

SQ 596 Pentium PCI Mainboard

User's Manual

User's Notice

Static Electricity Precaution

Static electricity can easily damage your SQ 596 mainboard. By observing a few basic precaution can help you safeguard against damage that could result in expensive repairs. Follow the simple measures below to protect your equipment from static electricity damage:

Keep the mainboard and other system components in their anti-static packaging until you are ready to install them.

Touch a grounded surface before you remove any system component from its protective anti-static packaging. Unpacking and installation should be done on a grounded, anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same points as the anti-static mat.

After removing the mainboard from its original packing, only place it on a grounded, anti-static surface component side up. Immediately inspect the board for damage. Due to shifting during shipping, it is suggested that the installer press down on all of the socket ICs to ensure they are properly seated. Do this only with the board placed on a firm flat surface.

During configuration and installation, touch a grounded surface frequently to discharge any static electrical charge that may have built up in your body. The best precaution is to wear a grounded wrist strap. When handling the mainboard or an adapter card avoid touching its components. Handle the mainboard and adapter cards either by the edges or by the adapter card's case mounting bracket.

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Introduction

How to use this Manual

This manual provides information necessary for SQ596 mainboard and is organized into 4 chapters. Its purpose is to explain the installation procedures and operations of the mainboard as specified below.

1. Introduction : Manual information and checklist
2. Key Features : An overview specification of this mainboard
3. Installation : Instructions on how to setup the mainboard
4. BIOS setup : BIOS software setup information

Item Checklist

The SQ596 mainboard should contain following items(✓). Immediately, contact to your retailer if you discover any missing items, or any damage .

- The SQ596 mainboard
- This SQ596 user's manual
- 1 parallel ribbon cable attached to a mounting bracket
- 1 IDE ribbon cable
- 1 Floppy ribbon cable
- Floppy diskette(s) for the Sound Driver
- Infrared (IrDA)module with ribbon cable(optional)
- Pipeline Burst Cache Module (optional)
- 1 CD-In cable (optional)

key Features

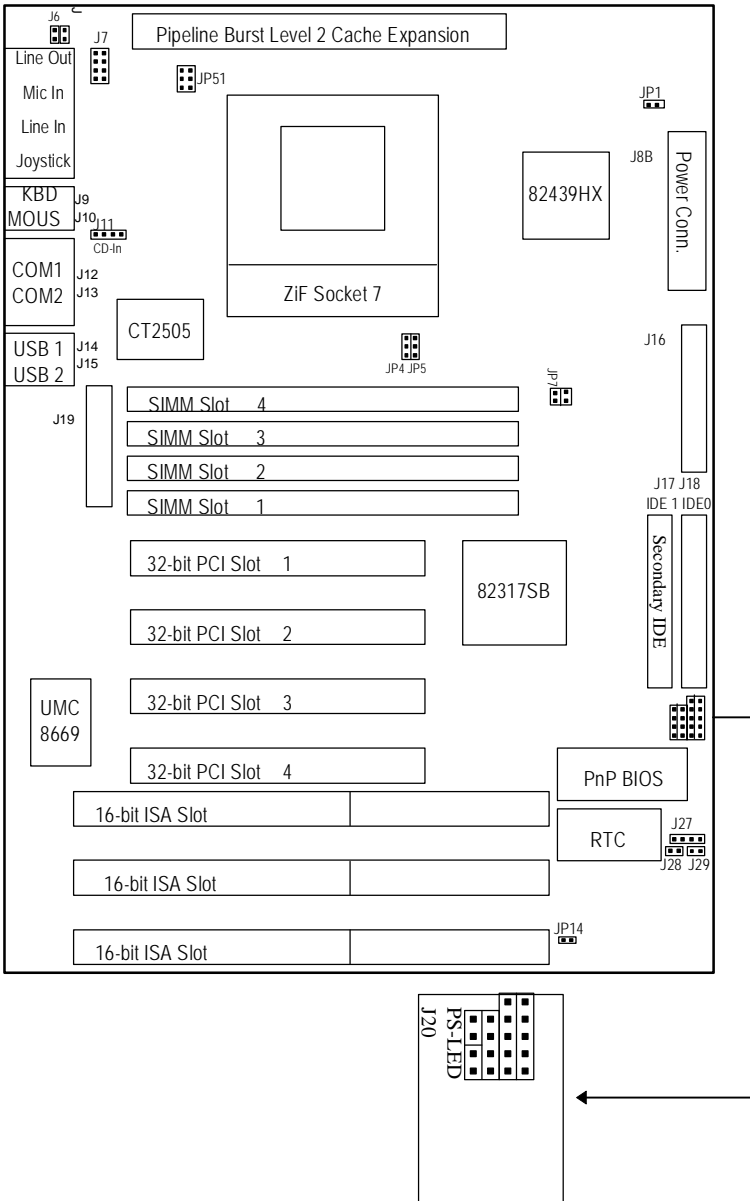
The SQ596 mainboard integrates the Pentium microprocessor, memory , and I/O technologies and is designed to fit into a standard mini-ATX form factor chassis. Page 2-3 illustrates the mechanical form factor for the SQ596 mainboard.

Product Specification

- ✧ **Processor:** The SQ596 supports Intel Pentium Processors P54C/P55C 75-200MHz, and Cyrix 6x86 (M1/M2) Processors. The ZIF Socket 7 will support future Pentium Overdrives.
- ✧ **L2 Cache:** 0KB onboard upgradeable to 256KB or 512KB using a Pipeline Burst L2 COAST(cache on a stick) Module inserted into the cache expansion slot.
- ✧ **System memory:** Supports four 72-pin SIMM modules using 4MB, 8MB, 16MB, 32MB or 64MB for a maximum 256MB. Memory supported is both Fast Page Mode (FPM) and Extended Data Output (EDO). The memory must be 70ns (nano seconds) or faster.
- ✧ **Chipset:** Intel Triton 430HX PCIset as the core chipset with a UMC UM8669F super I/O (input/output) controller chip & Creative 16C CT2505 PnP Sound controller chip.
- ✧ **Expansion Slots:** Three 16-bit ISA slots and Four 32-bit PCI slots(one shared).
- ✧ **Super Multi-I/O:** Two high-speed UART compatible serial ports and One parallel port with ECP and EPP compatibility. One FDD header supporting either 5.25 or 3.5.(1.2 or 1.44/2.88MB) floppy drives. One IrDA TX/RX infrared port.
- ✧ **Audio Subsystem:** Features a 16-bit stereo audio sub-system, on board Joystick/MIDI connector, Line in port, Line out port ,Microphone in port, CD in header, Speaker in connector and Wave table upgrade connector.
- ✧ **PS/2 mouse and PS/2 keyboard:** Onboard PS/2 mouse Port and PS/2 Keyboard port.
- ✧ **PCI bus Master IDE Controller:** Onboard PCI Bus Master IDE controller with 2 ports to support 4 IDE devices. This controller supports PIO Mode 3 and Mode 4 with a data transfer rate up to 17MB per second. The Bus Master IDE DMA Mode 2 transfer up to 22MB per second.
- ✧ **PCI BIOS:** Win 95 Plug and Play with Green feature
- ✧ **Universal Serial Bus:** Two standard USB connectors supporting up to 48MHz and 127 peripheral devices.
- ✧ **Mechanical:** Mini-ATX form factor 210mm x 285mm

Mainboard Outlook

Mainboard Layout



Installation Preview

Before you install the SQ596 mainboard into the system chassis you may find it convenient to first configure the mainboard hardware. This section describes how to configure the jumper settings, install memory modules, and how to attach the various system components. Before using your computer you must review the following 6 steps :

1. Jumpers settings.
2. Installation of DRAM memory modules
3. Installation of the CPU
4. Installation of expansion cards
5. Installation of IDE, I/O cables and the power supply connection.
6. Setup of the system BIOS software

