onboard ports. The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

| ROM PCI/ISA BIOS (2A51IAK9) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC. | | | |
|---|-----------|--------------------------|-------------------|
| Internal PCI/IDE | :Both | Parallel Port Mode | :SPP |
| IDE Primary Master PIO | :Auto | PS/2 mouse function | :Enabled |
| IDE Primary Slave PIO | :Auto | USB Controller | :Enabled |
| IDE Secondary Master PIO | :Auto | USB Keyboard Support | :Disabled |
| IDE Secondary Slave PIO | :Auto | | |
| Primary Master Ultra DMA | :Auto | | |
| Primary Slave Ultra DMA | :Auto | | |
| Secondary Master UltraDMA | :Auto | | |
| Secondary Slave Ultra DMA | :Auto | | |
| IDE Burst Mode | :Disabled | | |
| IDE Data Port Post Write | :Enabled | | |
| IDE HDD Block Mode | :Enabled | | |
| Onboard FDD Controller | :Enabled | | |
| Onboard Serial Port1 | :3F8/IRQ4 | | |
| Onboard Serial Port 2 | :2F8/IRQ3 | | |
| IR Address Select | :3E8H | | |
| IR Mode | :HP SIR | | |
| IR IRQ Select | :IRQ 10 | | |
| Onboard Parallel Port | :378/IRQ7 | | |
| | | Esc:Quit | ↑↓→←: Select Item |
| | | F1 : Help | PU/PD/+/- :Modify |
| | | F5 : Old Values | (Shift)F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

Integrated Peripherals Setup

Internal PCI/IDE

You can choose *Disable* to terminate the onboard PCI/IDE controller and then support external HDD devices. When the setting is *Primary*, users can setup IDE Mode or UltraDMA mode depending on the HDD device.

IDE Primary/Secondary Master/Slave PIO

This sets 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

This sets the transfer mode of the UltraDMA hard disk, 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* 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 *Enable* to use HDD block transfer mode.

Onboard FDD Controller

Enables or *Disables* the onboard Floppy Drive controllers.

Onboard Serial Port 1/2

You can set the I/O address for serial ports 1/2. The system will auto-detect the COM port address when this item set to *Auto*.

3F8/IRQ4 (default for port 1)

2F8/IRQ3 (default for port 2)

3E8/IRQ4

2E8/IRQ3

IR Address Select

The address of the IR port can be changed from *Disabled*, *2E8H*, *3E8H*, *2F8H*, to *3F8H*.

IR Mode

The IR mode can be either set to *HPSIR* or *ASKSIR*.

IR IRQ Select

The user can manually set the IRQ of the IR port.

Onboard Parallel Port

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

378/IRQ7 (default)

Disabled

278/IRQ5

3BC/IRQ7

Parallel Port Mode

Selects the parallel port mode. The setting options are:

SPP

ECP+EPP

EPP

ECP

If you set this option to *SPP* or *EPP*, the "ECP Mode Use DMA" option will not appear on the screen. If you set this option to *SPP* or *ECP*, the "Parallel Port EPP Type" option will not appear on the screen.

ECP Mode Use DMA

Selects the ECP Mode DMA channel. The setting options are:

3

1

Note: that this option does not appear if the "Onboard Parallel Mode" is set to *SPP* or *EPP*.

PS/2 Mouse Function

The user can disable the PS/2 Mouse if desired.

USB Controller/Keyboard Support

Enable or Disable the onboard USB port controller, as well as USB Keyboard support.

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.

| | |
|--|----------------------------|
| ROM PCI/ISA BIOS (2A511AKD) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | |
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISER PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSSSWORD |
| POWER MANAGEMENT SETUP | IDE HDD AUTO DETECTION |
| PNP/PCI CONFIGURATION | HDD LOW LEVEL FORMAT |
| LOAD BIOS DEFAULTS | SAVE & EXIT SETUP |
| LOAD SETUP DEFAULTS | EXIT WITHOUT SAVING |
| ESC: Quit | ↑↓→←: Select Item |
| F10: Save & Exit Setup | (Shift)F2: Change Color |
| Time, Date, Hard Disk Type.... | |

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

To disable a password, just press <ENTER> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter the utility freely.

PASSWORD

When a password has been enabled, you will be prompted to enter it every time you try to enter the setup utility. This prevents unauthorized use of the utility on your computer.

