

Main Board

PS21 User's Manual

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Item Checklist

Please check that your package is complete. If you discover damaged or missing items, please contact your retailer.

Motherboard x 1

- ☒ 40-pin IDE Connector Flat Cable x 1
- ☒ 34-pin Floppy Disk Drive Flat Cable x 1
- ☒ User's Manual x 1
- ☒ CD x 1

☐ LDCM Diskette x 1 (Option)

☐ USB Connector Cable with bracket x 1 (Option)

☐ IrDA Module x 1 (Option)

Option : Components will be include upon customer ordering instructions per Proforma Invoice & additional external procurement cost will be included.

1. Specifications

Microprocessor

Support Intel P54C/P55C, AMD K5/K6/K6-2, Cyrix M1/M2 and other Pentium compatible CPUs. The Front Side Bus Supports 66/75/83/95/100/112 MHz host bus clock, selectable by jumpers.
ZIF Socket 7 for CPU Insert

Cache and System Memory

512KB pipeline burst synchronous SRAM
Three 168 pin dual in line memory module (DIMM) sockets
Support up to 768 MB of synchronous DRAM (SDRAM)

Chipset (SiS 530/5595 PCI AGP/VGA chip set)

SiS 530 PCI/AGP VGA controller

Integrated AGP VGA for hardware 2D/3D video/graphics accelerators

Integrated PCI bus mastering controller

Integrated second level cache controller

SiS 5595 PCI system I/O controller

Multifunction PCI-to-ISA bridge

Universal Serial Bus (USB) and DMA controllers

Two fast IDE interfaces that support up to four IDE drives or devices

Power management logic

Real-time clock

Video/Graphics Subsystems

Integrated high performance & high quality AGP 2D/3D accelerator

Programmable 2MB, 4MB, and 8MB shared frame buffer

Optional 4MB, and 8MB local frame buffer (manufacturing option)

24 bit true color RAMDAC up to 230MHz pixel clock, supports 1024*768 8/16/

32 bpp @85Hz NI

DVD hardware accelerator

Audio Subsystems

ESS solo1 PCI 3D single chip audio controller
Mic-in, Line-out, Line-out, MIDI/Game port

I/O features

1 x FDD Port support up to 2.88MB

1 x Parallel Port (LPT) support ECP/EPP

2 x High Speed Serial (16C550 UART) Ports

2 x IDE Ports support Ultra DMA/33

2 x Universal Serial Bus (USB) Ports

1 x PS/2 Keyboard Port

1 x PS/2 Mouse Port

1 x IrDA Port

1 x VGA Port

Expansion slots

2 x 16-bit ISA Slots

3 x 32-bit PCI Slots

Other features

Award BIOS

Plug and Play compatible

Advanced Power Management (APM) 1.2 support

Advanced Configuration and Power Interface (ACPI) 1.0 support

Form factor

Micro ATX, 240mmX220mm

2. Chipset on this Mother Board

The Motherboard use the Chipset of SiS530 & SiS5595 where SiS 530 is function for Host, PCI, 3D A.G.P. Video/Graphics & Memory Controller and the SiS5595 is function for PCI SYSTEM I/O.

The SiS530/5595 chipset, provides a high performance/cost index Desktop/Mobile solution for the Intel Pentium P54C/P55C, AMD K5/K6/K6-II, Cyrix M1/M2 and other compatible Pentium CPU with 3D A.G.P. VGA system.

The Host, PCI, 3D A.G.P. Video/Graphics & Memory Controller, SiS530 integrates the Host-to-PCI bridge, the PCI interface, the L2 cache controller, the DRAM controller, the high performance hardware 2D/3D VGA controller, and the PCI IDE controller.

The Host interface supports Synchronous/Asynchronous Host/DRAM clocking configuration to eminently improve the system performance and DRAM compatibility issues.

The L2 cache controller can support up to 512 KB P.B. SRAM, and the DRAM controller can support SDRAM memory up to 768 MBytes.

The built-in fast PCI IDE controller supports the ATA PIO/DMA, and the Ultra DMA33 function that support the data transfer rate up to 33MB/s. It provides the separate data path for two IDE channels that can eminently improve the performance under the multi-tasking environment.

The A.G.P. internal interface is supported for integrated HW 3D VGA controller. The integrated VGA controller is a high performance and targeted at 3D graphics application. In addition, the integrated 3D Video/Graphics controller adopts the 64bits 100MHz host bus interface high technology to improve the performance eminently. To cost-effective the PC system, the share system memory architecture will be adopted and it can flexibly using the 2MB, 4MB and 8MB frame buffer size from programming the system BIOS. To enhance the system performance, SiS530 also supports the local frame buffer solution and memory sizes can support up to 8MB with SDRAM.

As for DVD solution, the integrated 3D VGA controller also support DVD H/W accelerator to improve the DVD playback performance.