Jumpers:

JP1,JP51,JP52	CPU voltage regulator output selection
JP14	Clear CMOS RAM
JP7 , JP8	CPU external clock(Bus) frequency selection
JP4(= BF0)	CPU (Bus) frequency ration
JP5(= BF1)	CPU(Bus) frequency ration

Expansion Slots:

SIMM Sockets	DRAM SIMM Module Sockets
Cache Expansion	Slot for L2 External Pipelined SRAM Module.
ZIF Socket 7	Socket for Central Processing Unit(CPU)
ISA Slots 1, 2, 3	16-bit ISA Bus expansion slots
PCI Slots 1,2,3,4	32-bit PCI Bus expansion slots

Audio Subsystem Connector

Line-Out(J2)	Stereo line output jack
Mic-In(J4)	Microphone input jack

Line-In(J5)	Stereo line input jack
Joystick/MIDI(J3)	Joystick/MIDI port interface
Speaker-In (J6)	Speaker-In connector (2-pin)
CD-In (J11)	CD-In connector (4-pin)
Wave (J7)	Wave connector (8-pin block)

Connectors

Keyboard (J9)	PS/2 keyboard port (6-pin female)
PS/2 Mouse(J10)	PS/2 mouse port (6-pin female)
Parallel Port(J19)	Parallel port connector (26-pin Block)
Serial Port(J12/J13)	Serial port COM1 & COM2 (9-pin male)
Floppy Drive(J16)	Floppy drive connector (34-pin Block)
Power Input (J8B)	ATX Power Connector (20-pin male)
Primary IDE(J18)	Primary IDE connector(40-pin Block)
Secondary IDE(J17)	Secondary IDE connector (40-pin Block)
USB Connector(J14/J15)	2 USB ports USB 0 & USB 1 (4-pin male)(Optional)
IrDA(J23)	IrDA connector (5-pin)
Key Lock(J22)	Keyboard lock switch connector (5-pin)
ATX P/S Switch(JP50)	ATX power supply switch connector (2-pin)
HDD LED(J21)	Hard Disk drive LED connector (4-pin)
ATX P/S LED(J20)	ATX power supply LED connector(2-pin)
Speaker(J27)	Speaker connector (4-pin)
Suspend Switch(J28)	SMI suspend switch connector (2-pin)
Reset Switch(J29)	Reset switch connector (2-pin)

WARNING: Do not apply power if the mainboard appears damaged or items are missing on the mainboard .




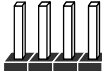

Installation Steps

Jumper Settings

You can configure the hardware options by setting jumpers on the mainboard. A jumper is a set of two or more metal pins in a plastic base attached to the mainboard. A plastic jumper cap, with a metal (conductive) plates inside fits over two pins to create an electrical contact or short between them. This contact establishes a hardware setting and is referred to as a closed jumper setting.

Some jumper have two pins while others may have three or more. Jumpers are sometimes combined into sets called jumper blocks where all the jumpers in the block must be set together to establish a hardware setting. In this manual the jumper settings will be described graphically using a triangle (◀) always marking pin 1. Those jumpers with two pins will be shown as closed and open. A jumper is referred to as closed by placing the plastic jumper cap over the two jumper pins and as open by removing the jumper cap. Some jumpers are oriented vertically and other horizontally with pin 1 marked as (◀P1).

Jumpers, Jumper caps, and Jumper blocks

Jumper cap	2-pin jumper	3-pin jumper	4-pin jumper	Jumper block
				

Setting 3-pin jumpers



Jumper Pins 1 & 2 are closed with a jumper cap



Jumper Pins 2 & 3 are closed with a jumper cap

Setting 2-pin jumpers

Setting 2-pin jumpers



This jumper is closed with the jumper cap is placed over 2 pins



This jumper is open with the jumper cap moved from the 2 pins

WARNING: Some pins are used for connectors or power sources. These are clearly marked separately from the jumpers listed in “Mainboard Layout”. Any improper placing of jumper caps over these connectors will result in damage to your mainboard

CPU VOLTAGE Selection Jumpers



The Pentium & Cyrix 6x86 processors have various voltage choices depending on the CPU speed and the bin grade. These jumpers provide a way to select the different types of voltage

Intel Pentium Selection	JP1	JP52	JP51
P54C STD (3.135V-3.6V)			
P54C VRE (3.4-3.6V) * (Manufacturer default)			
P55C (2.5V)			
Previous marking	previous recommended nominal voltage	New marking	New recommended nominal

			voltage
Blank	3.3V	3.3V or	3.52V
016	3.3V	3.52V	N/A
028	3.52V	N/A	3.52V
		3.52V(028)	

CMOS RAM Settings(Clear CMOS Data) (JP14)

The JP14 allows you to discharge the SQ596 mainboard CMOS memory and Real Time Clock (RTC) data. The CMOS memory maintains the system configuration information and the RTC provides the system with the date and time. Make sure this jumper is open for normal operation.

Normal Mode (Default)	Clear CMOS
	

Clear CMOS procedure :

The SQ596 mainboard uses a Benchmark BQ3287AMT or DS12B887 chip. To clear the stored CMOS data, power on with the JP14 closed and then do the following: 1) With the system turned off, close JP14 ↑ 2) Power on for a few seconds ↑ 3)Power off ↑ 4) Remove JP14 ↑ 5) Power on ↑ 6) Re-setup the BIOS (note: to bring up the BIOS setup menu, hold down during the system boot sequence)

NOTICE: Under some circumstances it is possible that the CMOS configuration settings may be lost or corrupted causing the system to malfunction. This is not a serious problem. If this happens, run the BIOS setup utility and re-enter your configuration settings. When you restart the computer, the system should work normally.

CPU Type Selection {JP7,JP8,JP4(=BF0),JP5(= BF1)}

The system speed depends upon the frequency of CLOCK GENERATOR which is determined by jumpers. These jumpers tell the system what speed to run at. Currently, this mainboard speed range is from 75MHz to 200MHz. The CPU input frequency must match the frequency of CLOCK GEN or it will cause the system to malfunction. For example, setting a 75MHz CPU to run at 90MHz will cause the system to malfunction.

Intel CPU Setting	JP7	JP8	JP4(BF0)	JP5(BF1)
75MHz				
90MHz				
100MHz ★(Manufacturer default)				
120MHz				
133MHz				
150MHz				
166MHz				

180MHz				
200MHz				

Cyrix6X86 Setting	JP7	JP8	JP4(BF0)	JP5(BF1)
100MHz(=P120+)				
110MHz(=P133+)				
120MHz(=P150+)				
133MHz(=P166+)				

NOTICE: When installing the CPU into the CPU socket, be sure that PIN 1 of the CPU is in the same corner as the PIN 1 of socket. The CPU is an extremely sensitive electrical component and can be easily damaged by static electricity.

Expansion Slots

The SQ596 has 7 expansion slots on-board. Three are 16-bit ISA Bus expansion connectors and four are 32-bit PCI expansion slots (include 1 shared) . One of the expansion slots is

shared by connectors that will accommodate either an ISA or a PCI expansion card, but not both at the same time. All four PCI expansion slots accept PCI Bus master cards and fully support the PCI 2.1 specification.

SIMM Slots - System Memory (DRAM)

You can configure the system memory size in a variety of ways by in using different combinations of the Four 72-pin DRAM SIMM modules. The memory must be 70ns(nano seconds) or faster using either Fast Page Mode or Extended Data Output (EDO) types. The memory table below shows the different memory size combinations available. Please pay attention to the following restrictions :

1. You must use one pair of sockets at a time in sequence (i.e. SIMM1 and SIMM2, or all four sockets at once).
2. Each pair of modules must be the same size and speed and may be single sided or double-side. Module sizes: Single-side SIMMs: 4MB,16MB; Double-side SIMMs: 8MB,32MB

IMPORTANT: To support parity ECC check detection , you must use True 36-bit parity type DRAM (i.e. 8 data chips + 4 parity chips) . Mixing 32-bit non parity DRAM (i.e 8 chips) and 36-bit parity DRAM will cancel the parity check detection feature.