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 different IDE combinations: *Primary Master, Secondary Master, Primary Slave, and Secondary Slave.*

| ROM PCI/ISA BIOS (2A5L9AKD) | | | | | | | |
|--|------|------|------|---------|---------|--------|-------------|
| CMOS SETUP UTILITY | | | | | | | |
| AWARD SOFTWARE, INC. | | | | | | | |
| Hard Disks | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR MODE |
| Primary Master: | | | | | | | |
| Select Primary Master Option (N=Skip) : N | | | | | | | |
| OPTIONS | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
| 1(Y) | 0 | 0 | 0 | 0 | 0 | 0 | Normal |
| ESC = SKIP | | | | | | | |
| Some OSes (like SCO-UNIX) must use "NORMAL" for installation | | | | | | | |

IDE HDD Auto Detection Screen

HDD Low Level Format Utility

Selecting this utility allows you to execute HDD low level formatting. This 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 appears after you enter into the utility.

| HARD DISK LOW LEVEL FORMAT UTILITY | | NO. CYLS HEAD | | | | | |
|--|-------------|---------------|--------|-----------------|---------|----------|-----------|
| <input type="button" value="SELECT DRIVE"/> BAD TRACK LIST PREFORMAT | | | | | | | |
| CURRENT SELECT DRIVE IS: C | | | | | | | |
| Drive: C | Cylinder: 0 | Head: 0 | | | | | |
| Primary Master : | SIZE 0 | CYLS 0 | HEAD 0 | PRECOMP 0 | LANDZ 0 | SECTOR 0 | MODE AUTO |
| Up/Down: SELECT ITEM | | ENTER: ACCEPT | | ESC: Exit/Abort | | | |
| Copyright (c) Award Software, Inc. 1992-1997 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 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

Selecting this option and pressing <ENTER> lets you exit the setup utility without recording any new values or changing old ones.

SiS 5598 VGA Drivers

The content of this chapter includes SiS 5598 VGA Driver installation instructions for the SBC-598.

System Requirements

This section describes system requirements for the SiS 5598 VGA Driver and how to install the drivers.

1. The hardware system must contain a 5598 chipset.
2. A mouse is optional.
3. Set the *VGA Shared Memory Size* in the BIOS CHIPSET Features Setup. Please refer to Chapter 3 for more information on how to set the *VGA Shared Memory Size* in the BIOS CHIPSET FEATURES SETUP section.

Windows 95

Windows 95 (Display Driver Installation)

1. Click on the "Start" button and select "Control Panel" from the *Settings* menu.
2. Double-click on the Display icon.
3. Select the *Settings* tab in the Display Properties window.
4. Click on the "Change Display Type" or the "Advanced Properties" button.
5. Click on "Change..." in the *Adapter* tab.
6. Click on "Have Disk..."
7. Place the Windows 95 Installation Disk into the floppy drive.
8. When the Install from Disk dialog box appears, type the directory storing the drivers and click "OK" or click the "Browse..." button to manually locate the drivers.

The directory is "A:\Win95\" and the file is called "SiS5597.INF"

9. The name of the VGA driver (SiS 5597/5598) will appear in the Models list box of the Select Device dialog.

10. When the Change Display dialog box appears, click on "Close".
11. Select the "OK" or the "Apply" button.
12. A message will appear stating you must restart Windows 95, click on "Yes" to restart.
13. After restarting, Windows 95 will run on 640 x 480 @ 256 colors.

Selecting resolution, color depth, and refresh

1. Click on the "Start" button and select "Control Panel" from the *Settings* menu.
2. Double-click on the Display icon.
3. Select the *Settings* tab in the Display Properties window.
4. In the *Color Palette* area, change between 16, 256, High, and True color.
5. To select a new desktop resolution size, go to the *Desktop Area* section and use the slider to change resolution from 640 x 480, 800 x 600, 1024 x 768, to 1280 x 1024.
6. Select the *Refresh Rate* list box to change the screen refresh rate.
7. Click "OK" or "Apply."

Windows 3.x

Installation

1. Click on the *File* menu and select the "Run..." menu item.
2. In the Run dialog, type the source execution file then press "OK".
The execution file in the Win 3.1 Driver diskette is "A:\SETUP.EXE".
3. Follow the setup program's on-screen instructions.
4. The setup procedure will create a "SiS Multimedia Vx.xx" program group and there are 5 items in the program group:
 - Multimedia Manager
 - SiS MMPlayer
 - SVGA Setup
 - Center Screen
 - Uninstall
5. A setup successful dialog will appear when setup is completed, and the user can choose to restart the system now or later.

Graphics Setup

1. In the "SiS Multimedia Vx.xx" program group, double-click on the SVGA Setup icon to enter the *SiS VGA Configuration System* screen.
2. In the *SiS VGA Configuration System* screen, choose which options you would like to use.
3. After completing your selections, choose "OK" to make all your selections effective.
4. Choose "Restart Windows" to reboot Windows using the new settings. Or, choose "Continue" to not reboot now.

Power Saving Setup in Windows 3.x

1. In the *SiS VGA Configuration System* screen, choose the *power saver* item to enter the Power Saver screen.
2. In the Power Saver screen, choose which options you would like to use.
3. After completing the selections, choose "OK" to make all your selections effective.
4. After a complete setup, the power saver mode should take effect.