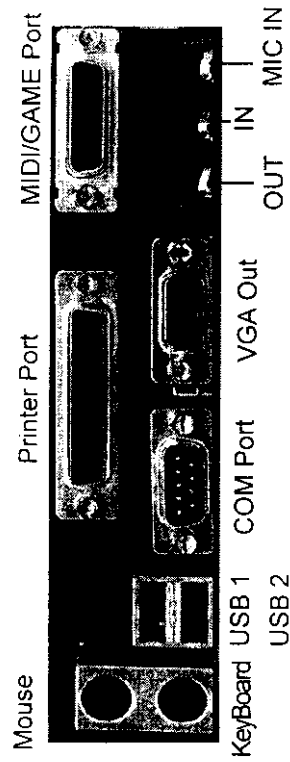
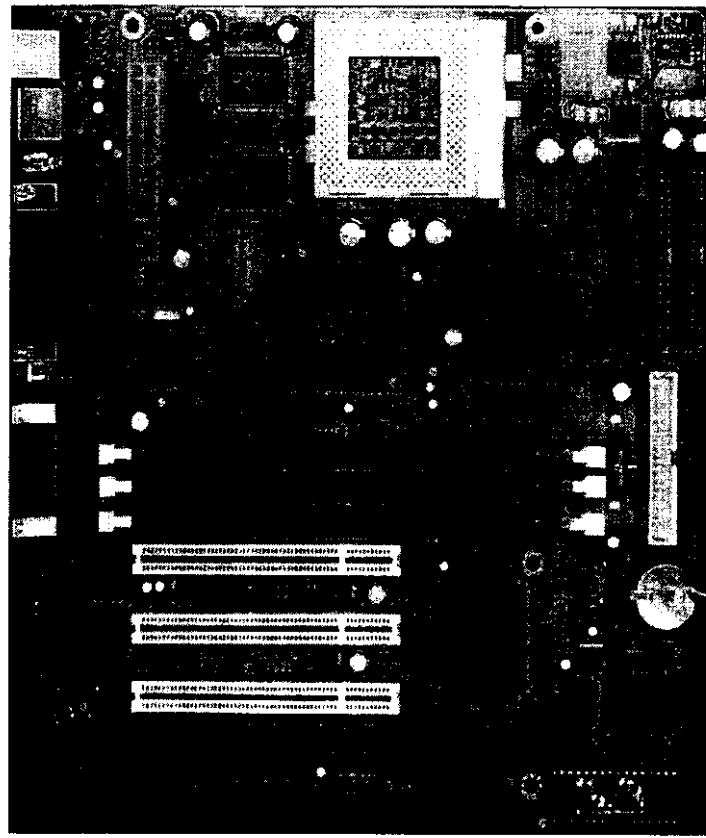
The SiS5595 PCI system I/O integrates the PCI-to-ISA bridge with the DDMA, PC/PCI DMA and Serial IRQ capability, the ACPI/Legacy PMU, the Data Acquisition Interface, the Universal Serial Bus host/hub interface, and the ISA bus interface which contains the ISA bus controller, the DMA controllers, the interrupt controllers, the Timers and the Real Time Clock (RTC). It also integrates the Keyboard Controller and PS/2 mouse interface that can support keyboard power on function for users to power on system by entering the hot key or password from keyboard.

The built-in USB controller, which is fully compliant to OHCI (Open Host Controller Interface), provides two USB ports capable of running full/low speed USB devices.

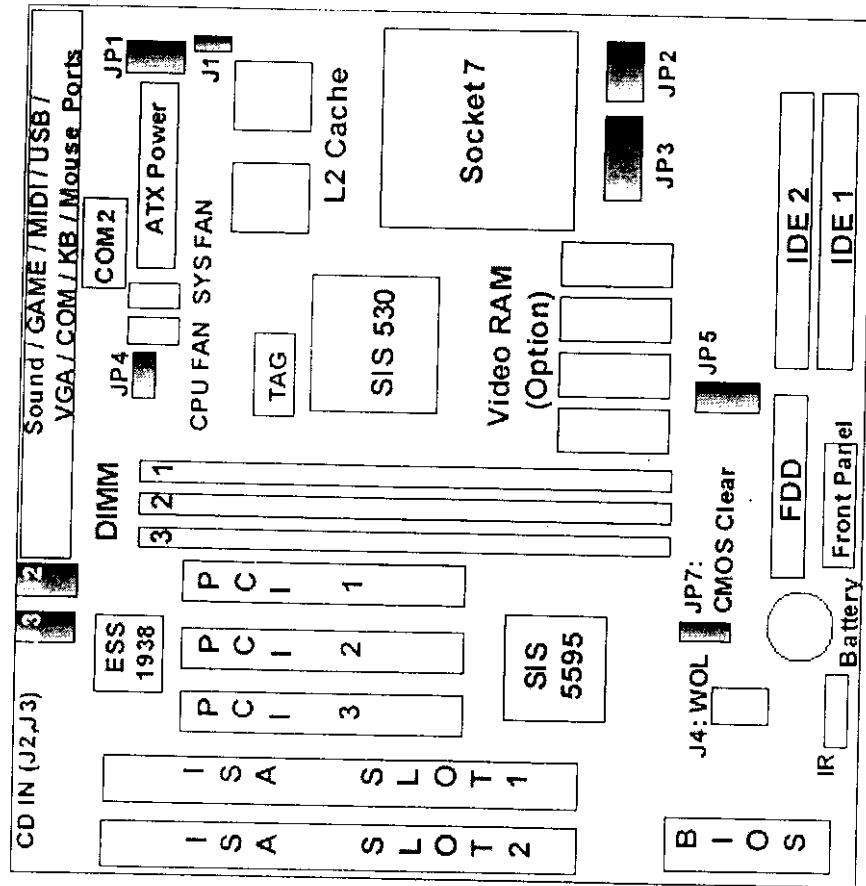
The Data Acquisition Interface offers the ability of monitoring and reporting the environmental condition of the PC. It could monitor 5 positive analog voltage inputs, 2 Fan speed inputs, and one temperature input.

In addition, SiS5595 also supports ACPI function to meet Advanced Configuration and Power Interface (ACPI) 1.0 specification for Windows 98 environment, it can support power-management timer, Power button, Real-time clock alarm wake up, more sleeping state, ACPI LED for sleeping and working state, LAN wake up, Modem Ring In wake up, and OnNow initiative function.