Memory Module Combinations

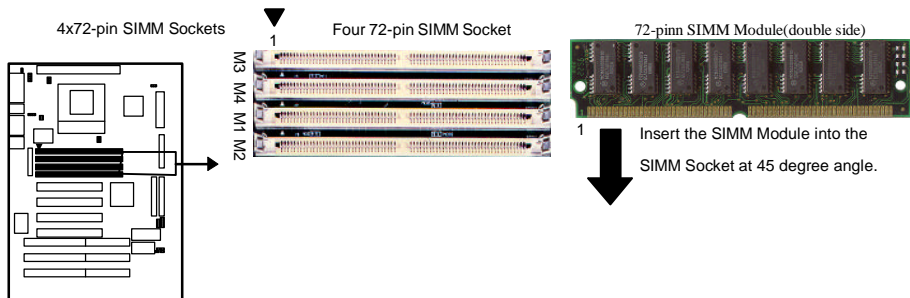
Total Memory (Slot 1-4)	Bank A (Slot 1 & 2)	Bank B (Slot 3 & 4)
8MB	4MBx2	None
16MB	8MBx2	None
32MB	16MBx2	None
64MB	32MBx2	None
8MB	None	4MBx2
16MB	None	8MBx2
32MB	None	16MBx2
64MB	None	32MBx2
16MB	4MBx2	4MBx2
24MB	4MBx2	8MBx2
40MB	4MBx2	16MBx2

72MB	4MBx2	32MBx2
24MB	8MBx2	4MBx2
32MB	8MBx2	8MBx2
48MB	8MBx2	16MBx2
80Mb	8MBx2	32MBx2
40MB	16MBx2	4MBx2
48MB	16MBx2	8MBx2
64MB	16MBx2	16MBx2
96MB	16MBx2	32MBx2
72MB	32MBx2	4MBx2
80MB	32MBx2	8MBx2
96MB	32MBx2	16MBx2
128MB	32MBx2	32MBx2
128MB	64MBx2	None
128MB	None	64MBx2
256MB	64MBx2	64MBx2

Installation Procedure for System Memory

1. PIN1 of the SIMM module must match with the PIN1 of the SIMM socket.
2. The module will only insert into the socket one way. An orientation cut-out will prevent you from inserting it the wrong way.
3. Insert the DRAM module into the SIMM socket at a 45 degree angle. If pin 1 of the SIMM does not line up with pin 1 of the socket, the SIMM will not insert into the socket. After inserting the SIMM module completely into socket, push the SIMM module into a vertical position.
4. The module should click into place with the retaining clips at each end of the socket snapping behind the module to secure it.
5. To release the memory module push both retaining clips outwards and carefully rock the module forward.

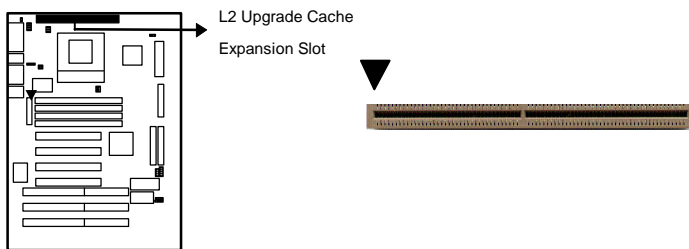
IMPORTANT: Do not use SIMM modules that use an extra TTL chip to convert the memory module from asymmetric to symmetric.



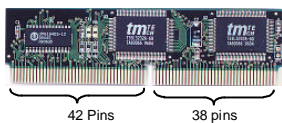
Cache Expansion - L2 External Pipelined Burst SRAM

The SQ596 provides an upgradeable secondary (second level or L2) cache using Pipeline Burst SRAM. The Pipeline Burst (PB) SRAM provides performance similar to expensive Synchronous Burst SRAM for only a slight cost premium over slower performing Asynchronous SRAMs. The SQ596 mainboard defaults with 0K cache on-board, with a second-level cache module you are able to upgrade to 256KB or 512KB. Instructions on how to insert the cache modules are shown below.

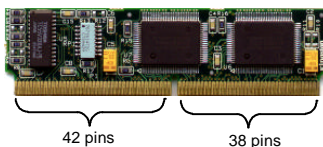
NOTICE: The number of pins are different on either side of the break, therefore the module will only fit in the orientation as shown.



256KB PB Cache Module



512KB PB Cache Module



ZIF Socket 7 for Central Processing Unit(CPU)

The SQ596 comes with a 321-pin ZIF socket 7 for installing the CPU. The Socket 7 will also support future Pentium up-grade processors. It is strongly recommended that a heatsink and CPU cooling fan be used to prevent the CPU from overheating. (Tip) Applying a thermal jelly between the CPU and the heatsink/fan will further cool the CPU.

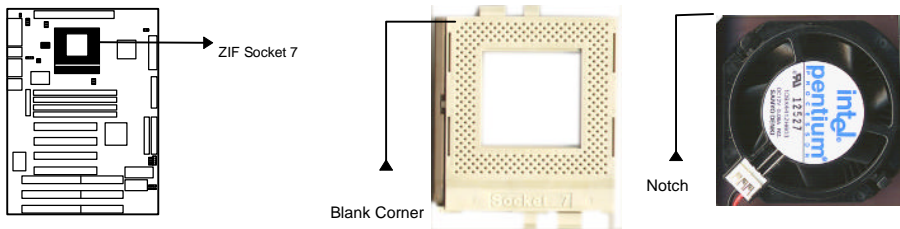
Installation Procedure(CPU)

To install a CPU, remember to take careful precaution against static electric discharge. The basic procedure is as follows:

IMPORTANT: You must set jumpers JP7,JP8, JP4 & JP5 to the correct bus frequency ratio as instructed on page 6-8 of Section 3 .

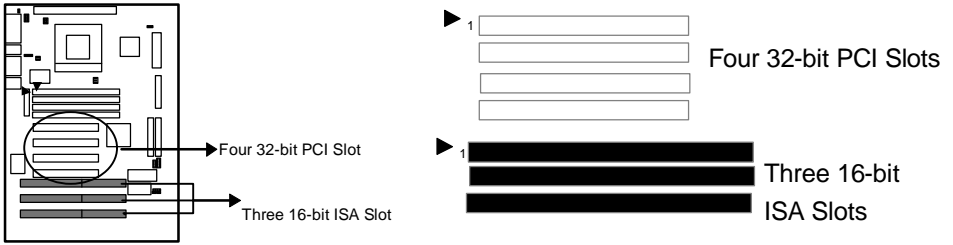
1. Turn off your system and disconnect the power source.
2. Remove the existing CPU from the ZIF socket by pulling the ZIF lever upwards at a 90 degree angle.
3. Insert the CPU with the correct orientation as below shown. Use the notched (white dot) corner of the CPU as your guide. The notch in the corner of the CPU should correspond with PIN 1 of the ZIF socket (Notice: Pin 1 is the blank corner of the ZIF socket with one hole missing)
4. Once the CPU is inserted close the socket's lever.

WARNING: Without a fan, the CPU can overheat and will cause damage to both the CPU and the SQ596 mainboard.



ISA & PCI Slots

The SQ596 mainboard has three 16-bit ISA and four 32-bit PCI Slots.



Installation Procedure:

To install expansion cards, please read the expansion card's documentation for instructions.

NOTICE: Some expansion cards require an IRQ to work and may cause a conflict. There are total of 16 IRQs but only 6 are free for expansion cards. In case of a conflict please contact the system manufacturer for technical support.