NT 3.5x

Windows NT 3.5x display drivers Installation:

1. Double-click on "Control Panel" in the *Main* group.
2. Double-click on the Display icon.
3. Select *Change Display Type* from *Display Settings*.
4. Select "Change" from *Display Type*.
5. Select "Other" from *Select Device*.
6. Insert the Windows NT 3.5x Installation Disk into the floppy drive.
7. When the Install from Disk dialog box appears, type the directory storing the drivers and click "OK"

The Win NT 3.5x directory is "A:\WINNT35".
8. Select "Install" and click "Yes" when the Installing Driver dialog box appears.
9. Select "New" when the Windows NT Setup dialog box appears.
10. Click "Continue".

A message will appear stating that the drivers were successfully installed; click "OK". You must now restart Windows NT 3.51.

Selecting resolution and color depth:

1. Click on the "Start" button and select "Control Panel" from the *Settings* group.
2. Select "Control Panel" from the *Main* group.
3. Select the Display icon.
4. Select the *Color Palette* to change between 16, 256, 32768, 65536, and 16777216 colors.
5. To select a new desktop resolution size, go to the *Desktop Area* and use the slider to change resolution from 640 x 480, 800 x 600, 1024 x 768, and 1280 x 1024.
6. Select "Test" to test the resolution.

If the display test screen was good then select "Yes" when the Testing Mode dialog box appears. If the display test screen was bad then select "No". Windows NT 3.5 will give you an error message.

7. If the display test screen was good and you selected "Yes", Windows NT 3.5 will prompt you to restart.

NT 4.0

Windows NT 4.0 display drivers installation:

1. Click on the "Start" button and select "Control Panel" from the *Settings* group.
2. Double-click on the Display icon.
3. Select the *Settings* tab in the Display Properties window.
4. Select *Display Type*.
5. Select "Change" in the *Adapter Type* tab.

6. Select "Have Disk..."
7. Place the Windows NT 4.0 Installation Disk into the floppy drive.
8. When the Install from Disk dialog box appears, type the directory storing the drivers and click "OK."

The WIN NT 4.0 directory is located in "A:\WINNT40".

9. When the Change Display dialog box appears, click "OK."
10. When the Third-party Drivers dialog box appears, click "Yes."

A message will appear stating that the drivers were successfully installed, click "OK." You must now restart Windows NT 4.0.

Selecting resolution and color depth

1. Click on the "Start" button and select "Control Panel" from the *Settings* group.
2. Double-click on the Display icon.
3. Select *Settings* tab in the Display Properties window.
4. In the *Color Palette* area, change between 16, 256, 32768, 65536, and 16777216 colors.
5. To select a new desktop resolution size, go to the Desktop Area and use the slider to change resolution from 640 x 480, 800 x 600, 1024 x 768, to 1280 x 1024.
6. Select "Test" to test the resolution. If the display test screen was good then select "Yes" when the Testing Mode dialog box appears. If the display test screen was bad then select "No." Windows NT 4.0 will give you an error message.
7. Click "OK." If the display test screen was good and you selected "Yes", Windows NT 4.0 will change the mode without restarting.

DOS

VGA drivers do not have to be installed when operating in DOS. Changing the VGA settings requires running the program "*SVGAUTIL.EXE*."

VGA Utility

1. Insert the disk which contains the SiS 5598 DOS VGA Utility installation program
2. Run the setup program called "*SVGAUTIL.EXE*"

You should now see the screen for setting various VGA options:

- a) Video Mode Setting,
 - b) Frame Rate Setting, and
 - c) Power Saving Setting.
- 3) Once you have made your changes, you can choose to save the changes to the "*AUTOEXEC.BAT*" file or not.

Video Mode Setting

A list of the different video modes that can be supported is displayed. Be sure to first test the video mode, by highlighting the mode and then by pressing <F1>, before making a final selection.

Frame Rate Setting

Much like the Video Mode Setting, a list of valid frame rate modes will be displayed which includes the monitor display resolution and the corresponding frame rate. Again, first press <F1> to test if the monitor can support the frame rate before finalizing your frame rate selection.

Power Saving Setting

Here you can set the timers for the Standby and Suspend power saving modes. Highlight the "Standby Timer" or "Suspend Timer" option to change the timer values.

Programming the Watchdog Timer

The SBC-598 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

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. The timer ranges from 0 minutes (i.e., 00 hex) to 127 minutes 127 seconds (i.e., FF hex).

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).

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

- Type **C:\DOS\Debug** <ENTER>
- To start the watchdog timer and set function "Reset" type;
444 0 <ENTER>
out 444h data 0
- To input the watchdog timer time-out interval of 3 min type;
443 83 <ENTER>
443 0 <ENTER>
out 443h data 83
- To input the watchdog timer time-out interval of 5 sec type;
443 05 <ENTER>
out 443h data 05
- To disable the watchdog timer type;
80 "x" <ENTER>
out 080h data "x" (where "x" can be any hex value)

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

If bit 8 is "1" = minute

If bit 8 is "0" = second

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| x | | | | | | | |

Sample 1: 3 minutes

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
|---|---|---|---|---|---|---|---|

Sample 2: 5 seconds

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
|---|---|---|---|---|---|---|---|