3. Parts Of The Mother Board



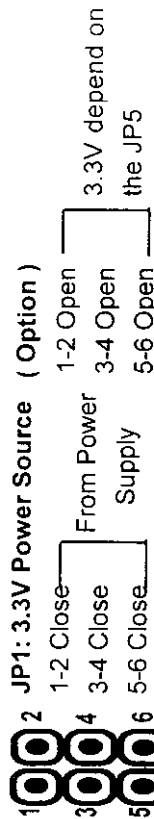
4. MotherBoard Layout Quick View



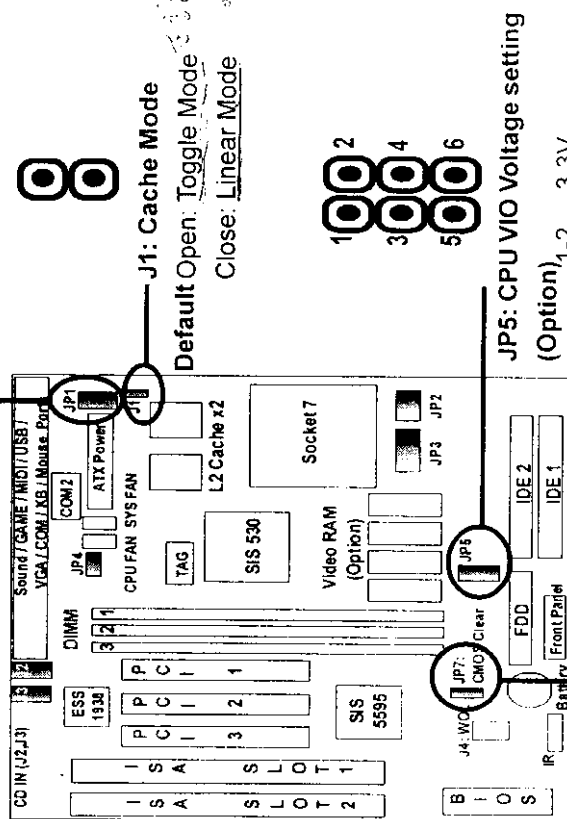
Special Connector description

- J1:** L2 Cache Linear Mode or Toggle Mode Selection
J2: CD-IN Connector (L, G, G, R)
J3: CD-IN Connector (G, L, G, R)
J4: Wake On LAN Connector
JP1: Select the CPU VIO 3.3V Power Source
JP2: CPU Frequency Ratio Setting
JP3: CPU VID Voltage Setting
JP4: CPU Front Side Bus setting
JP5: CPU VIO Voltage setting (When JP1 set to DISABLE)
JP7: CMOS Clear

5-1 Jumper Setting I



If set to Close, The 3.3V regulator (U15) should be removed

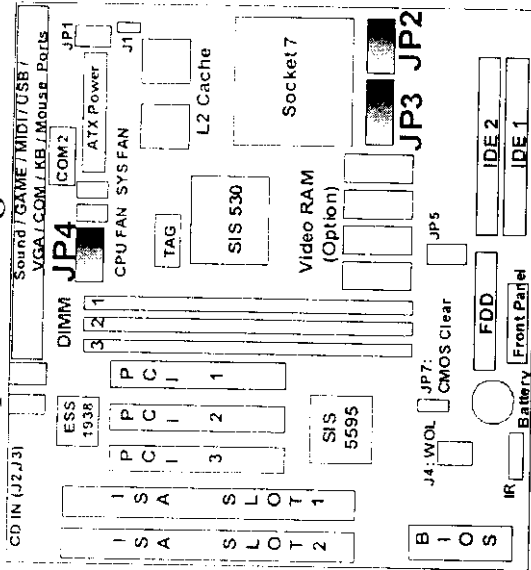


1. CMOS Clear, which is a safety hook if you forget the password.

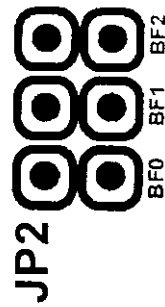
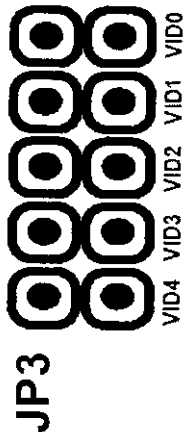
2. Clear the CMOS memory by momentarily shorting pins 1-2, for a few seconds. Then restore it to the initial 2-3 jumper setting

3. If you found that the system Date and Time doesn't work and the machine always appear the CMOS data error message, please check this jumper to correct this problem.

5-2 Jumper Setting II



SD	FS2	FS1	FS0	CPU FSB Clock	SDRAM Clock
ON	ON	ON	ON	66 MHZ	89 MHZ
OFF	ON	ON	ON	66 MHZ	66 MHZ
OFF	ON	ON	OFF	75 MHZ	75 MHZ
ON	ON	ON	OFF	83 MHZ	66 MHZ
OFF	ON	OFF	ON	83 MHZ	83 MHZ
ON	ON	OFF	ON	95 MHZ	63 MHZ
OFF	ON	OFF	OFF	95 MHZ	95 MHZ
ON	ON	OFF	OFF	100 MHZ	66 MHZ
OFF	OFF	ON	ON	100 MHZ	100 MHZ
ON	OFF	ON	OFF	112 MHZ	75 MHZ
OFF	OFF	ON	OFF	112 MHZ	112 MHZ



CPU Freq. Ratio	BF0	BF1	BF2
x 1.5 or x 3.5	OFF	OFF	X
x 2.0	ON	OFF	X
x 2.5	ON	ON	X
x 3.0	OFF	ON	X
x 4.0	ON	OFF	ON
x 4.5	ON	ON	ON
x 5.0	OFF	ON	ON
x 5.5	OFF	OFF	ON

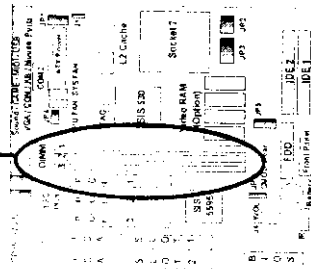
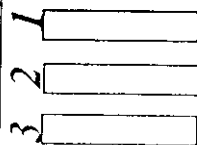
CPU Vcore	VID4	VID3	VID2	VID1	VID0
1.8V	ON	ON	OFF	ON	OFF
2.0V	ON	ON	ON	ON	OFF
2.2V	OFF	OFF	OFF	ON	OFF
2.5V	OFF	OFF	ON	OFF	ON
2.8V	OFF	ON	OFF	OFF	OFF
2.9V	OFF	ON	OFF	OFF	ON
3.1V	OFF	ON	OFF	ON	ON
3.2V	OFF	ON	ON	OFF	OFF
3.3V	OFF	ON	ON	OFF	ON
3.5V	OFF	ON	ON	ON	ON