There are two types of ISA expansion cards, design-Legacy and PnP(Plug & Play). For Legacy cards you must set the cards' jumpers manually. For Plug & Play cards, your system will arrange the IRQs automatically. You can verify the IRQ allocation either by using Microsoft's Diagnostic (MSD.EXE) utility which is in the Windows directory or through the Windows 95 resources menu. An IRQ is automatically assigned to PCI expansion card. All the PCI slots on the mainboard use an interrupt . Be sure that the jumpers on your PCI cards are set to interrupt A.

Audio Subsystem Connector

The SQ596 mainboard features a 16-bit stereo audio sub-system. This audio subsystem is in accordance with the Creative ViBRA CT2505 16C VLSI single combo chip combines with the Yamaha OPL3 FM synthesizer. This solution is fully compliant with multimedia PC Level 2 specifications and supports compatibility with Adlib™, Sound Blaster Pro™2.0 , Roland MPU-401 and Windows Sound System that meet today's requirements of multimedia applications. The CT2505 single combo chip provides the followings features:

1. ISA 16-bit Bus Interface Chip
2. Digital Audio Processor
3. High performance 16-bit Sigma Delta Stereo Codec
4. Sound Blaster 16 register compatible mixer with AGC
5. Joystick quad timer
6. Music synthesizer with DAC
7. Plug and Play support

8. One 46MHz crystal for Digital Interface, Digital Audio Processor, and Music Synthesizer

Audio I/O Access(Line-out, Mic-In, Line-In, & Joystick)

Line out jack : The Line out jack allows you to connect powered speakers or an external amplifier for audio output.

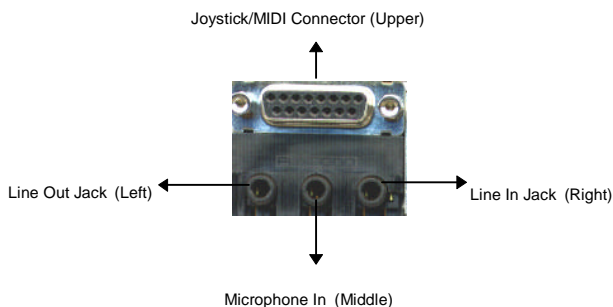
Mic in jack: The Microphone in jack allows you to connect a microphone for voice input.

Line in jack: The line in jack allows you to connect devices such as a cassette, DAT, or Minidisc player to the audio card for playback or recording.

Joystick/MIDI Connector: The joystick/MIDI connector allows you to connect a joystick or MIDI kit (not both) to the audio system.

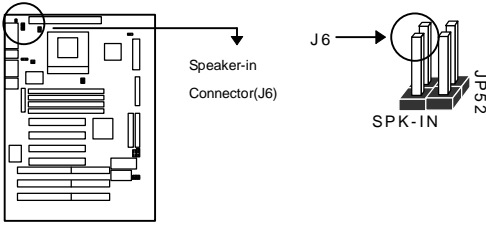
The joystick connector on the audio system is identical to that on a standard PC game control adapter or game I/O port. You can connect any analog joystick with a 15-pin D-sub connector. It also works well with any application that is compatible with the standard PC joystick.

Normally, the MIDI kit contains a MIDI adapter with a joystick connector so that you can plug in a joystick and a MIDI device simultaneously. The kit also comes with a sequencing software that allows you to record, play back, and edit MIDI files.



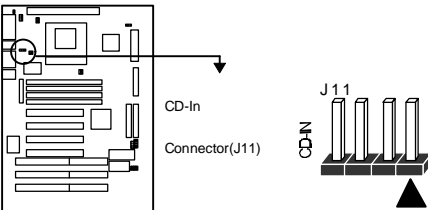
Speaker-In(2-pin)(J6)

This connector makes it possible to redirect sound that normally comes from the PC speakers to the external speakers connected to the audio.



CD-In (4-pin header)(J11)

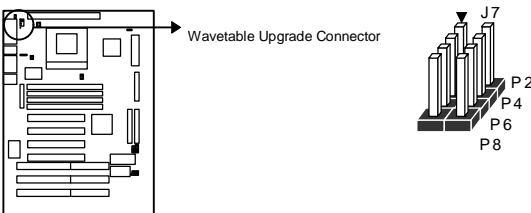
A 1x4 pin header(J11) is available for Audio input from CD-Rom drives on the SQ596 mainboard .



Wavetable Upgrade (8-pin block)(J7)

A wavetable upgrade connector provides access to wavetable Table ISA compatible add-in cards, allowing the onboard audio solution to use a lookup table for wavetable synthesis. To install the wavetable upgrade a dual inline header and mounting screws are available on the SQ596 mainboard. The bellow table is Wavetable Upgrade Connector Pinout.

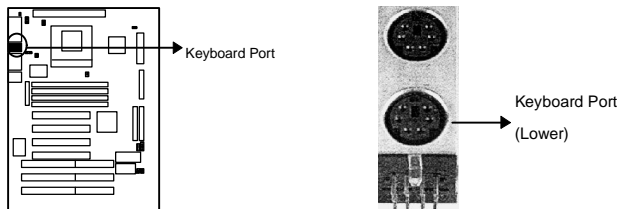
Pin	Description	Pin	Description
1	Signal (Right)	5	N.C
2	GND	6	GND
3	Signal(Left)	7	GND
4	GND	8	GND



Connectors

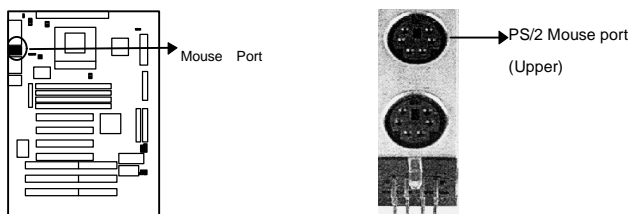
Keyboard port(J9)

This port is for a PS/2 compatible keyboard interface.



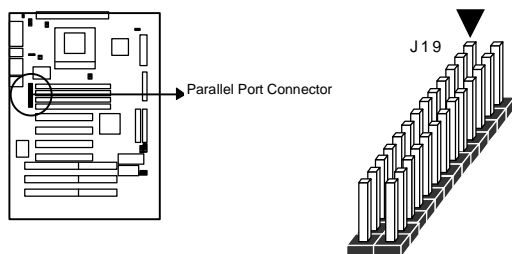
PS/2 Mouse Port (J10)

This SQ596 mainboard provides a default 6 pin female PS/2 compatible mouse interface port.



Parallel Port Connector (26-pin Block) (J19)

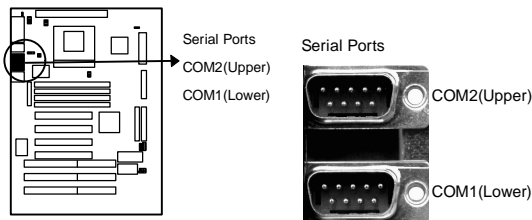
This is a bi-directional parallel port (EPP/ECP compatible). The parallel port is capable of being disabled or remapped to either the secondary LPT address of the primary LPT address through BIOS if other parallel ports are installed. The parallel port contains 12mA source output drivers on the drive interface and incorporates Chip Protect circuitry for protection against damage due to printer's power being on.



WARNING: When you connect a ribbon cable to this port, you must orient the cable connector so that the PIN 1 edge of the cable is at the PIN 1 end of the on-board port

Serial Port (J12/J13)

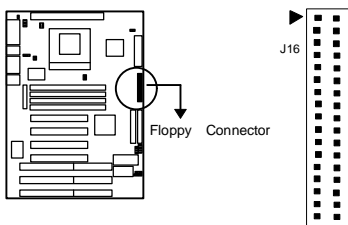
The SQ596 has two serial ports. The electrical characteristics are compliant with the EIA-232-D Serial Communications Specifications. The serial ports may be remapped above other installable serial ports or disabled through the BIOS.