5-3 Install System Memory Modules

This motherboard support 3 slots for 168-pin 3.3V Non-buffered DIMM modules, providing support for up to 256 MB of main memory using DIMM modules from 8MB to 128MB. For 66MHz host bus CPUs, please use 10ns or faster DIMM modules. For 100MHz host bus CPUs, please use 8ns or faster DIMM modules. The following is the example to install the system SDRAM memory module combination: if you have two DIMM Modules, you has better install them into DIMM Slot 1 & Slot 2 with the Max possible memory size up to 256MB (128 + 128) if the 128MB DIMM module is available.

Note: It is highly recommended to use the PC-100 Spec. DIMM module

Numbers of the Memory Module	DIMM1	DIMM2	DIMM3	Memory Size	Max. Size
1	1st			8~256MB	256 MB
2	1st	2nd		8~256 MB	512 MB
3	1st	2nd	3rd	8~256 MB	768 MB



The DIMM types supported SDRAM (Synchronous DRAM). The following is the summary:

Single side:

1Mx64 (8MB), 2Mx64 (16MB), 4Mx64 (32MB), 8Mx64 (64MB), 16Mx64 (128MB)

Double side:

1Mx64x2 (16MB), 2Mx64x2 (32MB), 4Mx64x2 (64MB), 8Mx64x2 (128MB).

Total Memory Size:

There is no jumper setting required for the memory size or type. It is automatically detected by the system BIOS, and the total memory size is to add them together.

Please Install the DIMM Module from DIMM Slot 1

5-4 Install the Central Processing Unit (CPU)

Step 1: Set the CPU Frequency Front Side Bus Clock (JP4)

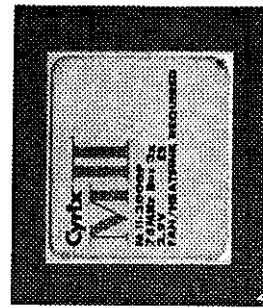
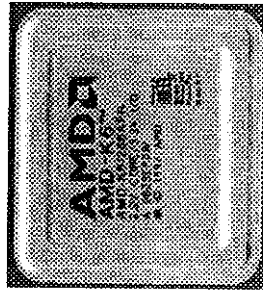
SD	FS2	FS1	FS0	CPU FSB Clock	SDRAM Clock
ON	ON	ON	ON	66 MHz	89 MHz
OFF	ON	ON	ON	66 MHz	66 MHz
OFF	ON	ON	OFF	75 MHz	75 MHz
ON	ON	ON	OFF	83 MHz	66 MHz
OFF	ON	OFF	ON	83 MHz	83 MHz
ON	ON	OFF	ON	95 MHz	63 MHz
OFF	ON	OFF	OFF	95 MHz	95 MHz
ON	ON	OFF	OFF	100 MHz	66 MHz
OFF	OFF	ON	ON	100 MHz	100 MHz
ON	OFF	ON	OFF	112 MHz	75 MHz
OFF	OFF	ON	OFF	112 MHz	112 MHz

1. The SDRAM Clock will depending on the DIMM Module the User used.
The PC-100 spec. SDRAM basically can support 100MHz or above Clock
2. The possible Front Side Bus setting are from 66 to 133 MHz.
3. If you want to overclock the CPU, please make sure the other peripherals can work fine with one another. That mean you need to well test the whole system with your own configuration, otherwise, please set the default and safe setting with 66MHz or 100MHz front side bus.
3. Please make sure you are using the correct DIMM module with the related CPU type. For the 100MHz or faster front side bus, you need to use the PC100 type DIMM module.

Step 2: Set the CPU Frequency Ratio And the Vcore (J2, J3)

CPU Freq. Ratio	BF0	BF1	BF2
x 1.5 or x 3.5	OFF	OFF	X
x 2.0	ON	OFF	X
x 2.5	ON	ON	X
x 3.0	OFF	ON	X
x 4.0	ON	OFF	ON
x 4.5	ON	ON	ON
x 5.0	OFF	ON	ON
x 5.5	OFF	OFF	ON

1. Normally, The CPU itself will mention about the Frequency and the Clock Ratio and also the Voltage of the Vcore. Please refer to the below two samples for the AMD K6-2 266 and the M II 300.
2. "X" means the setting will be ignore. If End-User want to use the CPU with the Freq. Ratio 4 ~ 5.5 times, the BF2 need to well select for the related CPU requirement.



CPU Vcore	VID4	VID3	VID2	VID1	VID0
1.8V	ON	ON	OFF	ON	OFF
2.0V	ON	ON	ON	ON	OFF
2.2V	OFF	OFF	OFF	ON	OFF
2.5V	OFF	OFF	ON	OFF	ON
2.8V	OFF	ON	OFF	OFF	OFF
2.9V	OFF	ON	OFF	OFF	ON
3.1V	OFF	ON	OFF	ON	ON
3.2V	OFF	ON	ON	OFF	OFF
3.3V	OFF	ON	ON	OFF	ON
3.5V	OFF	ON	ON	ON	ON

5-5 External Connection

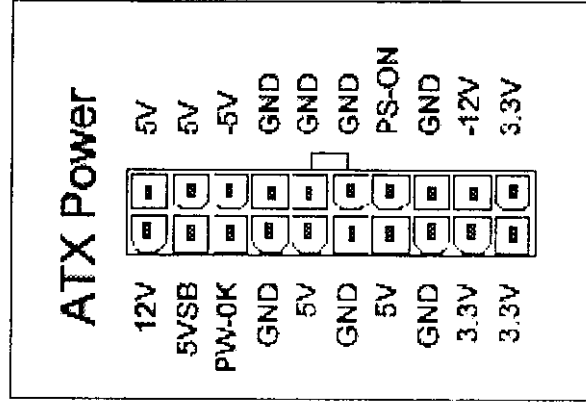
1. Unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.
2. Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. The Four Corners of the connectors are labeled on the motherboard. Pin 1 is the side closest to the power connector on hard drives and floppy drives. IDE ribbon cable must be less than 18in. (46cm), with the second drive connector no more than 6in. (15cm) from the first connector.
3. The motherboard requires a power supply and a "power good" signal. Make the ATX power supply can take at least 10mAmp load on the 5V Standby lead (5VSB) to meet the standard ATX specification.
4. To prevent electrical spikes, make sure that the power supply is not connected to an outlet when making or removing connections. Power supplies contain power remains, which can damage electrical components.

5. Expansion Card Installation Procedure

- ! Read the documentation for your expansion card and make any necessary hardware or software settings for your expansion card, such as jumpers.
- ! Remove your computer system's cover and the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
- ! Carefully align the card's connectors and press firmly.
- ! Secure the card on the slot with the screw you removed above.
- ! Replace the computer system's cover.
- ! Set up the BIOS if necessary (such as IRQ xx Used By ISA: Yes in PNP AND PCI SETUP)

5-5-1 Power Cable

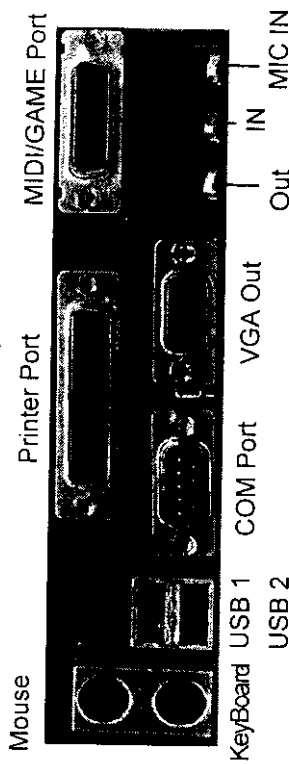
Plug the connector from the power directly into the 20-pin male ATX PW connector on the motherboard as shown in the following figure. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned and the power supply is off before connecting or disconnecting the power cable.



Make sure that your ATX power supply can supply at least 10 mAmp on the 5-volt standby lead (5VSB). You may experience difficulty in powering on your system if your power supply cannot support the load. For Wake on LAN support, your ATX power supply must supply at least 1 Amp.

You should plug in/out the Power Cable to/from the Mother Board more carefully, all the Pins should be connect at the same time.

5-5-2 KB, Mouse, USB, COM and LPT



PS/2 Keyboard Connector

The onboard PS/2 keyboard connector is a 6-pin Mini-Din connector marked KB2. The view angle of drawing shown here is from back panel of the housing.

Pin	Description	Pin	Description
1	Keyboard Data	2	N.C.
3	Ground	4	+5VDC
5	Keyboard Clock	6	N.C.

PS/2 Mouse Connector

The onboard PS/2 mouse connector is a 6-pin Mini-Din connector marked PS2. The view angle of drawing shown here is from back panel of the housing.

Pin	Description	Pin	Description
1	.Mouse Data	2	N.C.
3	Ground	4	+5VDC
5	Mouse CLK	6	N.C.

USB (Universal Serial Bus Connector)

You can attach USB devices to the USB connector. The Mother board contains two USB connectors, which are marked as USB. USB is a new serial bus design that is capable of cascading low-/medium-speed peripherals (less than 12Mbps) such as keyboard, mouse, joystick, scanner, printer and modem/ISDN. With USB, complex cable connections at the back panel of your PC can be eliminated.

Pin	Description	Pin	Description
1	+5 VDC	5	+5VDC
2	DATA -	6	DATA-
3	DATA +	7	DATA+
4	Ground	8	Ground

Serial Devices (COM1/COM2)

The onboard serial connectors are 9-pin D-type connector on the back Panel of motherboard. The serial port 1 connector is marked as COM1 and the serial port 2 connector is marked as COM2

Printer Port (LPT)

The onboard printer connector is a 25-pin D-type connector marked PRINTER. The view angle of drawing shown here is from back panel of the housing.

Line In

For the External Audio signal Input

Mic In

Connect to Microphone

Line Out (Speaker Out)

Connect to Speaker

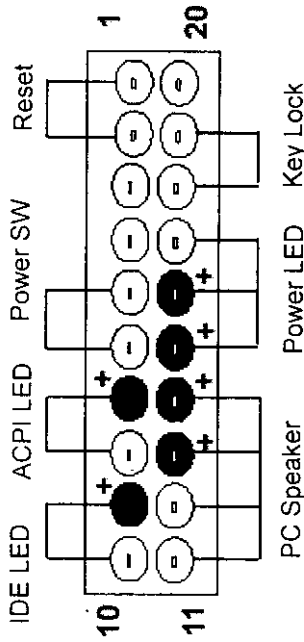
VGA Port

Connect to Monitor

MIDI / GAME Port

Connect to MIDI device or Game Pad or joystick

5-5-3 Front Panel Connection



1). IDE Activity LED (Pin 9,10)

This connector connects to the IDE (hard disk) activity indicator light on the system abinet.

2). System Power LED (Pin 15,16,17)

This 3-pin connector lights the system power LED when the motherboard has power.