Floppy Drive Connector (34-pin block)(J16)

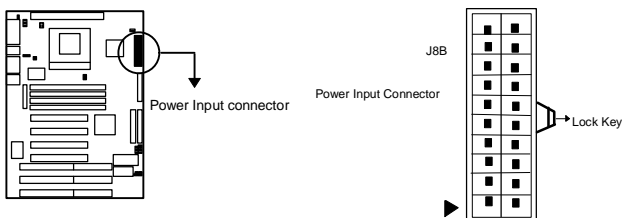
The FDC sub-section can control three types (1.2, 1.44 and 2.88MB) of floppy drivers or compatible tape drives. Connection to the floppy drives is via a header (J16). The floppy disk interface contains 48mA drivers and Schmit inputs on the drive interface.

WARNING: When you connect a ribbon cable to this port, you must orient the cable connector so that the PIN 1 edge of the cable is at the PIN 1 end of the on-board port.



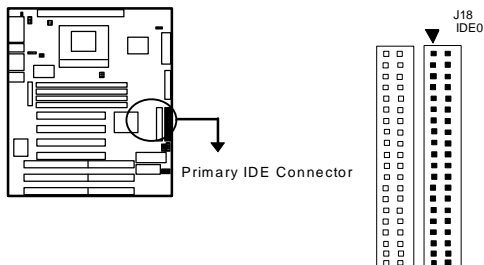
Power Input Connector (20-pin block)(J8B)

This connector supports a standard ATX power supply. When connecting ,make sure the lock key matches the hook attached on a power supply cable. The power cord should be unplugged when you connect it.



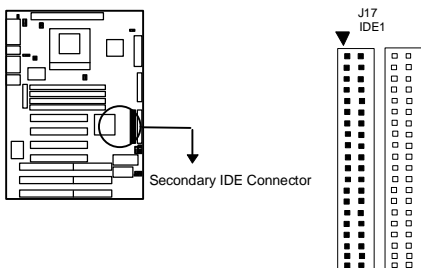
Primary IDE Connector (40-pin block)(J18)

This connector supports two primary channel IDE devices via a ribbon cable. When two IDE devices are installed using the primary IDE connector make sure that the second IDE device is adjusted to slave mode as instructed in the device's manual.



Secondary IDE Connector (40-pin block)(J17)

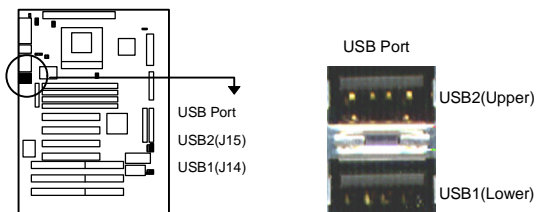
This connector supports two secondary channel IDE devices via a ribbon cable. When two IDE devices are installed using the secondary IDE connector make sure that the second IDE device is adjusted to slave mode as instructed in the device's manual.



WARNING: When you connect a ribbon cable to these ports, you must orient the cable connector so that the PIN 1 edge of the cable is at the PIN 1 end of the on-board connector.

Universal Serial Bus (USB) Ports (J14/J15)

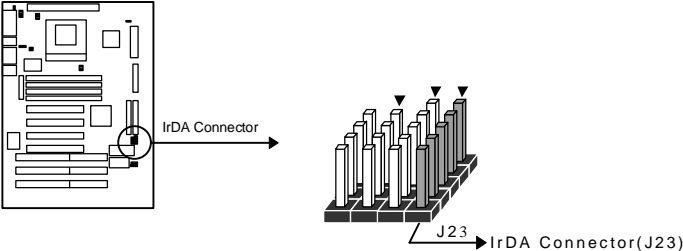
This SQ 596 mainboard has two USB ports on-board. USB devices provide a more convenient operating environment and improve data transferring capacity. True Plug-and-Play, this new bus technology will support over 127 different peripherals through a Hub.



IrDA connector (5-pin) (J23)

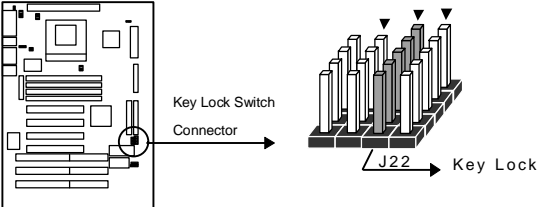
The SQ596 mainboard offers an IrDA function. The ATX case must reserve space for the IR module if you want to use the IrDA function. The connector links with the COM2 connector so you can only use one of them. This connector supports the optional wireless transmitting and receiving of infrared data. The module mounts to a small opening on system case that supports this feature. The efficient distance is 100CM and the transfer rates is 1.44M KB/sec.

IMPORTANT: You must configure this feature through the BIOS. by selecting whether UART2 is allocated for use by COM2 or for IrDA. The IR module is supported by the mainboard via a 5-pin connector and ribbon cable.



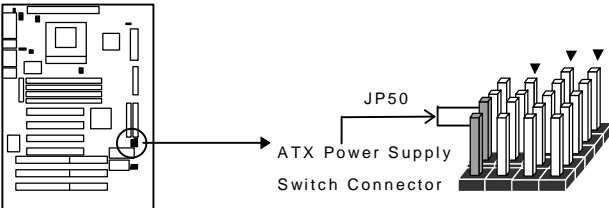
Key Lock Switch Connector (5-pin) (J22)

This connector connects the case-mounted switch for locking the keyboard for security purposes.



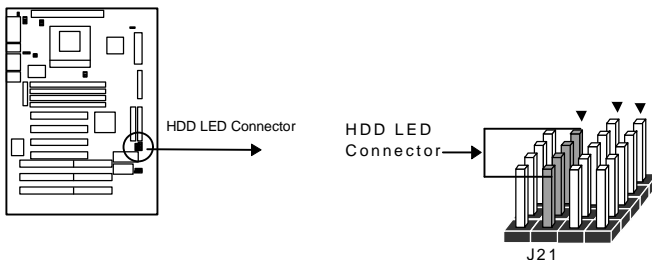
ATX Power Supply Switch Connector (2-pin)(JP50)

This connector connects the ATX case-mounted power switch



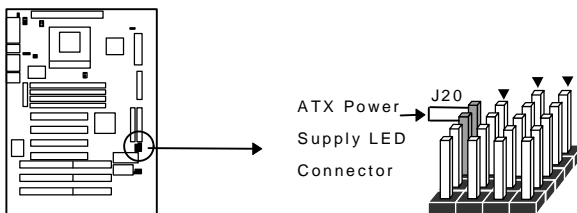
HDD LED Connector (4-pin)(J21)

The SQ596 supports one straight 4 pin header for connecting to an off-board LED indicator. Pin 1 and pin 4 are connected to Vcc(+5) through a 470 ohm pull-up resistor. Pin2 and Pin3 are connect to DISK-ACTIVE signal on pin 39 of the IDE header.



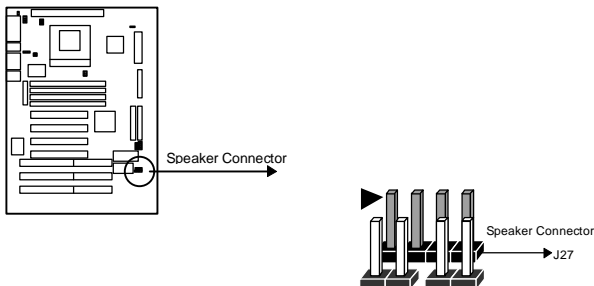
ATX Power Supply LED Connector (2-pin)(J20)

This connector connects the ATX case-mounted power-on LED.