3). ACPI LED (Pin 7,8)

ACPI LED can use to control the blinking of a LED at the frequency of 1 HZ to indicate the system is at power saving mode

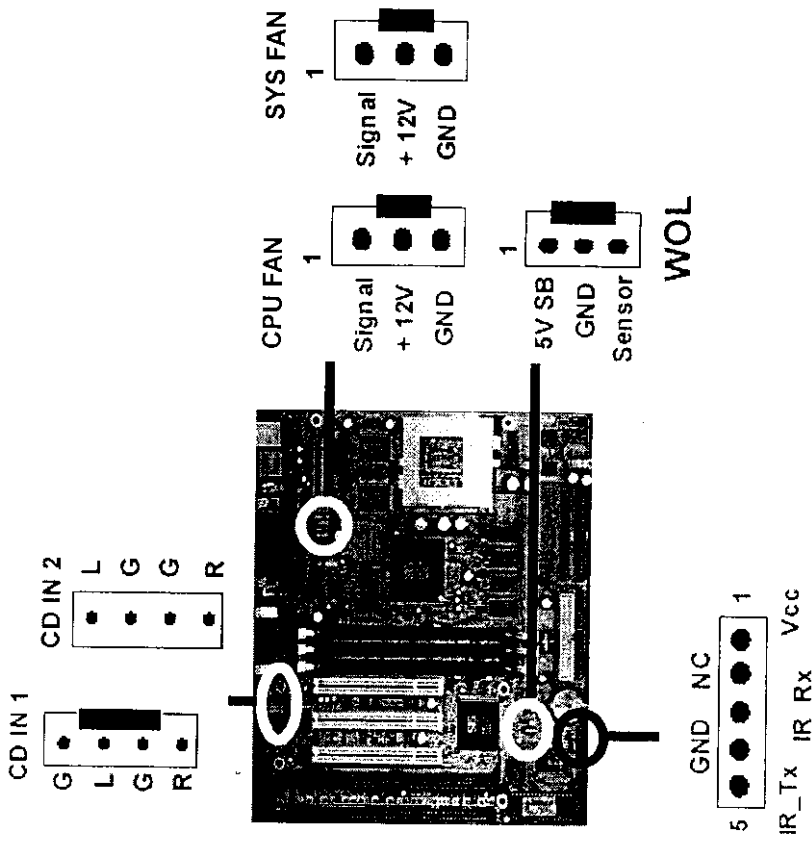
4). ATX Power Switch (Pin 5,6)

The system power is controlled by a push-switch, connected to this lead. Pushing the button once will turn on the power and pushing again will turn off the power. The system power LED shows that status of the system's power. If the power to the ATX power supply is interrupted while the motherboard is on, standby power will remember that the motherboard should be on and boot the computer when power is reapplied to the ATX power supply.

5). Reset Switch (Pin 1,2)

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

5-5-4 FAN, CD IN, IR, WOL Connector



A. CPU & System Cooling FAN Connector:

This connectors support a CPU cooling fan of 500 mA (6WATT, +12V) or less. Orient the fan so that the heat sink fins allow airflow to go across the onboard heat sink(s). Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive (+12V), while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

B. IrDA Compliant Infrared Module Connector

This connector support the optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure UART 2. Use Infrared in Chipset Features Setup to select whether UART 2 is directed for use with COM2 or IrDA. When IrDA is selected in BIOS, COM2 will be disabled. Use the five pins as shown and connect a ribbon cable from the module to the motherboard to the pin definitions.

Pin 1 Vcc
Pin 2 NC
Pin 3 IR_RX
Pin 4 GND
Pin 5 IR_TX

C. Wake-On-LAN (WOL)

Attach the 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function to the WOL connector on the motherboard. This WOL function lets users wake up the connected computer through the LAN card. Please install according to the following pin assignment:

D. CD IN Connector

Provided 2 CD Audio Input Connectors that depending on the Cable user have which connect from CDRom to This Connector

5-6 Power On Procedure

1. After all connections are made, close the system case cover.
2. Be sure that all switches are off (in some systems, marked with 0)
3. Make sure your power supply voltage is correctly set to 110V or 230V.
4. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
5. Connect the power cord into a power outlet that is equipped with a surge protector.

6. You may then turn on your devices in the following order:

Your monitor

External SCSI devices (starting with the last device on the chain)

Your system power. For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the case.

7. The power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed. The monitor LED may light up after the system power up, if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.
8. During power-on, hold down <Delete> to enter BIOS setup menu if you want to run the BIOS Setup Utility.

Powering Off your computer: You must first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system. If you use Windows 95/98, click the Start button, click Shut Down, and then click Shut down the computer. The system will give three quick beeps after about 30 seconds and then power off after Windows shuts down. The message "You can now safely turn off your computer" will not appear when shutting down with ATX power supplies.

Attached: BIOS SETUP TIPS

The document comes from the Award BIOS Manual, for reference only.

■ Chipset Features Setup

ROM PCI/ISA BIOS (2A51MEC9) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.	
Auto Configuration	: Disabled
Refresh Rate Control	: 15.6us
Ref/Act Command Delay	: 8T
Refresh Queue Depth	: 0
RAS Precharge Time	: 2T
RAS to CAS Delay	: 2T
ISA Bus Clock Frequency	: 7.159MHz
Starting Point of Paging	: 1T
NA# Enable	: Disabled
L2 Cache Burst RD Cycle	: Normal
Asyn/Sync Mode CPU/DRAM	: Asynchronous
SDRAM CAS Latency	: x2-2-2
SDRAM WR Retire Rate	: Disabled
PCI Peer Concurrency	: Disabled
Read Prefetch Memory RD	: Enabled
Assert TRDY After Prefetch	: 2 QWs
CPU to PCI Burst Mem. WR	: Disabled
CPU to PCI Post Write	: Disabled
Linear Mode SRAM Support	: Disabled
ECC Function Support	: Disabled
AGP Aperture Size	: 4MB
System BIOS Cacheable	: Disabled
Video BIOS Cacheable	: Disabled
Memory Hole at 15M-16M	: Disabled
VGA Shared Memory Size	: 2 MB
VGA Memory Clock (MHz)	: 66
DRAM Controller 1 T WR	: Disabled
DRAM Controller 1 T RD	: Enabled
PCI Post Write Buffer	: Disabled
PCI Delayed Transaction	: Disabled
Auto Detect DIMM/PCI Clk	: Enabled
Spread Spectrum	: Disabled
CPU Host Clock (CPU/PCI)	: Default
ESC : Quit	F1++ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift)F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Auto Configuration

This item allows you select pre-determined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

Refresh Rate Control

Select the period required to refresh the DRAMs, according to DRAM specifications. The choice: 3.9us, 7.8us, 15.6us

Ref / Act Command Delay

Set the DRAM clock of the refresh command to refresh/active command delay. The choice: 5T, 6T, 7T, 8T.

Refresh Queue Depth

Set the depth of refresh queue. The choice: 0, 4, 8, 12.

RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. The Choice: 2T, 3T, 4T, 5T.

RAS to CAS Delay

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe).

ISA Bus Clock Frequency

You can set the speed of the AT bus at one-third or one-fourth of the CPU clock speed. The choice: 7.159MHz, PCICLK/3, PCICLK/4.

Starting Point of Paging

This value controls the start timing of memory paging operations. The choice: 1T, 2T, 4T, 8T.

NA# Enable

Selecting *Enabled* permits pipelining, in which the chipset signals the CPU for a new memory address before all data transfers for the current cycle are complete, resulting in faster performance. The choice: Enabled, Disabled.

L2 Cache Burst RD Cycle

These timing numbers are the pattern of cycles the CPU uses to read data from the cache. The choice: Normal, Delay 1T.

Asyn/Sync Mode CPU/DRAM

This feature can only be enabled when the frequency of CPU clock and the frequency of DRAM clock are the same and the skew between these two clocks should be zero. The choice: Asynchronous, Synchronous.

SDRAM CAS Latency

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The choice: 2T, 3T.

SDRAM WR Retire Rate

The system designer must select the correct timing for data transfers from the write buffer to memory, according to DRAM specifications. The choice: 0WS, 1WS.

DRAM Opt RAS Precharge

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

PCI Peer Concurrency

Peer concurrency means that more than one PCI device can be active at a time. The choice: Enabled, Disabled.

Read Prefetch Memory RD

When this item is *Enabled*, the system is allowed to prefetch the next read instruction and initiate the next process. The choice: Enabled, Disabled.

Assert TRDY After Prefet

When you select 1QWs, SiS530 asserts its first TRDY# for 1 transaction after it prefetched 1 quadword of data from system memory. Otherwise, SiS530 asserts its first TRDY# after 2 quadwords are prefetched. The choice: 1QWs, 2QWs.

CPU to PCI Burst Mem. WR

Select enabled permits PCI burst memory write cycles, for faster performance. When disabled, performance is slightly slower, but more reliable. Choices are Enabled, Disabled.

CPU to PCI Post Write

Select enabled to use a fast buffer for posting writes to memory. Using a fast buffer releases the CPU before completion of a write cycle to DRAM. The choice: Enabled, Disabled.

Linear Mode SRAM Support

Select Enabled if your system contains a CPU that requires linear mode (e.g., Cyrix M1/M2 CPU). The choice: Disabled, Enabled.

ECC Function Support

Enable/Disable the ECC (error-correcting code) function support. The choice: Enabled, Disabled.

AGP Aperture Size

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for AGP information. The choice: 4 MB, 8MB, 16 MB, 32 MB, 64 MB, 128 MB, 256MB.

VGA Shared Memory Size

Specify the size of system memory to allocate for video memory, from 1 MB to 8 MB. The choice: 1MB, 2MB, 4MB, 8MB.

VGA Memory Clock (MHz)

Set the speed (MHz) of the VGA memory clock. The choice: 66, 75, 83, 100.

DRAM Controller 1 T WR/RD

Enable/disable DRAM controller one cycle write/read for VUMA function. The choice: Enabled, Disabled.

PCI Post Write Buffer

Enable/disable PCI post write buffer. The choice: Enabled, Disabled.

PCI Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The choice: Enabled, Disabled

Power Management Setup

ROM PCI/ISA BIOS (2ASIMCE9)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI Function : Enabled Power Management : User Define Video Off Option : Always On Video Off Method : Blank Screen Switch Function : Disabled Doze Speed (div by): 8/8 Stdy Speed(div by): 8/8 MODEM Use IRQ : NA Hot Key Function As: Disable	VGA Activity : Disabled IRQ [3-7,9-15],NMI : Disabled IRQ 8 Break Suspend : Disabled Power Button Over Ride : Instant Off Ring Power Up Control : Disabled GPIO5 Power Up Control : Disabled KB Power ON Password : Enter Power Up by Alarm : Disabled
** PM Timers ** HDD Off After : Disable Doze Mode : Disable Standby Mode : Disable Suspend Mode : Disable ** PM Events ** HDD Ports Activity : Disabled COM Ports Activity : Disabled LPT Ports Activity : Disabled	ESC : Quit F1 : Help F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

ACPI function :

Select Enabled if your system has an ACPI function. The choice: Enabled, Disabled.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section *PM Timers* for a brief description of each mode. This table describes each power management mode:

Disable	No power management.	Disables all four modes
Min. Power Saving	Minimum power management. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.	Doze Mode = 1 hr.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.	
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.	

PM Control APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to No.

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
Susp, Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

Switch Function

You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period.

The choice: Deturbo, Break, Break/Wake, Disabled.

Doze Speed (div by)

Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8.

The choice: 1~8.

Stdby Speed (div by)

Select a divisor to reduce the CPU speed during Standby mode to a fraction of the full CPU speed. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8-0.

The choice: 1~8.

MODEM Use IRQ

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

The choice: 3, 4, 5, 7, 9, 10, 11, NA.

Hot Key Power Off

Select Enabled if your system has a hot key for soft power off.

The choice: Enabled, 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 available selections.

HDD Off After

By default, this item is Disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.