Speaker Connector (4-pin) (J27)

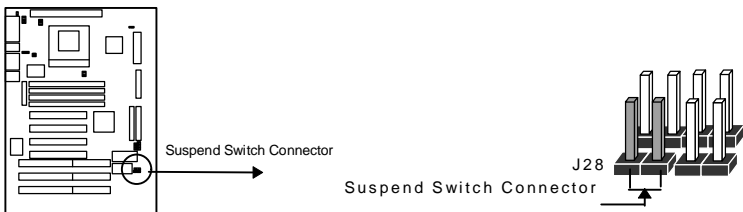
A 1x4 straight header (J27) is available to drive a chassis-mounted speaker if desired .



Suspend Switch Connector (2-pin)(J28)

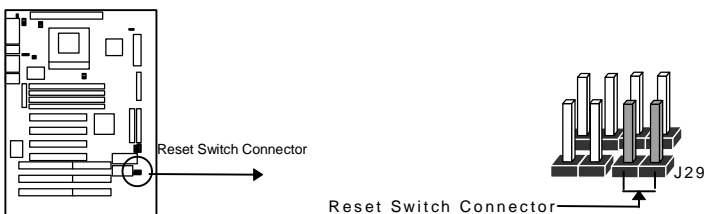
This connector supports the case-mounted suspend switch allowing you to manually place the system into a suspend mode or “Green” mode. During Green mode, the system activity will be decreased to save energy when the system is not in use. If you want to use this

feature, the “Suspend Switch” in the Power Management Setup of the BIOS should be enabled.



Reset Switch Connector (2-pin)(J29)

This connector supports the case-mounted reset. It is advised that the reset switch be used for rebooting the system in order to extend the life of the system’s power supply.



BIOS Setup

The 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-backup RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

Entering Setup

When the computer is first turned on the below message will appear briefly at the bottom of the screen. During the POST (Power On Self Test), press key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

Press **DEL** to enter SETUP, **ESC** to skip memory test

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not reboot, an error message will be displayed at the bottom of the screen and you will again be asked to,

Press **F1** to continue, **DEL** to enter SETUP

Control Keys

<↑> , <↓>	Move to previous or next item
<←> , <→>	Move to the item in the left or right hand
<Esc>	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
<PgUp> / <+>	Increase the numeric value or make changes
<PgDn> / <->	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
Shift-<F2>	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward

<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F7>	Load the Setup default , only for Option Page Setup Menu
<F10>	Save all the CMOS changes, only for Main Menu
<F3><F4> <F8><F9>	Reserved

Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

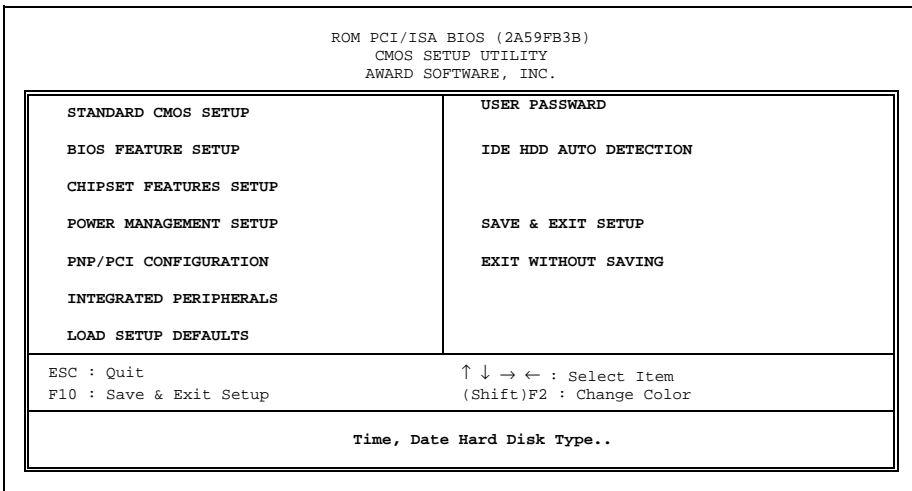


Figure 1

Standard CMOS setup

This setup page includes all the items of standard CMOS setup features.

BIOS features setup

This setup page includes all the items of Award special enhanced features.

Chipset features setup

This setup page includes all the items of chipset special features.

Power Management setup

This category determines how much power consumption for system after selecting

PNP/PCI Configuration

This category specifies all the items of PCI/ISA devices' resources configuration and assignment.

Integrated peripherals

This setup page includes all the items of peripherals I/O setup features.

Load setup defaults

Setup defaults indicates the values required by the system for the maximum performance.

User Password

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

IDE HDD auto detection

Automatically configure hard disk parameters.

Save & exit setup

Save CMOS value changes to CMOS and exit setup.

Exit without save

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one, or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

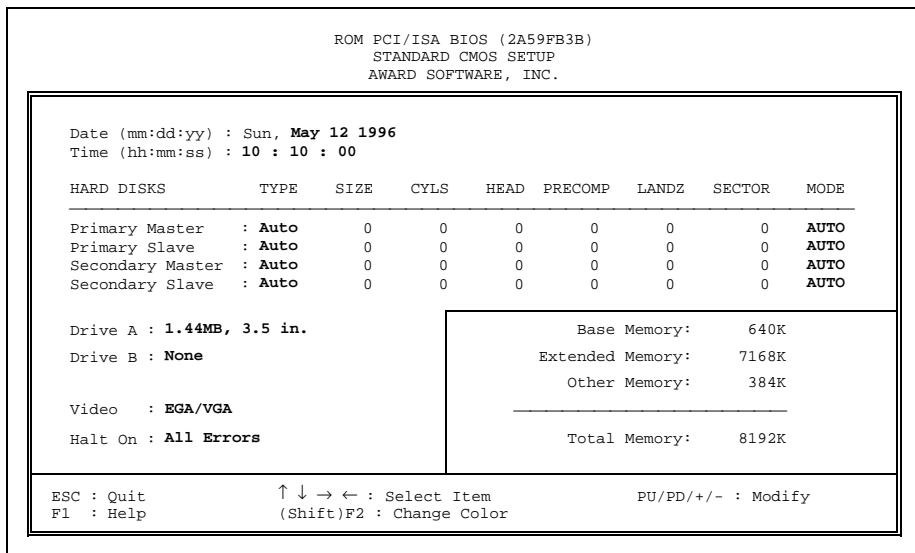


Figure 2

Date

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

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

Time

The time format is <hour> <minute> <second>. which accepts both function key or numerical key The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Hard Disks

The categories identify the types of hard disks that have been installed in the computer. There are 45 predefined types, 1 user definable type and 1 Auto type. The Auto Type can auto configure your hard disks.

Primary Master/Slave and Secondary Master/Slave

There are 4 items in this categories to identify the types of 2 hard disk channel that have been installed in the computer.

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

If you select User Type, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

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

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

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

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

Drive A/B type

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

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

Video

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

You have two ways to boot up the system:

1. When VGA as primary and monochrome as secondary, the selection of the video type is .VGA Mode.
2. When monochrome as primary and VGA as secondary, the selection of the video type is .Monochrome mode.

EGA/VGA	Enhanced Graphics Adapter/video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Halt on

The category determines whether the computer will stop if an error is detected during power up.

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

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mainboard, or 640K for systems with 640K or more memory installed on the mainboard.