Doze Mode

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

Standby Mode

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

Suspend Mode

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

PM Events

You may disable activity monitoring of some common I/O events and interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity. When On (or named, in the case of LPT & COM), any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD Ports Activity

When set to On (default), any event occurring at a HDD (serial) port will awaken a system which has been powered down.

COM Ports Activity

When set to On (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

LPT Ports Activity

When set to On (default), any event occurring at a LPT (printer) port will awaken a system which has been powered down.

VGA Activity

When set to *On* (default), any event occurring at VGA will awaken a system which has been powered down.

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. As above, the choices are *On* and *Off*. When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ [3-7, 9-15], NMI
- IRQ 8 Break Suspend : You can *Enable* or *Disable* monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Power Button Over Ride

You could press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."
The choice: Soft-Off, Delay 4 Sec.

Ring Power Up Control

When you select *Enabled*, a signal from ring returns the system to Full On state. The choice: Enabled, Disabled.

GPIO5 Power Up Control

When you select *Enabled*, a signal from General Purpose Input 05 returns the system to Full On state. The choice: Enabled, Disabled.

KB Power ON Password

When you set a password for keyboard, The password you set the keyboard that returns the system to Full On state.

Power Up by Alarm

When you select *Enabled*, the following fields appear. They let you set the alarm that returns the system to Full On state. The choice: Enabled, Disabled.

■ PNP/PCI Configuration

ROM PCI/ISA BIOS (2451MEC9)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By : Auto Reset Configuration Data : Disabled	PCI IRQ Activated By : Edge Assign IRQ For USB : Disabled
ESC : Quit F1 : Help F2 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults F10 : Select Item PUP/PD/+/- : Modify (Shift)F2 : Color Defaults Load Setup Defaults	

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95, 98. The choice: Auto, Manual.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
The choice: Enabled, Disabled.

PCI IRQ Activated by

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

■ INTEGRATED PERIPHERALS SETUP

ROM PCI/ISA BIOS (ZASIMEC9) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.	
Internal PCI/IDE	Parallel Port Mode
IDE Primary Master PIO : Both	PS/2 mouse function : SPP
IDE Primary Slave PIO : Auto	USB Controller : Enabled
IDE Secondary Master PIO : Auto	USB Keyboard Support : Enabled
IDE Secondary Slave PIO : Auto	Init Display First : Disabled
Primary Master UltraDMA : Auto	Current System Temp. : AGP
Primary Slave UltraDMA : Auto	Current CPU/FAN1 Speed :
Secondary Master UltraDMA : Auto	Current CPU/FAN2 Speed :
Secondary Slave UltraDMA : Auto	IN1(V) :
IDE Burst Mode : Enabled	IN2(V) :
IDE Data Port Post Write : Disabled	IN3(V) :
IDE HDD Block Mode : Enabled	
Onboard FDC Controller : Enabled	
Onboard Serial Port 1 : 3F8/IRQ4	
Onboard Serial Port 2 : 2F8/IRQ3	
IR Address Select : Disable	
Onboard Parallel Port : 378/IRQ7	

Internal PCI / IDE

This chipset contains an internal PCI IDE interface with support for two IDE channels. The choice: Primary, Secondary, Both.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input / Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In *Auto* mode, the system automatically determines the best mode for each device. The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary/Secondary Master/Slave UDMA

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select *Auto* in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device. The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Burst Mode

Selecting *Enabled* reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*. This field does not appear when the Internal PCI/IDE field, above, is *Disabled*. The choice: Enabled, Disabled.

IDE Data Port Post Write

Selecting *Enabled* speeds up processing of drive reads and writes, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*. The choice: Enabled, Disabled.

IDE HDD Block Mode

The chipset contains a PCI IDE interface with support for two IDE channels. Select *Enabled* to activate the primary and/or secondary IDE channels. Select *Disabled* to deactivate this interface, if you install a primary and/or secondary add-in IDE interface IDE interface.

Enabled	Secondary HDD controller used
Disabled	Secondary HDD controller not used

Onboard FDD Controller

This should be enabled if your system has a floppy disk drive (FDD) 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. The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address. The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART 2 Mode

The second serial port offers these InfraRed interface modes. Choices are Standard, ASKIR, HPSIR.

IR Function Duplex

This item allows you to select the IR function when you select the UART 2 Mode is ASKIR. Choices are Half, Full.

RxD, TxD Active

This item allows you to determine the active of RxD, TxD. Choices are "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

Onboard Parallel Port

This item allows you to determine access onboard parallel port controller with which I/O address. The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Onboard Parallel Mode

Select an operating mode for the onboard parallel (printer) port. Select *SPP* unless you are certain your hardware and software both support one of the other available modes. The choice: SPP, EPP, ECP, ECP+E PP.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode. The choice: 3, 1.

Parallel Port EPP Type

This item allows you to determine the IR transfer mode of onboard I/O chip. Choices are EPP1.9, EPP1.7.

PS/2 mouse function

If your system has a PS/2 mouse port and you install a serial pointing device, select *Disabled*. The choice: Enabled, Disabled.

USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choice: Enabled, Disabled.

Init Display First

This item allows you to decide to active which bus first (PCI Slot or AGP first). The choice: PCI Slot, AGP.

CPU Warning Temperature

Select the CPU warning temperature. If your CPU temperature is higher than the selected temperature, the BIOS will slow down your CPU process till the temperature is below the CPU warning temperature then the CPU will work normally.

Current CPU Temperature

This field displays the *current* CPU temperature, if your computer contains a monitoring system.

Shutdown Temperature

Select the shutdown temperature.

Current System Temperature

This field displays the *current* system temperature, if your computer contains a monitoring system.

Current CPU FAN1/2 Speed

These fields display the *current* speed of up to two CPU fans, if your computer contains a monitoring system.

IN0~IN3

These fields display the *current* voltage of up to seven voltage input lines, if your computer contains a monitoring system.