Extended Memory

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

Other Memory

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

Total Memory

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

BIOS Features Setup Menu

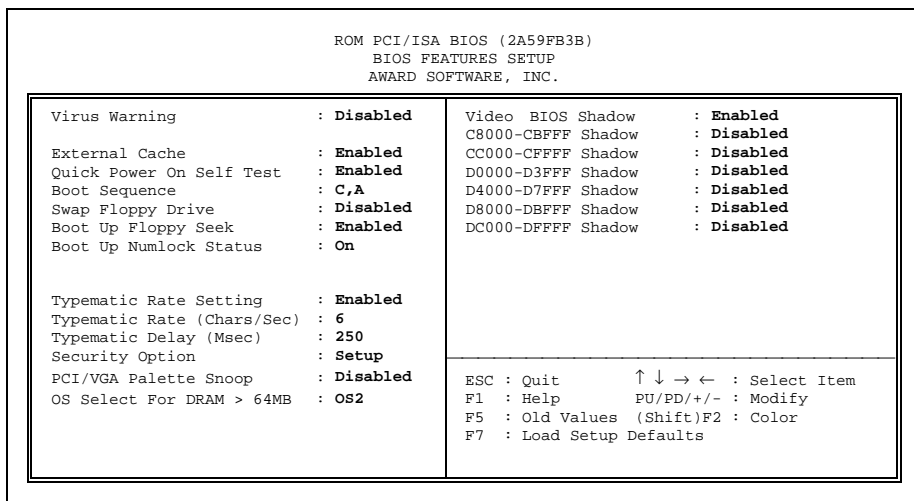
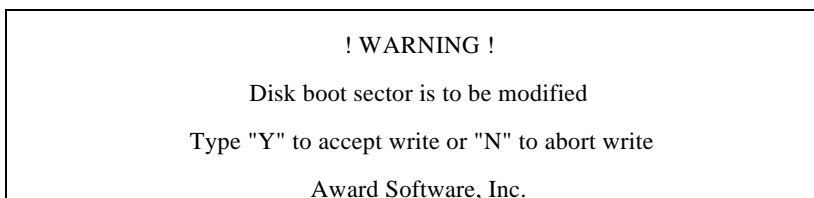


Figure 3

Virus Warning

This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.



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

Note: This function is available only for DOS and other OSES that do not trap INT13.

External Cache

This category speeds up the memory access but depends on chipset design. The default value is Enable.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on 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 computer searches first for the disk operating system (i.e., DOS).

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.

Note: This function is only available for IDE type, SCSI type is always boot from A.

Swap Floppy Drive

This category allows you to swap two floppy disk drives for reading or writing data. When enabled the BIOS swaps floppy disk drive assignments, so that Drive A becomes Drive B, and Drive B becomes A.

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.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

Keypad is number keys when it is on and arrow keys when it is off.

Typematic Rate Setting

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

Typematic Rate (Chars/Sec)

It controls the speed at which the system registers repeated keystrokes. The range is from 6 to 30 characters per second.

Typematic Delay (Msec)

It controls the time between the display of the first and second characters. There are for delay rates: 250ms, 500ms, 750ms and 1000ms.

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

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

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

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

PCI/VGA Palette Snoop

Some display cards which are non-standard VGA (such as graphics accelerators or MPEG Video Cards) may not show colors properly. This setting enabled should fix this problem.

OS select for DRAM > 64MB

When using OS/2 operating systems with installed DRAM of greater than 64MB, you have to enable this option.

Video BIOS Shadow

It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

C8000 - DFFFF Shadow

These categories determine whether other expansion cards' ROM BIOS will be copied to Main memory by 16K byte or 32K byte per/unit and the size depends on chipset. Which segment should be chose depending on cards' ROM BIOS address decoding and chips size.

Chipset Features Setup Menu

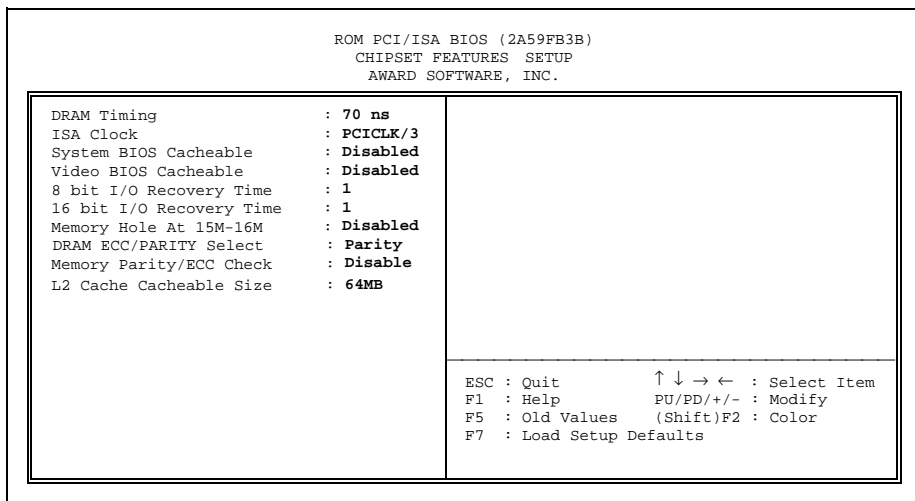


Figure 4

DRAM Timing

DRAM speed requirements are 60ns or at least 70ns.

ISA Bus Clock

Determines the clock rate of ISA bus.

System BIOS Cacheable

Defines whether or not the system area is to be cached by the on board cache RAM

Video BIOS Cacheable

Defines whether or not the Video BIOS area is to be cached by the on board cache RAM

8 Bit I/O Recovery Time

Selects recovery time for 8 bit I/O.

16 Bit I/O Recovery Time

Selects recovery time for 16 bit I/O.

Memory Hole At 15M-16M

For special old ISA cards.

L2 Cache Cacheable Size

This category provides the L2 cache size option (64Mb/512MB). The default setting is 512MB.

Power Management Setup Menu

This category determines the systems power consumption.

ROM PCI/ISA BIOS (2A59FB3B)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

<p>Power Management : Disable PM Control by APM : Yes Video Off Method : V/H SYNC+Blank</p> <p>Doze Mode : Disable Standby Mode : Disable Suspend Mode : Disable HDD Power Down : Disable</p> <p>** Wake Up Events In Doze & Standby ** IRQ3 (Wake-Up Event) : OFF IRQ4 (Wake-Up Event) : OFF IRQ8 (Wake-Up Event) : OFF IRQ12 (Wake-Up Event) : OFF</p>	<p>** Power Down & Resume Events ** IRQ3 (COM 2) : OFF IRQ4 (COM 1) : OFF IRQ5 (LPT 2) : OFF IRQ6 (Floppy Disk) : OFF IRQ7 (LPT1) : OFF</p> <p>IRQ9 (IRQ2 Redir) : OFF IRQ10 (Reserved) : OFF IRQ11 (Reserved) : OFF IRQ12 (PS/2 Mouse) : OFF IRQ13 (Coprocessor) : OFF IRQ14 (Hard Disk) : OFF IRQ15 (Reserved) : OFF</p> <hr/> <p>ESC : Quit ↑↓← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F7 : Load BIOS Defaults</p>
---	---

Figure 5

Power Management

Options	Descriptions
1. Disable	Global Power Management will be disabled
2. User Define	Users can configure their own power management
3. Min Saving	Pre-defined timer values are used such that all timers are in their MAX value
4. Max Saving	Pre-defined timer values are used such that all timers MIN value

PM Control by APM

Options	Descriptions
1. No	System BIOS will ignore APM when power managing the system
2. Yes	System BIOS will wait for APM prompt before it enter any PM mode e.g. DOZE, STANDBY or SUSPEND

Vedio Off Method

1. Blank Screen	The system BIOS will only blanks off the screen when disabling video
2. V/H SYNC+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals form VGA cards to monitor
3. DPMS	This function is enabled for only the VGA card supporting DPM

Doze, Standby, Suspend Mode

Defines the continuous idle time before the system enters DOZE mode. The range is from 10 min to 1Hr. If any item defined in (J) is enabled & active, STANDBY timer will be reloaded

Note: Normally, these modes will put the system into low speed or 8 MHz, screen may be off depend on (E)

HDD Power Down

Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off). The range is from 1 to 15 Mins. When it is suspended, BIOS will turn the HDDs motor off when system is in SUSPEND mode.

Note: When HDD is in the power saving mode, any access to the HDD will wake the HDD up.

Wake Up Events In Doze & Standby

The specified event's activity causes the PM Timers to be reloaded (i.e. the Power Management Unit(PMU) monitors the specified activities as PM events).

Power Down & Resume Events

The specified event's activity causes the PM Timers to be reloaded (i.e. the Power Management Unit(PMU) monitors the specified activities as PM events).

PNP/PCI Configuration Setup Menu

You can manually configurate the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

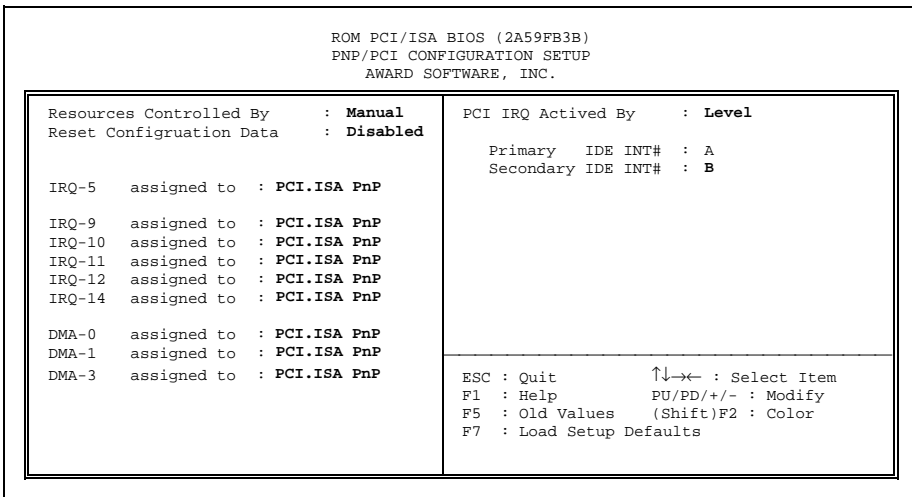


Figure 6

Resources Controlled By

The default setting is Auto and can change to Manual for specifying individual IRQ#s and DMA#s for a 'Legacy' (non Plug Play) ISA card.

Reset Configuration Data

This setting is always disabled. The function is used for restoring ESCD (Extended System Configuration Data) buffering during the POST phase on system reboot once you have enabled it.

PCI IRQ Activated by

This tells the chipset the IRQ signals input is either level or edge trigger.

PCI IDE IRQ Map To

PCI-AUTO	<p><u>PCI-AUTO</u></p> <p>The BIOS will:</p> <ul style="list-style-type: none"> - scan for PCI IDE devices & determine the location of the PCI IDE device
----------	--

PCI-SLOT1	- assign IRQ 14 for primary IDE INT #
PCI-SLOT2	- assign 15 for secondary IDE INT #
PCI-SLOT3	
PCI-SLOT4	

Primary and Secondary IDE INT#

This tells what INT the PCI IDE card is using for its interrupts.

Remarks: Master Arbitration Protocol, CPU->PCI Mem Post Write Buf, CPU->PCI Memory Burst Write, and PC Master Burst Read/Write. Please see the reference: Chipset Data Sheet.

Integrated peripherals Menu

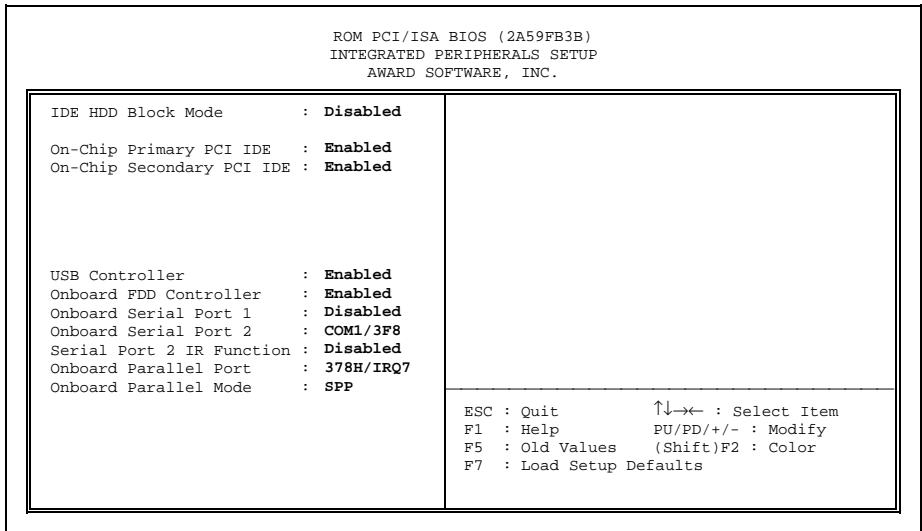


Figure 6

IDE HDD Block Mode

The default setting is Disabled. If you want to use the IDE HDD Block Mode you must enable it and that will allow your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD) .

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

PCI Slot IDE 2nd Channel

This item allows you designate an IDE controller board inserted into one of the PCI slots as your secondary IDE controller.

Enabled	External IDE controller designated as the secondary controller
Disabled	No IDE controller occupying a PCI slot.

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used -- Default
Disabled	Primary HDD controller not used.

On-Chip Secondary PCI IDE

As above for the Primary controller, this setup item allows either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used
Disabled	Primary HDD controller not used.

IDE PIO

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

PIO means Programmed Input Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This simpler faster and more efficient.

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

IDE Primary Master PIO

IDE Primary Slave PIO

IDE Secondary Master PIO

IDE Secondary Slave PIO

USB Controller

Enables or disables the USB function

Onboard FDC Controller

This should be enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

Enabled	Onboard floppy disk controller active (Default)
Disabled	Either onboard floppy disk controller absent or not to be used.

Onboard Serial Port 1

This allows you to determine how serial port number one installed on your mainboard is to be configured.

COM1, 3F8	IRQ 4 (Default)
COM2, 2F8	IRQ 3
COM3, 2E8	IRQ 3
COM4, 3E8	IRQ 4
Disabled	Serial port 1 disabled

Onboard Serial Port 2

This allows you to determine how serial port number two installed on your mainboard is to be configured.

COM1, 3F8	IRQ 4(Default)
COM2, 2F8	IRQ 3
COM3, 2E8	IRQ 3
COM4, 3E8	IRQ 4
Disabled	Serial port 2 disabled

Serial Port 2 IR Function

Makes serial Port 2 available to infrared applications. The options are enabled and disabled. The default is disabled. (If configuration mode is set to auto, this option cannot be modified).

Onboard Parallel Port

This can be used to change the default port address of the onboard parallel (printer) port.

378/IRQ7	Standard LPT1 address (Default)
278/IRQ5	Standard LPT2 address
3BC/IRQ7	Alternate LPT address. NOTE: Cannot use EPP (or ECP+EPP) with this configuration.
Disabled	Printer parallel port disabled

Onboard Parallel Mode

This allows you to select the operation mode of the onboard printer port.

Normal	Standard parallel port mode (Default)
EPP	Bi-directional mode
ECP	Fast, buffered
EPP/ECP	Bi-directional and buffered

Password Setting

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, 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 password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter the Setup freely.

PASSWORD DISABLED.

If you select System at Security Option of the BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter the

Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

IDE HDD Auto Detection

BIOS setup will display all possible modes supported by the HDD including NORMAL, LBA & LARGE.

if the HDD does not support LBA modes, noLBA' option will be shown.

if no of cylinders is less than or equal to 1024, noLARGE' option will be shown.

Users can select a mode which is appropriate for them.

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